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Catalog Navigation Features

Welcome to the enhanced and expanded Cooper Crouse-Hinds catalog. This catalog contains several features designed to help you easily navigate the catalog to find the right products and information fast.

Catalog Organization / Page Layout Guide - For detailed information on the overall organization of the catalog and individual page layout, please refer to pages G62 and G63.

Fold Out Tabs - We've increased the number of easy-to-use tabs, allowing you to quickly get to the product lines you use most. Refer to the back of each tab for a list of new products in the catalog.

Product Index by Catalog Number - Looking for a specific Cooper Crouse-Hinds catalog number? Refer to the Catalog Number Index starting on page G5.

Product Index by Description and/or Trade Name - Starting on page G2, refer to this index when looking for a type of product or a Cooper Crouse-Hinds brand name.

Product Line Table of Contents - Know which product line you want, but don't know where to go from there? The first page after each fold-out-tab contains an overview of the type of products found within each section of the product line.

Section-Specific Table of Contents - Located on the first page of each product section, they allow you to quickly locate the products within each section.

New Products Identification - Look for this logo at the top of the page to quickly find the products that are new to this catalog.



Lightning Service™ Delivery Service - Looking for job specific products to meet tight deadlines? Then specify Lightning Service. All products available with Lightning Service delivery will be marked with a checkmark. Look for pages with the Lightning Service Logo located at the top of the page. See page G77 for complete details about this delivery option.



The product information published in our catalogs and literature is not guaranteed. It has been compiled with care and is sufficiently accurate for most purposes. It is subject to change without notice. Occasionally, it may be necessary to modify the materials, finishes, or other components of the product. These changes will in no way reduce the performance or function for which the product is intended.

All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. The accuracy or completeness thereof are not guaranteed. In accordance with Cooper Crouse-Hinds' *Terms and Conditions of Sale*, and since conditions of use are outside our control, the purchaser should determine the suitability of the product for his/her intended use and assumes all risk and liability whatsoever in connection therewith.

All sales of Cooper Crouse-Hinds products are specifically subject to the Terms and Conditions of Sale as shown on Cooper Crouse-Hinds distributor or trade sheets.

Measurements: All units of measurement shown in this catalog are in "inches" and "pounds" unless otherwise indicated. Dimensions are approximate and should not be used for construction purposes.

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Product Index

By description and/or trade name

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Cord Reels	7P
Cable Reels	7P
Static Discharge Reels	7P
Cable Reels	7P
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FS/FD	3F
Cast Outlet Boxes	2F
Champ® Luminaires	3L
Circuit Breakers	
Auxiliary	3C, N
Technical Data	6C
Thermal Magnetic	3C, N
Circuit Breaker Panelboards	1A, N
Clamps	8L
Clocks, Explosion Proof	4A
Combination Motor Starters	
Single Speed	1C, N
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Commercial/Industrial Fittings	CP
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Sealing	8F
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Conduit Fittings C/I	CP
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Connectors Straight Blade	6P
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Grounding Indicator	4C
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F	
Fiber	
Sealing	8F
Fiberglass Outlet Boxes	CP
Fire Alarm Station	4C, N
Fire Barrier	5F
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By description and/or trade name

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Ark-trol®	8P, 9P
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WLWP100HPS/MT.....	255	✱WSRD10352.....	1019	X8635-40B.....	423	XB16UL12060AYNN.....	1140
WLWP100HPS/TT.....	255	✱WSRD103541.....	1019	X8635-41B.....	423	XB16UL12060BYNN.....	1140
WLWP100MH/MT.....	255	✱WSRD103542.....	1019	X8635-42B.....	423	XB16UL12060CYNN.....	1140
WLWP100MH/TT.....	255	WSRD103542SMS901.....	1020	X8635-60B.....	423	XB16UL12060GYNN.....	1140
WLWP150HPS/MT.....	255	✱WSRD3351.....	1019	X8635-61B.....	423	XB16UL12060RYNN.....	1140
WLWP150HPS/TT.....	255	✱WSRD3352.....	1019	X8635-62B.....	423	XB4BB8D2B3B06AN0RN1R.....	1146
WLWP175MH/MT.....	255	✱WSRD33541.....	1019	X8635-80.....	423	XB4BH8D2B3B06AN0RN1R.....	1146
WLWP175MH/TT.....	255	✱WSRD33542.....	1019	X8635-81.....	423	XB4ULB8D2E3E06ANAN1R.....	1146
WLWP250HPS/MT.....	255	WSRD33542SMS901.....	1020	X8635-82.....	423	XB4ULB8D2E3E06ANRN1R.....	1146
WLWP250HPS/TT.....	255	✱WSRD6351.....	1019	X8995-1.....	423	XB4ULE8D2E3E06ANAN1R.....	1146
WLWP250MH/MT.....	255	✱WSRD6352.....	1019	XB11B02406ANBNNNN.....	1143	XB4ULE8D2E3E06ANRN1R.....	1146
WLWP250MH/MT-S828.....	255	✱WSRD63541.....	1019	XB11B02406RNBNNNN.....	1143	XC-A1-B1.....	590
WLWP250MH/TT.....	255	✱WSRD63542.....	1019	XB11B24006ANBNNNN.....	1143	XC-A1-N0.....	590
WLWP400HPS/MT.....	255	WSRD63542SMS901.....	1020	XB11B24006RNBNNNN.....	1143	XC-A2-B2.....	590
WLWP400HPS/TT.....	255	WSRDW10352SMS901.....	1020	XB11SL3.....	1135	XC-A2-N0.....	590
WLWP400MH/MT.....	255	WSRDW103542SMS901.....	1020	XB11UL02406ANBNNNR.....	1143	XC-A3-B3.....	590
WLWP400MH/MT-S828.....	255	WSRDW3352SMS901.....	1020	XB11UL02406CNBNNNN.....	1143	XC-A3-N0.....	590
WLWP400MH/TT.....	255	WSRDW33542SMS901.....	1020	XB11UL02406CNBNNNR.....	1143	XC-A4-B4.....	590
WLWPMP-1.....	256	WSRDW6352SMS901.....	1020	XB11UL02406RNBNNNR.....	1143	XC-A4-N0.....	590
WLWPWG-1.....	256	WSRDW63542SMS901.....	1020	XB11UL11006RNBNNNR.....	1143	XC-A5-N0.....	590
WLWPWG-2.....	256	✱WST10025.....	558	XB12B02406ANBNNNN.....	1146	XC-A6-B6.....	590
WLWPWG-3.....	256	✱WST10035.....	558	XB12B02406RNBNNNN.....	1146	XC-A6-N0.....	590
✱WMG100.....	299	✱WST10254.....	558	XB12B24006ANBNNNN.....	1146	XC-B1-B1.....	590
✱WMG125.....	299	✱WST10354.....	558	XB12B24006RNBNNNN.....	1146	XC-B1-N0.....	590
✱WMG150.....	299	✱WST3025.....	558	XB12SL2.....	1135	XC-B2-B2.....	590
✱WMG200.....	299	✱WST30254.....	558	XB12SL3.....	1135	XC-B2-N0.....	590
✱WMG38.....	299	✱WST3035.....	558	XB12UL02406ANBNNNR.....	1146	XC-B3-B3.....	590
✱WMG50.....	299	✱WST30354.....	558	XB12UL02406RNBNNNR.....	1146	XC-B3-N0.....	590
✱WMG75.....	299	✱WST6025.....	558	XB12UL11006ANBNNNR.....	1146	XC-B4-B4.....	590
✱WP820.....	37	✱WST60254.....	558	XB12UL11006RNBNNNR.....	1146	XC-B4-N0.....	590
WP832.....	37	✱WST6035.....	558	XB13024ANN.....	1147	XC-B5-N0.....	590
WP930.....	37	✱WST60354.....	558	XB13024RNNN.....	1147	XC-B6-B6.....	590
WS2-15.....	108	X100M.....	6	XB13230ANN.....	1147	XC-B6-N0.....	590
WS2-21.....	108	X125M.....	6	XB13230RNNN.....	1147	XC-C2-B2.....	590
WS2.5-10.....	108	X150M.....	6	XB15UL02406AWBNN.....	1139	XC-C2-N0.....	590
WS2.5-20.....	108	✱X17.....	6	XB15UL02406AWPNN.....	1139	XC-C3-B3.....	590
WS3.5-22.....	108	✱X17-CG.....	8	XB15UL02406BWBNN.....	1139	XC-C3-N0.....	590
WS3.5-32.....	108	✱X18.....	6	XB15UL02406BWPNN.....	1139	XC-C4-B4.....	590
WS4-23.....	108	✱X19.....	6	XB15UL02406CWBNN.....	1139	XC-C4-N0.....	590
WS5-25.....	108	X200M.....	6	XB15UL02406CWPNN.....	1139	XC-C5-N0.....	590
WS6-28.....	108	✱X27.....	6	XB15UL02406GWBNN.....	1139	XC-C6-B6.....	590
WS8-18.....	108	✱X27-CG.....	8	XB15UL02406GWPNN.....	1139	XC-C6-N0.....	590
WS8-32.....	108	✱X28.....	6	XB15UL02406RWBNN.....	1139	XC-D2-N0.....	590
✱WSQC2330.....	1037	✱X29.....	6	XB15UL02406RWPNN.....	1139	XC-D3-B3.....	590
✱WSQC2340.....	1037	✱X37.....	6	XB15UL12006AWBNN.....	1139	XC-D3-N0.....	590
✱WSQC3330.....	1037	✱X37-CG.....	8	XB15UL12006AWPNN.....	1139	XC-D4-B4.....	590
✱WSQC3340.....	1037	✱X38.....	6	XB15UL12006BWBNN.....	1139	XC-D4-N0.....	590
✱WSQC5630.....	1037	✱X39.....	6	XB15UL12006BWPNN.....	1139	XC-D5-N0.....	590
✱WSQC5640.....	1037	✱X448.....	6	XB15UL12006CWBNN.....	1139	XC-D6-B6.....	590
✱WSR10351.....	1019	✱X47.....	6	XB15UL12006CWPNN.....	1139	XC-D6-N0.....	590
✱WSR10352.....	1019	✱X47-CG.....	8	XB15UL12006GWBNN.....	1139	XC-E2-N0.....	590
✱WSR103541.....	1019	X50M.....	6	XB15UL12006GWPNN.....	1139	XC-E3-N0.....	590
✱WSR103542.....	1019	✱X57.....	6	XB15UL12006RWBNN.....	1139	XC-E4-B4.....	590
✱WSR3351.....	1019	✱X57-CG.....	8	XB15UL12006RWPNN.....	1139	XC-E4-N0.....	590
✱WSR3352.....	1019	✱X58.....	6	XB16UL02460AYNN.....	1140	XC-E5-N0.....	590
✱WSR33541.....	1019	✱X67.....	6	XB16UL02460BYNN.....	1140	XC-E6-N0.....	590
✱WSR33542.....	1019	✱X67-CG.....	8	XB16UL02460CYNN.....	1140	XD010.....	172

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✻XJG84.....	173	XLVS11620081.....	142				
✻XJG84-EMT.....	174	XLVS12016061.....	142				
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✻XJG94.....	173	XLVS12020061.....	142				
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G

General Information

Organization of catalog

Organization of the Catalog

The Cooper Crouse-Hinds catalog includes products from six major offerings; Fittings, Control and Apparatus, Corrosion Resistant, Industrial Lighting, Plugs and Receptacles, and Signals and Alarms.

Major Sections

The six product lines are broken down into seven major product sections to catalog similar items in a section. The sections are:

Product Line	Major Section
Fittings	Section F – Fittings
Commercial Products	Section CP – Commercial Products
Control & Apparatus	Section C – Motor Control
	Section A – Apparatus
Corrosion Resistant	Section N – Corrosion Resistant Products
Industrial Lighting	Section L – Lighting
Plugs & Receptacles	Section P – Plugs & Receptacles
Signals & Alarms	Section S – Signals and Alarms

Product Sections

Each of the six major product sections is broken down into minor product sections to make it easier to find and select desired items. Each minor product section has an index for that section.

Product Line	Major Section	Minor Sections
Fittings	Section F – Fittings	1F – 8F
Commercial Products	Section CP – Commercial Products	CP
Control & Apparatus	Section C – Motor Control	1C – 8C
	Section A – Apparatus	1A – 4A
Corrosion Resistant	Section N – Corrosion Resistant Products	N
Industrial Lighting	Section L – Lighting	1L – 12L
Plugs & Receptacles	Section P – Plugs & Receptacles	1P – 9P
Signals & Alarms	Section S – Signals & Alarms	S

Tabs & Symbols

Fold out tabs clearly identify each product section for easy reference. Additionally, a symbol on the tab is used to denote the general acceptable areas for use for the products listed in the section. The specific catalog page for the product should be carefully reviewed to ensure appropriateness of use in a particular area, but the tabs provide a quick and easy starting point.

The symbols are:

-  – Products for Non-Hazardous Areas
-  – Products for Both Non-Hazardous and Hazardous Areas
-  – Products for Hazardous Areas

General Information

Catalog Page Layout

To make it easier to find specific information about a product, all catalog pages follow the same general layout. A sample follows.

Product Section and Product Family

4F Condulet® Conduit Outlet Boxes With Covers for Threaded Rigid and IMC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG
Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

**Hazardous
(Classified)
Locations
Suitability**

Typical Product Applications & Key Product Features

Application:

GUA series conduit outlet boxes are installed within hazardous area conduit systems to:

- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- connect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes
- act as mounting outlets for fixtures (with appropriate covers)
- act as sealing fittings (with appropriate covers)

Features:

GUA conduit boxes have:

- Neoprene "O" ring standard to meet NEMA 4 requirements
- Cast brackets on cover to permit easy removal and tightening
- Internal green ground screw
- Four standard mounting pads except for boxes with bottom hubs
- threaded cover openings
- ten different hub arrangements
- taper threaded hubs to provide grounding continuity
- smooth integral hub bushing protects conductor insulation when pulling
- surface covers furnished with boxes
- sealing covers, dome covers, and fixture hanger covers are available.
- cover threads are 12 pitch.

Standard Materials:

- Bodies – *Feralloy* iron alloy
- Covers – Copper-free aluminum

Standard Finishes:

- *Feralloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Size Ranges:

- Hub – 1/2" to 2"
- Cover opening – 2" to 5" dia.

Options:

Description

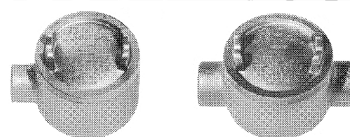
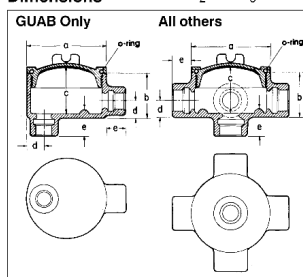
Bodies – copper-free aluminum – SA†
Covers – *Feralloy* iron alloy – electrogalvanized and aluminum acrylic paint – WOD
Corro-free epoxy powder coat – S752
To order box less cover add "O" to end of catalog number ie. GUAT 260.

Certifications and Compliances:

- NEC/CEC: Class I, Division 1 & 2, Groups C,D Class II, Division 1, Groups E,F,G Class II, Division 2, Groups F,G Class III
- UL Standard: 886
- ANSI Standard: C33.27
- CSA Standard: C22.2 No. 30
- NEMA/CEMAC 3,4

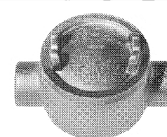
NOTE: When assembled with sealing type cover, GUA series outlet boxes provide adequate sealing for 40% fill in hazardous areas – Class I, Groups C,D; Class II, Groups E,F,G; and Class III. Seals can be made in either horizontal or vertical positions. Use *Chico*™ "A" sealing compound only. Conductor splices or connections must not be made in enclosures where sealing compound is to be used per NEC.

Dimensions



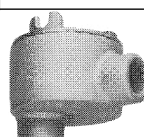
GUA

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUA14
3/4	2	GUA24
1	3	GUA16
1 1/4	3	GUA26†
1 1/2	3	GUA36
1 3/4	3 3/4	GUA47
2	5	GUA59



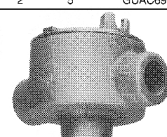
GUAC

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAC14†
3/4	2	GUAC24†
1	3	GUAC16†
1 1/4	3	GUAC26†
1 1/2	3 3/4	GUAC36†
1 3/4	5	GUAC47†
2	5	GUAC59†



GUAB

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAB14†
3/4	2	GUAB24
1	3	GUAB16†
1 1/4	3	GUAB26†
1 1/2	3	GUAB36†
1 3/4	3 3/4	GUAB47†
2	5	GUAB59†



GUAD

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAD14†
3/4	2	GUAD24
1	3	GUAD16†
1 1/4	3	GUAD26†
1 1/2	5	GUAD36†
1 3/4	5	GUAD47

**Catalog
Number/
Ordering
Information**

**Certifications
and
Compliances**

Standard Materials & Standard Finishes of Construction

**Dimensional
Information**

† Available in copper-free aluminum, add suffix -SA.

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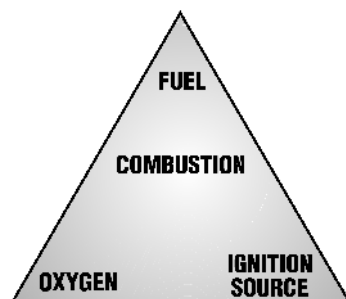
General Information

Reference Information Hazardous (Classified) Locations

The installation and maintenance of equipment for use in Hazardous (Classified) Locations is governed by the National Electrical Code® (NEC), Canadian Electrical Code® (CEC), and/or other local codes. The information that follows is not intended to be a comprehensive discussion of Hazardous Areas, but a general overview which can be used to assist in the selection of appropriate equipment.

Hazardous (Classified) Locations

A source of energy is all that is needed to touch off an explosion when flammable gases, vapors or combustible dusts are mixed in the proper proportion with air. The explosion triangle is an effective way to remember this principle.



COMBUSTION TRIANGLE

In an industrial environment, sparks or heat from electrical equipment can be the source of ignition, which can ignite surrounding gases or combustible dusts with disastrous results.

Users, insurance underwriters and engineering companies classify hazardous areas. Cooper Crouse-Hinds cannot classify hazardous areas.

There are two methods for classifying hazardous areas: Classes and Zones.

Using the Classes methodology, hazardous areas are broken down into three distinct classes based upon the material that makes the area hazardous.

Classes:

Class I areas are hazardous because of the presence of Gases & Vapors. Examples of areas that may have Class I areas are: refineries, chemical plants, paint spray areas, waste water treatment facilities, printing presses, and pharmaceutical facilities.

Class II areas are hazardous because of the presence of Combustible Dusts. Examples of areas that may have Class II areas are: grain processing and storage facilities, coal handling and storage areas, cocoa plants, metal grinding areas, and munitions plants.

Class III areas are hazardous because of the presence of Easily Ignitable Fibers & Flyings. Examples of areas that may have Class III areas are: textile mills, wood cutting and pulverizing facilities, insulation manufacturing areas, cotton mills and wool processing areas.

Divisions:

Within the Classes classification, areas are divided into two distinct Divisions; Division 1 and Division 2.

Division 1 atmospheres cover locations where the hazardous material can exist under normal operating conditions. Division 1 is referred to as “normally hazardous”. An example of an area that could be rated as Class I, Division 1 would be an area surrounding a vat where a product is being produced and flammable vapors are released as a normal by-product of the manufacturing process.

Division 2 atmospheres cover locations where the hazardous material does not typically exist. Division 2 is referred to as “not normally hazardous”. Examples of areas that could be rated as Class I, Division 2 would be a location where flammable gases or vapors are handled in a closed system, or confined within suitable enclosures, or where hazardous concentrations are normally prevented by positive mechanical ventilation. Areas adjacent to Division 1 locations, into which gases might occasionally flow, would also belong to Division 2.

Class II areas are also divided into Division 1 and Division 2 depending on the quantity of dust present in the area. In Class II, Division 1 areas the combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures. In Class II, Division 2 areas the combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitable mixtures.

A Class III, Division 1 location is a location in which easily ignitable fibers or materials producing combustible flyings are manufactured or used.

A Class III, Division 2 location is a location in which easily ignitable fibers are stored or handled other than in the process of manufacture.

Groups:

Hazardous areas are then broken down into sub-categories grouped based on the characteristics of the materials. Class I areas (gases and vapors) are divided into four groups; A, B, C, D.

Class II areas (dusts) are divided into three groups; E, F, G. (For areas rated Class II, Group E there is no Division 2, only Division 1).

There are no groups for Class III (easily ignitable fibers and flyings).

The chart below shows typical hazardous material for each group.

Class I -	Class II	Class III
(Gases & Vapors)	(Dusts)	(Fibers & Flyings)
A – Acetylene	E – Metal	No groups
B – Hydrogen	F – Carbonaceous	
C – Ethylene	G – Grain (organic)	
D – Propane		

In selecting equipment, equipment must be approved not only for the class of location but also for the explosive, combustible, or ignitable properties of the specific gas, vapor, dust, fiber or flyings that will be present. In addition, heat producing equipment, such as light fixtures and heaters, must not operate with temperatures, as appropriately measured, that are above the temperature, which could potentially be a source of ignition. An identification number is used to identify the maximum temperature of the equipment and is marked on the equipment. The identification number is referred to as a “T-number”.

The chart below shows maximum temperature for each of the 14 T-numbers.

Temperature Identification Numbers.

Maximum Temperature		Identification Number
Deg.C	Deg.F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Zones:

The 1996 edition of the NEC and the 1998 edition of the CEC gave industries in North America a choice of how to classify hazardous areas.

The Zone Classification addresses areas made hazardous due to the presence of flammable gases or vapors, or flammable liquids and is based upon the IEC three zone system.

A Class I, Zone 0 location is a location in which ignitable concentrations of flammable gases or vapors are present continuously or for long periods of time. An example of an area that could be classified as Class I, Zone 0 is the vapor space within a vented tank.

General Information

Reference Information

Hazardous (Classified) Locations

A Class I, Zone 1 location is a location in which ignitable concentrations of flammable gases or vapors are likely to exist under normal operating conditions. An area adjacent to a Class I, Zone 0 location would also be a Zone 1 location. An example of an area that could be classified Class I, Zone 1 would be a container filling area in a refinery.

(Zone 0 and Zone 1 locations are similar to Division 1).

A Class I, Zone 2 location is a location in which ignitable concentrations of flammable gases or vapors are not likely to occur in normal operation and if they do occur will exist only for a short period. An example of an area that could be classified Class I, Zone 2 would be a container storage area.

(Zone 2 locations are similar to Division 2).

Groups:

Similar to the Classes method of classifying hazardous areas, the Zone method also groups the hazardous gases or vapors together based upon characteristics of those gases or vapors. In the Zone classification system, there are three groups; IIC, IIB, and IIA.

The chart below shows typical hazardous material for each group.

Group	Typical Gas or Vapor
IIC	Acetylene and Hydrogen
IIB	Acetaldehyde and Ethylene
IIA	Methane, Gasoline, and Propane

Also similar to the Class method, the Zone method requires equipment be marked to show the operating temperature or temperature range. The temperature range is identified through the use of an identification number.

The table below shows the maximum surface temperature for the six temperature classes.

Classification of Maximum Surface Temperature for Group II Electrical Equipment						
Temp. Class	T1	T2	T3	T4	T5	T6
Max. Surface Temp. (°C)	≤ 450	≤ 300	≤ 200	≤ 135	≤ 100	≤ 85

Methods of Protection

Many of the products offered in this Cooper Crouse-Hinds catalog are designed and manufactured for safe use within a hazardous (classified) location, when properly installed and maintained. Some of the more commonly used protection techniques incorporated into product design and manufacture are listed below.

Explosionproof equipment contains the explosion and allows gases to cool as they escape the enclosure across threaded, flat or serrated joints. These metallic enclosures are drilled and tapped for conduit or cable glands.

Intrinsic Safety allows instrumentation and control circuits to operate properly under normal conditions, but protects them if an electrical fault occurs, by limiting the voltage and current, thus preventing ignition from sparks or overheating.

Flameproof enclosures – With this type of protection those parts that are capable of igniting an explosive atmosphere are built into a flameproof enclosure that withstands the explosion pressure if a flammable mixture is ignited inside it. The transmission of the explosion to the surrounding atmosphere is prevented.

Increased Safety – This type of protection is used for electrical apparatus that, under normal operating conditions, does not form an ignition. Apparatus that produces arcs or sparks in the course of normal operation or apparatus that generates “excessive” heat are not suitable for this type of protection. Therefore, this type of protection is not used for equipment such as switchgear, pushbuttons and motors.

Dust-ignition Proof – This type of protection used for applications in Class II (dusts) in North America excludes ignitable concentrations of dusts and offers cool operating temperatures.

Please note, the above information is provided only as an overview of hazardous (classified) locations and protection techniques. For more detailed information, including a comprehensive list of hazardous atmospheres and their characteristics as well as a glossary of terms, consult the appropriate governing code, the Cooper Crouse-Hinds Code Digest, or contact your local Cooper Crouse-Hinds representative.

G

General Information

Reference Information

Gases and Vapors — Hazardous Substances Used
in Business and Industry

TABLE I

Class I* Group	Substance	Auto-* Ignition Temp.		Flash** Point		Flammable Limits** Percent by Volume		Vapor** Density (Air Equals 1.0)
		°F	°C	°F	°C	Lower	Upper	
C	Acetaldehyde	347	175	-38	-39	4.0	60	1.5
D	Acetic Acid	867	464	103	39	4.0	19.9 @ 200°F	2.1
D	Acetic Anhydride	600	316	120	49	2.7	10.3	3.5
D	Acetone	869	465	-4	-20	2.5	13	2.0
D	Acetone Cyanohydrin	1270	688	165	74	2.2	12.0	2.9
D	Acetonitrile	975	524	42	6	3.0	16.0	1.4
A	Acetylene	581	305	gas	gas	2.5	100	0.9
B(C)	Acrolein (inhibited) ¹	455	235	-15	-26	2.8	31.0	1.9
D	Acrylic Acid	820	438	122	50	2.4	8.0	2.5
D	Acrylonitrile	898	481	32	0	3.0	17	1.8
D	Adiponitrile	—	—	200	93	—	—	—
C	Allyl Alcohol	713	378	70	21	2.5	18.0	2.0
D	Allyl Chloride	905	485	-25	-32	2.9	11.1	2.6
B(C)	Allyl Glycidyl Ether ¹	—	—	—	—	—	—	—
D	Ammonia ²	928	498	gas	gas	15	28	0.6
D	n-Amyl Acetate	680	360	60	16	1.1	7.5	4.5
D	sec-Amyl Acetate	—	—	89	32	—	—	4.5
D	Aniline	1139	615	158	70	1.3	11	3.2
D	Benzene	928	498	12	-11	1.3	7.9	2.8
D	Benzyl Chloride	1085	585	153	67	1.1	—	4.4
B(D)	1,3-Butadiene ¹	788	420	gas	gas	2.0	12.0	1.9
D	Butane	550	288	-76	-60	1.6	8.4	2.0
D	1-Butanol	650	343	98	37	1.4	11.2	2.6
D	2-Butanol	761	405	75	24	1.7 @ 212°F	9.8 @ 212°F	2.6
D	n-Butyl Acetate	790	421	72	22	1.7	7.6	4.0
D	iso-Butyl Acetate	790	421	—	—	—	—	—
D	sec-Butyl Acetate	—	—	88	31	1.7	9.8	4.0
D	t-Butyl Acetate	—	—	—	—	—	—	—
D	n-Butyl Acrylate (inhibited)	559	293	118	48	1.5	9.9	4.4
C	n-Butyl Formal	—	—	—	—	—	—	—
B(C)	n-Butyl Glycidyl Ether ¹	—	—	—	—	—	—	—
C	Butyl Mercaptan	—	—	35	2	—	—	3.1
D	t-Butyl Toluene	—	—	—	—	—	—	—
D	Butylamine	594	312	10	-12	1.7	9.8	2.5
D	Butylene	725	385	gas	gas	1.6	10.0	1.9
C	n-Butyraldehyde	425	218	-8	-22	1.9	12.5	2.5
D	n-Butyric Acid	830	443	161	72	2.0	10.0	3.0
3	Carbon Disulfide	194	90	-22	-30	1.3	50.0	2.6
C	Carbon Monoxide	1128	609	gas	gas	12.5	74.0	1.0
C	Chloroacetaldehyde	—	—	—	—	—	—	—
D	Chlorobenzene	1099	593	82	28	1.3	9.6	3.9
C	1-Chloro-1-Nitropropane	—	—	144	62	—	—	4.3
D	Chloroprene	—	—	-4	-20	4.0	20.0	3.0
D	Cresol	1038-1110	559-599	178-187	81-86	1.1-1.4	—	—
C	Crotonaldehyde	450	232	55	13	2.1	15.5	2.4
D	Cumene	795	424	96	36	0.9	6.5	4.1
D	Cyclohexane	473	245	-4	-20	1.3	8.0	2.9
D	Cyclohexanol	572	300	154	68	—	—	3.5
D	Cyclohexanone	473	245	111	44	1.1 @ 212°	9.4	3.4
D	Cyclohexene	471	244	<20	<-7	—	—	2.8
D	Cyclopropane	938	503	gas	gas	2.4	10.4	1.5
D	p-Cymene	817	436	117	47	0.7 @ 212°F	5.6	4.6
C	n-Decaldehyde	—	—	—	—	—	—	—
D	n-Decanol	550	288	180	82	—	—	5.5
D	Decene	455	235	<131	<-55	—	—	4.84
D	Diacetone Alcohol	1118	603	148	64	1.8	6.9	4.0
D	o-Dichlorobenzene	1198	647	151	66	2.2	9.2	5.1
D	1,1-Dichloroethane	820	438	22	-6	5.6	—	—
D	1,2-Dichloroethylene	860	460	36	2	5.6	12.8	3.4
C	1,1-Dichloro-1-Nitroethane	—	—	168	76	—	—	5.0
D	1,3-Dichloropropene	—	—	95	35	5.3	14.5	3.8
C	Dicyclopentadiene	937	503	90	32	—	—	—
D	Diethyl Benzene	743-842	395-450	133-135	56-57	—	—	4.6
C	Diethyl Ether	320	160	-49	-45	1.9	36.0	2.6
C	Diethylamine	594	312	-9	-23	1.8	10.1	2.5
C	Diethylaminoethanol	—	—	—	—	—	—	—
C	Diethylene Glycol	—	—	—	—	—	—	—
C	Monobutyl Ether	442	228	172	78	0.85	24.6	5.6
C	Diethylene Glycol	—	—	—	—	—	—	—
D	Monomethyl Ether	465	241	205	96	—	—	—
D	Di-isobutyl Ketone	745	396	120	49	0.8 @ 200°F	7.1 @ 200°F	4.9
D	Di-isobutylene	736	391	23	-5	0.8	4.8	3.9
C	Di-isopropylamine	600	316	30	-1	1.1	7.1	3.5
C	N-N-Dimethyl Aniline	700	371	145	63	—	—	4.2
D	Dimethyl Formamide	833	455	136	58	2.2 @ 212°F	15.2	2.5
D	Dimethyl Sulfate	370	188	182	83	—	—	4.4
C	Dimethylamine	752	400	gas	gas	2.8	14.4	1.6
C	1,4-Dioxane	356	180	54	12	2.0	22	3.0
D	Dipentene	458	237	113	45	0.7 @ 302°F	6.1 @ 302°F	4.7
C	Di-n-propylamine	570	299	63	17	—	—	3.5
C	Dipropylene Glycol	—	—	—	—	—	—	—
D	Methyl Ether	—	—	186	86	—	—	5.11
D	Dodecene	491	255	—	—	—	—	—
C	Epichlorohydrin	772	411	88	31	3.8	21.0	3.2
D	Ethane	882	472	gas	gas	3.0	12.5	1.0

General Information

Reference Information Gases and Vapors — Hazardous Substances Used in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto-* Ignition Temp.		Flash** Point		Flammable Limits** Percent by Volume		Vapor** Density (Air Equals 1.0)
		°F	°C	°F	°C	Lower	Upper	
D	Ethanol	685	363	55	13	3.3	19	1.6
D	Ethyl Acetate	800	427	24	-4	2.0	11.5	3.0
D	Ethyl Acrylate (inhibited)	702	372	50	10	1.4	14	3.5
D	Ethyl sec-Amyl Ketone	—	—	—	—	—	—	—
D	Ethyl Benzene	810	432	70	21	0.8	6.7	3.7
D	Ethyl Butanol	—	—	—	—	—	—	—
D	Ethyl Butyl Ketone	—	—	115	46	—	—	4.0
D	Ethyl Chloride	966	519	-58	-50	3.8	15.4	2.2
D	Ethyl Formate	851	455	-4	-20	2.8	16.0	2.6
D	2-Ethyl Hexanol	448	231	164	73	0.88	9.7	4.5
D	2-Ethyl Hexyl Acrylate	485	252	180	82	—	—	—
C	Ethyl Mercaptan	572	300	<0	<-18	2.8	18.0	2.1
C	n-Ethyl Morpholine	—	—	—	—	—	—	—
C	2-Ethyl-3-Propyl Acrolein	—	—	155	68	—	—	4.4
D	Ethyl Silicate	—	—	125	52	—	—	7.2
D	Ethylamine	725	385	<0	<-18	3.5	14.0	1.6
C	Ethylene	842	450	gas	gas	2.7	36.0	1.0
D	Ethylene Chlorohydrin	797	425	140	60	4.9	15.9	2.8
D	Ethylene Dichloride	775	413	56	13	6.2	16	3.4
C	Ethylene Glycol	—	—	—	—	—	—	—
C	Monobutyl Ether	460	238	143	62	1.1 @ 200°F	12.7 @ 275°F	4.1
C	Ethylene Glycol	—	—	—	—	—	—	—
C	Monobutyl Ether Acetate	645	340	160	71	0.88 @ 200°F	8.54 @ 275°F	—
C	Ethylene Glycol	—	—	—	—	—	—	—
C	Monoethyl Ether	455	235	110	43	1.7 @ 200°F	15.6 @ 200°F	3.0
C	Ethylene Glycol Monoethyl Ether Acetate	715	379	124	52	1.7	—	4.72
D	Ethylene Glycol	—	—	—	—	—	—	—
B(C)	Monomethyl ether	545	285	102	39	1.8 @ STP	14 @ STP	2.6
D	Ethylene Oxide*	804	429	-20	-28	3.0	100	1.5
D	Ethylenediamine	725	385	104	40	2.5	12.0	2.1
C	Ethylenimine	608	320	12	-11	3.3	54.8	1.5
C	2-Ethylhexaldehyde	375	191	112	44	0.85 @ 200°F	7.2 @ 275°F	4.4
B	Formaldehyde (Gas)	795	429	gas	gas	7.0	73	1.0
D	Formic Acid (90%)	813	434	122	50	18	57	1.6
B	Fuel and Combustible Process Gas (containing more than 30 percent H ₂ by volume)	—	—	—	—	—	—	—
D	Fuel Oils	410-765	210-407	100-336	38-169	0.7	5	—
C	Furfural	600	316	140	60	2.1	19.3	3.3
C	Furfuryl Alcohol	915	490	167	75	1.8	16.3	3.4
D	Gasoline	536-880	280-471	-36 to -50	-38 to -46	1.2-1.5	7.1-7.6	3-4
D	Heptane	399	204	25	-4	1.05	6.7	3.5
D	Heptene	500	260	<32	<0	—	—	3.39
D	Hexane	437	225	-7	-22	1.1	7.5	3.0
D	Hexanol	—	—	145	63	—	—	3.5
D	2-Hexanone	795	424	77	25	—	8	3.5
D	Hexenes	473	245	<20	<-7	—	—	3.0
D	sec-Hexyl Acetate	—	—	—	—	—	—	—
C	Hydrazine	74-518	23-270	100	38	2.9	9.8	1.1
B	Hydrogen	968	520	gas	gas	4.0	75	0.1
C	Hydrogen Cyanide	1000	538	0	-18	5.6	40.0	0.9
C	Hydrogen Selenide	—	—	—	—	—	—	—
C	Hydrogen Sulfide	500	260	gas	gas	4.0	44.0	1.2
D	Isoamyl Acetate	680	360	77	25	1.0 @ 212°F	7.5	4.5
D	Isoamyl Alcohol	662	350	109	43	1.2	9.0 @ 212°F	3.0
D	Isobutyl Acrylate	800	427	86	30	—	—	4.42
C	Isobutylaldehyde	385	196	-1	-18	1.6	10.6	2.5
C	Isodecaldehyde	—	—	185	85	—	—	5.4
C	Iso-octyl Alcohol	—	—	180	82	—	—	—
C	Iso-octyl Aldehyde	387	197	—	—	—	—	—
D	Isophorone	860	460	184	84	0.8	3.8	—
D	Isoprene	428	220	-65	-54	1.5	8.9	2.4
D	Isopropyl Acetate	860	460	35	2	1.8 @ 100°F	8	3.5
D	Isopropyl Ether	830	443	-18	-28	1.4	7.9	3.5
C	Isopropyl Glycidyl Ether	—	—	—	—	—	—	—
D	Isopropylamine	756	402	-35	-37	—	—	2.0
D	Kerosene	410	210	110-162	43-72	0.7	5	—
D	Liquefied Petroleum Gas	761-842	405-450	—	—	—	—	—
	Manufactured Gas (see Fuel and Combustible Process Gas)	—	—	—	—	—	—	—
D	Mesityl Oxide	652	344	87	31	1.4	7.2	3.4
D	Methane	999	537	gas	gas	5.0	15.0	0.6
D	Methanol	725	385	52	11	6.0	36	1.1
D	Methyl Acetate	850	454	14	-10	3.1	16	2.8
D	Methyl Acrylate	875	468	27	-3	2.8	25	3.0
D	Methyl Amyl Alcohol	—	—	106	41	1.0	5.5	—
D	Methyl n-Amyl Ketone	740	393	102	39	1.1 @ 151°F	7.9 @ 250°F	3.9
C	Methyl Ether	662	350	gas	gas	3.4	27.0	1.6
D	Methyl Ethyl Ketone	759	404	16	-9	1.7 @ 200°F	11.4 @ 200°F	2.5
D	2-Methyl-5-Ethyl Pyridine	—	—	155	68	1.1	6.6	4.2
C	Methyl Formal	460	238	—	—	—	—	—
D	Methyl Formate	840	449	-2	-19	4.5	23	2.1

G

General Information

Reference Information

Gases and Vapors — Hazardous Substances Used
in Business and Industry

TABLE I (cont'd)

Class I* Group	Substance	Auto-* Ignition Temp.		Flash** Point		Flammable Limits** Percent by Volume		Vapor** Density (Air Equals 1.0)
		°F	°C	°F	°C	Lower	Upper	
D	Methyl Isobutyl Ketone	840	440	64	18	1.2 @ 200°F	8.0 @ 200°F	3.5
D	Methyl Isocyanate	994	534	19	-7	5.3	26	1.97
C	Methyl Mercaptan	—	—	—	—	3.9	21.8	1.7
D	Methyl Methacrylate	792	422	50	10	1.7	8.2	3.6
D	2-Methyl-1-Propanol	780	416	82	28	1.7 @ 123°F	10.6 @ 202°F	2.6
D	2-Methyl-2-Propanol	892	478	52	11	2.4	8.0	2.6
D	alpha-Methyl Styrene	1066	574	129	54	1.9	6.1	—
C	Methylacetylene	—	—	gas	gas	1.7	—	1.4
C	Methylacetylene- Propadiene (stabilized)	—	—	—	—	—	—	—
D	Methylamine	806	430	gas	gas	4.9	20.7	1.0
D	Methylcyclohexane	482	250	25	-4	1.2	6.7	3.4
D	Methylcyclohexanol	565	296	149	65	—	—	3.9
D	o-Methylcyclohexanone	—	—	118	48	—	—	3.9
D	Monoethanolamine	770	410	185	85	—	—	2.1
D	Monoisopropanolamine	705	374	171	77	—	—	2.6
C	Monomethyl Aniline	900	482	185	85	—	—	3.7
C	Monomethyl Hydrazine	382	194	17	-8	2.5	92	1.6
C	Morpholine	590	310	98	37	1.4	11.2	3.0
D	Naphtha (Coal Tar)	531	277	107	42	—	—	—
D	Naphtha (Petroleum)*	550	288	<0	<-18	1.1	5.9	2.5
D	Nitrobenzene	900	482	190	88	1.8 @ 200°F	—	4.3
C	Nitroethane	778	414	82	28	3.4	—	2.6
C	Nitromethane	785	418	95	35	7.3	—	2.1
C	1-Nitropropane	789	421	96	36	2.2	—	3.1
C	2-Nitropropane	802	428	75	24	2.6	11.0	3.1
D	Nonane	401	205	88	31	0.8	2.9	4.4
D	Nonene	—	—	78	26	—	—	4.35
D	Nonyl Alcohol	—	—	165	74	0.8 @ 212°F	6.1 @ 212°F	5.0
D	Octane	403	206	56	13	1.0	6.5	3.9
D	Octene	446	230	70	21	—	—	3.9
D	n-Octyl Alcohol	—	—	178	81	—	—	4.5
D	Pentane	470	243	<-40	<-40	1.5	7.8	2.5
D	1-Pentanol	572	300	91	33	1.2	10.0 @ 212°F	3.0
D	2-Pentanone	846	452	45	7	1.5	8.2	3.0
D	1-Pentene	527	275	0	-18	1.5	8.7	2.4
D	Phenylhydrazine	—	—	190	88	—	—	—
D	Propane	842	450	gas	gas	2.1	9.5	1.6
D	1-Propanol	775	413	74	23	2.2	13.7	2.1
D	2-Propanol	750	399	53	12	2.0	12.7 @ 200°F	2.1
D	Propiolactone	—	—	165	74	2.9	—	2.5
C	Propionaldehyde	405	207	-22	-30	2.6	17	2.0
D	Propionic Acid	870	466	126	52	2.9	12.1	2.5
D	Propionic Anhydride	545	285	145	63	1.3	9.5	4.5
D	n-Propyl Acetate	842	450	55	13	1.7 @ 100°F	8	3.5
C	n-Propyl Ether	419	215	70	21	1.3	7.0	3.53
B	Propyl Nitrate	347	175	68	20	2	100	—
D	Propylene	851	455	gas	gas	2.0	11.1	1.5
D	Propylene Dichloride	1035	557	60	16	3.4	14.5	3.9
B(C)	Propylene Oxide ¹	840	449	-35	-37	2.3	36	2.0
D	Pyridine	900	482	68	20	1.8	12.4	2.7
D	Styrene	914	490	88	31	0.9	6.8	3.6
C	Tetrahydrofuran	610	321	6	-14	2.0	11.8	2.5
D	Tetrahydronaphthalene	725	385	160	71	0.8 @ 212°F	5.0 @ 302°F	4.6
C	Tetramethyl Lead	—	—	100	38	—	—	6.5
D	Toluene	896	480	40	4	1.1	7.1	3.1
D	Tridecene	—	—	—	—	—	—	—
C	Triethylamine	480**	249**	16	-9	1.2	8.0	3.5
D	Triethylbenzene	—	—	181	83	—	—	5.6
D	Tripropylamine	—	—	105	41	—	—	4.9
D	Turpentine	488	253	95	35	0.8	—	—
D	Undecene	—	—	—	—	—	—	—
C	Unsymmetrical Dimethyl Hydrazine (UDMH)	480	249	5	-15	2	95	2.0
C	Valeraldehyde	432	222	54	12	—	—	3.0
D	Vinyl Acetate	756	402	18	-8	2.6	13.4	3.0
D	Vinyl Chloride	882	472	-108.4	-78	3.6	33.0	2.2
D	Vinyl Toluene	921	494	127	53	0.8	11.0	4.1
D	Vinylidene Chloride	1058	570	-19	-28	6.5	15.5	3.4
D	Xylenes	867-984	464-529	81-90	27-32	1.0-1.1	7.0	3.7

¹ If equipment is isolated by sealing all conduit ½ in. or larger, in accordance with Section 501.15(A) of NFPA 70, National Electrical Code, equipment for the group classification shown in parentheses is permitted.

² For classification of areas involving Ammonia, see Safety Code for Mechanical Refrigeration, ANSI/ASHRAE 15, and Safety Requirements for the Storage and Handling of Anhydrous Ammonia, ANSI/CGA G2.1.

³ Certain chemicals may have characteristics that require safeguards beyond those required for any of the above groups. Carbon disulfide is one of these chemicals because of its low autoignition temperature and the small joint clearance to arrest its flame propagation.

⁴ Petroleum Naphtha is a saturated hydrocarbon mixture whose boiling range is 20° to 135°C. It is also known as benzene, ligroin, petroleum ether, and naphtha.

* Data from NFPA 497M-1991, Classification of Gases, Vapors, and Dusts for Electrical Equipment in Hazardous (Classified) Locations.

** Data from NFPA 325M-1991, Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids.

TABLE II
Class II, Group E

Material ²	Minimum Cloud or Layer Ignition Temp. ¹	
	°F	°C
Aluminum, atomized collector fines	1022	CI
Aluminum, A422 flake	608	320
Aluminum — cobalt alloy (60-40)	1058	570
Aluminum — copper alloy (50-50)	1526	830
Aluminum — lithium alloy (15% Li)	752	400
Aluminum — magnesium alloy (Dowmetal)	806	CI
Aluminum — nickel alloy (58-42)	1004	540
Aluminum — silicon alloy (12% Si)	1238	NL
Boron, commercial-amorphous (85% B)	752	400
Calcium Silicide	1004	540
Chromium, (97%) electrolytic, milled	752	400
Ferromanganese, medium carbon	554	290
Ferrosilicon (88%, 9% Fe)	1472	800
Ferrotitanium (19% Ti, 74.1% Fe, 0.06% C)	698	CI
Iron, 98%, H ₂ reduced	554	290
Iron, 99%, Carbonyl	590	310
Magnesium, Grade B, milled	806	430
Manganese	464	240
Silicon, 96%, milled	1436	CI
Tantalum	572	300
Thorium, 1.2%, O ₂	518	CI
Tin, 96%, atomized (2% Pb)	806	430
Titanium, 99%	626	CI
Titanium Hydride, (95% Ti, 3.8% H ₂)	896	CI
Vanadium, 86.4%	914	490
Zirconium Hydride, (93.6% Zr, 2.1% H ₂)	518	270
Class II, Group F		
CARBONACEOUS DUSTS		
Asphalt, (Blown Petroleum Resin)	950	CI
Charcoal	356	180
Coal, Kentucky Bituminous	356	180
Coal, Pittsburgh Experimental	338	170
Coal, Wyoming	—	—
Gilsonite	932	500
Lignite, California	356	180
Pitch, Coal Tar	1310	NL
Pitch, Petroleum	1166	NL
Shale, Oil	—	—
Class II, Group G		
AGRICULTURAL DUSTS		
Alfalfa Meal	392	200
Almond Shell	392	200
Apricot Pit	446	230
Cellulose	500	260
Cherry Pit	428	220
Cinnamon	446	230
Citrus Peel	518	270
Cocoa Bean Shell	698	370
Cocoa, natural, 19% fat	464	240
Coconut Shell	428	220
Corn	482	250
Corn cob Grit	464	240
Corn Dextrine	698	370
Cornstarch, commercial	626	330
Cornstarch, modified	392	200
Cork	410	210
Cottonseed Meal	392	200
Cube Root, South Amer.	446	230
Flax Shive	446	230
Garlic, dehydrated	680	NL
Guar Seed	932	NL
Gum, Arabic	500	260
Gum, Karaya	464	240
Gum, Manila (copal)	680	CI
Gum, Tragacanth	500	260
Hemp Hurd	428	220
Lycopodium	590	310
Malt Barley	482	250
Milk, Skimmed	392	200
Pea Flour	500	260
Peach Pit Shell	410	210
Peanut Hull	410	210
Peat, Sphagnum	464	240
Pecan Nut Shell	410	210

Class II, Group G (cont'd)

	Minimum Cloud or Layer Ignition Temp.	
	°F	°C
Pectin	392	200
Potato Starch, Dextrinated	824	NL
Pyrethrum	410	210
Rauwolfia Vomitoria Root	446	230
Rice	428	220
Rice Bran	914	NL
Rice Hull	428	220
Safflower Meal	410	210
Soy Flour	374	190
Soy Protein	500	260
Sucrose	662	CI
Sugar, Powdered	698	CI
Tung, Kernels, Oil-Free	464	240
Walnut Shell, Black	428	220
Wheat	428	220
Wheat Flour	680	360
Wheat Gluten, gum	968	NL
Wheat Starch	716	NL
Wheat Straw	428	220
Woodbark, Ground	482	250
Wood Flour	500	260
Yeast, Torula	500	260
CHEMICALS		
Acetoacetanilide	824	M
Acetoacet-p-phenetide	1040	NL
Adipic Acid	1022	M
Anthranilic Acid	1076	M
Aryl-nitrosomethylamide	914	NL
Azelaic Acid	1130	M
2,2-Azo-bis-butyronitrile	662	350
Benzoic Acid	824	M
Benzotriazole	824	M
Bisphenol-A	1058	M
Chloroacetoacetanilide	1184	M
Diallyl Phthalate	896	M
Dicumyl Peroxide (suspended on CaCO ₃), 40-60	356	180
Dicyclopentadiene Dioxide	788	NL
Dihydroacetic Acid	806	NL
Dimethyl Isophthalate	1076	M
Dimethyl Terephthalate	1058	M
3,5 - Dinitrobenzoic Acid	860	NL
Dinitrotoluamide	932	NL
Diphenyl	1166	M
Ditertiary Butyl Paracresol	878	NL
Ethyl Hydroxyethyl Cellulose	734	NL
Fumaric Acid	968	M
Hexamethylene Tetramine	770	S
Hydroxyethyl Cellulose	770	NL
Isotoic Anhydride	1292	NL
Methionine	680	360
Nitrosoamine	518	NL
Para-oxy-benzaldehyde	716	CI
Paraphenylene Diamine	1148	M
Paratertiary Butyl Benzoic Acid	1040	M
Pentaerythritol	752	M
Phenylbetanaphthylamine	1256	NL
Phthalic Anhydride	1202	M
Phthalimide	1166	M
Salicylanilide	1130	M
Sorbic Acid	860	460
Stearic Acid, Aluminum Salt	572	300
Stearic Acid, Zinc Salt	950	M
Sulfur	428	220
Terephthalic Acid	1256	NL
DRUGS		
2-Acetyl amino-5-nitrothiazole	842	450
2-Amino-5-nitrothiazole	860	460
Aspirin	1220	M
Gulasonic Acid, Diacetone	788	NL
Mannitol	860	M
Nitropyridone	806	M
1-Sorbose	698	M
Vitamin B1, mononitrate	680	NL
Vitamin C (Ascorbic Acid)	536	280

G

General Information

Reference Information

Dusts — Hazardous Substances Used in Business and Industry

TABLE II
Class II, Group G (cont'd)

	Minimum Cloud or Layer Ignition Temp. ¹	
	°F	°C
DYES, PIGMENTS, INTERMEDIATES		
Beta-naphthalene-azo-Dimethylaniline	347	175
Green Base Harmon Dye	347	175
Red Dye Intermediate	347	175
Violet 200 Dye	347	175
PESTICIDES		
Benzethonium Chloride	716	CI
Bis(2-Hydroxy-5-chlorophenyl) methane	1058	NL
Crag No. 974	590	CI
Dieldrin (20%)	1022	NL
2, 6-Ditertiary-butyl-paracresol	788	NL
Dithane	356	180
Ferbam	302	150
Manganese Vancide	248	120
Sevin	284	140
☒ ☒ - Trithiobis (N,N-Dimethylthio-formamide)	446	230
THERMOPLASTIC RESINS AND MOLDING COMPOUNDS		
<u>Acetal Resins</u>		
Acetal, Linear (Polyformaldehyde)	824	NL
<u>Acrylic Resins</u>		
Acrylamide Polymer	464	240
Acrylonitrile Polymer	860	460
Acrylonitrile-Vinyl Pyridine Copolymer	464	240
Acrylonitrile-Vinyl Chloride-		
Vinylidene Chloride Copolymer (70-20-10)	410	210
Methyl Methacrylate Polymer	824	NL
Methyl Methacrylate-Ethyl Acrylate Copolymer	896	NL
Methyl Methacrylate-Ethyl Acrylate-Styrene Copolymer	824	NL
Methyl Methacrylate-Styrene-	896	NL
Butadiene-Acrylonitrile Copolymer Methacrylic Acid Polymer	554	290
<u>Cellulosic Resins</u>		
Cellulose Acetate	644	340
Cellulose Triacetate	806	NL
Cellulose Acetate Butyrate	698	NL
Cellulose Propionate	860	NL
Ethyl Cellulose	608	CI
Methyl Cellulose	644	340
Carboxymethyl Cellulose	554	290
Hydroxyethyl Cellulose	644	340
<u>Chlorinated Polyether Resins</u>		
Chlorinated Polyether Alcohol	860	460
<u>Nylon (Polyamide) Resins</u>		
Nylon Polymer (Polyhexa-methylene Adipamide)	806	430
<u>Polycarbonate Resins</u>		
Polycarbonate	1310	NL
<u>Polyethylene Resins</u>		
Polyethylene, High Pressure Process	716	380
Polyethylene, Low Pressure Process	788	NL
Polyethylene Wax	752	NL
<u>Polymethylene Resins</u>		
Carboxypolymethylene	968	NL

Class II, Group G (cont'd)

	Minimum Cloud or Layer Ignition Temp.	
	°F	°C
<u>Polypropylene Resins</u>		
Polypropylene (No Antioxidant)	788	NL
<u>Rayon Resins</u>		
Rayon (Viscose) Flock	482	250
<u>Styrene Resins</u>		
Polystyrene Molding Compd.	1040	NL
Polystyrene Latex	932	500
Styrene-Acrylonitrile (70-30)	932	NL
Styrene-Butadiene Latex (>75% Styrene; Alum Coagulated)	824	NL
<u>Vinyl Resins</u>		
Polyvinyl Acetate	1022	NL
Polyvinyl Acetate/Alcohol	824	440
Polyvinyl Butyral	734	NL
Vinyl Chloride-Acrylonitrile Copolymer	878	470
Polyvinyl Chloride-Dioctyl Phthalate Mixture	608	NL
Vinyl Toluene-Acrylonitrile Butadiene Copolymer	936	NL
THERMOSETTING RESINS AND MOLDING COMPOUNDS		
<u>Allyl Resins</u>		
Allyl Alcohol Derivative (CR-39)	932	NL
<u>Amino Resins</u>		
Urea Formaldehyde Molding Compound	860	NL
Urea Formaldehyde-Phenol Formaldehyde Molding Compound (Wood Flour Filler)	464	240
<u>Epoxy Resins</u>		
Epoxy	1004	NL
Epoxy - Bisphenol A	950	NL
Phenol Furfural	590	310
<u>Phenolic Resins</u>		
Phenol Formaldehyde	1076	NL
Phenol Formaldehyde Molding Compd. (Wood Flour Filler)	932	NL
Phenol Formaldehyde, Polyalkylene-Polyamine Modified	554	290
<u>Polyester Resins</u>		
Polyethylene Terephthalate	932	NL
Styrene Modified Polyester-Glass Fiber Mixture	680	360
<u>Polyurethane Resins</u>		
Polyurethane Foam, No Fire Retardant	824	440
Polyurethane Foam, Fire Retardant	734	390
SPECIAL RESINS AND MOLDING COMPOUNDS		
Alkyl Ketone Dimer Sizing Compound	320	160
Cashew Oil, Phenolic, Hard	356	180
Chlorinated Phenol	1058	NL
Coumarone-Indene, Hard	968	NL
Ethylene Oxide Polymer	662	NL
Ethylene-Maleic Anhydride Copolymer	1004	NL
Lignin, Hydrolyzed, Wood-Type, Fines	842	NL
Petrin Acrylate Monomer	428	NL
Petroleum Resin (Blown Asphalt)	932	500
Rosin, DK	734	NL
Rubber, Crude, Hard	662	NL
Rubber, Synthetic, Hard (33% S)	608	NL
Shellac	752	NL
Sodium Resinate	428	220
Styrene — Maleic Anhydride Copolymer	878	CI

¹ Normally, the minimum ignition temperature of a layer of a specific dust is lower than the minimum ignition temperature of a cloud of that dust. Since this is not universally true, the lower of the two minimum ignition temperatures is listed. If no symbol appears between the two temperature columns, then the layer ignition temperature is shown. "CI" means the cloud ignition temperature is shown. "NL" means that no layer ignition temperature is available and the cloud ignition temperature is shown. "M" signifies that the dust layer melts before it ignites; the cloud ignition temperature is shown. "S" signifies that the dust layer sublimates before it ignites; the cloud ignition temperature is shown.

² Certain metal dusts may have characteristics that require safeguards beyond those required for atmospheres containing the dusts of aluminum, magnesium, and their commercial alloys. For example, zirconium, thorium, and uranium dusts have extremely low ignition temperatures (as low as 20°C) and minimum ignition energies lower than any material classified in any of the Class I or Class II groups.

General Information

Reference Information

Standard Materials and Finishes

Standard Materials and Finishes

Cooper Crouse-Hinds offers products of numerous types of materials with numerous finishes to have an offering for virtually all types of applications.

The information below summarizes some of the most commonly used materials and finishes. For information relating to materials and finishes for a particular product or product family, consult the specific catalog page.

Standard Finishes

Zinc Electroplate and Aluminum Acrylic Paint:

- Electrolytically deposited zinc plate
- Finished with aluminum acrylic paint on all cast *Feraloy*® iron alloy products unless otherwise specified

Electrogalvanized and Chromate Treatment:

- Applied to steel parts

Zinc Chromate Primer and Aluminum Acrylic Paint:

- Applied to certain ferrous castings

Zinc Mechanical Plating:

- Applied to certain ferrous castings and steel parts

Hot Dip Galvanize:

- Zinc plate by dipping in molten zinc

Natural Finish:

- Unplated, unpainted (non-ferrous metals only)

Corro-free™ Epoxy Powder Coat:

- *Corro-free*™ powdered epoxy finish is applied electrostatically, resulting in a tough, durable coating. Powder epoxy finish has many advantages over enamel, lacquer, aluminum paint, or epoxy paint. Powder epoxy finish has superior adhesion. Coating over the entire casting is uniform, even in hidden crevices. Electrostatic application reduces galvanic action.

Standard Materials:

Feraloy® Iron Alloy:

- *Feraloy*, a Cooper Crouse-Hinds proprietary gray-iron alloy, offers strength, versatility, adaptability, and economy. Cast iron generally resists corrosion from alkalies, organic compounds, neutral and slightly acidic solutions, and certain concentrated acids and neutral brines. Cast *Feraloy* products are normally supplied with a finish of electrolytically deposited zinc plate covered with an aluminum acrylic paint. Physical properties similar to ASTM-A48 Class 30A (30,000 psi tensile)
- *Feraloy* iron alloy with zinc electroplate or hot dip galvanize finish resists corrosion.

Aluminum:

- **Copper-free aluminum is particularly resistant to salt atmospheres, sulfur gases and ammonium nitrate.** Cooper Crouse-Hinds copper-free aluminum alloy contains a maximum of 1/10 of 1% copper. Above this level, the rate of corrosion due to galvanic action within the structure of the metal increases rapidly. Cooper Crouse-Hinds copper-free aluminum products provide optimum protection against galvanic corrosion.
- Sand cast copper-free – contains maximum of 1/10 of 1% copper (21,000-25,000 psi tensile)
- Permanent mold copper-free contains maximum of 1/10 of 1% copper (21,000-25,000 psi tensile).
- Die-cast copper-free – ASTM B85 except with maximum of 1/10 of 1% copper

Krydon® Material:

- *Krydon* is the trade name for Cooper Crouse-Hinds proprietary formulation of fiberglass-reinforced polyester. It is specifically formulated for electrical products intended for use in the harshest corrosive environments. *Krydon* material has proven itself superior to all other commercially available materials used in corrosive environments.

Besides being corrosion resistant, *Krydon* material has high impact strength, is fire retardant, heat resistant and withstands weathering – even over extended periods of time.

Brass:

- ASTM B16

Diallyl Phthalate (DAP):

- Acme #1-502 compound or equal

Glass-Filled Alkyd:

- Glaskyd #3001 or equal

Malleable iron:

- ASTM A47

Neoprene:

- ASTM D2000

Nylon:

- Type %

Silicon Bronze:

- This metal was developed for structural and engineering uses requiring metals with high strength and fabrication capabilities, along with a corrosion resistance equal to that of copper. Silicon bronze is resistant to most dry gases and has excellent marine, industrial and rural atmospheric corrosion resistance. With variation of temper and chemical composition, a variety of non-magnetic, high strength, readily fabricated copper-silicon alloys can be achieved.
- ASTM B584

Stainless Steel:

- Turned (bar) – ASTM A582
- Stamped (sheet) – ASTM A167

Tellurium Copper:

- ASTM B301

Vellum:

- ASTM F104

Vestamid™:

- Thermoplastic polymer, corrosion and weather resistant

Wrought Aluminum:

- Turned (bar) – ASTM B211
- Stamped (sheet) – ASTM B209

Wrought Steel:

- Turned (bar) – ASTM A108 leaded
- Stamped (sheet) – ASTM A366

General Information

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Corrosion Resistant Materials

Cooper Crouse-Hinds Products Available in Corrosion Resistant Materials

The following guide is intended as a convenient aid in quickly selecting the material or finish best suited to reducing your corrosion problem. Refer to previous page for more detailed information on standard materials and finishes available for all products.

Products Material Guide	Krydon	Product Quick Selector Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Engineered Plastics
Conduit Outlet Bodies & Boxes	●	●	●	●	
Cable & Cord Fittings	●	●	●		
Junction Boxes	●	●	●	●	
Unions, Couplings, Plugs, Grounding Devices & Seals	●	●	●		
Motor Control & Circuit Breakers	●	●	●	●	
Control Stations	●	●	●	●	●
Panelboards	●	●	●	●	●
Switches	●	●	●	●	●†
Incandescent Fixtures	●	●	●	●	
Fluorescent Fixtures		●	●	●	●*
HID Fixtures		●	●	●	●*
Lighting Accessories	●	●	●	●	
Heavy Duty Plugs & Receptacles	●	●	●	●	
Interlocked Plugs & Receptacles	●	●	●	●	●†
Emergency Lighting	●	●	●	●	

NOTE – Product types shown above are available as standard in materials indicated. Availability of those not shown depends on specific requirements.

† CSR Compact Interlock and NSR disconnect switches manufactured from Valox®

* N2MV Champ lighting fixtures available in PPS.

For more detailed information, or assistance in selecting a product material and finish for your specific application, please see the Combatting Corrosion Material & Finish Selector Guide found in the “Resources” area of the Cooper Crouse-Hinds web site, www.CooperCrouse-Hinds.com, or contact your local Copper Cooper Crouse-Hinds Sales Representative.

General Information

Reference Information General Guide for Product Material Selection

When designing a new facility or improving an old one, corrosion control can mean the difference between trouble-free operation and costly downtime.

At Cooper Crouse-Hinds, our years of experience in corrosion control can help you reduce equipment failures, costly repairs and loss of production.

The general guide below can help you in selecting the most suitable material for products used in corrosive environments.

A = Excellent B = Good C = Adequate D = Unsatisfactory

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feralloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Acetic Acid		A	C	C	C	C	A	A
Acetic Anhydride		A	A	D	C	C	A	C
Acetone		A	A	A	C	A	A	C
Acetylene		A	A	A	A	D	A	B
Aluminum Chloride		A	D	D	A	C	D	B
Aluminum Sulfate		A	C	D	A	C	B	B
Ammonium Carbonate		A	A	A	A	D	A	C
Ammonium Chloride		A	D	D	A	D	D	C
Ammonium Hydroxide		A	A	B	A	D	B	D
Ammonium Nitrate		A	A	B	A	D	A	B
Ammonium Phosphate		A	C	B	A	D	B	B
Amyl Acetate		A	A	B	C	A	A	D
Amyl Alcohol		A	A	A	A	A	B	D
Aniline		A	B	D	B	C	A	D
Arsenious Acid		A	A	D	A	C	B	B
Asphalt		A	A	A	A	A	A	A
Barium Carbonate		A	D	A	A	A	B	B
Barium Chloride		A	D	D	A	C	B	A
Barium Hydroxide		A	D	A	A	A	A	C
Beer		A	A	A	A	A	A	A
Beet Sugar Liquors		A	A	A	A	A	A	A
Benzene		A	A	A	C	A	A	D
Benzoic Acid		A	A	D	A	A	A	D
Borax		A	B	A	A	A	A	A
Boric Acid		A	B	A	A	A	B	B
Bromine, Wet		B	D	D	C	C	D	D
Butane		A	A	A	A	A	B	B
Butyl Alcohol		A	A	B	A	A	A	A
Butyric Acid		A	A	D	C	A	B	B
Calcium Bisulfite		A	A	D	A	C	D	B
Calcium Chloride		A	C	B	A	A	D	A
Calcium Hydroxide		A	D	A	A	A	B	B
Calcium Hypochlorite		A	B	D	A	C	D	C

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feralloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox 357
Calcium Sulfate		A	A	A	A	A	B	B
Cane Sugar Liquors		A	A	A	A	A	A	B
Carbon Dioxide, Dry		A	A	A	A	A	A	A
Carbon Dioxide, Wet		A	A	B	A	C	A	C
Carbon Disulfide		A	A	B	C	C	B	C
Carbon Tetrachloride		A	A	B	C	A	A	C
Carbonic Acid		A	A	B	A	C	B	C
Castor Oil		A	A	A	A	A	B	B
Chlorine		A	D	A	B	D	B	C
Chloroform		B	B	C	B	A	C	D
Citric Acid		A	A	D	A	A	B	A
Cottonseed Oil		A	A	A	A	A	B	C
Chromic Acid		A	B	B	C	D	C	D
Crude Oil		A	A	A	A	A	A	C
Ethyl Acetate		A	A	A	C	A	B	D
Ethyl Alcohol		A	A	A	A	A	A	B
Ethyl Chloride		A	B	B	B	A	A	B
Ethylene Dichloride		B	A	A	C	A	B	D
Ethylene Glycol		A	A	A	A	A	B	B
Fatty Acids		A	A	B	A	C	B	C
Ferric Chloride		A	D	D	A	D	D	B
Ferric Sulfate		A	D	D	A	D	B	B
Formaldehyde		A	A	B	A	A	B	D
Formic Acid		A	B	D	A	A	B	C
Freons, Dry		A	A	A	A	A	B	A
Fuel Oil		A	A	A	A	A	B	A
Furfural		D	A	A	C	A	B	C
Gasoline		A	A	A	A	A	A	A
Glue		A	A	A	A	A	B	B
Glycerine		A	A	A	A	A	A	C
Concd. Hydrochloric Acid		C	D	D	C	D	D	B
Hydrofluoric Acid		D	D	D	C	D	D	C
Hydrogen		A	A	A	A	A	A	A

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General Information

Reference Information
General Guide for Product Material
Selection

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The general guide below can help you in selecting the most suitable material for products used in corrosive environments.

A = Excellent B = Good C = Adequate D = Unsatisfactory

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox-357
Hydrogen Peroxide		A	A	D	C	C	B	D
Hydrogen Sulfide		A	A	C	A	B	B	C
Kerosene		A	A	A	A	A	B	C
Ketones		A	A	A	C	A	B	D
Lacquers		A	A	B	A	A	A	C
Lacquer Solvents		A	A	B	C	A	A	C
Lactic Acid		A	B	D	B	B	B	A
Lime		B	B	A	B	A	B	C
Linseed Oil		A	A	A	A	A	B	A
Magnesium Chloride		A	B	D	A	A	B	A
Magnesium Hydroxide		A	D	A	A	A	A	C
Magnesium Sulfate		A	A	A	A	A	B	A
Marine Atmosphere		A	A	D	A	A	B	A
Mercuric Chloride		A	D	D	A	D	D	B
Mercury		A	D	B	A	D	A	D
Methyl Alcohol		A	A	A	A	A	B	B
Methyl Chloride		B	D	B	D	B	A	A
Methyl Ethyl Ketone		A	A	B	B	A	B	B
Mine Waters		A	B	D	B	B	A	B
Motor Oil		A	A	A	A	A	B	A
Nickel Chloride		A	D	D	A	D	D	A
Nickel Sulfate		A	D	D	A	C	B	B
Nitric Acid		C	A	D	A	D	B	D
Oleic Acid		A	A	B	A	B	B	D
Oxalic Acid		A	B	B	A	A	D	B
Oxygen		A	A	A	A	A	B	B
Perchloric Acid		A	D	D	C	D	D	D
Phenol		A	A	B	B	A	A	A
Phosphoric Acid		A	D	C	B	B	C	B
Picric Acid		A	A	B	B	D	B	D
Potassium Carbonate		A	B	A	A	A	A	A
Potassium Chloride		A	D	B	A	B	B	A
Potassium Cyanide		A	D	B	A	D	B	A
Potassium Hydroxide		C	D	A	B	C	B	A
Potassium Nitrate		A	A	A	A	B	B	A
Potassium Sulfate		A	A	A	A	A	A	A

CHEMICAL ATMOSPHERE	Krydon	Copper-Free Aluminum	Feraloy	Corro-Free Epoxy Coating	Silicon Bronze	316 Stainless Steel	PPS	Valox-357
Propane			A	A	A	A	A	B
Rosin			A	A	B	A	A	A
Sea Water			A	B	D	A	A	B
Sodium Bicarbonate			A	A	B	A	A	A
Sodium Bisulfate			A	B	D	A	A	B
Sodium Bisulfite			A	B	D	A	B	B
Sodium Carbonate			A	C	A	A	A	B
Sodium Chloride			A	D	B	A	A	B
Sodium Cyanide			A	D	B	A	D	A
Sodium Hydroxide			B	D	A	B	B	B
Sodium Hypochlorite			A	D	D	B	B	C
Sodium Nitrate			A	A	A	A	B	B
Sodium Phosphate			A	D	A	A	B	B
Sodium Silicate			A	B	A	A	A	A
Sodium Sulfate			A	A	A	A	A	A
Sodium Sulfite			A	A	B	A	A	B
Stearic Acid			A	A	B	A	B	A
Sulfur			A	A	A	A	D	A
Sulfur Dioxide, Dry			A	B	A	A	A	B
Sulfur Trioxide, Dry			A	A	A	A	A	B
Sulfur Trioxide, Wet			A	D	D	B	C	C
Sulfuric Acid			A	A	D	B	C	D
Sulfurous Acid			A	B	D	B	B	D
Tannic Acid			A	A	B	A	A	B
Tar			A	A	A	A	A	A
Tartaric Acid			A	A	B	B	B	A
Toluene			A	A	A	C	A	A
Trichlorethylene			A	A	B	C	A	B
Turpentine			A	A	A	A	A	A
Vegetable Oils			A	A	A	A	A	A
Vinegar			A	B	B	A	A	B
Vinyl Chloride			A	B	B	B	D	B
Waxes			A	A	A	A	A	B
Xylene			A	A	A	C	A	B
Zinc Chloride			A	B	B	A	D	B
Zinc Sulfate			A	B	B	A	C	A

General Information

Reference Information Enclosure Type/Levels of Protection

Enclosure Type: NEMA, CEC and NEC Types

A North American system of rating standard levels of protection provided to electrical apparatus by enclosures for (1) the protection of persons against contact with live or moving parts inside the enclosure; (2) the protection provided by enclosure against ingress of solids and/or liquids; (3) the protection provided by the enclosure against the deleterious effects of corrosion; and (4) the protection provided by the enclosure against damage due to the formation of external ice. This enclosure type is in addition to (and not an alternative to) the types of protection necessary to ensure protection against ignition in hazardous (classified) locations.

The chart below shows typical NEMA, CEC and NEC types of enclosure.

NEMA Classification Typical NEMA, CEC and NEC types of enclosures are listed below:	
• Type 3 Enclosure	are intended for outdoor use primarily to provide a degree of protection against dust, rain, sleet, and external ice formation.
• Type 3R Enclosure	are intended for outdoor use primarily to provide a degree of protection against falling rain, and external ice formation.
• Type 4 Enclosure	are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and external ice formation.
• Type 4X Enclosure	are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and external ice formation.
• Type 7 Enclosure	are for use in indoor locations classified as Class I, Groups A, B, C, or D, as defined in the National Electrical Code®.
• Type 9 Enclosure	are for use in indoor locations classified as Class II, Groups E, F, or G, as defined in the National Electrical Code®.
• Type 12 Enclosure	are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids.

Degree of Protection (IP):

A system of rating standard levels of protection provided by apparatus for the protection of persons against contact with live or moving parts inside the apparatus, as well as the protection provided by apparatus against ingress of solids and/or liquids. This type of protection classification is in addition to (and not an alternative to) the types of protection necessary to ensure protection against ignition in hazardous (classified) locations.

The chart below shows ingress protection codes.

Ingress Protection: (IP) Codes

First Numeral Protection against solid bodies	Second Numeral Protection against liquid
0 – NO PROTECTION	0 – NO PROTECTION
1 – OBJECTS EQUAL TO OR GREATER THAN 50mm	1 – VERTICALLY DRIPPING WATER
2 – OBJECTS EQUAL TO OR GREATER THAN 12.5mm	2 – 75 TO 105° ANGLED DRIPPING WATER
3 – OBJECTS EQUAL TO OR GREATER THAN 2.5mm	3 – SPRAYING WATER
4 – OBJECTS EQUAL TO OR GREATER THAN 1.0mm	4 – SPLASHING WATER
5 – DUST-PROTECTED	5 – WATER JETS
6 – DUST-TIGHT	6 – HEAVY SEAS, POWERFUL WATER JETS
	7 – EFFECTS OF IMMERSION
	8 – INDEFINITE IMMERSION

i.e. An enclosure rated IP68 is rated to exclude dust (dust-tight) and rated for indefinite immersion.

General Information

Reference Information Quality, Compliances & Third Party Certifications

Statement of Accuracy

The information published in this catalog and other literature has been compiled with great care and is sufficiently accurate for most purposes, but is not guaranteed. All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. This catalog and the products contained within is subject to change without notice. The purchaser should determine the suitability of the product for his or her application and assumes all risk and liability whatsoever in connection therewith.

Compliances & Third Party Certifications

The products described in this catalog are of the highest possible quality. Cooper Crouse-Hinds products have been tested and field proven in a wide variety of applications. Products are designed and manufactured to meet or exceed, in numerous products, multiple world wide standards.

- The designs of Cooper Crouse-Hinds products are original and proprietary. Some are patented.
- The product information in this catalog, though current at the catalog printing, is subject to improvements and modifications. Due to the breadth of our product offering with regard to the design, materials, components and the variations of these products available to our customers, it is impractical to adequately identify third-party certification of all items in this publication.
- Product improvements and other developments may at times affect third-party approval of testing laboratories such as Underwriters Laboratories, the Canadian Standards Association, Factory Mutual and others. To avoid publishing possibly superseded product certification information, Cooper Crouse-Hinds has elected not to show *specific* certification references in this catalog.
- Cooper Crouse-Hinds products are designed to meet or exceed the performance requirements of applicable standards. Where the term "compliances" is used in this catalog in conjunction with a UL/CSA standard number, it identifies the criteria which have governed the design and Company testing of the products listed on that page.
- The term "compliances" is not to be construed to mean that the products have been listed by the Underwriters' Laboratories/ CSA. Such listing is a matter of independent record signified by product marking, carton marking, or other approved means.
- The individual product offerings in this catalog comply with the national and third-party standards identified under the 'Certifications and Compliances' sections. To obtain specific third-party approval information for these products contact Cooper Crouse-Hinds or the applicable agency.

Worldwide Testing Authorities

Country	Testing Authority
USA	Underwriters Laboratories
USA	Factory Mutual
USA	ETL
Canada	CSA
Mexico	ANCE
Austria	TUV-A
Austria	BVFA
Belgium	ISSEP
Denmark	DEMKO
Finland	VTT

Country	Testing Authority
France	INERIS
France	LCIE
Italy	CESI
Netherlands	KEMA
Norway	NEMKO
Spain	LOM
Sweden	SP
United Kingdom	BASEEFA/EECS
United Kingdom	SIRA
Germany	PTB
Germany	BVS

Quick Ship Delivery Services



NEED IT ON-SITE NOW?

THINK "SOS" SMALL ORDER EMERGENCY SERVICE

Request "SOS" Service through your distributor and we'll ship any of our 4,000+ stock items direct to your site the fastest way. The "SOS" program supplements your distributor's local inventory by providing same-day, premium (first- or second-day air) shipment of stock material from our distribution center. Your order can be shipped to the distributor warehouse or direct to your job site. Orders placed with us by your Cooper Crouse-Hinds distributor before 3:30 p.m.* can ship out that same day. Emergency service is available 24/7. Contact your distributor to facilitate.

*Orders received via fax after 3:30 p.m. Eastern time or via phone after 3:45 p.m. will be shipped the next day.



NEED A JOB-SPECIFIC ITEM FAST?

ASK FOR LIGHTNING SERVICE™ DELIVERY

Our commitment to getting you "what you need, when you need it" goes beyond in-stock inventory to include more than 15,000 build-to-order and hard-to-find products. We're ready to build, machine, package and ship what you need in a fraction of the time you might expect. Lightning Service is available for many of our most popular products, and we're adding more all the time. Visit the Quick Ship area of our website for the most up-to-date listing of Lightning Service products. Lightning Service products are also designated in the Cooper Crouse-Hinds price list. Look for "LIGHTNING" in the stock status column.

Lightning Service products are indicated throughout the catalog. Look for the symbol at the top of the catalog page.



LIGHTNING SERVICE™ PRODUCT CATEGORIES



Section 3L

CHAMP® HID LUMINAIRES

Same-day to 24-hour shipping.

Select from VMV, VMV High Wattage, DMV and LMV Low Profile Series. Two ordering options are available: components or complete fixture unit pack (complete fixture packed by components in a single carton). Just choose the alternative that works best for you. Complete fixtures must be made up of the components listed below.

Whether you order CHAMP components or a complete fixture, we'll ship it the same day if your distributor's order requesting same-day Lightning Service is placed with us before 12:00 p.m. Eastern time.

Ballast Housings

High-Pressure Sodium

DMVS100/MT LMVS070/120
DMVS150/MT-LX LMVS100/120

VMVS070/MT VMVS250/MT
VMVS100/MT VMVS400/MT
VMVS150/MT-LX

Metal Halide

VMVM100/MT VMVM250/MT
VMVM175/MT VMVM400/MT

Top Hats

APM2 HPM2
APM3 TWM2
CM2 JM5
CM3 PM5

Globes

G24
G54
G303

Guards

P21
P241
P33
P50

Refractors*

G241
G245
GR305

Reflectors*

GRD4 RD636 (RD66)
RA636 (RA66) RD70
RA70 RD739 (RD79)
RA739 (RA79)

Maximum line item quantities for Lightning Service:
VMVS250, VMVS400, VMVM250, VMVM400 — 12
All other CHAMP fixtures — 25
For larger quantities Consult Factory.

All fixtures ordered with suffixes BG, FA, IR, QTZ,
S658, S714 and S806 will ship in 4 weeks.
*Refractors and reflectors will ship in separate cartons

In Canada: Complete fixtures will be shipped as components. Unit pack not available. /MT not available on CSA certified fixtures — select /120 or /347 in place of /MT. Suffix S658 not available on CSA certified fixtures.

General Information

Reference Information

Quick Ship Delivery Services



Section 6L

NFL SERIES NONMETALLIC FLUORESCENT LUMINAIRES

Shipped from stock: NFL4232/UNV fixtures,
120-277V 50-60Hz

Maximum line item quantity for Lightning Service — 10
For larger quantities typically 2-4 weeks.
All fixtures ordered with suffixes FA or S658 will ship in 4 weeks.

In Canada: Suffix S658 not available on CSA certified fixtures.



Section 1L and 6L

VAPORGARD™ INCANDESCENT AND FLUORESCENT LUMINAIRES

Shipped within 48 hours

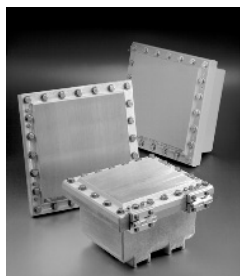
Two ordering options are available: components or complete fixture unit pack (complete fixture packed by components in a single carton).

Incandescent: All components and all complete fixtures (packed by components in a single carton).

Fluorescent: Complete fixtures consisting of VFH122, VFA222 and VFC222.

Maximum line item quantity for Lightning Service — 12
For larger quantities typically 2-4 weeks.
Refractors and reflectors will ship in separate cartons.

In Canada: Lightning Service not available for fluorescent fixtures



Section 6F

HAZARDOUS LOCATION EJB, GU AND GUB JUNCTION BOXES

Lightning Service for EJB, GU and GUB junction boxes lets you select various styles and sizes of boxes in the configurations that best meet your requirements.

Shipped from stock: GUB01, GUB02

Shipped within 24 hours: All enclosures listed below *without* drilled and tapped openings, hinges or a mounting plate.

Shipped within 72 hours: All enclosures listed below *with* standard drilled and tapped openings and/or hinges and/or a mounting plate. See Section 6F for details on ordering standard openings.

EJB (bolted covers)

Style C

EJB121206
EJB121208
EJB161606
EJB161608
EJB241808

Style D

EJB060404
EJB060404-SA
EJB080604
EJB080606
EJB080606-SA
EJB100606
EJB101008-SA
EJB120804
EJB120804-SA

GU/GUB (threaded covers)

GU
GU-SA
GUB01
GUB02

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory



Section 2A, 1C and 3C

SPECTRUM™ EBM HAZARDOUS LOCATION MOTOR CONTROL ENCLOSURES

Apparatus-ready circuit breaker enclosures and combination line starter enclosures are available from inventory. Additional larger size apparatus-ready enclosures and frequently ordered enclosures with circuit breakers installed are available to ship in two weeks.

Shipped from stock:

Apparatus-Ready Enclosures

EBMBA EBMCFB

EBMBB EBMCFD

Shipped within 2 weeks:

Apparatus-Ready Enclosures

EBMBG EBMCFH

EBMBK EBMCFB

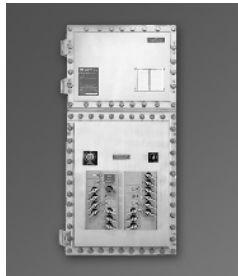
EBMBL EBMCFM

Enclosures Complete with Circuit Breakers

EBMBA EBMBB

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory

In Canada: Lightning Service not available for Apparatus-Ready EBMBA, EBMBB, EBMCFB and EBMCFD.
All other indicated Apparatus-Ready enclosures and enclosures complete with Circuit Breakers are shipped within 3 weeks.



Section 1A

POWERPLUS™ FACTORY-SEALED HAZARDOUS LOCATION PANELBOARDS

Job-specific panelboards are available within 3 to 4 weeks to meet your power or lighting requirements in 1-, 2- or 3-pole configurations, with or without main circuit breakers. See the Cooper Crouse-Hinds catalog for complete ordering information.

Shipped within 3 weeks: EPL/D2L
(Lighting Panel)

Shipped within 4 weeks: EXD/D2D
(Power Panel)

Some panelboards require modifications for Group B, GFI and EPD branch breakers. Consult Factory for lead times. Maximum line item quantity for Lightning Service — 5. For larger quantities Consult Factory.

In Canada: EPL/D2L shipped within 4 weeks. EXD/D2D shipped within 5 weeks.



Section 3P

ARKTITE® WSR AND WSRD INTERLOCK RECEPTACLES AND MATING AP PLUGS

Shipped from stock.

Many of the WSR and WSRD fusible and nonfusible interlock receptacles with enclosed disconnect switch and mating APJ plugs are readily available from inventory:

Interlocks	30A	60A	100A
	WSRD3352	WSRDW6352 WSRD6352 WSRD63542 WSR6352 WSR63542 WSRDW6352 CH S901 WSRD63541	WSRD10352
Mating Plugs	30A	60A	100A
	APJ3485 NPJ3483 NPJ3484	APJ6485 APJ6375 NPJ6484 NPJ6485	APJ10487 NPJ10486 NPJ10487

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory.



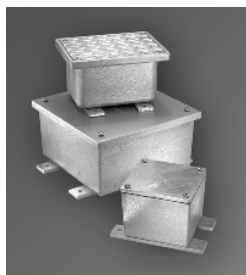
Section 4C and 6F

CUSTOM-BUILT EJB CONTROL PANELS

Shipped within 3 weeks

Your custom panel with windows, devices, drilled and tapped holes, etc. will be complete and available to ship within 3 weeks. Specify your exact requirements in the Custom Control Panel Ordering Brochure #3331 or the worksheet in the price list. Consult Factory for delivery on other combinations of control panels or for a copy of the ordering brochure. Also Consult Factory for delivery of control panels using EMP039 pushbuttons and EMP059, -079 or -089 selector switches.

In Canada: Shipped within 4 weeks



Section 6F

W-SERIES CAST-IRON WEATHERPROOF JUNCTION BOXES

Lightning Service is available for over 90 of the most popular size boxes in five different styles.

Shipped within 24 hours: All enclosures listed below *without* drilled and tapped openings or a mounting plate.

Shipped within 72 hours: All enclosures listed below *with* standard drilled and tapped openings and/or a mounting plate. See the W-Series brochure #4740 for details on ordering standard openings.

Maximum line item quantity for Lightning Service — 5
For larger quantities Consult Factory

In Canada: Enclosures *without* openings or mountings plate shipped within 1 week. Enclosures *with* standard openings or mounting plate shipped within 2 weeks.

WAB040402	WAB080808	WCB040403	WCB090604	WCB242408	WJBF080604	WJBF241810
WAB040403	WAB100804	WCB040404	WCB100804	WJB040404	WJBF080606	
WAB040404	WAB100806	WCB050503	WCB100806	WJB060604	WJBF080804	
WAB050503	WAB101006	WCB050504	WCB101006	WJB060606	WJBF080806	
WAB050504	WAB120604	WCB060403	WCB120604	WJB080606	WJBF080808	
WAB060403	WAB120606	WCB060404	WCB120606	WJB080804	WJBF101006	
WAB060404	WAB120806	WCB060603	WCB120805	WJB101006	WJBF101008	
WAB060603	WAB121204	WCB060604	WCB121204	WJB121206	WJBF120808	
WAB060604	WAB121206	WCB060606	WCB121206	WJB121208	WJBF121206	
WAB060606	WAB121208	WCB080604	WCB121208	WJB181208	WJBF121208	
WAB080604	WAB161208	WCB080606	WCB161208	WJBF040404	WJBF121212	
WAB080606	WAB181206	WCB080804	WCB181206	WJBF060404	WJBF161208	
WAB080804	WAB181806	WCB080806	WCB181806	WJBF060604	WJBF181208	
WAB080806	WAB181812	WCB080808	WCB181812	WJBF060606	WJBF181812	

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Fittings

Section F



F Electrical Fittings

Table of Contents

Section F of the Cooper Crouse-Hinds Product Catalog lists a wide variety of conduit outlet bodies and boxes, cable fittings, unions, connectors, seals, breathers, and drains for both hazardous and non-hazardous area use. Information on applications, features, standard materials, standard finishes, options, size ranges, compliances and accessories is presented for ease of product selection. Information relating to product families in Section F is grouped as follows:

Section 1F Condulet® Conduit Bodies (for non-hazardous areas)

For installation in conduit systems to act as pull outlets, make 90° bends, provide for splices, taps, mounting outlets, etc.

Form 7	Mogul	SLB
Form 8	LBD	LBV
Mark 9	LBNEC	ET
Form 5		
Series 5		
Form 7 SnapPack		

Section 2F Condulet Cast Outlet Boxes (for non-hazardous areas)

Round cast outlet boxes and accessories for use in conjunction with threaded rigid conduit to serve as junction boxes, pull outlets, accommodate wiring devices and support lighting fixtures.

GRF	VXF
-----	-----

Section 3F Condulet Cast Device Boxes (for non-hazardous areas)

For installation in conduit systems to:

- accommodate wiring devices
- act as pull boxes
- provide openings for taps and splices.

Provided in two box depths with a wide variety of hub configurations and sizes.

Boxes can accommodate single or multiple devices.

FS	FD	COVERS
----	----	--------

Section 4F Condulet Conduit Bodies and Outlet Bodies (for hazardous areas)

For use with rigid conduit systems:

- act as pull and splice boxes
- act as mounting outlets or supports for lighting fixtures
- act as sealing fittings

CPS	ET	LBH	STL
EAB	GUA	LBV	EAJ
EKC	HTL	OE	GUR

Section 5F Cable and Cord Fittings (for hazardous and non-hazardous areas)

Includes listings of cable and cord connectors and cable terminators for armored and unarmored cable and cord, and aluminum sheathed cable.

Used to:

- provide means for passing cord, cable or flexible conduit through bulkhead and into boxes and cabinets
- form watertight seal
- form non-slip connection or termination for flexible cord, cable or flexible conduit
- provide grounding continuity

CAPRI	LCC	TGC	TUCFB
CGB	LCCF	THRU-WALL	TUSC
CGFP	TAB	TMC	TWDC
EBY	TACFB	TMCX	

Section 6F Junction Boxes (for hazardous and non-hazardous areas)

Wide variety of boxes for use as:

- pull boxes
- enclosures for splices and taps
- mounting boxes for control stations
- housings for apparatus, instruments, etc.

EGJ	GUE, GUB	RS, RSM, RSS
EJB	GUAG	W Series
	GUP	Custom panels
	GUAH	NeXT Series
	GUAP	STB Series
		HVB Series
		QBX Series
		ExCell Series

Section 7F Elbows, Couplings, Hubs, Grounding Devices, Plugs, Reducers, Service Entrance and Unions (for hazardous and non-hazardous areas)

Includes:

- service entrance heads
- grounding receptacles and straps
- unions and elbows for threaded conduit systems
- couplings for use where allowance must be made in conduit system for difficult bends or vibration
- reducers for connecting conduit of different dimensions
- plugs for unused conduit openings and hubs

ECGJH	GC	LNR	UNA	UNY
ECLK	GCR	PLG	UNF	UNYL
EL	GCT	RE	UNFL	XD
F	HUBS	REC	UNL	XJG

Section 8F Seals, Breathers and Drains (for hazardous areas)

Includes:

- seals used to prevent passage of gases or flames in conduit runs and from device enclosures
- sealing/drain fittings for retrofit applications
- breathers used to provide ventilation for enclosures
- drains used to prevent accumulation of moisture in conduit systems and enclosures
- *Chico*® sealing compound and fiber

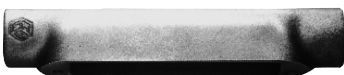
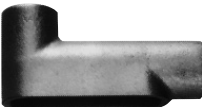
Seal	Seal and drain	Breather
EYS	EYD	and drain
EZS	EZD	ECD
EYSR	EYDX	CD
EYSX		

Secondary Proces Sealing Fitting
EYS Tool Kit

Description	Page No.
Charts	
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Condulet® Conduit Bodies	
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LBNEC	12
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Covers	
Blank	
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Gaskets	
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Condulet® Conduit Bodies

Shape Selector Chart

SERIES	PAGE	SERIES	PAGE	SERIES	PAGE	SERIES	PAGE
C		L		LBNEC		BT	
							
Form 7	6	Form 7	6	LBNEC	12	Mogul	15
Form 8	6						
Mark 9	6	TA		BC		LBD	
Form 5	6						
Series 5	6	Form 7	6	Mogul	14	1/2 - 1"	13
E		T		BLB		LBD	
							
Form 7	6	Form 7	6	Mogul	14	1 1/4 - 6"	13
		Form 8	6				
LB		Mark 9	6				
		Form 5	6	BUB		SLB	
Form 7	6	Series 5	6				
Form 8	6			Mogul	15	Service Entrance Elbows	16
Mark 9	6	TB					
Form 5	6					LBY	
Series 5	6	Form 7	6				
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LL		Mark 9	6				
		Form 5	6			ET	
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Form 8	6	X				Short Radius Elbows	16
Mark 9	6						
Form 5	6	Form 7	6				
Series 5	6	Form 8	6				
		Mark 9	6				
		Form 5	6				

Application:

Conduit outlet bodies are installed in conduit systems to:

- act as pull outlets for conductors being installed
- provide openings for making splices and taps in conductors
- act as mounting outlets for lighting fixtures and wiring devices
- connect conduit sections
- provide taps for branch conduit runs
- make 90° bends in conduit runs
- provide for access to conductors for maintenance and future system changes

Features:

Conduit Outlet Bodies

- Form 7 Condulet outlet bodies approach conduit in size for neat, compact installations.
- Form 8 and Mark 9 bodies provide more room for heavier conductors
- Many shapes and sizes are available for rigid threaded conduit – see complete listings on page 6.
- Conduit hubs have tapered threads and feature integral bushings for protection of wire insulation.
- Form 7 has exclusive snaptight and wedge-nut cover attachment to provide clear, unobstructed cover opening.
- Built-in rollers on all Form 5 1½" to 4" C and LB bodies to facilitate wire pulling.
- Series 5 bodies available in optional configuration with set screws on hubs for EMT conduit (add suffix -MT to catalog number).

Gaskets

Solid gaskets:

- are used with blank covers
- for Mark 9 and Form 5, can be converted to open type gaskets by tearing out center section along scored lines – ½" to 2" sizes
- for Form 7 are used with all covers

Open gaskets:

- for Form 8 – ½" to 4" sizes
- for Mark 9 – 2½" to 4" sizes

Blank Covers

Stainless steel cover screws are standard on Form 7, Form 8, Mark 9, Series 5 and Form 5 covers.

- Form 7

Wedge nut design facilitates installation and removal. Nuts are held captive in cover. Covers can be used with or without gaskets.

SNAPTIGHT™ Form 7 Covers with integral sealing gaskets are installed without the use of screws, reducing installation time and costs. Covers are reusable.

- Form 8

Two cover screws provided on all sizes to provide tight cover and gasket assembly. *Feraloy* iron alloy covers have dome shapes for added strength and extra wiring room.

- Mark 9

Self-retaining cover screws.

Standard Materials:

- Form 7, Form 8 outlet bodies – *Feraloy* iron alloy
- Mark 9 outlet bodies – copper-free aluminum
- Form 5 – malleable iron
- Series 5 – die cast aluminum

Standard Finishes:

- Form 7, Form 8 outlet bodies – electrogalvanized with aluminum acrylic paint
- Mark 9 outlet bodies – natural
- Form 5 – electrogalvanized with aluminum acrylic paint
- Series 5 – aluminum acrylic paint

Options:

Description	Suffix to be Added to Cat. #
Form 7 body and cover only: Copper-free aluminum.	SA
<i>Corro-free</i> ™ epoxy powder coat.	add suffix S752
• Series 5 in an EMT version with set screws on all hubs	add suffix -MT
• Series 5 pre-packaged with neoprene gasket and cover	add suffix -CGN

Certifications and Compliances:

Outlet Bodies –

- UL Standard: 514B
- Fed. Spec.: W-C-586D
- CSA Standard 22.2 No. 18

Size comparison of 1½" Form 7, Mark 9, Form 8, and Mogul bodies.

Round backs on Form 7 and Mogul; flat backs on Form 8 and Mark 9. The round back conduit body is a registered trademark of Cooper Industries, Inc.

- Raintight (when installed with cover and gasket)



Form 7



Mark 9

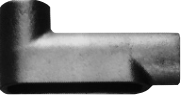
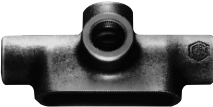


Form 8



Mogul

Threaded Rigid Bodies

		Hub Size									
Shape	Style	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
	C										
	Form 7	C17	C27	C37	C47	C57	C67	C77	C87		
	Form 8	C18	C28	C38	C448	C58	C68	C78	C88		
	Mark 9	C19	C29	C39	C49	C59	C69	C789	C889	C989	C1089
	Form 5	C50M	C75M	C100M	C125M	C150M	C200M	C250M	C300M	C350M	C400M
	E										
	Form 7	E17	E27	E37							
	L										
	Form 7	L17	L27	L37	L47	L57	L67				
		Double faced – may be used as LL or LR – has 2 openings, one of which is furnished with a blank sheet steel cover									
	LB										
	Form 7	LB17	LB27	LB37	LB47	LB57	LB67	LB777	LB87	LB97	LB107
	Form 8	LB18	LB28	LB38	LB448	LB58	LB68	LB78	LB888	LB98	LB108
	Mark 9	LB19	LB29	LB39	LB49	LB59	LB69	LB789	LB889	LB989	LB1089
	Form 5	LB50M	LB75M	LB100M	LB125M	LB150M	LB200M	LB250M	LB300M	LB350M	LB400M
	LL										
	Form 7	LL17	LL27	LL37	LL47	LL57	LL67	LL777	LL87	LL97	LL107
	Form 8	LL18	LL28	LL38	LL448	LL58	LL68	LL78	LL888		
	Mark 9	LL19	LL29	LL39	LL49	LL59	LL69	LL789	LL889	LL989	LL1089
	Form 5	LL50M	LL75M	LL100M	LL125M	LL150M	LL200M	LL250M	LL300M	LL350M	LL400M
	LR										
	Form 7	LR17	LR27	LR37	LR47	LR57	LR67	LR777	LR87	LR97	LR107
	Form 8	LR18	LR28	LR38	LR448	LR58	LR68	LR78	LR888		
	Mark 9	LR19	LR29	LR39	LR49	LR59	LR69	LR789	LR889	LR989	LR1089
	Form 5	LR50M	LR75M	LR100M	LR125M	LR150M	LR200M	LR250M	LR300M	LR350M	LR400M
	T										
	Form 7	T17	T27	T37	T47	T57	T67	T77	T87	T97	T107
	Form 8	T18	T28	T38	T448	T58	T68	T78	T88		
	Mark 9	T19	T29	T39	T49	T59	T69	T789	T889	T989	T1089
	Form 5	T50M	T75M	T100M	T125M	T150M	T200M	T250M	T300M	T350M	T400M
	TA										
	Form 7	TA17	TA27	TA37	TA47	TA57	TA67				
	TB										
	Form 7	TB17	TB27	TB37	TB47	TB57	TB67				
	Form 8	TB18	TB28	TB38	TB448	TB58	TB68				
	Mark 9	TB19	TB29	TB39	TB49	TB59	TB69				
	Form 5	TB50M	TB75M	TB100M	TB125M	TB150M	TB200M				
	X										
	Form 7	X17	X27	X37	X47	X57	X67				
	Form 8	X18	X28	X38	X448	X58	X68				
	Mark 9	X19	X29	X39							
	Form 5	X50M	X75M	X100M	X125M	X150M	X200M				

Condulet® Conduit Outlet Bodies

1F

Covers and Gaskets

Dimensions Pgs. 9 to 11 (Dimensions for Form 5 – see Section CP)

Blank Covers



Sheet Steel

Size	Form 7 Wedgenut Cat. #	Form 7 Snaptight™ Covers† Cat. #	Form 7 Wedgenut w/Integral Gasket Cat. #	Form 8* Cat. #	Form 8 w/Integral Gasket Cat. #	Form 5 Cat. #
1/2	170	170-SG	170G	180	180G	K50S
3/4	270	270-SG	270G	280	280G	K75S
1	370	370-SG	370G	380	380G	K100S
1 1/4	470	470-SG	470G	480	480G	K125S
1 1/2	570	570-SG	570G	580	580G	K125S
2	670	670-SG	670G	680	680G	K200S
2 1/2	870			880		K250S
3	870			880		K250S
3 1/2	970			980		K350S
4	970			980		K350S



Sheet Aluminum



Feraloy® Iron Alloy



Cast Aluminum

Size	Mark 9 Cat. #	Mark 9 w/Integral Gasket Cat. #	Form 7 Gasket Cat. #	Form 7 w/Integral Gasket Cat. #	Series 5 Cat. #	Form 7 Wedgenut Cat. #	Form 7 Wedgenut w/Integral Gasket Cat. #	Form 8* Cat. #	Form 5 ♦ Cat. #	Form 7 Wedgenut Cat. #
1/2	190	190G	170-SA	170G-SA	150	170F	170FG	180F	K50CM	170F-SA
3/4	290	290G	270-SA	270G-SA	250	270F	270FG	280F	K75CM	270F-SA
1	390	390G	370-SA	370G-SA	350	370F	370FG	380F	K100CM	370F-SA
1 1/4	490	490G	470-SA	470G-SA	450	470F	470FG	480F	K125CM	470F-SA
1 1/2	590	590G	570-SA	570G-SA	450	570F	570FG	580F	K125CM	570F-SA
2	690	690G	670-SA	670G-SA	650	670F	670FG	680F	K200CM	670F-SA
2 1/2	889		870-SA		850D	870F		880F	K250CM	870F-SA
3	889		870-SA		850D	870F		880F	K250CM	870F-SA
3 1/2	989		970-SA		950D	970F		980F	K350CM	970F-SA
4	989		970-SA		950D	970F		980F	K350CM	970F-SA

Solid Gaskets

Neoprene



Size	Form 7 Cat. #	Form 8* Cat. #	Mark 9† Cat. #	Form 5 Cat. #	Series 5 Cat. #
1/2	GASK571	GASK851N	GASK1941	GK50N	GASK015N
3/4	GASK572	GASK852N	GASK1942	GK75N	GASK025N
1	GASK573	GASK853N	GASK1943	GK100N	GASK035N
1 1/4	GASK574	GASK854N	GASK1944	GK125N	GASK045N
1 1/2	GASK575	GASK805N	GASK1945	GK125N	GASK045N
2	GASK576	GASK806N	GASK1946	GK200N	GASK065N
2 1/2	GASK578	GASK808N	GASK808N	GK250N	GASK085N
3	GASK578	GASK808N	GASK808N	GK250N	GASK085N
3 1/2	GASK579	GASK809N	GASK8089N	GK350N	GASK095N
4	GASK579	GASK8089N	GASK809N	GK350N	GASK095N

* 1/2 – 1 1/4 are solid gaskets; 1 1/2 – 4 are open gaskets.

† 1/2 – 2 are solid gaskets; 2 1/2 – 4 are open gaskets.

* Two cover screws on 1/2" to 2" Form 8 covers and four cover screws on 2 1/2" and larger Form 8 covers.

‡ Form 7 Snaptight covers with integral sealing gasket are installed without the use of screws.

♦ Malleable Iron Covers.

1F Cast Conduit Outlet Bodies

Form 7 SnapPack™

Pre-Assembled Body, Gasket and Cover

Application:

Form 7 Condulets are installed in conduit systems to:

- act as pull outlets for conductors being installed
- provide an opening for making splices and taps in conductors
- connect conduit sections
- provide taps for branch conduit runs
- make 90-degree bends in conduit runs
- provide access to conductors in a conduit system for maintenance and future system changes

Features:

- All SnapPack product is individually bar coded to facilitate more efficient inventory control
- Distributors and end users need to stock a single SKU instead of three separate component numbers – order the body, cover and gasket with one catalog number – saving transaction costs, and making product selection and merchandising fast and easy
- Form 7 conduit bodies are compact with a round back design for neat, efficient installations
- Conduit hubs have tapered threads and integral bushings for protection of wire insulation
- Many shapes and trade sizes available
- Sheet-steel wedge nut cover is provided with integral gasket. The wedge nut design facilitates installation and removal. Nuts and screws are held captive in cover
- Cover screws are stainless steel with a combination slotted and Phillips head, for easy installation and superior corrosion protection

Standard Materials:

- Body – Feraloy® iron alloy
- Gasket – urethane
- Cover – sheet steel
- Cover screws – stainless steel

Standard Finishes:

- Feraloy – electrogalvanized with aluminum acrylic paint
- Sheet steel – electrogalvanized

Certifications and Complies:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18

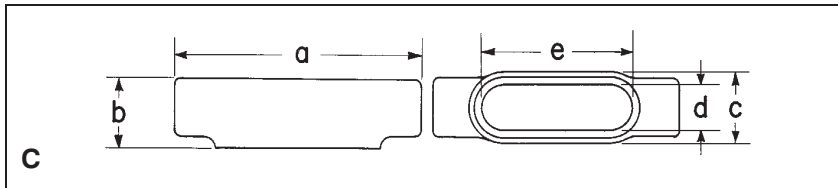
Ordering Information:

Trade Size	Shape	Cat. #
1/2"	C	C17-CG
3/4"	C	C27-CG
1"	C	C37-CG
1 1/4"	C	C47-CG
1 1/2"	C	C57-CG
2"	C	C67-CG
1/2"	LB	LB17-CG
3/4"	LB	LB27-CG
1"	LB	LB37-CG
1 1/4"	LB	LB47-CG
1 1/2"	LB	LB57-CG
2"	LB	LB67-CG
1/2"	LL	LL17-CG
3/4"	LL	LL27-CG
1"	LL	LL37-CG
1 1/4"	LL	LL47-CG
1 1/2"	LL	LL57-CG
2"	LL	LL67-CG
1/2"	LR	LR17-CG
3/4"	LR	LR27-CG
1"	LR	LR37-CG
1 1/4"	LR	LR47-CG
1 1/2"	LR	LR57-CG
2"	LR	LR67-CG
1/2"	T	T17-CG
3/4"	T	T27-CG
1"	T	T37-CG
1 1/4"	T	T47-CG
1 1/2"	T	T57-CG
2"	T	T67-CG
1/2"	TB	TB17-CG
3/4"	TB	TB27-CG
1"	TB	TB37-CG
1 1/4"	TB	TB47-CG
1 1/2"	TB	TB57-CG
2"	TB	TB67-CG
1/2"	X	X17-CG
3/4"	X	X27-CG
1"	X	X37-CG
1 1/4"	X	X47-CG
1 1/2"	X	X57-CG
2"	X	X67-CG

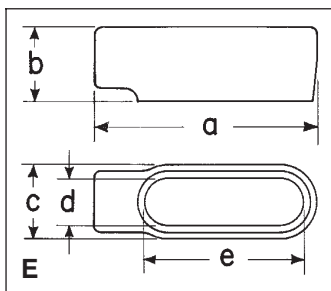
Note: Form 7 Condulets and covers are available in additional configurations, sizes and materials. For a complete listing of Form 7, Form 8 and Mark 9 conduit bodies and covers see pages 6 and 7.



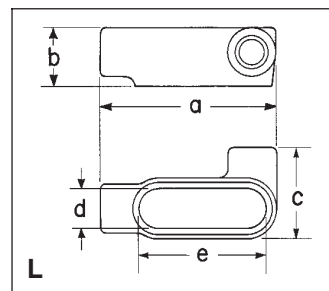
Dimensions



Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Form 7 C										
a	5 9/16	6	7	7 7/16	8 3/16	9 3/16	12	11 3/4		
b	1 3/8	1 5/8	1 7/8	2 5/16	2 9/16	3 1/8	3 5/8	4 3/8		
c	1 3/8	1 9/16	1 3/4	2 3/16	2 7/16	3	4 1/4	4 1/4		
d	1 5/16	1 1/8	1 3/8	1 3/4	1 15/16	2 7/16	3 9/16	3 9/16		
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8	8 5/8	8 5/8		
Form 8 C										
a	5 11/16	6 9/32	7 5/16	8 1/2	10 3/8	12 1/4	15 5/8	15 5/8		
b	1 7/16	1 11/16	1 15/16	2 3/8	2 29/32	3 9/16	4 7/16	4 13/16		
c	1 3/8	1 3/16	1 3/4	2 3/16	2 3/4	3 3/4	5	5		
d	1	1 3/16	1 3/8	1 3/4	2 1/8	3	4 1/4	4 1/4		
e	3 5/16	3 15/16	4 9/16	5 5/16	6 1/2	8 9/16	10 7/8	10 7/8		
Mark 9 C										
a	5	5 11/16	6 19/32	7 1/2	8 1/4	10 1/2	15 5/8	15 5/8	18 3/4	18 3/4
b	1 3/8	1 5/8	1 7/8	2 1/2	2 3/4	3 7/16	4 7/16	4 13/16	5 11/16	5 15/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 1/2	3 3/16	5	5	6 1/4	6 1/4
d	1 3/16	1 3/8	1 1/2	1 15/16	2 1/4	2 7/8	4 1/4	4 1/4	5 7/16	5 7/16
e	3 3/16	3 15/16	4 9/16	5 5/16	6	8 1/16	10 7/8	10 7/8	13 7/16	13 7/16



Size	1/2	3/4	1
Form 7 E			
a	4 9/16	5 3/16	6
b	1 3/8	1 5/8	1 7/8
c	1 3/8	1 9/16	1 3/4
d	1 5/16	1 1/8	1 3/8
e	3 3/16	3 13/16	4 1/2

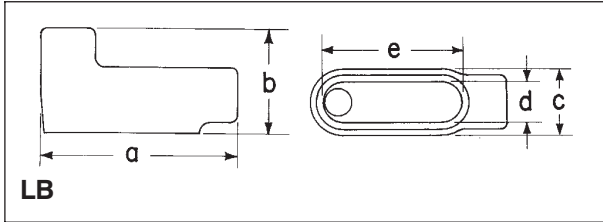


Size	1/2	3/4	1	1 1/4	1 1/2	2
Form 7 L						
a	4 9/16	5 3/16	6	6 1/2	7 1/8	3 1/8
b	1 3/8	1 5/8	1 7/8	2 5/16	2 9/16	3 1/8
c	2 1/4	2 7/16	2 3/4	3 3/16	3 9/16	4 1/8
d	1 5/16	1 1/8	1 3/8	1 3/4	1 15/16	2 7/16
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8

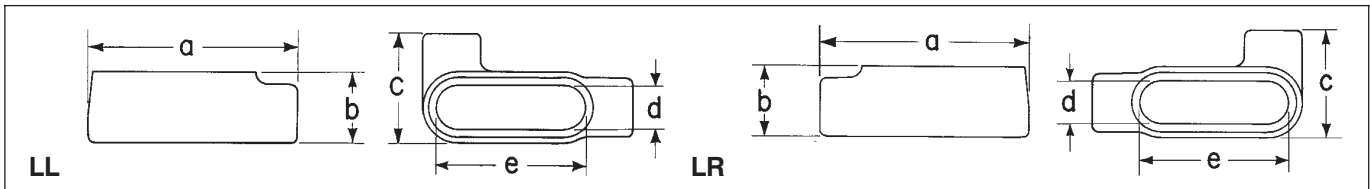
1F Condulet® Conduit Outlet Bodies

Dimensions

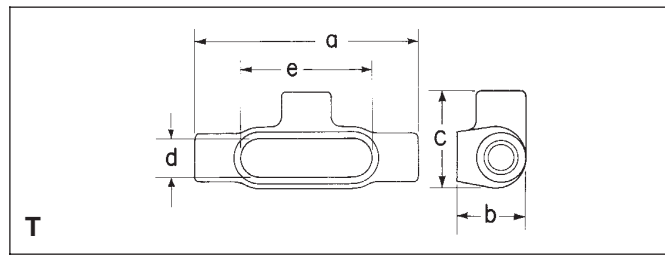
Conduit Outlet
Bodies



Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Form 7 LB										
a	4 9/16	5 3/16	6	6 1/2	7 1/8	8 1/8	10 1/2	10 1/2	12 11/16	12 11/16
b	2 1/4	2 1/2	2 7/8	3 5/16	3 11/16	4 1/4	5 1/8	5 7/8	6 9/16	7 1/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 7/16	3	4 1/4	4 1/4	5 1/4	5 1/4
d	1 5/16	1 1/8	1 3/8	1 3/4	1 5/16	2 7/16	3 9/16	3 9/16	4 1/2	4 1/2
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8	8 3/8	8 3/8	10 1/4	10 1/4
Form 8 LB										
a	4 15/16	5 9/16	6 15/32	7 17/32	9 1/8	11	13 15/16	13 15/16	16 7/8	16 7/8
b	2 7/32	2 7/16	2 13/16	3 11/32	4 1/32	4 13/16	6 1/8	6 1/2	7 9/16	7 13/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 3/4	3 3/4	5	5	6 1/4	6 1/4
d	1	1 3/16	1 3/8	1 3/4	2 1/8	3	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6 1/2	8 9/16	10 7/8	10 7/8	13 7/16	13 7/16
Mark 9 LB										
a	4 19/32	5 1/4	6 3/32	7 1/32	7 3/4	10 1/32	13 15/16	13 15/16	16 7/8	16 7/8
b	2 1/8	2 13/32	2 27/32	3 15/32	3 3/4	4 15/32	6 1/8	6 1/2	7 9/16	7 13/16
c	1 3/8	1 9/16	1 3/4	2 3/16	2 1/2	3 3/16	5	5	6 1/4	6 1/4
d	1 3/16	1 3/8	1 1/2	1 5/16	2 1/4	2 7/8	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6	8 1/16	10 7/8	10 7/8	13 7/16	13 7/16



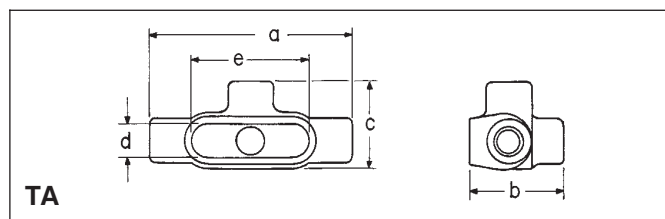
Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Form 7 LL & LR										
a	4 9/16	5 3/16	6	6 1/2	7 1/8	8 1/8	10 1/2	10 1/2	12 11/16	12 11/16
b	1 3/8	1 5/8	1 7/8	2 5/16	2 9/16	3 1/8	3 5/8	4 3/8	4 7/8	5 3/8
c	2 1/4	2 7/16	2 3/4	3 3/16	3 9/16	4 1/8	5 3/4	5 3/4	6 15/16	6 15/16
d	1 5/16	1 1/8	1 3/8	1 3/4	1 5/16	2 7/16	3 9/16	3 9/16	4 1/2	4 1/2
e	3 3/16	3 13/16	4 1/2	5	5 7/16	6 3/8	8 3/8	8 3/8	10 1/4	10 1/4
Form 8 LL & LR										
a	4 15/16	5 9/16	6 15/32	7 17/32	9 1/8	11	13 15/16	13 15/16	16 7/8	16 7/8
b	1 7/16	1 11/16	1 15/16	2 3/8	2 25/32	3 9/16	4 7/16	4 13/16	5 11/16	5 15/16
c	2 5/32	2 5/16	2 5/8	3 5/32	4	5	6 11/16	6 11/16	8 1/8	8 1/8
d	1	1 3/16	1 3/8	1 3/4	2 1/8	3	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6 1/2	8 9/16	10 7/8	10 7/8	13 7/16	13 7/16
Mark 9 LL & LR										
a	4 19/32	5 1/4	6 3/32	7 1/32	7 3/4	10 1/32	13 15/16	13 15/16	16 7/8	16 7/8
b	1 3/8	1 5/8	1 7/8	2 1/2	2 3/4	3 7/16	4 7/16	4 13/16	5 11/16	5 15/16
c	2 1/8	2 3/8	2 5/8	3 3/32	3 7/16	4 1/8	6 11/16	6 11/16	8 1/8	8 1/8
d	1 3/16	1 3/8	1 1/2	1 5/16	2 1/4	2 7/8	4 1/4	4 1/4	5 7/16	5 7/16
e	3 5/16	3 15/16	4 9/16	5 5/16	6	8 1/16	10 7/8	10 7/8	13 7/16	13 7/16



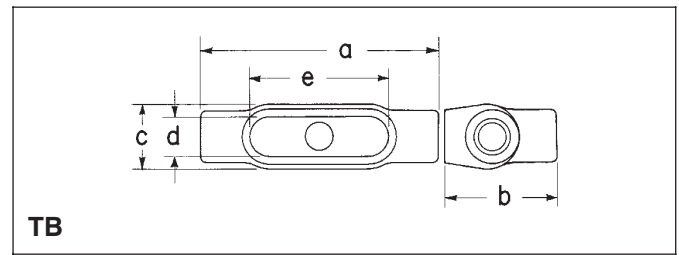
Size	a	b	c	d	e
Form 7T					
1/2	5 5/8	1 3/4	27/16	1 5/16	3 3/16
3/4	6 1/4	2	2 5/8	1 1/8	3 13/16
1	7 1/4	2 1/4	3	1 3/8	4 1/2
1 1/4	7 7/16	2 5/16	3 3/16	1 3/4	5
1 1/2	8 3/16	2 9/16	3 9/16	1 15/16	5 7/16
2	9 3/16	3 1/8	4 1/8	2 7/16	6 3/8
2 1/2	12	3 3/8	5 3/4	3 9/16	8 3/8
3	12 1/16	4 3/8	5 3/4	3 9/16	8 3/8
3 1/2	14 5/16	4 7/8	6 15/16	4 1/2	10 1/4
4	14 5/16	5 3/8	6 15/16	4 1/2	10 1/4

Size	a	b	c	d	e
Form 8T					
1/2	5 11/16	1 3/4	2 5/32	1	3 5/16
3/4	6 9/32	2	2 5/16	1 3/16	3 15/16
1	7 7/16	2 1/4	2 5/8	1 3/8	4 9/16
1 1/4	8 1/2	2 5/8	3 5/32	1 3/4	5 5/16
1 1/2	10 3/8	2 25/32	4	2 1/8	6 1/2
2	12 1/4	3 9/16	5	3	8 9/16
2 1/2	15 5/8	4 7/16	6 11/16	4 1/4	10 7/8
3	15 5/8	4 13/16	6 11/16	4 1/4	10 7/8

Size	a	b	c	d	e
Mark 9T					
1/2	5	1 3/8	2 1/8	1 3/16	3 5/16
3/4	5 11/16	1 3/8	2 3/8	1 3/8	3 15/16
1	6 19/32	1 7/8	2 5/8	1 1/2	4 9/16
1 1/4	7 1/2	2 1/2	3 3/32	1 15/16	5 5/16
1 1/2	8 1/4	2 3/4	3 7/16	2 1/4	6
2	10 1/2	3 7/16	4 1/8	2 7/8	8 1/16
2 1/2	15 5/8	4 7/16	6 11/16	4 1/4	10 7/8
3	15 5/8	4 13/16	6 11/16	4 1/4	10 7/8
3 1/2	18 3/4	5 11/16	8 1/8	5 7/16	13 7/16
4	18 3/4	5 15/16	8 1/8	5 7/16	13 7/16



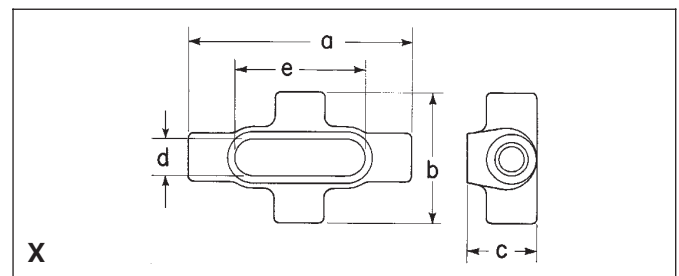
Size	a	b	c	d	e
Form 7TA					
1/2	5 5/8	2 5/8	27/16	1 5/16	3 3/16
3/4	6 1/4	2 7/8	2 5/8	1 1/8	3 13/16
1	7 1/4	3 1/4	3	1 3/8	4 1/2
1 1/4	7 7/16	3 9/16	3 3/16	1 3/4	5
1 1/2	8 3/16	3 11/16	3 9/16	1 15/16	5 7/16
2	9 3/16	4 1/4	4 1/8	2 7/16	6 3/8



Size	a	b	c	d	e
Form 7TB					
1/2	5 5/8	2 5/8	1 9/16	1 5/16	3 3/16
3/4	6 1/4	2 7/8	1 3/4	1 1/8	3 13/16
1	7 1/4	3 1/4	2	1 3/8	4 1/2
1 1/4	7 7/16	3 5/16	2 3/16	1 3/4	5
1 1/2	8 3/16	5	2 7/16	1 15/16	5 7/16
2	9 3/16	6 1/8	3	2 7/16	6 3/8

Size	a	b	c	d	e
Form 8TB					
1/2	5 11/16	2 17/32	1 3/8	1	3 5/16
3/4	6 9/32	2 3/4	1 9/16	1 3/16	3 15/16
1	7 7/16	3 1/8	1 3/4	1 3/8	4 9/16
1 1/4	8 1/2	3 11/32	2 3/16	1 3/4	5 5/16
1 1/2	10 3/8	4 1/32	2 3/4	2 1/8	6 1/2
2	12 1/4	4 13/16	3 3/4	3	8 9/16

Size	a	b	c	d	e
Mark 9TB					
1/2	5	2 1/8	1 3/8	1 3/16	3 5/16
3/4	5 11/16	2 13/32	1 9/16	1 3/8	3 15/16
1	6 19/32	2 27/32	1 3/4	1 1/2	4 9/16
1 1/4	7 1/2	3 15/32	2 3/16	1 15/16	5 5/16
1 1/2	8 11/32	3 7/8	2 1/2	2 5/32	5 7/8
2	10 5/8	4 19/32	3 7/32	2 13/16	8 3/32



Size	a	b	c	d	e
Form 7X					
1/2	5 5/8	3 5/16	1 3/4	1 5/16	3 3/16
3/4	6 1/4	3 1/2	2	1 1/8	3 13/16
1	7 1/4	4	2 1/4	1 3/8	4 1/2
1 1/4	7 7/16	4 1/8	2 5/16	1 3/4	5
1 1/2	8 3/16	4 5/8	2 9/16	1 15/16	5 7/16
2	9 3/16	5 3/16	3 1/8	2 7/16	6 3/8

Size	a	b	c	d	e
Form 8X					
1/2	5 11/16	2 29/32	1 3/4	1	3 5/16
3/4	6 9/32	3 1/16	2	1 3/16	3 15/16
1	7 7/16	3 1/2	2 1/4	1 3/8	4 9/16
1 1/4	8 1/2	4 1/8	2 5/8	1 3/4	5 5/16
1 1/2	10 3/8	5 1/4	2 15/32	2 1/8	6 1/2
2	12 1/4	6 1/4	3 9/16	3	8 9/16

Size	a	b	c	d	e
Mark 9X					
1/2	5 11/16	2 29/32	1 3/4	1	3 5/16
3/4	6 9/32	3 1/16	2	1 3/16	3 15/16
1	7 7/16	3 1/2	2 1/4	1 3/8	4 9/16

Application:

Die cast mogul pulling elbows are installed in conduit systems to provide:

- an accessible weather resistant chamber for containing heavy duty conductors
- a chamber for containing 90° turn in large stiff conductors. Used either to change conductor direction or to enter buildings
- a pull box for pulling large conductors
- a chamber for making splices and taps
- an accessible opening to accommodate future changes of the system

Features:

- Large dome cover permits easy, straight through pull
- Dimension from centerline of back hub to bushing of end hub exceeds six times the trade diameter of the conduit
- Tapered threads provide easy assembly, tight construction
- Heavy duty machine screws for cover
- Cover is gasketed
- Smooth design and finish make handling easy and complement any construction job

Standard Materials:

- Die cast copper-free aluminum

Standard Finishes:

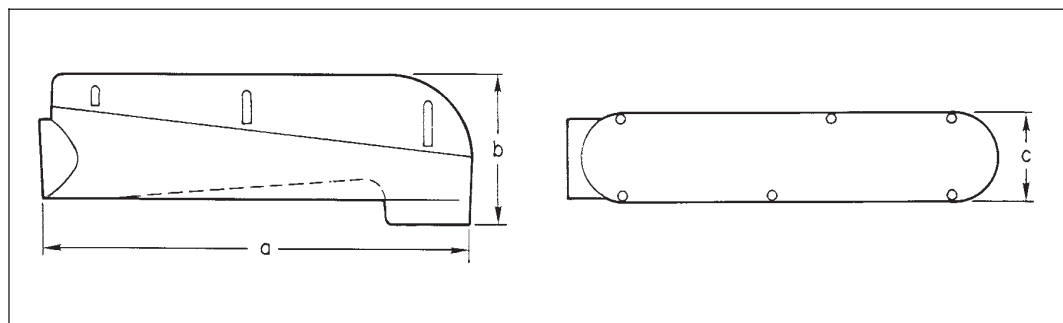
- Aluminum lacquer

Certifications and**Compliances:**

- UL Standard: 514B
- NEC: Article 370
- CSA C22.2 No. 18
- CEC: 22.1

**LBNEC Furnished With Cover, Gasket and Screws**

Size	Cat. #	Bending Radius
2½	LBNEC7	5¼
3	LBNEC8	5¾
3½	LBNEC9	7
4	LBNEC10	7¾

Dimensions

Cat. #	Size	a	b	c
LBNEC7	2½	21 ¹¹ / ₁₆	8 ⁹ / ₃₂	4½
LBNEC8	3	21 ¹¹ / ₁₆	8 ⁹ / ₃₂	4½
LBNEC9	3½	28 ¹¹ / ₁₆	9 ⁷ / ₃₂	5½
LBNEC10	4	28 ¹¹ / ₁₆	9 ⁷ / ₃₂	5½

Condulet® Conduit Outlet Bodies

Replacement Gaskets

1F

1F
Conduit Outlet
Bodies

Application:

- LBD bodies are installed at 90° bends in rigid conduit to:
- act as pull outlets for conductors that are stiff due to large size or type of insulation
 - make 90° bends in conduit system, allowing straight pull in either direction
 - provide for conduit service entrance to buildings
 - provide for conductor entrance to motors
 - provide access to wiring for maintenance and future expansion

Features:

- LBD bodies have:
- cover openings on an angle permitting conductors to be pulled straight thru hubs from either direction
 - domed covers to permit easy conductor bends (relieves strain on insulation)
 - cover and gasket furnished
 - taper tapped hubs with integral bushings

Standard Materials:

- Body and cover – *Feraloy*® iron alloy
- Gasket – Neoprene

Standard Finishes:

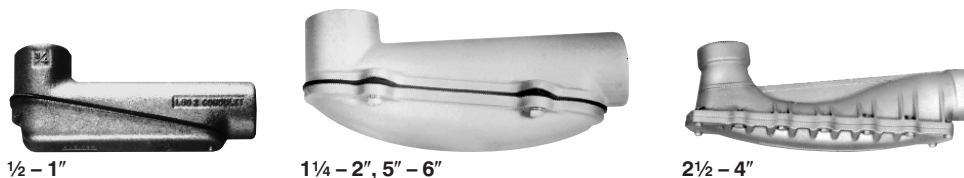
- *Feraloy* iron alloy: ½" to 4" sizes, electrogalvanized and aluminum acrylic paint; 5" and 6" sizes, zinc chromate primer and aluminum lacquer.
- Neoprene – natural

Options:

Description	Suffix to be Added to Cat. #
Material – All sizes, copper-free aluminum.....	SA

Certifications and Compliances:

- UL Standard: 514B
- Fed. Spec.: W-C-586d
- CSA 22.2 No. 18



LBD

Size	Cat. #	Size	Cat. #	Size	Cat. #
½	LBD1100	1¼	LBD4400	3½	LBD9900
¾	LBD2200	1½	LBD5500	4	LBD10900
1	LBD3300	2	LBD6600	5	LBD012
		2½	LBD7700	6	LBD014
		3	LBD8800		

Replacement Gaskets for Above Sizes

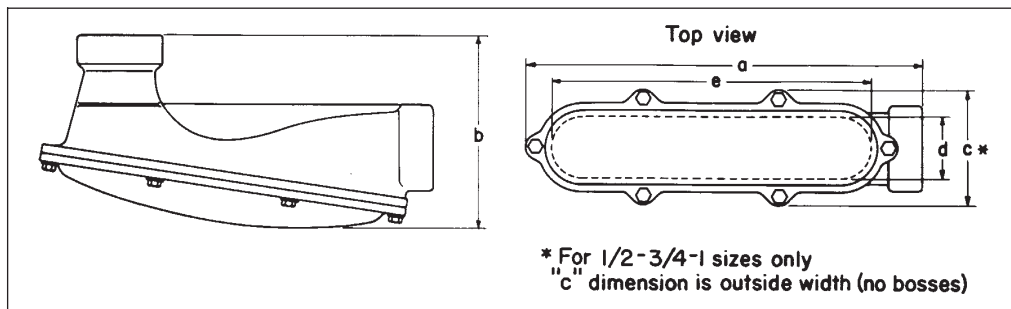
Rubber

Size	Cat. #	Size	Cat. #	Size	Cat. #
½	GASK680R	1¼	GASK683R	3½	GASK989R
¾	GASK681R	1½	GASK684R	4	GASK989R
1	GASK682R	2	GASK684R	5	GASK687R
		2½	GASK990R	6	GASK688R
		3	GASK990R		

Replacement Cover Assembly with Hardware

Size	Cat. #	Size	Cat. #	Size	Cat. #
½	LBD100	1¼	LBD400	3	LBD800
¾	LBD200	1½	LBD600	3½	LBD900
1	LBD300	2	LBD600	4	LBD900
		2½	LBD800	5	LBD120
				6	LBD140

Dimensions



Cat. #	Size	a	b	c	d	e
LBD1100	½	5	2⅝	1⅝	1	3⅛
LBD2200	¾	6¼	2⅝	1⅞	1¼	4⅞
LBD3300	1	6¼	2⅝	1⅞	1½	4⅞
LBD4400	1¼	8⅝	4¼	3½	1⅞	7⅞
LBD5500	1½	12⅞	5⅞	4⅝	2⅝	10⅞
LBD6600	2	12⅞	5⅞	4⅝	2⅝	10⅞
LBD7700	2½	19⅞	9⅞	5⅝	3	15¾
LBD8800	3	19⅞	9⅞	5⅝	3	15¾
LBD9900 (iron)	3½	20⅞	10⅞	7¼	4¾	19⅞
LBD10900 (iron)	4	20⅞	10⅞	7¼	4¾	19⅞
LBD9900 (-SA)	3½	27⅞	11⅞	7⅞	4	24
LBD10900 (-SA)	4	27⅞	11⅞	7⅞	4	24
LBD012	5	32⅞	12½	8⅝	5⅞	30
LBD014	6	41½	15	9¾	7	39

1F Condulet® Conduit Outlet Bodies

Covers with Gaskets on Page 15

Application:

Mogul bodies are installed in conduit systems to:

- act as pull outlets for conductors that are stiff, due to large size or type of insulation
- provide the longer openings needed when pulling large conductors
- prevent sharp bends and kinks in large conductors (protects insulation during installation)
- provide ample openings for splices and taps
- provide access to wiring for maintenance and future system changes

Features:

Mogul bodies have:

- long openings
- provision for easy bends
- taper tapped hubs with integral bushings
- Stainless Steel cover screws
- Covers are provided with integral gasket

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

- Feraloy – electrogalvanized and aluminum acrylic paint

Options:

Description	Suffix to be Added to Cat. #
Material – copper-free aluminum.....	SA

Certifications and Compliances:

- UL Standard: 514B
- Fed. Spec.: W-C-586d
- CSA Standard: C22.2 No. 18



BC
Mogul Series

Size	Cat. #
1	BC3
1¼	BC4
1½	BC5
2	BC6
2½	BC7
3	BC8
3½	BC9
4	BC10

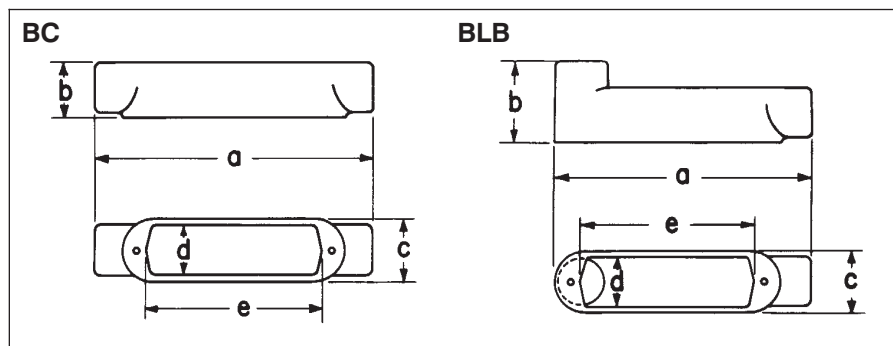


BLB†
Mogul Series

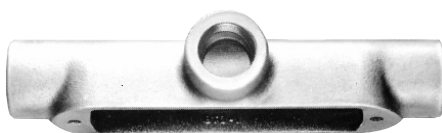
Size	Cat. #
1	BLB3
1¼	BLB4
1½	BLB5
2	BLB6
2½	BLB7
3	BLB8
3½	BLB9
4	BLB10

† For 5" size use LBD012.
For 6" size use LBD014.

Dimensions



	Size 1	1¼	1½	2	2½	3	3½	4
Mogul Series BC								
a	9 ⁹ / ₁₆	9 ⁹ / ₁₆	13 ³ / ₄	13 ³ / ₄	18 ³ / ₈	18 ³ / ₈	23 ³ / ₄	23 ³ / ₄
b	1 ⁷ / ₈	2 ⁵ / ₁₆	2 ⁹ / ₁₆	3 ¹ / ₈	3 ⁵ / ₈	4 ³ / ₈	4 ⁷ / ₈	5 ³ / ₈
c	2 ³ / ₁₆	2 ³ / ₁₆	3	3	4 ¹ / ₄	4 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄
d	1 ⁷ / ₈	1 ⁷ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	3 ¹³ / ₁₆	3 ¹³ / ₁₆	4 ³ / ₄	4 ³ / ₄
e	6	6	10	10	15	15	20	20
Mogul Series BLB								
a	8 ¹⁹ / ₃₂	8 ¹⁹ / ₃₂	12 ¹¹ / ₁₆	12 ¹¹ / ₁₆	16 ²⁹ / ₃₂	16 ²⁹ / ₃₂	22 ¹ / ₈	22 ¹ / ₈
b	2 ²⁷ / ₃₂	3 ⁹ / ₃₂	3 ⁵ / ₈	4 ³ / ₁₆	5 ³ / ₃₂	5 ²⁷ / ₃₂	6 ¹ / ₂	7
c	2 ³ / ₁₆	2 ³ / ₁₆	3	3	4 ¹ / ₄	4 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄
d	1 ⁷ / ₈	1 ⁷ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	3 ¹³ / ₁₆	3 ¹³ / ₁₆	4 ³ / ₄	4 ³ / ₄
e	6	6	10	10	15	15	20	20



BUB

Mogul Series

Size	Cat. #
1	BUB3
1¼	BUB4
1½	BUB5
2	BUB6
2½	BUB7
3	BUB8
3½	BUB9
4	BUB10

BT

Mogul Series

Size	Cat. #
1	BT3
1¼	BT4
1½	BT5
2	BT6
2½	BT7
3	BT8
3½	BT9
4	BT10

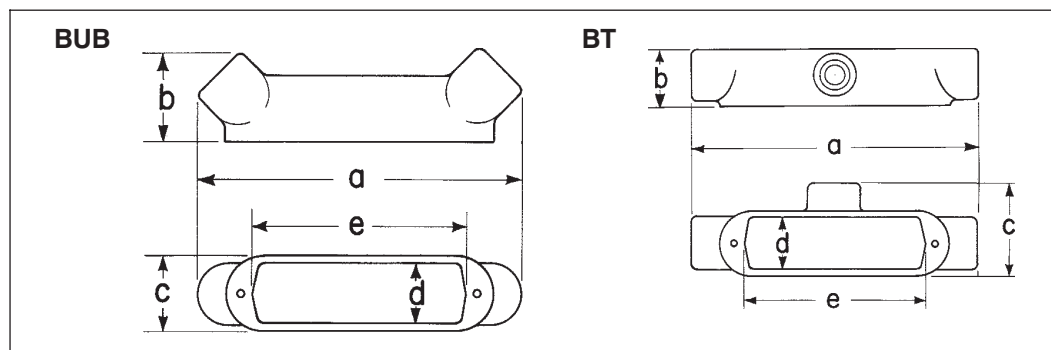
Blank Covers

For all Mogul Series

Feraloy® iron alloy

Size	With Round Neoprene Gasket Cat. #
1 or 1¼	BG48
1½ or 2	BG68
2½ or 3	BG88
3½ or 4	BG98

Dimensions



Size	1	1¼	1½	2	2½	3	3½	4
Mogul Series BUB								
a	9⅞	9⅞	13½	13½	17¾	17⅞	23⅞	23¼
b	2⅞	3⅞	3½	4⅞	4⅞	5⅞	6⅞	6⅞
c	2⅞	2⅞	3	3	4¼	4¼	5¼	5¼
d	1⅞	1⅞	2⅞	2⅞	3⅞	3⅞	4¾	4¾
e	6	6	10	10	15	15	20	20
Mogul Series BT								
a	9⅞	9⅞	13¾	13¾	18⅞	18⅞	23¾	23¾
b	1⅞	2⅞	2⅞	3⅞	3⅞	4⅞	4⅞	5⅞
c	3⅞	3⅞	4⅞	4⅞	5⅞	5⅞	6⅞	6⅞
d	1⅞	1⅞	2⅞	2⅞	3⅞	3⅞	4¾	4¾
e	6	6	10	10	15	15	20	20

1F Condulet® Service Entrance Elbows and Tees

Conduit Outlet Bodies

Application:

SLB and LBY elbows are installed in conduit systems to:

- act as service entrance elbows between service entrance and vertical weatherhead conduit runs
- make 90° bends in conduit systems where space is limited
- act as pull outlets
- provide access to conductors for maintenance and future system changes

ET short radius tees are installed in conduit systems:

- in concealed conduit runs allowing single conduit stub up to outlet boxes located above or below main conduit run. Eliminates separate feed and return conduits to flush floor box or junction box

Features:

SLB elbows have:

- compact overall size and short hubs
- taper tapped hubs and integral bushing for standard threaded conduit
- covers and gaskets furnished

LBY elbows have:

- maximum volume for bends within a compact overall size
- screw-on cover for ease of installation and removal
- cover openings on an angle, permitting conductors to be pulled straight through either hub
- taper tapped hubs and integral bushing for standard threaded conduit

ET short radius tees have:

- compact size, small radius of bend for use in concealed or open conduit systems. Particularly suited for use in shallow floors or partitions
- taper tapped hubs and integral bushing for standard threaded conduit

Standard Materials:

- SLB elbows – copper-free aluminum
- LBY elbows – *Feraloy*® iron alloy
- ET tees – *Feraloy* iron alloy

Standard Finishes:

- Copper-free aluminum – natural
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

Options:

- Finishes – LBY elbows: *Corro-free*™ epoxy power coat add suffix S752
- Material (LBY only) – copper-free aluminum construction Add suffix –SA

Certifications and Compliances:

- UL Standard: 514B
- Fed. Spec.: W-C-586a



LBY (includes cover)

Size	Cat. #
1/2	LBY15
3/4	LBY25
1	LBY35
1 1/4	LBY45
1 1/2	LBY55



ET

Size	Cat. #
3/4 – 1/2 – 1/2	ET218
3/4 – 3/4 – 3/4	ET228
1 – 3/4 – 3/4	ET328

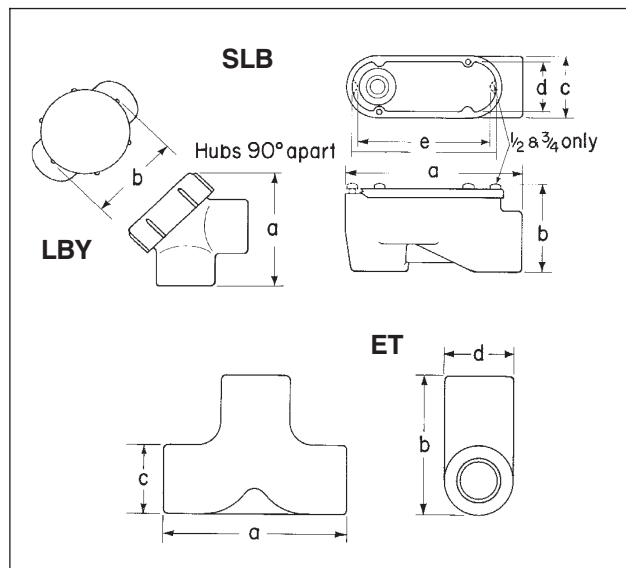
Largest hub shown at top of photo



SLB (includes cover)

Size	Cat. #
1/2	SLB1
3/4	SLB2
1	SLB3
1 1/4	SLB4
1 1/2	SLB5
2	SLB6

Dimensions



SLB	Size	1/2	3/4	1	1 1/4	1 1/2	2
	a	3 1/8	3 1/2	4 1/8	5 3/8	6 23/32	7 3/4
	b	1 25/32	2	1 9/32	2 25/32	3 1/32	3 29/32
	c	1 3/16	1 3/8	1 11/16	2 3/32	2 3/8	3
	d	1	1 3/16	1 15/32	1 7/8	2 5/32	2 5/8
	e	2 11/16	2 15/16	3 11/32	4 3/4	6 1/32	6 31/32
LBY							
	a	2 13/16	3 3/16	3 1/4	3 25/32	4 1/4	
	b	2	2 1/4	2 1/2	2 15/16	3 3/8	
ET	Size	3/4 – 1/2 – 1/2	3/4 – 3/4 – 3/4	1 – 3/4 – 3/4			
	a	4	4	4			
	b	2 5/8	3	3			
	c	1 1/4	1 1/2	1 1/2			
	d	1 1/2	1 1/2	1 3/4			

Description	Page No.
Application/Selection	18
Condulet® Cast Outlet Boxes	
GRF Series	19
VXF Series	19

Application:

Round cast outlet boxes are installed at appropriate locations in threaded rigid conduit systems to:

- act as support for lighting fixtures (with hub and fixture hanging covers)
- act as junction or fuse boxes when fitted with connection blocks or fuse blocks
- act as pull outlets for conductors to be installed in a conduit system (with blank covers; gasketed or ungasketed)
- act as mounting for wiring devices (wide variety available)
- provide openings for splices and taps in conductors
- provide access to conductors for maintenance and future system changes
- connect conduit sections and change direction of conduit runs

Considerations for Selection:

- Shape required – determine from configuration of conduit system and intended function of outlet boxes
- Size required – determine from conduit and conductor size
- Material required – determine from environmental conditions (corrosive fumes, buried in concrete, etc.)

Accessories:

- Blank & hub covers – for VXF, GRF
- Fixture hangers – for VXF, GRF series
- Gaskets – for VXF, GRF series

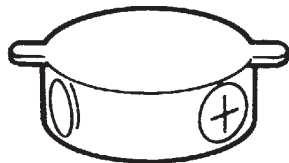
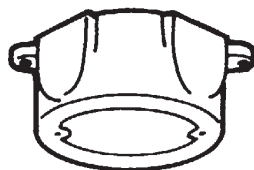
Options:

- *Corro-free*™ epoxy powder coat. Information available on request.

Quick Selector Chart

Series†	Conduit Sizes	Inside Dimensions		No. of Conduit Openings	Surface or Flush Mtg.	Standard Material	Finish	Covers
		Depth	Dia.					
VXF	½ and ¾	1¾	4¼	4 or 5	S	Copper-free aluminum	Epoxy Enamel	When box is used as junction or pull box, install GRF covers, gaskets.
GRF	½ to 1	1⅝ to 3⅝	3⅞	0 to 4	S – F	Feraloy iron alloy or aluminum	Electro-galvanized and aluminum paint	Blank, hub, standard 4" octagonal box covers, wiring devices, lighting fixture hangers, gaskets.

† Fit lighting fixture as follows: ARB & VGR

Shape Selector Chart**SERIES VXF****GRF**

Application:

VXF and GRF cast outlet boxes are installed in threaded rigid conduit systems to:

- act as junction boxes
- act as pull outlets
- accept round base wiring devices and covers intended for use on 4" outlet boxes (GRF boxes only)
- act as ceiling or wall mounting for *Vaporgard™* lighting fixtures (VXF boxes)
- mount enclosed and gasketed lighting fixtures: Series ARB and VGR; Series ARB fixture hangers (GRF boxes)

Features VXF:

- Compact, shallow design
- Takes GRF covers
- Multiple tapped conduit openings and pipe plugs for versatility
- 4 hubs and 3 plugs on VXF10 and VXF20
- 5 hubs and 4 plugs on VXFT10 and VXFT20

Features GRF:

- Surface mounting. Flush mounting can be obtained by nailing box to concrete form through mounting lug
- Drilled mounting lugs
- Four conduit bosses spaced 90° apart on sides and one boss on back
- Blank or drilled and tapped bodies (with 4 side bosses tapped and plugged, plus blank back boss)

Standard Materials:

- VXF – copper-free aluminum
- GRF – *Feraloy®* iron alloy or copper-free aluminum

Standard Finishes:

- VXF – epoxy enamel
- GRF – electrogalvanized and aluminum acrylic paint

Certifications and Compliances:

- UL Standard: boxes and covers – 514A
- CSA Standard: C22.2

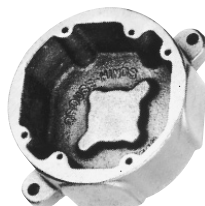


VXF Tapped Surface With Lugs
4 Hubs, 3 Plugs

Hub Size	Cat. #
1/2	VXF10
3/4	VXF20

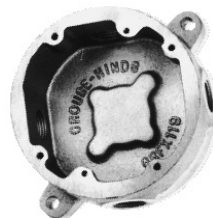
Surface With Lugs
5 Hubs, 4 Plugs

Hub Size	Cat. #
1/2	VXFT10
3/4	VXFT20



GRF Blank Surface With Lugs

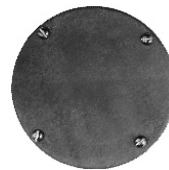
Inside Depth	Cat. #
1 3/8	GRF19
1 5/16	GRF29
3 1/8	GRF39



GRFX Tapped Surface With Lugs
4 Hubs, 3 Plugs
Blank Back Boss

Inside Depth	Size Tap	Iron Cat. #	Aluminum Cat. #
1 3/8	1/2	GRFX119	GRF119
1 3/8	3/4	GRFX219	GRF219
2 1/16	1/2	GRFX129	GRF129
2 1/16	3/4	GRFX229	GRF229
2 1/16	1	GRFX329	GRF329
3 1/8	1/2	GRFX139	GRF139
3 1/8	3/4	GRFX239	GRF239
3 1/8	1	GRFX339	GRF339

NOTE: See lighting section 8L for complete listing of lighting fixtures and hangers.



GRF Blank Cover

Description	Steel Cat. #	Aluminum Cat. #
Surface	GRF10	GRF110



Fixture weight to 125 lbs.

GRF Hub Covers

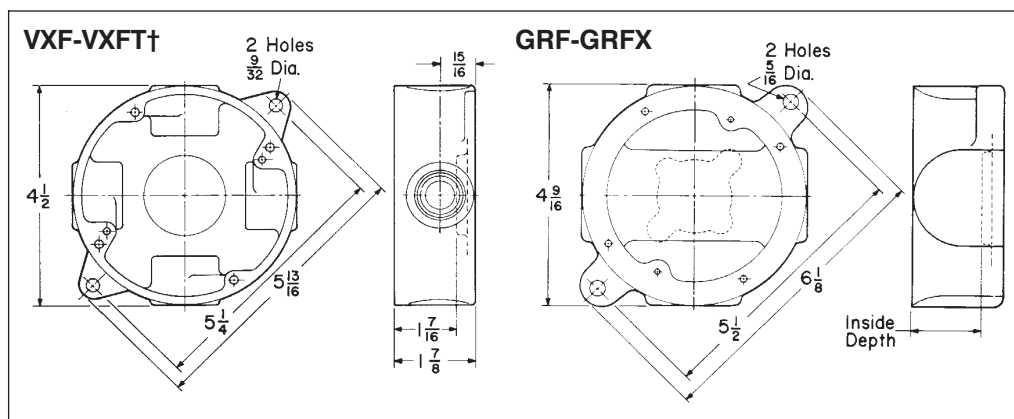
Description	Size	Iron Cat. #	Aluminum Cat. #
Surface	1/2	GRF11	GRF11-SA
Surface	3/4	GRF12	GRF12-SA



GRF Gasket

Description	Cat. #
Neoprene	GASK643

Dimensions

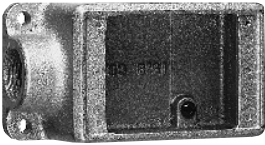
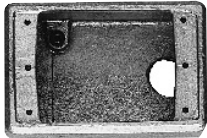
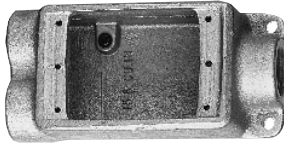
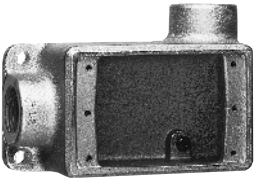
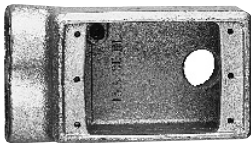
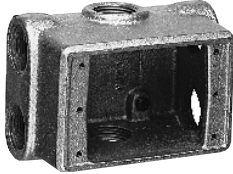
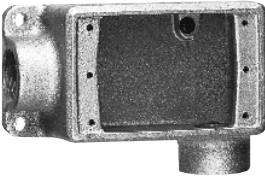
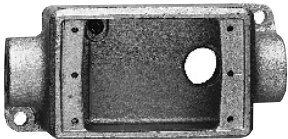
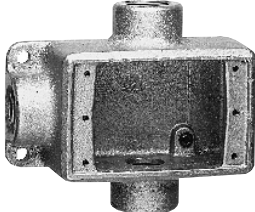
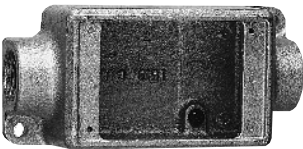
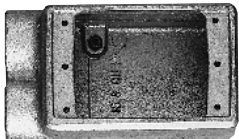
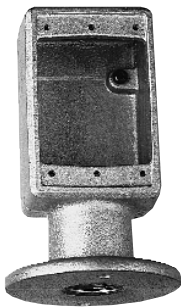
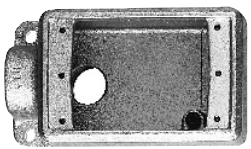


† VXFT has hubs on 4 sides and back; VXF has hubs on 4 sides only.

Notes Page

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NOTE: If the hub configurations required are not available, drilled and tapped openings can be provided in blank boxes per your specifications. See pages 31 to 34 for details.

Condulet® Cast Device Boxes with Hubs

3F

Multi-Gang Shape Selector Chart

SERIES

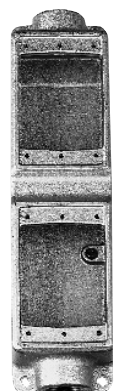
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SERIES

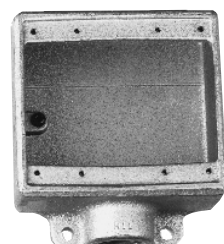
PAGE

SERIES

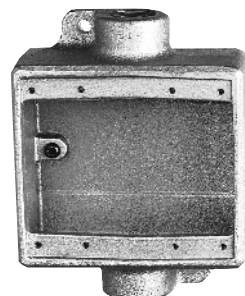
PAGE



FSC (Two gang tandem) 29
FS (Two gang tandem) 29



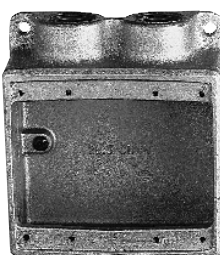
FS/FD (Two gang) 29



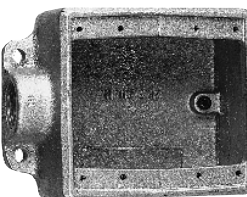
FSC/FDC (Two gang) 29



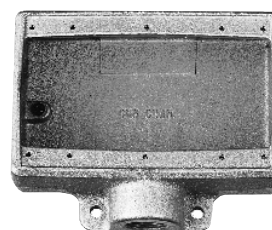
FSD (Two gang) 30



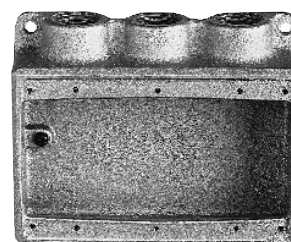
FSS/FDS (Two gang) 30



FSE (Two gang) 29



FS/FD (Three gang) 30



FSS (Three gang) 30

3F Cast Device
Boxes

NOTE: If the hub configurations required are not available, drilled and tapped openings can be provided in blank boxes per your specifications. See pages 31 to 34 for details.

Application:

Cast device boxes are installed in conduit and cable systems to:

- Accommodate wiring devices
- Act as pull boxes for conductors in a conduit system
- Provide openings to make splices and taps in conductors
- Provide access to conductors for maintenance and future system changes

Considerations for Selection of Device Box

Type of conduit system:

- Should be compatible with conduit or cable system
- Boxes are standard with mounting lugs and internal green ground screw.
- Boxes are available for rigid steel, IMC; rigid aluminum; flexible conduit and cable systems.

Number of devices to be used in the box:

- Standard flush devices require one gang each

Depth:

- Two box types are available – standard (FS) and deep (FD), single through five gang.
- Standard flush wiring devices will normally fit in the FS boxes.
- Some special purpose devices of higher ratings will require the deeper box (FD).
- In addition, the need for additional wiring space will require the deep box.

Hub configuration and size:

- The layout of the conduit system dictates the conduit opening locations of the box.

The table below indicates the types of conduit and the boxes available. Drilled and tapped openings can be supplied in blank boxes to meet your requirements.

- Hub size is the same as conduit size. A variety of hub sizes are available. Where the specific hub size is not available, reducing bushings can be used.

Materials and finishes:

- The environment and the use of the box will determine the material and finish needed.

Areas of the country with harsh weather and corrosive environments may require different materials and finishes for added protection.

- Standard material and finish is *Feraloy*® iron alloy with electrogalvanized and aluminum acrylic paint. Many items are also available in copper-free aluminum.

- Optional finishes can be obtained if environment warrants. See Options listings.

Considerations for Selection of Covers, Devices, and Accessories

Both general purpose and weatherproof, waterproof devices and covers are available. Selection will depend on individual conditions.

To provide for a wide variety of applications, the following covers and devices are available:

Covers	Pg.
General use snap switch.	39-41, 43, 44
Pushbutton switch	41
Plug and receptacle.	35-39, 43
Blank	38, 43, 44
Pilot light	42
Receptacle	35-39, 43

Devices	Pg.
Receptacle	37
Pilot lights	42
Wiring device	37

Accessories	Pg.
Gaskets	42
Box extensions	42
Flush mtg. adapter.	42

Options:

- *Corro-free*™ epoxy powder coat – add suffix S752

Quick Selector Chart

Box	Depth	Gang	Conduit Type	Standard Material	Standard Finish
FS	1 ¹¹ / ₁₆	1-3	Threaded rigid	<i>Feraloy</i> iron alloy (some are copper-free aluminum)	<i>Feraloy</i> iron alloy – electrogalvanized and aluminum acrylic paint. Copper-free aluminum – natural
FD	2 ¹ / ₂	1-3	Threaded rigid	<i>Feraloy</i> iron alloy	<i>Feraloy</i> iron alloy – electrogalvanized and aluminum acrylic paint
FS blank bodies Drilled and tapped	1 ¹⁵ / ₁₆	1-4 1-3	Threaded rigid	<i>Feraloy</i> iron alloy	<i>Feraloy</i> iron alloy – electrogalvanized and aluminum acrylic paint
FD blank bodies Drilled & tapped	2 ¹ / ₂	1-5 1-3	Threaded rigid	<i>Feraloy</i> iron alloy	<i>Feraloy</i> iron alloy – electrogalvanized and aluminum acrylic paint

Condulet® Single Gang Cast Device Boxes

Accessories Pages 35 to 44

3F

3F Cast Device Boxes

With and Without Mounting Lugs for Threaded Rigid and IMC Conduit

Application:

Cast device boxes are installed to:

- accommodate wiring devices
- act as pull boxes for conductors in a conduit system
- provide openings to make splices and taps in conductors
- provide access to conductors for maintenance and future system changes
- connect conduit sections
- FSF boxes for mounting surface devices on floor or bench (used with single gang covers)

Features:

- Internal green ground screw standard on boxes
- Suitable for use in wet locations when used with gasketed covers
- Mounting lugs standard on most boxes
- Tapered threaded hubs (NPT) with integral bushing
- Available for surface mounting (with mounting lugs) or flush mounting (without mounting lugs) as listed
- Available as shallow (FS) or deep (FD) configuration. Use FD if device to be enclosed exceeds 1 5/8" in depth
- Ample wiring room provided in either FS or FD configuration
- Wide selection of surface or flush covers available in three materials (sheet steel, *Feraloy*®, aluminum)
- Covers for flush mounting extend to conceal the rough plaster line
- Available in single gang and multi-gang configurations with hubs, and as blank bodies for drilled and tapped openings

Standard Materials:

- *Feraloy* iron alloy or copper-free aluminum.

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Options:

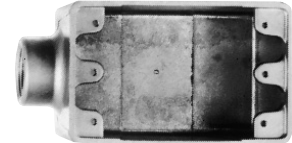
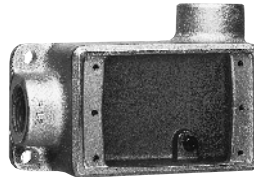
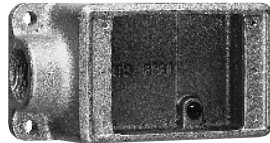
- Finishes:
Corro-free™ epoxy powder coat
 – add suffix S752

Size Ranges:

- Hubs – 1/2" to 1"

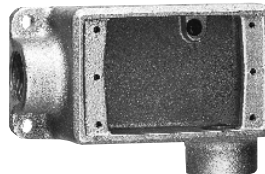
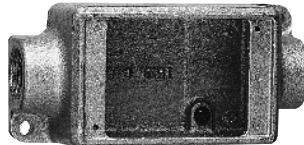
Certifications and Compliances:

- UL Standard: 514
- ANSI Standard: C33.84
- Fed. Spec.: W-C-5860
- CSA Standard: C22.2 No. 18



FS & FD

Size	Cat. #	Cat. #
1/2	FS1*	FD1**
3/4	FS2*	FD2**
1	FS3**	FD3**



Size	Cat. #	Cat. #
1/2	FSC1*	FDC1**
3/4	FSC2*	FDC2**
1	FSC3**	FDC3**

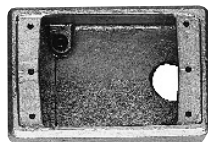
Die Cast Aluminum†

Size	Cat. #	Cat. #
1/2	FS1-SA	FSC1-SA
3/4	FS2-SA	FSC2-SA

† Mounting lugs and ground screw are not offered with standard die cast box – add suffix SCA to Cat. No. for sand cast aluminum box with mounting lugs and ground screw. (Example: FS1-SCA)

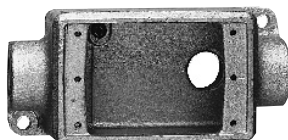
* Available in sandcast copper-free aluminum – add suffix SCA to Cat. No.

** Available in sandcast copper-free aluminum – add suffix SA to Cat. No.

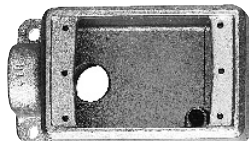


FS & FD

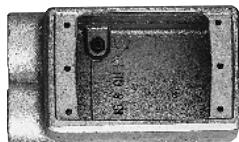
Size	Cat. # †	Cat. # †
1/2	FSA1	FDA1
3/4	FSA2	FDA2



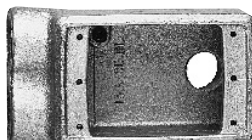
Size	Cat. #
1/2	FSCA1
3/4	FSCA2



Size	Cat. #	Cat. #
1/2	FLSA1	FDLA1
3/4	FLSA2*	FDLA2



Size	Cat. #†	Cat. #†
1/2	FSS1*	FDD1
3/4	FSS2*	FDD2*
1	FSS3	FDD3

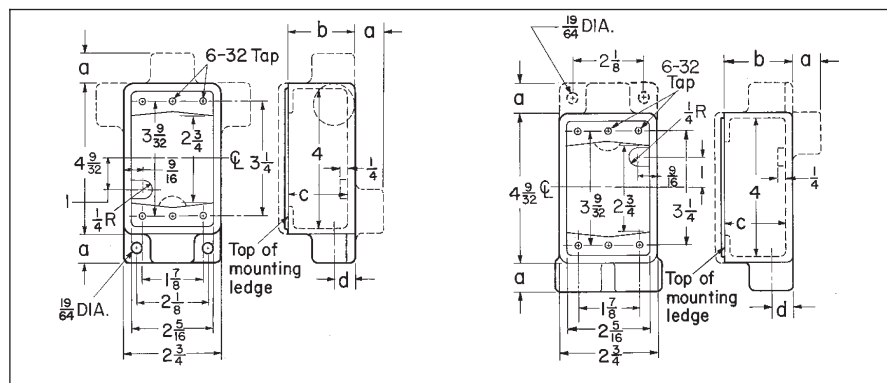


Size	Cat. #†
3/4	FSSA2



Size	Cat. #	Cat. #
1/2	FSCC1	FDCC1
3/4	FSCC2	FDCC2

Dimensions



Series	Hub Size	a	b	c	d
FS	1/2	7/8	17/8	11 ¹ / ₁₆	5/8
	3/4	7/8	17/8	11 ¹ / ₁₆	3/4
	1	1	17/8	11 ¹ / ₁₆	7/8
FD	1/2	7/8	21 ¹ / ₁₆	2 1/2	5/8
	3/4	7/8	21 ¹ / ₁₆	2 1/2	3/4
	1	1	21 ¹ / ₁₆	2 1/2	7/8

* Available in copper-free aluminum; add suffix "SA".

† Mounting lugs not available.

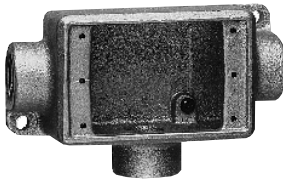
Condulet® Single Gang Cast Device Boxes

Accessories Pages 35 to 44

3F

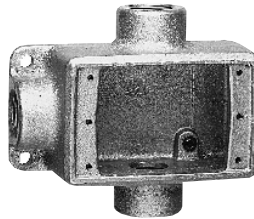
With and Without Mounting Lugs for Threaded Rigid and IMC Conduit

3F Cast Device Boxes

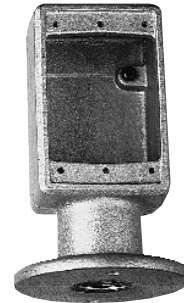


FS and FD

Size	Cat. #	Cat. #
1/2	FSCT1	FDCT1
3/4	FSCT2*	FDCT2*
1	FSCT3	FDCT3



Size	Cat. #	Cat. #
1/2	FST1*	FDT1
3/4	FST2*	FDT2
1		FDT3

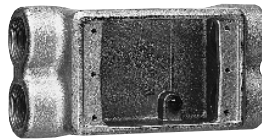


FSY

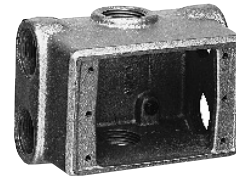
Description	Hub Size	Cat. # ‡
Single face	1	FSY311
Double face	1	FSY312



Size	Cat. #	Cat. #
1/2	FSX1	FDX1
3/4	FSX2	FDX2
1		FDX3



Size	Cat. #†
1/2	FSCD1
3/4	FSCD2



FDXC†

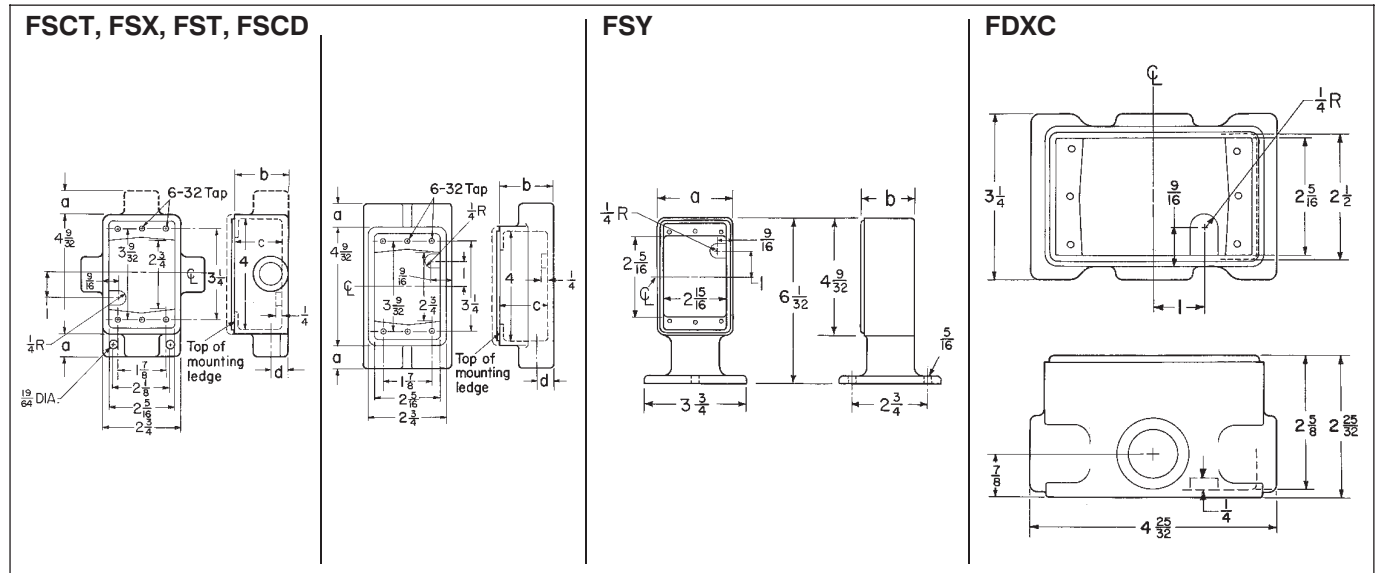
Hub Size	Cat. # ‡
3/4	FDXC219

† 6 Hubs – all 3/4" pipe tap.

* Available in copper-free aluminum; add suffix "SA".

‡ Not available with mounting lugs.

Dimensions



FSCT, FSX, FST, FSCD

Series	Hub Size	a	b	c	d
FS	1/2	7/8	17/8	11 1/16	5/8
	3/4	7/8	17/8	11 1/16	3/4
	1	1	17/8	11 1/16	7/8

FSY

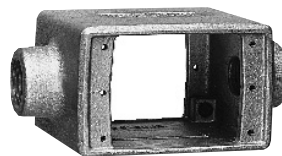
Description	Hub Size	a	b
Single gang, single face	1	2 3/4	1 15/16
Single gang, double face	1	2 3/4	3 3/8



FS

Double Face

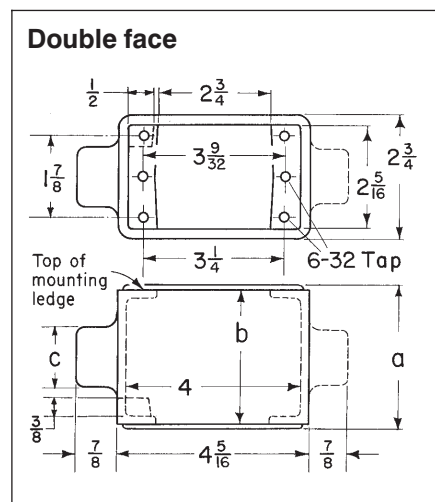
Size	Cat. # †
1/2	FS152
3/4	FS252



Double Face

Size	Cat. # †
1/2	FSC152
3/4	FSC252

Dimensions



Series	Hub Size	a	b	c
FS	1/2	3 ⁵ / ₁₆	3 ¹ / ₈	1 ¹ / ₄
	3/4	3 ¹¹ / ₁₆	3 ¹ / ₂	1 ¹ / ₂

† Mounting lugs not available.

Condulet® Multi-Gang Cast Device Boxes

Accessories Pages 35 to 44

3F

With and Without Mounting Lugs for Threaded Rigid and IMC Conduit

3F Cast Device Boxes



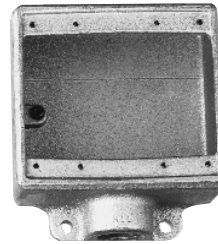
FS†
Two Gang Tandem

Size	Cat. #
1/2	FS17
3/4	FS27



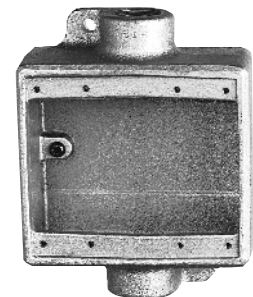
FSC†
Two Gang Tandem

Size	Cat. #
1/2	FSC17
3/4	FSC27



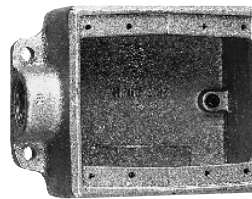
FS & FD
Two Gang

Size	Cat. #	Cat. #
1/2	FS12*	FD12
3/4	FS22*	FD22*
1	FS32	FD32



FSC & FDC
Two Gang

Size	Cat. #	Cat. #
1/2	FSC12	FDC12
3/4	FSC222	FDC222*
1	FSC32	FDC32



FSE
Two Gang

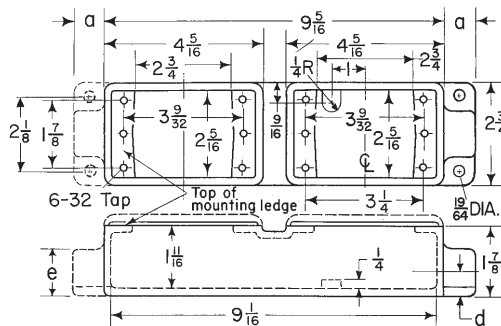
Size	Cat. #
3/4	FSE22

* Available in copper-free aluminum; add suffix "SA".

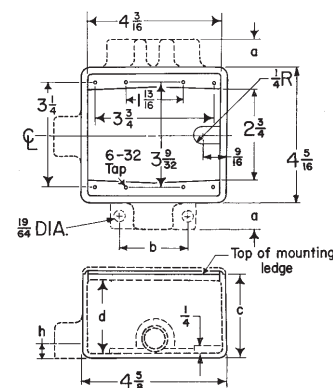
† Use single gang covers only.

Dimensions

Two gang tandem



Two gang



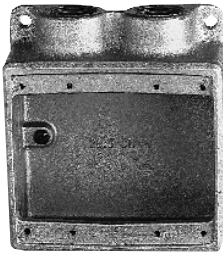
Two gang tandem

Series	Hub Size	a	d	e
FS	1/2	7/8	5/8	1 1/4
	3/4	7/8	3/4	1 1/2

Two gang

Series	Hub Size	a	b	c	d	h
FS	1/2	7/8	2 1/4	1 7/8	1 11/16	5/8
	3/4	7/8	2 1/4	1 7/8	1 11/16	3/4
	1	1	2 1/2	1 7/8	1 11/16	7/8
FD	1/2	7/8	2 1/4	2 11/16	2 1/2	5/8
	3/4	7/8	2 1/4	2 11/16	2 1/2	3/4
	1	1	2 1/2	2 11/16	2 1/2	7/8

With and Without Mounting Lugs for
Threaded Rigid and IMC Conduit



FSS & FDS

Two Gang

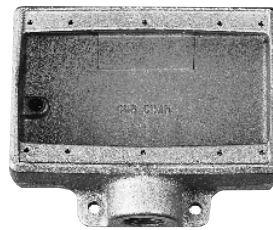
Size	Cat. #	Cat. #
3/4	FSS222	FDS222



FSD

Two Gang

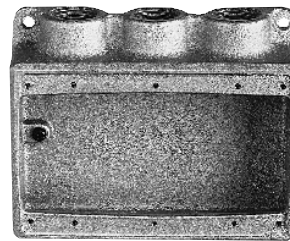
Size	Cat. #
3/4	FSD212*



FS & FD

Three Gang

Size	Cat. #	Cat. #
3/4	FS23	FD23
1	FS33	



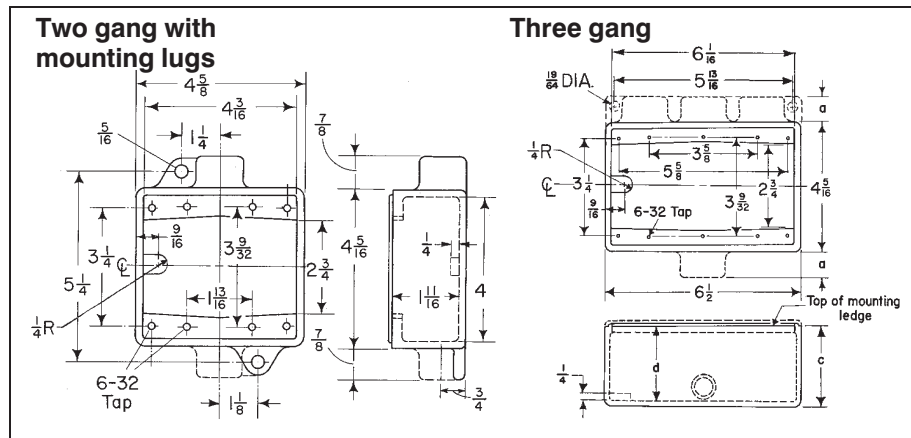
FSS

Three Gang

Size	Cat. #
3/4	FSS23

* Hubs on 2 hub side are 1/2".

Dimensions



Three gang

Series	Hub Size	a	c	d
FS	3/4	7/8	1 7/8	1 11/16
	1	1	1 7/8	1 11/16
FD	3/4	7/8	2 11/16	2 1/2

Blank Bodies With Mounting Lugs for Drilling and Tapping Single Gang, Multi-Gang, Tandem

Application:

- Blank cast device boxes are used:
- where several wiring devices are to be grouped together
- to assemble special combinations of wiring devices
- where special arrangements of conduit hubs or entrances are required

Features:

- Available in shallow (FS) or deep (FD) configurations.
- FS/FD bodies have thick walls for drilling and tapping conduit entrances.
- Internal green ground screw standard on boxes.
- Available in single, two, three, four and five gang and two gang tandem bodies.
- Cast mounting lugs at diagonally opposite corners.
- Wide selection of standard surface or flush covers listed on pages 35 to 44.

Standard Materials:

- *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint

Certifications and Compliances:

- UL Standard: 514A
- CSA Standard: C22.2 No. 18



FS019
FD019
single
gang



FS029
FD029
two gang



FS039, FD039 three gang



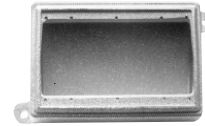
FD04 four gang



FD05 five gang



FS062
FD062
two gang



FS063
FD063
three gang



FS094
FD094
four
gang



FS097
FD097
Two gang
tandem

Ordering Information

Description	Shallow Cat. #	Deep Cat. #
Single gang	FS019	FD019*
Two gang	FS029	FD029*
Three gang	FS039	FD039*
Four gang		FD04
Five gang		FD05
Two gang (takes one two gang cover)	FS062	FD062
Three gang (takes one three gang cover)	FS063	FD063
Four gang (takes one four gang cover)	FS094	FD094
Two gang tandem	FS097	FD097

* Available in copper-free aluminum. To order add suffix SA to Cat. No.

Blank Bodies for Drilling and Tapping Ordering Information

Ordering Information:

To order one of the blank bodies with drilled and tapped holes listed on page 31, proceed as follows:

Step 1

Select the required box.

Step 2

Select the arrangement that meets the requirements from Table 1.

Step 3

Determine the maximum size and spacing of conduit openings from Table 2.

Step 4

Substitute the appropriate symbol from Table 4 for each conduit entrance, using "0" (zero) for those locations on arrangement where an entrance is not required.

Example:

Step 1 – box required FS062

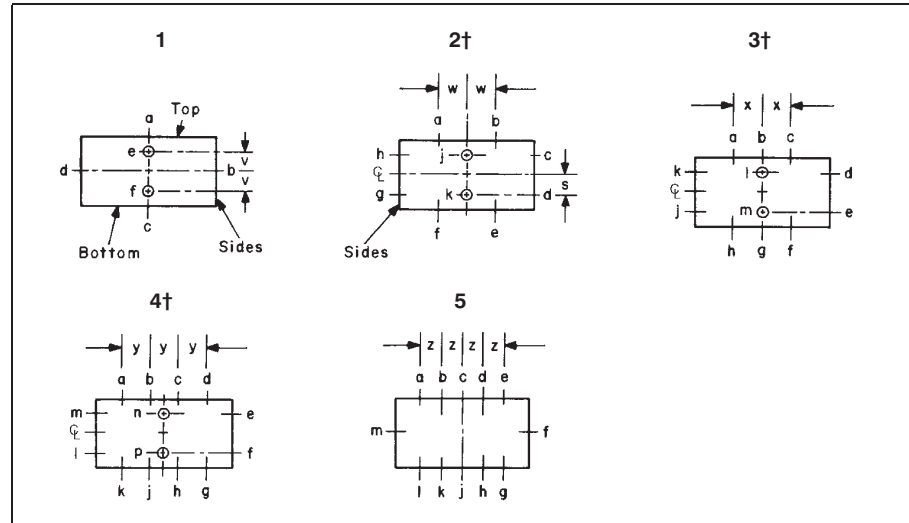
Step 2 – arrangement 1

Step 3 – conduit entrances – ½" at "a", none at "b"; 1" at "c" and "d"; none at "e" and "f".

Step 4 – symbols are substituted and written in **alphabetical order starting with location "a"**. For this example **A0CC00**.

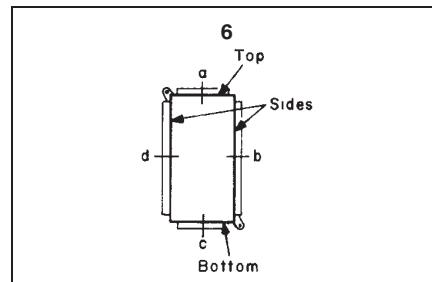
Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit entrances. For this example: **FS062-1-A0CC00**.

Table 1/Drilling and Tapping Arrangements*
Two, Three, Four and Five Gang

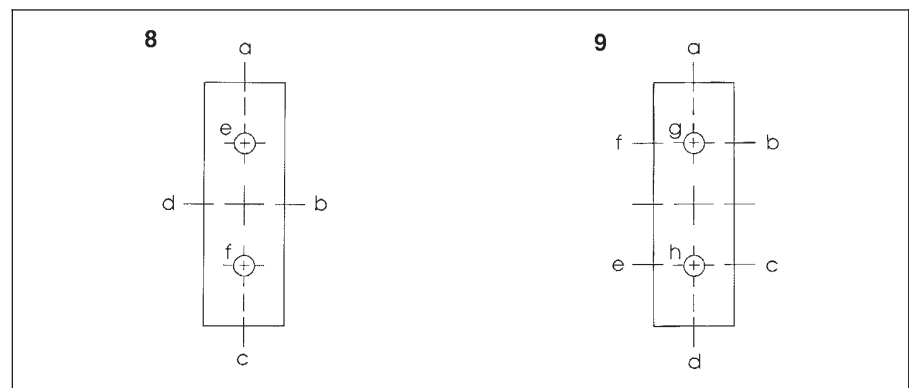


† If only one conduit entry is specified or permitted (see Table 2) on a side wall that conduit entry will be centered on the wall.

Single Gang Only (FS or FD019)



Two Gang Tandem (FS or FD097)



* Drilling and tapping arrangements other than those in Table 1 are available. Consult Cooper Crouse-Hinds.

Blank Bodies for Drilling and Tapping Ordering Information

Table 2/Maximum Number, Size and Spacing of Conduit Openings

Cat. #	Maximum Conduit Opening Size					Sides		Back	Spacings					
	Top and Bottom					1	2	2	s	v	w	x	y	z
FS019	1					1								
FD019	1½					1½								
FS029	1	1	1	¾		1					1⅞	1⅞	1⅝	
FD029	1½	1½	1	¾		1½					1⅞	1⅞	1⅝	
FS039	1	1	1	1	1	1					3¾	3¾	2½	1⅞
FD039	1½	1½	1½	1½	1	1½					3¾	3¾	2½	1⅞
FD04	1½	1½	1½	1½		1½	1	1		1⅜	1⅞	3¾	3¾	
FD05	1½	1½	1½	1½	1½	1½	1	1		1⅜	3¾	3¾	3¾	3¾
FS062	1	1	¾			1	1	1		1¼	29/32	1⅝		
FD062	1½	1¼	¾			1½	1	1¼	1	1	1	1⅝		
FS063	1	1	1	¾		1	1	1		1¼	1⅜	1⅜	1⅝	
FD063	1½	1¼	1	¾		1½	1	1¼	1	1	1⅜	2	1⅝	
FS094	1	1	1	1	¾	1	1	1		1¼	1⅜	1⅜	1⅜	1⅝
FD094	1½	1½	1½	1	¾	1½	1	1		1⅞	1½	2⅝	1⅜	1⅝
FS097	1	½				1	1	1½		1⅝	¾			
FD097	1½	1½				1½	1½	1½		1⅝	¾			

Table 3/Distance From Mounting Surface to Centerline of Conduit Opening ("u")

Cat. #	u
FS019	29/32
FD019	1⅜
FS029	29/32
FD029	1⅜
FS039	31/32
FD039	1⅜
FD04	1⅜
FD05	1⅜
FS062	1⅝
FD062	1⅝
FS063	1⅝
FD063	1⅝
FS094	1⅝
FD094	1⅜
FS097	1⅝
FD097	1⅜

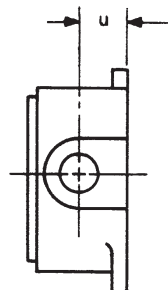
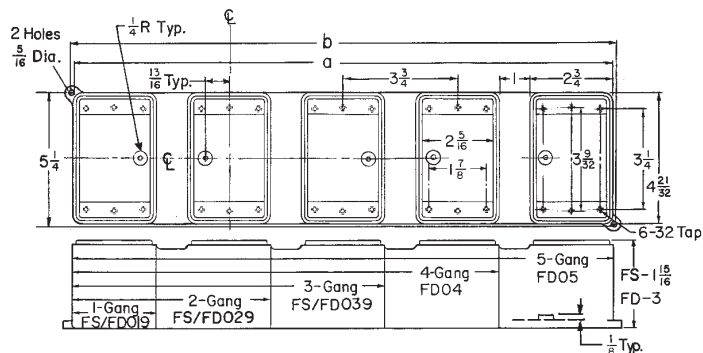


Table 4/Symbols for Openings

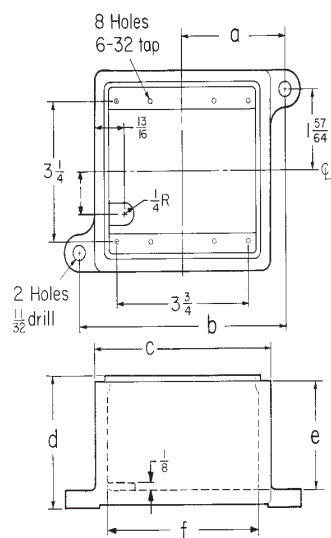
Conduit Size	Symbol
½	A
¾	B
1	C
1¼	E
1½	F
None	0

Dimensions



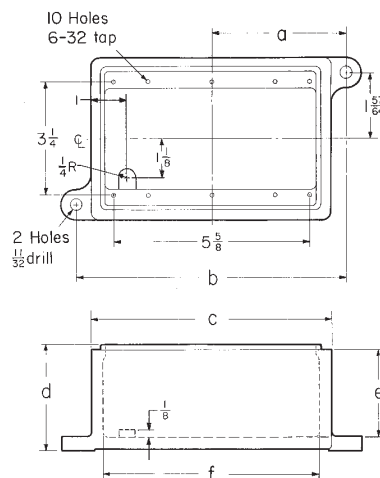
	a	b
FS/FD019	3 1/4	3 1/4
FS/FD029	7	7
FS/FD039	10 3/4	10 3/4
FD04	14 3/8	15
FD05	18 1/8	18 3/4

FS/FD062



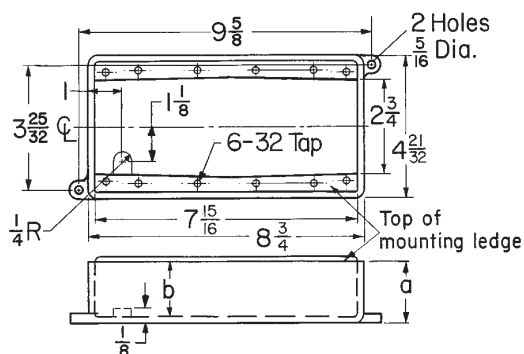
	a	b	c	d	e	f
FS062	2 7/8	5 3/4	5	2 3/16	1 1/2	4 3/8
FD062	2 15/16	5 7/8	5 1/16	3 1/16	2 1/2	4 5/16

FS/FD063



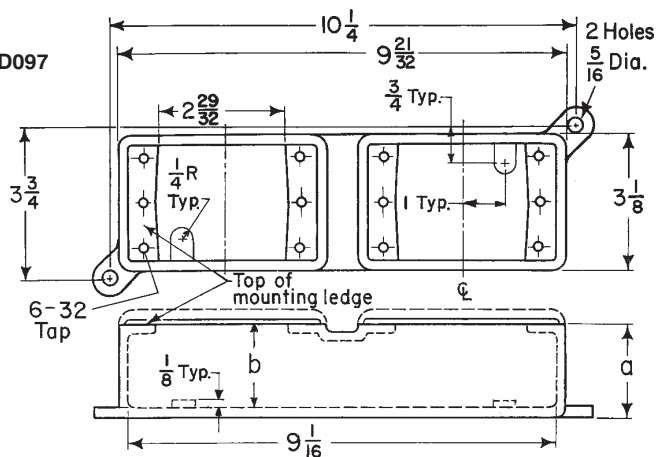
	a	b	c	d	e	f
FS063	3 13/16	7 5/8	6 7/8	2 3/16	1 1/2	6 1/4
FD063	3 7/8	7 1/4	7 1/16	3 1/32	2 1/2	6 3/16

FS/FD094



	a	b
FS094	2 3/16	1 45/64
FD094	3	2 1/2

FS/FD097



	a	b
FS097	2 1/32	1 1/2
FD097	2 27/32	2 9/16

WLRS and WLRD Wet Location Covers

3F

For NEMA Configuration Receptacle Interiors
For FS and FD Cast Device Boxes
Flush Device Boxes

Application:

WLRS and WLRD series wiring device covers are designed to meet the total NEMA requirements for wet locations – Article 410-57:

“A receptacle installed in a wet location where the product intended to be plugged into it is not attended while in use shall have an enclosure that is weatherproof with the attachment plug cap inserted or removed.”

WLRS and WLRD series covers are suitable for use in wet and damp locations:

- wherever portable equipment is required
- as general purpose utility receptacle covers
- for industrial, commercial or residential use
- in areas where electrical requirements do not exceed medium duty ratings
- to mount FS and FD single-gang or multi-gang boxes having individual cover openings (see Sect. 3F for listings)
- to mount on most flush device boxes (see Accessories)

Features:

WLRS and WLRD covers:

- self closing spring door assures protection of wiring device at all times, in wet and damp locations
- one piece EPDM gasket provides environmental protection of wiring device at all times
- EPDM gasketing material offers excellent resistance to ozone, weather and temperature extremes of -50°F to 260°F
- die cast, copper-free aluminum construction with aluminum lacquer finish provides maximum corrosion resistance
- positive ground path ensured for all exposed metal parts

NEMA configuration receptacle interiors:

- comply with NEMA Standards WD-1 and WD-5
- grounded through an extra contact in all types except 3-phase applications; self grounded in duplex variety
- back and side wired
- offered in single and duplex configurations for use with standard plugs
- specification grade

Standard Materials:

- WLRS and WLRD face plate and cover – die cast copper-free aluminum
- Cover hinge spring – stainless steel
- Cover screws – corrosion resistant metal
- Gasket – ethylene propylene rubber (EPDM)

Standard Finishes:

- Copper-free aluminum – aluminum lacquer

Electrical Rating Ranges:

- 15 amperes; 125, 250, or 277 volts
- 20 and 30 amperes; 125, 250, 277, 480, 600, 125/250, 208/120, 480/277 or 600/347 volts

Accessories:

Flush mounting adapter – **WLRA-1** required for mounting on device boxes. (Order separately)

Certifications and Compliances:

- ANSI/UL Standard 514A
- NEMA 410-57
- OSHA Standards, Subpart “S”
- NEMA Standards WD-1, 1974 (Straight Blade) and WD-5, 1972 (Locking Type)



Typical installation

Spring Door Covers – with Gasket*



Description
Cat. #

Single cover
WLRS-1
WLRD-2

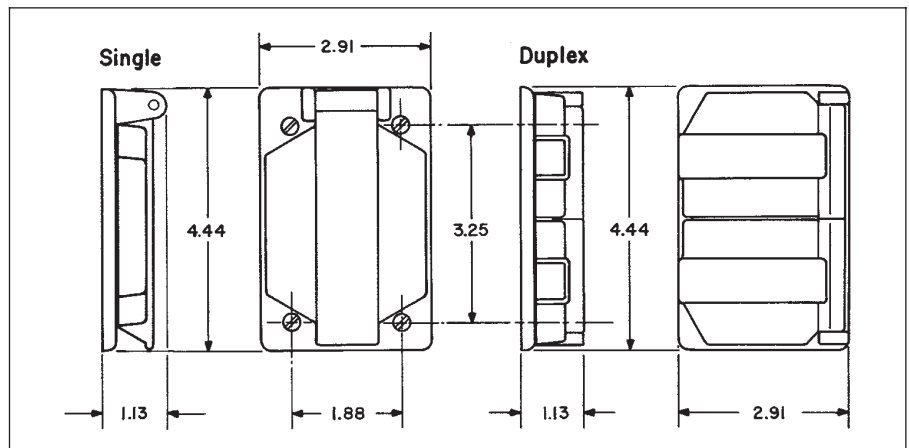
Diameter
1 3/8"
1 1/2"

Duplex cover
WLRD-1†

Diameter
1 3/8"

* Patent Number 4,058,358

Dimensions



† Horizontal mount only.

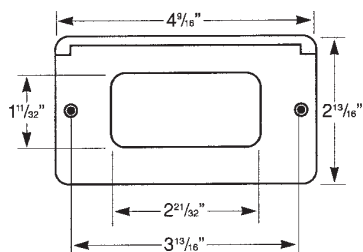
Covers with and without NEMA Configuration Receptacles

Single Device					Duplex Device				
Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #†	Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #†
For Non-Locking Blade Plugs									
2-Pole 3-Wire Grounding 15 Amp	125V	 5-15R	WLRS-5-15	WLRS-1	2-Pole 3-Wire Grounding 15 Amp	125V	 5-15R	WLRD-5-15	WLRD-1
	250V	 6-15R	WLRS-6-15	WLRS-1		250V	 6-15R	WLRD-6-15	WLRD-1
2-Pole 3-Wire Grounding 20 Amp	125V	 5-20R	WLRS-5-20	WLRS-1	2-Pole 3-Wire Grounding 20 Amp	125V	 5-20R	WLRD-5-20	WLRD-1
	250V	 6-20R	WLRS-6-20	WLRS-1		250V	 6-20R	WLRD-6-20	WLRD-1
For Locking Blade Plugs									
2-Pole 3-Wire Grounding 15 Amp	125V	 L5-15R	WLRS-L5-15	WLRS-1	2-Pole 3-Wire Grounding 15 Amp	125V	 L5-15R	WLRD-L5-15	WLRD-1
	250V	 L6-15R	WLRS-L6-15	WLRS-1					
2-Pole 3-Wire Grounding 20 Amp	125V	 L5-20R	WLRS-L5-20	WLRS-2					
	250V	 L6-20R	WLRS-L6-20	WLRS-2					

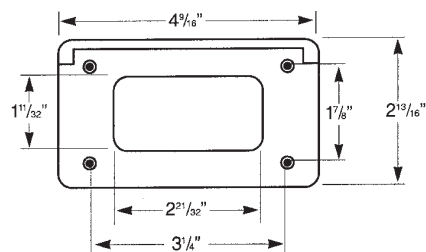
Wet Location Covers for GFCI Duplex Receptacles



Cat. No. **Description**
WLGF For Flush Device Boxes Spring Door Cover & Gasket Only
 Cat # WLGF



Cat. No. **Description**
WLGF-FS For FS and FD Cast Device Boxes Spring Door Cover & Gasket Only
 Cat. # WLGF-FS



† Must be used with a wet locations rated wiring device.

Application:

WP plugs and DS receptacles are used:

- wherever dust, dirt, moisture and corrosion are a problem
- outdoors or in locations where frequent washdowns occur, as in dairies and food processing plants

Features:

DS receptacle housings are used:

- with FS and FD cast device boxes, either surface mounted or installed flush in a wall
- with single gang, two gang tandem and multiple gang boxes having individual cover openings
- a threaded cap which effectively seals housing when not in use

WP plugs include:

- a molded Neoprene hood with integral sleeve to seal the cord entrance
- an aluminum ring which clamps the hood to receptacle housing face, to complete watertight seal when plug is in use

Standard Materials:

- Receptacle housings: body – *Feraloy*® iron alloy cap – copper-free aluminum
- Plug exteriors: hood – Neoprene; fastening ring – copper-free aluminum

Standard Finishes:

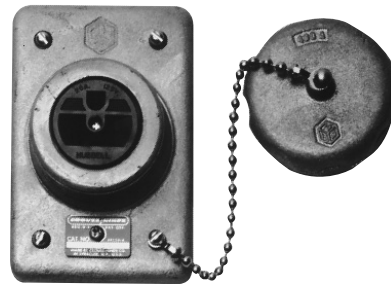
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Neoprene – natural (black or yellow)

Electrical Rating Ranges:

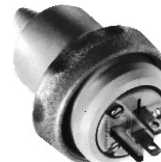
- 15 amperes, 125 volts
- 20 amperes, 125, 250 volts

Certifications and Compliances:

- UL Standards: 498; 514A
- NEMA/EEMAC: WD-1; WD-5
- CSA Standard: C22.2 No. 42*



DS Receptacle housings



WP Plugs



CC Replacement receptacle

Grounding Type Receptacles For Plugs with U shaped or Round Grounding Contacts

Rating	Cover With Recept. Cat. #	Diagram	Style	Plug Cat. #	Diagram	Cord Dia.	Repl. Recept. Cat. #
15 amps 125 volts	DS96*		2-wire, 3-pole†	WP820		.500 to .625	CC55
		NEMA: 5-15R			NEMA: 5-15P		
20 amps, 125 volts	DS222		2-wire, 3-pole†	WP832		.500 to .625	CC71
		NEMA: 5-20R			NEMA: 5-20P		
20 amps, 250 volts	DS290		2-wire, 3-pole†	WP930		.500 to .625	CC90
		NEMA: 6-20R			NEMA: 6-20P		

NOTE: For listing of typical FS cast devices boxes, see pages 22 and 23

† Third pole grounded.

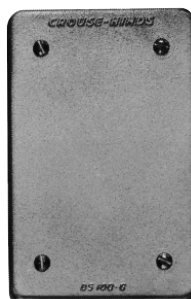
* Compliance.

For FS and FD Condulet® Cast Device Boxes Single Gang



Blank cover for enclosing splices and taps where device not used

Description	Material	Cat. #
Surface	Sheet aluminum	DS100
Flush	Sheet steel	DSS100



Blank cover with gasket for enclosing splices and taps where device not used

Description	Material	Cat. #
Surface or flush	Cast aluminum	DS100G



DS21



DS21G

For standard and 3-pole, 2-wire grounding type round flush receptacles. Opening diameter 1 $\frac{7}{16}$ ".

Description	Material	Cat. #
Surface	Sheet steel	DS21
Surface	Sheet aluminum	DS21-SA
Surface or flush	Feraloy® iron alloy with gasket	DS21G



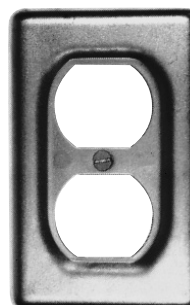
For GFI receptacles.

Description	Material	Cat. #
Surface	Sheet steel	DS23-GFI



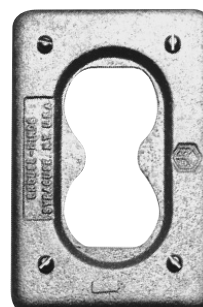
For flush plug receptacle requiring 1 $\frac{5}{8}$ " opening diameter.

Description	Material	Cat. #
Surface	Sheet steel	DS35



For duplex convenience receptacles.

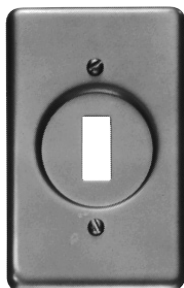
Description	Material	Cat. #
Surface	Sheet steel	DS23
Surface	Sheet aluminum	DS23-SA
Flush	Sheet steel	DSS23



For standard and 3-pole, 2-wire grounding type duplex convenience receptacles. Gasket included.

Description	Material	Cat. #
Surface or flush	Feraloy® iron alloy	DS23G

For FS and FD Condulet® Cast Device Boxes Single Gang



For square handle general use snap or toggle switches – unguarded.

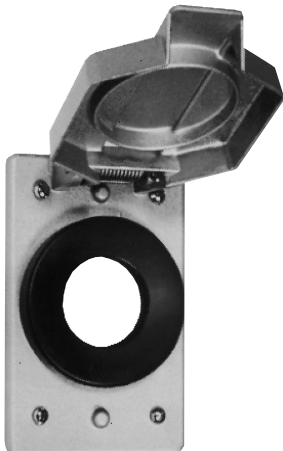
Description	Material	Cat. #
Surface	Sheet steel	DS32
Surface	Sheet aluminum	DS32-SA



For square handle general use snap or toggle switches – guarded.

Description	Material	Cat. #
Surface or flush	Feraloy® iron alloy with gasket	DS32G
Surface	Sheet steel	DS52

WLRS and WLRD Wet Locations Covers† For NEMA Configuration Receptacles*



For single convenience receptacles

Spring door with gasket

WLRS-1 cover takes 15 and 20 ampere non-locking type and 15 ampere locking type receptacles*

WLRS-2 cover takes 20 ampere locking type receptacles*

Description	Material	Cat. #
Surface	Die cast aluminum	WLRS-1 WLRS-2

Use WLRA-1 adapter for mounting on flush device boxes



For duplex convenience receptacles*

Spring doors with gasket

WLRD-1 cover takes 15 and 20 ampere non-locking type and 15 ampere locking type receptacles*

Description	Material	Cat. #
Surface	Die cast aluminum	WLRD-1

Use WLRA-1 adapter for mounting on flush device boxes.

Flush Device Adapter



Adapter plate for mounting WLRS/WLRD covers to flush device boxes.

Cat. #
WLRA-1

Also can be used to mount all covers with four corner screws listed on pages 35 to 42 to flush device boxes.

† Must be used with a wet locations rated wiring device.

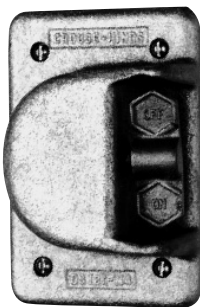
* Refer to pages 37 and 38 for receptacle specifications and listings of complete receptacle/cover combinations.

3F Raintight Covers (Gasket Included)

For FS and FD Condulet® Cast Device Boxes Single Gang

Cast Device Boxes

3F



For general use snap switches. Includes gasket.

Description	Material	Cat. #
For standard ON-OFF operation	Copper-free aluminum	DS181



For general use snap switches. Includes gasket.

Description	Material	Cat. #
For standard ON-OFF operation. With hole for lock	Die cast aluminum	DS185



For general use snap switches. Includes gasket.

Description	Material	Cat. #
For standard operation. Marked ON-OFF handle	Cast aluminum	DS128

Switches and Motor Control Push Button Covers

Raintight

3F

3F Cast Device Boxes

For FS and FD Condulet® Cast Device Boxes
Single Gang



For manual motor starting switches. Fits FS and FD boxes. Takes Westinghouse switches MST01 (1-pole) and MST02 (2-pole). Includes gasket.

Description	Material	Cat. #
For standard ON-OFF operation	Feraloy iron alloy	DS199



Furnished with buttons for operating motor control push button switches. Includes gasket.

Push Buttons				
Description	No.	Color	Material	Cat. #
Button (normally open) marked START	1	Green	Feraloy iron alloy	DS171F
Button (normally closed) marked STOP	1	Red	Feraloy iron alloy	DS171G
Button (normally open) marked START and button (normally closed) marked STOP	1	Green	Feraloy iron alloy	DS171
	1	Red		

Description	No.	Color	Material	Cat. #
Two push button	2	Black	Feraloy iron alloy	DS171J

NOTE: Markings other than shown can be supplied. Standard markings available are as follows:

HAND	CLOSE	OFF	AUTO.	UP	RUN
EMER.	DOWN	JOG	FORWARD	START	RESET
REVERSE	STOP	TRIP	OPEN	ON	TEST
LGT. ON					



Heavy duty motor control push button switch

No. of Buttons	Normal Positions		Cat. #
1	1 circuit universal		ED11
2	2 circuits universal		ED12

DS Covers use the switches shown in the list below.

Cover	Takes Switch	Cover	Takes Switch
DS171	ED12	DS171F	ED11
DS171G	ED11	DS266	ED12
DS265	ED11		



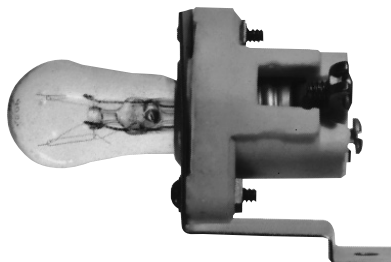
For pilot light units (furnished with jewels)

Description	Material	Jewel Color	Cat. #
Surface	Sheet steel	Red	DS24



For pilot light units (furnished with jewel and gasket).

Description	Material	Jewel Color	Cat. #
Surface or flush	Feraloy iron alloy	Red	DS24G



Pilot light unit (without transformer)

Circuit Voltage	Lamp Base	Watts	Cat. #
110	Candelabra	6	C3310



Pilot light (with transformer) †, FD only

Circuit Voltage	Lamp Base	Watts	Cat. #
440	Candelabra	6	C333



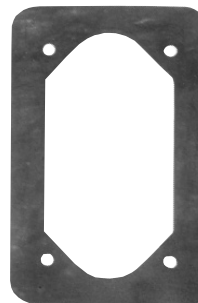
EXF Extensions (takes covers and flush rectangular wiring devices, or plug receptacles with housings)

Ext. Depth	Cat. #
1	EXF11
2½	EXF21



FS Flush mounting adapter (can be used with multi-gang bodies having individual cover openings. Furnished with gasket and screws)

Mtg. Style	Cat. #
Wall	FS031



Gaskets for use between device boxes and covers.

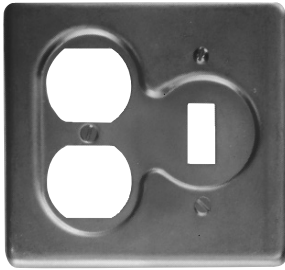
Material	Cat. #
Neoprene	GASK91 ‡

† Transformer 50-60 cycle, 440/110 volts.

‡ Not recommended as watertight.

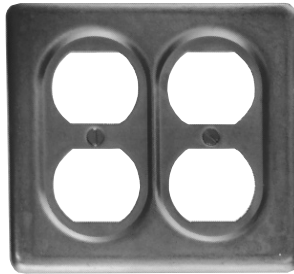
Covers

For FS and FD Condulet® Cast Device Boxes Two Gang



For flush general use snap switches with square handles

Description	Material	Cat. #
For standard duplex flush receptacles. Surface	Sheet steel	S32232



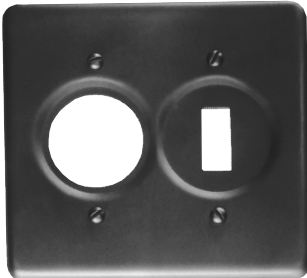
For duplex convenience receptacles, standard and 2-wire, 3-pole grounding

Description	Material	Cat. #
Surface	Sheet steel	S232



Blank. *Feraloy*® iron alloy

Description	Material	Cat. #
Surface	Sheet steel	S1002
Surface or flush	<i>Feraloy</i> iron alloy	S1002G*
Surface or flush	Copper-free aluminum	S1002G-SA



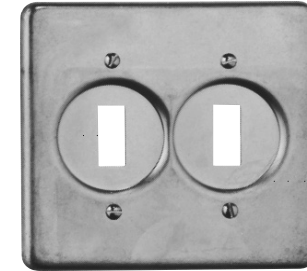
For flush general use snap switches with square handles

Description	Material	Cat. #
For round plug flush receptacles. Surface	Sheet steel	S32212



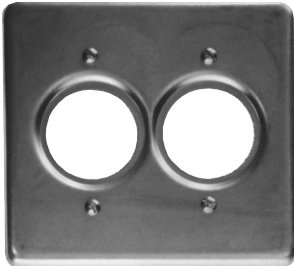
For GFI receptacles

Description	Material	Cat. #
Surface	Sheet steel	S232-GFI



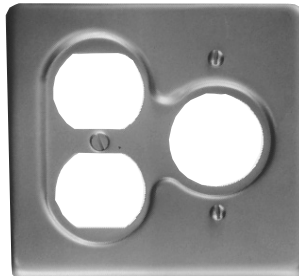
For flush general use snap switches with square handles

Description	Material	Cat. #
Surface	Sheet steel	S322



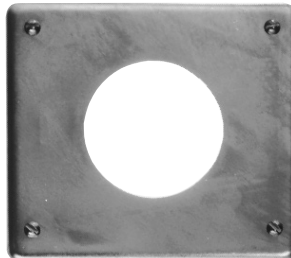
For standard and 2-wire, 3-pole grounding †

Description	Material	Cat. #
For round flush receptacles. Surface	Sheet steel	S212



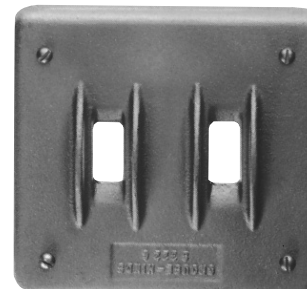
For round flush receptacles, duplex convenience receptacles, standard and 2-wire, 3-pole grounding

Description	Material	Cat. #
Surface	Sheet steel	S21232



For 20 amp., 250 volt receptacles

Description	Material	Cat. #
2-pole, ‡ Surface	Sheet steel	S612



For flush general use snap switches with square handles

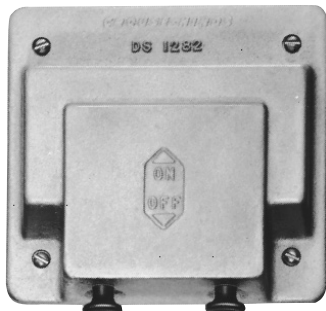
Description	Material	Cat. #
Surface or flush	<i>Feraloy</i> iron alloy	S322G

* Includes gasket.

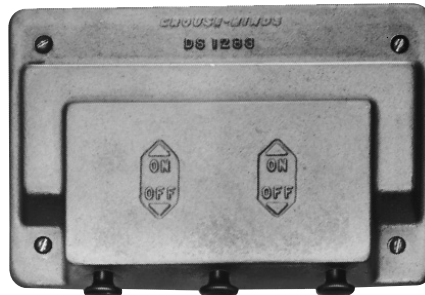
★ Hole diameter 1.688".

† Hole diameter 1.406".

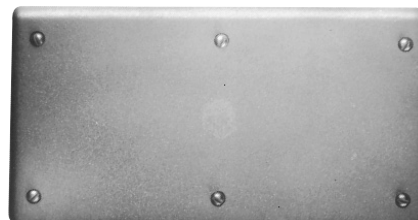
‡ Hole diameter 2 5/32".

**With operating mechanism and gasket**

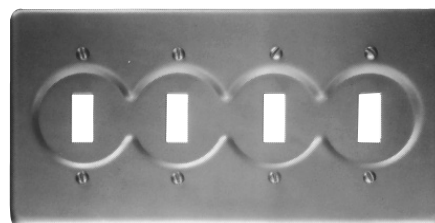
Description	Material	Cat. #
Two gang. For operation of general use snap switches. Surface or flush	Feraloy® iron alloy	DS1282*



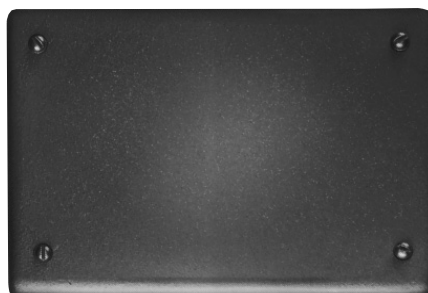
Description	Material	Cat. #
Three gang with gasket. For external operation of general use snap switches. Surface or flush. Includes gasket.	Feraloy iron alloy	DS1283*

**Blank. With gasket**

Description	Material	Cat. #
Surface or flush	Feraloy iron alloy	S1004G

**For flush general use snap switches with square handles**

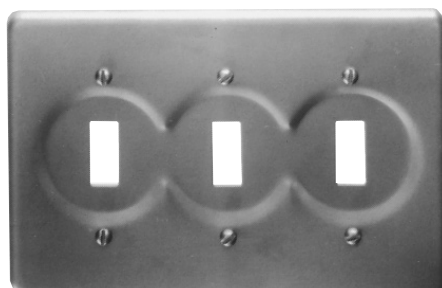
Description	Material	Cat. #
Surface, four gang†	Sheet steel	S324

**Blank.**

Description	Material	Cat. #
Surface	Sheet steel	S1003
Surface or flush	Feraloy iron alloy	S1003G*
Surface or flush	Copper-free aluminum	S1003G-SA

**Gasket for use between device box and cover**

Description	Material	Cat. #
Two gang	Rubber	GASK434
Three gang	Rubber	GASK460
Four gang	Rubber	GASK461

**For flush general use snap switches with square handles**

Description	Material	Cat. #
Surface, three gang	Sheet steel	S323

† For FS094 and FD094 boxes.

* Includes gasket.

Application:

FSE series assemblies are used in outdoor areas for supplying power in remote locations, particularly parking lots, automobile engine block heaters, marinas, drive-in theatres, trailer camps etc.

Features:

- Compact design.
- Suitable for a variety of combinations.
- U ground duplex receptacle.
- Circuit breaker protection.
- Breakers cannot be manually tripped.

Size:

- 2" integral hub for pole mounting.

Standard Materials:

- Body and cover – copper-free aluminum

Standard Finishes:

- Copper-free aluminum – natural

Electrical Ratings:

- 15A 120V

Certifications and Complies:

- CSA Standard C22.2 No. 18



FSE 6121



FSE 612

Cat.

FSE 612
FSE 6121
FSE 6122
FSE 61212

FSE 61211

Description

Double face receptacle body only
Fitting complete with 1-15 amp. duplex receptacle and blank cover.
Fitting complete with 2-15 amp. duplex receptacles.
Fitting complete with 1-15 amp. duplex receptacle and two 1- pole Mini-breakers
Fitting complete with 1-15 amp. duplex receptacle and one 1- pole Mini-breaker.
Other combinations available on request.

Notes Page

[illegible]

Description	Page No.
Application/Selection	48, 49
Lubricants	
HTL	59
STL	59
Conduit Bodies & Outlet Boxes	
Cylindrical	
EKC	57
90° Elbow	
LBH	58
LBY	58
Rectangular	
OE	56
Round	
CPS	55
GUA	50-52
EAB	53
EAJ	54
GUR Universal	60
Tees	
Short Radius	
ET	58

Application:

Hazardous area conduit bodies and outlet boxes are installed in rigid conduit systems in Class I and II hazardous locations to:

- protect conductors
- act as pull and splice boxes
- connect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes
- act as mounting outlets for fixtures (with appropriate covers)
- act as sealing fittings (with appropriate covers)

Considerations for Selection:

- Determine the area classification per National Electrical Code Hazardous Area Groups. Based on this classification, select the product families that are acceptable for use in the particular location.
- Establish functional physical requirements – these will help to determine box size, cover, shape and mounting for the particular installation.
- Each product family has features suitable for specific functions:
 - i.e., boxes used as mountings for lighting fixtures are generally of a small size, and provided with mounting lugs when required to support lighting fixtures.
 - Boxes used for wire pulling should generally be larger to provide room for easy pulling.
 - Boxes used to splice and/or tap conductors should be large enough to permit ease of work and sufficient room for the required size and number of conductors.
 - Hub size and configuration – dependent on the conduit system configuration and the conduit size used.
 - Material and finish – determine from environmental conditions (corrosive fumes, weather, buried in concrete, etc.)

Options and Accessories:

- Flat blank covers (surface and flanged flush), fixture support and sealing covers and extensions are available. See specific product listing for details.
- Lubricant (STL and HTL) are available to make joints raintight, provide for easy cover removal and to lubricate shafts over a wide temperature range.
- *Corro-free*™ epoxy powder coat – information available on request.

Quick Selector Chart

Series	NEC Class I & II Groups	Normal Function	Cover Opening Diameter	Hub Size†	Cover Type
GUA	C, D E, F, G	Mtg. lgt. fixt., taps, pulling, splicing	2-5	1/2-2	Threaded
EAJ	A, B, C, D E, F, G	Pulling, splicing, taps	3 3/16 & 5	1/2-2	Threaded
EAB	A, B, C, D E, F, G	Pulling, splicing, taps	3	1/2-1	Threaded
CPS	C, D E, F, G	Fixt. support, pulling, splicing	3 1/2	1/2 & 3/4	Ground joint
OE	C, D E, F, G	Pulling		1/2-1	Ground joint
ET	C, D E, F, G	Stub up		1/2-1	
LBY	C, D E, F, G	Pulling		1/2-1 1/4	Threaded
LBH	B, C, D E, F, G	Pulling		1/2-4	Ground joint
EKC	C, D E, F, G	Pulling		1-3	Ground joint
GUR	C, D E, F, G	Pulling, splicing		1/2-1	Threaded

† See following table for standard hub configuration.

4F Condulet® Conduit Outlet Boxes

With Covers for Threaded Rigid and IMC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

GUA series conduit outlet boxes are installed within hazardous area conduit systems to:

- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- connect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes
- act as mounting outlets for fixtures (with appropriate covers)
- act as sealing fittings (with appropriate covers)

Features:

- GUA conduit boxes have:
- Neoprene "O" ring standard to meet NEMA 4 requirements
 - Cast ears on cover to permit easy removal and tightening
 - Internal green ground screw
 - Four standard mounting pads except for boxes with bottom hubs
 - threaded cover openings
 - ten different hub arrangements
 - taper threaded hubs to provide grounding continuity
 - smooth integral hub bushing protects conductor insulation when pulling
 - surface covers furnished with boxes
 - sealing covers, dome covers, and fixture hanger covers are available.
 - cover threads are 12 pitch.

Standard Materials:

- Bodies – *Feraloy* iron alloy
- Covers – Copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Size Ranges:

- Hub – 1/2" to 2"
- Cover opening – 2" to 5" dia.

Options:

Description

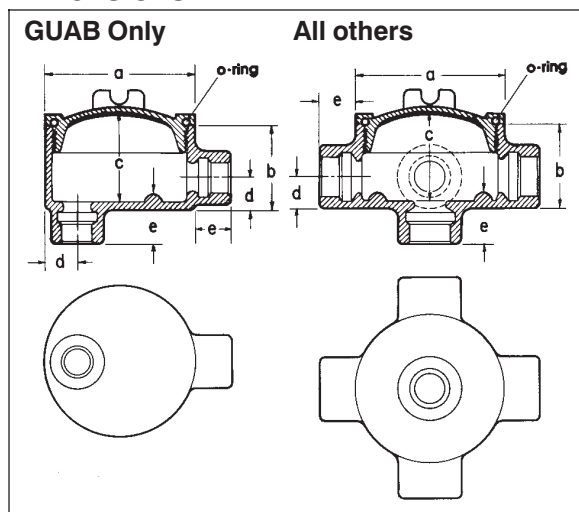
Bodies – copper-free aluminum SA†
Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint..... WOD
• GUA Form 6 (with 3" cover opening) are available with optional cover with viewing window..... -VW
Corro-free epoxy powder coat S752
To order box less cover add "0" to end of catalog number ie.GUAT260.

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- ANSI Standard: C33.27
- CSA Standard: C22.2 No. 30
- NEMA/EEMAC 3,4

NOTE: When assembled with sealing type cover, GUA series outlet boxes provide adequate sealing for 40% fill in hazardous areas – Class I, Groups C,D; Class II, Groups E,F,G; and Class III. Seals can be made in either horizontal or vertical positions. Use *Chico*® "A" sealing compound or *Chico*® SpeedSeal only. Conductor splices or connections must not be made in enclosures where sealing compound is to be used per NEC.

Dimensions



Suffix to be Added to Cat. #



GUA

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUA14
3/4	2	GUA24
1/2	3	GUA16
3/4	3	GUA26*
1	3	GUA36
1 1/4	3 3/8	GUA47
1 1/2	5	GUA59



GUAC

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAC14†
3/4	2	GUAC24†
1/2	3	GUAC16*
3/4	3	GUAC26*
1	3	GUAC36*
1 1/4	3 3/8	GUAC47†
1 1/4	5	GUAC49
1 1/2	5	GUAC59†
2	5	GUAC69†



GUAB

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAB14†
3/4	2	GUAB24
1/2	3	GUAB16*
3/4	3	GUAB26*
1	3	GUAB36*
1 1/4	3 3/8	GUAB47†
1 1/2	5	GUAB59†
2	5	GUAB69†



GUAD

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAD14†
3/4	2	GUAD24
1/2	3	GUAD16
3/4	3	GUAD26†
1	3	GUAD36†
1 1/4	5	GUAD49

Length of Hub

Hub Size
1/2-3/4
1-1 1/4
1 1/2-2

Dimension "e" Length

Length
7/8
1
1 1/16

GUA, GUAD, GUAM, GUAW, GUAX

Cat. #	a	b	c	d
14	2 1/2	1 3/16	1 3/4	5/8
24	2 1/2	2	2	3/4
16	3 1/2	2	1 7/8	5/8
26	3 1/2	2	1 7/8	3/4
36	3 1/2	2 5/16	2 3/16	7/8
37	4 1/4	2 5/16	2 3/8	7/8
47	4 1/4	2 11/16	2 3/4	1 3/32
49	5 3/4	3 13/16	3 3/4	1 3/32
59	5 3/4	3 13/16	3 3/4	1 3/32
69	5 3/4	4 1/16	4	1 1/16

† Available in copper-free aluminum, add suffix -SA.

* Available in copper-free aluminum, add suffix -SA. GUA outlet boxes marked with * when ordered with suffix -SA are listed for Class I, Division 1 & 2, Groups B, C and D, Class II, Division 1, Groups E, F, G and Class III. Covers have 16 pitch threads. Replacement cover is a GUA06-GB.

Condulet® Conduit Outlet Boxes

With Covers for Threaded Rigid and IMC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4F

4F
Conduit Outlet
Boxes & Bodies



GUAL

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAL14†
3/4	2	GUAL24†
1/2	3	GUAL16*
3/4	3	GUAL26*
1	3	GUAL36*
1 1/4	3 5/8	GUAL47†
1 1/4	5	GUAL49†
1 1/2	5	GUAL59†
2	5	GUAL69†

GUAN

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAN14
3/4	2	GUAN24
1/2	3	GUAN16
3/4	3	GUAN26
1	3	GUAN36†
1 1/4	3 5/8	GUAN47
1 1/2	5	GUAN59†
2	5	GUAN69

GUAT

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAT14†
3/4	2	GUAT24†
1/2	3	GUAT16*
3/4	3	GUAT26*
1	3	GUAT36*
1	3 5/8	GUAT37
1 1/4	3 5/8	GUAT47†
1 1/4	5	GUAT49†
1 1/2	5	GUAT59†
2	5	GUAT69†

GUAX

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAX14†
3/4	2	GUAX24†
1/2	3	GUAX16*
3/4	3	GUAX26*
1	3	GUAX36*
1	3 5/8	GUAX37†
1 1/4	3 5/8	GUAX47†
1 1/4	5	GUAX49
1 1/2	5	GUAX59†
2	5	GUAX69†



GUAM

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAM14†
3/4	2	GUAM24
1/2	3	GUAM16
3/4	3	GUAM26
1	3	GUAM36
1 1/4	3 5/8	GUAM47
2	5	GUAM69

GUAW

Hub Size	Cover Opening Dia.	Cat. #
1/2	2	GUAW14†
3/4	2	GUAW24†
1/2	3	GUAW16
3/4	3	GUAL26†

Dimensions

GUAC, GUAT

Cat. #	a	b	c	d
14	2 1/2	2 1/4	2 3/16	5/8
24	2 1/2	2	2	3/4
16	3 1/2	2	1 7/8	5/8
26	3 1/2	2	1 7/8	3/4
36	3 1/2	2 5/16	2 3/16	7/8
37	4 1/4	2 9/16	2 3/8	7/8
47	4 1/4	2 11/16	2 3/4	1 3/32
49	5 3/4	3 13/16	3 3/4	1 9/32
59	5 3/4	3 13/16	3 3/4	1 9/32
69	5 3/4	4 1/16	4	1 9/16

GUAN

Cat. #	a	b	c	d
14	2 1/2	2 1/8	2 1/16	5/8
24	2 1/2	2 5/16	2 1/4	3/4
16	3 1/2	2	1 7/8	3/4
26	3 1/2	2	1 7/8	3/4
36	3 1/2	2 5/16	2 3/8	7/8
47	4 1/4	2 11/16	2 3/4	1 3/32
59	5 3/4	4 1/16	4	1 9/32
69	5 3/4	4 1/16	4	1 9/16

GUAB, GUAL

Cat. #	a	b	c	d
14	2 1/2	2 1/4	2 3/16	5/8
24	2 1/2	2 1/2	2 7/16	3/4
16	3 1/2	2	1 7/8	5/8
26	3 1/2	2	1 7/8	3/4
36	3 1/2	2 5/16	2 3/16	7/8
47	4 1/4	2 11/16	2 3/4	1 3/32
49	5 3/4	3 13/16	3 3/4	1 5/32
59	5 3/4	3 13/16	3 3/4	1 9/32
69	5 3/4	4 1/16	4	1 9/16

* Available in copper-free aluminum, add suffix -SA. GUA outlet boxes marked with * when ordered with suffix-SA are listed for Class I, Division 1&2, Groups B, C and D, Class II, Division 1, Groups E, F, G and Class III. Covers have 16 pitch threads. Replacement cover is a GUA06-GB.

† Available in copper-free aluminum, add suffix -SA.

4F Covers and Accessories

For GUA Condulet® Conduit Outlet Boxes

Application:

Threaded covers, canopies and extensions are used:

- to provide a seal in hazardous areas (sealing cover). See note at right
- to mount pendant lighting fixtures such as EVA listed in lighting section (fixture canopy)
- to mount EVA pendant lighting fixtures on cover which is then screwed into outlet box without twisting conductors (union hub cover)
- to mount pendant lighting fixtures on cover which is then screwed into outlet box as above, for wiring after fixture stem is installed (nipple cover)
- to provide means of increasing outlet box depth (threaded extension)

Features:

- Surface covers are supplied with GUA boxes
- Sealing cover has removable plug for filling enclosure with sealing compound after installation. Sealing cover meets 40% fill requirement of the NEC®. See note at right.
- Fixture canopy has a threaded cover in its side to provide access for making splices or taps. Fixture with its conduit stem and canopy can be assembled and wired before installation and conductors can be spliced in canopy after it has been screwed into the body
- Cover threads are 12 pitch.

Standard Materials:

- Surface and dome covers, union hub covers, nipple covers – copper-free aluminum
- Sealing covers, fixture canopies, threaded extensions – *Feraloy*® iron alloy

Standard Finishes:

- Aluminum – natural
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint

Options:

- *Corro-free*™ epoxy powder coat – add suffix S752
- To order an iron surface cover, add suffix – WOD ie. GUA06 – WOD.

Size Ranges:

- Fixture stems – 3/4"
 - Body openings – 2" to 5"
- NOTE: Depth of sealing compound in body must satisfy requirements of NEC section 501-5 (C-3). Splices and taps in sealing fittings are prohibited by NEC.

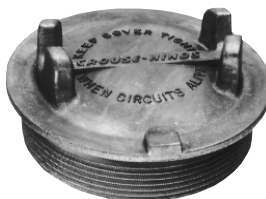


GUA Threaded Extension

Cover Opening Dia.	Ext. Depth	Cat. #
3	1 1/4	GUA0631

GUA

Cover Opening	Replacement O-Ring Gasket Cat. #
2"	GASK1713
3"	GASK1151
3 5/8"	GASK1589
5"	GASK925



Surface Cover

Cover Opening Dia.	Thread Pitch	Cat. #
2	12	GUA04
3	12	GUA06
3	16	GUA06-GB*
3 5/8	12	GUA07
5	12	GUA09



Dome Cover

Cover Opening Dia.	Ext. Depth	Thread Pitch	Cat. #
2	2	12	GUA047
3	2	12	GUA067
3 5/8	2	12	GUA077
3 5/8	4	12	GUA0716
5	4	12	GUA514
5	10	12	GUA5110



Sealing Cover

Cover Opening Dia.	Thread Pitch	Cat. #
2	12	GUA041
3	12	GUA062
3	16	GUA062-GB*
3 5/8	12	GUA072†
5	12	GUA092



Nipple Cover

Cover Opening Dia.	Fixt. Stem Size	Thread Pitch	Cat. #
3	3/4	12	GUA0672



Fixture Cover Union Hub Type

Cover Opening Dia.	Fixt. Stem Size	Thread Pitch	Cat. #
3	3/4	12	GUA0687



Fixture Canopy

Cover Opening Dia.	Fixt. Stem Size	Thread Pitch	Cat. #
3	3/4	12	GUA068

† Also used with GUP bodies on page 138 or GU and GUE bodies on page 122.

* GUA covers with 16 pitch threads are used with GUA bodies ordered with -SA suffix identified with * symbol on pages 50 and 51.

Condulet® Conduit Outlet Boxes With Covers

Cl. I, Div. 1 & 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7ABCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4F

4F
Conduit Outlet
Boxes & Bodies

Application:

EAB series conduit outlet boxes are installed in conduit systems within hazardous areas to:

- provide protection against exterior explosion where acetylene, hydrogen and other hazardous gases are present
- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- interconnect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes

Features:

EAB series conduit outlet boxes have:

- five different hub configurations
- taper threaded hubs to provide ground continuity
- smooth integral hub bushing to protect conductor insulation when pulling
- threaded cover openings
- surface covers furnished with boxes
- Neoprene "o"-ring gasket and green ground screw are both standard.
- Four standard mounting pads, except for EABY.
- Cover threads are 16 pitch.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Options:

Description

Bodies – copper-free aluminum SA†

Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint WOD

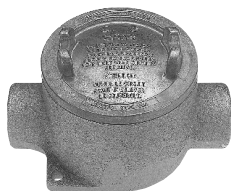
Corro-free epoxy power coat S752

Size Ranges:

- Hub – 1/2" to 1"
- Cover opening – 3" dia.

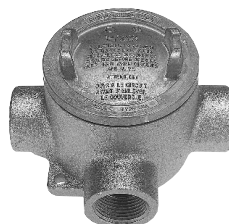
Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups A,B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



EABC

Hub Size	Cat. #
1/2	EABC16†
3/4	EABC26†
1	EABC36†



EABT

Hub Size	Cat. #
1/2	EABT16†
3/4	EABT26†
1	EABT36†



EABY

Hub Size	Cat. #
1/2	EABY16†
3/4	EABY26†



EABL

Hub Size	Cat. #
1/2	EABL16†
3/4	EABL26†
1	EABL36†



EABX

Hub Size	Cat. #
1/2	EABX16†
3/4	EABX26†
1	EABX36†

Replacement Cover:

Size	Cat. #
3"	EAB06

Replacement O-Ring:

Cat. #	GASK1151
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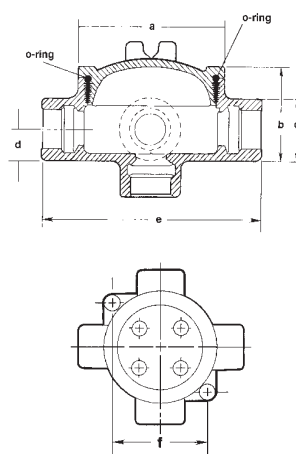


Fixture Cover: Union Hub Type

Cover Opening Dia.	Fixt. Stem Size	Cat. #
3"	3/4	EAB0687*

Dimensions

EAB Series



Cat. #	a	b	c	d	e	f
16	3/4	2 17/32	1 1/2	3/4	5 5/16	3 3/32
26	3/4	2 25/32	1 3/4	7/8	5 9/16	3 3/32
36	3/4	2 25/32	1 3/4	7/8	5 9/16	3 3/32

† Available in copper-free aluminum, add suffix -SA.

* EAB0687 is listed for Group C & D only.

Cl. I, Div. 1 & 2, Groups A†,B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3, 4, 7ABCD, 9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

EAJ series conduit outlet boxes are installed in conduit systems within hazardous areas to:

- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- interconnect lengths of conduit
- change conduit direction
- provide access to conductors for maintenance and future system changes

Features:

EAJ conduit outlet boxes have:

- water shedding cover – suitable for wet locations when mounted in upright position
- external cover threads on body protecting conductors from damage during pulling
- no pinching of conductors during cover installation
- six different hub arrangements
- taper threaded hubs to provide ground continuity
- smooth integral hub bushing to protect conductor insulation when pulling
- internally threaded cover openings for additional wiring room
- flat overlapping threaded covers furnished with boxes
- weather-resistant finish
- green ground screw standard in all boxes
- four standard mounting pads, except for EAJB and EAJD

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum

Standard Finishes:

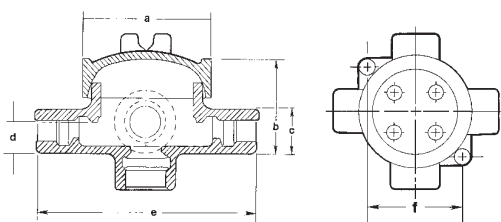
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural

Size Ranges:

- Hub – 1/2" to 2"
- Cover opening – 3/16" to 5" dia.

Dimensions

EAJ Series



Certifications and Compliances:

- NEC/CEC:
 Class I, Division 1 & 2, Groups A†,B,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

Options:

Description

Bodies – copper-free aluminum SA†

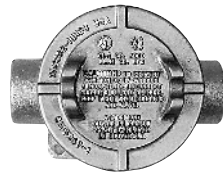
Covers – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint WOD

Corro-free epoxy power coat S752



EAJB

Cover Opening Dia.	Hub Size	Cat. #
3/16	1/2	EAJB16†
3/16	3/4	EAJB26†
3/16	1	EAJB36†



EAJC

Cover Opening Dia.	Hub Size	Cat. #
3/16	1/2	EAJC16†
3/16	3/4	EAJC26†
3/16	1	EAJC36†



EAJD

Cover Opening Dia.	Hub Size	Cat. #
3/16	1/2	EAJD16†
3/16	3/4	EAJD26†
3/16	1	EAJD36†



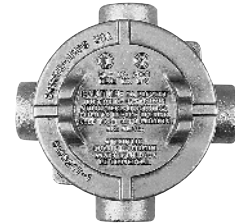
EAJL

Cover Opening Dia.	Hub Size	Cat. #
3/16	1/2	EAJL16†
3/16	3/4	EAJL26†
3/16	1	EAJL36†



EAJT

Cover Opening Dia.	Hub Size	Cat. #
3/16	1/2	EAJT16†
3/16	3/4	EAJT26†
3/16	1	EAJT36†
5	1 1/4	EAJT49†
5	1 1/2	EAJT59†
5	2	EAJT69†



EAJX

Cover Opening Dia.	Hub Size	Cat. #
3/16	1/2	EAJX16†
3/16	3/4	EAJX26†
3/16	1	EAJX36†

EAJ Threaded Covers Flat Covers

Cover Opening Diameter	Cat. #
3/16	EAJ06
5	EAJ09



Dome Covers

Cover Opening Dia.	Depth	Cat. #
3/16	2	EAJ0612



Fixture Covers Union Hub Type

Cover Opening Dia.	Fixt. Stem Size	Cat. #
3/16	3/4	EAJ0687*



Cat. #	a	b	c	d	e	f
16	3/4	2 17/32	1 1/2	3/4	5 5/16	3 3/32
26	3/4	2 25/32	1 3/4	7/8	5 9/16	3 3/32
36	3/4	2 25/32	1 3/4	7/8	5 9/16	3 3/32
49	5/4	4 1/16	2 3/16	1 3/32	7 5/16	4 3/4
59	5/4	4 1/16	3	1 1/2	7 13/16	4 3/4
69	5/4	4 1/16	3	1 1/2	7 13/16	4 3/4

* EAJ0687 is listed for Group C & D only.

† Available in copper-free aluminum, add suffix -SA.
 ‡ Form 9 products with 5" cover opening are not suitable for Group A.

Condulet® Conduit Outlet Boxes With Covers

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 7CD,9EFG

Explosionproof
Dust-Ignitionproof

4F

4F
Conduit Outlet
Boxes & Bodies

Application:

CPS series conduit outlet boxes are installed in conduit systems in hazardous areas to:

- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- change conduit direction
- interconnect lengths of conduit
- act as fixture hangers with hub covers
- provide access to conductors for maintenance and future system changes

Features:

CPS conduit outlet boxes have:

- two types of cover:
 - blank for splice or pull box use
 - threaded hub for mounting light fixtures
- wide, accurately machined body and cover mating surfaces, to insure flamtight joint
- blind tapped holes for cover screws to further insure flamtightness
- removable mounting feet for flush or surface mounting to wall or ceiling

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

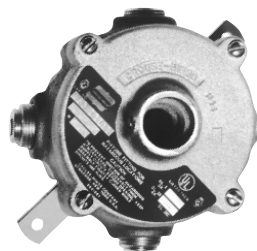
- Electrogalvanized and aluminum acrylic paint

Options:

- Corro-free™ epoxy powder coat add suffix - S752

Certifications and Complies:

- NEC/CEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard C22.2 No. 30



Box with Hub Cover

Hub Size		
Body†	Cover	Cat. #
3/4	1/2	CPS12021
3/4	3/4	CPS12022



Box with Blank Cover

Hub Size	Cat. #
3/4	CPS12026

CPS Covers



Blank Covers

Description	Cat. #
Form 20	CPS026



Hub Covers*

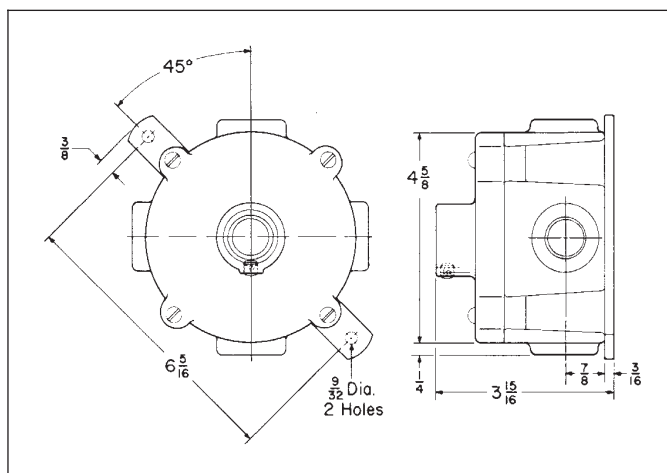
Description	Hub Size	Cat. #
Form 20	1/2	CPS021
Form 20	3/4	CPS022

* Fixture weight up to 125 lbs.

Note: complete line of fixture hangers are located in section 8L of this catalog.

† Furnished with four 3/4" standard taper tapped, integrally bushed hubs. Three hubs are plugged.

Dimensions



Application:

OE series are installed in conduit systems within hazardous areas to:

- protect conductors in threaded rigid conduit
- act as pulling and splice fittings
- interconnect lengths of conduit
- change direction of conduit
- provide access for maintenance and future system changes

Features:

- OE conduit outlet bodies have:
- taper threaded hubs for ground continuity
 - smooth integral hub bushings to protect conductor insulation when pulling
 - five different hub arrangements
 - accurately machined body with blind tapped screw holes
 - most compact design of all hazardous area outlet bodies

Standard Materials:

- Feraloy® iron alloy (1/2" and 3/4" fittings)
- Copper-free aluminum (1" fittings)

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Options:

- Corro-free™ epoxy powder coat..... add suffix - S752

Size Ranges:

- Hub – 1/2" to 1"

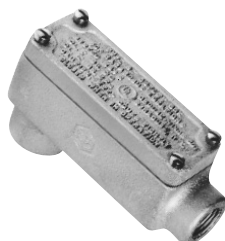
Certifications and Complies:

- NEC/CEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



OEC

Hub Size	Cat. #
1/2	OEC1
3/4	OEC2
1	OEC3-SA



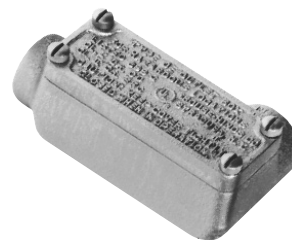
OELB

Hub Size	Cat. #
1/2	OELB1
3/4	OELB2
1	OELB3-SA



OELL

Hub Size	Cat. #
1/2	OELL1
3/4	OELL2
1	OELL3-SA



OELR

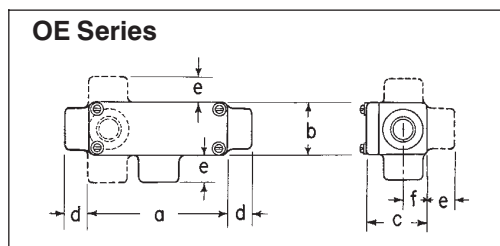
Hub Size	Cat. #
1/2	OELR1
3/4	OELR2
1	OELR3-SA



OET

Hub Size	Cat. #
1/2	OET1
3/4	OET2
1	OET3-SA

Dimensions



Hub Size	a	b	c	d	e	f
1/2	4 1/16	1 9/16	1 13/16	1 1/16	7/8	5/8
3/4	4 5/16	1 7/8	2 1/16	1 1/16	7/8	3/4

Condulet® Pull Boxes and Outlet Bodies

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 7CD,9EFG

Explosionproof
Dust-Ignitionproof

4F

4F Conduit Outlet Boxes & Bodies

Application:

EKC series conduit outlet bodies are installed in conduit systems within hazardous areas to:

- provide convenient opening in conduit system for pulling or splicing conductors

Features:

EKC bodies have:

- accurately machined body and cover mating surfaces to ensure flamtight joint when properly assembled
- extra long cover opening to facilitate pulling and splicing of conductors
- taper threaded hubs and integral bushing for rigid threaded conduit

Standard Materials:

- EKC bodies – *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint

Options:

- EKC series:
Corro-free™ epoxy powder coat
– add suffix S752

Size Ranges:

- EKC bodies – hub size – 1" to 3"

Certifications and Compliances:

- NEC:
EKC 30 – 60
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
EKC 70, 80
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

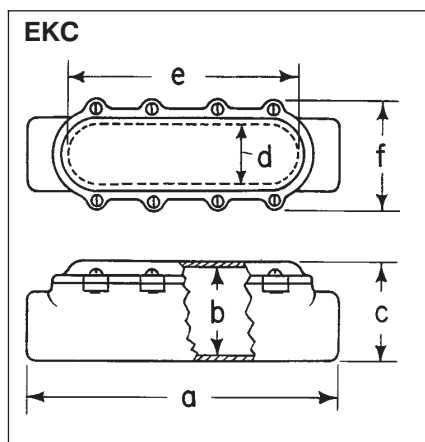


EKC

EKC Outlet Bodies

Hub Size	Cat. #
1	EKC30
1¼	EKC40
1½	EKC50
2	EKC60
2½	EKC70
3	EKC80

Dimensions



EKC

Size	a	b	c	d	e	f
1 – 1¼	12⅝	3⅛	3⅞	1¾	9	4
1½ – 2	15⅞	3⅞	4⅞	2½	12	5
2½ – 3	21¾	5½	6	3¾	16	6⅝

Cl. I, Div. 1 & 2, Groups A,B,C,D*
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 7ABCD,9EFG

Explosionproof
 Dust-Ignitionproof

Application:

LBH conduit outlet bodies are installed in hazardous areas to:

- act as pull outlets especially for conductors that are stiff due to large size or type of insulation
- make 90° bends in conduit system, allowing straight pull in either direction

- provide for conduit service entrance to buildings
- provide for conductor entrance to motors

- provide access to wiring for maintenance and future system changes

LBY elbows are installed in conduit systems within hazardous areas to:

- make 90° bends in conduit systems where space is limited
- act as pull outlets

- provide access to conductors for maintenance and future system changes

ET series short radius tees are installed in conduit systems within hazardous areas to:

- allow single conduit stub up to outlet and device boxes located above or below main conduit runs. Eliminates separate feed and return conduits

Features:

LBH bodies have:

- cover openings on an angle, permitting conductors to be pulled straight through hubs from either direction

- domed covers to permit easy conductor bends (relieves strain on insulation)
- taper threaded hubs with integral bushings

LBY elbows have:

- maximum volume for bends within a compact overall size
- screw on cover for ease of installation and removal
- cover opening on an angle, permitting conductors to be pulled straight through either hub
- taper threaded hubs and integral bushing for rigid threaded conduit

ET short radius tees have:

- compact size and small radius of bend for use in concealed, or open conduit systems. Particularly suited for use in shallow floors or partitions
- taper threaded hubs and integral bushing for rigid threaded conduit

‡ Largest hub is shown at top of photo.

Standard Materials:

- LBH, LBY and ET – *Feraloy*® iron alloy

Standard Finishes:

- LBH, LBY and ET – electrogalvanized and aluminum acrylic paint

Options:

Description	Suffix to be Added to Cat. #
LBH and LBY series – copper-free aluminum	SA
LBH and LBY series – <i>Corro-free</i> ™ epoxy powder coat	add suffix S752

Size Ranges:

- LBH bodies – hub size 1/2" to 4"
- LBY elbows – hub size 1/2" to 1 1/2"

Certifications and Compliances:

- NEC:
LBH 10-20 –
 Class I, Division 1 & 2, Groups B,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III

LBH 30-100

- Class I, Division 1 & 2, Group D
- Class II, Division 1, Groups E,F,G
- Class II, Division 2, Groups F,G
- Class III

LBY –

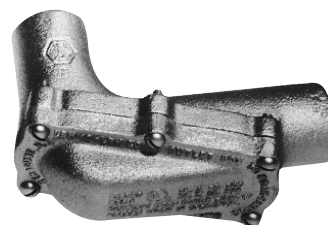
- Class I, Division 1 & 2, Groups C,D
- Class II, Division 1, Groups E,F,G
- Class II, Division 2, Groups F,G
- Class III

ET –

- Class I, Division 1 & 2, Groups A,B,C,D
- Class II, Division 1, Groups E,F,G
- Class II, Division 2, Groups F,G
- Class III

- UL Standard: 886
- CSA Standard: C22.2 No. 30

* See Compliances for classification of each product.



LBH

Size	Cat. #
1/2	LBH10
3/4	LBH20
1	LBH30
1 1/4	LBH40
1 1/2	LBH50
2	LBH60
2 1/2	LBH70
3	LBH80
3 1/2	LBH90
4	LBH100

LBY

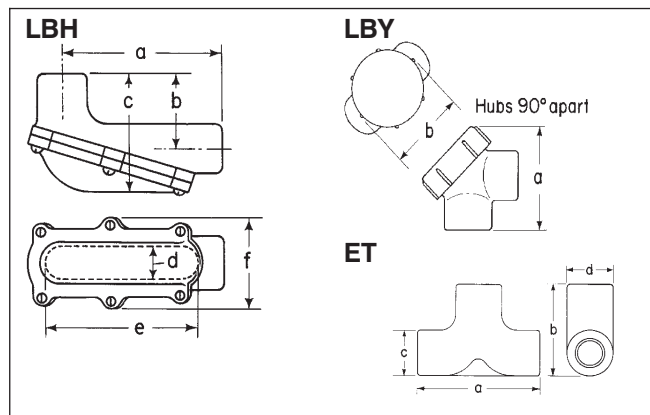
Size	Cat. #
1/2	LBY15
3/4	LBY25
1	LBY35
1 1/4	LBY45
1 1/2	LBY55



ET

Size	Cat. #
3/4-1/2-1/2‡	ET218
3/4-3/4-3/4‡	ET228
1-3/4-3/4‡	ET328

Dimensions



LBH

Size	a	b	c	d	e	f
1/2 – 3/4	5 1/16	2 19/32	4	1 3/16	4	2 3/4
1 – 1 1/4	7 7/8	3 13/32	5 1/4	1 3/4	7	4
1 1/2	10 15/16	4 1/2	7 3/32	2 1/2	10	5
2	10 21/32	4 25/32	7 3/32	2 1/2	10	5
2 1/2 – 3	15 5/8	5 1/2	9 1/2	3	15 3/4	5 5/8
3 1/2 – 4	23 9/16	6 1 1/16	11 3/4	4	24	7 1/8

LBY

Size	a	b	c	d
1/2	2 9/16	2	3/4-1/2-1/2	4
3/4	2 13/16	2 1/4	3/4-3/4-3/4	4
1	3 3/32	2 1/2	1-3/4-3/4	4
1 1/4	3 3/4	2 15/16		
1 1/2	4 1/4	3 3/8		

ET

Size	a	b	c	d
3/4-1/2-1/2	4	2 5/8	1 1/4	1 1/2
3/4-3/4-3/4	4	3	1 1/2	1 1/2
1-3/4-3/4	4	3	1 1/2	1 3/4

Application:

- STL thread lubricant is used between any screw thread and its tapped opening, on any rotating shaft – threaded or plain, and to inhibit corrosion on any metal-to-metal joint of apparatus and control enclosures.
- HTL high temperature lubricant is used on lighting fixture threaded joints and on threaded joints of the enclosures of any heat-producing apparatus or control.

Features:

STL thread lubricant is lithium based, anti-galling and:

- is especially effective between parts made of dissimilar metals
- is effective and stable from -20°F to +300°F
- **maintains grounding continuity; should not be used on exposed current-carrying parts**

● has excellent adhesion qualities
A liberal application on threaded joints maintains raintightness and inhibits corrosion.

HTL is a high temperature, anti-seize, conductive thread lubricant:

- effective and stable from -70°F to +1800°F
- prevents seizure, galling, rust, galvanic action
- maintains grounding continuity; should not be used on exposed current-carrying parts
- effective between parts made of dissimilar metals

**STL
Thread
Lubricant**

**Net
Wt.**
1 3/4 oz. (tube)
8 oz. (can)



Cat. #
STL2
STL8

**HTL
High Temperature
Thread Lubricant**

**Net
Wt.**
4 oz. (tube)

Cat. #
HTL4

MSDS Sheets are available at www.crouse-hinds.com

Cl. I, Div. 1 & 2, Groups C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,4,7CD,9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

GUR conduit outlet boxes are installed within hazardous areas:

- to protect conductors in threaded rigid conduit
- to act as pull and splice boxes
- to connect lengths of conduit
- to provide access to conductors for maintenance and future system changes
- to change conduit direction
- where space is limited, such as underneath gasoline pumps

Features:

GUR outlet boxes feature:

- neoprene O-ring standard in cover to meet NEMA 4/UL Type 4 requirements
- internal green ground screw
- five standard hubs with three pipe plugs included
- threaded cover opening
- recesses in cover to assist in cover tightening and removal
- smooth, integral hub bushing to protect conductor insulation when pulling
- compact design for confined spaces
- UL and cUL listing
- optional all-aluminum construction

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Aluminum – natural

Certifications and

Compliances:

- NEC/CEC:
 - Class I, Division 1 and 2, Groups C and D
 - Class II, Division 1, Groups E, F and G
 - Class III
 - Zone 1 and 2
- UL Standard 886
- cUL to CSA Standard C22.2 No. 30
- NEMA 4

Options:

- Bodies – copper-free aluminum (add suffix -SA)

Ordering Information

Hub Size

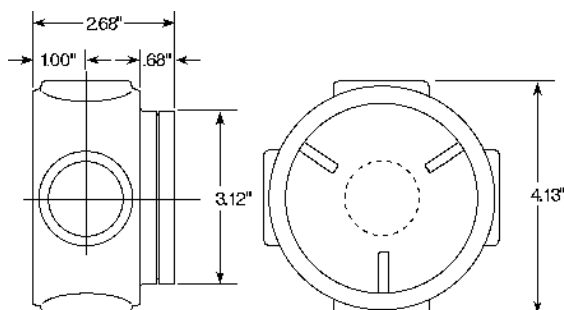
1/2"
 3/4"
 1"

Cat.

GUR1
 GUR2
 GUR3



Dimensions



Description	Page No.	Description	Page No.
Application/Selection	62, 63	Cable Tray Clamps	
Cable/Conduit Sealing Devices		Conduit	
Thru-Wall Barrier®		LCC, LCCF Series	99
TW Series	101-106	Grounding Conductor	
Link Seal – For Conduit		TGC Series	100
Environmental Seal	107, 108, 110	Cord and Cable Fittings	
Fire Seal	107, 109, 110	Straight Body, Male Thread	
Cable Fittings		CGB Series	64-66, 72
Metal Clad and Tray Cable		CGFP Series	73
TMC, TMCX Series	74, 75	NCG Series	67
Teck Cable		Straight Body, Male Thread, Sealing	
TECK Series	76, 77	CGB-SG Series	68, 69
Steel Wire Armour		45° Angle Body, Male Thread	
TWDC Series	78, 79	CGD Series	70
CAPRI Series	94, 95	90° Angle Body, Male Thread	
TAB Series	80, 81	CGE Series	71
TAS Series	80, 81	Cord Fittings	
TACFB Series	82, 83	Portable Cord	
TACFS Series	82, 83	EBY Series	97
Unarmoured Cable		Sealing	
TUSC Series	84, 85	CGBS Series	98
TUCFB Series	86, 87	Brass Accessories	
TUCFS Series	86, 87	Locknuts, Earth Tags, Sealing	
Steel Wire Braid		Washers, PVC Shrouds	92, 93
TBDC Series	78, 79	Non Hazardous Drain	96
TUSC Series	84, 85	NEMA 4X Breather/Drain	90
CAPRI Series	94, 95		
TAB Series	80, 81		
TAS Series	80, 81		
TACFB Series	82, 83		
TACFS Series	82, 83		
Steel Tape			
CAPRI Series	94, 95		
TAB Series	80, 81		
TAS Series	80, 81		
TACFB Series	82, 83		
TACFS Series	82, 83		
Conduit Fitting			
TCCF Series	88, 89		

Application:

Cord and cable fittings are installed to:

- provide means for passing a cord, cable (armored or unarmored) or flexible conduit into an enclosure, through a bulkhead or into a rigid conduit
- form a mechanical grip and water and/or oil resistant seal for cord and unarmored or jacketed armored, round cables
- form a non-slip connection or termination for flexible cord, cable (armored or unarmored), or flexible conduit
- provide grounding continuity for cable armor and flexible conduit

Cable fittings with sealing fitting or epoxy are installed to:

- provide means for passing armored, metal clad, jacketed or unjacketed and unarmored cables through a bulkhead or enclosure in hazardous areas. These fittings are suitable for use in Class I, Groups C, D, locations only when *Chico*® A sealing compound or TSC epoxy (TMCX) is used to make the seal in the fitting.*
- form a mechanical grip and water and/or oil-resistant termination
- provide ground continuity of cable armor and flexible conduit

TMC (non-hazardous) and TMCX (hazardous) fittings are designed for use with Type MC jacketed steel or aluminum metal clad cables with interlocked or corrugated armor and Type TC tray cable (TMCX).

LCC cable tray conduit clamps are used for installation on cable tray side rails with inside flanges (requiring inside tray mounting) and outside flanges; LCCF clamps are for use exclusively on inside flanges. LCC/LCCF series cable tray conduit clamps are installed to:

- provide a means of clamping metal conduit (rigid steel or aluminum, IMC and EMT) to cable tray for the exit of power and/or control cables from tray
- provide a means to firmly bond exiting conduit to cable tray for best grounding continuity

TW series THRU-WALL BARRIER® cable/conduit sealing devices are installed to:

- seal cables or conduits penetrating fire-rated walls, ceilings or floors
- restrict entrance of water and dust and contain treated air
- provide a seal for cable/conduit penetrations through steel, masonry or concrete; to restrict the entrance of contaminants through cable/conduit penetrations into clean areas

TGC cable tray grounding conductor clamp provides a means for securely attaching a grounding conductor to cable tray to provide grounding continuity for the entire tray system. TGC cable tray grounding conductor clamps provide a reliable method for carrying ground fault current for equipment protection. TGC clamp may be installed on most types of cable trays – with inside or outside flanges.

Considerations for Selection:

- Selection of the proper device or fitting involves consideration of the type of cable to be installed and the environment that will surround the cable after installation.
- A proper matching of the cable and its fitting is necessary to prevent physical damage to the cable when installed. Some types of cable fittings depend on gripping methods (set screws etc.) which may lead to damage of the cable outer covering. Cooper Crouse-Hinds cord and cable fittings utilize compression of split lead or tapered neoprene bushings to provide high gripping strength for adequate cable support and strain relief without damage to the cable sheath.
- Compression of bushing provides a strong electrical bond that assures grounding continuity.
- Compression of a tapered neoprene bushing, assures the watertight integrity of Cooper Crouse-Hinds fittings. Additional watertightness, to prevent water seepage into the fitting body, can be obtained by use of a potting head filled with a hot pouring compound.
- To meet National Electrical Code requirements for electrical installations in hazardous atmospheres, a sealing fitting may be required in conjunction with the cable or cord fitting.

Standard Materials:

- Cord and cable fittings ½" through 1" bodies and gland nuts – steel; larger sizes – *Feraloy*® iron alloy
- TMC/TMCX – copper free aluminum
- LCC/LCCF series bodies – cast malleable iron; hook, set screws and clamping nut – steel
- TW series frames and compression plates – cast malleable iron; sealing material – special elastomeric compound; clamping hardware – steel
- TGC clamp body – cast malleable iron; set screw and clamping screw – steel

Standard Finishes:

- *Feraloy* iron alloy, cast iron and cast malleable iron materials – electrogalvanized and aluminum acrylic paint
- Steel bodies and nuts – electrogalvanized and chromate treatment
- Steel hardware – electrogalvanized

Accessories:

CGB series:

- SG sealing gaskets – for use with locknuts to provide a watertight seal in slip holes of sheet metal structures and boxes

CGS series:

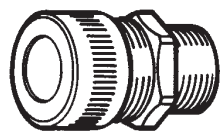
- Sealing compounds – for use in making field cable seals in hazardous locations

CGB, CGK, CGD and CGE series:

- Wire mesh grips – for strain relief of unarmored cable and portable cord

* With specific cords and cables when installed in accordance with NEC/CEC requirements.

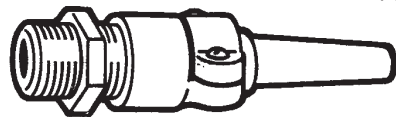
† Registered trademark of E.I. DuPont de Nemours Company.



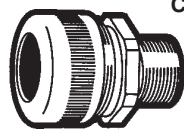
CGB/pg. 64



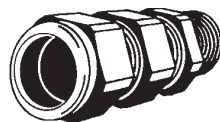
CGB-SG/pg. 68



CGB 1013/pg. 72



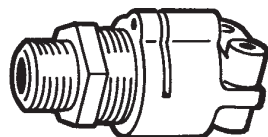
CGFP/pg. 73



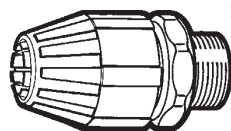
TMC/TMCX/pg. 74



EBY/pg. 97



CGBS/pg. 98

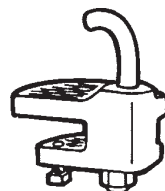


NCG/pg. 67

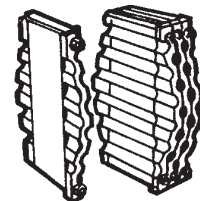
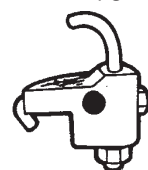
Series	Cable Type	Environment
CGB, CGD, CGE with neoprene bushing; CGB-SG	Portable cords and types MV (unarmored), PLTC, SE (round), TC and UF cables	Class I, Div. 2; dry or wet
CGB1013 series	Portable cord	Class I, Div. 2; dry or wet
CGFP	Portable cord and types MV, CLTC, SE (round), TC and UF jacketed unarmored cables	Class I, Div. 2; dry or wet
TMC/TMCX	Type MC jacketed steel or aluminum metal clad cables with interlocked or corrugated armor and Type TC tray cable (TMCX)	Non-hazardous, Class I, Div.; dry or wet
EBY	Portable cord	Class I, Groups B, C & D; Class II, Group G; dry
CGBS	Portable cord and types MV (unarmored), PLTC, SE (round), TC and UF cables	Class I, Groups C & D; Class II, Group G; Class III; wet
NCG	Type SO portable cords	Dry or wet
LCC/LCCF	Conduit only, to exit cables out of cable tray	Dry or wet
TGC	Grounding conductor to provide cable tray grounding continuity	Dry or wet
Thru Wall	Cable/conduit sealing device	Dry or wet
TECK	Teck cable	Class II, Groups E, F, G; dry or wet
TWDC	Steel wire armour lead sheath	EEx d IIC/EEx e II; dry or wet
TBDC	Steel wire braid	EEx d IIC/EEx e II; dry or wet
TAB/TAS	Steel wire armour, braided or steel tape	EEx d IIC/EEx e II; dry or wet
TACFB/TACFS	Steel wire armour, braided or steel tape	EEx d IIC/EEx e II; dry or wet
TUCFB/TUCFS	Unarmoured	EEx d IIC/EEx e II; dry or wet
TCCF	Conduit	EEx d IIC/EEx e II; dry or wet
TUSC	Unarmoured or braided	EEx d IIC/EEx e II; dry or wet
CAPRI	Steel wire armour, braided or steel tape	EEx d IIB/EEx e II; dry or wet
LSA	Conduit sealing system	Wet, corrosive, fire rated



TGC/pg. 100



LCC/LCCF/pg. 99



TWB/pg. 101

Application:

CGB, CGD and CGE cord and cable fittings with neoprene bushing are for use with portable cords and Types MV (unarmored), PLTC, SE (round), TC and UF cables. CGB, CGD and CGE cord and cable fittings are installed to:

- provide means for passing a cord, cable (unarmored) or flexible conduit into an enclosure, through a bulkhead or into a rigid conduit
- form an environmental seal for cord or unarmored round cables
- form a secure connection or termination for flexible cord, cable (unarmored), or flexible conduit

Features:

- Rugged construction protects cord and cable from damage.
- Compact, permitting close grouping of several cords and/or cables
- Tightening one nut makes watertight seal
- Large range of NPT sizes for use with any conduit system
- Available for straight, 45° or 90° entrance
- Many combinations of gland nuts and bushings can be used to make up connectors, provided parts of the same form are used together

Standard Materials:

- CGB series – Form A through Form D bodies and gland nuts – steel. Form E & F bodies and gland nuts – *Feraloy*® iron alloy
- CGD & CGE series – all bodies are *Feraloy* iron alloy. Form A through Form D gland nuts – steel. Form E & F gland nuts – *Feraloy* iron alloy.
- Bushing – neoprene

Standard Finishes:

- Steel – zinc electroplate with chromate finish coat
- *Feraloy* – electrogalvanized and aluminum acrylic paint

Size Ranges:

- Cable O.D. – .125" to 2.500"
- NPT thread – 3/8" to 3"

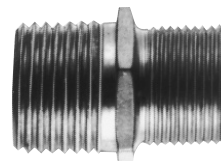
Certifications and Complies:

- UL Standard: 514B
- NEC: Class I, Division 2*; Class II, Class III
- Wet locations
- CSA Standard: C22.2 No. 18, 25
- CEC: Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G; Class III

Complete with gland nut and Neoprene bushing



Body only



Neoprene bushing

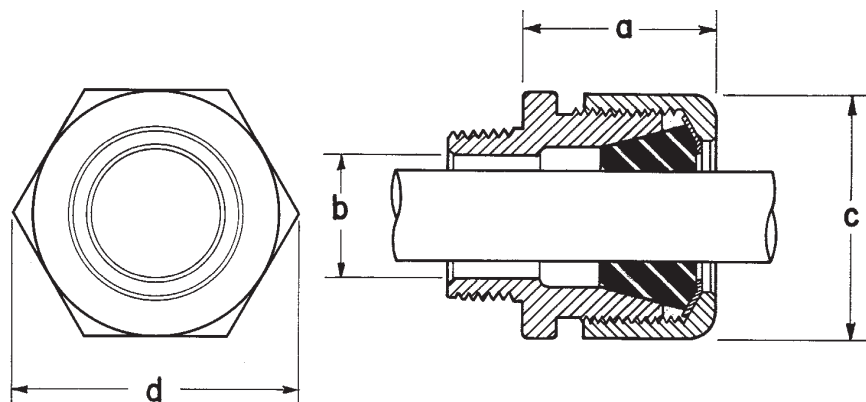
**CGB With Gland Nut and Tapered Neoprene Bushing†**

Male Thread NPT Trade Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #
3/8	A	.125 to .250	.469	CGB3814	CGB:17123B	BUSH214
3/8	A	.250 to .375	.469	CGB3816	CGB:17123B	BUSH216
3/8	A	.375 to .437	.469	CGB3817	CGB:17123B	BUSH217
3/8	B	.125 to .250	.500	CGB3892	CGB:4315A	BUSH92
3/8	B	.250 to .375	.500	CGB3893	CGB:4315A	BUSH93
3/8	B	.375 to .500†	.500	CGB3894	CGB:4315A	BUSH94
1/2	A	.125 to .250	.469	CGB114\$	CGB:17122B	BUSH214
1/2	A	.250 to .375	.469	CGB116\$	CGB:17122B	BUSH216
1/2	A	.375 to .437	.469	CGB117\$	CGB:17122B	BUSH217
1/2	B	.125 to .250	.625	CGB192\$	CGB:010435\$	BUSH92
1/2	B	.250 to .375	.625	CGB193\$	CGB:010435\$	BUSH93
1/2	B	.375 to .500	.625	CGB194\$	CGB:010435\$	BUSH94
1/2	B	.500 to .625	.625	CGB195\$	CGB:010435\$	BUSH05
1/2	C	.625 to .750†	.625	CGB196\$	CGB:1702A	BUSH96
1/2	C	.750 to .875†	.625	CGB197\$	CGB:1702A	BUSH97
3/4	B	.125 to .250	.688	CGB292\$	CGB:0104438\$	BUSH92
3/4	B	.250 to .375	.688	CGB293\$	CGB:0104438\$	BUSH93
3/4	B	.375 to .500	.688	CGB294\$	CGB:0104438\$	BUSH94
3/4	B	.500 to .625	.688	CGB295\$	CGB:0104438\$	BUSH05
3/4	C	.625 to .750†	.750	CGB296\$	CGB:4318A	BUSH96
3/4	C	.750 to .875†	.750	CGB297\$	CGB:4318A	BUSH97
3/4	D	.875 to 1.000†	.813	CGB298\$	CGB:4320A	BUSH98

Continued on page 65.

Dimensions (see next page)

* \$†‡ ♦ For description of symbols, see page 65.

CGB Series

Cord and Cable Fittings

Straight Body Male Thread

Sizes 3/8" – 3"

Cl. I, Div. 2*, Groups A,B,C,D

Cl. II, DIV. 1, Groups E,F,G

Cl. II, Div. 2, Groups F,G

Cl. III

Wet Locations

5F

5F Cable and
Cord Fittings

Gland nut



Wire mesh grip



Gland Nut	Wire Mesh Grip ♦
Cat. #	Cat. #
NUT217	
NUT217	
NUT217	
NUT94	
NUT94	
NUT94	RPE417-115
NUT217	
NUT217	
NUT217	
NUT94	
NUT94	
NUT94	RPE417-115
NUT94	RPE417-116
NUT95	RPE417-117
NUT95	RPE421-119
NUT94	
NUT94	
NUT94	RPE417-115
NUT94	RPE417-116
NUT95	RPE417-117
NUT95	RPE421-119
NUT98	16676N

Dimensions (see previous page for line art)

CGB assembly

Thread Size	Form	a	b	c	d
3/8	A	1 1/16	1 5/32	7/8	7/8
3/8	B	1 5/16	1/2	1 3/16	1 3/16
1/2	A	1	1 5/32	7/8	1 3/16
1/2	B	1 5/16	5/8	1 3/16	1 9/32
1/2	C	1 3/4	5/8	1 5/8	1 21/32
3/4	B	1 3/8	1 1/16	1 3/16	1 13/32
3/4	C	1 3/4	3/4	1 5/8	1 1/4
3/4	D	2 1/2	1 3/16	2 1/4	2 1/8
1	B	1 3/8	1 1/16	1 3/16	1 5/8
1	C	1 11/16	3 1/32	1 5/8	1 7/8
1	D	2 3/8	1 1/32	2 1/4	2 3/8
1 1/4	D	2 5/16	1 1/4	2 1/4	2 1/4
1 1/4	E	2 5/8	1 1/4	3 1/8	3
1 1/2	D	2 5/16	1 7/16	2 1/4	2 1/4
1 1/2	E	2 5/8	1 7/16	3 1/8	3
2	E	2 5/8	1 29/32	3 1/8	3
2	F	2 9/16	1 7/8	3 7/8	3 3/4
2 1/2	E	2 5/8	2 1/16	3 1/8	3 1/8
2 1/2	F	2 5/8	2 5/16	3 7/8	3 3/4
3	F	2 5/8	2 3/4	3 7/8	3 3/4

PORTABLE CORD SELECTION CHART**

2 conduc- tors	Cord Type	SV0, SV, SVT	SJ, SJ0 SJT, SJT0			S, S0, ST, ST0															
	Cord Size	#18	#18	#16	#14	#18	#16	#14	#12	#10	#8	#6	#4	#3	#2	#1	#1/0	#2/0	#3/0	#4/0	#250
	Cord Diameter, prox.	.250	.305	.330	.365	.380	.400	.540	.615	.675	.810	.940	1.080	1.170	1.270	1.440	1.520	1.650	1.770	1.920	2.160

3 conductors	Cord Type	SV0, SV, SVT	SJ, SJ0, SJT, SJT0				S, S0, ST, ST0														
	Cord Size	#18	#18	#16	#14	#18	#16	#14	#12	#10	#8	#6	#4	#3	#2	#1	#1/0	#2/0	#3/0	#4/0	#250
	Cord Diameter, prox.	.255	.325	.350	.385	.390	.420	.565	.645	.710	.850	1.000	1.070	1.240	1.340	1.510	1.650	1.750	1.800	2.070	2.390

4 conductors	Cord Type	CORD TYPE SJ, SJ0, SJT, SJT0				S, S0, ST, ST0														
	Cord Size	#18	#16	#14	#18	#16	#14	#12	#10	#8	#6	#4	#3	#2	#1	#1/0	#2/0	#3/0	#4/0	
	Cord Diameter, prox.	.355	.385	.425	.420	.450	.610	.700	.765	.970	1.100	1.270	1.340	1.480	1.580	1.790	1.930	2.070	2.260	

5 conductors	Cord Type	CORD TYPE S, S0, ST, ST0						
	Cord Size	#18	#16	#14	#12	#10	#8	#6
	Cord Diameter, prox.	.500	.540	.695	.760	.830	1.060	1.180

** Cable diameters are approximate and may vary depending on the manufacturer. Check cord/cable manufacturer for actual diameters.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings providing all parts are of the same form.

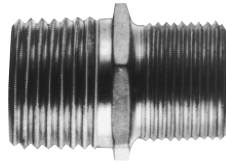
♦ Order wire mesh grip separately.

§ Available in copper-free aluminum. To order, add suffix SA to Cat. No.

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

Complete with gland nut
and Neoprene bushing

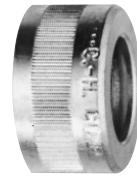
Body only



Neoprene bushing



Gland nut

CGB With Gland Nut
and Tapered Neoprene Bushing†

Wire mesh grip



Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #	Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
1	B	.250 to .375	.688	CGB393§	CGB:19478A	BUSH93	NUT94	
1	B	.375 to .500	.688	CGB394§	CGB:19478A	BUSH94	NUT94	RPE417-115
1	C	.500 to .625	.969	CGB395§	CGB:4319A	BUSH95	NUT95	RPE417-129
1	C	.625 to .750	.969	CGB396§	CGB:4319A	BUSH96	NUT95	RPE417-117
1	C	.750 to .875	.969	CGB397§	CGB:4319A	BUSH97	NUT95	RPE421-119
1	C	.875 to 1.000†	.969	CGB3239§	CGB:4319A	BUSH239	NUT95	RPE421-120
1	D	.875 to 1.000†	1.031	CGB398§	CGB:4321A	BUSH98	NUT98	16676N
1	D	1.000 to 1.188†	1.031	CGB399§	CGB:4321A	BUSH99	NUT98	RPE421-121
1	D	1.188 to 1.375†	1.031	CGB3911§	CGB:4321A	BUSH911	NUT98	RPE433-122
1¼	D	.875 to 1.000	1.250	CGB498	CGB:4322A	BUSH98	NUT98	16676N
1¼	D	1.000 to 1.188	1.250	CGB499	CGB:4322A	BUSH99	NUT98	RPE421-121
1¼	D	1.188 to 1.375†	1.250	CGB4911	CGB:4322A	BUSH911	NUT98	RPE433-122
1¼	E	1.375 to 1.625†	1.250	CGB4913	CGB:5472B	BUSH913	NUT913	RPE433-123
1¼	E	1.625 to 1.875†	1.250	CGB4915	CGB:5472B	BUSH915	NUT913	17317N
1½	D	.875 to 1.000	1.438	CGB598	CGB:5397B	BUSH98	NUT98	16676N
1½	D	1.000 to 1.188	1.438	CGB599	CGB:5397B	BUSH99	NUT98	RPE421-121
1½	D	1.188 to 1.375	1.438	CGB5911	CGB:5397B	BUSH911	NUT98	RPE433-122
1½	E	1.375 to 1.625†	1.438	CGB5913	CGB:5473B	BUSH913	NUT913	RPE433-123
1½	E	1.625 to 1.875†	1.438	CGB5915	CGB:5473B	BUSH915	NUT913	17317N
2	E	1.375 to 1.625	1.875	CGB6913	CGB:5474B	BUSH913	NUT913	RPE433-123
2	E	1.625 to 1.875†	1.875	CGB6915	CGB:5474B	BUSH915	NUT913	17317N
2	F	1.875 to 2.188†	1.875	CGB6917	CGB:5475B	BUSH917	NUT917	17345N ♦ ♦ ♦
2	F	2.188 to 2.500†	1.875	CGB6920	CGB:5475B	BUSH917	NUT917	16772N ♦ ♦ ♦ ♦
2½	E	1.375 to 1.625	2.062	CGB7913	CGB:1278B	BUSH913	NUT913	RPE433-123
2½	E	1.625 to 1.875	2.062	CGB7915	CGB:1278B	BUSH915	NUT913	17317N
2½	F	1.875 to 2.188	2.313	CGB7917		BUSH917		17345N ♦ ♦ ♦
2½	F	2.188 to 2.500	2.313	CGB7920		BUSH920		16772N ♦ ♦ ♦ ♦
3	F	1.875 to 2.188	2.750	CGB8917		BUSH917		17345N ♦ ♦ ♦
3	F	2.188 to 2.500	2.750	CGB8920		BUSH920		16772N ♦ ♦ ♦ ♦

NOTE: Use CGFP series on page 73 for larger sizes.

See page 64 for dimensions.

§ Available in copper-free aluminum. To order, add suffix SA to Cat. No.

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings providing all parts are of the same form.

♦ Order wire mesh grip separately.

Diameter Cord Range

Wire Mesh Grip

♦ ♦ ♦ 1.875 to 2.000

♦ ♦ ♦ ♦ 2.000 to 2.250

Neoprene Bushing

1.875 to 2.188

2.188 to 2.500

Cord And Cable Connectors

NCG Series Nonmetallic Cord Grips

Applications

For use with portable cord, NCG Series watertight cord grips terminate and protect conductors from mechanical damage due to vibration and movement. A neoprene bushing seals out oils, coolants, water, dust and other abusive agents. NCG cord grips may be used with types S, SO, STO, SJ, SJT, SJTO and SVO portable cords.

Typical applications include the termination of wiring for:

- machine tools
- motors
- transformers
- food processing equipment
- robotics
- air conditioning units
- illuminated signs
- terminal boxes
- control cabinets

Standard Materials

- cable gland body and nut - polyamide 6
- bushing - neoprene
- locknut - polyamide 6

Features

- Available in 3/8" to 1" trade sizes.
- Neoprene bushings cover a large cable range, reducing the number of different fittings required.
- Polyamide nonmetallic construction stands up to most corrosive environments.
- Polyamide locknut available, order separately.
- UL listed and cUL third party certified.
- Rain-tight and watertight construction for outdoor use.
- Tightening one nut creates watertight seal.

Certifications & Compliances

- UL Standard 514B
- cUL to CSA Standard C22.2 No.18
- IP 68
- NEMA 4X Watertight
- Zone 2, Division 2 use per Code



Ordering Information

TRADE SIZE	CABLE RANGE INCHES (MM)	CATALOG NUMBER	CARTON QTY.
3/8"	0.1-0.35 (2.5-8)	NCG38-35	25
1/2"	0.20-0.50 (5-12)	NCG50-50	25
3/4"	0.35-0.75 (9-18)	NCG75-75	25
1"	0.55-1.00 (14-25)	NCG100-100	20

Locknuts – must be ordered separately



TRADE SIZE	CATALOG NUMBER	CARTON QTY.
3/8"	10N	25
1/2"	11N	25
3/4"	12N	25
1"	13N	20

Application:

For use with portable cord and types MV (unarmored), PLTC, SE (round), TC and UF cables.

CGB – SG cord and cable fittings are installed to:

- provide means for passing a cord or cable into an enclosure or through a bulkhead
- form a seal for cord or cable

Features:

- Rugged construction protects cord and cable from damage
- Compact, permitting close grouping of several cords and/or cables
- Tightening one nut makes watertight seal
- Large range of NPT sizes for use with any conduit system
- Available for straight entrance
- Armored sealing gaskets facilitate assembly of connectors to sheet metal boxes and cabinets. The steel ring positively retains the PVC gasket for a distortion-free 100% seal; it can't squirt out of the body-to-box joint

Standard Materials:

- Form B through Form D bodies and gland nuts – steel. Forms E & F bodies and gland nuts – *Feraloy*® iron alloy
- Bushing – neoprene
- Sealing gasket – steel and PVC

Standard Finishes:

- Steel – electrogalvanized with chromate treatment
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- PVC – natural

Size Ranges:

- Cable O.D. – .125" to 2.50"
- NPT thread – 1/2" to 1"

Certifications and Complies:

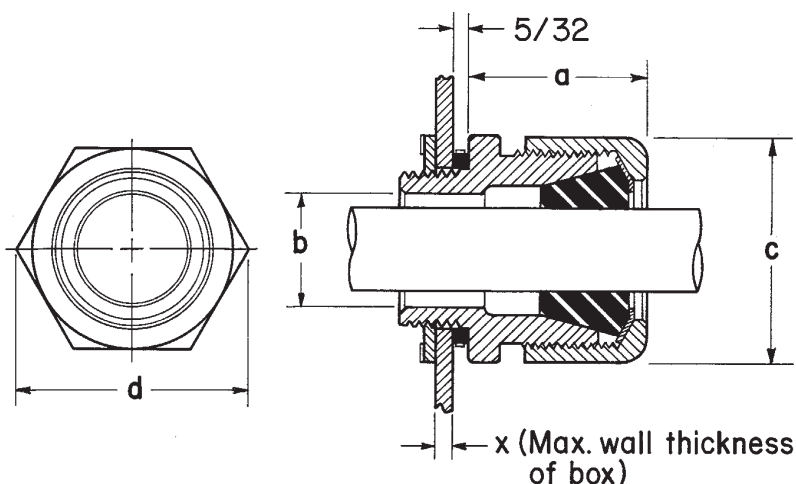
- UL Standard: 514B
- CSA Standards: C22.2
- NEC/CEC: Class I, Division 2*
- Wet locations



Complete with locknut, sealing gasket, gland nut and Neoprene bushing.

Dimensions**Thread**

Size	Form	a	b	c	d	x
1/2	B	1 5/16	5/8	1 3/16	1 9/32	3/16
1/2	C	1 3/4	5/8	1 5/8	1 21/32	3/16
3/4	C	1 3/4	3/4	1 5/8	1 21/32	3/16
3/4	D	2 1/2	13/16	2 1/4	2 1/8	3/16
1	C	1 11/16	31/32	1 5/8	1 7/8	1/4
1	D	2 3/8	1 1/32	2 1/4	2 3/8	3/16

CGB – SG Series

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

Cord and Cable Fittings

**Straight Body Male Thread
Sealing Gaskets and Locknuts
Sizes 1/2" – 1"**

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations*

5F

Complete with locknut, sealing gasket, gland nut and Neoprene bushing



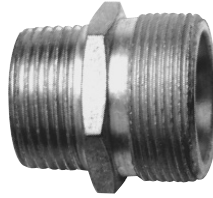
Locknut



Sealing gasket



Body only



Neoprene bushing



Gland nut



Wire mesh grip



5F Cable and Cord Fittings

**CGB-SG With Locknut,
Sealing Gasket, Gland Nut and
Tapered Neoprene Bushing†**

Complete with
Locknut, Sealing
Gasket, Gland

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Nut & Neoprene Bushing ♦ Cat. #	Sealing Gasket Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #	Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
1/2	B	.125 to .250	.625	CGB192-SG	SG1	CGB:0104355	BUSH92	NUT94	
1/2	B	.250 to .375	.625	CGB193-SG	SG1	CGB:0104355	BUSH93	NUT94	
1/2	B	.375 to .500	.625	CGB194-SG	SG1	CGB:0104355	BUSH94	NUT94	RPE417-115
1/2	B	.500 to .625	.625	CGB195-SG	SG1	CGB:0104355	BUSH05	NUT94	RPE417-116
1/2	C	.625 to .750†	.625	CGB196-SG	SG1	CGB:1702A	BUSH96	NUT95	RPE417-117
1/2	C	.750 to .875†	.625	CGB197-SG	SG1	CGB:1702A	BUSH97	NUT95	RPE421-119
3/4	C	.625 to .750†	.750	CGB296-SG	SG2	CGB:4318A	BUSH96	NUT95	RPE417-117
3/4	C	.750 to .875†	.750	CGB297-SG	SG2	CGB:4318A	BUSH97	NUT95	RPE421-119
3/4	D	.875 to 1.000†	.813	CGB298-SG	SG2	CGB:4320A	BUSH98	NUT98	16676N
1	C	.500 to .625	.969	CGB395-SG	SG3	CGB:4319A	BUSH95	NUT95	RPE417-129
1	C	.625 to .750	.969	CGB396-SG	SG3	CGB:4319A	BUSH96	NUT95	RPE417-117
1	C	.750 to .875	.969	CGB397-SG	SG3	CGB:4319A	BUSH97	NUT95	RPE421-119
1	D	.875 to 1.000†	1.031	CGB398-SG	SG3	CGB:4321A	BUSH98	NUT98	16676N
1	D	1.000 to 1.188†	1.031	CGB399-SG	SG3	CGB:4321A	BUSH99	NUT98	RPE421-121
1	D	1.188 to 1.375†	1.031	CGB3911-SG	SG3	CGB:4321A	BUSH911	NUT98	RPE433-122

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings, providing all parts are of the same form.

♦ Order wire mesh grip separately.

Cord and Cable Fittings

45° Angle Body Male Thread

Sizes 1/2" - 3/4"

Cl. I, Div. 2*, Groups A,B,C,D

Cl. II, Div. 1, Groups E,F,G

Cl. II, Div. 2, Groups F,G

Cl. III

Wet Locations*

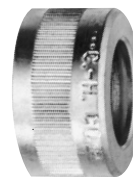
Complete with gland nut
and Neoprene bushing

Body only

Neoprene bushing

Gland nut

Wire mesh grip



CGD 45° With Gland Nut and Tapered Neoprene Bushing†

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Body Only Cat. #	Neoprene Bushing Cat. #	Gland Nut Cat. #	Wire Mesh Grip ♦ Cat. #
1/2	B	.125 to .250	.500	CGD192	CGD:3832A	BUSH92	NUT94	
1/2	B	.250 to .375	.500	CGD193	CGD:3832A	BUSH93	NUT94	
1/2	B	.375 to .500†	.500	CGD194	CGD:3832A	BUSH94	NUT94	RPE417-115
1/2	B	.500 to .625†	.500	CGD195	CGD:3832A	BUSH05	NUT94	RPE417-116
1/2	C	.625 to .750†	.500	CGD196	CGD:5636B	BUSH96	NUT95	RPE417-117
1/2	C	.750 to .875†	.500	CGD197	CGD:5636B	BUSH97	NUT95	RPE421-119
3/4	B	.125 to .250	.688	CGD292	CGD:3967B	BUSH92	NUT94	
3/4	B	.250 to .375	.688	CGD293	CGD:3967B	BUSH93	NUT94	
3/4	B	.375 to .500	.688	CGD294	CGD:3967B	BUSH94	NUT94	RPE417-115
3/4	B	.500 to .625	.688	CGD295	CGD:3967B	BUSH05	NUT94	RPE417-116
3/4	C	.625 to .750†	.688	CGD296	CGD:5643B	BUSH96	NUT95	RPE417-117
3/4	C	.750 to .875†	.688	CGD297	CGD:5643B	BUSH97	NUT95	RPE421-119

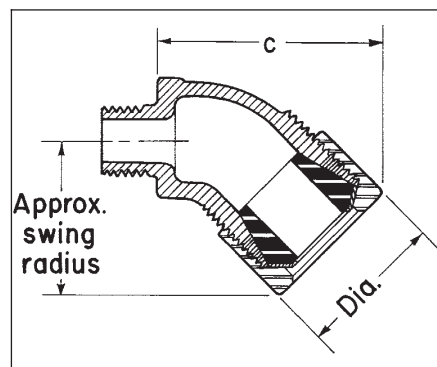
* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

‡ A wide variety of connectors may be made up using combinations of bodies, gland nuts and Neoprene bushings, providing all parts are of the same form.

♦ Order wire mesh grip separately.

Dimensions



CGD assembly

Cat. #	Approx. Swing Radius	Dia.	c
CGD192	1 3/16	1 3/16	1 11/16
CGD193	1 3/16	1 3/16	1 11/16
CGD194	1 3/16	1 3/16	1 11/16
CGD195	1 3/16	1 3/16	1 11/16
CGD196	1 11/16	1 5/8	2 1/16
CGD197	1 11/16	1 5/8	2 1/16
CGD292	1 1/4	1 9/64	1 15/16
CGD293	1 1/4	1 9/64	1 15/16
CGD294	1 1/4	1 1/8	1 15/16
CGD295	1 1/4	1 1/8	1 15/16
CGD296	1 11/16	1 5/8	2
CGD297	1 11/16	1 5/8	2

Cord and Cable Fittings

90° Angle Body Male Thread

Sizes 1/2" - 1"

Cl. I, Div. 2*, Groups A,B,C,D

Cl. II, Div. 1, Groups E,F,G

Cl. II, Div. 2, Groups F,G

Cl. III

Wet Locations*

5F

5F
Cable and
Cord Fittings



Body Only

Optional
Sealing
Gasket§

Optional
Locknut§



Complete with
gland nut,
Neoprene
bushing, optional
locknut and
sealing gasket§



Neoprene Bushing



Gland Nut



Optional
Wire Mesh
Grip ♦

CGE 90° With Gland Nut and Tapered Neoprene Bushing

Thread Size	Form	Cord Range Dia.	Inside Body Dia.	Complete with Gland Nut & Neoprene Bushing ♦ Cat. #	Wire Mesh Grip ♦ Cat. #
1/2	B	.125 to .250	.531	CGE192	
1/2	B	.250 to .375	.531	CGE193	
1/2	B	.375 to .500	.531	CGE194	RPE417-115
1/2	B	.500 to .625†	.531	CGE195	RPE417-116
1/2	C	.625 to .750†	.500	CGE196	RPE417-117
1/2	C	.750 to .875†	.500	CGE197	RPE421-119
3/4	B	.125 to .250	.688	CGE292	
3/4	B	.250 to .375	.688	CGE293	
3/4	B	.375 to .500	.688	CGE294	RPE417-115
3/4	B	.500 to .625	.688	CGE295	RPE417-116
3/4	C	.625 to .750†	.688	CGE296	RPE417-117
3/4	C	.750 to .875†	.688	CGE297	RPE421-119
1	C	.500 to .625	.906	CGE395	RPE417-129
1	C	.625 to .750	.906	CGE396	RPE417-117
1	C	.750 to .875	.906	CGE397	RPE421-119
1	C	.875 to 1.000†	.906	CGE3239	RPE421-120
1	D	.875 to 1.000†	.906	CGE398	16676N
1	D	1.000 to 1.188†	.906	CGE399	RPE421-121
1	D	1.188 to 1.375†	.906	CGE3911	RPE433-122

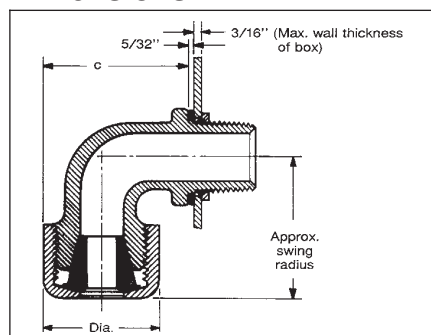
§1/2" and 3/4" sizes can be furnished with sealing gasket and locknut. To order, add suffix "SG" to cat. no. For example: CGE192-SG. Application, features, materials and finishes are detailed on page 68.

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

† Remove sufficient outer covering of cord or cable to pass conductors through the connector body.

♦ Order wire mesh grip separately.
Diameter Cord Range
Wire Mesh Grip

Dimensions



CGE assembly

Cat. #	Approx. Swing Radius	Dia.	c	Cat. #	Approx. Swing Radius	Dia.	c
CGE192	1 9/16	1 3/16	1 7/16	CGE396	2 3/16	1 5/8	2 3/32
CGE193	1 9/16	1 3/16	1 7/16	CGE397	2 3/16	1 5/8	2 3/32
CGE194	1 9/16	1 3/16	1 7/16	CGE398	2 5/8	2 1/4	2 21/32
CGE195	1 9/16	1 3/16	1 7/16	CGE399	2 5/8	2 1/4	2 21/32
CGE196	1 7/8	1 5/8	2	CGE3239	2 3/16	1 5/8	2 3/32
CGE197	1 7/8	1 5/8	2	CGE3911	2 5/8	2 1/4	2 21/32
CGE292	1 5/8	1 3/16	1 13/32				
CGE293	1 5/8	1 3/16	1 13/32				
CGE294	1 5/8	1 3/16	1 13/32				
CGE295	1 5/8	1 3/16	1 13/32				
CGE296	2	1 5/8	1 7/8				
CGE297	2	1 5/8	1 7/8				
CGE395	2 3/16	1 5/8	2 3/32				

5F

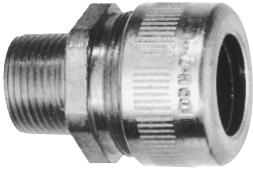
Cord and Cable Fittings Straight Body Male Thread Portable Cord

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
Wet Locations

For portable cord



With oil impregnated flax packing



CGB with Tapered Neoprene Bushings and Cable Clamp

For Portable Cord*

Size	Range Dia.	Cat. #
1/2	.312 to .437	CGB1013
1/2	.375 to .500	CGB1014
1/2	.500 to .625	CGB1015
3/4	.312 to .437	CGB2013
3/4	.375 to .500	CGB2014
3/4	.500 to .625	CGB2015

CGB with Oil Impregnated Flax Packing

Size	Cable Dia.	Cat. #
1/2	.250 to .625	CGB1
3/4	.594 to .688	CGB2
1	.688 to .968	CGB3
1 1/4	.906 to 1.219	CGB4
1 1/2	1.219 to 1.438	CGB5
2	1.438 to 1.875	CGB6
2 1/2	1.875 to 2.313	CGB7
3	2.313 to 2.625	CGB8

* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC/CEC requirements.

Cord and Cable Fittings

CGFP Wet Locations

Cl. I, Div. 2*, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

5F

5F
Cable and
Cord Fittings

Application:

- CGFP series for use with portable cords and Types MV (unarmored), PLTC, SE (round), TC and UF jacketed unarmored cables
- CGFP cord and cable fittings are installed to:
- Form a mechanically gripping water and/or oiltight termination
- SG series sealing gaskets can be used with locknuts to provide a watertight seal in slip holes of sheet metal structures and boxes.
- RSMP series terminating hub plates can be used on panels, junction boxes and bulkheads.

Features:

- Superior pull out strength.
- Rugged construction protects cable against mechanical damage.
- Compact size permitting close grouping of cables.
- Complete range of sizes for all types of cable.
- Provide double seal against water entry.

Standard Materials:

- 1/2" to 1" body and gland nut – turned steel
- Over 1" body and gland nut – *Feraloy*® iron alloy

Standard Finishes:

- Steel – electrogalvanized and chromate treatment
- Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint

Size Ranges:

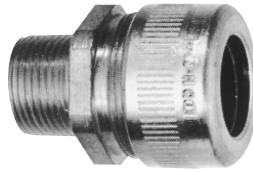
- Cable O.D. – .125" to 3.500"
- NPT threads – 1/2" to 4"

Certifications and Complies:

- UL Standard: 514B
- NEC: Class I, Division 2*
- Wet locations

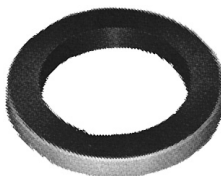
* May be used in hazardous locations with specific cords and cables when installed in accordance with NEC requirements.

† All parts of the same form may be used together in an assembly.



CGFP With Neoprene Bushing for Wet Locations

Male Thread Size	O.D. Range	Form†	Cat. #
1/2	.125 to .250	B	CGFP192
1/2	.250 to .375	B	CGFP193
1/2	.375 to .500	B	CGFP194
1/2	.500 to .625	B	CGFP195
3/4	.625 to .750	C	CGFP296
3/4	.750 to .875	C	CGFP297
3/4	.875 to 1.000	C	CGFP2239
1	.625 to .750	C	CGFP396
1	.750 to .875	C	CGFP397
1	.875 to 1.000	C	CGFP3239
1 1/4	1.000 to 1.188	D	CGFP499
1 1/4	1.188 to 1.375	D	CGFP4911
1 1/2	1.000 to 1.188	D	CGFP599
1 1/2	1.188 to 1.375	D	CGFP5911
2	1.375 to 1.625	E	CGFP6913
2	1.625 to 1.875	E	CGFP6915
2 1/2	1.875 to 2.188	F	CGFP7917
2 1/2	2.188 to 2.500	F	CGFP7920
3	1.875 to 2.188	F	CGFP8917
3	2.188 to 2.500	F	CGFP8920
3 1/2	2.500 to 3.000	G	CGFP923
3 1/2	3.000 to 3.500	G	CGFP927
4	2.500 to 3.000	G	CGFP1023
4	3.000 to 3.500	G	CGFP1027



Sealing Gaskets For CGF terminators

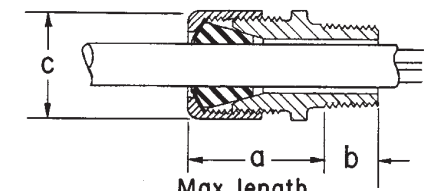
Armored sealing gaskets can be used with locknuts for watertight seals in slip holes of sheet metal structures and boxes. The steel ring positively retains the PVC gasket for a distortion-free 100% seal.

Conduit Size	Cat. #
3/8 – 1/2	SG1
3/4	SG2
1	SG3
1 1/4	SG4
1 1/2	SG5
2	SG6
2 1/2	SG7
3	SG8
3 1/2	SG9
4	SG10

Dimensions

CGFP Cat. #	a	b	c (max.)
CGFP192	1 3/8	3/4	1 9/32
CGFP193	1 3/8	3/4	1 9/32
CGFP194	1 3/8	3/4	1 9/32
CGFP195	1 3/8	3/4	1 9/32
CGFP296	1 3/4	3/4	1 25/32
CGFP297	1 3/4	3/4	1 25/32
CGFP2239	1 3/4	3/4	1 25/32
CGFP396	1 3/4	15/16	1 25/32
CGFP397	1 3/4	15/16	1 25/32
CGFP3239	1 3/4	15/16	1 25/32
CGFP499	2 3/8	15/16	2 1/4
CGFP4911	2 3/8	15/16	2 1/4
CGFP599	2 3/8	15/16	2 1/4
CGFP5911	2 3/8	15/16	2 1/4
CGFP6913	3 1/4	1	3 1/4
CGFP6915	3 1/4	1	3 1/4
CGFP7917	3 1/4	1 7/16	3 7/8
CGFP7920	3 1/4	1 7/16	3 7/8
CGFP8917	3 1/4	1 1/2	3 7/8
CGFP8920	3 1/4	1 1/2	3 7/8
CGFP923	4 1/4	1 9/16	5 1/2
CGFP927	4 1/4	1 9/16	5 1/2
CGFP1023	4 1/4	1 5/8	5 1/2
CGFP1027	4 1/4	1 5/8	5 1/2

CGFP



Max. length
resulting when
max. size cable
is used

TERMINATOR™ Cable Fittings

for Metal Clad Cable and Tray Cable ♦

TMC/TMCX Series

Cl. I, Div. 1†, Groups A*,B,C,D
 Cl. II, Div. 1†, Groups F,G
 Cl. III♦, Div. 1† & 2
 Wet Locations

Application:

Terminator cable fittings are designed for use with the following cables:

- Type MC – corrugated aluminum, interlocked aluminum and interlocked steel
- Type TC Tray Cable ♦

Terminator cable fittings are installed:

- to provide a means for terminating type MC and TC cable at junction boxes, control centers, panelboards and enclosures for motor control and electrical distribution equipment
- to form a mechanical watertight connection
- to provide ground continuity of cable armor
- indoors and outdoors in wet and dry locations
- in vertical and horizontal cable runs
- in non-hazardous and hazardous (classified) locations. Both TMC and TMCX series can be used in Class I and Class II, Division 2 locations. TMCX series may be used in Division 1 locations and when a seal is required.

Features:

- Ten fittings cover cable O.D. range of .440" to 4.020", in 1/2" to 4" NPT sizes.
- Quick and easy to install. No disassembly is required for TMC installation.
- Unique stainless steel grounding/retaining spring with copper plate finish provides positive ground continuity and superior pull-out resistance exceeding that required by UL/CSA.
- Neoprene bushing provides a watertight seal.
- Lightweight, corrosion-resistant/copper-free aluminum construction provides long, maintenance-free service life in industrial environments
- Optional all brass construction available.
- Hex design for easy wrenching.
- Compact size for close nesting of cables.
- TMC fittings are furnished complete with epoxy sealing compound.†
- TMCX fittings with sealing chamber have a red colored gland nut for easy identification.
- Hazardous location TMCX Terminators are reusable. An integral union feature simplifies installation on new construction and allows installed TMCX Terminator cable fittings to be disassembled and reused when performing repairs or replacement of equipment.
- Optional Cold-Shrink® Kit for extra corrosion protection against corrosive elements like salt water.

Standard Materials:

- Body, intermediate body, gland nut, and armor stop insert – copper-free aluminum
- Bushing – neoprene
- Grounding/retaining spring – stainless steel
- Slip washer and armor stop reducer – nylon
- Cold Shrink Kit — EPDM Rubber

Standard Finishes:

- Copper-free aluminum – natural
- Neoprene – natural
- Stainless steel – copper flash
- Nylon – natural

Options:

- All brass construction add suffix -BR to catalog number.
- All brass construction with nickel plate finish on entry threads add suffix -BR-NP to catalog number.

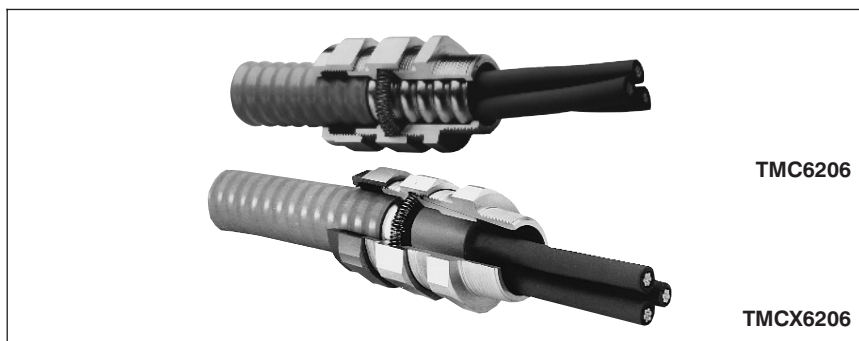
Certifications and Complies:

- NEC: Class I, Groups A*,B,C,D
 Class II, Groups F,G
 Class III, Div. 1 and 2 (except when used with Tray Cable)
 Article 334, 340, 501-4(b), 502-4(b), 503-3(a)
- NEMA: FB1-1989
- UL Standards: 514B, 886
- Fed. Spec.: W-F-406B



- CSA Standard C22.2 No. 18-M1987
 Class I, A,B,C,D SL
 Class II, E,F,G
 Class III, Enc. 4 locations

NPT Thread Size	Armor O.D. Range	Non-Hazardous Cat. #	Hazardous Cat. #*	Optional Cold Shrink® Kit Cat. #
1/2	.440 to .650	TMC165	TMCX165 ♦	TMC-K1
3/4	.600 to .850	TMC285	TMCX285 ♦	TMC-K2
1	.800 to 1.120	TMC3112	TMCX3112 ♦	TMC-K3
1 1/4	1.100 to 1.400	TMC4140	TMCX4140 ♦	TMC-K4
1 1/2	1.330 to 1.610	TMC5161	TMCX5161 ♦	TMC-K5
2	1.570 to 2.060	TMC6206	TMCX6206 ♦	TMC-K6
2 1/2	1.930 to 2.470	TMC7247	TMCX7247 ♦	TMC-K7
3	2.450 to 3.020	TMC8302	TMCX8302	TMC-K8
3 1/2	2.950 to 3.520	TMC9352	TMCX9352	TMC-K9
4	3.500 to 4.020	TMC10402	TMCX10402	TMC-K10



* Hazardous location fittings are supplied with sealing compound for one termination. Additional compound may be ordered separately. See following page.

† TMCX series is suitable for use in hazardous locations when installed in accordance with NEC articles 501-4(b), 501-5(e), 502-4(b), 502-5 and 503-3(a).

♦ TMCX catalog numbers listed are suitable for use with Type TC tray cable in hazardous locations when installed in accordance with NEC articles 501-5(e) and 502-5. TMCX series is not suitable for use in Class III locations when used with tray cable.

‡ In Canada order separately Cat. # TSC1 - 1 oz. TSC4 - 4 oz.

* Terminators ordered in all brass construction (suffix – BR) are *not* suitable for Class I, Group A hazardous area environments.

TMC-K Corrosion Protection Kits

TMC-K Corrosion Protection Kits are specially designed for Cooper Crouse-Hinds TMC and TMCX fittings to provide protection against corrosive elements like salt spray and moisture. The TMC-K kit is made of a Cold Shrink material that is quick and easy to install on the fitting. The Cold Shrink material is made of EPDM rubber that contains no chlorides or sulfurs.



The protection kit installs easily over the fitting *without* the use of a heat source to shrink the material tightly over the fitting. Just slide the kit over the fitting and pull out the inner core. The kit shrinks tightly over the fitting forming a watertight seal. The Cold Shrink material can be removed easily from the fitting by simply cutting it off.

See ordering information for complete offering of TMC-K Cold Shrink kits for corrosion protection.

Cold Shrink is a registered trademark of the 3M Company.

TERMINATOR™ Cable Fittings

for Metal Clad Cable and Tray Cable♦

TMC/TMCX Series

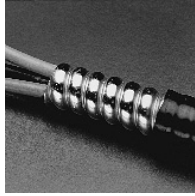
Accessories, Dimensions

Cl. I, Div. 1†, Groups A,B,C,D
Cl. II, Div. 1†, Groups F,G
Cl. III, Div. 1† & 2
Wet Locations

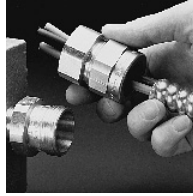
5F

5F Cable and
Cord Fittings

Installing a TMCX Terminator



1. Prepare cable.



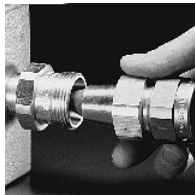
2. Install body into enclosure. Slide gland nut and intermediate body onto cable.



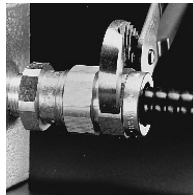
3. Mix sealing compound and pack conductors over armor.



4. Slide armor stop insert over conductor and sealing compound, then back against armor. Pack remaining sealing compound.



5. Insert cable assembly into body.



6. Thread intermediate body with gland nut onto body. Tighten intermediate body, then gland nut.



TSC Epoxy Sealing Compound

A two part epoxy sealing compound is used to seal TMCX cable fittings. It is quick and easy to measure, mix and install. The compound is kneaded until a uniform color is obtained. It is then packed around the conductors and cable armor to effectively seal the cable.

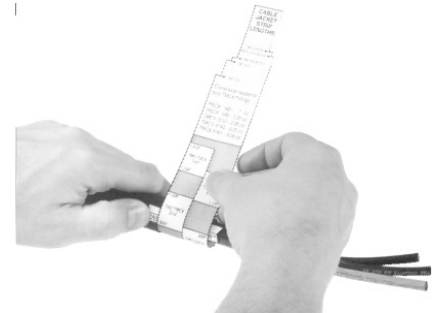
Each hazardous location fitting is supplied with enough sealing compound for one termination. Additional compound may be ordered separately in one and four ounce packages.

Std. Ctn.

Qty.	Tube Size	Cat. #**
10	0.5 oz	TSC05
10	1.0 oz	TSC1
5	4.0 oz.	TSC4

Approximate Amount of Compound Required to Seal Fittings

NPT Size	Cat. #	Ounces Required
1/2	TMCX165	0.25
3/4	TMCX285	0.50
1	TMCX3112	0.70
1 1/4	TMCX4140	1.50
1 1/2	TMCX5161	1.85
2	TMCX6206	4.50
2 1/2	TMCX7247	8.65
3	TMCX8302	15.75
3 1/2	TMCX9352	25.55
4	TMCX10402	38.95



Cable Gauge and Sizer

TMC and TMCX cable fittings are supplied with a cable gauge and sizer. This installation tool is used:

- to measure the cable armor and select the proper cable fitting.
- to determine how much cable jacket should be removed to ensure proper installation, eliminating any guesswork.
- as a gauge of how much compound to pack around the cable in order to meet UL requirements and ensure a safe, proper installation for TMCX fittings.

† TMCX series is suitable for use in hazardous locations when installed in accordance with NEC articles 501-4(b), 501-5(e), 502-4(b), 502-5 and 503-3(a).

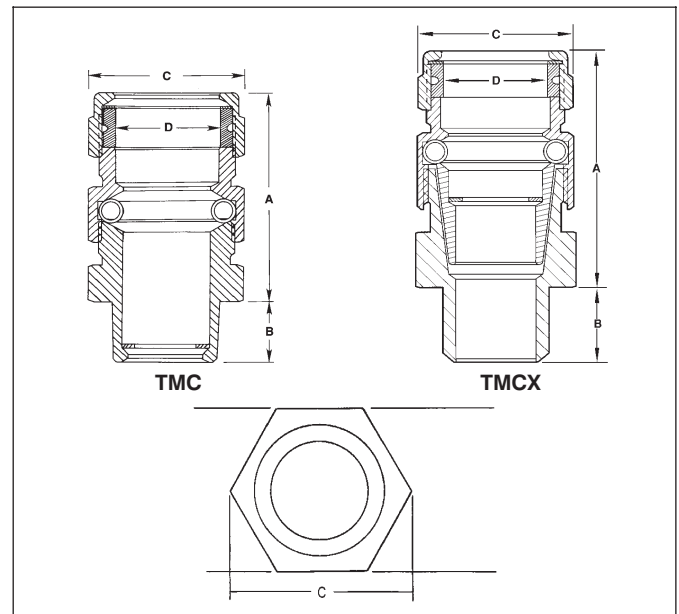
♦ TMCX catalog numbers listed are suitable for use with Type TC tray cable in hazardous locations when installed in accordance with NEC articles 501-5(e) and 502-5. TMCX series is not suitable for use in Class III locations when used with tray cable.

** Order quantity of one (1) TSC1 equals 10 1.0 oz. tubes; one (1) TSC4 equals 5 4.0 oz. tubes.

Dimensions

NPT Size	TMC Cat. #	A	TMCX Cat. #	A	TMC/TMCX		
					B	C	D
1/2	TMC165	2 3/8	TMCX165	2 3/8	3/4	1 1/8	2 9/32
3/4	TMC285	2 5/8	TMCX285	2 7/8	25/32	1 5/8	1
1	TMC3112	2 5/8	TMCX3112	3 1/8	15/16	2	1 5/16
1 1/4	TMC4140	2 3/4	TMCX4140	3 1/8	3 1/32	2 7/16	1 5/8
1 1/2	TMC5161	2 3/4	TMCX5161	3 3/8	3 1/32	2 3/4	1 29/32
2	TMC6206	4 1/2	TMCX6206	5 5/16	1	3 1/2	2 5/16
2 1/2	TMC7247	4 3/4	TMCX7247	6 1/16	1 7/16	4	2 23/32
3	TMC8302	4 7/8	TMCX8302	6 1/16	1 7/16	4 7/8	3 3/32
3 1/2	TMC9352	5 3/8	TMCX9352	7 3/4	1 5/8	5 3/8	3 29/32
4	TMC10402	5 1/2	TMCX10402	8 5/16	1 5/8	5 7/8	4 9/32

(Dimensions also apply to brass product, suffix — BR)



TECK TERMINATOR™ Cable Fittings

for Teck Cable

Cl. II, Division 1, Groups E,F,G
 Cl. II, Division 2, Groups F,G
 Cl. III
 IP56
 Wet Locations

Application:

TECK TERMINATORS have a wide array of applications in pulp and paper mills, chemical and petrochemical plants, petroleum refineries, waste treatment facilities, coal mines, electric power generating plants, grain handling and storage facilities, and many other industrial applications.

TECK TERMINATORS are CSA Certified for use with TECK armoured cable:

- to provide a means to terminate at junction boxes, control centers, panelboards, and enclosures for motor control and electrical distribution equipment
- to form a watertight (Encl 4/IP 56) seal around cable and at enclosure entry
- to provide ground continuity of cable armour
- to provide excellent cable pullout protection exceeding CSA requirements
- indoors or outdoors, in wet and dry locations
- in vertical or horizontal cable runs; and
- with TMC-K Series Cold Shrink™ corrosion protection kits to protect fitting from corrosive elements like salt water

Features:

- **CSA Certified** for ordinary and hazardous locations assuring a safe and reliable termination in adverse environments
- **No disassembly required**, resulting in a quick-and-easy installation and lower labour costs
- Available in aluminum, steel, stainless steel and PVC-coated aluminum construction for almost any type of corrosive environment
- **Unique stainless steel grounding spring** provides 360° positive grounding and superior pullout resistance
- Neoprene bushing creates a **watertight seal** to protect electrical equipment
- Neoprene O-ring on connector provides an **environmental seal** when fitting is installed in knockout
- **Hex surfaces** provide a large wrenching area for easy installation
- Hex surfaces on aluminum fittings have **slots for screwdriver tightening/loosening**
- **Compact design** allows close spacing of connectors
- Available in ½" to 4" trade sizes for application flexibility

Assembly Detail Shown with TECK Cable Installed



Standard Materials/Finishes:

- Body, Gland Nut – aluminum/natural, steel/zinc electrogalvanized, *Feraloy*®/zinc electrogalvanized, stainless steel/natural
- Drive Washer – aluminum/natural, steel/electrogalvanized, stainless steel/natural
- Bushing, O-ring – neoprene/natural
- Grounding Spring – stainless steel/copper-plated
- Cold Shrink Corrosion Protection Kit – EPDM rubber
- Slip Washer – nylon/natural

Certifications and Compliances:

- CEC: Class II, Division 1 and 2
Groups E, F and G
Class III
- CSA Standard: C22.2 No. 18
- Encl 4/IP 56

TECK TERMINATOR™ Cable Fittings

for Teck Cable

Cl. II, Division 1, Groups E,F,G
Cl. II, Division 2, Groups F,G
Cl. III
IP56
Wet Locations

5F

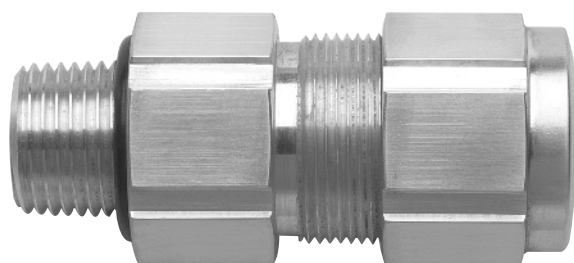
5F Cable and Cord Fittings

Ordering Information:

Hub Size	Aluminum Cat. #	Steel Cat. #	Stainless Steel Cat. #	PVC Cat. #	Range Over Jacket		Range Over Armour	
					Min.	Max.	Min.	Max.
1/2"	TECK050-1	TECK050-1S	TECK050-1SS	TECK050-1PVC	0.525	0.650	0.415	0.570
1/2"	TECK050-2	TECK050-2S	TECK050-2SS	TECK050-2PVC	0.600	0.760	0.490	0.680
1/2"	TECK050-3	TECK050-3S	TECK050-3SS	TECK050-3PVC	0.725	0.885	0.615	0.805
1/2"	TECK050-4	TECK050-4S	TECK050-4SS	TECK050-4PVC	0.825	0.985	0.715	0.905
3/4"	TECK075-5	TECK075-5S	TECK075-5SS	TECK075-5PVC	0.880	1.065	0.770	0.985
3/4"	TECK075-6	TECK075-6S	TECK075-6SS	TECK075-6PVC	1.025	1.205	0.915	1.125
1"	TECK100-7	TECK100-7S	TECK100-7SS	TECK100-7PVC	1.187	1.375	1.077	1.295
1 1/4"	TECK125-8	TECK125-8S	—	TECK125-8PVC	1.350	1.625	1.240	1.545
1 1/4"	TECK125-9	TECK125-9S	—	TECK125-9PVC	1.500	1.625	1.390	1.545
1 1/4"	TECK125-10	TECK125-10S	—	TECK125-10PVC	1.600	1.875	1.490	1.795
1 1/2"	TECK150-11	TECK150-11S	—	TECK150-11PVC	1.700	1.965	1.590	1.885
1 1/2"	TECK150-12	TECK150-12S	—	TECK150-12PVC	1.900	2.187	1.790	2.107
2"	TECK200-13	TECK200-13S	—	TECK200-13PVC	1.900	2.187	1.790	2.107
2"	TECK200-14	TECK200-14S	—	TECK200-14PVC	2.100	2.375	1.990	2.280
2"	TECK200-15	TECK200-15S	—	TECK200-15PVC	2.300	2.565	2.190	2.485
2"	TECK200-16	TECK200-16S	—	TECK200-16PVC	2.500	2.750	2.390	2.656
2 1/2"	TECK250-17	TECK250-17S	—	TECK250-17PVC	2.380	2.640	2.240	2.560
2 1/2"	TECK250-18	TECK250-18S	—	TECK250-18PVC	2.580	2.840	2.440	2.750
3"	TECK300-19	TECK300-19S	—	TECK300-19PVC	2.790	3.060	2.640	2.970
3"	TECK300-20	TECK300-20S	—	TECK300-20PVC	3.000	3.270	2.870	3.190
3"	TECK300-21	TECK300-21S	—	TECK300-21PVC	3.210	3.480	3.042	3.390
3 1/2"	TECK350-22	TECK350-22S	—	TECK350-22PVC	3.420	3.690	3.270	3.590
3 1/2"	TECK350-23	TECK350-23S	—	TECK350-23PVC	3.610	3.870	3.440	3.770
4"	TECK400-24	TECK400-24S	—	—	3.810	4.030	3.600	3.930
4"	TECK400-25	TECK400-25S	—	—	3.965	4.185	3.755	4.065
4"	TECK400-26	TECK400-26S	—	—	4.120	4.340	3.910	4.220

Optional Cold Shrink Corrosion Protection Kits

Trade Size	Cat. #	Trade Size	Cat. #
1/2"	TMC-K1	2"	TMC-K6
3/4"	TMC-K2	2 1/2"	TMC-K7
1"	TMC-K3	3"	TMC-K8
1 1/4"	TMC-K4	3 1/2"	TMC-K9
1 1/2"	TMC-K5	4"	TMC-K10



Dimensions (inches)

Cat. #	A - Throat Dia.	B - Overall	C - Max.
TECK050-1	0.395	2.16	1.34
TECK050-2	0.485	2.24	1.47
TECK050-3	0.612	2.20	1.61
TECK050-4	0.612	2.24	1.61
TECK075-5	0.819	2.37	2.14
TECK075-6	0.819	2.42	2.14
TECK100-7	1.039	2.42	2.41
TECK125-8	1.184	3.42	3.20
TECK125-9	1.375	3.34	3.20
TECK125-10	1.375	3.34	3.20
TECK150-11	1.577	3.81	3.60
TECK150-12	1.600	3.81	3.72
TECK200-13	1.715	4.14	4.20
TECK200-14	1.995	4.06	4.20
TECK200-15	2.063	3.84	4.40
TECK200-16	2.063	3.92	4.40
TECK250-17	2.250	5.15	4.79
TECK250-18	2.437	5.10	4.79
TECK300-19	2.630	4.91	4.89
TECK300-20	2.875	4.97	5.30
TECK300-21	3.032	4.97	5.30
TECK350-22	3.260	5.12	5.90
TECK350-23	3.437	5.25	5.90
TECK400-24	3.594	4.90	6.53
TECK400-25	3.750	4.90	6.53
TECK400-26	3.900	4.90	6.53

TWDC/TBDC SERIES
ATEX and CENELEC Range
for Steel Wire Armour or Steel Wire
Braid Cable

ATEX and CENELEC Dual E Exd IIC/E Exe II
Zone 1 or 2 Hazardous Areas
IP66/67



Certifications and Compliances

- ATEX E Exd IIC/E Exe II with SIRA 03ATEX2078X
- Standards EN50014:1998, EN50018:2000, EN50019:2000 and EN50281-1-1:1998
- IP66 and IP67
- GOST R - Exd IICU/Exe IIU

Design Data (millimeters)

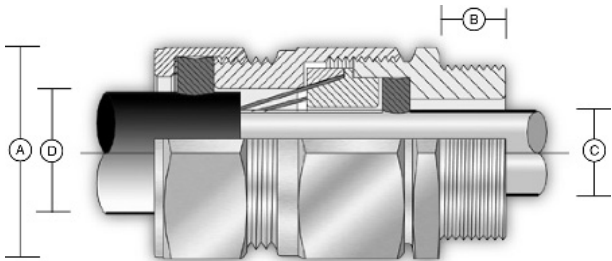
Gland Size	A (across corners)	B
16	25.5	16.0
20S	26.5	16.0
20	33.0	16.0
25	41.4	16.0
32	50.6	16.0
40	60.5	16.0
50S	71.5	16.0
50	71.5	16.0
63S	88.0	19.0
63	88.0	19.0
75S	99.0	19.0
75	99.0	19.0
80	115.2	25.0
80H	115.2	25.0
85	115.2	25.0
90	125.7	25.0
90H	125.7	25.0
100	125.7	25.0

Application

For use in Zone 1 or 2 hazardous areas with ATEX/CENELEC certified equipment and armoured or braided cable.

Features

- All TWDC and TBDC glands offer:
- a flameproof or increased safety seal on the inner sheath of the cable
 - mechanical clamping, providing retention of armour or braid
 - a weatherproof seal to the outer sheath of the cable
 - brass construction (optional stainless steel)
 - optional nickel-plate finish
 - metric or NPT threads
- TW3DC/TB3DC cable glands offer a zero halogen version for extreme high and low temperature applications (-60°C to +180°C).



Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:

1. Select the Gland Type based on cable type and seal required (i.e., TW1DC)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT)

Ordering example:

TW1DC/NP/20S/075NPT

Step 1 – Select Gland Type from Table below:

Gland Types

Gland Type	Description
TW1DC	For steel wire armour with neoprene seal.
TW3DC	For steel wire armour with silicone seal for extreme temperatures.
TB1DC	For braided cable with neoprene seal.
TB3DC	For braided cable with silicone seal for extreme temperatures.

For optional nickel-plate finish add suffix/NP after Gland Type (i.e., TW1DC/NP).

For reduced bore gland add "R" at the end of Gland Type (i.e., TW1DCR).

For optional poly-bagged kit including gland, brass locknut, brass earth tag, sealing washer and PCP shroud, add "K1" at the end of Gland Type (i.e. TW1DCK1).

For stainless steel construction add "S" at the end of Gland Type (i.e., TW1DCS).

Step 2 – Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		Gland Seal Range						Armour Acceptance Range		Shroud Size†
			Cable Inner Sheath [C]		Cable Outer Sheath [D]						
					Standard		Reduced				
	Metric	NPT	Min	Max	Min	Max	Min	Max	SWA	Braided	
16	M20	½" or ¾"	3.5	8.4	8.4	13.5	4.9	10.0	0.90	0.15 – 0.35	L24
20S	M20	½" or ¾"	8.0	11.7	11.5	16.0	9.4	12.5	0.90 – 1.25	0.15 – 0.35	L24
20	M20	½" or ¾"	6.7	14.0	15.5	21.1	12.0	17.6	0.90 – 1.25	0.15 – 0.50	L30
25	M25	¾" or 1"	13.0	20.0	20.3	27.4	16.8	23.9	1.25 – 1.60	0.15 – 0.50	L38
32	M32	1" or 1¼"	19.0	26.3	26.7	34.0	23.2	30.5	1.60 – 2.00	0.15 – 0.55	L46
40	M40	1¼" or 1½"	25.0	32.2	33.0	40.6	28.6	36.2	1.60 – 2.00	0.20 – 0.60	L55
50S	M50	1½" or 2"	31.5	38.2	39.4	46.7	34.8	42.4	2.00 – 2.50	0.20 – 0.60	L65
50	M50	2"	36.5	44.1	45.7	53.2	41.1	48.5	2.00 – 2.50	0.30 – 0.80	L65
63S	M63	2" or 2½"	42.5	50.1	52.1	59.5	47.5	54.8	2.50	0.30 – 0.80	L80
63	M63	2½"	49.5	56.0	58.4	65.8	53.8	61.2	2.50	0.30 – 0.80	L80
75S	M75	2½" or 3"	54.5	62.0	64.8	72.2	60.2	68.0	2.50	0.30 – 1.00	L90
75	M75	3"	60.5	68.0	71.1	78.0	66.5	73.4	2.50	0.30 – 1.00	L90
80	M80 × 2	3" or 3½"	62.2	72.0	77.0	84.0	---	---	3.15	0.45 – 1.00	L104
80H	M80 × 2	3" or 3½"	62.2	72.0	79.6	90.0	---	---	3.15	0.45 – 1.00	L104
85	M85 × 2	3" or 3½"	69.0	78.0	79.6	90.0	75.0	85.4	3.15	0.45 – 1.00	L104
90	M90 × 2	3½" or 4"	74.0	84.0	88.0	96.0	---	---	3.15	0.45 – 1.00	L114
90H	M90 × 2	3½" or 4"	74.0	84.0	92.0	102.0	---	---	3.15	0.45 – 1.00	L114
100	M100 × 2	3½" or 4"	82.0	90.0	92.0	102.0	87.4	97.4	3.15	0.45 – 1.00	L114

† For PVC or PCP shrouds see Accessories, page 93.

Step 3 – Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
1/2" NPT	050NPT
3/4" NPT	075NPT
1" NPT	100NPT
1 1/4" NPT	125NPT
1 1/2" NPT	150NPT
2" NPT	200NPT
2 1/2" NPT	250NPT
3" NPT	300NPT
3 1/2" NPT	350NPT
4" NPT	400NPT
—	—
—	—



ATEX and CENELEC Dual
E Exd IIC/E Exe II
CSA Exd IIC/Exe II
Class I, Zone 1

Zone 1 or 2 Hazardous Areas
IP66/68
Enclosure Type 4X
DTS01 1991 Deluge



Certifications and Compliances

- ATEX E Exd IIC/E Exe II with SIRA 03ATEX2077X
- Standards EN50014:1998, EN50018:2000, EN50019:2000 and EN50281-1-1:1998
- IP66 and IP68 at 25 meters
- DTS01 1991 deluge
- CSA Exd IIC/Exe II, Class I, Zone 1
- Enclosure Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R - Exd IICU/Exe IIU

Design Data (millimeters)

Gland Size	A (across corners)	B
16	28.0	16
20S	28.0	16
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50S	71.5	16
50	71.5	16
63S	88.0	19
63	88.0	19
75S	99.0	19
75	99.0	25
80	115.2	25
80H	115.2	25
85	115.2	25
90	125.7	25
90H	125.7	25
100	125.7	25

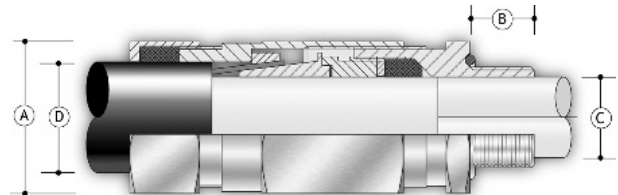
Application

For use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and wire, braided or tape armoured cables. For use in Zone 1 or 2 hazardous areas with CSA equipment with braided and marine shipboard cable.

Features

All TAB and TAS Cable glands:

- offer a universal armour clamp for all armoured cable types (wire, braided, tape, marine shipboard)
- come with no reversible components, eliminating installer error
- maintain Flameproof Exd and Increase Safety Exe methods of explosion protection
- provide a seal on the inner sheath
- provide a seal on the outer sheath offering IP66/68 and Type 4X protection
- provide an O-Ring on the entry seal (metric entry threads only)
- meet DTS01 1991 deluge requirements
- are constructed of all brass or all stainless steel material
- incorporate anti-twist assembly reducing the amount of cable twist during installation
- are available with metric or NPT threads
- are available with optional nickel-plate finish
- are available with optional silicone zero halogen seal for extreme high and low temperature applications (-60°C to +180°C).





Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:

1. Select the Gland Type based on cable type and seal required (i.e., TAB1)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT) (Available sizes listed in step 2)

Ordering example:
TAB1/20S/075NPT

Step 1 – Select Gland Type from Table below:

Gland Types

Gland Type	Description
TAB1	Universal gland for steel wire, steel braid & steel tape with neoprene seal - brass construction
TAB3	Universal gland for steel wire, steel braid & steel tape with silicone seal - brass construction
TAS1	Universal gland for steel wire, steel braid & steel tape with neoprene seal - stainless steel construction
TAS3	Universal gland for steel wire, steel braid & steel tape with silicone seal - stainless steel construction

For optional nickel-plate finish add suffix /NP after Gland Type (i.e., TAB1/NP).

For reduced bore gland add "R" at the end of gland type (i.e. TAB1R).

For optional poly-bagged kit including gland, locknut, earth tag, sealing washer and PVC shroud, add "K1" at the end of Gland Type (i.e., TAB1K1).

Step 2 – Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		GLAND SEAL RANGE						Armour Acceptance Range	Shroud Size
			Cable Inner Sheath [C]	Cable Outer Sheath [D]						
				Standard		Reduced				
	Metric	NPT	Min	Max	Min	Max	Min	Max		
16	M20	½" or ¾"	3.4	8.4	9.0	13.5	6.7	10.3	0.15 - 1.25	L24
20S	M20	½" or ¾"	7.2	11.7	11.5	16.0	9.4	12.5	0.15 - 1.25	L24
20	M20	½" or ¾"	9.4	14.0	15.5	21.1	12.0	17.6	0.15 - 1.25	EL30
25	M25	¾" or 1"	13.5	20.0	20.3	27.4	16.8	23.9	0.15 - 1.60	EL38
32	M32	1" or 1¼"	19.5	26.3	26.7	34.0	23.2	30.5	0.15 - 2.00	EL46
40	M40	1¼" or 1½"	23.0	32.2	33.0	40.6	28.6	36.2	0.20 - 2.00	EL55
50S	M50	1½" or 2"	28.1	38.2	39.4	46.7	34.8	42.4	0.30 - 2.50	EL65
50	M50	2"	33.1	44.1	45.7	53.2	41.1	48.5	0.30 - 2.50	EL65
63S	M63	2" or 2½"	39.3	50.1	52.1	59.5	47.5	54.8	0.30 - 2.50	EL80
63	M63	2½"	46.7	56.0	58.4	65.8	53.8	61.2	0.30 - 2.50	EL80
75S	M75	2½" or 3"	52.3	62.0	64.8	72.2	60.2	68.0	0.30 - 2.50	EL90
75	M75	3"	58.0	68.0	71.1	78.0	66.5	73.4	0.30 - 2.50	EL90
80	M80 x 2	3" or 3½"	61.9	72.0	77.0	84.0	-	-	0.45 - 3.15	L104
80H	M80 x 2	3" or 3½"	61.9	72.0	79.6	90.0	-	-	0.45 - 3.15	L104
85	M85 x 2	3" or 3½"	69.1	78.0	79.6	90.0	75.0	85.4	0.45 - 3.15	L104
90	M90 x 2	3½" or 4"	74.1	84.0	88.0	96.0	-	-	0.45 - 3.15	L114
90H	M90 x 2	3½" or 4"	74.1	84.0	92.0	102.0	-	-	0.45 - 3.15	L114
100	M100 x 2	3½" or 4"	81.8	90.0	92.0	102.0	87.4	97.4	0.45 - 3.15	L114

Step 3 – Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
1/2" NPT	050NPT
3/4" NPT	075NPT
1" NPT	100NPT
1 1/4" NPT	125NPT
1 1/2" NPT	150NPT
2" NPT	200NPT
2 1/2" NPT	250NPT
3" NPT	300NPT
3 1/2" NPT	350NPT
4" NPT	400NPT
-	-
-	-



Atex and CENELEC Range



TACF

Certifications and Compliances

- ATEX E Exd I & IIC with SIRA 03ATEX1552X
- Standards EN50014, EN50018 and EN50281-1-1:1998
- IP66 and IP68 at 100 meters
- DTS01 1991 deluge
- CSA Exd I & IIC
- Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R-Exd I & IICU
- Mining Equipment Group I, M2

Application

The TACF series is a flameproof E Exd compound filled barrier cable gland for use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and steel wire armoured, steel wire braided, steel tape armoured and unarmoured cables. Also, for use in Exd and Exe hazardous areas with CSA equipment and braided and marine shipboard cable. The TACF series will maintain the flameproof Exd integrity of any volume enclosure with an internal ignition source for all gas groups when used with any armoured or unarmoured cable types.

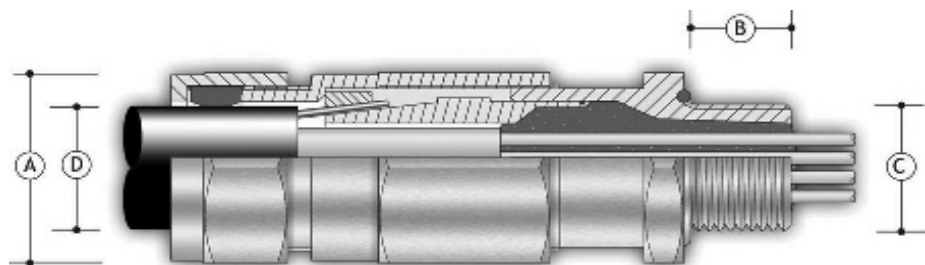
Features:

All TACF Cable glands:

- are available in all brass or all stainless steel construction.
- offer a universal armour clamp for all armoured cable types (steel wire, steel braid, steel tape, marine shipboard) and unarmoured cable.
- are provided with sealing compound that cures in 4 hours at 21°C.
- come with no reversible components, eliminating installer error.
- maintain Flameproof Exd and Increase Safety Exe methods of explosion protection.
- provide a seal on the outer sheath offering IP66/68 and Type 4X protection.
- provide an entry thread seal (metric threads only).
- meet DTS01 1991 deluge requirements.
- may be terminated 1 hour after creation of seal.
- may be energized 4 hours after creation of seal.
- incorporate anti-twist assembly reducing the amount of cable twist during installation.
- are available with metric or NPT threads.
- are available with optional nickel-plate finish.
- are provided with silicone seals, temperature range -60°C to +85°C.

Design Data (millimeters)

Gland Size	A (across corners)	B
16	28.0	16
20S	28.0	16
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50S	71.5	16
50	71.5	16
63S	88.0	19
63	88.0	19
75S	99.0	19
75	99.0	19
80	115.2	25
85	115.2	25
90	125.7	25
100	125.7	25



TACF Series Barrier Gland

Atex and CENELEC Range

ATEX and CENELEC E Exd & IIC ATEX I M2 II 2 GD
Ignitable dusts, Zones 21 and 22 CSA Exc I IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/88
DTS01 1991 Deluge

5F



Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:

1. Select the Gland Type based on material required (i.e., TACFB)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT) (Available sizes listed in step 2)

Ordering example:
TACFB/20S/075NPT

Step 1: Select Gland Type from Table below:

Gland Types

Gland Type	Description
TACFB	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Brass construction
TACFS	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Stainless steel construction

For optional nickel-plate finish on brass glands add suffix /NP after Gland Type (i.e., TACFB/NP).

For reduced bore gland add "R" at the end of Gland Type (i.e., TACFBR).

For optional poly-bagged kit including gland, locknut, earth tag, sealing washer and PVC shroud, add "K1" at the end of Gland Type (i.e., TACFBK1).

Step 2: Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		GLAND SEAL RANGE							Armour Acceptance Range	Shroud Size
			Cable Inner Sheath/Cores [C]			Cable Outer Sheath [D]					
						Standard		Reduced			
	Metric	NPT	Max No. of Cores	Max Over Cores	Max Inner Sheath	Min	Max	Min	Max		
16	M20	½" or ¾"	7	9.0	11.7	9.0	13.5	6.7	10.3	0.15 - 1.25	L24
20S	M20	½" or ¾"	8	10.4	11.7	11.5	16.0	9.4	12.5	0.15 - 1.25	L24
20	M20	½" or ¾"	14	12.5	14.0	15.5	21.1	12.0	17.6	0.15 - 1.25	EL30
25	M25	¾" or 1"	25	17.8	20.0	20.3	27.4	16.8	23.9	0.15 - 1.60	EL38
32	M32	1" or 1¼"	50	23.5	26.3	26.7	34.0	23.2	30.5	0.15 - 2.00	EL46
40	M40	1¼" or 1½"	80	28.8	32.2	33.0	40.6	28.6	36.2	0.20 - 2.00	EL55
50S	M50	2"	100	34.2	38.2	39.4	46.8	34.8	42.4	0.20 - 2.50	EL65
50	M50	2"	100	39.4	44.1	45.7	53.2	41.1	48.5	0.20 - 2.50	EL65
63S	M63	2½"	120	44.8	50.1	52.1	59.5	47.5	54.8	0.30 - 2.50	EL80
63	M63	2½"	120	50.0	56.0	58.4	65.8	53.8	61.2	0.30 - 2.50	EL80
75S	M75	3"	140	55.4	62.0	64.8	72.2	60.2	68.0	0.30 - 2.50	EL90
75	M75	3"	140	60.8	68.0	71.1	78.0	66.5	73.4	0.30 - 2.50	EL90
80	M80 x 2	3" or 3½"	160	64.4	72.0	77.0	84.0	—	—	0.45 - 3.15	L104
85	M85 x 2	3" or 3½"	180	69.8	78.0	79.6	90.0	75.0	85.4	0.45 - 3.15	L104
90	M90 x 2	3½" or 4"	200	75.1	84.0	88.0	96.0	—	—	0.45 - 3.15	L114
100	M100 x 2	3½" or 4"	220	80.5	90.0	92.0	102.0	87.4	97.4	0.45 - 3.15	L114

Step 3: Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
1/2" NPT	050NPT
3/4" NPT	075NPT
1" NPT	100NPT
1 1/4" NPT	125NPT
1 1/2" NPT	150NPT
2" NPT	200NPT
2 1/2" NPT	250NPT
3" NPT	300NPT
3 1/2" NPT	350NPT
4" NPT	400NPT
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—	—



Certifications and Compliances

- ATEX E Exd IIC/E Exe II with SIRA 03ATEX2079X
- Standards EN50014:1998, EN50018:2000, EN50019:2000 and EN50281-1-1:1998
- Class I, Zone 1
- CSA Exd IIC/Exe II
- Enclosure Type 4X
- IP66, IP67 and IP68
- GOST R - Exd IICU/Exe IIU

Design Data (millimeters)

Gland Size	A (across corners)	B (thread length)
16	28.0	16.0
20S	28.0	16.0
20	33.0	16.0
25	41.4	16.0
32	50.6	16.0
40	60.5	16.0
50S	71.5	16.0
50	71.5	16.0
63S	88.0	19.0
63	88.0	19.0
75S	99.0	19.0
75	99.0	19.0
80	115.2	25.0
85	115.2	25.0
90	125.7	25.0
100	125.7	25.0

Application

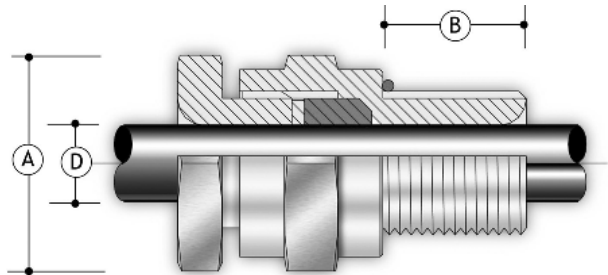
For use in Zone 1 or 2 hazardous areas with ATEX/CENELEC certified equipment and unarmoured, braided or marine shipboard cable.

Features

All TUSC cable glands offer:

- a flameproof or increased safety seal on the outer sheath of unarmoured or braided cable
- a weatherproof seal to the outer sheath of the cable
- integral entry thread seal (metric entry threads only)
- brass construction (optional stainless steel)
- optional nickel-plate finish
- metric or NPT threads

TU3SC cable glands offer a zero halogen version for extreme high and low temperature applications (-60°C to +180°C).



TUSC Brass Cable Glands

ATEX and CENELEC Range for Unarmoured or Braided Cable

ATEX and CENELEC Dual E Exd IIC/E Exe II
Zone 1 or 2 Hazardous Areas
CSA Exd IIC/Exe II, Class I, Zone 1
Enclosure Type 4X
IP66/67/68

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5F Cable and
Cord Fittings

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:

1. Select the Gland Type (i.e., TU1SC)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT)

Ordering example:

TU1SC/NP/20S/075NPT

Step 1 – Select Gland Type from Table below:

Gland Types

Gland Type	Description
TU1SC	For Unarmoured or Braided cable with neoprene seal – brass construction.
TU3SC	For Unarmoured or Braided cable with silicone seal for extreme temp. – brass construction.
TU1SCS	For Unarmoured or Braided cable with neoprene seal – stainless steel construction.
TU3SCS	For Unarmoured or Braided cable with silicone seal for extreme temp. – stainless steel construction.

For optional nickel-plate finish add suffix /NP after Gland Type (i.e., TU1SC/NP).

For optional poly-bagged kit including gland, brass locknut, sealing washer and PCP shroud, add "K1" at the end of Gland Type (i.e. TU1SCK1).

Step 2 – Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		Cable Outer Sheath [D]		Shroud Size †
	Metric	NPT	Min	Max	
16	M20	½" or ¾"	3.4	8.4	L24
20S	M20	½" or ¾"	7.2	11.7	L24
20	M20	½" or ¾"	9.6	14.0	L30
25	M25	¾" or 1"	13.5	20.0	L38
32	M32	1" or 1¼"	19.5	26.3	L46
40	M40	1¼" or 1½"	23.0	32.2	L55
50S	M50	1½" or 2"	28.2	38.2	L65
50	M50	2"	33.2	44.1	L65
63S	M63	2" or 2½"	39.3	50.1	L80
63	M63	2½"	46.7	56.0	L80
75S	M75	2½" or 3"	52.3	62.0	L90
75	M75	3"	58.1	68.0	L90
80	M80 × 2	3" or 3½"	62.3	72.0	L104
85	M85 × 2	3" or 3½"	69.1	78.0	L104
90	M90 × 2	3½" or 4"	74.1	84.0	L114
100	M100 × 2	3½" or 4"	82.1	90.0	L114

† For PVC or PCP shrouds see Accessories, page 93

Step 3 – Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
½" NPT	050NPT
¾" NPT	075NPT
1" NPT	100NPT
1¼" NPT	125NPT
1½" NPT	150NPT
2" NPT	200NPT
2½" NPT	250NPT
3" NPT	300NPT
3½" NPT	350NPT
4" NPT	400NPT
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–	–



Atex and CENELEC Range



TUCF

Certifications and Compliances

- ATEX E Exd I & IIC with SIRA 03ATEX1552X
- Standards EN50014, EN50018 and EN50281-1-1:1998
- IP66 and IP68 at 100 meters
- DTS01 1991 deluge
- CSA Exd I & IIC
- Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R-Exd I & IICU
- Mining Equipment Group I, M2

Application

The TUCF series is a flameproof E Exd compound filled barrier cable gland for use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and unarmoured cable. Also, for use in Exd and Exe hazardous areas with CSA equipment and unarmoured cable. The TUCF series will maintain the flameproof Exd integrity of any volume enclosure with an internal ignition source for all gas groups when used with any unarmoured cable types.

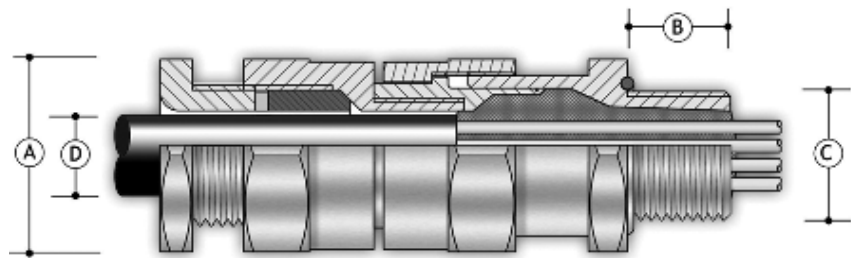
Features:

All TUCF Cable glands:

- are available in all brass or all stainless steel construction.
- are provided with sealing compound that cures in 4 hours at 21°C.
- maintain Flameproof Exd methods of explosion protection.
- provide a secondary seal on the outer sheath offering IP66/68 and Type 4X protection.
- provide an entry thread seal (metric threads only).
- meet DTS01 1991 deluge requirements.
- may be terminated 1 hour after creation of seal.
- may be energized 4 hours after creation of seal.
- are available with metric or NPT threads.
- are available with optional nickel-plate finish.
- are provided with silicone seals, temperature range -60°C to +85°C.

Design Data (millimeters)

Gland Size	A (across corners)	B
16	28.0	16
20S	28.0	16
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50S	71.5	16
50	71.5	16
63S	88.0	19
63	88.0	19
75S	99.0	19
75	99.0	19
80	115.2	25
85	115.2	25
90	125.7	25
100	125.7	25



TUCF Series Barrier Gland

Atex and CENELEC Range

ATEX and CENELEC E Exd I & IIC ATEX I M2 II 2 GD
Ignitable dusts, Zones 21 and 22 CSA Exc I & IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/68
DTS01 1991 Deluge

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Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:

1. Select the Gland Type based on material required (i.e., TUCFB)
2. Select the Gland Size based on cable specifications (i.e., 20S)
3. Specify Thread Size (i.e., 075NPT) (Available sizes listed in step 2)

Ordering example:
TUCFB/20S/075NPT

Step 1: Select Gland Type from Table below:

Gland Types

Gland Type	Description
TUCFB	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Brass construction
TUCFS	Compound filled universal gland for steel wire, steel braid & steel tape w/ silicone seal - Stainless steel construction

For optional nickel-plate finish on brass glands add suffix /NP after Gland Type (i.e., TUCFB/NP). For reduced bore gland add "R" at the end of Gland Type (i.e., TUCFBR). For optional poly-bagged kit including gland, locknut, earth tag, sealing washer and PVC shroud, add "K1" at the end of Gland Type (i.e., TUCFBK1).

Step 2: Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Gland Size	Available Entry Threads		GLAND SEAL RANGE					Shroud Size
			Cable Inner Sheath/Cores [C]			Cable Outer Sheath [D]		
	Standard							
	Metric	NPT	Max No. of Cores	Max Over Cores	Max Inner Sheath	Min	Max	
16	M20	½" or ¾"	7	8.4	8.4	3.4	8.4	L24
20S	M20	½" or ¾"	8	10.4	11.7	4.8	11.7	L24
20	M20	½" or ¾"	14	12.5	14.0	9.5	14.0	EL30
25	M25	¾" or 1"	25	17.8	20.0	11.7	20.0	EL38
32	M32	1" or 1¼"	50	23.5	26.3	18.1	26.3	EL46
40	M40	1¼" or 1½"	80	28.8	32.2	22.6	32.2	EL55
50S	M50	2"	100	34.2	38.2	28.2	38.2	EL65
50	M50	2"	100	39.4	44.1	33.1	44.1	EL65
63S	M63	2½"	120	44.8	50.1	39.3	50.1	EL80
63	M63	2½"	120	50.0	56.0	46.7	56.0	EL80
75S	M75	3"	140	55.4	62.0	52.3	62.0	EL90
75	M75	3"	140	60.8	68.0	58.0	68.0	EL90
80	M80 x 2	3" or 3½"	160	64.4	72.0	61.9	72.0	L104
85	M85 x 2	3" or 3½"	180	69.8	78.0	69.1	78.0	L104
90	M90 x 2	3½" or 4"	200	75.1	84.0	74.1	84.0	L114
100	M100 x 2	3½" or 4"	220	80.5	90.0	81.8	90.0	L114

Step 3: Specify Thread Size from Table below:

Metric Thread Sizes

Thread Size	Add to Catalog Number
M16	M16
M20	M20
M25	M25
M32	M32
M40	M40
M50	M50
M63	M63
M75	M75
M80	M80
M85	M85
M90	M90
M100	M100

NPT Thread Sizes

Thread Size	Add to Catalog Number
1/2" NPT	050NPT
3/4" NPT	075NPT
1" NPT	100NPT
1 1/4" NPT	125NPT
1 1/2" NPT	150NPT
2" NPT	200NPT
2 1/2" NPT	250NPT
3" NPT	300NPT
3 1/2" NPT	350NPT
4" NPT	400NPT
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Atex and CENELEC Range



TCCF

Certifications and Compliances

- ATEX E Exd I & IIC with SIRA 03ATEX1552X
- Standards EN50014, EN50018 and EN50281-1-1:1998
- IP66 and IP68 at 100 meters
- DTS01 1991 deluge
- CSA Exd I & IIC
- Type 4X
- Zone 1 and Zone 2
- Ignitable dusts, Zones 21 and 22
- GOST R-Exd I & IICU
- Mining Equipment Group I, M2

Application

The TCCF series is a flameproof E Exd compound filled barrier cable gland for use in Zone 1 or 2 hazardous areas with ATEX/CENELEC equipment and conduit. The gland provides a flameproof Exd seal on the cables individual conductors within a conduit. Also, for use in Exd and Exe hazardous areas with CSA equipment and braided and marine shipboard cable. The TCCF series will maintain the flameproof Exd integrity of any volume enclosure with an internal ignition source for all gas groups when used with conduit.

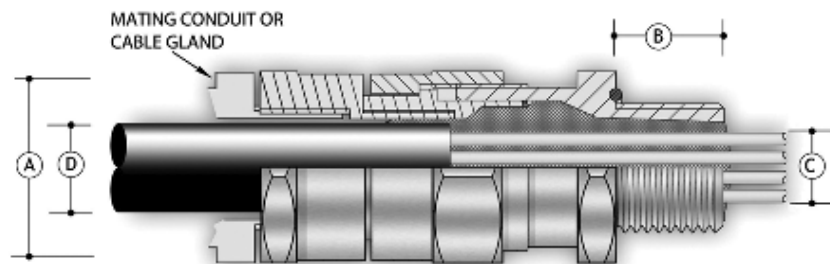
Features:

All TCCF Cable glands:

- are available in all brass or all stainless steel construction.
- are provided with sealing compound that cures in 4 hours at 21°C.
- maintain Flameproof Exd and Increase Safety Exe methods of explosion protection.
- provide a seal on the conduit offering IP66/68 and Type 4X protection.
- provide an entry thread seal (metric threads only).
- meet DTS01 1991 deluge requirements.
- may be terminated 1 hour after creation of seal.
- may be energized 4 hours after creation of seal.
- are available with metric or NPT threads.
- are available with optional nickel-plate finish.
- have a temperature range of -60°C to +85°C.

Design Data (millimeters)

Gland Size	A (across corners)	B
20	33.0	16
25	41.4	16
32	50.6	16
40	60.5	16
50	71.5	16
63	88.0	19
75	99.0	19
80	115.2	25
85	115.2	25
90	125.7	25
100	125.7	25



TCCF Series Barrier Gland

Atex and CENELEC Range

ATEX and CENELEC E Exd & IIC ATEX I M2 II 2 GD
Ignitable dusts, Zones 21 and 22 CSA Exc I IIC
Class I, Zone 1 or 2 Hazardous Areas
Type 4X, IP66/88
DTS01 1991 Deluge

5F



5F Cable and
Cord Fittings

Ordering Information

Build your catalog number from the information below. All catalog numbers consist of three main sections:

1. Select the Gland Type based on material required (i.e., TCCFB)
2. Select the Fitting Size based on entry threads (i.e., 20)
3. Specify Male Entry Thread Size (i.e., 075NPT)
4. Specify Female Entry Thread Size (i.e., 075NPT)

Ordering example:
TCCFB/20S/075NPT

Step 1: Select Gland Type from Table below:

Gland Types

Gland Type	Description
TCCFB	Cable gland for conduit - Brass construction
TCCFS	Cable gland for conduit - Stainless steel construction

For optional nickel-plate finish on brass glands add suffix /NP after Gland Type (i.e., TCCFB/NP).

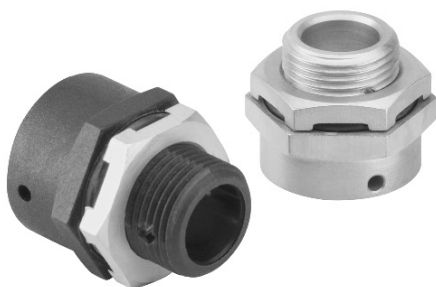
Step 2: Select Gland Size based on Cable Size from Table below:

Cable Sizes (Dimensions are all in millimeters)

Fitting Size Ref	Male Entry Threads		Female Entry Threads		SEALING RANGE		
					Cable Conductors / Cores		
	Metric	NPT	Metric	NPT	Max No. of Cores	Max Over Cores [C]	Max Cable Inside Fitting [D]
20	M20	1/2" or 3/4"	M20	1/2" or 3/4"	14	12.5	14.0
25	M25	3/4" or 1"	M25	3/4" or 1"	25	17.8	20.0
32	M32	1" or 1 1/4"	M32	1" or 1 1/4"	50	23.5	26.3
40	M40	1 1/4" or 1 1/2"	M40	1 1/4" or 1 1/2"	80	28.8	32.2
50	M50	2"	M50	2"	100	39.4	44.1
63	M63	2 1/2"	M63	2 1/2"	120	50.0	56.0
75	M75	3"	M75	3"	140	60.8	68.0
80	M80 x 2	3" or 3 1/2"	M80 x 2	3" or 3 1/2"	160	64.4	72.0
85	M85 x 2	3" or 3 1/2"	M85 x 2	3" or 3 1/2"	180	69.8	78.0
90	M90 x 2	3 1/2" or 4"	M90 x 2	3 1/2" or 4"	200	75.1	84.0
100	M100 x 2	3 1/2" or 4"	M100 x 2	3 1/2" or 4"	220	80.5	90.0

Step 3: Specify Male Thread Size from Table Above:

Step 4: Specify Female Thread Size from Table Above:

**Certifications and Compliances**

- SIRA 99 ATEX 3050U
- I M2 II 2GD, E Exe I & II (Stainless Steel & Brass only)
- II 2GD, E Exe II (Nylon only)
- CSA Class I, Division 2, Groups A, B, C & D, Exe II
- Enclosure Type 4X
- IP66

Operating Temperature

- -50°C to +85°C

Application

For use in enclosures to provide a method to effectively drain moisture while allowing the enclosure to breathe.

Features

All NEMA 4X breather/drains offer:

- Castellated locknuts that allow moisture to pass between the enclosure and the locknut to the drain holes in the fitting.
- Available in brass, stainless steel (Type 316) or 30% glass filled nylon.
- Captive "O" ring on recess of the face of the breather/drain to optimize ingress protection.
- ATEX and CSA Certified for worldwide market acceptance.
- Available with metric or NPT threads.

Ordering Information**NEMA 4X Breather/Drain**

Entry Method	Material	Catalog Number
M20	Brass	ACDPEB/M20/15
M20	Stainless Steel	ACDPES/M20/15
M20	Nylon	ACDPEBN/M20/15
M25	Brass	ACDPEB/M25/15
M25	Stainless Steel	ACDPES/M25/15
M25	Nylon	ACDPEBN/M25/15
1/2"	Brass	ACDPEB/050NPT/15
1/2"	Stainless Steel	ACDPES/050NPT/15
3/4"	Brass	ACDPEB/075NPT/15
3/4"	Stainless Steel	ACDPES/075NPT/15

Thread Data (Dimensions are all in millimeters)

Thread Size	Major Diameter	Pitch	Length	Min. Hex
M16	15.97	1.50	16.00	24
M20	19.97	1.50	16.00	30
M25	24.97	1.50	16.00	38
M32	31.97	1.50	16.00	46
M40	39.97	1.50	16.00	55
M50	49.97	1.50	16.00	65
M63	62.97	1.50	19.00	80
M75	74.97	1.50	19.00	90
M80	79.97	2.00	25.00	104
M85	84.97	2.00	25.00	104
M90	89.97	2.00	25.00	114
M100	99.97	2.00	25.00	114
1/2" NPT	21.22	1.81	19.90	24
3/4" NPT	26.57	1.81	20.10	30
1" NPT	33.23	2.20	25.00	38
1 1/4" NPT	41.99	2.20	25.60	46
1 1/2" NPT	48.05	2.20	26.00	55
2" NPT	60.09	2.20	26.90	65
2 1/2" NPT	72.7	3.18	39.90	80
3" NPT	88.61	3.18	41.50	90
3 1/2" NPT	101.36	3.18	42.80	104
4" NPT	113.97	3.18	44.00	114

Weight Data (Weights are all in grams)

Gland Size	TWDC/TBDC	TWCF/TBCF	TWSC/TBSC	TUSC	TUDC
16	141	—	116	85	139
20S	131	191	110	86	129
20	190	188	161	120	176
25	265	275	234	167	246
32	424	429	355	253	396
40	673	673	590	375	626
50S	966	962	532	588	898
50	743	740	616	459	691
63S	1389	—	1255	836	1258
63	1142	—	999	693	1030
75S	1690	—	1473	1091	1537
75	1347	—	1122	844	1225
80	2615	—	—	1690	2379
85	2335	—	—	1510	2124
90	3470	—	—	1650	3157
100	3090	—	—	1520	2811

Glossary of Terms

I M2 - Gas Group 1, M2 is the ATEX category for equipment suitable for Zones 21 & 22 (Mining applications).

II 2GD - Gas Group II, 2 is the ATEX category for equipment suitable for Zones 1 & 2, GD denotes suitability for both Gas and Dust atmospheres.

ATEX - The ATEX Directive (94/9/EC) applies to equipment and protective systems intended for use in potentially explosive atmospheres within Europe. The directive outlines the conformity assessment procedures and product classification for explosion protected (Ex) products. All explosion protected products placed on the market within Europe after 30th June 2003 must comply with these requirements.

Cable Glands - A fitting designed to terminate cable or flexible cord at junction boxes, control centers, lighting fixtures, panelboards and other enclosures. Also provides strain relief and environmental sealing.

CENELEC - The standards-writing body of the European Union.

Deluge Areas - A deluge area is one where the cable gland may be temporarily submersed in water. (Shell DTS01 tested).

Earth Tag - Designed as a ground connection that is affixed to the entry threads of the cable gland.

E Exe I & II - Increased Safety, Gas Groups I (Mining) & II (Surface).

E Exe II - Increased Safety, Gas Group II (Surface).

GOST - Gosstandart is the state approvals and standards body of the Russian Federation.

IEC - International Electrotechnical Commission.

IP Rating - IP stands for ingress protection and is a term used by the IEC. The IP rating indicates the degree of protection provided by the cable gland from environmental elements. It is similar to NEMA ratings. IP54 is protected against dusts and no ingress of water sprayed from all directions. IP66 is completely dust proof and no ingress of water from jets similar to heavy seas. IP67 is completely dust proof and no ingress of water from immersion at 1 meter depth. IP68 is completely dust proof and no ingress of water from deeper and prolonged immersion.

PCP - polychloroprene.

PVC - poly-vinyl-chloride.

Reduced Bore - Options available on CENELEC certified Terminator Brass Cable Glands for a reduced bore on outer neoprene seal for smaller OD cable.

Shroud - A PVC, PCP or SIO accessory that is designed to cover the cable gland for added environmental protection.

SIO - Silicone, low smoke, zero halogen shroud.

Locknuts, Earth Tags, Sealing Washers,
Metric Adapters, PVC Shrouds,
PCP Shrouds



Brass Locknut – Standard locknut to affix a hazardous area brass cable gland in a plain hole

Size	Cat. #	Size	Cat. #	Size	Cat. #
M16	BLN/M16	M80	BLN/M80	1½"	BLN/150NPT
M20	BLN/M20	M85	BLN/M85	2"	BLN/200NPT
M25	BLN/M25	M90	BLN/M90	2½"	BLN/250NPT
M32	BLN/M32	M100	BLN/M100	3"	BLN/300NPT
M40	BLN/M40	1½"	BLN/050NPT	3½"	BLN/350NPT
M50	BLN/M50	¾"	BLN/075NPT	4"	BLN/400NPT
M63	BLN/M63	1"	BLN/100NPT	–	–
M75	BLN/M75	1¼"	BLN/125NPT	–	–



Brass Earth Tag – Standard earth connection for threaded cable glands

Size	Cat. #	Size	Cat. #	Size	Cat. #
M16	BET/M16	M80	BET/M80	1½"	BET/150NPT
M20	BET/M20	M85	BET/M85	2"	BET/200NPT
M25	BET/M25	M90	BET/M90	2½"	BET/250NPT
M32	BET/M32	M100	BET/M100	3"	BET/300NPT
M40	BET/M40	1½"	BET/050NPT	3½"	BET/350NPT
M50	BET/M50	¾"	BET/075NPT	4"	BET/400NPT
M63	BET/M63	1"	BET/100NPT	–	–
M75	BET/M75	1¼"	BET/125NPT	–	–



Sealing Washer – Required to maintain IP ratings above IP54

Size	Cat. #	Size	Cat. #	Size	Cat. #
M16	RNSW/M16	M80	RNSW/M80	1½"	RNSW/150NPT
M20	RNSW/M20	M85	RNSW/M85	2"	RNSW/200NPT
M25	RNSW/M25	M90	RNSW/M90	2½"	RNSW/250NPT
M32	RNSW/M32	M100	RNSW/M100	3"	RNSW/300NPT
M40	RNSW/M40	1½"	RNSW/050NPT	3½"	RNSW/350NPT
M50	RNSW/M50	¾"	RNSW/075NPT	4"	RNSW/400NPT
M63	RNSW/M63	1"	RNSW/100NPT	–	–
M75	RNSW/M75	1¼"	RNSW/125NPT	–	–

Brass Cable Gland Accessories

Locknuts, Earth Tags, Sealing Washers,
Metric Adapters, PVC Shrouds,
PCP Shrouds



Type A



Type B

Metric/NPT Thread Adapters – Brass adapters used to change the thread form and/or size

Adapters: NPT → Metric

Cat. #	Male Thread	Female Thread	Body Style
CAPRI: 740454	1/2"	20mm	B
CAPRI: 740714	1/2"	25mm	B
CAPRI: 740464	3/4"	20mm	A
CAPRI: 740724	3/4"	25mm	B
CAPRI: 740474	1"	20mm	A
CAPRI: 740734	1"	25mm	A
CAPRI: 740994	1"	32mm	B
CAPRI: 740744	1 1/4"	25mm	A
CAPRI: 741004	1 1/4"	32mm	A
CAPRI: 741274	1 1/2"	40mm	A
CAPRI: 741284	2"	40mm	A
CAPRI: 741544	2"	50mm	A
CAPRI: 741804	2"	63mm	B
CAPRI: 741814	2 1/2"	63mm	A

Class I, Zone I, Group IIC & Class II

Adapters: Metric → NPT

Cat. #	Male Thread	Female Thread	Body Style
CAPRI: 744704	20mm	1/2"	B
CAPRI: 744964	20mm	3/4"	B
CAPRI: 744714	25mm	1/2"	A
CAPRI: 744974	25mm	3/4"	B
CAPRI: 744984	32mm	3/4"	A
CAPRI: 745244	32mm	1"	B
CAPRI: 745254	40mm	1"	A
CAPRI: 745514	40mm	1 1/4"	B
CAPRI: 745524	50mm	1 1/4"	A
CAPRI: 745794	63mm	1 1/2"	A

Class I, Zone I, Group IIC & Class II

Adapters are available with optional nickel-plate finish, add suffix -NP (i.e., ANM21-NP)



Black PVC Shroud – Covers the gland as added environmental protection

Size	Cat. #	Size	Cat. #
L24	PVC-L24	L65	PVC-L65
L30	PVC-L30	L80	PVC-L80
L38	PVC-L38	L90	PVC-L90
L46	PVC-L46	L104	PVC-L104
L55	PVC-L55	L114	PVC-L114



Black PCP Shroud – Covers the gland as added environmental protection†

Size	Cat. #†	Size	Cat. #†
L24	PCP-L24	L65	PCP-L65
L30	PCP-L30	L80	PCP-L80
L38	PCP-L38	L90	PCP-L90
L46	PCP-L46	L104	PCP-L104
L55	PCP-L55	–	–

† For a zero halogen version shroud, to be used with cable glands for extreme high and low temperature applications (i.e. TW3DC) change PCP catalog number to SIO (i.e., PCP-L24 becomes SIO-L24).

CAPRI Series Brass Cable Glands

One Gland for Steel-Wire Armour,
Steel Wire Braid and Steel-Tape Cable

EEx e II
EEx d IIB
Zone 1 or 2
IP 68

Universal clamping with
standard nickel plate finish



Certifications and Compliances

- ATEX E Exd IIC / E Exe II by Securite LCIE 97 ATEX 6006X
- Standards EN50014, EN50018, EN50019:2000, EN50281-1-1 and 2.
- IP68

Application

For terminating cable in Zone 1 or 2 hazardous areas with ATEX/ CENELEC certified equipment and steel wire armoured, braided or steel-tape cable. For use indoors or outdoors.

- E Exe II rating • E Exd IIB rating • E Exd IIC <2000 cm³

Features

All CAPRI Series brass cable glands offer:

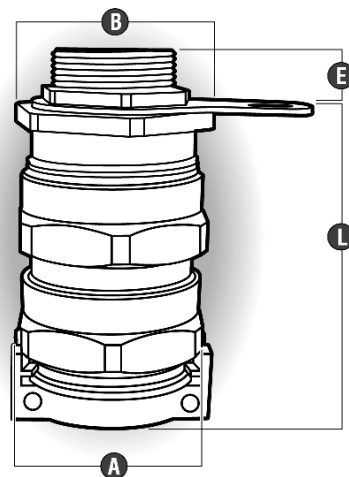
- one gland for 3 types of cable.
- a standard nickel plate finish.
- clamping and bonding on the armour.
- a flameproof seal on the inner sheath of the cable.
- a weatherproof seal to the outer sheath of the cable.
- IP68 ingress protection.
- a neoprene bushing temperature range of -40°C to 100°C.
- an optional earthing washer for use with lead sheath cable.
- metric or NPT entry threads.
- a perfect fit for cables with an inner sheath diameter of 4 mm to 82 mm.

Metric Design Data (millimeters)

Thread Gland					
Size	Size	A	B	E	L
16	5	19.0	19.0	15.0	36.0
16	6	24.0	24.0	15.0	42.0
20	5	19.0	24.0	15.0	36.0
20	6	24.0	24.0	15.0	42.0
20	7	30.0	30.0	15.0	46.0
25	6	24.0	30.0	15.0	42.0
25	7	30.0	30.0	15.0	46.0
25	8	41.0	41.0	15.0	56.0
32	8	41.0	41.0	15.0	56.0
32	9	48.0	48.0	15.0	63.0
40	9	48.0	48.0	15.0	63.0
40	10	55.0	55.0	15.0	68.0
50	10	55.0	55.0	16.0	68.0
50	11	64.0	64.0	16.0	74.0
63	12	72.0	72.0	17.0	77.0
63	13	85.0	85.0	17.0	85.0
75	13	85.0	85.0	18.0	85.0
75	14	95.0	95.0	18.0	92.0
80	14	95.0	95.0	20.0	92.0
80	15	110.0	110.0	20.0	104.0
90	15	110.0	110.0	22.0	104.0
90	16	120.0	110.0	22.0	108.0

NPT Design Data (millimeters)

Thread Gland					
Size	Size	A	B	E	L
1/2"	5	19.0	24.0	16.0	36.0
1/2"	6	24.0	24.0	16.0	42.0
1/2"	7	30.0	30.0	16.0	46.0
3/4"	6	24.0	30.0	16.0	42.0
3/4"	7	30.0	30.0	16.0	46.0
3/4"	8	41.0	41.0	16.0	56.0
1"	8	41.0	41.0	20.0	46.0
1"	9	48.0	48.0	20.0	63.0
1 1/4"	9	48.0	48.0	20.0	63.0
1 1/4"	10	55.0	55.0	20.0	68.0
1 1/2"	10	55.0	55.0	20.0	68.0
1 1/2"	11	64.0	64.0	20.0	74.0
2"	12	72.0	72.0	20.0	77.0
2"	13	85.0	85.0	20.0	85.0
2 1/2"	13	85.0	85.0	28.0	85.0
2 1/2"	14	95.0	95.0	28.0	92.0
3"	15	110.0	110.0	30.0	104.0
3"	16	120.0	120.0	30.0	108.0



CAPRI Series Brass Cable Glands cont.

One Gland for Steel-Wire Armour,
Steel Wire Braid and Steel-Tape Cable

EEx e II
EEx d IIB
Zone 1 or 2
IP 68

5F

5F Cable and
Cord Fittings

Ordering Information

Capri ADE 4F Series – Metric

Thread Size	Gland Size	GLAND SEAL RANGE				Armour Range	Catalog Number
		Cable Inner Sheath		Cable Outer Sheath			
		Min	Max	Min	Max		
16	5	4.0	8.5	6.0	12.0	0.90	CAPRI:846594
16	6	6.0	12.0	8.5	16.0	1.25	CAPRI:846504
20	5	4.0	8.5	6.0	12.0	0.90	CAPRI:846674
20	6	6.0	12.0	8.5	16.0	1.25	CAPRI:846694
20	7	8.5	15.5	12.0	21.0	1.25	CAPRI:846604
25	6	6.0	12.0	8.5	16.0	1.25	CAPRI:846774
25	7	8.5	16.0	12.0	21.0	1.25	CAPRI:846794
25	8	12.0	20.5	16.0	27.5	1.60	CAPRI:846704
32	8	12.0	21.0	16.0	27.5	1.25	CAPRI:846894
32	9	16.0	27.5	21.0	34.0	1.60	CAPRI:846804
40	9	16.0	27.5	21.0	34.0	2.00	CAPRI:846994
40	10	21.0	34.0	27.0	41.0	2.00	CAPRI:846904
50	10	21.0	34.0	27.0	41.0	2.50	CAPRI:847094
50	11	27.0	41.0	33.0	48.0	2.50	CAPRI:847004
63	12	33.0	48.0	40.0	56.0	2.50	CAPRI:847294
63	13	40.0	56.0	47.0	65.0	2.50	CAPRI:847204
75	13	40.0	56.0	47.0	65.0	2.50	CAPRI:847394
75	14	47.0	65.0	54.0	74.0	3.15	CAPRI:847304
80	14	47.0	65.0	54.0	74.0	3.15	CAPRI:847494
80	15	54.0	73.0	63.0	83.0	3.15	CAPRI:847404
90	15	54.0	74.0	63.0	83.0	3.15	CAPRI:847594
90	16	63.0	82.0	72.0	93.0	3.15	CAPRI:847504

Clamping Module

Gland Size	Cable Dia.		Catalog Number
	Min	Max	
5	8.0	12.0	CAPRI:810534
6	8.5	16.0	CAPRI:810634
7	12.0	21.0	CAPRI:810734
8	16.0	27.5	CAPRI:810834
9	21.0	34.0	CAPRI:810934
10	27.0	41.0	CAPRI:811034
11	33.0	48.0	CAPRI:811134
12	40.0	56.0	CAPRI:811234
13	47.0	65.0	CAPRI:811334
14	54.0	74.0	CAPRI:811434
15	63.0	83.0	CAPRI:811534
16	72.0	93.0	CAPRI:811634

PVC Shroud

Gland Size	Cable Dia.		Catalog Number
	Min	Max	
5	6.0	12.0	CAPRI:506050
6	8.5	16.0	CAPRI:506060
7	12.0	21.0	CAPRI:506070
8	16.0	27.5	CAPRI:506080
9	21.0	34.0	CAPRI:506090
10	27.0	41.0	CAPRI:506100
11	33.0	48.0	CAPRI:506110
12	40.0	56.0	CAPRI:506120
13	47.0	65.0	CAPRI:506130
14	54.0	74.0	CAPRI:506140
15	63.0	83.0	CAPRI:506150
16	72.0	93.0	CAPRI:506160

Capri ADE 4F Series – NPT

Thread Size	Gland Size	GLAND SEAL RANGE				Armour Range	Catalog Number
		Cable Inner Sheath		Cable Outer Sheath			
		Min	Max	Min	Max		
1/2"	5	4.0	8.5	6.0	12.0	0.90	CAPRI:848674
1/2"	6	6.0	12.0	8.5	16.0	1.25	CAPRI:848694
1/2"	7	8.5	15.5	12.0	21.0	1.25	CAPRI:848604
3/4"	6	6.0	12.0	8.5	16.0	1.25	CAPRI:848774
3/4"	7	8.5	16.0	12.0	21.0	1.25	CAPRI:848794
3/4"	8	12.0	20.5	16.0	27.5	1.60	CAPRI:848704
1"	8	12.0	21.0	16.0	27.5	1.25	CAPRI:848894
1"	9	16.0	26.0	21.0	34.0	1.60	CAPRI:848804
1 1/4"	9	16.0	27.5	21.0	34.0	2.00	CAPRI:848994
1 1/4"	10	21.0	34.0	27.0	41.0	2.00	CAPRI:848904
1 1/2"	10	21.0	34.0	27.0	41.0	2.00	CAPRI:849094
1 1/2"	11	27.0	41.0	33.0	48.0	2.50	CAPRI:849004
2"	12	33.0	48.0	40.0	56.0	2.50	CAPRI:849294
2"	13	40.0	53.0	47.0	65.0	2.50	CAPRI:849204
2 1/2"	13	40.0	56.0	47.0	65.0	2.50	CAPRI:849494
2 1/2"	14	47.0	62.5	54.0	74.0	2.50	CAPRI:849404
3"	15	54.0	74.0	63.0	83.0	3.15	CAPRI:849594
3"	16	63.0	78.0	72.0	93.0	3.15	CAPRI:849504

Lead Sheath Earthing Washer

Gland Size	Catalog Number
5	CAPRI:506050
6	CAPRI:506060
7	CAPRI:506070
8	CAPRI:506080
9	CAPRI:506090
10	CAPRI:506100
11	CAPRI:506110
12	CAPRI:506120
13	CAPRI:506130
14	CAPRI:506140
15	CAPRI:506150
16	CAPRI:506160

Earth Tags, Locknuts, Washers – for CAPRI Series only

Thread Size	Nickel Plated Brass Earth Tag	Nickel Plated Brass Locknut	Neoprene Sealing Washer	Thread Size	Nickel Plated Brass Earth Tag	Nickel Plated Brass Locknut	Neoprene Sealing Washer
1/2"	CAPRI:567064	CAPRI:280124	CAPRI:229012	M16	CAPRI:567034	CAPRI:221694	CAPRI:221649
3/4"	CAPRI:567084	CAPRI:280134	CAPRI:229034	M20	CAPRI:567054	CAPRI:222094	CAPRI:222049
1"	CAPRI:567104	CAPRI:280144	CAPRI:229010	M25	CAPRI:567074	CAPRI:222594	CAPRI:222549
1 1/4"	CAPRI:567134	CAPRI:280154	CAPRI:229114	M32	CAPRI:567094	CAPRI:223294	CAPRI:223249
1 1/2"	CAPRI:567154	CAPRI:280164	CAPRI:229112	M40	CAPRI:567124	CAPRI:224094	CAPRI:224049
2"	CAPRI:567174	CAPRI:280174	CAPRI:229020	M50	CAPRI:567154	CAPRI:225094	CAPRI:225049
2 1/2"	CAPRI:567194	CAPRI:280184	CAPRI:229212	M63	CAPRI:567184	CAPRI:226394	CAPRI:226349
				M75	CAPRI:567194	CAPRI:227594	CAPRI:227549

Application:

CD Series drains are for use in conduit systems to:

- Drain accumulated condensate.
- Provide ventilation to minimize condensation.

Drains are installed in hubs or drilled and tapped openings.

Standard Materials:

- CD bodies and nuts – steel or aluminum
- CD screen – stainless steel

Standard Finishes:

- Steel – electrogalvanized with chromate treatment.

Certifications and Compliances:

- UL Standard 514B

Options:

- Copper-free aluminum construction – add suffix -SA

**Ordering Information:**

Size	Cat. #
1/2	CD1
3/4	CD2

Portable Cord Connector

20A 460V AC/DC

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1 & 2, Group G
NEMA 3,4

5F

5F Cable and
Cord Fittings

Application:

EBY portable cord connectors are installed to:

- provide means for passing cord into an enclosure, through a bulkhead or into a rigid conduit in hazardous areas.
- form a non-slip connection or termination for cord

Features:

EBY portable cord connectors have:

- heavy duty rating
- factory sealing
- three, 12 inch long, #12 type SF-2 (150° C rating) stranded pigtails; 2 circuit wires and one identified grounding wire
- 3 pressure connectors for 3-conductor cord, range #18 to #12 AWG
- rugged construction to protect cable and cord from mechanical damage
- compact size permitting close grouping of several cords and/or cables
- cord clamp
- long neck bushings to prevent fraying of cord

Standard Materials:

- Copper-free aluminum
- Insulators – phenolic
- Bushing – Neoprene

Standard Finishes:

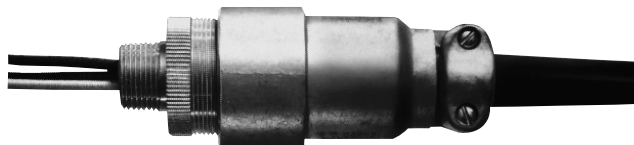
- Natural

Size Ranges:

- Thread – NPT 3/4" only
- Cord O.D. – .250" to .625"

Certifications and Compliances:

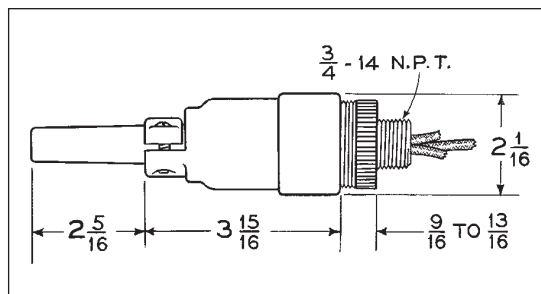
- NEC: Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1 & 2, Group G
- UL Standard: 886



EBY

Nipple Size	Cord Dia.	Cat. #
3/4	.250 to .437	EBY2672
3/4	.375 to .500	EBY2682
3/4	.500 to .625	EBY26102

Dimensions



Application:

CGBS sealing connectors are for use with portable cords and types MV (unarmored), PLTC, SE (round), TC and UF cables.

CGBS sealing connectors are installed to:

- provide means for passing cord into an enclosure, through a bulkhead or into a rigid conduit in hazardous areas

These connectors are suitable for use in Class I, Groups C, D, Class II, Group G, and Class III locations.

- form a watertight seal for cord
- form a non-slip connection of termination for cord

Features:

CGBS sealing connectors have:

- rugged construction to protect cable and cord from mechanical damage
- compact size permitting close grouping of several cords and/or cables
- body well for Chico A sealing compound
- watertight seal by tightening one nut
- cord clamp
- large range of NPT sizes to permit use with any conduit system
- long neck bushings prevent cord fraying

Standard Materials:

- Body – steel
- Gland nut – copper-free aluminum
- Bushing – Neoprene

Standard Finishes:

- Steel – electrogalvanized with chromate treatment
- Aluminum – natural

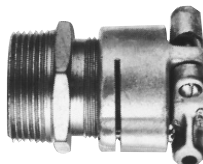
Size Ranges:

- Thread – NPT 1/2" to 1 1/4"
- Cord O.D. – 5/16" to 1 3/16"

Certifications and Complies:

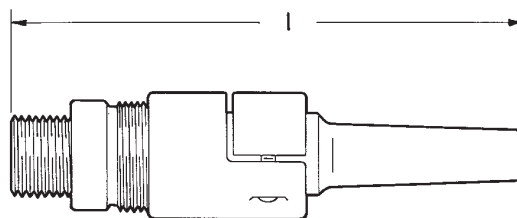
- NEC: Class I, Division 1 & 2, Groups C,D
Class II, Division 1 & 2, Group G
Class III

* Supplied complete with wire mesh grip in Canada.

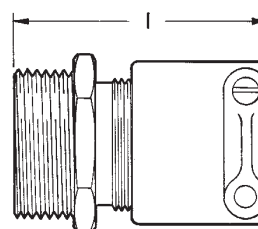
Style A**Style B*****CGBS**

Size	Style	Cord Dia.	Complete with Gland Nut and Neoprene Bushing Cat. #	Neoprene Bushing Cat. #
1/2	A	.312 to .437	CGBS1013	BUSH013
3/4	A	.312 to .437	CGBS2013	BUSH013
3/4	A	.375 to .500	CGBS2014	BUSH014
1	B	.500 to .625	CGBS3015	BUSH95
1	B	.625 to .750	CGBS3016	BUSH96
1 1/4	B	.750 to .875	CGBS4017	BUSH97
1 1/4	B	.875 to 1.000	CGBS4018	BUSH98
1 1/4	B	1.000 to 1.188	CGBS4019	BUSH99

Note: See page 196 for Chico A Sealing Compound required to complete seal installation on CGBS series.

Dimensions**Style A**

Cat. #	Style	I
CGBS1013	A	5 1/4
CGBS2013	A	5 1/4
CGBS2014	A	5 1/4
CGBS3015	B	2 7/8
CGBS3016	B	2 15/16
CGBS4017	B	2 13/16
CGBS4018	B	3 1/2
CGBS4019	B	3 9/16

**Style B**

Application:

LCC cable tray conduit clamps are used for installation on cable tray side rails with inside flanges (requiring inside tray mounting) and outside flanges; LCCF clamps are for use exclusively on inside flanges.

LCC/LCCF cable tray conduit clamps:

- provide a means of clamping metal conduit (rigid steel or aluminum, IMC and EMT) to cable tray to provide for the exit of power and/or control cables from tray
- provide a means to firmly bond exit conduit to cable tray for best grounding continuity
- provide strong mechanical support for exit conduits and cables
- can be used indoors or outdoors, wherever cable tray systems are installed
- facilitate the safe exit of cables from tray – insure protection of cables from damage

Features:

- Quick and easy installation – low installed cost. Merely tighten clamp nut and/or set screw(s)
- Swivel hook clears conduit. No disassembly required for installation
- No drilling or welding necessary for installation
- Provides superior ground continuity between conduit and cable tray
- Clamps conduit at any angle with relation to tray – facilitates wire pulling, minimizes conduit bending
- Malleable iron body provides great strength
- Knurled body has no-slip surface for conduit and tray – positive grip assured
- Compact design has low profile – minimum tray space required for assembly
- Design accommodates all popular types of cable tray
- Accommodates wide range of conduit sizes – 1/2" through 4"

LCCF features:

- Outside mounting facilitates inside rail installation
- Adjustable hook assures positive grip on inside rail
- Accommodates 3/4" through 1 3/4" wide flange

Standard Materials:

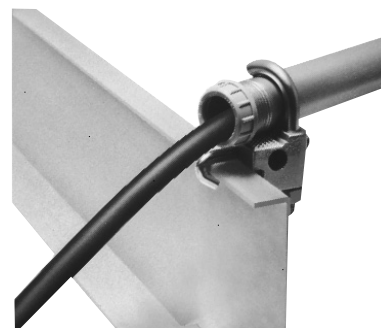
- Body – cast iron
- Hook – steel
- Set screws and clamping nut – steel
- Hook cap – vinyl

Standard Finishes:

- Cast iron – electrogalvanized and aluminum acrylic paint
- Steel – zinc electroplate
- Vinyl – natural



LCC – for use with outside rail tray



LCCF – for use with inside rail tray

Conduit Size Ranges:

- 1/2" to 4"

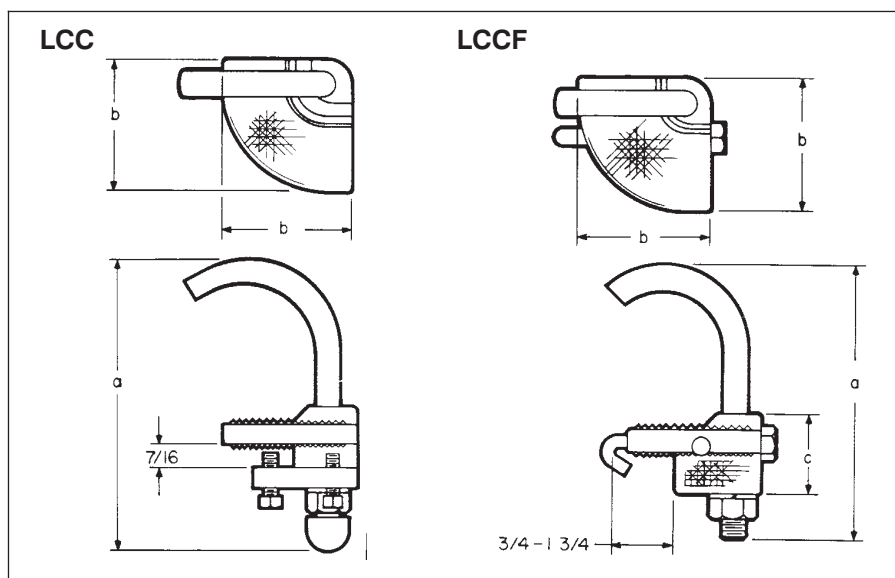
Certifications and Compliances:

- UL Standard: 467 (grounding and bonding equipment)

Conduit Size

Conduit Size	Cat. #	Cat. #
1/2	LCC1	LCCF1
3/4	LCC2	LCCF2
1	LCC3	LCCF3
1 1/4	LCC4	LCCF4
1 1/2	LCC5	LCCF5
2	LCC6	LCCF6
2 1/2	LCC7	LCCF7
3	LCC8	LCCF8
3 1/2	LCC9	LCCF9
4	LCC10	LCCF10

Dimensions



Conduit Size	LCC a	LCC b
1/2	3 3/16	1 11/16
3/4	3 7/16	1 11/16
1	3 9/16	1 11/16
1 1/4	4	1 11/16
1 1/2	4 13/16	2 11/16
2	5 5/16	2 11/16
2 1/2	5 13/16	2 11/16
3	6 13/16	3 3/4
3 1/2	7 5/16	3 3/4
4	7 13/16	3 3/4

LCCF a	LCCF b	LCCF c
3 1/8	1 5/8	1 11/32
3 11/32	1 5/8	1 11/32
3 19/32	1 5/8	1 11/32
3 15/16	1 5/8	1 11/32
4 3/4	2 3/4	1 11/16
5 1/4	2 3/4	1 11/16
5 3/4	2 3/4	1 11/16
6 3/4	3 11/16	2 3/16
7 1/4	3 11/16	2 3/16
7 3/4	3 11/16	2 3/16

Application:

Cable tray grounding conductor clamps are designed for use in heavy industrial applications:

- to provide a means for securely attaching a grounding conductor to cable tray to maintain grounding continuity for the entire cable tray system
- to provide protection of equipment through a reliable method for carrying ground fault currents
- to meet UL and NEC code requirements
- for installation indoors or outdoors, with most types of cable trays with inside or outside flanges

Features:

- Meets requirements of NEC Article 318-7 for grounding and bonding
- Quick and easy installation – low installed cost. No drilling or special tools required.
- Accommodates solid (where suitable) or stranded aluminum or copper grounding conductors in sizes from #6 to 2/0
- Set screw bonds the clamp to the tray and another set screw securely attaches the grounding conductor to the clamp – outstanding pull-out and vibration resistance
- Design accommodates most popular types of cable tray
- Mechanical device – can be easily inspected
- Malleable iron body provides high strength

Standard Materials:

- Body – malleable iron
- Set screws – steel

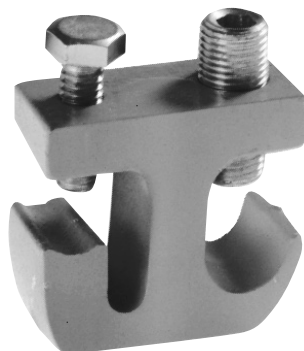
Standard Finishes:

- Malleable iron and steel – electrogalvanized

Certifications and

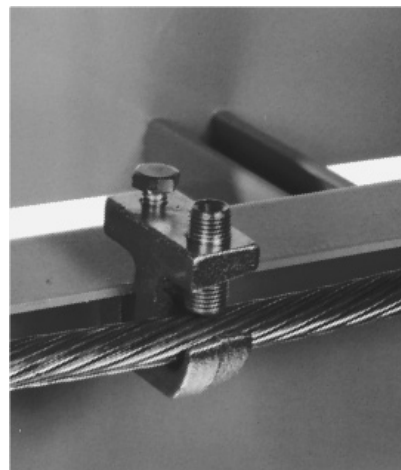
Compliances:

- UL Standard: 467 (Grounding and Bonding Equipment)



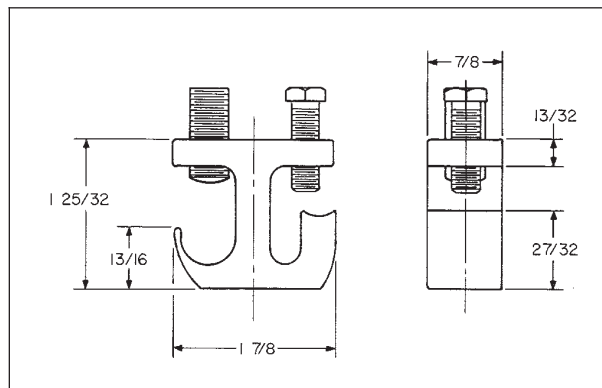
Ground Wire Size
#6 to 2/0

Cat. #
TGC40



TGC Clamp installs on cable trays with inside or outside flanges

Dimensions



TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

5F

Ordering Information Pgs. 102 to 105
Dimensions Pgs. 105 and 106

Application:

THRU-WALL BARRIER cable/conduit sealing device is used wherever there is a need to seal cables or conduits penetrating fire- or non-fire-rated walls, ceilings, floors, bulkheads or decks. For non-fire-rated walls, ceilings, floors, bulkheads or decks, THRU-WALL BARRIER also restricts water and dust and will help contain treated air.

THRU-WALL BARRIER is designed:

- to provide a seal for cable/conduit penetrations through masonry, concrete or steel; to restrict the entrance of contaminants through cable/conduit penetrations into clean areas
- for use with most types of power, instrument and control cables as well as conduits
- to be used indoors or outdoors, in new construction or existing structures

Features:

System

- Few parts required to seal a wide range of diameters of cables or conduits
- Easy and fast installation, using factory assembled components
- High degree of flexibility with interchangeable sealing block assemblies and a selection of different sizes of frames

Mounting frame

- One-piece cast malleable iron or steel mounting frame can be cast into concrete during wall construction, grouted in masonry surfaces or welded into steel bulkheads at any time
- Retrofit frame allows for easy installation of frame where cables/conduit are already installed
- Available in sizes to accommodate a wide range of cable tray sizes and loadings including single and multiple layers of cables for power or instrument applications
- Cast keyways in mounting frame align and position sealing block assemblies
- Frames can be installed in wall such that sealing block assemblies can be inserted in either horizontal or vertical position

Sealing block assembly

- Specially formulated elastomeric material between cast malleable iron pressure plates protects cable from mechanical damage; provides high pullout resistance and positive cable separation; expands during fire to seal any voids left by burned cable insulation
- Interchangeable sealing block assemblies fit all THRU-WALL BARRIER mounting frames
- Cast stops on front pressure plate prevent sealing block assembly from slipping through mounting frame during installation
- Assemblies are offered for all cable/conduit outside diameters from .250" to 4.500" (6.4 mm to 114.3 mm). Cables with diameters less than .250" can be accommodated – consult Cooper Crouse-Hinds.



- Sealing block openings will accommodate undersize and out-of-round cable
- Each sealing block assembly seals multiple cables/conduits. Compact design permits close nesting of cables, saving space.
- Reducers permit sealing block assemblies to accept cables with smaller O.D. than the specified range
- Plugs are used to fill unused openings in sealing block assemblies. Blank sealing block assemblies fill unused spaces in mounting frames, providing for future expansion.

Standard Materials:

- Mounting frame:
 - TWF, TWFR – cast malleable iron
 - TWFS – cast carbon steel,
 - ASTM A27 Grade 60-30
- Pressure plate – cast malleable iron
- Sealing material – special elastomeric material
- Clamping hardware – steel

Standard Finish:

- Malleable iron and hardware – electrogalvanized
- Steel – aluminized weldable paint
- Special elastomeric material – natural

Certifications and Compliances:

- ASTM Standard E-119
- NFPA 251
- UL Classification per UL Standard 1479
- USCG Acceptance – consult Cooper Crouse-Hinds
- NAVSEA Approval – Electric Plant Installation Standard Methods No. S9300-AW-EDG-010/EPISM – TWFS/TWBS assemblies

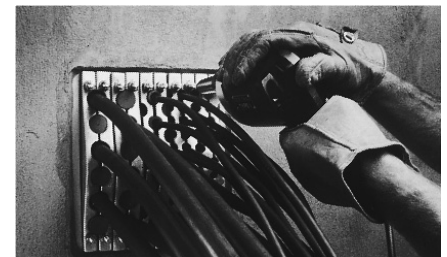
Easy three step installation



1. Cast, grout or weld the one-piece mounting frame into masonry or steel surface.



2. Feed cables/conduit through the frame.



3. Position cables/conduit, insert factory-assembled sealing blocks into keyways in mounting frame, and tightened nuts on clamping hardware to effect the seal.

5F
Cable and
Cord Fittings

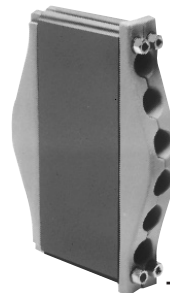
TW Series THRU-WALL BARRIER® Cable Conduit Sealing Device

Sealing Block Assemblies & Mounting Frames
Dimensions Pgs. 105 and 106

TWB Sealing Block Assemblies

TWB sealing block assemblies are offered for cable/conduit outside diameters (O.D.) from .250" to 4.500" (6.4 mm to 114.3 mm). Cables with diameters less than .250" can be accommodated – consult Cooper Crouse-Hinds. Each assembly opening will accommodate a .250" (6.4 mm) O.D. range. When clamping hardware is tightened, the elastomeric material is uniformly compressed around all cable/conduits for a completely tight fit.

Sealing block assemblies are offered for use in marine applications. Each assembly has the required lubrication and sealing gaskets to meet U.S. Navy Hydrostatic Pressure Test Requirements. Assemblies for marine applications are available for cable/conduit outside diameters (O.D.) from .250" (6.4 mm) through 3.500" (88.9 mm). To order, add suffix S to TWB sealing block assembly Cat. No. **Example: TWBS4036.**



TWB2063

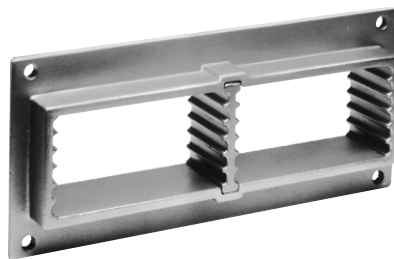
Depending on opening size range, a standard sealing block assembly will seal from one to eleven cables

Opening Size Range {In. mm}	.250-.500 6.4-12.7	.500-.750 12.7-19.1	.750-1.000 19.1-25.4	1.000-1.250 25.4-31.8	1.250-1.500 31.8-38.1	1.500-1.750 38.1-44.5	1.750-2.000 44.5-50.8	2.000-2.250 50.8-57.2	2.250-2.500 57.2-63.5	
No. Openings In Block	11 11 Added*	6 11 Added*	6	5	4	3	3	3	2	
Sealing Block Assembly Cat. #	TWB2111 TWB1111	TWB2062 TWB2112	TWB2063	TWB3054	TWB3045	TWB30355	TWB4036	TWB40366	TWB5027	
Frame Spaces Required	2 1	2 2	2	3	3	3	4	4	5	
Plug Cat. #	TWP1		TWP3		TWP5		TWP6		TWP7	
Reducer Cat. #§	—	TWR2	TWR3	TWR4	TWR5	TWR55	TWR6	TWR66	TWR7	

TWF Mounting Frames

TWF(S) mounting frames may be installed either horizontally or vertically. TWFR retrofit frames are used wherever cables/conduits are already installed through a fire- or non-fire-rated wall, floor or ceiling. They are designed with a removable section to permit installation around cables/conduits. TWFR retrofit frames can be grouted into walls, floors, or ceilings; or welded into steel bulkheads or decks. TWFR retrofit frames will perform in the same manner as the one-piece TWF(S) frames.

TWFS steel mounting frames are welded directly into steel bulkheads, decks and prepared sleeves. For marine applications, keeper bars are provided to securely hold TWBS sealing block assemblies in position when installed.



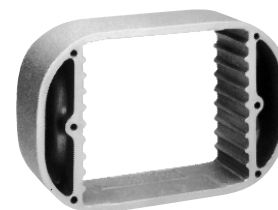
TWF12



TWF6



TWF10



TWFS10

No. of Spaces Available
6
10
12
20
24
30

Frame Cat. #
TWF6
TWF10
TWF12 ♦
TWF20
TWF24
TWF30

Retrofit Frame Cat. #
TWFR6
TWFR10
TWFR12 ♦
TWFR20
TWFR24
TWFR30

Cast Steel Frame Cat. #
TWFS10
TWFS20
TWFS30

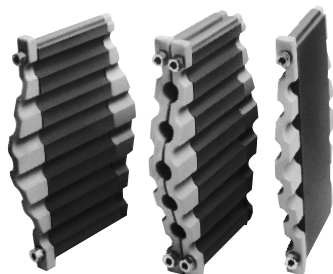
TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

5F

Plugs, Reducers, Closure Cover Kits, Anchors & Lubricant
Ordering Information

5F Cable and
Cord Fittings

TWB2062



TWB2112

TWP Plugs



TWP plugs will close any unused openings in sealing block assemblies. See table for plug catalog numbers which match specific sealing block assemblies.

TWR Reducers



TWR reducers will reduce openings by .250" (6.4 mm) in sealing block assemblies. See table for reducer catalog numbers which match specific sealing block assemblies. More than one reducer can be used in a single opening.

It is possible to increase cable fill density with double-sided sealing block assemblies (TWB1111 and TWB2112) sandwiched between halves of a standard assembly.

	2.500-2.750 63.5-69.9	2.750-3.000 69.9-76.2	3.000-3.250 76.2-82.6	3.250-3.500 82.6-88.9	3.500-4.250† 101.6-108.0	4.250-4.500 108.0-114.3	Blank – No Openings	
	2	2	2	2	1	1	None	None
	 TWB50277	 TWB5028	 TWB60288	 TWB6029	 TWB7011010	 TWB70111	 TWB1	 TWB3
	5	5	6	6	7	7	1	3
	TWP7	TWP8		TWP9	TWP10	TWP11	—	
	◀ TWR77	TWR8	TWR88	TWR9 TWR99	TWR1010 TWR10	TWR11	—	

TWB Closure Cover Kits

TWB closure cover kits offer an optional method to close TWF frames installed for future expansion or those that are abandoned. Closure cover kits include two covers clamped to opposite sides of the frame with hardware provided. The insulating material provided is sandwiched between the two covers to maintain the fire rating of the assembly. See table below for closure kit catalog numbers.

No. of Spaces Available	Closure Cover Kit Cat. #**
6	TWB600
10	TWB1000
12	TWB600‡
20	TWB2000
24	TWB2400
30	TWB3000

TWK Anchors

TWK anchor assemblies are used to attach mounting frames to wall, ceiling or floor when grouting in frames.

Mounting Type
Flush
Recessed

Cat. #
TWK1
TWK2

† For 3.5" - 4" cable/conduit – use TWB7011010 assembly and reduce down using TWR reducers.

* Catalog # TWB1111 and TWB2112 are used between TWB2111 and TWB2062 in cases where the number of cables to be sealed in .250-.750 range exceeds the number of openings in standard assemblies. Use as many of these higher density assemblies as needed, sandwiched between halves of a standard assembly.

** TWB closure cover kits are not designed to provide a watertight seal in marine/shipboard applications or washdown areas. One kit seals one unused frame opening of same size. Example: use one TWB2000 kit to seal one TWF20, or TWF20 frame.

‡ Use two TWB600 kits to seal one TWF12 or TWF12 frame opening.

§ TWR reducers match TWB sealing block assemblies shown in column above Cat. No. and reduce openings to accept cable size ranges shown in adjacent column to the left (in direction of arrow).

◆ Includes removable partition.

TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

Ordering Information Ordering Example A

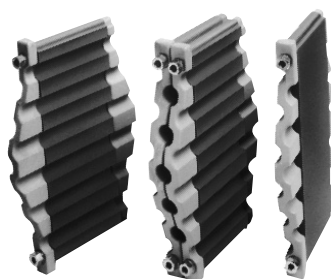
Product Information

Selecting and specifying THRU-WALL BARRIER components is a simple procedure. Primary components for the THRU-WALL BARRIER consist of TWF mounting frames in various sizes and TWB sealing block assemblies for cable/conduit outside diameters (O.D.) in 1/4-inch increments from .250" to 4.500" (6.4 mm to 114.3 mm). Cables with diameters less than .250" can be accommodated – consult Cooper Crouse-Hinds.

Cable/conduit sizes can be mixed within a sealing block assembly by inserting TWR reducers to accommodate smaller diameters. The use of reducers can decrease the number of sealing block assemblies required. More than one reducer can be used in a single opening.

Another way to increase density is to use TWB1111 and TWB2112 sealing block assemblies wherever there is a large number of cables/conduits in sizes ranging from .250" to .750".

TWB2112



TWB2062

Shown here is a double-sided sealing block assembly (TWB2112) sandwiched between halves of a standard sealing block assembly (TWB2062). Additional double-sided sealing block assemblies may be used to accommodate larger quantities of cables or conduits.

Unused sealing block openings must be closed with TWP plugs. Blank sealing block assemblies TWB1 and TWB3 are used to fill each unused opening in the mounting frame and permit future expansion of the system. Typical practice is to include space allowance of 20 to 50% for future expansion. TWP closure kits are used to seal entire frames and permit future system expansion.

Specifying & Ordering

The selection of components is based on the quantity and sizes of cables or conduits going through the penetrations. Once these are known, the sealing block assemblies and frames can be selected.

Step 1. Group cables/conduits by outside diameter (O.D.) and rank from the largest to the smallest.

Step 2. Keeping in mind that sealing block assemblies are available in one-quarter inch increments, group cables/conduits that fall within the same sealing block assembly O.D. size range.

Step 3. Starting with the largest cable/conduit O.D., select the sealing block assemblies required. All openings in each

sealing block assembly must be filled. Specify TWR reducers to accommodate smaller diameter cables where possible and TWP plugs to fill openings not used.

Step 4. Total the frame spaces required for the specified sealing block assemblies and select an appropriate mounting frame(s). Frames are available in 6-, 10-, 12-, 20-, 24- and 30-space sizes. Keep future expansion requirements in mind when specifying frame. Specify blank sealing block assemblies to fill unused mounting frame space and TWB closure cover kits to fill unused frames.

Step 5. Check specification/order to be sure it includes 1) frames, 2) sealing block assemblies, 3) plugs and 4) reducers.

Ordering Example A:

Cable tray size: 24"

Cables specified: 5 power cables – sizes ranging from 1.960" to 2.200" O.D.

Spare capacity required: 50%

Step 1. Group cables by O.D. and rank from largest to smallest.

Cable Qty.	Cable O.D.
4	2.200
1	1.960
Total	5

Step 2. Group cables that fall within the same sealing block assembly size.

Cable Qty.	Sealing Block O.D. Range
4	2.000-2.250
1	1.750-2.000
Total	5

Step 3. Starting with the largest cable O.D., select the quantity of sealing block assemblies required. Specify TWR reducers to accommodate smaller diameter cables

Sealing Block Assy Cat. #	O.D. Range	Number of Openings	Cables to be Sealed	Openings Not Used	Frame Spaces Required
TWB40366	2.000-2.250	3	3	—	4
TWB40366	2.000-2.250	3	2	1	4
	Totals	66	5	1	8

Step 5. Bill of materials for specification/order should read:

- (1) TWF12
- (2) TWB40366
- (4) TWB1
- (1) TWR66
- (1) TWP6

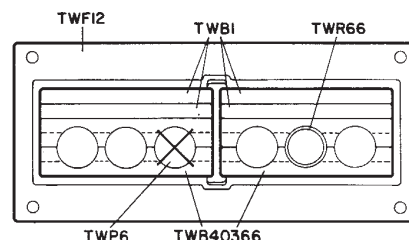
where possible and TWP plugs to fill openings not used. (See Example A diagram.)

Note: In the example, one TWR66 reducer is required to accommodate the cable with 1.960" O.D. and one TWP6 plug is required for the unused opening.

Step 4. Total the frame spaces required for sealing block assemblies and select appropriate size mounting frame. Factor in spare capacity required for future expansion.

Total frame spaces required	8
Specification requires 50% spare capacity	4
Total spaces	12

Selection: One TWF12 mounting frame with capacity of 12 spaces. Four TWB1 blank sealing block assemblies to fill unused frame space. (Choice of frame could vary based on future expansion needs and/or specific cable arrangement.)



Example A diagram

TW Series THRU-WALL BARRIER® Cable/Conduit Sealing Device

5F

5F Cable and
Cord Fittings

Ordering Example B Dimensions

Ordering Example B:

Cable tray size: 24"

Cables specified: 6 power cables – sizes ranging from 2.140" to 2.180" O.D.
31 control cables – sizes ranging from .550" to .945" O.D.

Spare capacity required: 25%

Step 1. Group cables by O.D. and rank from largest to smallest

Cable Qty.	Cable O.D.
4	2.180
2	2.140
1	.945
4	.890
7	.700
9	.637
10	.550

Total 37

Step 2. Group cables that fall within the same sealing block assembly O.D. range.

Cable Qty.	Sealing Block O.D. Range
6	2.000-2.250
5	.750-1.000
26	.500-.750

Total 37

Step 3. Starting with the largest cable O.D., select the quantity of sealing block assemblies required. Specify TWR reducers to accommodate smaller diameter cables where possible and TWP plugs to fill openings not used. (See Example B diagram.)

Sealing Block Assy Cat. #	O.D. Range	Number of Openings	Cables to be Sealed	Openings Not Used	Frame Spaces Required
TWB40366	2.000-2.250	3	3	—	4
TWB40366	2.000-2.250	3	3	—	4
TWB2063	.750-1.000	6	5	1	2
TWB2062	.500-.750	6	6	—	2
TWB2112	.500-.750	11	11	—	2
TWB2112	.500-.750	11	9	2	2
Totals 40			37	3	16

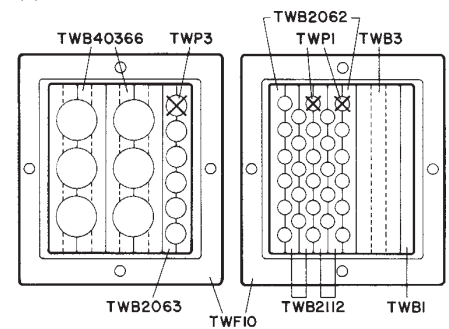
Note: In this example, two TWB2112 sealing block assemblies are sandwiched between two halves of a TWB2062. This dramatically increases cable density in minimum frame space. One TWP3 plug is required for unused opening in TWB2063 and two TWP1 plugs are required for unused openings in the TWB2112.

Step 4. Total the frame spaces required for sealing block assemblies and select appropriate size mounting frame(s). Factor in spare capacity required for future expansion.
Total frame spaces required 16
Specification requires 25% spare capacity 4
Total 20 spaces

Selection: Two TWF10 (or one TWF20) mounting frames with total capacity of 20 spaces. One TWB3 and one TWB1 blank sealing block assembly to fill unused frame space. (Choice of frame could vary based on future expansion needs and/or specific cable/conduit arrangement.)

Step 5. Bill of materials for specification/order should read:

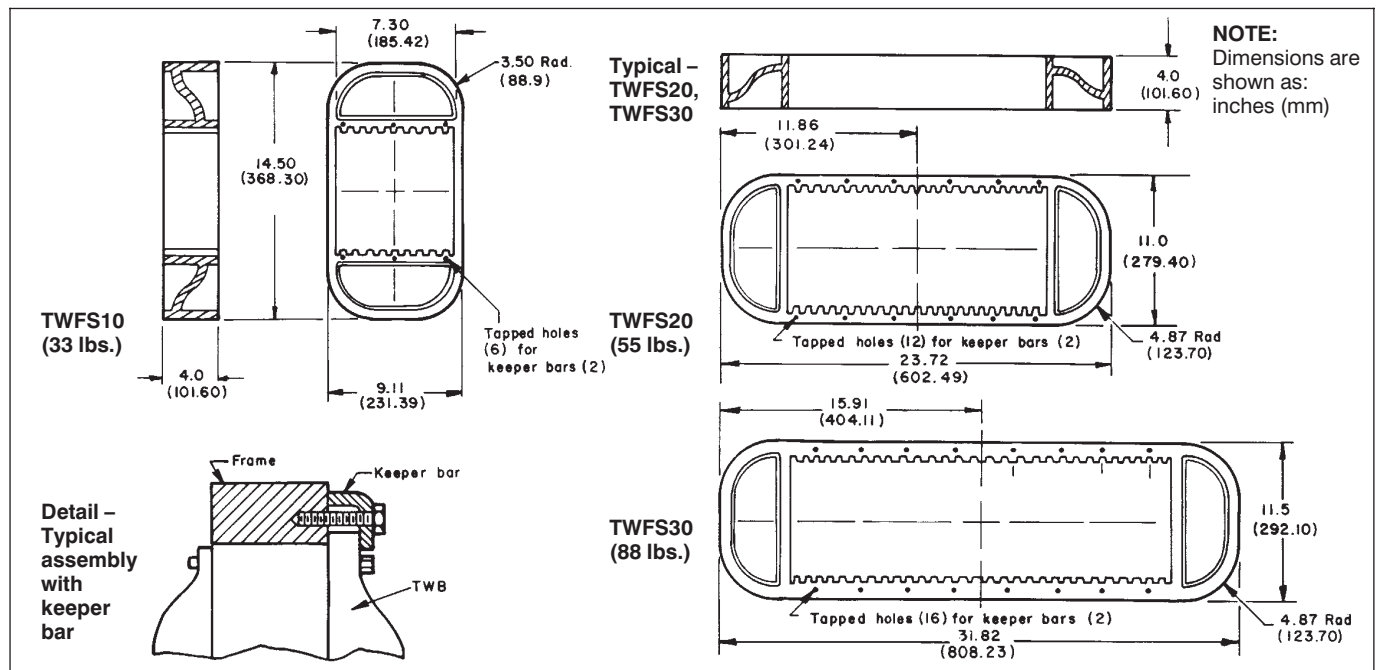
- (2) TWF10 or (1) TWF20
- (2) TWB40366
- (1) TWB2063
- (1) TWB2062
- (2) TWB2112
- (1) TWP3
- (2) TWP1
- (1) TWB3
- (1) TWB1

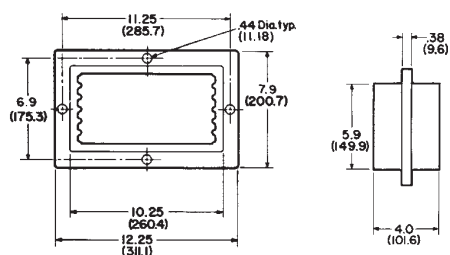
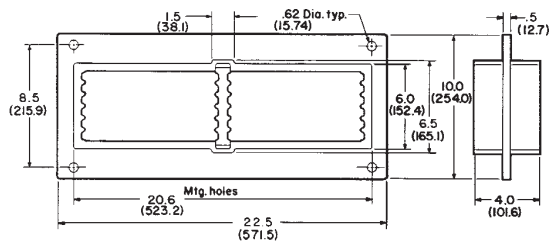
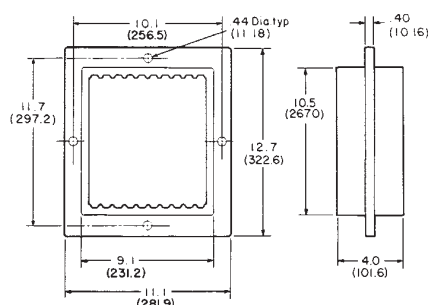
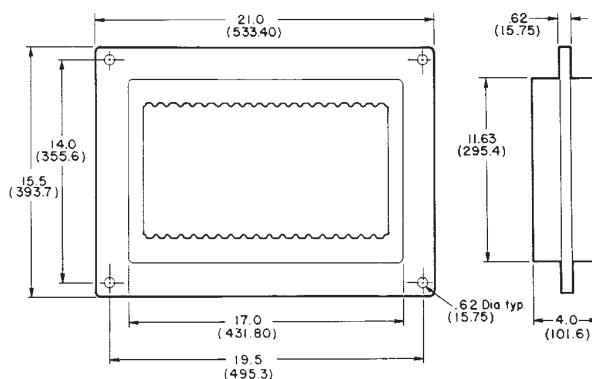
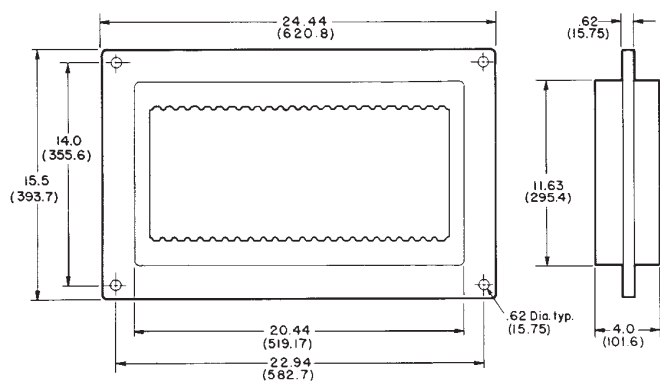
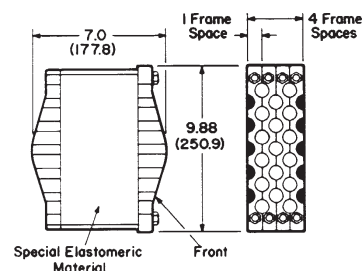


Example B diagram

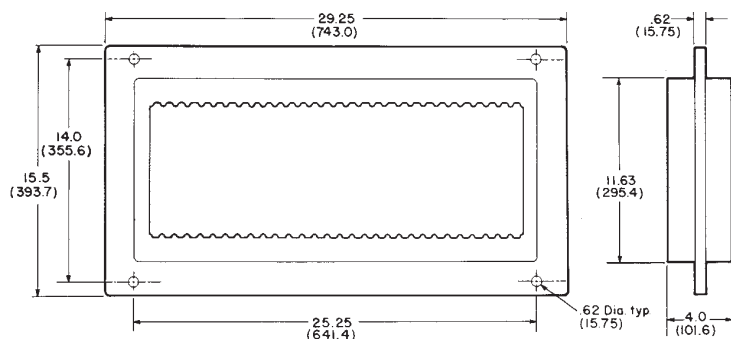
* For TWFS mounting frame hole dimensions, contact Cooper Crouse-Hinds ECM field representative or headquarters.

Dimensions*

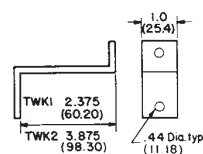


Cable/Conduit Sealing Device
Dimensions*TWF6
(20 lbs.)TWF12
(38 lbs.)TWF10
(25 lbs.)TWF20
(82 lbs.)TWF24
(88 lbs.)

TWB



TWF30 (97 lbs.)



TWK

NOTES:

1. Dimensions are shown as inches (mm).
2. Dimensions shown for TWF frames also apply for TWFR retrofit frames.

* For TWF mounting frame hole dimensions, contact Cooper Crouse-Hinds ECM field representative or headquarters.

Environmental Seal for Conduit passing through Concrete Walls, Floors or Ceilings

Link-Seal® Devices

Application:

Cooper Crouse-Hinds Link-Seal® is the quick, economical way to seal around conduit in concrete walls, floors and casings. Link-Seal is a modular mechanical seal used for any type of penetration.

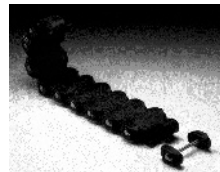
Features & Benefits:

- Saves time and money – Link-Seal installs in up to 75% less time than competition products
- Positive Hydrostatic Sealing – properly installed, Link-Seal is rated at 20 psig (40 feet of head), which exceeds the performance requirements of most applications
- Environment Seals – Link-Seal environmental seal is designed for long life and use as a permanent seal. Seal elements are specially compounded to resist aging, ozone, sunlight, water and a wide range of chemicals
- Fire Seals – for fire protection in floor and wall penetrations Link-Seal is Factory Mutual approved
- Resistance to high and low temperatures – Link-Seal environmental seal is manufactured from special compounds that resist temperatures from -40°F to +250°F. Link-Seal Fire Seal is manufactured from a silicone material that resists temperatures from -67°F to +400°F
- Corrosion protection – where installation against galvanic corrosion (or electrolysis) is required, Link-Seal provides complete separation pipe and casing. Metal-to-metal contact is eliminated
- Compensates for misalignment – Link-Seal allows for some angular and off-center conduit conditions and still seals effectively

- Absorbs shock, sound and vibration – this inherent benefit of Link-Seal helps reduce conduit failure due to fatigue and threaded connections

Standard Materials:

- Rubber Seal Elements:
 - EPDM (Black) – Environmental Seals
 - Silicone (Grey) – Fire Seals
- Pressure Plates:
 - Glass Reinforced Nylon – Environmental Seals
 - Steel w/Zinc Dichromate Plate – Fire Seals
- Fasteners:
 - Carbon Steel, Zinc Dichromate Plate – Environmental Seals
 - 316 Stainless Steel – Environmental with Option S316
 - Carbon Steel w/Zinc Dichromate – Fire Seals



Environmental Conduit Seal

Ordering Information:

It's easy. Locate the conduit size and type you are installing in the columns on the left. Then locate the seal and sleeve part numbers under the installation method you've selected. No sleeve is needed for cored or cast hole installation.

Cored or Cast Hole Method:

Note the appropriate hole diameter and select the seal part number. Example: For 3/4" EMT conduit through a cored hole – Core a 2" diameter hole and install the conduit using Link-Seal Part number LSA200-C-04.

Sleeve Methods:

Select either the plastic or metal sleeve. Both types of sleeves are designed to be cast into concrete walls or floors. Sleeves are ordered separately. Remember to add the wall or floor thickness to the steel sleeve part number to insure the sleeve is provided in the proper length. Plastic sleeves are a standard 16" long and can be modified in the field.

Materials:

The standard product for environmental conduit seals is made from EPDM supplied with steel bolts and nuts with a zinc dichromate finish. These seals are suitable for use in water, direct ground burial and atmospheric conditions. They provide electrical insulation where cathodic protection is required. EPDM rubber is resistant to most inorganic acids and alkalis, and some organic chemicals (acetone, alcohol, ketones).

Options:

To order the standard product with 316 stainless steel bolts and nuts, for corrosive environments, replace the "C" in the seal catalog number with "S316". For example, a 1/2" seal for rigid steel conduit for a cored hole is an LSA200-C-04; ordered with stainless steel bolts and nuts the catalog number becomes LSA200-S316-04.

Environmental Seal for Conduit passing through Concrete Walls, Floors or Ceilings

Wet Locations
Corrosive Environments

Ordering Information

Environmental Conduit Seal

Cable and
Cord Fittings
5F

Conduit Nominal Size	Conduit Type*	Conduit Actual O.D. (inches)	Cast/Cored Hole Dia. (inches)	Seal for Cast/Cored Hole Cat. #	Plastic Sleeve Cat. #	Seal for Plastic Sleeve Cat. #	Steel Sleeve Cat. #	Seal for Steel Sleeve Cat. #
1/2"	EMT	.706	2.000	LSA275-C-04	LS-CS-2-16	LSA200-C-04	WS2-15-**	LSA275-C-04
1/2"	IMC	.815	2.000	LSA200-C-04	LS-CS-2-16	LSA200-C-04	WS2-21-**	LSA200-C-04
1/2"	RSC	.840	2.000	LSA200-C-04	LS-CS-2-16	LSA200-C-04	WS2-21-**	LSA200-C-04
3/4"	EMT	.922	2.000	LSA200-C-04	LS-CS-3-16	LSA315-C-04	WS2-15-**	LSA200-C-04
3/4"	IMC	1.029	2.500	LSA275-C-06	LS-CS-3-16	LSA315-C-04	WS2-15-**	LSA200-C-04
3/4"	RSC	1.050	2.500	LSA275-C-06	LS-CS-3-16	LSA315-C-04	WS2.5-20-**	LSA275-C-06
1"	EMT	1.163	3.000	LSA315-C-04	LS-CS-3-16	LSA300-C-04	WS2.5-20-**	LSA275-C-06
1"	IMC	1.290	3.000	LSA300-C-04	LS-CS-3-16	LSA300-C-04	WS2.5-10-**	LSA275-C-06
1"	RSC	1.315	3.000	LSA300-C-04	LS-CS-3-16	LSA300-C-04	WS2.5-20-**	LSA200-C-05
1 1/4"	EMT	1.510	3.000	LSA300-C-04	LS-CS-3.5-16	LSA315-C-05	WS3.5-22-**	LSA315-C-05
1 1/4"	IMC	1.638	3.000	LSA275-C-07	LS-CS-3.5-16	LSA300-C-05	WS3.5-22-**	LSA315-C-05
1 1/4"	RSC	1.660	3.000	LSA275-C-07	LS-CS-3-16	LSA200-C-06	WS3.5-22-**	LSA315-C-05
1 1/2"	EMT	1.740	3.500	LSA315-C-05	LS-CS-3.5-16	LSA300-C-05	WS3.5-32-**	LSA315-C-05
1 1/2"	IMC	1.883	3.500	LSA300-C-05	LS-CS-3.5-16	LSA275-C-08	WS3.5-22-**	LSA300-C-05
1 1/2"	RSC	1.900	3.500	LSA300-C-05	LS-CS-3.5-16	LSA275-C-08	WS3.5-22-**	LSA300-C-05
2"	EMT	2.197	4.000	LSA315-C-06	LS-CS-4-16	LSA315-C-06	WS4-23-**	LSA315-C-06
2"	IMC	2.360	4.000	LSA300-C-06	LS-CS-4-16	LSA300-C-06	WS4-23-**	LSA300-C-06
2"	RSC	2.375	4.000	LSA300-C-06	LS-CS-4-16	LSA300-C-06	WS4-23-**	LSA300-C-06
2 1/2"	EMT/RSC	2.875	4.000	LSA200-C-09	LS-CS-4-16	LSA200-C-09	WS4-23-**	LSA200-C-09
2 1/2"	IMC	2.857	4.000	LSA200-C-09	LS-CS-4-16	LSA200-C-09	WS4-23-**	LSA200-C-09
3"	EMT/RSC	3.500	5.000	LSA300-C-08	LS-CS-5-16	LSA300-C-08	WS5-25-**	LSA300-C-08
3"	IMC	3.476	5.000	LSA300-C-08	LS-CS-5-16	LSA300-C-08	WS5-25-**	LSA300-C-08
3 1/2"	EMT/RSC	4.000	6.000	LSA325-C-05	LS-CS-6-16	LSA325-C-05	WS6-28-**	LSA325-C-05
3 1/2"	IMC	3.971	6.000	LSA325-C-05	LS-CS-6-16	LSA325-C-05	WS6-28-**	LSA325-C-05
4"	EMT/RSC	4.500	6.000	LSA300-C-10	LS-CS-6-16	LSA300-C-10	WS6-28-**	LSA300-C-10
4"	IMC	4.466	6.000	LSA300-C-10	LS-CS-6-16	LSA300-C-10	WS6-28-**	LSA300-C-10
5"	RSC	5.563	8.000	LSA425-C-06	LS-CS-8-16	LSA425-C-06	WS8-32-**	LSA425-C-06
6"	RSC	6.625	10.000	LSA475-C-10	LS-CS-10-16	LSA475-C-10	WS8-18-**	LSA300-C-15

* EMT – Electrical Metallic Tubing; IMC – Intermediate Metal Conduit;
RSC – Rigid Steel Conduit

** Specify length of steel sleeve in inches. Example: WS6-28-08 is 8" long. All plastic sleeves
come in standard 16" lengths and can be field cut to desired length.

Note: The last two digits of the seal part number indicate the number of links (and the number
of bolts) per seal.

Fire Seal for Conduit passing through Concrete Walls, Floors or Ceilings

Fire Conduit Seal

Ordering Information:

Locate the conduit size and type you are installing in the columns on the left. Then locate the seal and sleeve part number under the installation method you've selected. No sleeve is needed for cored or cast hole installation.

Cored or Cast Hole Method:

Note the appropriate hole diameter and select the seal part number. Example: For ¾" EMT conduit through a cored hole – Core a 2" diameter hole and install the conduit using Link-Seal Part number LSA200-T-04.

Sleeve Methods:

Select the appropriate metal sleeve for the size and type of conduit being installed. The sleeve should be ordered separately. Remember to add the wall or floor thickness to the steel sleeve part number to insure the sleeve is provided in the proper length.

Materials:

The standard product for fire conduit seals is made from grey silicone supplied with steel bolts and nuts with a zinc dichromate finish. These seals are Factory Mutual approved for use as a 1-hour fire stop and can handle temperature extremes of -67°F to +400°F.

Options:

To order the fire seal for a 3-hour rating, replace the "T" in the seal catalog number with a "FS". For example, a ½" seal for rigid steel conduit for a cored hole is an LSA200-T-04; ordered with option FS the catalog number becomes LSA200-FS-04. A 3-hour fire seal can also be made by using two Model T's back-to-back.

The Model FS is basically two Model T's back-to-back. In Model FS, a tie rod tightens both seals simultaneously – for use when only one side of an opening is accessible.

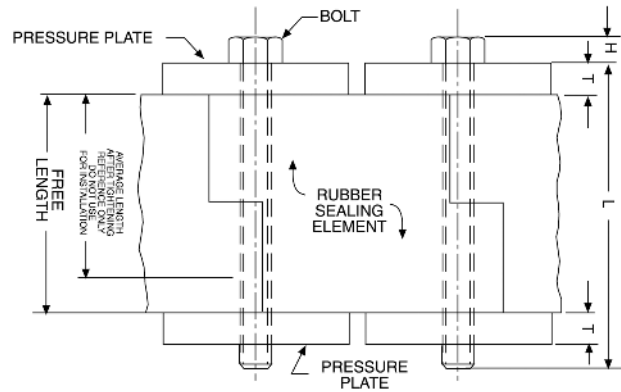
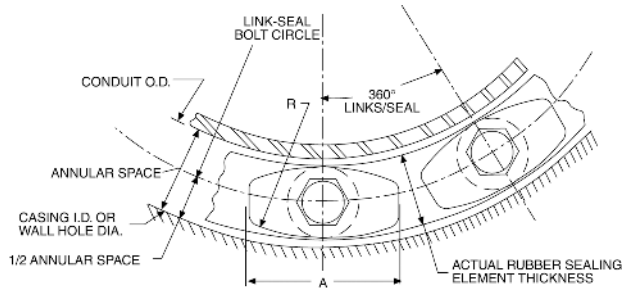
Conduit Nominal Size	Conduit Type*	Conduit Actual O.D. (inches)	Cast/Cored Hole Dia. (inches)	Seal for Cast/Cored Hole Cat. #	Steel Sleeve Cat. #	Seal for Steel Sleeve Cat. #
½"	EMT	.706	2.000	LSA275-T-04	WS2-15-**-	LSA275-T-04
½"	IMC	.815	2.000	LSA200-T-04	WS2-21-**-	LSA200-T-04
½"	RSC	.840	2.000	LSA200-T-04	WS2-21-**-	LSA200-T-04
¾"	EMT	.922	2.000	LSA200-T-04	WS2-15-**-	LSA200-T-04
¾"	IMC	1.029	2.500	LSA275-T-06	WS2-15-**-	LSA200-T-04
¾"	RSC	1.050	2.500	LSA275-T-06	WS2.5-20-**-	LSA275-T-06
1"	EMT	1.163	3.000	LSA315-T-04	WS2.5-20-**-	LSA275-T-06
1"	IMC	1.290	3.000	LSA300-T-04	WS2.5-10-**-	LSA275-T-06
1"	RSC	1.315	3.000	LSA300-T-04	WS2.5-20-**-	LSA200-T-05
1¼"	EMT	1.510	3.000	LSA300-T-04	WS3.5-22-**-	LSA315-T-05
1¼"	IMC	1.638	3.000	LSA275-T-07	WS3.5-22-**-	LSA315-T-05
1¼"	RSC	1.660	3.000	LSA275-T-07	WS3.5-22-**-	LSA300-T-05
1½"	EMT	1.740	3.500	LSA315-T-05	WS3.5-32-**-	LSA300-T-05
1½"	IMC	1.883	3.500	LSA300-T-05	WS3.5-22-**-	LSA300-T-05
1½"	RSC	1.900	3.500	LSA300-T-05	WS3.5-22-**-	LSA275-T-08
2"	EMT	2.197	4.000	LSA315-T-06	WS4-23-**-	LSA315-T-06
2"	IMC	2.360	4.000	LSA300-T-06	WS4-23-**-	LSA300-T-06
2"	RSC	2.375	4.000	LSA300-T-06	WS4-23-**-	LSA300-T-06
2½"	EMT/RSC	2.875	4.000	LSA200-T-09	WS4-23-**-	LSA200-T-09
2½"	IMC	2.857	4.000	LSA200-T-09	WS4-23-**-	LSA200-T-09
3"	EMT/RSC	3.500	5.000	LSA300-T-08	WS5-25-**-	LSA300-T-08
3"	IMC	3.476	5.000	LSA300-T-08	WS5-25-**-	LSA300-T-08
3½"	EMT/RSC	4.000	6.000	LSA325-T-05	WS6-28-**-	LSA325-T-05
3½"	IMC	3.971	6.000	LSA325-T-05	WS6-28-**-	LSA325-T-05
4"	EMT/RSC	4.500	6.000	LSA300-T-10	WS6-28-**-	LSA300-T-10
4"	IMC	4.466	6.000	LSA300-T-10	WS6-28-**-	LSA300-T-10
5"	RSC	5.563	8.000	LSA425-T-06	WS8-32-**-	LSA425-T-06
6"	RSC	6.625	10.000	LSA475-T-10	WS8-18-**-	LSA300-T-15

* EMT – Electrical Metallic Tubing; IMC – Intermediate Metal Conduit; RSC – Rigid Steel Conduit

* * Specify length of steel sleeve in inches. Example: WS6-28-08 is 8" long.

Note: The last two digits of the seal part number indicate the number of links (and the number of bolts) per seal.

Technical Information



Link-Seal Model #	Rubber Sealing Element			Pressure Plate			Bolt			
	Actual Thickness (inches)	Free Length (inches)	Avg. Length After Tightening (inches)	A (inches)	R (inches)	T (inches)	Hex Across Flats	H (inches)	Thread Size (inches)	L
LSA200-C	.478	1¾	1⅝	1⅙	2¼	⅝	M5	.180	M5	2½
LSA275-C	.607	1¾	1⅝	⅞	1⅞	⅝	slotted hex M5	.180	M5	2½
LSA300-C	.687	2½	2	1½	2½	⅞	1/2	⅞	⅝-⅝	3½
LSA315-C	.807	2½	2	1⅞	2½	⅞	1/2	⅞	⅝-⅝	3½
LSA325-C	.875	3	2⅝	3⅞	2	1/2	1/2	⅞	⅝-⅝	4
LSA425-C	1.062	3½	2¾	3½	3	¾	9/16	¼	¾-¾	5
LSA475-C	1.562	3½	2¾	3½	3½	1/2	9/16	¼	¾-¾	4½

Description	Page No.
Application/Selection	112
Boxes	
Flush	
EGJ Series	139
WJBF Recessed Sidewalk Cover Series	116
Service Station	
EGJ Series	139
GUA Series	137
GUP Series	138
Surface	
EJB Series	128-136
GUB/GUE Series	122-127
GUA Series	137
GUP Series	138
RS/RSM/RSS Series	121
WAB Unflanged Cover Series	113
WCB Overlapping Cover Series	114
WJB Flanged Cover Series	115
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IEC Junction Boxes	
Ex-Cell Stainless Steel Enclosures	141-143
NexT Series	144-148
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Custom-Built Control Panels	
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Equipment Housings	
GUE/GUB Series	122
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W Series	113-120
Conduit Liners	
LNR Series	140
Explosion Protected Terminal Boxes	
GHG Series	159-161

Application:

Junction boxes, designed for hazardous and non-hazardous locations, are used in a variety of industries to perform the following functions:

- as a pull box
- to provide enclosures for splices and taps
- as a mounting box for multi-device control stations
- for housing apparatus, instruments, and other devices

Considerations for Selection:

- Environmental location – the physical location of the junction box will call for proper construction of the box to meet National Electrical Code requirements and

will affect the material and finish needed to meet weather and corrosive conditions, if present.

- Number and size of conductors – combined with the function to be performed (i.e., splicing, pull box), determines the amount of space needed, and therefore, the required physical dimensions of the box.
- Conduit layout – determines the number, size, and location of the conduit openings in the box. It will also determine the type of mounting required (i.e., flush or surface positioning of the box).
- Flexibility required – if changes in the electrical system are anticipated, the box chosen should be easily adaptable, either by construction (i.e., detachable hub plates) or size to the future system.

Options and Accessories:

A wide variety of options and accessories for special application are available for the various junction box families. These can be selected once the type of junction box has been determined. These options are shown on the individual pages. Some of the options available include:

- Special covers
- Hinged covers
- Materials and finishes
- Equipment mounting plates
- Openings for control station and other device mounting
- *Corro-free*™ epoxy powder coat – information available on request

Quick Selector Chart

Junction Boxes	NEC/CEC Hazardous Area Compliance	Environmental Capability/Type Designation	Size Range† L, W, D Inside	Max. Conduit Opening Size	Mtg.	Type of Conduit Opening	Cover Type	Page No.
WAB		Raintight/Type 3, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Unflanged	113
WCB		Raintight/Type 3, Watertight/Type 4, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Overlapping	114
WJB		Raintight/Type 3, Watertight/Type 4	4 x 4 x 3 to 36 x 24 x 24	6	Surface	Drilled and tapped, slip holes	Flanged	115
WJBF		Raintight/Type 3, Watertight/Type 4	4 x 4 x 4 to 36 x 24 x 24	6	Flush	Drilled and tapped, slip holes	External flanged recessed sidewalk	116
WEB		Raintight/Type 3	4 x 4 x 3 to 36 x 36 x 12	6	Flush	Drilled and tapped, slip holes	Internal Flanged	117
RS, RSM, RSS		Raintight/Type 3	4½ x 4½ x 4 to 8½ x 8½ x 4	3	Surface	Detachable hub plates	Flanged	121
GU, GUE, GUB	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4‡ Hazardous/Types 7,9	4⅝ x 4⅝ x 4⅝ to 17 x 16⅜ x 17⅜	4	Surface	Drilled and tapped	Threaded, glass window and domed covers available	122
EJB	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4 (Style C only) Hazardous/Types 7,9	6 x 4 x 4 to 60 x 22 x 12*	6	Surface	Drilled and tapped	Ground joint	136
GUA	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4 Hazardous/Types 7,9	3⅝ x 3⅝ x 1⅞	1	Surface	Union hubs	Threaded	137
GUP	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Watertight/Type 4 Hazardous/Types 7,9	3⅝ x 3⅝ x 2¼	1	Surface	Drilled and tapped cast hubs	Threaded	138
EGJ	Cl. I, Div. 1 & 2, Groups D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III	Raintight/Type 3 Hazardous/Types 7,9	5½ x 5½ x 4 to 6¾ x 6¾ x 5	1	Flush	Drilled and tapped	Threaded	139

† Length and width are inside dimensions. Depth is inside dimension without cover.

‡ All except GUB01110 and GUB15151.

* EJB602212 is suitable for Class I, Div. 1, Groups C and D.

WAB Junction Boxes

Heavy Duty

Unflanged for Surface Mounting

Ordering Info. Pages 118 to 120

Dimensions Pages 119 and 120

Dust-proof
Weatherproof
Raintight
NEMA 3

6F



6F
Junction Boxes

Application:

Where a heavy duty dustproof or weatherproof enclosure is desired, WAB boxes are installed in conduit system to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Covers are suitable for vehicular traffic (H-20 loading)
- Flat neoprene gasket cemented to the cover.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for 1/4" – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- Feraloy® iron alloy body
- Heavy-gauge steel cover
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- Feraloy iron alloy and heavy gauge steel – hot dip galvanized

Options:

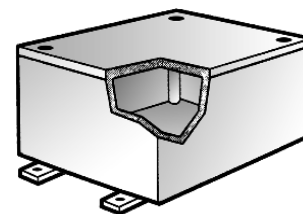
- Factory installed mounting plate... add suffix –MP.
- See Ordering Information, beginning pg. 118 for:
Drilled and tapped conduit holes
Slip holes

Size Ranges:

- 4" x 4" x 2" to 24" x 24" x 8"

Certifications and Complies:

- UL Standard: 50
- Dust-proof
- Weatherproof
- H-20 Vehicle Load Rating



Flat Covers

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WAB040402	5/32	4	4	2	✓
WAB040403	3/16	4	4	3	✓
WAB040404	1/4	4	4	4	✓
WAB050503	1/4	5	5	3	✓
WAB050504	1/4	5	5	4	✓
WAB060403	1/4	6	4	3	✓
WAB060404	7/32	6	4	4	✓
WAB060603	1/4	6	6	3	✓
WAB060604	3/16	6	6	4	✓
WAB060606	9/32	6	6	6	✓
WAB080403	5/16	8	4	3	
WAB080604	7/32	8	6	4	✓
WAB080606	5/16	8	6	6	✓
WAB080804	5/16	8	8	4	✓
WAB080806	5/16	8	8	6	✓
WAB080808	5/16	8	8	8	✓
WAB090604	5/16	9	6	4	
WAB100604	1/4	10	6	4	
WAB100804	1/4	10	8	4	✓
WAB100806	9/32	10	8	6	✓
WAB101006	1/4	10	10	6	✓
WAB120604	9/32	12	6	4	✓
WAB120606	9/32	12	6	6	✓
WAB120806	9/32	12	8	6	✓
WAB120808	3/8	12	8	8	
WAB121204	9/32	12	12	4	✓
WAB121206	9/32	12	12	6	✓
WAB121208	9/32	12	12	8	✓
WAB160606	1/4	16	6	6	
WAB161208	5/16	16	12	8	✓
WAB181206	5/16	18	12	6	✓
WAB181208	5/16	18	12	8	
WAB181210	3/8	18	12	10	
WAB181806	3/8	18	18	6	✓
WAB181812	7/16	18	18	12	✓
WAB241212	7/16	24	12	12	
WAB242408	1 1/32	24	24	8	

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™
See Section G for complete details



WCB Junction Boxes

Heavy Duty

Overlapping Cover for Surface Mounting

Ordering Info. Pages 118 to 120

Dimensions Pages 119 and 120

Dust-tight
Weatherproof
Raintight
Watertight
NEMA 3,4

Application:

Where a heavy duty dust-tight, weatherproof, raintight, or watertight enclosure is desired, WCB boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Flat neoprene gasket cemented to cover.
- Overlapping cover sheds environment.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits maximum flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for 1/4" – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- Feraloy® iron alloy cover and body
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- Feraloy iron alloy – hot dip galvanized

Options:

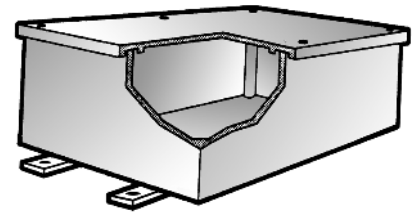
- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 118, for:
Drilled and tapped conduit holes
Slip holes

Size Ranges:

- 4" x 4" x 2" to
24" x 24" x 8"

Certifications and Compliances:

- UL Standard: 50
- Dust-tight
- Weatherproof
- Raintight
- Watertight



Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WCB040402	5/32	4	4	2	
WCB040403	3/16	4	4	3	✓
WCB040404	1/4	4	4	4	✓
WCB050503	1/4	5	5	3	✓
WCB050504	1/4	5	5	4	✓
WCB060403	1/4	6	4	3	✓
WCB060404	7/32	6	4	4	✓
WCB060603	1/4	6	6	3	✓
WCB060604	3/16	6	6	4	✓
WCB060606	9/32	6	6	6	✓
WCB080403	5/16	8	4	3	
WCB080604	7/32	8	6	4	✓
WCB080606	5/16	8	6	6	✓
WCB080804	5/16	8	8	4	✓
WCB080806	5/16	8	8	6	✓
WCB080808	5/16	8	8	8	✓
WCB090604	5/16	9	6	4	✓
WCB100604	1/4	10	6	4	
WCB100804	1/4	10	8	4	✓
WCB100806	9/32	10	8	6	✓
WCB101006	1/4	10	10	6	✓
WCB120604	9/32	12	6	4	✓
WCB120606	9/32	12	6	6	✓
WCB120806	9/32	12	8	6	✓
WCB120808	3/8	12	8	8	
WCB121204	9/32	12	12	4	✓
WCB121206	9/32	12	12	6	✓
WCB121208	9/32	12	12	8	✓
WCB160606	1/4	16	6	6	
WCB161208	5/16	16	12	8	✓
WCB181206	5/16	18	12	6	✓
WCB181208	5/16	18	12	8	
WCB181210	3/8	18	12	10	
WCB181806	3/8	18	18	6	✓
WCB181812	7/16	18	18	12	✓
WCB241212	7/16	24	12	12	
WCB242408	11/32	24	24	8	✓

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™
See Section G for complete details

WJB Junction Boxes

Heavy Duty

Flanged for Surface Mounting

Ordering Info Pages 118 to 120

Dimensions Pages 119 and 120

Weatherproof
Watertight
Raintight
NEMA 3,4

6F



6F
Junction Boxes

Application:

WJB boxes are standard with mounting straps and are primarily designed for surface mounting. WJB heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Covers are suitable for vehicular traffic (H-20 loading)
- Neoprene gasket cemented to cover.
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads may be drilled and tapped for 1/4" – 20 mounting screws.
- Blind tapped into internal mounting pads.

Standard Materials:

- Feraloy® iron alloy body
- Heavy-gauge steel – cover and mounting straps
- Neoprene gaskets

Standard Finishes:

- Feraloy iron alloy and heavy-gauge steel – hot-dip galvanized

Options:

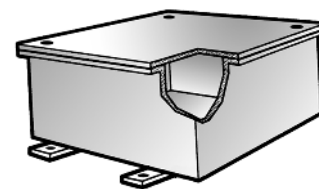
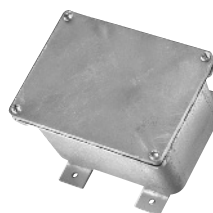
- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 118 for:
Drilled and tapped conduit holes
Slip holes

Size Ranges:

- 4" x 4" x 3" to
36" x 24" x 24"

Certifications and Compliances:

- UL Standard: 50
- CSA Standard C22.2
- Weatherproof
- Watertight
- CEC: Class II, E, F, G
Class III
Encl. 3-4
- H-20 Vehicle Load Rating



Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJB040403	1/4	4	4	3	
WJB040404	1/4	4	4	4	✓
WJB060404	1/4	6	4	4	
WJB060604	1/4	6	6	4	✓
WJB060606	1/4	6	6	6	✓
WJB080604	1/4	8	6	4	
WJB080606	1/4	8	6	6	✓
WJB080804	1/4	8	8	4	✓
WJB080806	1/4	8	8	6	
WJB080808	1/4	8	8	8	
WJB100806	1/4	10	8	6	
WJB100808	1/4	10	8	8	
WJB101006	1/4	10	10	6	✓
WJB101008	1/4	10	10	8	
WJB120606	1/4	12	6	6	
WJB120806	1/4	12	8	6	
WJB120808	1/4	12	8	8	
WJB120810	1/4	12	8	10	
WJB121206	5/16	12	12	6	✓
WJB121208	5/16	12	12	8	✓
WJB121212	5/16	12	12	12	
WJB121218	5/16	12	12	18	
WJB140806	5/16	14	8	6	
WJB141410	5/16	14	14	10	
WJB161206	5/16	16	12	6	
WJB161208	5/16	16	12	8	
WJB161606	5/16	16	16	6	
WJB180806	5/16	18	8	6	
WJB180808	5/16	18	8	8	
WJB181006	5/16	18	10	6	
WJB181206	5/16	18	12	6	
WJB181208	5/16	18	12	8	✓
WJB181210	5/16	18	12	10	
WJB181212	5/16	18	12	12	
WJB181218	3/8	18	12	18	
WJB181806	3/8	18	18	6	
WJB181808	3/8	18	18	8	
WJB181812	3/8	18	18	12	
WJB181818	3/8	18	18	18	
WJB241208	3/8	24	12	8	
WJB241212	3/8	24	12	12	
WJB241808	3/8	24	18	8	
WJB241810	3/8	24	18	10	
WJB241812	3/8	24	18	12	
WJB241818	9/16	24	18	18	
WJB242412	9/16	24	24	12	
WJB242418	9/16	24	24	18	
WJB242424	9/16	24	24	24	
WJB302412	9/16	30	24	12	
WJB302418	9/16	30	24	18	
WJB362418	9/16	36	24	18	
WJB362424	9/16	36	24	24	

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™
See Section G for complete details



WJBF Checkered Cover Sidewalk Junction Boxes

**Heavy Duty
External Flanged for Flush Mounting**

Ordering Information Pages 118 to 120
Dimensions Pages 119 and 120
Weatherproof
Watertight
Raintight
NEMA 3,4

Application:

WJBF boxes are standard with mounting feet and have a recessed flat checkered sidewalk cover for mounting in walls or floors. They may be ordered less mounting feet. WJBF heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductor for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Covers are suitable for vehicular traffic (H-20 loading)
- Neoprene gasket cemented to cover
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system
- Internal equipment mounting pads may be drilled and tapped for 1/4" – 20 mounting screws
- Blind tapped into internal mounting pads

Standard Materials:

- Feraloy® iron alloy – body
- Heavy-gauge steel (checkered) – cover, mounting straps
- Neoprene gaskets

Standard Finishes:

- Feraloy iron alloy and heavy-gauge steel – hot dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 118, for:
Drilled and tapped conduit holes
Slip holes

Size Ranges:

- 4" x 4" x 4" to 36" x 24" x 24"

Certifications and

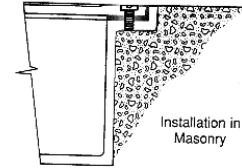
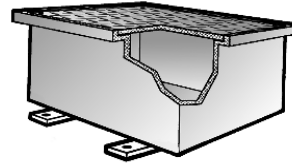
Compliances:

- UL Standard: 50
- CSA Standard C22.2 No. 40
- Weatherproof
- Watertight
- CEC:
- Class II, Division 1, Groups E,F,G
- Class III
- Encl. 3, 4
- H-20 Vehicle Load Rating

NOTE: For conduit liner ordering information, see page 140.

✓ – available with Lightning Service™

See Section G for complete details



Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJBF040404	1/4	4	4	4	✓
WJBF060404	1/4	6	4	4	✓
WJBF060604	1/4	6	6	4	✓
WJBF060606	1/4	6	6	6	✓
WJBF080604	1/4	8	6	4	✓
WJBF080606	1/4	8	6	6	✓
WJBF080804	1/4	8	8	4	✓
WJBF080806	1/4	8	8	6	✓
WJBF080808	1/4	8	8	8	✓
WJBF100806	1/4	10	8	6	
WJBF100808	1/4	10	8	8	
WJBF101006	1/4	10	10	6	✓
WJBF101008	1/4	10	10	8	✓
WJBF120606	1/4	12	6	6	
WJBF120806	1/4	12	8	6	
WJBF120808	1/4	12	8	8	✓
WJBF120810	5/16	12	8	10	
WJBF121206	1/4	12	12	6	✓
WJBF121208	1/4	12	12	8	✓
WJBF121212	5/16	12	12	12	✓
WJBF121218	5/16	12	12	18	
WJBF140806	1/4	14	8	6	
WJBF141410	5/16	14	14	10	
WJBF161206	1/4	16	12	6	
WJBF161208	1/4	16	12	8	✓
WJBF161606	1/4	16	16	6	
WJBF180806	1/4	18	8	6	
WJBF180808	1/4	18	8	8	
WJBF181006	5/16	18	10	6	
WJBF181206	5/16	18	12	6	
WJBF181208	5/16	18	12	8	✓
WJBF181210	3/8	18	12	10	
WJBF181212	5/16	18	12	12	
WJBF181218	3/8	18	12	18	
WJBF181806	3/8	18	18	6	
WJBF181808	3/8	18	18	8	
WJBF181812	3/8	18	18	12	✓
WJBF181818	3/8	18	18	18	
WJBF241208	3/8	24	12	8	
WJBF241212	3/8	24	12	12	
WJBF241808	3/8	24	18	8	
WJBF241810	3/8	24	18	10	✓
WJBF241812	3/8	24	18	12	
WJBF241818	3/8	24	18	18	
WJBF242412	3/8	24	24	12	
WJBF242418	3/8	24	24	18	
WJBF242424	3/8	24	24	24	
WJBF302412	3/8	30	24	12	
WJBF302418	3/8	30	24	18	
WJBF362418	3/8	36	24	18	
WJBF362424	3/8	36	24	24	

WEB Junction Box

Heavy Duty Internal Recess Flange for Flush Mounting

Dust-tight
Raintight
NEMA 3

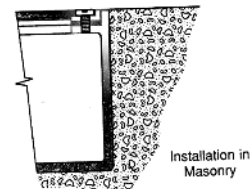
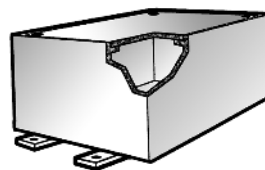
6F

6F
Junction Boxes

Application:

WEB Junction Boxes are installed:

- Where a heavy duty, dust-tight or raintight enclosure is desired
- To act as pull box for conductors
- To provide openings and space for making splices and taps in conductors
- To provide for branch conduit runs
- To provide access to conductors for maintenance and future system changes
- To enclose and protect electrical devices



Installation in
Masonry

Features:

- Flat neoprene gasket cemented to cover
- Internal equipment mounting pads
- Standard attachable heavy-gauge steel straps for mounting box
- Stainless-steel cover screws
- Internal ground screw
- Optional drilled and tapped conduit entries or slip holes
- Optional mounting plate

Standard Materials:

- Body - *Feraloy*® iron alloy, hot dip galvanized
- Cover - heavy-gauge steel, hotdip galvanized
- Cover screws - stainless steel
- Mounting Strap - heavy-gauge steel, electrogalvanized
- Gasket - neoprene

Certifications and Compliances:

- UL Standard 50
- CSA certified C22.2

Options:

- All boxes are available with optional mounting plate, add suffix -MP.
See ordering information beginning on pg. 118 for:
- Drilled and tapped conduit holes
 - Slip holes

Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)
WEB040403	$\frac{7}{32}$	4	4	3
WEB040404	$\frac{1}{4}$	4	4	4
WEB060604	$\frac{9}{32}$	6	6	4
WEB060606	$\frac{1}{4}$	6	6	6
WEB080804	$\frac{9}{32}$	8	8	4
WEB080806	$\frac{1}{4}$	8	8	6
WEB121206	$\frac{9}{32}$	12	12	6
WEB160606	$\frac{9}{32}$	16	6	6
WEB160806	$\frac{1}{4}$	16	8	6
WEB180808	$\frac{5}{16}$	18	8	8
WEB240606	$\frac{9}{32}$	24	6	6
WEB240808	$\frac{5}{16}$	24	8	8
WEB241010	$\frac{3}{8}$	24	10	10
WEB241210	$\frac{5}{16}$	24	12	10
WEB241212	$\frac{5}{16}$	24	12	12
WEB241812	$\frac{3}{8}$	24	18	12
WEB361212	$\frac{3}{8}$	36	12	12
WEB361812	$\frac{3}{8}$	36	18	12
WEB362412	$\frac{7}{16}$	36	24	12
WEB363612	$\frac{7}{16}$	36	36	12

6F W Series Junction Boxes

Ordering Information

DRILLED AND TAPPED CONDUIT OPENINGS OR SLIP HOLES

All W-Series cast-iron junction boxes may be ordered with drilled and tapped conduit openings or slip holes – subject to minimum spacing limitations listed in Table 1.

To order a box from the factory with conduit openings:

Options 1:

Send in a sketch of the box with openings specified (subject to spacing limitations specified in Table 1). **OR**

Option 2:

- Step 1: Select one of the four standard arrangements in Table 2, based on number and location of conduit entries.
- Step 2: Pick a symbol from Table 3 for each opening in the arrangement (see example).
- Step 3: Table 4 lists the maximum size and number of conduit openings by box size and the spacing dimensions. Use Table 4 to verify the openings selected are permitted.

Example – Catalog number logic:

- Select box required: WAB121208.
- User wants one 1/2" drilled and tapped hole in the top of the box, two 1" drilled and tapped holes on both sides and three 1/2" slip holes in the bottom of the box.
- Select arrangement 3 because it allows up to three openings per side.
- Next the symbols for the openings are substituted and written in clockwise order starting with location "a". The catalog number is written in three parts; part 1 – box number, part 2 – arrangement number, part 3 – symbols for the conduit openings.
- For this example the box would be ordered as:

WAB121208-3-0AO C0C 1A1A1A C0C

Box Arrangement # Symbols
Cat. # for openings

Table 1
Minimum spacing between centers of conduits

Size of Conduit	6"	5"	4"	3 1/2"	3"	2 1/2"	2"	1 1/2"	1 1/4"	1"	3/4"	1/2"
1/2"	5	4 3/8	3 5/8	3 3/8	3	2 5/8	2 3/8	2	1 7/8	1 3/4	1 5/8	1 1/2
3/4"	5 1/8	4 1/2	3 3/4	3 1/2	3 1/8	2 3/4	2 1/2	2 1/8	2	1 7/8	1 3/4	
1"	5 1/4	4 5/8	4	3 5/8	3 1/4	3	2 5/8	2 3/8	2 1/4	2		
1 1/4"	5 1/2	4 7/8	4 1/8	3 7/8	3 1/2	3 1/8	2 7/8	2 1/2	2 3/8			
1 1/2"	5 5/8	5	4 1/4	4	3 5/8	3 1/4	3	2 5/8				
2"	6	5 3/8	4 5/8	4 1/4	3 7/8	3 5/8	3 1/4					
2 1/2"	6 1/4	5 5/8	4 7/8	4 5/8	4 1/4	3 7/8						
3"	6 5/8	6	5 3/8	5	4 5/8							
3 1/2"	7	6 1/4	5 5/8	5 1/4								
4"	7 1/4	6 5/8	5 7/8									
5"	8	7 1/4										
6"	8 5/8											

Table 2
Standard conduit arrangements

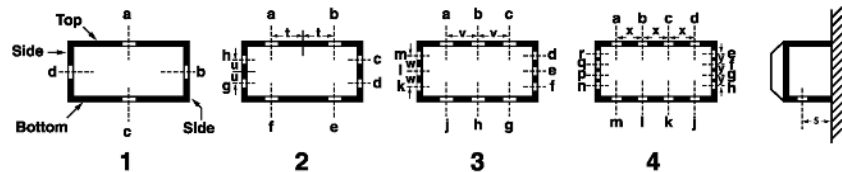
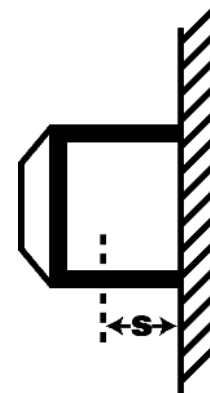


Table 3
Symbols for openings

Conduit Size	Drilled and Tapped Hole	Slip Hole
1/2"	A	1A
3/4"	B	1B
1"	C	1C
1 1/4"	E	1E
1 1/2"	F	1F
2"	G	1G
2 1/2"	H	1H
3"	J	1J
3 1/2"	K	1K
4"	L	1L
5"	M	1M
6"	N	1N
None	0 (Zero)	0 (Zero)



S = Dimension from wall to hole center line

Ordering Information

Table 4

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom†				Sides				Spacing Dimensionst						
	1	2	3	4	1	2	3	4	s	t	u	v	w	x	y
040402	¾	¾	—	—	¾	¾	—	—	1¼	⅞	⅞	—	—	—	—
040403	1¼	¾	—	—	1¼	¾	—	—	1⅝	⅞	⅞	—	—	—	—
040404	2	¾	—	—	2	¾	—	—	2¼	⅞	⅞	—	—	—	—
050503	1¼	¾	—	—	1¼	¾	—	—	1⅝	1¼	1¼	—	—	—	—
050504	2	1	—	—	2	1	—	—	2¼	1¼	1¼	—	—	—	—
060403	1¼	¾	¾	—	1¼	¾	—	—	1⅝	1⅝	⅞	1¾	—	—	—
060404	2	1½	¾	—	2	¾	—	—	2¼	1⅝	⅞	1¾	—	—	—
060603	1¼	1¼	¾	—	1¼	1¼	¾	—	1¼	1⅝	1⅝	1¾	1¾	—	—
060604	2	1½	¾	—	2	1½	¾	—	2¼	1⅝	1⅝	1¾	1¾	—	—
060606	4	1½	¾	—	4	1½	¾	—	3⅝	1⅝	1⅝	1¾	1¾	—	—
080403	1¼	1¼	1	¾	1¼	¾	—	—	1⅝	1⅝	⅞	2½	—	—	—
080604	2	2	1	¾	2	1½	¾	—	2¼	1⅝	1⅝	2½	1¾	1¾	—
080606	4	2	1	¾	4	1½	¾	—	3⅝	1⅝	1⅝	2½	1¾	1¾	—
080804	2	2	1	¾	3	2	1	¾	2¼	1⅝	1⅝	2½	2½	1¾	1¾
080806	4	2	1	¾	4	2	1	¾	3⅝	1⅝	1⅝	2½	2½	1¾	1¾
080808	4	2	1	¾	4	2	1	¾	4¼	1⅝	1⅝	2½	2½	1¾	1¾
090604	2	1¼	1½	1	2	1½	¾	—	2¼	2¼	1⅝	3	1¾	2	—
100604	2	2	1½	1	2	1½	¾	—	2¼	2½	1⅝	2¾	1¾	2½	—
100804	2	2	1½	1	2	2	1	¾	2¼	2½	1⅝	2¾	2½	2½	1¾
100806	4	3	1½	1	4	2	1	¾	3⅝	2½	1⅝	2¾	1¾	2½	1¾
100808	5	3	1½	1	5	2	1	¾	4½	2½	1⅝	2¾	2½	2½	1¾
101006	4	3	1½	1	3	3	1½	1	2⅝	2½	2½	2¾	2¾	2½	2½
101008	5	3	1½	1	5	3	1½	1	4¼	2½	2½	2¾	2¾	2½	2½
120604	2	2	2	1½	2	1½	¾	—	2¼	3	1⅝	4	1¾	2¾	—
120606	4	4	2½	1½	4	1½	¾	—	3⅝	3	1⅝	4	1¾	2¾	—
120806	4	4	2½	2½	4	2	1	¾	3⅝	3	1⅝	4	2½	2¾	1¾
120808	5	4	2½	2½	5	2	1	¾	4¼	3	1⅝	4	2½	2¾	1¼
121204	2	2	2	1½	2	2	2	1½	2¼	3	3	4	4	2¾	2¾
121206	4	4	2½	1½	4	4	2½	1½	3⅝	3	3	4	4	2¾	2¾
121208	5	4	2½	1½	5	4	2½	1½	4¼	3	3	4	4	2¾	2¾
121212	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
121218	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
140806	4	4	3	2	4	2	1	¾	3⅝	3½	1⅝	4½	2½	3½	1¾
141206	4	4	3	2	4	4	2½	1½	3⅝	3½	3	4½	4	3½	2¾
141410	6	4	3	2	6	4	3	2	5	3½	3½	4½	4½	3½	3½
160606	4	4	3½	2½	4	1½	¾	—	3⅝	4	1½	5⅝	2	4	—
160806	4	4	3½	2½	4	2½	1½	¾	3⅝	4	2	5⅝	2⅝	4	2
161206	4	4	3½	2½	4	4	2½	1½	3⅝	4	3	5⅝	4	4	3
161208	5	5	3½	2½	5	4	2½	1½	4¼	4	3	5⅝	4	4	3
161606	4	4	3½	2½	4	4	3½	2½	3⅝	4	4	5⅝	5⅝	4	4
180806	4	4	4	2½	4	2½	1¼	¾	3⅝	4½	2	6	2⅝	4½	2
180808	5	5	4	2½	5	2½	1¼	¾	4¼	4½	2	6	2⅝	4½	2
181206	4	4	4	2½	4	4	2½	1½	3⅝	6½	2⅞	5½	3⅞	4	2¾
181208	5	5	4	2½	5	4	2½	1½	4¼	4½	3	5½	4	4	2¾
181210	6	5	4	2½	6	4	2½	1½	5	4¼	3	5½	4	4	2¾

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.

‡Top and bottom are the longer dimensions on enclosures which are not square.

6F W Series Junction Boxes

Ordering Information

Table 4 (continued)

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom†								Spacing Dimensions†							
	1	2	3	4	1	2	3	4	s	t	u	v	w	x	y	
181212	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¼	
181218	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¾	
181806	4	4	4	2½	5	5	4	2½	3¾	4½	4	6	5¾	4½	4	
181808	5	5	4	2½	5	5	3½	2½	4¼	4½	4	6	5¾	4½	4	
181812	6	6	4	2½	6	6	4	2½	5	4½	4½	6	6	4½	4½	
240606	4	4	4	4	4	1½	¾	—	3¾	6¾	1¾	8	1¾	6	—	
240808	5	5	5	4	5	2½	1¼	¾	4¼	6¾	4½	8	2¾	6	2	
241010	6	6	5	4	6	3	1½	1	5	6½	2½	7	2¾	5¾	2½	
241208	5	5	5	4	5	4	2½	1½	4¼	6½	2¾	7	3¾	5¾	2¾	
241210	6	6	5	4	6	4	2½	1½	5	6½	3	7	4	5¾	2¾	
241212	6	6	5	4	6	4	2½	1½	5	6½	2¾	7	3¾	5¾	2¾	
241808	5	5	5	4	5	5	4	2½	4¼	6½	4½	7	5¾	5¾	4	
241810	6	6	5	4	6	6	4	2½	5	6½	4½	7	5¾	5¾	4	
241812	6	6	5	4	6	5	4	2½	5	6½	4½	7	5¾	5¾	4	
242408	5	5	5	4	5	5	5	4	4¼	6½	6½	7	7½	5¾	5¾	
242412	6	6	5	4	6	6	5	4	5	6½	6½	7	7½	5¾	5¾	
242424	6	6	5	4	6	6	5	4	6½	6¾	6½	7	7½	5¾	5¾	
302412	6	6	6	5	6	6	5	4	5	7½	6¾	10	8	7½	6	
361212	6	6	6	6	6	4	2½	1½	5	8¾	3	12	4	9	2¾	
361812	6	6	6	6	6	5	4	2½	5	8¾	4½	12	4½	9	4	
362412	6	6	6	6	6	6	5	4	5	8¾	6¾	12	8	9	6	
363612	6	6	6	6	6	6	6	6	5	8¾	8¾	12	12	9	9	

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.

‡Top and bottom are the longer dimensions on enclosures which are not square.

Application:

RS, RSM, RSS junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes

Features:

- Junction box bodies accept wide range of hub plates permitting varied hub arrangements and sizes.
- Stocking a few components provides for many specific needs.
- Future system expansion easily accomplished by substituting hub plates for currently installed plates.
- Suitable for use where boxes with integral hubs cannot satisfy requirements.
- Suitable for surface mounting outdoors or indoors in rigid conduit runs.

Standard Materials:

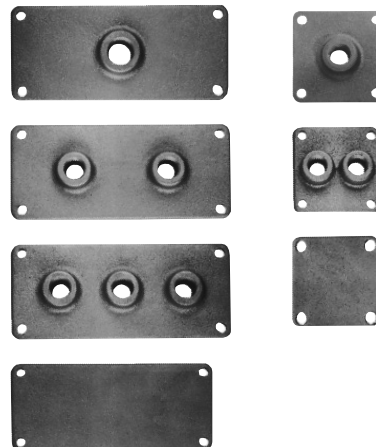
- Bodies and hub plates – Feraloy® iron alloy
- Gaskets – cork

Standard Finishes:

- Feraloy iron alloy – electrogalvanized and aluminum acrylic paint

Certifications and Compliances:

- UL Standard: 514A
- CSA Standard: C22.2 No. 18



Junction Boxes†

Approximate Inside Dimensions

Size	Cat. #
8½ x 8½ x 4	RS1
8½ x 4½ x 4	RSM1
4½ x 4½ x 4	RSS1

Replacement Cover Gaskets

Size	Cat. #
8½ x 8½	GASK61
8½ x 4½	GASK63
4½ x 4½	GASK64

Conduit Hub Plates‡

For 8½ x 4 inch Sides of RS and RSM Boxes

	One Hub	Two Hubs	Three Hubs
Size	Cat. #	Cat. #	Cat. #
½	RSP1	RSP11	RSP111
¾	RSP2	RSP22	RSP222
1	RSP3	RSP33	RSP333
1¼	RSP4	RSP44	RSP444
1½	RSP5	RSP55	RSP555
2	RSP6	RSP66	
2½	RSP7		
3	RSP8		

Blank Hub Plate
Cat. # RSP0

For 4½ x 4 inch Sides of RSM and RSS Boxes

	One Hub	Two Hubs
Size	Cat. #	Cat. #
½	RSMP1	RSMP11
¾	RSMP2	RSMP22
1	RSMP3	
1¼	RSMP4	
1½	RSMP5	
2	RSMP6	
2½	RSMP7	

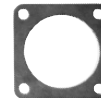
Blank Hub Plate
Cat. # RSMP0

Replacement Hub Plate Gaskets



Size
8½ x 4

Cat. #
GASK66



Size
4½ x 4

Cat. #
GASK65

† Includes body, top cover with gasket, 4 gaskets for side plates, and 20 bolts.
‡ Hub plates only. Gaskets not included.

NOTE: For conduit liner ordering information, see page 140.



Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 4*, 7BCD, 9EFG
 EEx d IIC T6, IP66†

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Application:

GUE, GUB series junction boxes are used in threaded rigid conduit systems in hazardous areas:

- to function as a splice box, pull box or equipment and device enclosure
- indoors and outdoors

Features:

- Threaded construction throughout permits use in hazardous areas.
- Bodies have thick walls so they can be factory or field drilled and tapped to meet NEC/CEC requirements for Class I hazardous areas.
- Covers are provided with a neoprene "O" ring gasket to meet NEMA/EEMAC 4 requirements for a watertight seal*
- Internal grounding lug provides a means to ground enclosed equipment.
- Boxes are machined for field installed mounting plates.
- GUB boxes are CENELEC certified when ordered with Suffix SA ATEX.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – GU, GUE, GUB01, GUB02 – electrogalvanized and aluminum acrylic paint. All other boxes – zinc chromate primer and aluminum acrylic paint
- Copper-free aluminum – natural

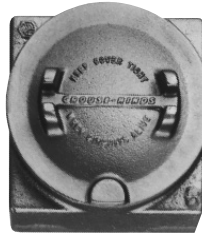
Options:

Description	Suffix to be Added to Cat. #
Material –	
<i>Feraloy</i> iron alloy covers.	WOD
For GU, GUE, GUB01, GUB02, GUB03 and GUB06 to be furnished in copper-free aluminum.	SA
Copper-free aluminum boxes with ATEX certification.	SA ATEX
Factory installed mounting plate for relays, terminal blocks, electrical devices, etc.	MP
Factory installed terminal blocks.	Information on request

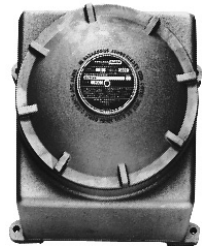
Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
 - UL Standard: 886
 - CSA Standard: C22.2 No. 30
 - CENELEC: EEx d IIC, IP66† ATEX Certificate: PTB 01 ATEX 1019 U
 - ✓ – available with Lightning Service™
- See Section G for complete details

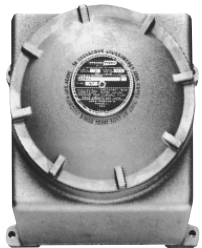
Junction Boxes Without Hubs**



GU ✓
 4¹⁵/₁₆" x 4¹⁵/₁₆" x 4¹/₈"
 3⁵/₈" cover opening



GUB01 ✓
 6¹/₂" x 7" x 5³/₄"
 5⁹/₈" cover opening



GUB02 ✓
 8" x 10" x 5⁷/₈"
 7" cover opening

GUB06 8¹/₂" x 10" x 6⁷/₈"
 7" cover opening



GUB03
 11" x 12" x 8¹³/₁₆"
 9⁹/₈" cover opening

GUB01110★
 14" x 18" x 13¹/₂"
 12¹/₄" cover opening

GUB15151 19" x 21" x 16⁵/₈"
 16³/₄" cover opening



GUB04
 11" x 12" x 8¹¹/₁₆"
 9⁵/₈" cover opening

GUB08
 7" cover opening
 8¹/₂" x 10" x 6¹³/₁₆"

Ordering Information:

Junction boxes listed can be furnished with drilled and tapped conduit openings, subject to the limitations of maximum opening, number and spacing shown in Tables 1, 2 and 4.

To Order:

Step 1

Select the box required from photos at left and dimensional drawings on page 123.

Step 2

Select standard conduit arrangement from Table 1.

Step 3

Determine maximum size conduit opening required from Table 2 (consider conduit opening spacing from Table 4).

Step 4

Select appropriate symbol for required drilled and tapped holes from Table 3.

Example:

Step 1 – box required GUB06

Step 2 – arrangement 108

Step 3 – openings – 1¹/₂" at "a" and "c"; 1" at "b" and "d".

Step 4 – symbols are substituted and written in **clockwise order starting with location "a"**. For this example: FCFC Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit openings. For this example: GUB06-108-FCFC. When no opening is required at a particular location, use symbol "0" (zero).

If none of the standard arrangements meet requirements, send a sketch showing junction box number with size and location of each opening desired.

* Not available on GUB01110 and GUB15151.

** External dimensions provided.

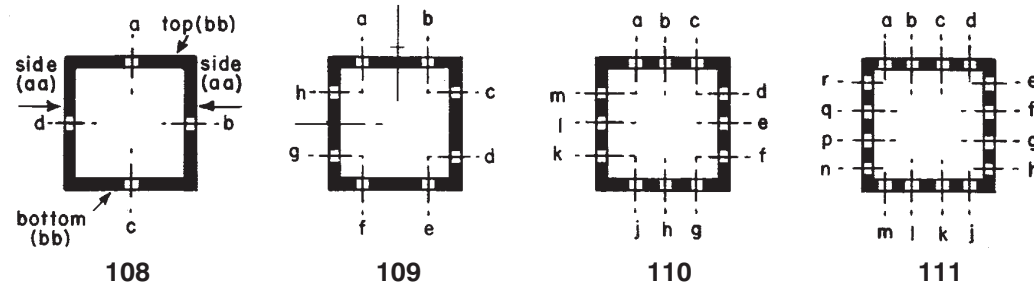
† Order suffix SA ATEX. GUB01110 and GUB15151 are rated IP54.

NOTE: For conduit liner ordering information, see page 140.

★ GUB01110 listed for Class I, Div. 1, Groups C & D only in Canada (CSA).

Ordering Information

Table 1/Arrangements of Drilled and Tapped Conduit Openings –
For other arrangements, send sketch and complete description



Conduit opening arrangements shown in the illustration should meet the majority of requirements.

These GUB junction boxes will be supplied with drilled and tapped openings up to the maximum size and number shown in Table 2.

Table 2/Maximum Size & No. of Drilled & Tapped Holes

Cat. #	Top & Bottom (bb) †				Each Side (aa) †				Back ‡			
	1	2	3	4	1	2	3	4	1	2	3	4
Group D*												
GU	1	1			1	1			3	1	3/4	3/4
GUE	2	1			2	1			2	1	3/4	3/4
GUB01	2	1 1/2	3/4		2	1 1/2	1	1/2	1	3/4	3/4	3/4
GUB02	2	2	1	3/4	2	2	1 1/2	1	3/4	3/4	3/4	3/4
GUB06	2	2	1	3/4	2	2	1 1/2	1	2	2	2	2
GUB08	2	2	1	3/4	2	2	1 1/2	1	2	2	2	2
GUB03	2	2	1 1/2	1	2	2	2	1 1/4	4	4	3 1/2	3
GUB04	2	2	1 1/2	1	2	2	2	1 1/4	4	4	3 1/2	3
GUB01110	2	2	2	1 1/2	2	2	2	2	6	6	4	3 1/2
GUB15151	5	4	3 1/2	2 1/2	5	4	4	3	6	6	6	6
Group C ♦												
GU	1	1			1	1			3	1	3/4	3/4
GUE	2	1			2	1			2	1	3/4	3/4
GUB01	2	1 1/4	1/2		2	1 1/4	1/2		3/4	3/4	3/4	3/4
GUB02	2	1 1/2	3/4		2	2	1 1/4	1/2	3/4	3/4	3/4	3/4
GUB06	2	1 1/2	3/4		2	2	1 1/4	1/2	2	2	2	1 1/2
GUB08	2	1 1/2	3/4		2	2	1 1/4	1/2	2	2	2	1 1/2
GUB03	2	2	1 1/4	3/4	2	2	1 1/2	1	4	3 1/2	2 1/2	2 1/2
GUB04	2	2	1 1/4	3/4	2	2	1 1/2	1	4	3 1/2	2 1/2	2 1/2
GUB01110	2	2	2	1 1/4	2	2	2	2	6	6	4	3 1/2
GUB15151	5	4	3	2	5	4	3 1/2	2 1/2	6	6	6	5
Group B ♦ ♦												
GU	1	1			1	1			3	1	3/4	3/4
GUE	2	1			2	1			2	1	3/4	3/4
GUB01	2	1 1/4	1/2		2	1 1/4	1/2		3/4	3/4	3/4	3/4
GUB02	2	1 1/2	3/4		2	2	1 1/4	1/2	3/4	3/4	3/4	3/4
GUB06	2	1 1/2	3/4		2	2	1 1/4	1/2	2	2	2	1 1/2
GUB08	2	1 1/2	3/4		2	2	1 1/4	1/2	2	2	2	1 1/2
GUB03	2	2	1 1/4	3/4	2	2	1 1/2	1	4	3 1/2	2 1/2	2 1/2
GUB04	2	2	1 1/4	3/4	2	2	1 1/2	1	4	3 1/2	2 1/2	2 1/2
GUB01110	2	2	2	1 1/4	2	2	2	2	4	4	4	4
GUB15151	4	4	3 1/2	2 1/2	4	4	3 1/2	2 1/2	4	4	4	4

Table 3/Drilled & Tapped Holes

Size	Symbol
1/2	A
3/4	B
1	C
1 1/4	E
1 1/2	F
2	G
2 1/2	H
3	J
3 1/2	K
4	L
none	O

* Group D chart is based on use of staggered unions. If adjacent unions are desired, additional spacing may be necessary.

† Sidewall and top and bottom sizes are based on all openings being in line.

‡ Backwall sizes are based on: two per side – diagonal corners; four per side – one in each corner; three per side – triangular pattern with two on adjacent corners on long wall and third in center of opposite long wall.

♦ Conduit seals are required within 1 1/2" of all conduit entrances for Class I, Group C hazardous locations.

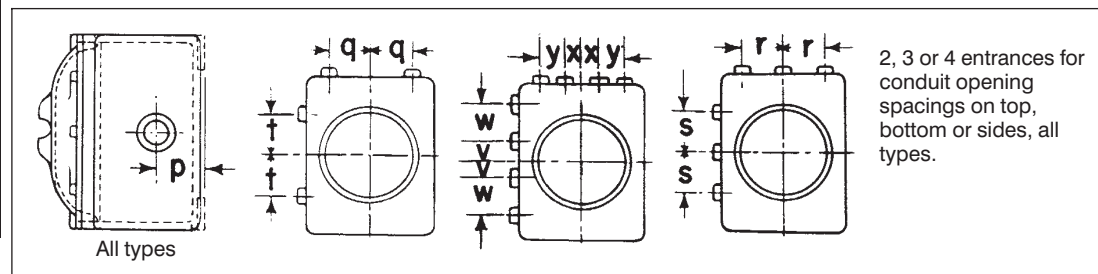
♦ ♦ Conduit seals are required within 1 1/2" of all conduit entrances for Class I, Group B hazardous locations.

NOTE: For conduit liner ordering information, see page 140.

6F GUB Junction Boxes

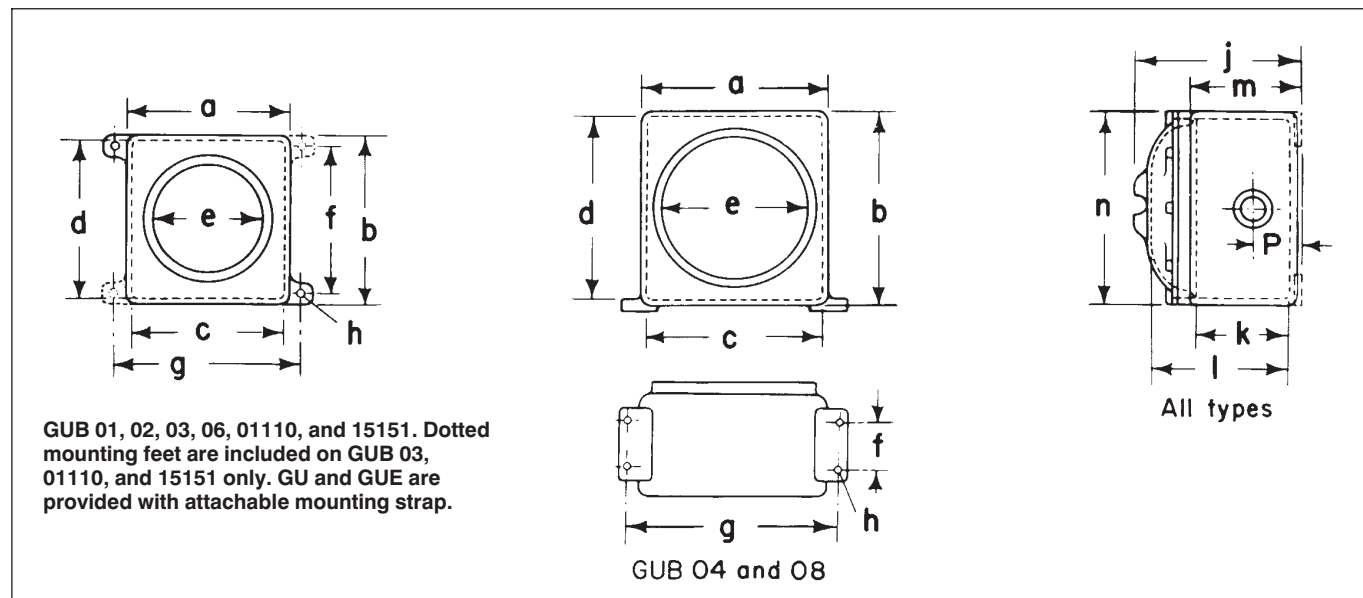
Dimensions

Table 4/Conduit Spacings



Type	p	q	r	s	t	v	w	x	y
GU	1 $\frac{3}{8}$	1	—	—	1	—	—	—	—
GUE	1 $\frac{7}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	—	1 $\frac{1}{8}$	—	—	—	—
GUB01	2 $\frac{1}{16}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	2 $\frac{1}{8}$	1 $\frac{5}{8}$	7 $\frac{7}{8}$	1 $\frac{3}{4}$	2 $\frac{5}{32}$	1 $\frac{9}{16}$
GUB02	2 $\frac{1}{16}$	1 $\frac{21}{32}$	2 $\frac{1}{16}$	2 $\frac{5}{16}$	1 $\frac{21}{32}$	1 $\frac{1}{32}$	2 $\frac{1}{16}$	7 $\frac{7}{8}$	1 $\frac{3}{4}$
GUB06	2 $\frac{1}{16}$	1 $\frac{21}{32}$	2 $\frac{5}{16}$	2 $\frac{5}{16}$	1 $\frac{21}{32}$	1 $\frac{1}{32}$	2 $\frac{1}{16}$	7 $\frac{7}{8}$	1 $\frac{3}{4}$
GUB08	2 $\frac{1}{16}$	1 $\frac{21}{32}$	2 $\frac{1}{16}$	2 $\frac{1}{16}$	1 $\frac{21}{32}$	1 $\frac{1}{32}$	2 $\frac{1}{16}$	7 $\frac{7}{8}$	1 $\frac{3}{4}$
GUB03	3 $\frac{3}{8}$	2 $\frac{1}{2}$	3 $\frac{5}{16}$	3 $\frac{5}{16}$	3	1 $\frac{5}{32}$	2 $\frac{5}{16}$	1 $\frac{5}{32}$	2 $\frac{5}{16}$
GUB04	3 $\frac{3}{8}$	1 $\frac{21}{32}$	3 $\frac{5}{16}$	3 $\frac{5}{16}$	3	1 $\frac{5}{32}$	2 $\frac{5}{16}$	1 $\frac{5}{32}$	2 $\frac{5}{16}$
GUB01110	4 $\frac{3}{4}$	3	4	6	4	2	4	1 $\frac{21}{32}$	3 $\frac{5}{16}$
GUB15151	6	4	5 $\frac{1}{4}$	5 $\frac{7}{8}$	4	2	4	2	4

Dimensions

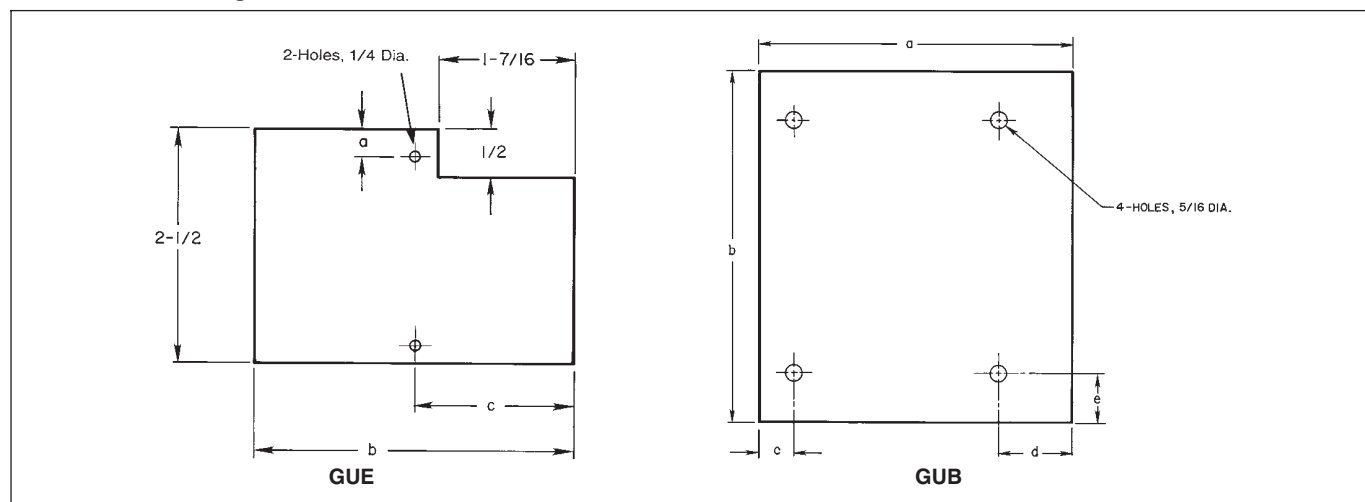


Type	a	b	c†	d†	e	f	g	h	j	k†	l†	m	n
GU	4 $\frac{15}{16}$	4 $\frac{15}{16}$	3 $\frac{13}{16}$	3 $\frac{13}{16}$	3 $\frac{5}{8}$	—	—	—	4 $\frac{1}{8}$	1 $\frac{9}{16}$	3 $\frac{7}{16}$	2 $\frac{3}{8}$	4 $\frac{1}{8}$
GUE	5 $\frac{5}{16}$	5 $\frac{5}{16}$	4 $\frac{3}{16}$	4 $\frac{3}{16}$	3 $\frac{5}{8}$	—	—	—	5 $\frac{3}{8}$	2 $\frac{1}{4}$	3 $\frac{7}{16}$	3 $\frac{1}{2}$	4 $\frac{1}{8}$
GUB01	6 $\frac{1}{2}$	7	6 $\frac{1}{2}$	5 $\frac{7}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{4}$	7 $\frac{1}{2}$	1 $\frac{3}{32}$	5 $\frac{3}{4}$	3 $\frac{1}{16}$	4 $\frac{1}{2}$	4 $\frac{1}{16}$	6 $\frac{1}{4}$
GUB02	8	10	7 $\frac{7}{8}$	9 $\frac{1}{8}$	7	8 $\frac{3}{4}$	9	1 $\frac{3}{32}$	5 $\frac{7}{8}$	3	4 $\frac{5}{8}$	4 $\frac{1}{16}$	7 $\frac{3}{4}$
GUB06	8 $\frac{1}{2}$	10	7 $\frac{3}{8}$	8 $\frac{7}{8}$	7	8 $\frac{3}{4}$	9 $\frac{1}{2}$	7 $\frac{1}{16}$	7 $\frac{3}{8}$	4 $\frac{1}{4}$	5 $\frac{13}{16}$	5 $\frac{1}{4}$	7 $\frac{3}{4}$
GUB08	8 $\frac{1}{2}$	10	7 $\frac{3}{8}$	8 $\frac{7}{8}$	7	2 $\frac{1}{2}$	9 $\frac{5}{8}$	7 $\frac{1}{16}$	7 $\frac{3}{8}$	4 $\frac{1}{4}$	5 $\frac{3}{16}$	5 $\frac{1}{4}$	7 $\frac{3}{4}$
GUB03	11	12	9 $\frac{3}{4}$	10 $\frac{3}{4}$	9 $\frac{5}{8}$	10 $\frac{3}{4}$	12 $\frac{1}{8}$	7 $\frac{1}{16}$	8 $\frac{19}{16}$	5	7 $\frac{3}{8}$	6 $\frac{3}{8}$	11
GUB04	11	12	9 $\frac{3}{4}$	10 $\frac{3}{4}$	9 $\frac{5}{8}$	3 $\frac{1}{2}$	12 $\frac{1}{8}$	7 $\frac{1}{16}$	8 $\frac{11}{16}$	5	7 $\frac{3}{8}$	6 $\frac{1}{2}$	11
GUB01110	14 $\frac{1}{16}$	18 $\frac{1}{16}$	13	17	12 $\frac{1}{4}$	16	16	1	13 $\frac{1}{2}$	6 $\frac{13}{16}$	10 $\frac{3}{4}$	9 $\frac{3}{4}$	14
GUB15151	20 $\frac{7}{8}$	18 $\frac{7}{8}$	19 $\frac{1}{8}$	17 $\frac{1}{8}$	16 $\frac{3}{4}$	18	21	1	16 $\frac{5}{8}$	9	13 $\frac{3}{16}$	11 $\frac{3}{8}$	18

† Inside Dimensions

NOTE: For conduit liner ordering information, see page 140.

Table 5/Mounting Plate Dimensions



Box Cat. #	Mounting Plate Kit Cat. #	a	b	c	d	e
GU	GU-MPK1	9/32	3 3/8	1 43/64	—	—
GUE	GUE-MPK1	9/32	3 3/8	1 43/64	—	—
GUB01	GUB-MP01	4 3/8	5	3/8	1	1
GUB02	GUB-MP02	5 9/16	6 1/4	5/8	1 5/16	7/8
GUB03	GUB-MP03	8	9	15/16	1 5/16	1 1/2
GUB04	GUB-MP03	8	9	15/16	1 5/16	1 1/2
GUB06	GUB-MP02	5 9/16	6 1/4	5/8	1 5/16	7/8
GUB08	GUB-MP02	5 9/16	6 1/4	5/8	1 5/16	7/8
GUB01110	GUB-MP01110	8 3/4	12	7/16	1 7/16	1 3/4
GUB15151	GUB-MP15151	14	14	1 5/8	1 5/8	1 5/8

NOTE: For conduit liner ordering information, see page 140.

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 7B,C,D,9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Application:

GUB and EPC threaded covers are used with GUB boxes in control systems in hazardous areas:

- indoors and outdoors
- in three categories:

Flat – for normal use; furnished with standard GUB boxes

Glass window – to provide visibility of meter indications when used to enclose meters

Domed – for increasing volume of GUB to make it easier to splice and pull large conductors

Features:

- Domed – more suitable for use when splices of heavy conductors are made and enclosed, since the conductors may be pulled in with the ends outside the box. After the splices are made, they do not have to be crowded back into the box
- Glass window – has maximum diameter glass to give best visibility. In selecting, the diameter of the meter face should match or be slightly smaller than window diameter.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Certifications and Compliances:

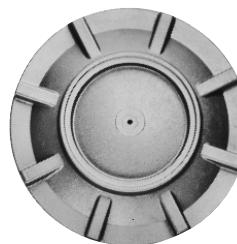
- NEC:
 GUB0101, -0102, -0103, -714, -7110, EPC2110, EPC2151
 Class I, Division 1 & 2, Groups B,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III

All other covers:

Class I, Division 1 & 2, Group D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III

- CEC:
 Class I, Division 1 & 2, Group D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III

Note: GUB covers are suitable for use in hazardous areas only when used with appropriate GUB series enclosures.



GUB flat cover



GUB glass cover



GUB dome cover

Body† Size	Flat Cover Cat. #	Glass Window Cover Cat. #	Dome Cover	
			Cat. #	Nominal Depth
GUB01	GUB0101	GUB0110	GUB714 GUB7110	4 10
GUB02 GUB06 GUB08	GUB0102	GUB0108	GUB726	6
GUB03 GUB04	GUB0103	GUB0109	GUB738 GUB7316	10 17
GUB01110	EPC2110		EPC2115	5
GUB15151	EPC2151		EPC21116	16

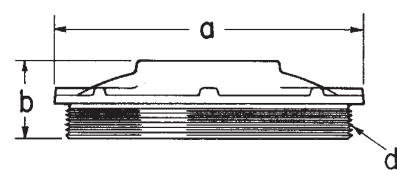
† Bodies are grouped by size of cover opening and take any of the covers shown in the group.

‡ Check certifications and compliances for specific hazardous area ratings for each catalog #.

Specify body and conduit openings in normal manner (see page 120) and state Cat. No. of cover required.

Dimensions

Flat covers



Flat Covers

Cat. #	a	b	Thread Size d
GUB0101	6 ⁵ / ₁₆	1 ²³ / ₃₂	5 ⁸ / ₁₆ -12
GUB0102	7 ¹³ / ₁₆	1 ¹⁵ / ₁₆	7 ⁸ / ₁₆ -12
GUB0103	11 ¹ / ₁₆	2 ³ / ₄	9 ³ / ₄ -8
EPC2110	12 ⁷ / ₈	5 ⁵ / ₃₂	12.660-8
EPC2151	17	5 ⁹ / ₁₆	16.910-8

Glass Covers

Cat. #	a	b	Window Opening c	Thread Size d
GUB0110	6 ⁵ / ₁₆	1 ¹³ / ₁₆	3 ⁵ / ₈	5 ⁸ / ₁₆ -12
GUB0108	7 ¹³ / ₁₆	2 ¹ / ₁₆	4 ³ / ₄	7 ¹ / ₈ -12
GUB0109	11 ¹ / ₁₆	1 ¹⁵ / ₁₆	6 ¹ / ₁₆	9 ³ / ₄ -8

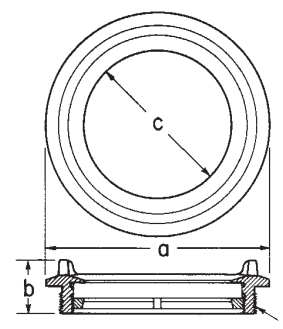
Dome Covers

Cat. #	a	b
GUB714	5 ¹ / ₁₆	2 ³ / ₄
GUB7110	5 ¹ / ₁₆	9 ¹ / ₈
GUB726	6 ³ / ₈	5 ¹ / ₈
GUB738	8 ⁷ / ₈	8
GUB7316	8 ⁷ / ₈	15 ¹ / ₄
EPC2115	11 ⁹ / ₁₆	3 ⁹ / ₁₆
EPC21116	11 ⁹ / ₁₆	14 ⁹ / ₁₆

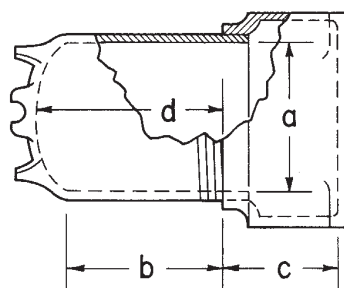
For Dimensions C

GUB02	GUB06	GUB08	all others	d
			4 ³ / ₁₆	4
			4 ³ / ₁₆	10 ³ / ₈
			6 ⁵ / ₈	10 ¹ / ₂
			6 ⁵ / ₈	17 ³ / ₈
			8 ¹ / ₂	6 ⁹ / ₁₆
			8 ¹ / ₂	17 ⁹ / ₁₆

Glass covers



GUB with dome covers



NOTE: For conduit liner ordering information, see page 140.

Application:

GUB equipment housings are used in threaded rigid conduit systems in hazardous areas:

- to house relays, contactors, terminal blocks or other equipment and devices
- indoors or outdoors

Features:

- Supplied with dome cover and adjustable mounting position plate which extends into dome cover.
- Mounting plate is adjustable. It may be located in center of cover so small devices can be mounted on both sides of plate or toward either side of dome cover when larger devices are mounted on one side of plate (see dimension "p").

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum
- Mounting plates – sheet steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Sheet steel – zinc plated

Options:

Description

Material – Bodies, copper-free aluminum. SA

Other sizes of boxes and covers available Information on request

Suffix to be Added to Cat. #

Certifications and Compliances:

- NEC:
GUB3100, GUB3177
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

GUB1440, GUB1100
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard: C22.2 No. 30



GUB with cover removed showing mounting plate.



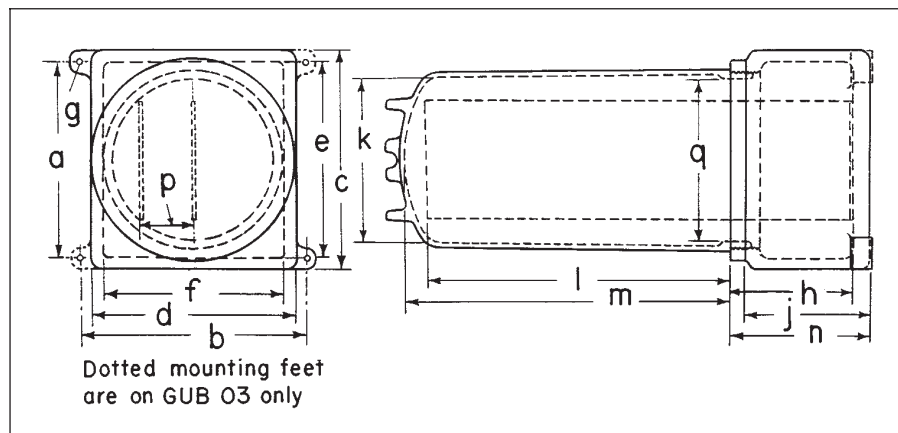
GUB with dome cover.

Body Size	Nominal Depth of Cover	Dimension		Width of Mounting Plate	Cat. #
		l	m		
GUB01	4	3 ⁵ / ₁₆	4	3 ¹ / ₁₆	GUB1440
	10	9 ³ / ₁₆	10 ⁷ / ₁₆		GUB1100
GUB03	10	9 ¹ / ₈	10 ¹ / ₁₆	6 ¹ / ₂	GUB3100
	17	16 ³ / ₈	17 ³ / ₈		GUB3177

NOTE: Conduit seals are required within 1½" of all conduit entrances for Class I, Division 1, Group B hazardous areas. For other sealing requirements consult the National Electrical Code®/Canadian Electrical Code.

†Check Certifications and Compliances for specific hazardous area ratings for each catalog #.

Dimensions



Body Size

	GUB01	GUB03
a	5 ³ / ₄	10 ³ / ₄
b	7 ¹ / ₂	12 ¹ / ₈
c	7	12
d	6 ¹ / ₂	11
e	6 ¹ / ₂	10 ³ / ₄
f	5 ⁷ / ₈	9 ³ / ₄
g	1 ³ / ₃₂	7 ¹ / ₁₆
h	4 ³ / ₁₆	6 ⁵ / ₈
j	4	6 ⁵ / ₈
k	5	9 ¹ / ₈
l	see listing	
m	see listing	
n	4 ⁷ / ₈	7 ⁵ / ₈
p	1 ¹ / ₂ max	2 ⁷ / ₈ max
q	5 ¹ / ₁₆	8 ⁷ / ₈

NOTE: For conduit liner ordering information, see page 140.

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,4,7,9
 EEx d IIB+H₂ T6, IP66**

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

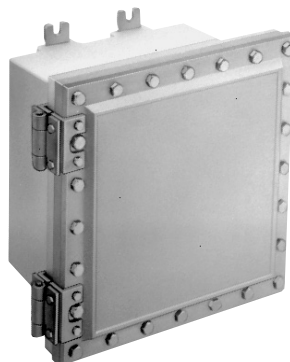
EJB junction boxes are used in threaded rigid conduit systems in hazardous areas:

- As a junction or pull box
- To provide enclosures for splices and branch circuit taps
- For housing terminal blocks, relays and other electrical devices
- Indoors or outdoors in damp, wet, dusty, corrosive, hazardous locations
- Where exposure to frequent or heavy rain, water, spray, moisture, and humidity is common; such as: offshore drilling facilities, cooling towers, coal preparation and handling facilities and sewage and waste water treatment plant
- In areas which are hazardous due to the presence of hydrogen or gases and vapors of equivalent hazard such as found in process industries, missile bases and gas manufacturing plants

Features:

- Style C boxes provided with Aluminum plate cover as standard, allowing for field addition of cover device holes.
- Stainless steel cover bolts (Style C only).
- Ground joint cover opening provides maximum opening for pulling wires or mounting equipment.
- Walls of bodies may be drilled and tapped for conduit entries as shown in listings.
- Stud bolts in diagonally opposite corners of body aid in aligning cover to body during installation (not furnished with hinged covers).
- All Style C bodies are provided with captive, quick release hex head stainless steel bolts with spring loaded action which provides clear indication that cover bolts are fully retracted from the body.
- External flange design – wide unobstructed cover opening provides a completely accessible interior for wiring and electrical equipment.
- Square corners of enclosure body provide maximum interior space and area for conduit openings.
- Internal grounding lug provides a means to ground enclosed equipment.
- Special neoprene cover gasket provides a watertight seal to meet NEMA 4 requirements, and provides superior protection for enclosed equipment against water/corrosion.
- Enclosures are machined for field installed mounting plates.
- Detachable mounting feet provide mounting flexibility. No need to replace enclosure if mounting feet are broken.
- Optional stainless steel hinges provide convenient and easy access for inspection, maintenance and systems changes.
- Enclosures are machined to accept field installed hinges.
- CENELEC certified when ordered with suffix ATEX (Style C only).

NOTE: For conduit liner ordering information, see page 140.



EJB121208 with optional hinged cover

Standard Materials:

- Body and cover – copper-free aluminum (suffix-SA items and Style C); *Feraloy*® iron alloy (Style D)
- Gasket – neoprene
- Cover bolts – stainless steel (Style C), steel (Style D)
- Hinges – stainless steel

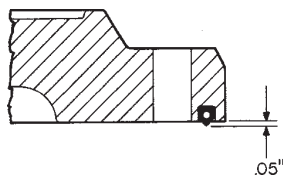
Standard Finishes:

- Copper-free aluminum – natural
- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Extruded aluminum – natural

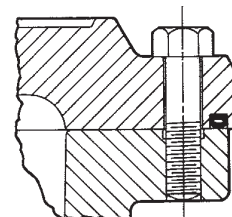
Certifications and Compliances:

- NEC/CEC
 Class I, Divisions 1 and 2, Groups B*, C† and D‡
 Class II, Division 1, Groups E, F and G
 Class II, Division 2, Groups F and G
 Class III
 Class I, Zones 1 and 2
- UL Standard 886
- cUL to CSA Standard C22.2 No. 30
- Style C only: CENELEC EEx d IIB + H₂ T6, IP66
 ATEX certificate: PTB 01 ATEX 1020 U (when ordered with-ATEX suffix)
- Enclosure Type 3, 3R, 4, 7BCD, 9EFG

Gasket Detail



Cross section of cover. Gasket extends beyond flange surface by .05".



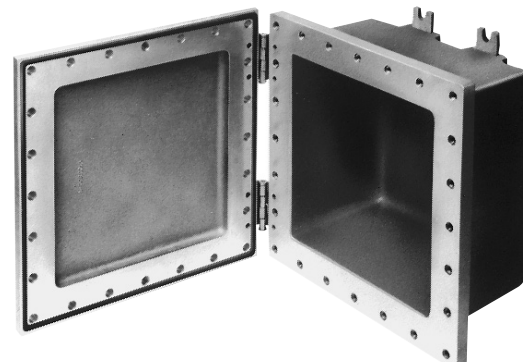
Bolted cover and body assembled. Compressed gasket forms watertight seal.

* For Group B, install sealing fitting in each conduit run within 18" of the enclosure.

† EJB361208, 361808, 362408 and all style D enclosures require sealing fittings within 18" of enclosure for each conduit run for Group C locations.

‡ Style D enclosures require sealing fittings within 18" of enclosure for each conduit run for Group D locations.

* * Order suffix ATEX (style C only).



EJB121208 with optional hinged cover and standard neoprene cover gasket

Options

Description

Description	Suffix to be added to Cat. No.
Hinged covers. Hinges mounted on left (short side) S598	
Available on all Style C and the following Style D enclosures: EJB101008-SA, EJB120804, EJB120804-SA, EJB120808-SA, & EJB141006-SA	
Hinge kits for field installation (no field machining required) –	
EJB100806 through 361208	EJB KIT 1 (2 hinges)
EJB361808	EJB KIT 3 (3 hinges)
EJB362408	EJB KIT 4 (4 hinges)

For EJB101008-SA, EJB120804, EJB120804-SA, EJB120808-SA & EJB141006-SA EJB KIT 5 (2 hinges)

Factory installed mounting plates for relays, terminal blocks, electrical devices, etc. –

Aluminum MP
 Mounting plate kit for field installation (kit includes aluminum mounting plate, pillars and mounting hardware). No field machining required. See Ordering Information on page 130

Factory installed terminal blocks Information on request

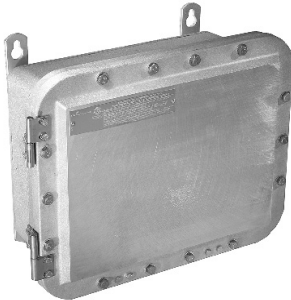
EJB Junction Boxes

Dimensions Pg. 132

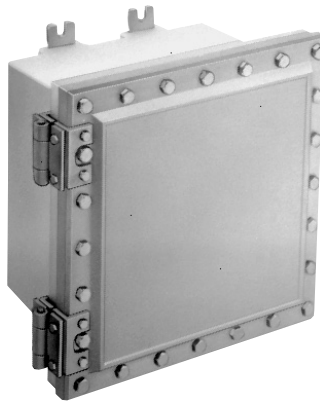
Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7,9
EEx d IIB+H₂ T6, IP66**

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

6F



Style D



Style C – EJB121208† with optional hinged cover

Style D

Cat. #	Nominal Inside Dimensions		
	Sides (aa)	Top & Bottom (bb)	Depth
Iron			
EJB060404✓	4	6	4
EJB080604✓	6	8	4
EJB080606✓	6	8	6
EJB080806✓	8	8	6
EJB120804✓	8	12	4
EJB160404	4	16	4
Aluminum			
EJB060404-SA✓	4	6	4
EJB080604-SA	6	8	4
EJB080606-SA✓	6	8	6
EJB080806-SA	8	8	6
EJB120604-SA	6	12	4
EJB120804-SA✓	8	12	4
EJB120808-SA	8	12	8
EJB160404-SA	4	16	4
EJB101008-SA✓	10	10	8
EJB141006-SA✓	10	14	6

Style C

Cat. #	Nominal Inside Dimensions		
	Sides (aa)	Top & Bottom (bb)	Depth
EJB100806	10	8	6
EJB121204	12	12	4
EJB121206✓	12	12	6
EJB121208✓	12	12	8
EJB161606✓	16	16	6
EJB161608✓	16	16	8
EJB181206	12	18	6
EJB181208	12	18	8
EJB241208	12	24	8
EJB241210	12	24	10
EJB241808✓	18	24	8
EJB242408	24	24	8
EJB242410	24	24	10
EJB361208	12	36	8
EJB361808	18	36	8
EJB362408	24	36	8
EJB602212†	60	22	12

Ordering Information:

Junction boxes listed can be furnished with drilled and tapped openings, subject to material required and the limitations of maximum size and number of openings as well as spacing, as shown in Tables 1 and 2.

To Order:

Step 1

Select the box required from photos at left, listings, and dimensional drawings on pages 130 to 132.

Step 2

Select standard conduit arrangement from Table 1 and maximum size conduit opening required from Table 2.

Step 3

Select appropriate symbol for required drilled and tapped opening from Table 3.

Example:

Step 1 – Box required – EJB080806

Step 2 – Arrangement – 2

Step 3 – Openings – two 1" drilled and tapped holes in top and bottom and two 2" drilled and tapped holes on each side.

Step 4 – Symbols are substituted and written in clockwise order starting with "a." When no opening is required at a particular location, use symbol "0" (zero).

For this example: CC,GG,CC,GG. Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit openings. For this example:

EJB080806-2-CC-GG-CC-GG

If none of the standard arrangements meet requirements, send a sketch showing junction box number with size and location of each conduit opening desired.

EJB Mounting Plate Kits

(For Field Installation)

Select kit number that matches junction box number.

Example: EJB-MP1410 is used in EJB141006-SA

Cat.

Style C

EJB-MP1008
EJB-MP1212
EJB-MP1616
EJB-MP1812
EJB-MP2412
EJB-MP2418
EJB-MP2424
EJB-MP3612
EJB-MP3618
EJB-MP3624

Cat.

Style D

EJB-MP0604
EJB-MP0806
EJB-MP0808
EJB-MP1206
EJB-MP1208
EJB-MP1604
EJB-MP1010
EJB-MP1410

* See Compliances on page 128.

** Order suffix ATEX (Style C only).

† Class I, Div. 1 and 2, Groups C and D only.

NOTE: For conduit liner ordering information, see page 140.

✓ - Available with Lightning Service™. See Section G for complete details.

Table 1/Conduit Arrangement Diagrams

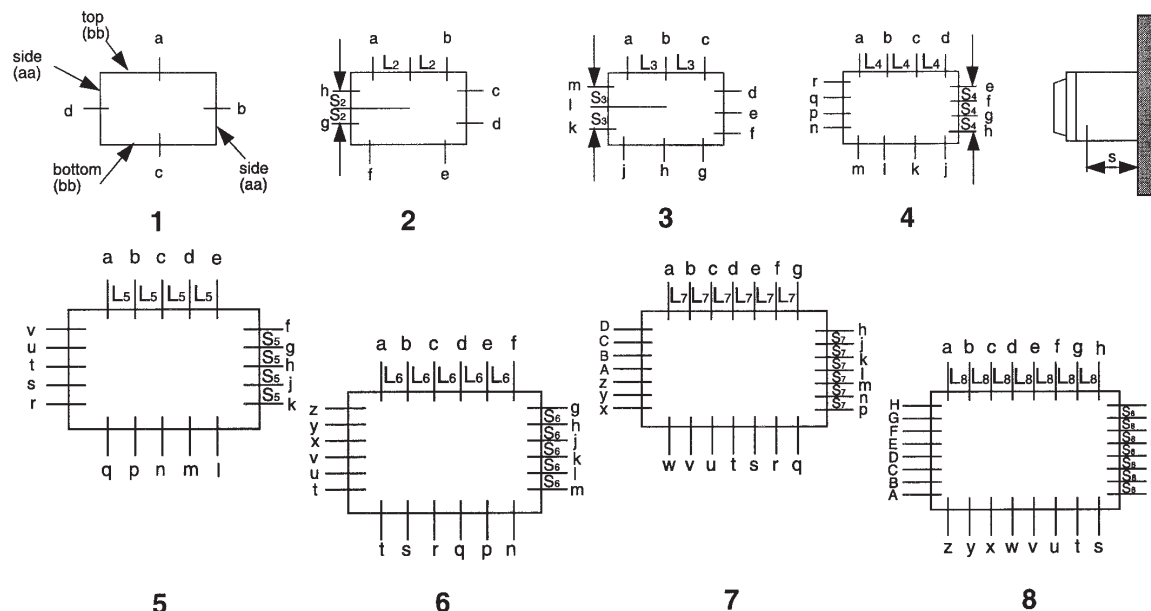


Table 2/Conduit Arrangements – Style D

Cat. #	Maximum Trade Size and Number of Openings								S	L ₂	S ₂	L ₃	S ₃	L ₄	S ₄
	Top and Bottom (bb)*				Sides (aa)										
	1	2	3	4	1	2	3	4							
EJB060404	2	1½	½	—	2	½	—	—	2⅝	1⅝	1⅛	2⅛	—	—	—
EJB080604	2	2	1	½	2	1¼	½	—	2⅝	2⅛	1⅝	2¾	2⅛	2⅛	—
EJB080606	3½	2	1	½	3½	1¼	½	—	3¾	2¼	1⅝	2¾	2⅛	2⅛	—
EJB080806	3½	2	1	½	3½	2	1	½	3¾	2¼	2¼	2¾	2¾	2⅛	2⅛
EJB101008	4	2½	1½	1	4	2½	1½	1	4¾	2¾	2¾	3⅝	3⅝	2⅞	2⅞
EJB120604	2	2	2	1¼	2	1½	½	—	2¾	3	1⅝	4⅛	2⅛	3⅛	—
EJB120804	2	2	2	1¼	2	2	1	½	2⅞	3	2¼	4⅞	2¾	3⅛	2⅛
EJB120808	4	4	2	1¼	4	2	1	½	4¾	3¼	2¼	4⅞	2¾	3⅛	2⅛
EJB141006	3½	3½	2½	1½	3½	2½	1½	1	3⅞	3¾	2¾	5	3⅞	3⅞	2⅞
EJB160404	2	2	2	2	2	½	—	—	2⅝	3	1⅛	6	—	4⅞	—

NOTE: Conduit seals are required in all conduit entrances for Class I, Division 1, Group B hazardous areas, and for EJB361208, EJB361808, EJB362408, and all Style D enclosures when used in Class I, Division 1, Group C hazardous areas. For other sealing requirements, consult the National Electrical Code*. Where standard arrangements are not adequate, special drilling and tapping can be ordered, or instructions can be provided for field drilling and tapping. Breathers and drains must be ordered separately. Maximum trade size for Group B application is 4".

* Top and bottom are longer dimensions on enclosures which are not square.

Table 2/Conduit Arrangements (Continued)

Style C Drilled and Tapped Openings – Groups B***, C and D

Cat. #	Maximum Trade Size and Number of Openings															
	Top and Bottom (bb)**								Sides (aa)							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
EJB100806	3½	3	1½	1¼	—	—	—	—	3½	2½	1½	1¼	—	—	—	—
EJB121204	1½	1½	1½	1¼	1	¾	½	—	1½	1½	1½	1¼	1	¾	½	—
EJB121206	3½	3½	1½	1¼	1	¾	½	—	3½	3½	1½	1¼	1	¾	½	—
EJB121208	5	3½	1½	1¼	1	¾	½	—	5	3½	1½	1¼	1	¾	½	—
EJB161606	3½	3½	2½	2	1½	1¼	1	¾	3½	3½	2½	2	1½	1¼	1	¾
EJB161608	5	5	3	2	1½	1¼	1	¾	5	5	3	2	1½	1¼	1	¾
EJB181206	3½	3½	3½	2½	1½	1½	1	¾	3½	3½	1½	1¼	1	¾	½	—
EJB181208	5	5	3½	2½	2	1½	1	1	5	3½	1½	1¼	1	¾	½	—
EJB241208	5	5	5	3½	3	2½	2	1½	5	3½	1½	1¼	1	1	½	—
EJB241210	6	6	5	3½	3	2½	2	1½	6	3½	1½	1¼	1	1	½	—
EJB241808	5	5	5	3½	3	2½	2	1½	5	5	3½	2½	2	1½	1¼	1
EJB242408	5	5	5	3½	3	2½	2	1½	5	5	5	3½	3	2½	2	1½
EJB242410	6	6	5	3½	3	2½	2	1½	6	6	5	3½	3	2½	2	1½
EJB361208	5	5	5	5	4	4	3½	2½	5	3½	1½	1¼	1	¾	½	—
EJB361808	5	5	5	5	4	4	3½	2½	5	5	3½	2½	2	1½	1¼	1
EJB362408	5	5	5	5	4	4	3½	2½	5	5	5	3½	3	2½	2	1½

Spacing Dimensions ♦ ♦

Cat. #	S	L2	S2	L3	S3	L4	S4	L5	S5	L6	S6	L7	S7	L8	S8
EJB100806	3⅞	2¾	1⅞	3	2⅞	2¼	1¾	—	—	—	—	—	—	—	—
EJB121204	3	2¼	2¼	3⅞	3⅞	3¼	3¼	2	2	1¾	1¾	1½	1½	—	—
EJB121206	3¾	3	3	3⅞	3⅞	3¼	3¼	2	2	1¾	1¾	1½	1½	—	—
EJB121208	4¾	3	3	3⅞	3⅞	3¼	3¼	2	2	1¾	1¾	1½	1½	—	—
EJB161606	3¾	3	3	4⅞	4⅞	4¾	4¾	2¾	2¾	2½	2½	2	2	1¾	1¾
EJB161608	4¾	3¼	3¼	4⅞	4⅞	4¾	4¾	2¾	2¾	2½	2½	2	2	1¾	1¾
EJB181206	3¾	3	3	6	3⅞	4⅞	3¼	2¾	2	2¾	1¾	2	1½	1¾	—
EJB181208	4¾	4¾	3	6	3⅞	4⅞	3¼	3¼	2	2¾	1¾	2	1½	2	—
EJB241208	5⅞	4¾	3	8⅞	3⅞	6	3¼	4⅞	2	3⅞	2	3¼	1½	2¾	—
EJB241210	6⅞	4¾	3	8⅞	3⅞	6	3¼	4⅞	2	3⅞	2	3¼	1½	2¾	—
EJB241808	5¼	4¾	4¾	8⅞	6	6	4⅞	4⅞	3¼	3⅞	2¾	3¼	2½	2¾	2
EJB242408	5⅞	4¾	4¾	8⅞	8⅞	6	6	4⅞	4⅞	3⅞	3⅞	3¼	3¼	2¾	2¾
EJB242410	6⅞	4¾	4¾	8⅞	8⅞	6	6	4⅞	4⅞	3⅞	3⅞	3¼	3¼	2¾	2¾
EJB361208	4¾	4¾	3	8⅞	3⅞	8⅞	3¼	5¾	2	5¾	1¾	5⅞	1½	3⅞	—
EJB361808	5½	4¾	4¾	8⅞	6	8⅞	4⅞	5¾	3¼	5¾	2¾	5⅞	2½	3⅞	2
EJB362408	6	4¾	4¾	8⅞	8⅞	8⅞	6	5¾	4⅞	5¾	3⅞	5⅞	3¼	3⅞	2¾

Table 3 / Symbols for Openings

Conduit Size Drilled and Tapped Hole Symbol

½	A
¾	B
1	C
1¼	E
1½	F
2	G
2½	H
3	J
3½	K
4	L
5	M
6	N
None	O

NOTE: Conduit seals are required in all conduit entrances for Class I, Division 1, Group B hazardous areas, and for EJB361208, EJB361808 and EJB362408 enclosures when used in Class I, Division 1, Group C hazardous areas. For other sealing requirements, consult the National Electrical Code®. Where standard arrangements are not adequate, special drilling and tapping can be ordered, or instructions can be provided for field drilling and tapping. Breathers and drains must be ordered separately – see page 195.

** Top and bottom are longer dimensions on enclosures which are not square.

♦ ♦ Spacing dimensions for Group B boxes are based on use of EYS11-101 sealing fitting in conduit.

§ Drilled and tapped openings for vertical mounted enclosures with horizontal conduit entries – consult Cooper Crouse-Hinds for proper pouring space for seals.

NOTE: For conduit liner ordering information, see page 140.

*** Maximum trade size for Group B applications is 4"

6F EJB Junction Boxes

Dimensions

6F Junction Boxes

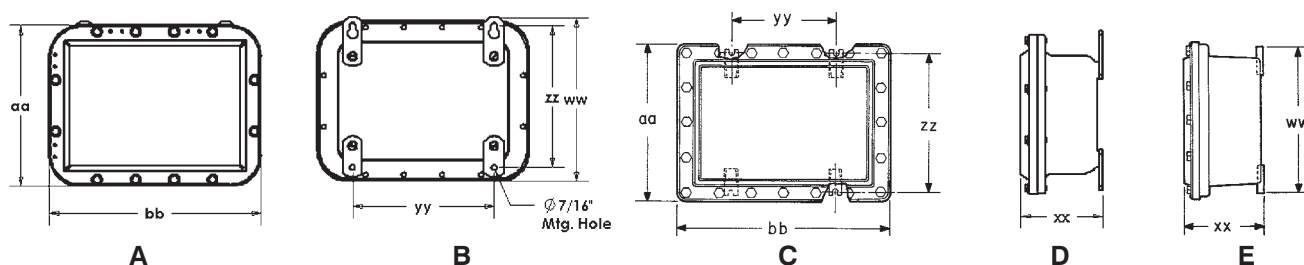


Table 4/Outside Dimensions

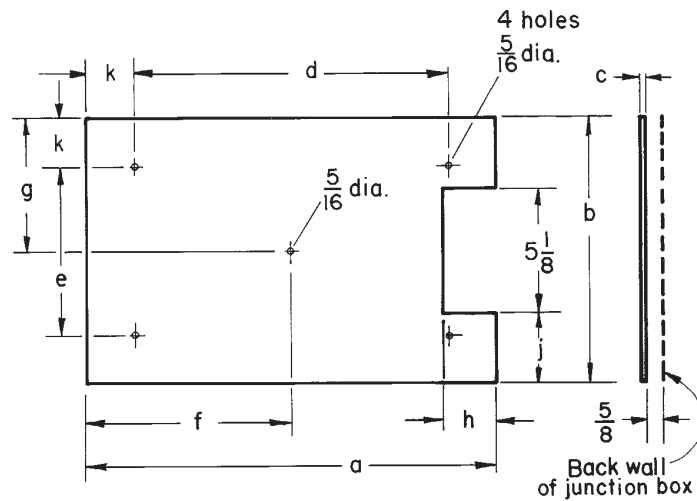
Cat. #†	Diagram	aa	bb	Mtg. Hole	ww	xx	yy	Net Weight (lbs.) With Cover	
								zz	w/Cover
EJB060404	A, B, D	8 ¹¹ / ₃₂	10 ¹¹ / ₃₂	7/16	8 ³ / ₄	6 ¹ / ₈	5	7 ¹ / ₈	43
EJB080604		10 ¹⁵ / ₃₂	12 ¹⁵ / ₃₂	7/16	10 ²⁵ / ₃₂	6 ³ / ₁₆	7	9 ¹ / ₈	64
EJB080606		10 ¹⁵ / ₃₂	12 ¹⁵ / ₃₂	7/16	10 ²⁵ / ₃₂	8 ³ / ₁₆	7	9 ¹ / ₈	84
EJB080806		12 ¹⁵ / ₃₂	12 ¹⁵ / ₃₂	7/16	12 ²⁵ / ₃₂	8 ⁷ / ₃₂	7	11 ¹ / ₈	98
EJB120804		12 ¹ / ₂	16 ¹ / ₂	7/16	12 ¹³ / ₁₆	6 ³ / ₈	11	11 ¹ / ₈	103
EJB160404		8 ¹ / ₂	20 ¹ / ₂	7/16	8 ¹³ / ₁₆	6 ⁵ / ₃₂	15	7 ¹ / ₈	86
EJB060404-SA		8 ¹¹ / ₃₂	10 ¹¹ / ₃₂	7/16	8 ³ / ₄	6 ¹ / ₈	5	7 ¹ / ₈	16
EJB080604-SA		10 ¹⁵ / ₃₂	12 ¹⁵ / ₃₂	7/16	10 ²⁵ / ₃₂	6 ³ / ₁₆	7	9 ¹ / ₈	24
EJB080606-SA		10 ¹⁵ / ₃₂	12 ¹⁵ / ₃₂	7/16	10 ²⁵ / ₃₂	8 ³ / ₁₆	7	9 ¹ / ₈	32
EJB080806-SA		12 ¹⁵ / ₃₂	12 ¹⁵ / ₃₂	7/16	12 ²⁵ / ₃₂	8 ⁷ / ₃₂	7	11 ¹ / ₈	37
EJB120604-SA		10 ¹ / ₂	16 ¹ / ₂	7/16	10 ¹³ / ₁₆	6 ³ / ₁₆	11	9 ¹ / ₈	32
EJB120804-SA		12 ¹ / ₂	16 ¹ / ₂	7/16	12 ¹³ / ₁₆	6 ³ / ₈	11	11 ¹ / ₈	39
EJB120808-SA		12 ¹ / ₂	16 ¹ / ₂	7/16	12 ¹³ / ₁₆	10 ³ / ₈	11	11 ¹ / ₈	56
EJB160404-SA		8 ¹ / ₂	20 ¹ / ₂	7/16	8 ¹³ / ₁₆	6 ⁵ / ₃₂	15	7 ¹ / ₈	33
EJB101008-SA		14 ²¹ / ₃₂	14 ²¹ / ₃₂	7/16	14 ⁷ / ₈	10 ³ / ₈	9	13 ¹ / ₈	59
EJB141006-SA		14 ²¹ / ₃₂	18 ²¹ / ₃₂	7/16	14 ⁷ / ₈	8 ¹⁵ / ₃₂	13	13 ¹ / ₈	66
EJB100806	C and E	13 ¹ / ₃₂	15 ¹ / ₃₂	9/16	12 ¹ / ₄	8 ⁹ / ₁₆	5 ¹ / ₂	11 ¹ / ₄	60
EJB121204		17 ¹ / ₁₆	17 ¹ / ₁₆	9/16	16 ¹ / ₈	6 ¹³ / ₁₆	5 ¹ / ₂	15 ¹ / ₈	60
EJB121206		17 ¹ / ₁₆	17 ¹ / ₁₆	9/16	16 ¹ / ₈	8 ⁷ / ₈	5 ¹ / ₂	15 ¹ / ₈	70
EJB121208		17 ¹ / ₁₆	17 ¹ / ₁₆	9/16	16 ¹ / ₈	10 ⁷ / ₈	5 ¹ / ₂	15 ¹ / ₈	80
EJB161606		21 ³ / ₁₆	21 ³ / ₁₆	9/16	20 ¹ / ₈	8 ⁷ / ₈	9 ¹ / ₂	19 ¹ / ₈	103
EJB161608		21 ³ / ₁₆	21 ³ / ₁₆	9/16	20 ¹ / ₈	10 ⁷ / ₈	9 ¹ / ₂	19 ¹ / ₈	113
EJB181206		17 ⁵ / ₁₆	23 ⁵ / ₁₆	9/16	16 ¹ / ₈	8 ⁷ / ₈	11 ¹ / ₂	15 ¹ / ₈	101
EJB181208		17 ⁵ / ₁₆	23 ⁵ / ₁₆	9/16	16 ¹ / ₈	10 ⁷ / ₈	11 ¹ / ₂	15 ¹ / ₈	110
EJB241208		17 ⁹ / ₁₆	29 ⁹ / ₁₆	9/16	16 ¹ / ₈	11 ³ / ₄	17 ¹ / ₂	15 ⁵ / ₈	149
EJB241210		17 ⁹ / ₁₆	29 ⁹ / ₁₆	9/16	16 ¹ / ₈	13 ³ / ₄	17 ¹ / ₂	15 ⁵ / ₈	160
EJB241808		23 ⁹ / ₁₆	29 ⁵ / ₈	1 ¹ / ₁₆	23 ¹ / ₂	12 ¹ / ₄	17 ¹ / ₄	21 ⁷ / ₈	243
EJB242408		29 ⁹ / ₁₆	29 ⁹ / ₁₆	1 ¹ / ₁₆	29 ¹ / ₂	12 ⁵ / ₁₆	16 ¹ / ₄	27 ⁷ / ₈	296
EJB242410		29 ⁹ / ₁₆	29 ⁹ / ₁₆	1 ¹ / ₁₆	29 ¹ / ₂	14 ⁵ / ₁₆	16 ¹ / ₄	27 ⁷ / ₈	322
EJB361208		17 ¹ / ₁₆	41 ¹ / ₁₆	9/16	16 ¹ / ₈	11 ¹¹ / ₁₆	29 ¹ / ₂	15 ¹ / ₈	185
EJB361808		23 ¹⁵ / ₁₆	41 ¹⁵ / ₁₆	1 ¹ / ₁₆	23 ¹ / ₂	12 ⁷ / ₁₆	28 ¹ / ₄	21 ⁷ / ₈	351
EJB362408		30 ³ / ₁₆	42 ³ / ₁₆	1 ¹ / ₁₆	31 ¹ / ₄	12 ⁵ / ₈	28 ¹ / ₄	29 ¹ / ₂	571

☆ Mounting strap location varies with body. In some cases, they extend beyond the sides.

* See Certifications and Compliances on page 128.

NOTE: For conduit liner ordering information, see page 140.

Table 5/Mounting Plate Dimensions



Style C

Style C

Cat. #	a	b	c	d	e	f	g	h	j	k
EJB-MP1008†	9	7	.125	7	5			1 3/8	1 1/2	1
EJB-MP1212†	11	11	.125	9	9			1 3/8	1 1/2	1
EJB-MP1616†	15	15	.125	13	13			1 3/8	1 1/2	1
EJB-MP1812	17	11	.125	13	7	8 1/2	5 1/2	2 3/8	2 1/2	2
EJB-MP2412	23	11	.125	19	7	11 1/2	5 1/2	2 3/8	2 1/2	2
EJB-MP2418	22	16	.125	19	13	11	8	1 7/8	2	1 1/2
EJB-MP2424	22	22	.125	19	19	11	11	1 7/8	2	1 1/2
EJB-MP3612	34	10	.125	31	7	17	5	1 7/8	2	1 1/2
EJB-MP3618	33 1/2	15 1/2	.125	31	13	16 3/4	7 3/4	1 5/8	1 3/4	1 1/4
EJB-MP3624	34	22	.125	31	19	17	11	1 7/8	2	1 1/2

* See Certifications and Compliances on page 128.

† Plate has no center hole.

NOTE: For conduit liner ordering information, see page 140.

Application:

EJB602212 junction box is used in threaded rigid conduit systems in hazardous areas:

- as a junction or pull box.
- as an enclosure for splices and branch circuit taps.
- for housing terminal blocks, relays, and other electrical devices.
- as a mounting box for multi-device control panels with EMP barrel assemblies (see section 4C).
- indoors or outdoors in damp, wet, dusty, corrosive locations.
- where exposure to frequent or heavy rain, water, spray, moisture, and humidity is common; such as: offshore drilling facilities, cooling towers, coal preparation and handling facilities, and sewage and waste water treatment plants.
- which are hazardous due to the presence of gases or vapors such as those found in process industries, missile bases, and gas manufacturing plants.

Features:

- Ground joint cover opening provides maximum opening for pulling wires or mounting equipment.
- Walls of enclosure may be drilled and tapped for conduit entries as shown in Table 2.
- External flange design – wide unobstructed cover opening provides a completely accessible interior for wiring and electrical equipment.
- Square corners of enclosure body provide maximum interior space and area for conduit openings.
- Flat cover provides maximum space for mounting a greater number of control devices.
- Internal grounding lug provides a means to ground enclosed equipment.
- Special neoprene cover gasket provides a watertight seal to meet UL Type 4 (NEMA 4) requirements, and provides superior protection for enclosed equipment against water/corrosion.
- Stainless steel cover bolts provide superior corrosion protection.
- Enclosure is machined for field installed mounting plates.
- Detachable mounting channels provide mounting flexibility. No need to replace enclosure if mounting channel is broken.
- Aluminum hinges provide convenient and easy access for inspection, maintenance, and systems changes.
- Safety chain attached to body and cover prevents accidental damage to hinges.

Standard Materials:

- Body and cover – copper-free aluminum
- Gasket – neoprene
- Cover bolts – stainless steel
- Hinges – extruded aluminum

NOTE: For conduit liner ordering information, see page 140.

Standard Finishes:

- Copper-free aluminum – natural
- Extruded aluminum – natural
- Stainless steel – natural
- Neoprene – natural

Certifications and Complies:

- NEC:
 Class I, Division 1 & 2, Groups C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- UL Standard: 886
- UL Raintight
- CSA 22.2 No. 18 and 30
- NEMA 3,4,7CD,9EFG

Options:

Mounting plate kit for field installation (kit includes aluminum mounting plate, pillars, and mounting hardware). EJB-MP6022
 Factory installed aluminum mounting plate for relays, terminal blocks, electrical devices, etc. MP

Ordering Information:

EJB602212 can be furnished with drilled and tapped openings, subject to the limitations of maximum size and number of openings as well as spacing, as shown in Tables 1 and 2.

TO ORDER:

Step 1

Specify box catalog number – EJB602212

Step 2

Select standard conduit arrangement from Table 1 and maximum allowable size conduit opening from Table 2.

Step 3

Select appropriate symbol for required drilled and tapped opening from Table 3.

Example:

Step 1 – Box Cat. No. – EJB602212

Step 2 – Arrangement – 2

Step 3 – Openings – two 2" drilled and tapped holes in top and bottom and two 2½" drilled and tapped holes evenly spaced on each side.

Step 4 – Symbols are substituted and written in clockwise order starting with "a". When no opening is required at a particular location, use symbol "0" (zero). For this example: GG-0H0H0-GG-0H0H0. Complete Cat. No. is made up of three parts: Part 1 – box number; Part 2 – arrangement number; Part 3 – symbols for conduit openings. For this example the catalog number is:
 EJB602212-2-GG-0H0H0-GG-0H0H0.



Table 1 / Conduit Arrangement Diagrams

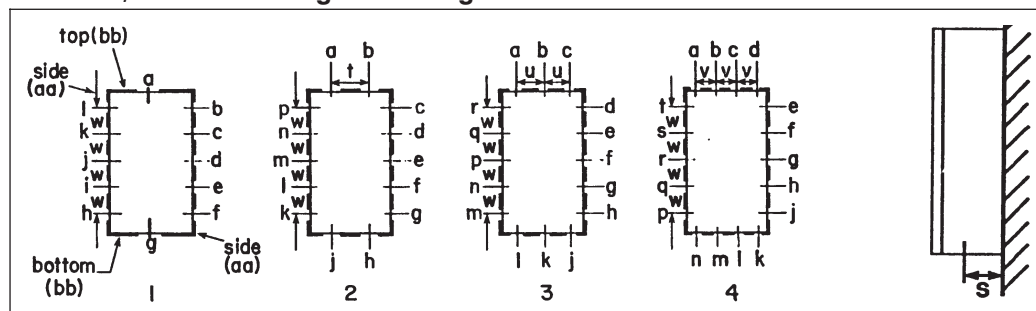


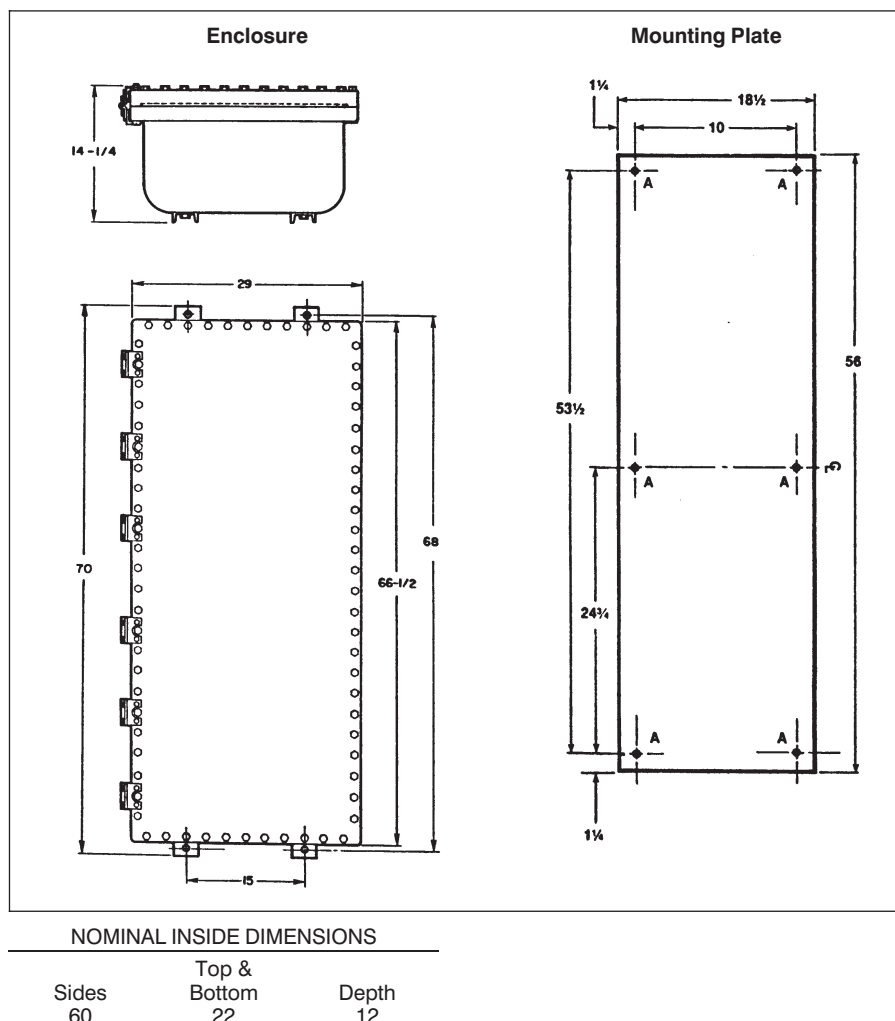
Table 2 / Conduit Arrangements

	MAXIMUM TRADE SIZE AND NUMBER OF OPENINGS										SPACING DIMENSIONS				
	Top and Bottom (bb)				Sides (aa)						s	t	u	v	w
EJB602212	1	2	3	4	1	2	3	4	5		6 3/4	10	7	5 3/8	10

Table 3 / Symbols for Openings

Conduit Size	Drilled and Tapped Hole Symbol
1/2	A
3/4	B
1	C
1-1/4	E
1-1/2	F
2	G
2-1/2	H
3	J
3-1/2	K
4	L
5	M
6	N
none	0

Note: Conduit sealing fittings are required on all conduit entrances (within 18" of the enclosure) when used in Class I, Division 1, Group C hazardous areas. For other sealing requirements consult the National Electrical Code.®



NOTE: For conduit liner ordering information, see page 140.

6F



EJB Custom-Built Control Panels

Using EMP and EMPS Barrel Assemblies

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG
Ex d IIB + H₂ T6, IP66†

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

EJB custom-built control panels are used with EMP and EMPS barrel assemblies:

- as a means of grouping control stations for centralized process control in hazardous areas in minimum space
- to provide the necessary pushbuttons, pilot lights, selector switches, tumbler switches and glass windows

Features:

- To reduce installation costs, panels can be supplied with control components factory wired to terminal blocks mounted in the box. Relays and other control devices can also be mounted in the boxes for special control functions
- Surface mounted control panels have the components assembled in the hinged cover, readily accessible for circuit checking and trouble shooting
- Panel mounted control assemblies have components installed in the back wall of the junction box. The protruding barrels are passed through holes drilled in the finished panel and locked to the panel in the same manner as individual EMP assemblies. Blank hinged covers are used, and are accessible from the rear of the panel to facilitate maintenance.
- Custom-built control panels to meet your exact requirements are a Cooper Crouse-Hinds specialty. Complete quotations will be supplied for any job, large or small.
- CENELEC certified when ordered with optional suffix ATEX.

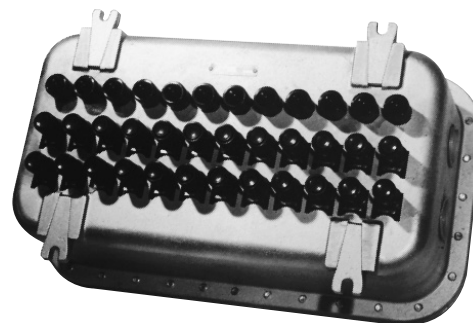
Certifications and Compliances:

EJB panels –

- NEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA/EMMAC: 3, 7CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2 No. 30
- CEC:
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
- CENELEC: EEx d IIB + H₂ T6
IP66 † ATEX Certificate: PTB 01
ATEX 1117 (control panels)



EJB surface mounted control panel – cover closed



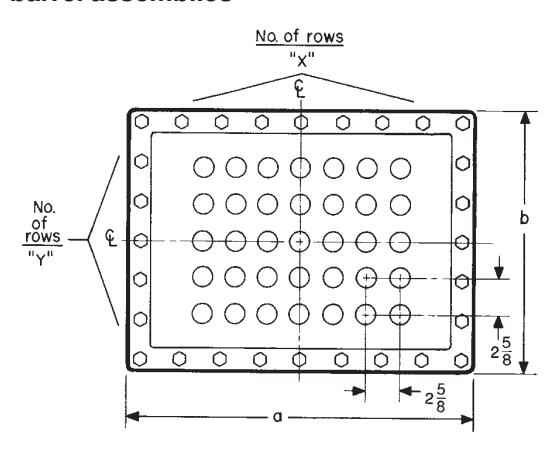
EJB panel mounted control assembly

Request Brochure # 3331 from your Cooper Crouse-Hinds sales representative or customer service to design your own custom control panel

Dimensions (in inches)*

Listed below are EJB boxes with standard spacing for most barrel assemblies. Depending on the number and type of barrel assemblies installed, closer spacing can be used and more devices assembled.

Standard spacing of barrel assemblies



Cat. #	a	b	x	y
EJB100806✓	15 ¹ / ₂	13 ¹ / ₂	3	3
EJB121204✓	17 ¹ / ₁₆	17 ¹ / ₁₆	4	4
EJB121206✓	17 ¹ / ₁₆	17 ¹ / ₁₆	4	4
EJB121208✓	17 ¹ / ₁₆	17 ¹ / ₁₆	4	4
EJB161606✓	21 ³ / ₁₆	21 ³ / ₁₆	6	6
EJB161608✓	21 ³ / ₁₆	21 ³ / ₁₆	6	6
EJB181206✓	23 ⁵ / ₁₆	23 ⁵ / ₁₆	6	4
EJB181208✓	23 ⁵ / ₁₆	17 ⁹ / ₁₆	6	4
EJB241208✓	29 ⁹ / ₁₆	17 ⁹ / ₁₆	9	4
EJB241210✓	29 ⁹ / ₁₆	17 ⁹ / ₁₆	9	4
EJB241808✓	29 ⁵ / ₈	23 ⁹ / ₁₆	9	6
EJB241810✓	29 ⁵ / ₈	23 ⁹ / ₁₆	9	6
EJB242408✓	29 ⁹ / ₁₆	29 ⁹ / ₁₆	9	9
EJB242410✓	29 ⁹ / ₁₆	29 ⁹ / ₁₆	9	9
EJB361208✓	40 ⁵ / ₁₆	16 ⁵ / ₁₆	13	4
EJB361808✓	41 ¹⁵ / ₁₆	23 ¹⁵ / ₁₆	13	6
EJB361810✓	41 ¹⁵ / ₁₆	23 ¹⁵ / ₁₆	13	6
EJB362408✓	42 ³ / ₁₆	30 ³ / ₁₆	13	9

Additional dimensional data for EJB is given on page 128.

✓ - Available with Lightning Service™. See Section G for complete details.

* Dimensions are approximate, not for construction purposes.
† Order with suffix ATEX.

NOTE: For conduit liner ordering information, see page 140.

GUA Junction Boxes with Union Hubs

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

6F

6F Junction Boxes

Application:

GUA junction boxes with union hubs are used in threaded rigid conduit systems in hazardous areas:

- to allow easy disassembly of conduit system
- to function as junction and pull box for multiple conductors and conduits
- indoors or outdoors where space is limited, such as in gasoline pumps

Features:

- Supplied with union hubs, which makes it a compact assembly.
- Have a variety of hub arrangements.
- Covers are threaded.
- Mounting straps are standard on all boxes.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Suffix to be Added to Cat. #

Description
Feraloy iron alloy cover . . . WOD

Size Ranges:

- 1/2" to 1" hubs

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

With nuts and sleeves*



GUAG



GUAH



GUAP

Hub Sizes

a	b	c	d	e
1/2	1/2	1/2		
3/4	3/4	3/4		
1/2	3/4	3/4		
3/4	1/2	1/2		
3/4	1	1		
3/4	1	3/4		
1	3/4	3/4		
1	3/4	1		
1	1	1		
3/4	3/4	3/4	3/4	
3/4	3/4	3/4	3/4	3/4

Cat. #
With Nuts and Sleeves*

GUAG6665
GUAG7775
GUAG6775
GUAG7665

GUAG7885
GUAG7875
GUAG8775
GUAG8785
GUAG8885

GUAH7775

GUAP77775

Dimensions

x	y
1 1/8	2 1/4
1 3/16	2 3/8
See GUAH above	
See GUAP above	

Outside dimensions of body: length, 3 3/4"; depth, 1 5/16" at corners, 3 1/8" over corners; nominal diameter of cover opening, 3"; width, 3 3/4".

* Photo shown without standard mounting strap(s).

NOTE: For conduit liner ordering information, see page 140.



Application:

GUP series junction boxes are used in threaded rigid conduit systems in hazardous areas:

- to function as a junction or pull box
- where space is limited such as in gasoline pumps
- indoors or outdoors

Features:

- Compact in design.
- Supplied with a variety of hubs (6 hubs and 3 plugs or 10 hubs and 7 plugs).
- Cover sealed with standard "O" ring gasket for raintight enclosure.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description

Feraloy iron alloy covers. WOD

Suffix to be
Added to
Cat. #

Certifications and Compliances:

- NEC/CEC:
 Class I, Division 1 & 2, Groups C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- UL Standard: 886
- CSA Standard C22.2 No. 30



Ordering Information

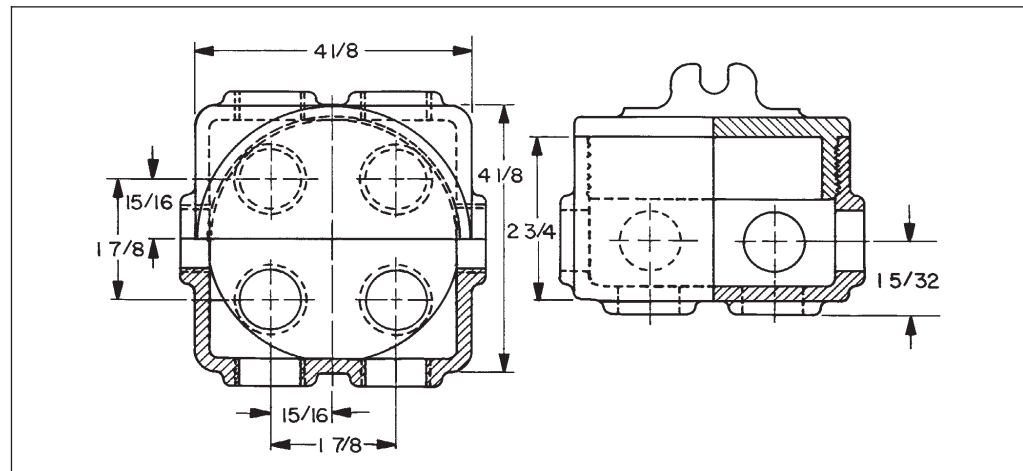
Top Hubs	Bottom Hubs	Side Hubs	Back Hubs	Catalog #
2-3/4"	2-3/4"	1-3/4"	None	GUP215*
2-3/4"	2-3/4"	1-3/4"	4-3/4"	GUP214**
2-3/4"	2-3/4"	1-3/4"	4-1"	GUP314***

* Furnished with 3-3/4" pipe plugs.

** Furnished with 7-3/4" pipe plugs.

*** Furnished with 4-3/4" pipe plugs and 3-1" pipe plugs

Dimensions



NOTE: For conduit liner ordering information, see page 140.

Application:

The EGJ series junction boxes are designed for flush installation in the concrete pump island of gasoline service stations.

Features:

- Cover sealed with "O" ring gasket to make unit raintight.
- Cover recess will accept tool used to open cover of gasoline storage tank.
- Two drilled and tapped conduit entrances on the bottom and six on the sides.
- Plugs are provided for the two bottom entrances and four of the side entrances for choice of conduit arrangement.
- ES sealing hubs thread into the bottom to seal the mainfeed.
- Caulking compound supplied for filling space between cover flange and body rim to prevent accumulation of water, dirt and ice. Compound remains pliable and is easily removed.

NOTE: Unused conduit entrances must be securely plugged with type PLG threaded pipe plugs to maintain flametight conditions (see section 7F page 169). See illustration for method of constructing seals.

Standard Materials:

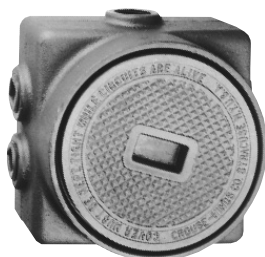
- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



EGJ421



EGJ422

Drilled and Tapped Conduit Entrances

Body Size

Length & Width	Depth
5 3/4	4 3/16
7	5 5/32

No. of Hubs Side	Size
6	3/4
6	3/4

No. of Hubs Back	Size
2	3/4
2	1

Cat. #
EGJ421
EGJ422

Replacement Cover

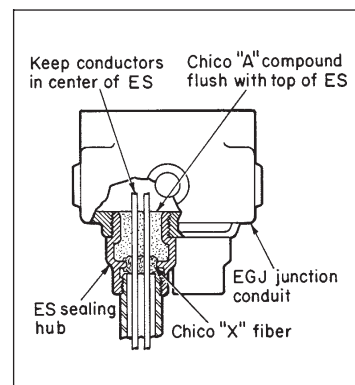
Cat. #
EGJ:10706L
EGJ:10705L

Sealing Hubs (order separately)

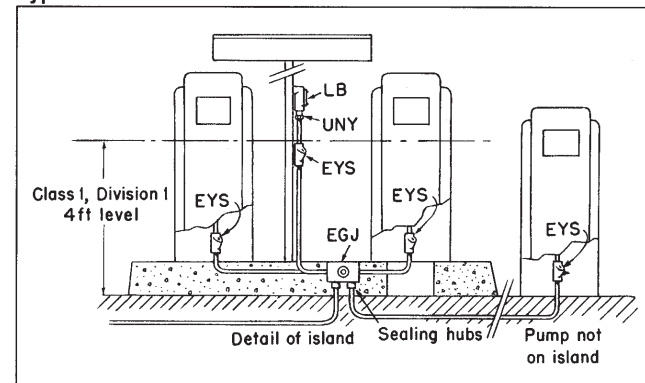
For	No.	Female Hub Size	Cat. #
EGJ421	2	1	ES53
EGJ422	2	1 1/4	ES64



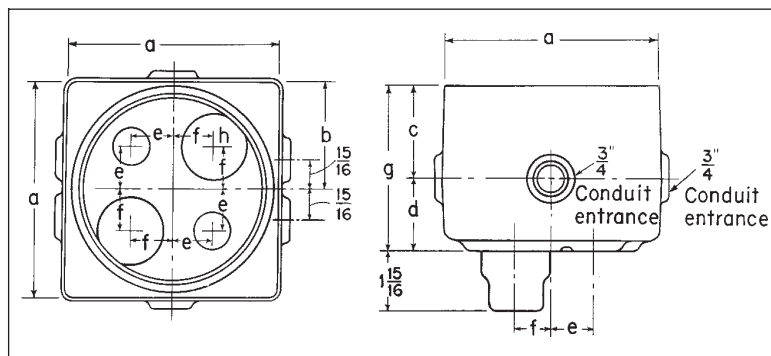
How to construct seal



Typical Installation



Dimensions



Cat. #	a	b	c	d	e	f	g	h
EGJ421	5 3/4	2 7/8	2 7/16	1 3/4	1 1/8	1 5/16	4 3/16	1 1/2" entry
EGJ422	7	3 1/2	3	2 9/32	1 3/8	1 3/8	5 9/32	2" entry

NOTE: For conduit liner ordering information, see page 140.

NOTE: Both the EGJ421 and EGJ422 junction boxes have 4 drilled and tapped conduit entrances in the back (see drawing above). The 2 larger diameter holes are for the ES Sealing Hubs and there are provisions for 2 smaller diameter conduit entrances.

Application:

- LNR conduit liners are installed in rigid metal conduit or IMC:
- to provide a smooth wire entry from conduit into enclosures to protect wires from abrasion as they are pulled.
 - with thin wall or thick wall enclosures.
 - entering drilled and tapped openings or slip holes.
 - entering an enclosure vertically or horizontally.
 - regardless of where the conduit ends in relation to the enclosure wall.

Features:

- UL listed and CSA certified.
- No need for threaded bushings, reducers, or special machining.
- Corrosion and heat resistant polypropylene material.
- Smooth flange providing easy wire pulling and protects conductors being installed.
- Space saving.
- Molded ribs ensure a tight fit, preventing the liner from sliding out while conductors are being pulled.
- Quick and easy to install.

Standard Materials:

- Polypropylene

Standard Finishes:

- Natural (clear)

Sizes:

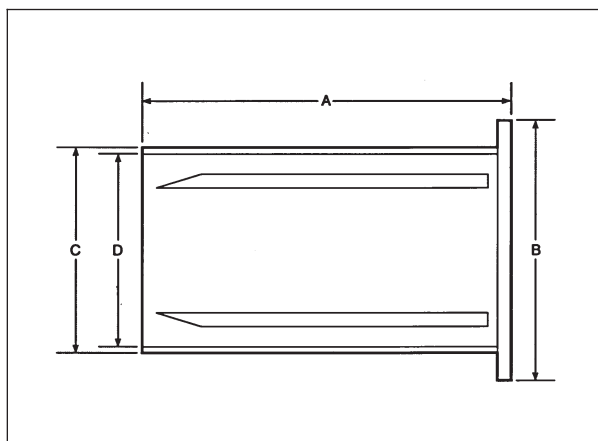
- 1/2" through 4"

Certifications and Compliances:

- NEC Article 346-8.
- UL Standard 514B.
- CSA Standard C22.2 No. 18.
- U.S. Patent No. 5,383,688.



Dimensions:



Ordering Information:

Cat. #	Size	A	B	C	D
LNR1	1/2"	1 3/16"	7/8"	5/8"	9/16"
LNR2	3/4"	1 9/16"	1 1/8"	1 3/16"	3/4"
LNR3	1"	2 1/16"	1 3/8"	1 1/16"	7/8"
LNR4	1 1/4"	2 1/16"	1 3/4"	1 3/8"	1 1/4"
LNR5	1 1/2"	2 9/16"	2"	1 5/8"	1 7/16"
LNR6	2"	2 9/16"	2 1/16"	2 1/16"	1 7/8"
LNR7	2 1/2"	2 7/8"	2 7/16"	2 1/4"	
LNR8	3"	2 7/8"	3 9/16"	3 1/16"	2 7/8"
LNR9	3 1/2"	3 1/16"	4 1/16"	3 9/16"	3 3/8"
LNR10	4"	3 1/16"	4 9/16"	4"	3 7/8"



Cooper Crouse-Hinds Ex-CELL Enclosures

Cooper Crouse-Hinds Ex-CELL enclosures are manufactured to meet the most demanding industrial and hazardous area environmental applications. Ex-CELL enclosures are available in a comprehensive range of sizes, each with various configurations for a multitude of applications. The Ex-CELL enclosure series is a UL/cUL and ATEX certified enclosure and termination solution for Type 3S, 4X and Zone 1 applications. They are certified to the impact, thermal and IP66 ingress requirements of EN 50014. The Ex-CELL series offers unique design features, precision manufacturing, and the highest quality materials making it the premier choice for instrumentation and electrical applications.



Certifications & Compliances

- ATEX II 2 GD EEx e II T6
- Certified IP66 to EN60529
- cULus to UL50
- C22.2 no. 94-M91
- Type 3S and 4X

Materials & Finishes

Enclosure:	316L (1.4404 to EN 10088) Stainless Steel 304 (1.4301 to EN 10088) Stainless Steel
Finish:	Superior corrosion resistant "Chromium enriched" electro-polished surface
Gasket:	High integrity "one piece" foam-in-place polyurethane gasket
Keyed Lock Fastening Mechanism:	Chromium plated zinc metal die cast
Door Hardware:	Stainless steel hinges on door
Enclosure Mounting:	4 x external 3mm Stainless Steel welded lugs, 11mm Ø holes/slots
Equipment Mounting:	4 x stand off pillars 9mm Ø, 25mm high, tapped M6 x10, for rail/mounting plate
Enclosure Earth:	M10 external & internal brass earth stud assembly
Operating Temp:	-20°C to +60°C
Impact Resistance:	7 J (Nm) to EN 50014

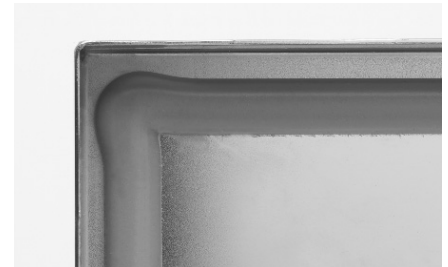
Features



The cover features a 1/4 turn slotted lock fastening mechanism that provides a rapid means of achieving a rating of IP66 environmental seal for reliable environmental protection.



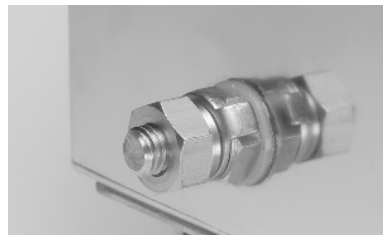
An integral drainage channel prevents liquids or other solid contaminants from running in or falling into the enclosure when the door is opened, and to minimize gasket path contamination.



The high integrity "one piece" sealing gasket provides an IP 66 rating and excellent recovery and re-sealing properties for continuous environmental protection



The enclosure is mounted by four heavy-duty 3mm thick surface welded and stainless steel lugs, with slotted bottom lugs for ease of mounting. These provide a secure, reliable means of mounting the enclosure.



This external & internal brass earth/ground stud assembly enables rapid and reliable protective earth/ground connection, which is mounted on the side of the enclosure for ease of access.



An option for up to 3 gland plates (3mm thick) on each side. Three possible combinations of 0, 1 or 3 gland-plates available. All sealed to IP 66 rating by a high integrity Chloroprene gasket and secured by rapid fixing "Hytork" fixing bolts.



Ordering Information - For Enclosures

All enclosures are provided with a keyed lock fastening cover and 1 gland plate. For other configurations see OPTIONS below.

Enclosure Size Outside Dim. (In.) (H x W x D)	Enclosure Size Outside Dim. (mm) (H x W x D)	Description	Enclosure Cat. # with Vertical Mtg Feet	Enclosure Cat. # with Horizontal Mtg Feet
9" x 6" x 5"	229 x 152 x 127	316L Stainless Steel Enclosure	XLVS10906051	XLHS12315131
12" x 8" x 6"	305 x 203 x 152	316L Stainless Steel Enclosure	XLVS11208061	XLHS13020151
12" x 12" x 6"	305 x 305 x 152	316L Stainless Steel Enclosure	XLVS11212061	XLHS13030151
16" x 12" x 6"	406 x 305 x 152	316L Stainless Steel Enclosure	XLVS11612061	XLHS14030151
16" x 12" x 8"	406 x 305 x 203	316L Stainless Steel Enclosure	XLVS11612081	XLHS14030201
16" x 16" x 6"	406 x 406 x 152	316L Stainless Steel Enclosure	XLVS11616061	XLHS14040151
16" x 16" x 8"	406 x 406 x 203	316L Stainless Steel Enclosure	XLVS11616081	XLHS14040201
16" x 20" x 6"	406 x 508 x 152	316L Stainless Steel Enclosure	XLVS11620061	XLHS14050151
16" x 20" x 8"	406 x 508 x 203	316L Stainless Steel Enclosure	XLVS11620081	XLHS14050201
20" x 16" x 6"	508 x 406 x 152	316L Stainless Steel Enclosure	XLVS12016061	XLHS15040151
20" x 16" x 8"	508 x 406 x 203	316L Stainless Steel Enclosure	XLVS12016081	XLHS15040201
20" x 20" x 6"	508 x 508 x 152	316L Stainless Steel Enclosure	XLVS12020061	XLHS15050151
20" x 20" x 8"	508 x 508 x 203	316L Stainless Steel Enclosure	XLVS12020081	XLHS15050201
20" x 24" x 8"	508 x 610 x 203	316L Stainless Steel Enclosure	XLVS12024081	XLHS15060201
24" x 16" x 6"	610 x 406 x 152	316L Stainless Steel Enclosure	XLVS12416061	XLHS16040151
24" x 16" x 8"	610 x 406 x 203	316L Stainless Steel Enclosure	XLVS12416081	XLHS16040201
24" x 20" x 6"	610 x 508 x 152	316L Stainless Steel Enclosure	XLVS12420061	XLHS16050151
24" x 20" x 8"	610 x 508 x 203	316L Stainless Steel Enclosure	XLVS12420081	XLHS16050201
24" x 24" x 6"	610 x 610 x 152	316L Stainless Steel Enclosure	XLVS12424061	XLHS16060151
24" x 24" x 8"	610 x 610 x 203	316L Stainless Steel Enclosure	XLVS12424081	XLHS16060201
24" x 30" x 8"	610 x 762 x 203	316L Stainless Steel Enclosure	XLVS12430081	XLHS16076201
30" x 20" x 8"	762 x 508 x 203	316L Stainless Steel Enclosure	XLVS13020081	XLHS17650201
30" x 24" x 8"	762 x 610 x 203	316L Stainless Steel Enclosure	XLVS13024081	XLHS17660201
30" x 30" x 8"	762 x 762 x 203	316L Stainless Steel Enclosure	XLVS13030081	XLHS17676201

Options

Material - standard enclosure is type 316L stainless steel

• For a 304 Stainless Steel Enclosure... change S1 to S2 in catalog number. ie. XLVS10906051 becomes XLVS20906051

Gland Plate - standard enclosure comes with 1 gland plate

• For no gland plates... change last digit from 1 to 0. ie. XLVS10906051 becomes XLVS10906050

• For 3 gland plates... change last digit from 1 to 3. ie. XLVS10906051 becomes XLVS10906053

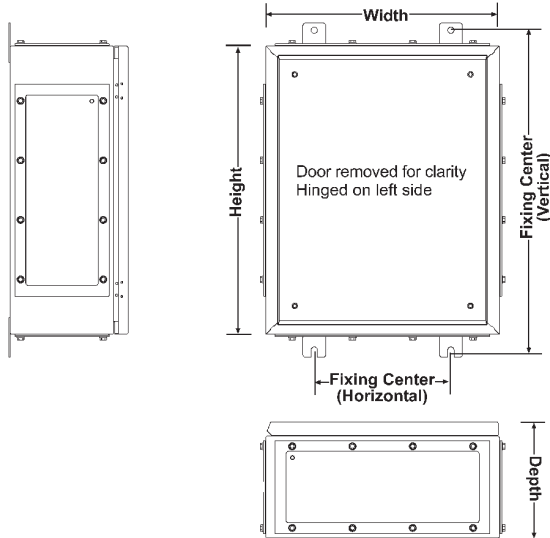
Cover Option - standard cover is a hinged cover with "1-Step" Keyed Lock Fastening device on "vertical mount" enclosures and double bit lock insert on "horizontal mount" enclosures.

• For a bolted cover... Add a suffix B at end of catalog number. ie. XLVS10906051 becomes XLVS10906051B

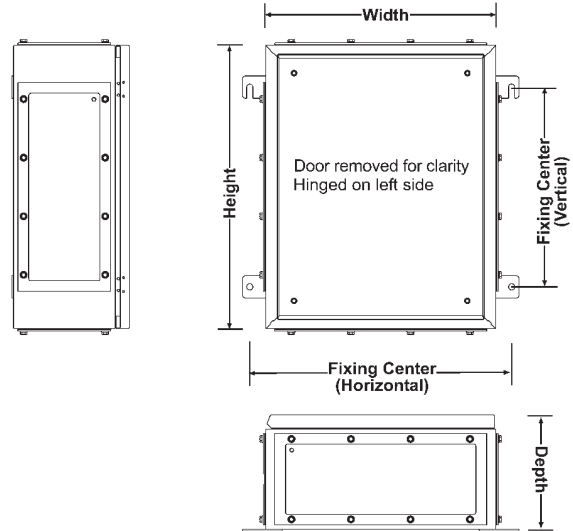
Mounting Plates - Fits both enclosures with vertical or horizontal mounting feet

Enclosure Size (in.)	Enclosure Size (mm)	Catalog #	Enclosure Size (in.)	Enclosure Size (mm)	Catalog #
9" x 6" x 5"	229 x 152 x 127	XLHZTMP2315	20" x 20" x 8"	508 x 508 x 203	XLHZTMP5050
12" x 8" x 6"	305 x 203 x 152	XLHZTMP3020	20" x 24" x 8"	508 x 610 x 203	XLHZTMP5060
12" x 12" x 6"	305 x 305 x 152	XLHZTMP3030	24" x 16" x 6"	610 x 406 x 152	XLHZTMP6040
16" x 12" x 6"	406 x 305 x 152	XLHZTMP4030	24" x 16" x 8"	610 x 406 x 203	XLHZTMP6040
16" x 12" x 8"	406 x 305 x 203	XLHZTMP4030	24" x 20" x 6"	610 x 508 x 152	XLHZTMP6050
16" x 16" x 6"	406 x 406 x 152	XLHZTMP4040	24" x 20" x 8"	610 x 508 x 203	XLHZTMP6050
16" x 16" x 8"	406 x 406 x 203	XLHZTMP4040	24" x 24" x 6"	610 x 610 x 152	XLHZTMP6060
16" x 20" x 6"	406 x 508 x 152	XLHZTMP4050	24" x 24" x 8"	610 x 610 x 203	XLHZTMP6060
16" x 20" x 8"	406 x 508 x 203	XLHZTMP4050	24" x 30" x 8"	610 x 762 x 203	XLHZTMP6076
20" x 16" x 6"	508 x 406 x 152	XLHZTMP5040	30" x 20" x 8"	762 x 508 x 203	XLHZTMP7650
20" x 16" x 8"	508 x 406 x 203	XLHZTMP5040	30" x 24" x 8"	762 x 610 x 203	XLHZTMP7660
20" x 20" x 6"	508 x 508 x 152	XLHZTMP5050	30" x 30" x 8"	762 x 762 x 203	XLHZTMP7676

DIMENSIONS Vertical Mounting



DIMENSIONS Horizontal Mounting



DIMENSIONS

Enclosures with vertical mtg feet	Enclosure Size Outside Dim. (In.) (H x W x D)	Mtg Hole Vertical (in.)	(Fixture Ctr.) Horizontal (in.)	Enclosures with horizontal mtg feet	Enclosures Size Outside Dim. (mm) (H x W x D)	Mtg Hole Vertical (mm)	(Fixture Ctr.) Horizontal (mm)
XLVS10906051	9" x 6" x 5"	10.24	3.5	XLHS12315131	229 x 152 x 127	152	208
XLVS11208061	12" x 8" x 6"	13.24	5.5	XLHS13020151	305 x 203 x 152	203	259
XLVS11212061	12" x 12" x 6"	13.24	9.5	XLHS13030151	305 x 305 x 152	203	361
XLVS11612061	16" x 12" x 6"	17.24	9.5	XLHS14030151	406 x 305 x 152	267	361
XLVS11612081	16" x 12" x 8"	17.24	9.5	XLHS14030201	406 x 305 x 203	267	361
XLVS11616061	16" x 16" x 6"	17.24	10	XLHS14040151	406 x 406 x 152	267	462
XLVS11616081	16" x 16" x 8"	17.24	10	XLHS14040201	406 x 406 x 203	267	462
XLVS11620061	16" x 20" x 6"	17.24	14	XLHS14050151	406 x 508 x 152	267	564
XLVS11620081	16" x 20" x 8"	17.24	14	XLHS14050201	406 x 508 x 203	267	564
XLVS12016061	20" x 16" x 6"	21.24	10	XLHS15040151	508 x 406 x 152	354	462
XLVS12016081	20" x 16" x 8"	21.24	10	XLHS15040201	508 x 406 x 203	354	462
XLVS12020061	20" x 20" x 6"	21.24	14	XLHS15050151	508 x 508 x 152	354	564
XLVS12020081	20" x 20" x 8"	21.24	14	XLHS15050201	508 x 508 x 203	354	564
XLVS12024081	20" x 24" x 8"	21.24	18	XLHS15060201	508 x 610 x 203	354	666
XLVS12416061	24" x 16" x 6"	25.24	10	XLHS16040151	610 x 406 x 152	445	462
XLVS12416081	24" x 16" x 8"	25.24	10	XLHS16040201	610 x 406 x 203	445	462
XLVS12420061	24" x 20" x 6"	25.24	14	XLHS16050151	610 x 508 x 152	445	564
XLVS12420081	24" x 20" x 8"	25.24	14	XLHS16050201	610 x 508 x 203	445	564
XLVS12424061	24" x 24" x 6"	25.24	18	XLHS16060151	610 x 610 x 152	445	666
XLVS12424081	24" x 24" x 8"	25.24	18	XLHS16060201	610 x 610 x 203	445	666
XLVS12430081	24" x 30" x 8"	25.24	24	XLHS16076201	610 x 762 x 203	445	818
XLVS13020081	30" x 20" x 8"	31.24	14	XLHS17650201	762 x 508 x 203	508	564
XLVS13024081	30" x 24" x 8"	31.24	18	XLHS17660201	762 x 610 x 203	508	666
XLVS13030081	30" x 30" x 8"	31.24	24	XLHS17676201	762 x 762 x 203	508	818

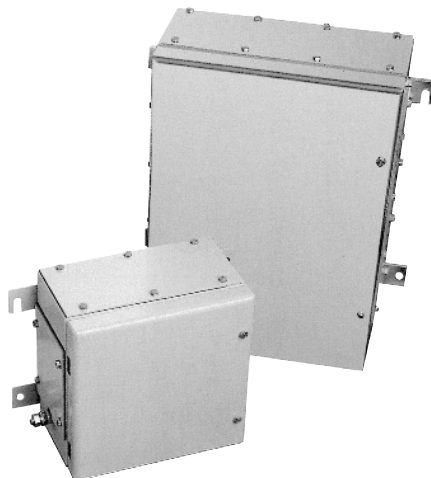
NexT Series

Features/Applications:

The NexT series of enclosures available in two types of material finish have been designed to accommodate rail mounted terminals or other electrical components. Stainless steel is recommended to give maximum protection for components in outdoor/aggressive environments.

Features of this series included thirteen basic sizes in two standard depths to optimize the accommodation of rail-mountable terminals or components.

- Fully removable hinged cover, concealed hinges provide 180° opening
- Cover mounting, two or three stainless steel captive screws on one side.
- Lip on upstand increases gasket contact area, ensuring high degree of ingress protection.
- Internal/external ground stud.
- 40mm wide mounting lugs for assembly on standard frames.
- Option of 0, 1, 2, 3 or 4 gland plates
- One piece gasket on cover and gland plates.
- Padlock hasp available optional.



Specifications:

Material	NXT 2215-5035 NXT 6245-9874 Gland plate	0.059" sheet steel or 316L stainless steel 0.080" sheet steel or 316L stainless steel 0.128" sheet steel or 316L stainless steel
Finish	Painted 316L Stainless steel	RAL 7032 (Textured) Bright Chemical Dip (polished appearance)
Gasket	All types	Neoprene (standard)
Cover Mounting	All types	Fully detachable hinged cover with 2 or 3 x M6 hexagon head captive stainless steel screws
Grounding	All types	M10 internal/external ground stud
Box Mounting	All types	4 x external lugs, 0.394" clearance holes/slots
Equipment Mounting	All types	4 x stand off pillars 0.394" OD, tapped M6 x 0.394"
Ingress Protection	All types	IP66 to IEC529
Temperature Range	RA104 HT800	-49°F to 203°F -85°F to 275°F
Ambient Temperature	RA104 Gaskets HT800	-49°F to 104°F T6 -49°F to 131°F T5 -85°F to 104°F T6 -85°F to 131°F T5
Impact Resistance	All types	7 J (Nm) to EN 50014
Deluge Test	All types	Spec. No. DTS 01

Factory Options (Consult Factory):

Material	Special materials or thickness according to customer specification
Finish	Special colors according to customer specification
Sizes	Special sizes according to customer specification
Equipment	Terminals, glands, and Myers Hubs assembled according to customer specification
Gland plates	Drilled cable glands fitted to customer specification
Ground Studs	Also available fitted to gland plates and cover
EMC	Versions for maximum shielding from EMI/RFI, 0 gland plate only
Cover Attachments	e.g. Handles

Certifications and Compliances:



UL50/C22.2 N094-M91 mild steel: Types 3S, 4; stainless steel: Type 4X.

CSA – selected sizes only
Germanischer Lloyd (GL)

ATEX	1. Component Certificate KEMA99ATEX3174 U
Codes	 II 2 G EEx e II II 2 D ≥ IP64

ATEX	2. Certificate of Conformity KEMA99ATEX3172X
Codes	 II 2 G EEx e II T6 or T5 II 2 D T100°C ≥ IP64  II 1 G EEx ia IIC T6 or T5 II 2 D T100°C ≥ IP64  II 2 (1) G EEx e ia IIC T6 or T5 II 2 D T100°C ≥ IP64

Next Series

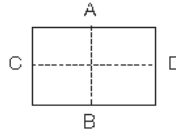
Sheet or Stainless Steel Hinged Cover

IP66
EEx e II
EEx ia IIC
EEx e ia IIC

6F

6F Junction Boxes

Top A
Bottom B
Left hand side C
Right hand side D



NXT 221513

Height 9.02"
Width 5.98"
Depth 5.31"
Weight 7.17 lb
Gland Plate A/B 3.54/5.51"
Gland Plate C/D 3.54/5.51"

NXT 262616

Height 10.23"
Width 10.23"
Depth 6.30"
Weight 12.13 lb
Gland Plate A/B 4.72/10"
Gland Plate C/D 4.72/6.06"

NXT 262620

Height 10.23"
Width 10.23"
Depth 9.07"
Weight 12.13 lb
Gland Plate A/B 6.46/10"
Gland Plate C/D 6.46/6.06"

NXT 303016

Height 12.05"
Width 12.05"
Depth 6.30"
Weight 15.43 lb
Gland Plate A/B 4.33/11.42"
Gland Plate C/D 4.33/7.48"

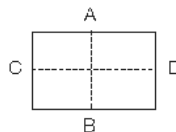
Ordering Data:

0 Gland Plates	Paint Finish Stainless Steel Finish	Cat. No. NXTPS2215130 NXTS12215130	Cat. No. NXTPS2626160 NXTS12626160	Cat. No. NXTPS2626200 NXTS12626200	Cat. No. NXTPS3030160 NXTS13030160
1 Gland Plate Side B (Bottom)	Paint Finish Stainless Steel Finish	NXTPS2215131 NXTS12215131	NXTPS2626161 NXTS12626161	NXTPS2626201 NXTS12626201	NXTPS3030161 NXTS13030161
2 Gland Plates Sides A + B (Top and Bottom)	Paint Finish Stainless Steel Finish	NXTPS2215132 NXTS12215132	NXTPS2626162 NXTS12626162	NXTPS2626202 NXTS12626202	NXTPS3030162 NXTS13030162
3 Gland Plates Sides B, C + D (Bottom and Sides)	Paint Finish Stainless Steel Finish	NXTPS2215133 NXTS12215133	NXTPS2626163 NXTS12626163	NXTPS2626203 NXTS12626203	NXTPS3030163 NXTS13030163
4 Gland Plates Sides A, B, C + D (All Sides)	Paint Finish Stainless Steel Finish	NXTPS2215134 NXTS12215134	NXTPS2626164 NXTS12626164	NXTPS2626204 NXTS12626204	NXTPS3030164 NXTS13030164

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left	Right
Brass Glands	M16	6	6	20	9	33	18	26	20	26
Brass Glands	M20	3	3	10	6	15	9	14	10	14
Brass Glands	M25	2	2	6	3	12	5	8	8	8
Brass Glands	M32	1	1	3	2	6	4	4	3	4
Brass Glands	M40	1	1	3	1	5	2	3	3	3
Brass Glands	M50	1	1	2	1	3	1	3	2	3

Top A
Bottom B
Left hand side C
Right hand side D



NXT 303020

Height 12.05"
Width 12.05"
Depth 8.07"
Weight 15.43 lb
Gland Plate A/B 4.33/11.42"
Gland Plate C/D 4.33/7.48"

NXT 382616

Height 14.96"
Width 10.24"
Depth 6.29"
Weight 15.43 lb
Gland Plate A/B 4.72/10"
Gland Plate C/D 4.72/10"

NXT 382620

Height 14.96"
Width 10.24"
Depth 8.07"
Weight 15.43 lb
Gland Plate A/B 6.46/10"
Gland Plate C/D 6.46/10"

NXT 453820

Height 18.031"
Width 15.039"
Depth 8.071"
Weight 21.45 lb
Gland Plate A/B 4.33/14.57"
Gland Plate C/D 4.33/14.57"

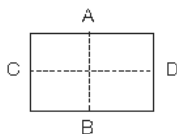
Ordering Data:

0 Gland Plates	Paint Finish Stainless Steel Finish	Cat. No. NXTPS3030200 NXTS13030200	Cat. No. NXTPS3826160 NXTS13826160	Cat. No. NXTPS3826200 NXTS13826200	Cat. No. NXTPS4538200 NXTS14538200
1 Gland Plate Side B (Bottom)	Paint Finish Stainless Steel Finish	NXTPS3030201 NXTS13030201	NXTPS3826161 NXTS13826161	NXTPS3826201 NXTS13826201	NXTPS4538201 NXTS14538201
2 Gland Plates Sides A + B Top and Bottom	Paint Finish Stainless Steel Finish	NXTPS3030202 NXTS13030202	NXTPS3826162 NXTS13826162	NXTPS3826202 NXTS13826202	NXTPS4538202 NXTS14538202
3 Gland Plates Sides B, C + D (Bottom and Sides)	Paint Finish Stainless Steel Finish	NXTPS3030203 NXTS13030203	NXTPS3826163 NXTS13826163	NXTPS3826203 NXTS13826203	NXTPS4538203 NXTS14538203
4 Gland Plates Sides A, B, C + D (All Sides)	Paint Finish Stainless Steel Finish	NXTPS3030204 NXTS13030204	NXTPS3826164 NXTS13826164	NXTPS3826204 NXTS13826204	NXTPS4538204 NXTS14538204

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left	Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right
Brass Glands	M16	32	38	32	20	20	33	33	44	44
Brass Glands	M20	18	15	18	10	10	15	15	24	24
Brass Glands	M25	15	12	15	6	6	12	12	20	20
Brass Glands	M32	8	6	8	3	3	6	6	10	10
Brass Glands	M40	6	5	6	3	3	5	5	8	8
Brass Glands	M50	3	3	3	2	2	3	3	4	4

Top A
Bottom B
Left hand side C
Right hand side D



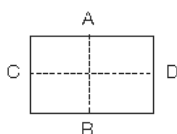
Ordering Data:

0 Gland Plates	Paint Finish Stainless Steel Finish	NXT 484820 Height 18.898" Width 18.898" Depth 8.071" Weight 22.88 lb Gland Plate A/B 4.33/14.57" Gland Plate C/D 4.33/14.57"	NXT 503520 Height 19.695" Width 13.78" Depth 8.071" Weight 23.1 lb Gland Plate A/B 6.46/13.54" Gland Plate C/D 6.46/13.54"	NXT 624520 Height 24.41" Width 17.72" Depth 8.07" Weight 37.48 lb Gland Plate A/B 6.46/17.48" Gland Plate C/D 6.46/17.48"	NXT 745520 Height 29.13" Width 17.72" Depth 8.07" Weight 37.48 lb Gland Plate A/B 6.46/17.48" Gland Plate C/D 6.46/17.48"
1 Gland Plate Side B (Bottom)	Paint Finish Stainless Steel Finish	NXTPS4848201 NXTS14848201	NXTPS5035201 NXTS15035201	NXTPS6245201 NXTS16245201	NXTPS7455201 NXTS17455201
2 Gland Plates Sides A + B (Top and Bottom)	Paint Finish Stainless Steel Finish	NXTPS4848202 NXTS14848202	NXTPS5035202 NXTS15035202	NXTPS6245202 NXTS16245202	NXTPS7455202 NXTS17455202
3 Gland Plates Sides B, C + D (Bottom and Sides)	Paint Finish Stainless Steel Finish	NXTPS4848203 NXTS14848203	NXTPS5035203 NXTS15035203	NXTPS6245203 NXTS16245203	NXTPS7455203 NXTS17455203
4 Gland Plates Sides A, B, C + D (All Sides)	Paint Finish Stainless Steel Finish	NXTPS4848204 NXTS14848204	NXTPS5035204 NXTS15035204	NXTPS6345204 NXTS16245204	NXTPS7455204 NXTS17455204

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left	Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right
Brass Glands	M16	53	44	53	40	40	53	53	60	60
Brass Glands	M20	30	24	30	24	24	30	30	39	39
Brass Glands	M25	24	20	24	18	18	24	24	30	30
Brass Glands	M32	14	10	14	10	10	14	14	18	18
Brass Glands	M40	11	8	11	7	7	11	11	13	13
Brass Glands	M50	5	4	5	4	4	5	5	6	6

Top A
Bottom B
Left hand side C
Right hand side D



Ordering Data:

0 Gland Plates	Paint Finish Stainless Steel Finish	NXT 765020 Height 30" Width 20" Depth 8.07" Weight 51.81 lb Gland Plate A/B 4.33/19.69" Gland Plate C/D 4.33/19.69"	NXT 866420 Height 33.86" Width 25.20" Depth 8.07" Weight 63.93 lb Gland Plate A/B 6.46/24.96" Gland Plate C/D 6.46/24.96"	NXT 916120 Height 35.99" Width 24.02" Depth 8.07" Weight 68.34 lb Gland Plate A/B 5.512/23.62" Gland Plate C/D 5.512/23.62"	NXT 987420 Height 38.58" Width 29.13" Depth 8.07" Weight 83.76 lb Gland Plate A/B 6.46/13.54" Gland Plate C/D 2x6.46/17.48"
1 Gland Plate Side B (Bottom)	Paint Finish Stainless Steel Finish	NXTPS7650201 NXTS17650201	NXTPS8664201 NXTS18664201	NXTPS9161201 NXTS19161201	NXTPS9874201 NXTS19874201
2 Gland Plates Sides A + B Top and Bottom	Paint Finish Stainless Steel Finish	NXTPS7650202 NXTS17650202	NXTPS8664202 NXTS18664202	NXTPS9161202 NXTS19161202	NXTPS9874202 NXTS19874202
3 Gland Plates Sides B, C + D (Bottom and Sides)	Paint Finish Stainless Steel Finish	NXTPS7650203 NXTS17650203	NXTPS8664203 NXTS18664203	NXTPS9161203 NXTS19161203	NXTPS9874203 NXTS19874203
4 Gland Plates Sides A, B, C + D (All Sides)	Paint Finish Stainless Steel Finish	NXTPS7650204 NXTS17650204	NXTPS8664214 NXTS18664204	NXTPS9161204 NXTS19161204	NXTPS9874204 NXTS19874204

Gland Sizes (mm) Per Plate (Reference Only)

		Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right	Top/Bottom	Left/Right
Brass Glands	M16	53	72	72	40	72	72	40	53
Brass Glands	M20	30	45	45	24	42	42	24	30
Brass Glands	M25	24	35	35	18	24	24	18	24
Brass Glands	M32	14	20	20	10	18	18	10	14
Brass Glands	M40	11	13	13	7	8	8	7	11
Brass Glands	M50	5	7	7	4	7	7	4	5

Next Series

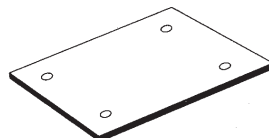
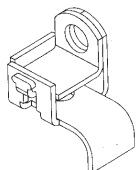
Sheet or Stainless Steel
Hinged Cover
Accessories

IP66
EEx e II
EEx ia IIC
EEx e ia IIC

6F

6F
Junction Boxes

Accessories



Mounting Plates:

Material: Tufnol, zinc coated or stainless steel

Enclosure Size	Tufnol Cat. No.	Zinc Coated Steel Cat. No.	Stainless Steel Cat. No.
NXT2215	NXTTLMP2215	NXTZTMP2215	NXTS1MP2215
NXT2626	NXTTLMP2626	NXTZTMP2626	NXTS1MP2626
NXT3030	NXTTLMP3030	NXTZTMP3030	NXTS1MP3030
NXT3826	NXTTLMP3826	NXTZTMP3826	NXTS1MP3826
NXT4538	NXTTLMP4538	NXTZTMP4538	NXTS1MP4538
NXT4848	NXTTLMP4848	NXTZTMP4848	NXTS1MP4848
NXT5035	NXTTLMP5035	NXTZTMP5035	NXTS1MP5035
NXT6245	NXTTLMP6245	NXTZTMP6245	NXTS1MP6245
NXT7455	NXTTLMP7455	NXTZTMP7455	NXTS1MP7455
NXT7650	NXTTLMP7650	NXTZTMP7650	NXTS1MP7650
NXT8664	NXTTLMP8664	NXTZTMP8664	NXTS1MP8664
NXT9161	NXTTLMP9161	NXTZTMP9161	NXTS1MP9161
NXT9874	NXTTLMP9874	NXTZTMP9874	NXTS1MP9874

Stand-off Pillars

Type	Inches	Cat. No.
SP15	0.60	ACCSOP15
SP20	0.80	ACCSOP20
SP30	1.20	ACCSOP30

Lock:

Type	Cat. No.
NP6 Brass Lock and 2 Keys	NXTNP6BL2K

Hasp:

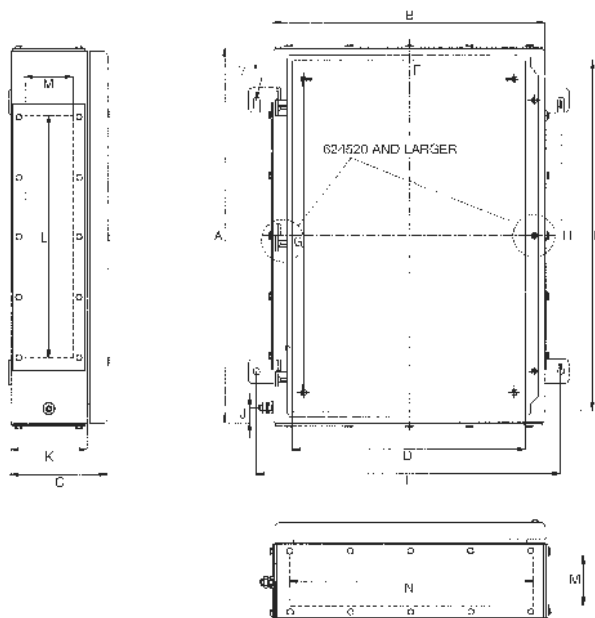
Type	Cat. No.
NPA6	NXTNPAHASP
Stainless Steel, for Type NP6 Padlocks	
Mount on Enclosure by Removing Cover Screw and Fitting Hasp Between Cover and Screw.	

Assembly Rail:

Type		Cat. No.
TS35	78.74" length	ACCTS352M
TAS20	78.74" length	ACCTAS202M

Ground Stud Kits:

Type	Cat. No.
M10 Brass	ACCBSESM10KIT
M10 Stainless Steel	ACCS1ESM10KIT
M14 Brass	ACCBSESM14KIT



NexT Enclosure Series Dimensions (in inches):

Dimensions:

Code Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N
NXT* 221513**	9.02	5.98	5.12	3.50	7.48	2.05	5**	5.98	8.19	0.98	4.01	4.25	2.28	4.25
NXT 262616 (262620)	10.24	10.24	6.30 (8.08)	7.76	8.70	6.30	6.30	6.69	12.44	0.98	4.96 (6.77)	4.49	3.15 (4.88)	8.43
NXT* 303016 (303020)	12.04	12.05	6.30 (8.08)	9.57	10.51	8.11	8.11	7.99	14.21	0.98	4.96 (6.77)	Left 8.43 Right 10.28	3.15 (4.88)	10.28
NXT 382616 (382620)	14.97	10.24	6.30 (8.08)	7.76	13.43	6.30	11.02	9.84	12.44	0.98	4.96 (6.77)	8.43	3.15 (4.88)	8.43
NXT* 453820	18.01	15.04	8.08	12.56	16.50	11.10	14.09	12.00	17.21	0.98	6.77	13.27	4.88	13.27
NXT* 484820	18.90	18.90	8.08	16.42	17.36	14.96	14.96	12.87	21.06	0.98	6.77	Left 13.27 Right 15.91	4.88	15.91
NXT 503520	19.69	13.79	8.08	11.30	18.15	9.84	15.75	13.78	15.98	0.98	6.77	11.97	4.88	11.97
NXT 624520	24.41	17.72	8.08	15.24	22.87	13.78	20.47	17.72	19.92	0.98	6.77	15.91	4.88	15.91
NXT 745520	29.13	21.66	8.08	19.18	27.60	17.72	25.18	21.26	23.86	0.98	6.77	19.84	4.88	19.84
NXT* 765020	30.00	20.00	8.08	17.52	28.47	16.06	26.06	20.00	22.21	0.98	6.77	23.39	4.25	18.27
NXT 866420	33.86	25.20	8.08	22.72	32.32	21.26	29.92	22.44	27.40	0.98	6.77	2 x 11.97	4.88	23.39
NXT* 916120	35.98	24.02	8.08	21.54	34.45	20.08	32.05	22.00	26.22	0.98	6.77	22.32	4.25	22.28
NXT 987420	38.58	29.13	8.08	26.65	37.05	25.20	34.65	27.56	31.34	0.98	6.77	2 x 15.91	4.88	2 x 11.97

*Note: Subtract 1.18" from dimension 'I' for mounting center when side gland plates are not used.

**Note: NXT 221513 has two stand off pillars only, mounted on the center line.

STB Series Junction Boxes

Sheet or Stainless Steel

IP66
EEx e II
EEx ia IIC
EEx e ia IIC

6F

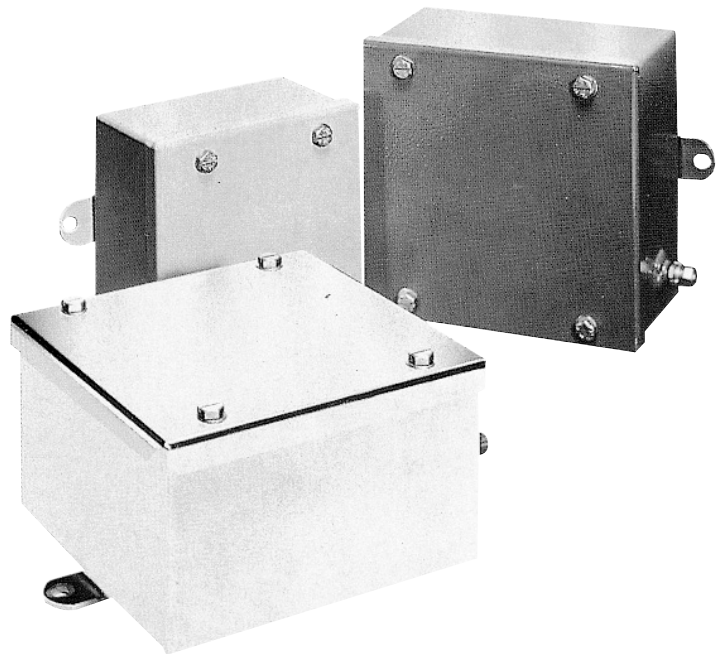
STB Series Small Sheet Steel Enclosures

Features/Applications:

The STB series of sheet steel enclosures are designed to meet the requirement for distribution and lighting junction boxes.

Available in eight sizes with standard finishes of painted or 316L stainless steel, together with the high IP rating make these enclosures suitable for all environmental conditions.

The stainless steel versions are particularly recommended for use in marine or other corrosive environments. Painting of these enclosure uses a two stage electrophoretic dip coat system. Treatment includes iron phosphate and paint application followed by electrostatic polyester powder coating. When applied to a mild steel substrate gives a minimum of 500 hours salt spray resistance.



6F
Junction Boxes

Specifications:

Material		0.059" Sheet Steel 0.059" 316L Stainless Steel
Finish		Painted – RAL 7032, Grey Stainless Steel – 'Bright Chemical Dip'
Gasket		HT800 Silicone
Cover Mounting		4 x M6 Slotted, Hexagon Head, Captive Screws
Grounding		M6 Internal/External Ground Stud
Box Mounting	STB 121208-252512	2 x External Lugs with 0.315" Clearance Holes
	STB 163812-254013	4 x External Lugs with 0.315" Clearance Holes
Equipment Mounting		TAS 20 Rail Welded to Base of Enclosure, to Which Equipment is Mounted by Means of Sliding Mounting Nut and Screw (1 Rail STB 121208-191910, Rails STB 252512-254030)
Ingress Protection		IP66 BSEN 60529
Temperature Range		-85°F to +275°F
Ambient Temperature		T5 -85°F to +131°F T6 -85°F to +104°F
Impact Resistance		7 J(Nm) to EN 50014

Factory Options (Consult Factory):

Finishes	Alternative paint colours
Assembly	Supplied with terminals, glands, drilled or drilled and tapped entries, breather/drains, and Myers Hubs

Certifications and Compliances:



UL50/C22.2 No. 94-M91 mild steel: Types 3S, 4; stainless steel: Type 4X.

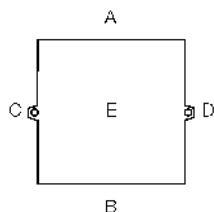
Germanischer Lloyd (GL)
(Excluding STB151208 & STB 191509)

ATEX 1. Component Certificate KEMA99ATEX7895 U

Codes		II 2 G	EEx e II
		II 2 D	≥ IP64

ATEX 2. Certificate of Conformity KEMA99ATEX7894 X

Codes		II 2 G	EEx e II T6 or T5
		II 2 D	T100°C ≥ IP64
		II 1 G	EEx ia IIC T6 or T5
		II 2 D	T100°C ≥ IP64
		II 2 (1) G	EEx e ia IIC T6 or T5
		II 2 D	T100°C ≥ IP64



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

Ordering Data:

Standard Paint Finish
Stainless Steel Finish

Guide to Gland Entries:

Max. Gland Area Dimensions

STB 121208

Height 4.73"
Width 4.72"
Depth 3.15"
Weight 3.09 lb

STBPS121208UL
STBS1121208UL

Sides	Size
A, B, C	4.49" x 2.48"
D	2.76" x 2.48"
E	2.36" x 2.36"

STB 151208

Height 5.91"
Width 4.72"
Depth 3.15"
Weight 3.50 lb

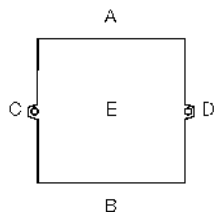
STBPS151208UL
STBS1151208UL

Sides	Size
A, B	4.49" x 2.48"
C	5.67" x 2.48"
D	3.94" x 2.48"
E	3.54" x 2.36"

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D
Brass Glands with Locknuts	16	5	5	6	4
	20	3	2	3	2
	25	2	2	2	1
	32	1	1	2	1
	40	-	-	-	-
	50	-	-	-	-

Side A	Side B	Side C	Side D
6	5	7	5
3	2	4	3
2	2	3	2
1	1	2	1
-	-	-	-
-	-	-	-



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

Ordering Data:

Standard Paint Finish
Stainless Steel Finish

Guide to Gland Entries:

Max. Gland Area Dimensions

STB 151509

Height 5.91"
Width 5.91"
Depth 3.54"
Weight 4.19 lb

STBPS151509UL
STBS1151509UL

Sides	Size
A, B, C	5.67" x 2.87"
D	3.94" x 2.87"
E	3.54" x 3.54"

STB 191509

Height 5.91"
Width 7.48"
Depth 3.54"
Weight 5.40 lb

STBPS191509UL
STBS1191509UL

Sides	Size
A, B	5.67" x 2.87"
C	7.24" x 2.87"
D	5.12" x 2.87"
E	5.12" x 3.54"

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D
Brass Glands with Locknuts	16	8	8	8	6
	20	5	4	5	3
	25	3	3	3	2
	32	2	2	2	1
	40	1	1	2	1
	50	-	-	-	-

Side A	Side B	Side C	Side D
9	8	12	8
5	4	7	5
3	3	4	3
2	2	3	2
2	1	2	2
-	-	-	-

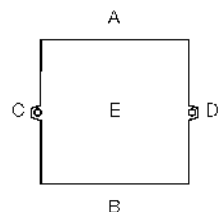
STB Series Junction Boxes

Sheet or Stainless Steel Ordering Information

IP66
EEx e II
EEx ia IIC
EEx e ia IIC

6F

6F
Junction Boxes



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

Ordering Data:

Standard Paint Finish
Stainless Steel Finish

Guide to Gland Entries:

Max. Gland Area Dimensions

STB 191910
Height 7.48"
Width 7.48"
Depth 3.94"
Weight 6.61 lb

STBPS191910UL
STBS1191910UL

Sides	Size
A, B, C	7.24" x 3.27"
D	5.51" x 3.27"
E	5.12" x 5.12"

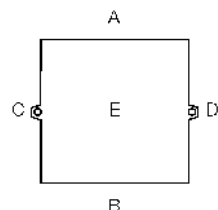
STB 252512
Height 9.84"
Width 9.84"
Depth 4.73"
Weight 8.16 lb

STBPS252512UL
STBS1252512UL

Sides	Size
A, B, C	9.61" x 4.05"
D	7.87" x 4.05"
E	7.48" x 7.48"

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D	Side A	Side B	Side C	Side D
Brass Glands with Locknuts	16	13	12	14	9	24	23	24	18
	20	8	7	8	6	13	12	13	10
	25	5	4	5	4	10	9	10	8
	32	3	3	3	2	5	5	5	4
	40	2	2	2	2	3	3	3	3
	50	2	1	2	1	3	2	3	2
	63	-	-	-	-	2	2	2	2



A = Top
B = Bottom
C = Left Hand Side
D = Right Hand Side
E = Base

Ordering Data:

Standard Paint Finish
Stainless Steel Finish

Guide to Gland Entries:

Max. Gland Area Dimensions

STB 163812
Height 8.30"
Width 14.96"
Depth 4.72"
Weight 8.14 lb

STBPS163812UL
STBS1163812UL

Sides	Size
A, B, C	14.64" x 4.05"
D	12.99" x 4.05"
E	12.60" x 3.93"

STB 254013
Height 9.84"
Width 15.74"
Depth 5.12"
Weight 11.88 lb

STBPS254013UL
STBS1254413UL

Sides	Size
A, B, C	15.51" x 4.45"
D	13.78" x 4.45"
E	13.39" x 7.48"

Gland Sizes (mm) per Side (Reference Only):

		Side A	Side B	Side C	Side D	Side A	Side B	Side C	Side D
Brass Glands with Locknuts	16	36	35	15	9	48	47	30	24
	20	21	21	7	5	27	27	17	14
	25	16	15	6	4	16	16	10	8
	32	9	9	3	2	11	11	7	6
	40	6	5	2	1	7	6	4	3
	50	4	4	1	1	5	5	3	2
	63	3	3	1	1	4	3	2	2

Accessories:**Mounting Hardware**

Sliding mounting nuts and screws for mounting assemblies or components to the support rail type TAS 20

M5 screw for TS 32/TS 35
M4 screw for TS15
M3 screw for terminal strips**Type**

SFNS 5

SFNS 4

SFNS 3

Cat. No.

ACCSFNM5

ACCSFNM4

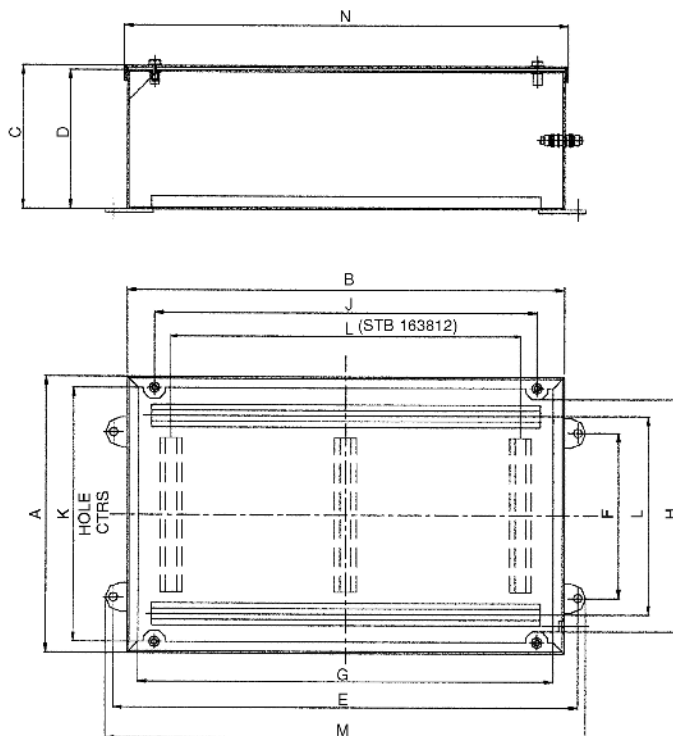
ACCSFNM3

Ground Stud Kits**Type**

M6 Brass

Cat. No.

ACCBSESM6KIT

**STB Enclosure Series Dimensions (in inches):**

Catalog Number	A	B	C	D	E	F	G	H	J	K	L	M	N
STB 121208UL	4.72	4.72	3.15	2.99	5.71	N/A	3.94	3.15	2.76	3.94	N/A	6.26	4.96
STB 151208UL	5.90	4.72	3.15	2.99	5.71	N/A	5.12	3.15	3.94	3.94	N/A	6.26	6.14
STB 151509UL	5.90	5.90	3.54	3.39	6.89	N/A	3.94	5.12	3.94	5.12	N/A	7.44	6.14
STB 191509UL	7.48	5.90	3.54	3.39	6.89	N/A	6.69	4.33	5.12	5.51	N/A	7.44	7.72
STB 191910UL	7.48	7.48	3.94	3.78	8.46	N/A	6.69	5.90	5.51	6.69	N/A	9.02	7.72
STB 252512UL	9.84	9.84	4.72	4.57	10.83	N/A	9.05	8.27	9.05	9.05	7.09	11.38	16.08
STB 163812UL	6.30	14.96	4.72	4.57	15.94	3.15	14.17	4.72	12.99	5.51	11.81	16.50	15.20
STB 254030UL	9.84	15.75	5.12	4.96	16.73	5.90	14.96	8.27	13.78	9.05	7.09	17.28	15.98

Sheet or Stainless Steel High Voltage Junction Box

HVB Series High Voltage Junction Boxes

Features & Applications:

The high voltage junction boxes have been designed for the termination of high voltage pumps ("down hole" pumps).

The HVB's are available in both stainless steel, fully polished or sheet steel with paint finish.

Gland plates are provided top and bottom for cable entry.

The units are complete with 3 or 4 pole assemblies to accept standard cable lugs up to 1.18" wide and an M12 hole

Live parts are protected by a clear cover, giving protection to IP 2X

High voltage warning labels are fitted to the cover and enclosure cover.

When using the enclosures at their full potential (i.e. 6.6 kV), high voltage cable termination kits have to be used to avoid breakdown of the cable long term.



Specifications:

Material	HVB 463820	0.059" steel or 316L stainless steel
	HVB 765120, 916120	0.080" steel or 316L stainless steel
	Gland Plates	0.128" steel or 316L stainless steel
Finish	Painted RAL 7032	
	Stainless Bright Chemical Dip (polished appearance)	
Gasket	Neoprene (cover & gland plates)	
Cover Mounting	Fully detachable hinged cover with 4 or 6 x M6 hexagon head captive screws	
Grounding	M10 internal/external stud	
	M14 internal/external stud for 5.91in ² phase conductor only	
Box Mounting	4 x external lugs with 0.39" clearance holes/slots	
Ingress Protection	IP66 & IP67 to IEC 529	
Temperature Range	-4°F to 104°F (ambient)	
Impact Resistance	7 J (Nm)	
Gland Plates	Top & Bottom	
Ratings	Voltage	6.6 kV 50Hz* ac 3 phase (grounded or ungrounded supply systems)
		*At frequencies above 50 Hz, current carrying capacities may require derating (e.g. motor variable speed controllers).

Maximum Current Rating (amps):

To allow American Wire Gauge (AWG) cables and current ratings for T6 to T4 temperature classes.

Conductor Size	Current A	
AWG (max. 5.91in ²)	T6 (185°F)	T5 (212°F)
6	42	59
4	55	80
3	64	92
2	73	107
1	81	121
1/0	101	141
2/0	150	173
3/0	160	180
		T4 (275°F)
		65
		88
		102
		118
		134
		156
		192
		200

Maximum Wiring Space for HV Cable Termination Kits:

Enclosure Type	Distance Between Bolt & Gland Plate
HVB 463820	7.09"
HVB 765120	13.19"
HVB 916126	16.14"

Connections:

3 or 4 pole, consists of 6 or 8 post insulators with 0.24" brass busbars, tin lead plated. Cable alignment restrictors prevent misalignment of the conductors. Accepts standard cable lugs up to 1.18" wide and an M12 hole.

Certifications and Compliances:



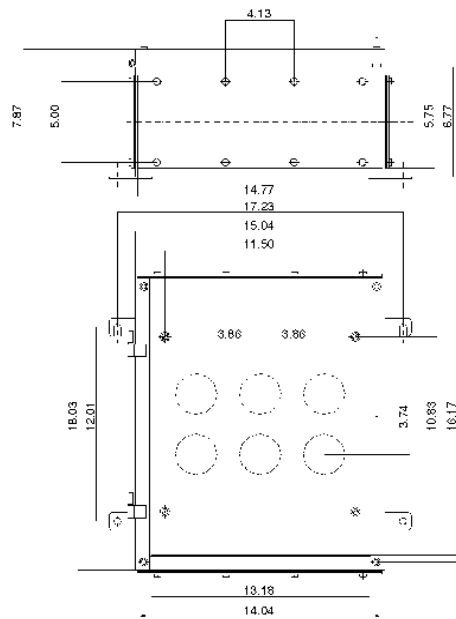
EEx'e' II T4 200A, T5 180A, T6 160A to EN 50019.
Certificate of Conformity Ex 91C3217X (enclosure & connection assembly)



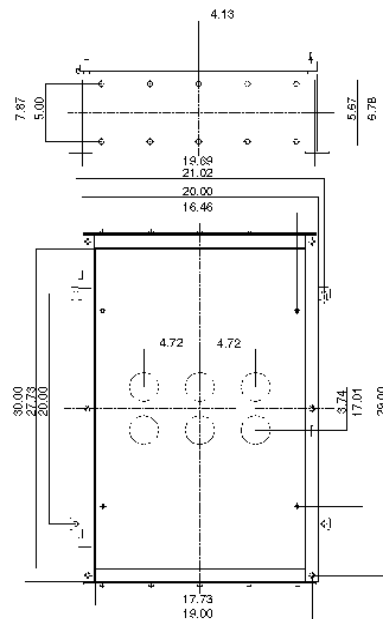
UL50/C22.2 No. 94-M91 mild steel: Types 3S, 4; stainless steel: Type 4X

Sheet or Stainless Steel
High Voltage Junction Box
Ordering Information

HVB463820 (3 pole)



HVB765120 (3 pole)



A = Top
B = Bottom

For dimensions marked with a *
subtract 1.18" for 2 gland
plate versions

All dimensions in inches.

Ordering Data:

M10 Ground Stud Phase Standard Paint Finish
Conductor 4.72in² Max. Stainless Steel Finish

M14 Ground Stud Phase Standard Paint Finish
Conductor 5.91in² Only Stainless Steel Finish

Cat. No.
HVBPS463820M10
HVBS1463820M10

HVBPS463820M14
HVBS1463820M14

Cat. No.
HVBPS765120M10
HVBS1765120M10

HVBPS765120M14
HVBS1765120M14

Guide to Gland Entries:

Max. Gland Area Dimensions

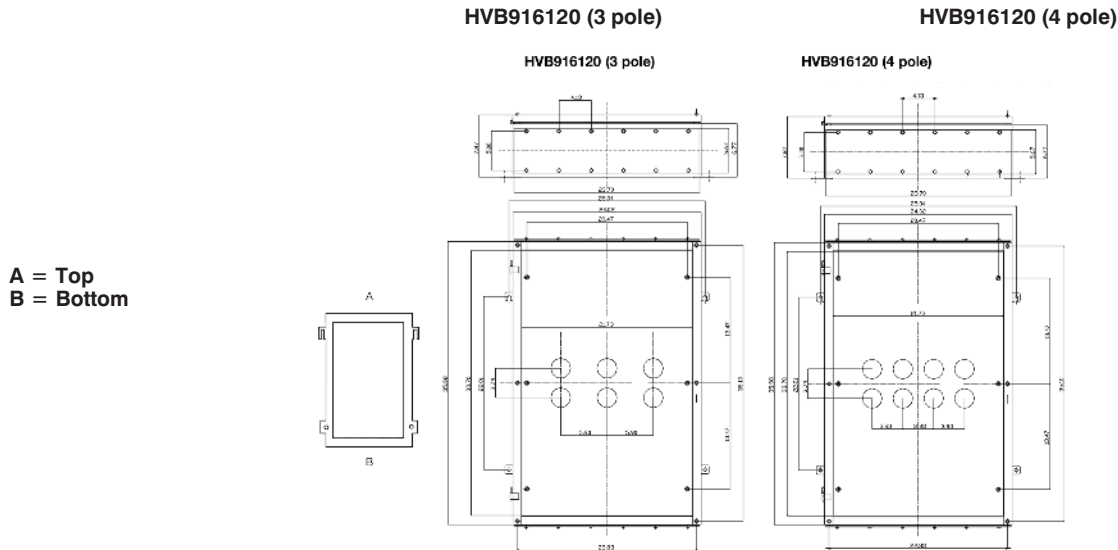
Side **Size**
A + B 13.27" x 4.25"

Side **Size**
A + B 18.27" x 4.25"

Gland Sizes (mm) Brass (Per Plate):

40	6	8
50	4	6
63	3	4
75	3	4

Sheet or Stainless Steel High Voltage Junction Box Ordering Information



For dimensions marked with a *
subtract 1.18" for 2 gland
plate versions
All dimensions in inches.

	Height 35.98" Width 24.20" Depth 7.87" Weight 99.21 lb	Height 35.98" Width 24.02" Depth 7.87" Weight 103.62 lb
Ordering Data:	Cat. No.	Cat. No.
M10 Ground Stud Phase Standard Paint Finish	HVBPS916120M10	HVBPS916120M104P
Conductor 4.72in² Max. Stainless Steel Finish	HVBS1916120M10	HVBS1916120M104P
M14 Ground Stud Phase Standard Paint Finish	HVBPS916120M14	HVBPS916120M144P
Conductor 5.91in² Only Stainless Steel Finish	HVBS1916120M14	HVBS1916120M144P
Guide to Gland Entries:	Side	Side
Max. Gland Area Dimensions	A + B	A + B
	Size	Size
	22.28" x 4.25"	22.28" x 4.25"
Gland Sizes (mm) Brass (Per Plate):		
40	8	8
50	7	7
63	5	5
75	4	4

Sheet or Stainless Steel Removable Hinge Cover

QBX Series

Features/Applications:

The QBX series of enclosures are available in two types of material and have been developed for the light industrial market.

Stainless steel is recommended to give maximum protection for components in outdoor/aggressive environments.

Specifically designed for the accommodation of rail mounted terminals or other electro/pneumatic components. The QBX series is user friendly and offers good access internally.

- Fully removable hinged cover, concealed hinges provide 180° opening
- Cover mounting, one or two ¼ turn latches (slot shape)
- 10 key lockable variations
- Form-in-place polyurethane gasket
- M6 ground stud in box and cover
- Mounting through internal holes (types 3S and 4) or with external lugs (type 4X)
- Pole mounting kit available



Specifications:

Material	All Types	0.125" Steel or 304 Stainless Steel
Finish	Flat Electro Polished Finish	Flat Electro Polished Finish
Gasket	All Types	Form-In-Place Polyurethane
Cover Mounting	All Types	2 or 3 Hinges /1 or 2 ¼ Turn Latches
Gland Plates	QBX302012, 303012, 403012, 403022 All Other Sizes	1 Gland Plate Bottom Face 2 Gland Plates on Bottom Face
Grounding	All Types	M6 Studs in Base and Cover
Enclosure Mounting	All Types	Holes Through Back of Enclosure or Using External Mounting Lugs
Equipment Mounting	All Types	IP 65 to BSEN60529
Temperature Range	All Types	-4°F to +176°F

Factory Options (Consult Factory)

Material	Special Materials or Thickness According to Customer Specification
Finish	Special Colors According to Customer Specification
Sizes	Special Sizes According to Customer Specification
Equipment	Terminals, Myers Hubs, and Glands Assembled According to Customer Specification
Gland Plates	Drilled Cable Glands Fitted to Customer Specification
Ground Studs	Also Available Fitted to Gland Plates
Cover Attachments	e.g. Handles and Locks

Certifications and Compliances:



UL50/C22.2 No. 94-M91 mild steel: Types 3S, 4; stainless steel: Type 4X

Sheet or Stainless Steel Removable Hinge Cover Ordering Information and Accessories

QBX Series Ordering Information

Painted Sheet Steel RAL 7032

Depth 4.72"

	Cat. No.	Weight (lb)
11.81" × 7.87"	QBXPS302012UL	6.13
11.81" × 11.81"	QBXPS303012UL	7.96
15.75" × 11.81"	QBXPS403012UL	10.74
15.75" × 15.75"	QBXPS404012UL	13.14
19.68" × 15.75"	QBXPS504012UL	14.15
23.62" × 15.75"	QBXPS604012UL	16.33

Stainless Steel (304) Brushed

Depth 4.72"

	Cat. No.	Weight (lb)
11.81" × 7.87"	QBXSS2302012UL	6.48
11.81" × 11.81"	QBXSS2303012UL	8.43
15.75" × 11.81"	QBXSS2403012UL	10.74
15.75" × 15.75"	QBXSS2404012UL	12.34
19.68" × 15.75"	QBXSS2504012UL	14.98
23.62" × 15.75"	QBXSS2604012UL	18.43

Painted Sheet Steel RAL 7032

Depth 8.66"

	Cat. No.	Weight (lb)
11.81" × 11.81"	QBXPS303022UL	11.35
11.81" × 15.75"	QBXPS304022UL	13.73
15.75" × 11.81"	QBXPS403022UL	13.73
15.75" × 15.75"	QBXPS404022UL	16.42
15.75" × 19.68"	QBXPS405022UL	19.11
19.68" × 15.75"	QBXPS504022UL	19.11
19.68" × 19.68"	QBXPS505022UL	22.13
19.68" × 23.62"	QBXPS506022UL	25.15
23.62" × 15.75"	QBXPS604022UL	21.62
23.62" × 19.68"	QBXPS605022UL	25.15
23.62" × 23.62"	QBXPS606022UL	28.66
27.56" × 19.68"	QBXPS705022UL	28.17
27.56" × 23.62"	QBXPS706022UL	31.81
31.50" × 23.62"	QBXPS806022UL	34.50

Stainless Steel (304) Brushed

Depth 8.66"

	Cat. No.	Weight (lb)
11.81" × 11.81"	QBXSS2303022UL	11.40
11.81" × 15.75"	QBXSS2304022UL	13.78
15.75" × 11.81"	QBXSS2403022UL	13.78
15.75" × 15.75"	QBXSS2404022UL	16.49
15.75" × 19.68"	QBXSS2405022UL	19.19
19.68" × 15.75"	QBXSS2504022UL	19.19
19.68" × 19.68"	QBXSS2505022UL	22.22
19.68" × 23.62"	QBXSS2506022UL	25.25
23.62" × 15.75"	QBXSS2604022UL	22.26
23.62" × 19.68"	QBXSS2605022UL	25.25
23.62" × 23.62"	QBXSS2606022UL	29.98
27.56" × 19.68"	QBXSS2705022UL	28.28
27.56" × 23.62"	QBXSS2706022UL	31.95
31.50" × 23.62"	QBXSS2806022UL	34.75

All enclosures are supplied with zinc coated mounting plate

Accessories:

Stand-Off Pillars M6:

Type	Cat. No.	Length Inches
SP15 (Set of 2)	ACCSOP15	0.59"
SP20 (Set of 2)	ACCSOP20	0.79"
SP30 (Set of 2)	ACCSOP30	1.18"

Mounting Feet:

Type	Cat. No.	
QMF (Set of 4)	QBXPSMF	For All Types (Steel)
QSF (Set of 4)	QBXSS1MF	For All Types (Stainless Steel)

Rail Mounting Bracket:

Type	Cat. No.	
QZFB	QBXRMB	For All Types

Further Accessories:

Type	Cat. No.
Ground Cable	QBXEARTHCB
Grounding Accessory Kit	QBXEARTHKIT

Type

Slot Shape
Eastern European (D Shape)
Double Bit Shape
Square 8mm
Square 7mm
Triangular 8mm
Triangular 7mm
Crown Shape
Wing Knob Insert with Standard Key
L Padlockable Handle 10mm

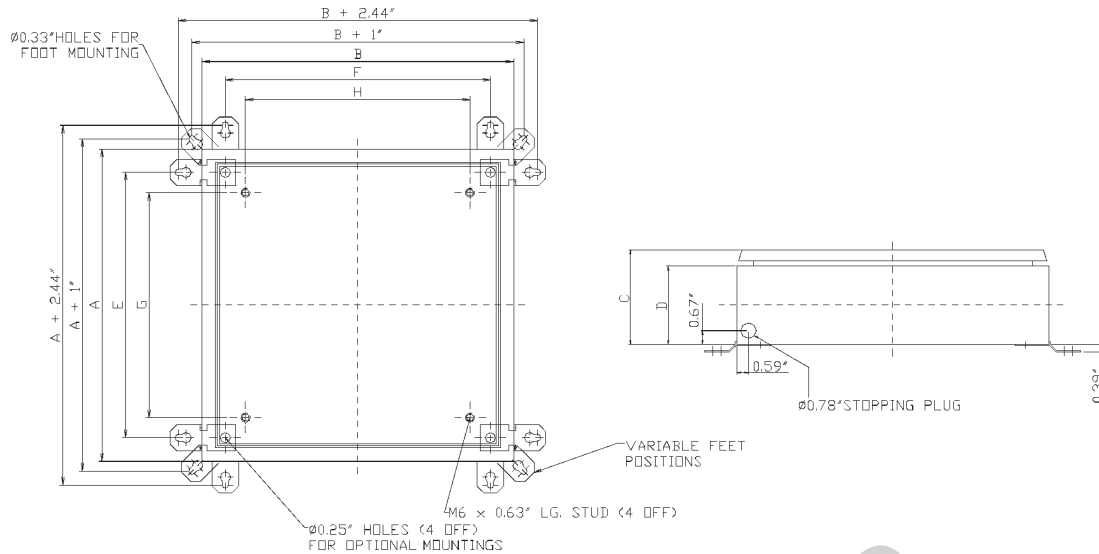
Lock Inserts (Key Not Included Unless Stated)

Cat. No.
QBXLKSLLOT
QBXLKKEE
QBXLKDBS
QBXLKQS8
QBXLKQS7
QBXLKTR8
QBXLKTR7
QBXLKWCWN
QBXLKWKI
QBXLKPAD

Keys

Cat. No.
N/A
QBXKEYEE
QBXKEYDBS
QBXKEYSQ8
QBXKEYSQ7
QBXKEYTR8
QBXKEYTR7
QBXKEYCWN
QBXKEYWNI
N/A

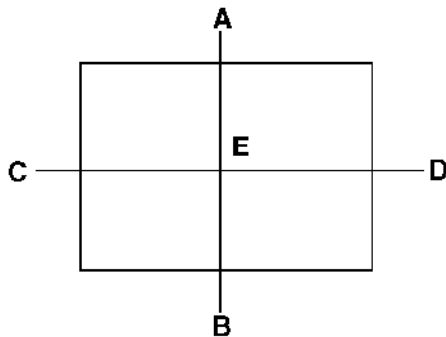
Sheet or Stainless Steel
Removable Hinge Cover
Dimensions



QBX Enclosure Series Dimensions (in inches):

Enclosure Type	A	B	C	D	E	F	G	H
4.72" Depth	Length	Width	Height					
QBX302012	11.81	7.87	4.72	9.34	9.45	5.51	7.40	3.46
QBX303012	11.81	11.81	4.72	9.34	9.45	9.45	7.40	7.40
QBX403012	15.75	11.81	4.72	9.34	13.39	9.45	11.34	7.40
QBX404012	15.75	15.75	4.72	9.34	13.39	13.39	11.34	11.34
QBX504012	19.68	15.75	4.72	17.32	17.32	13.39	15.28	11.34
QBX604012	23.62	15.75	4.72	21.26	21.26	13.39	19.21	11.34
8.66" Depth	Length	Width	Height					
QBX303022	11.81	11.81	8.66	7.87	9.45	9.45	7.40	7.40
QBX304022	11.81	15.75	8.66	7.87	9.45	13.39	7.40	11.34
QBX403022	15.75	11.81	8.66	7.87	13.39	9.45	11.34	7.40
QBX404022	15.75	15.75	8.66	7.87	13.39	13.39	11.34	11.34
QBX405022	15.75	19.68	8.66	7.87	13.39	17.32	11.34	15.28
QBX504022	19.68	15.75	8.66	7.87	17.32	13.39	15.28	11.34
QBX505022	19.68	19.68	8.66	7.87	17.32	17.32	15.28	15.28
QBX506022	23.62	15.75	8.66	7.87	17.32	21.26	15.28	19.21
QBX604022	23.62	15.75	8.66	7.87	21.26	13.39	19.21	11.34
QBX605022	23.62	19.68	8.66	7.87	21.26	17.32	19.21	15.28
QBX606022	23.62	23.62	8.66	7.87	21.26	21.26	19.21	19.21
QBX705022	27.56	19.68	8.66	7.87	25.20	17.32	23.15	15.28
QBX706022	27.56	23.62	8.66	7.87	25.20	21.26	23.15	19.21
QBX806022	31.49	23.62	8.66	7.87	29.15	21.26	27.08	19.21

Enclosure side identification



A: Top
B: Bottom
C: Left
D: Right
E: Back

Explosion Protected Terminal Boxes

Series GHG 744, 745, 746, 749

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H₂, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB ATEX CERTIFIED

EEx de IIC, T6, Zones 1 and 2
EEx de IIC, T6 Zones 21 and 22
IP66, NEMA 4X

6F

6F
Junction Boxes

Application:

Explosion protected terminal boxes are used in a metallic conduit or cable system for a marshalling cabinet between main circuits to the control room and branch circuits into the field.

- Junction boxes for intrinsically safe or increased safety connections
- Are designed for industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals and finishing areas where nonmetallic, weatherproof enclosures

Features:

- Enclosures can be mounted on walls, conduits or strut systems
- Connection terminals accessible from all sides
- Snap-out brass plates for metallic entry and grounding continuity
- Snap-out terminal rails
- Clip-in grounding PE rail
- Different sizes to accommodate any number of terminal connections

Standard Materials:

- Fiberglass - reinforced polyester housings
- Enclosure gasket - silicone
- Cover screws - stainless steel
- Metal entry plates - brass
- Conduit entries - zinc Myers hubs

Technical Data:

- Suitable from 1 to 296 terminal blocks (2.5mm²)
- Suitable for up to 90 - 3/4" hubs (largest size)
- Suitable for up to 72 - 3/4" metallic hubs
- Suitable for use as control panels
- Ex-e boxes and brass flanges can be field drilled

Ordering Data:

Contact factory for catalog numbers and pricing. Call 315 477-5531

Have the following information ready -

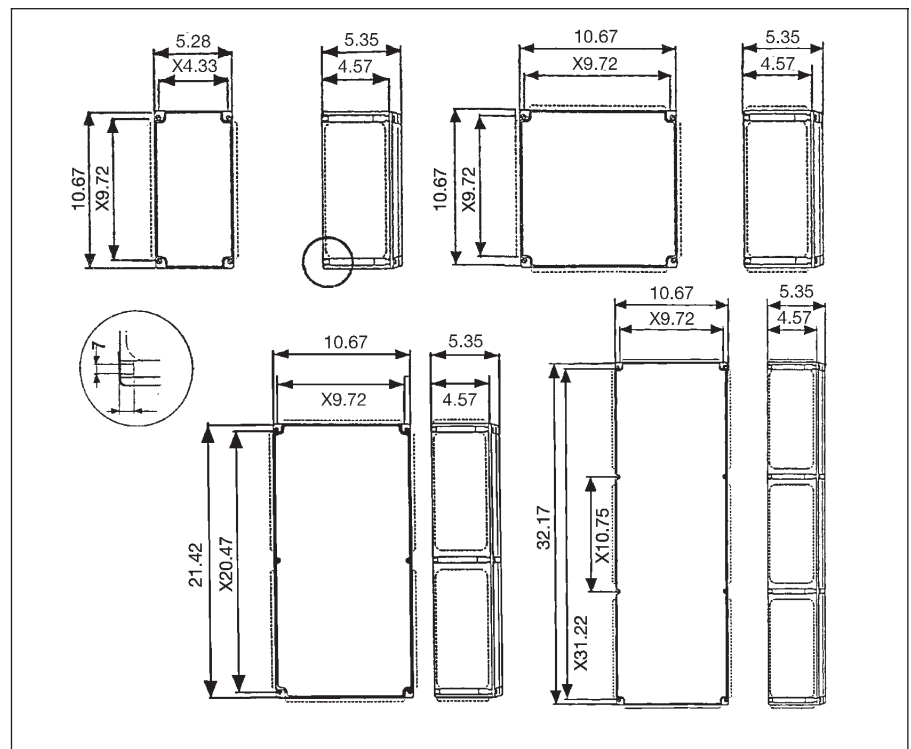
- Number and size of terminals (Table 1)
 - Number, size and location of entries (Tables 2 & 3)
 - Required ground points (Table 4)
- Cooper Crouse-Hinds will provide you with an extended list



Certifications & Compliances:

- UL/cUL Listed
- Class I, Division 2, Groups A, B, C, D
- Class I, Zones 1 and 2, (A)Ex de IIB + H₂, T6
- Class II, Division 1, Groups E, F, G (cUL)
- CENELEC - PTB ATEX CERTIFIED
- EEx de IIC, T6, Zones 1 and 2
- EEx de IIC, T6, Zones 21 and 22
- IP 66, NEMA 4X

Dimensions:



Explosion Protected Terminal Boxes

Series GHG 744, 745, 746, 749

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H₂, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB ATEX CERTIFIED

EEx de IIC, T6, Zones 1 and 2
EEx de IIC, T6 Zones 21 and 22
IP66, NEMA 4X

Panel and Side Designation

The sides of the enclosures are designated as W, X, Y & Z alphabetically in a clockwise rotation.
The narrow sides are always W & Y and the long sides are X & Z

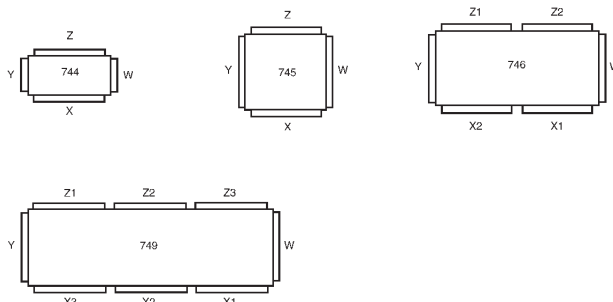


Table 1
Maximum number of built-in terminals supplied with enclosure

Type	Terminal cross section in mm ²							Length of terminal rail
	2.5	4	6	10	16	25	35	
GHG 44	40	33	25	20	17	17	–	(1) 230 mm
GHG 45	(2) 41	(2) 34	(2) 26	(2) 20	17	17	14	(2) 235 mm
GHG 46	(2) 94	(2) 78	(2) 26	(2) 20	40	40	32	(2) 510 mm
GHG 49	(2) 148	(2) 124	(2) 94	(2) 75	63	63	51	(2) 795 mm

Table 2
Flange Arrangement for Each Enclosure

Enclosure	744	745	746	749
Removable Flanges	2 total 1 - top & bottom	4 total 1 per side	6 total 2 top & bottom 1 each side	8 total 3 top and bottom 1 each side
Covers *	Shallow	Deep or shallow	Deep or shallow	Shallow
# of DIN rails	1	1 or 2	1, 2, or 4	1, 2, or 6

* The shallow cover is standard for terminal boxes. The deep cover is used when mounting larger sized terminal (>95 mm²) or switches for 80 amps and larger.

Table 3
Maximum number of Glands per Side

Type	Side	M12	M16	M20	M25	M32	M40	M50	M63
NPT equivalent				1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
GHG 744	X/Z	60	36	26	18	10	7	4	3
GHG 745	X/Z	60	36	26	18	10	7	4	3
GHG 746	X/Z	120	72	52	36	20	14	8	6
GHG 749	X/Z	180	108	78	54	30	21	12	9
# of glands /flange*		46	25	20	11	8	4	3	2
# of Myers hubs /flange*			–	10	9	6	3	3	2

If flanges are used, fewer glands can be installed. See Table 1 for flange arrangement.

Example: In the GHG 745 box a maximum of (10) 1/2" Myers hubs can be installed on each brass flange plates.
Each side will take one brass flange for a total of (40) 1/2" Myers hubs.

Explosion Protected Terminal Boxes

Series GHG 744, 745, 746, 749

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H₂, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB ATEX CERTIFIED

EEx de IIC, T6, Zones 1 and 2
EEx de IIC, T6 Zones 21 and 22
IP66, NEMA 4X

6F

6F Junction Boxes

Ground Rails:

- Used to connect ground points to common ground
- PE "potential earth" - European designation
- Designated by 3 number ordering code (see Table 4)

Table 4
Explanation of 14 × 2 × 4 mm²

Number	Meaning	Example
1 st	Number of screw terminals	14 screw terminals on strip
2 nd	# wires that can be connected on each terminal	2 ground wires can be connected
3 rd	Maximum conductor diameter	4 mm ² conductors can be terminated on the ground rail (28 total, 14 terminals; 2 wires per terminal)

Use Table 5 as a conversion from AWG to mm²

Table 5
Equivalent of AWG Conductor to mm²

AWG	Area mm ²
14	2.08
12	3.31
10	5.26
8	8.37
6	13.3
4	21.15
3	26.66
2	33.63
1	42.41
1/2	53.51
2/3	67.44
3/4	85.03
4/5	107.22

[illegible]

Elbows, Couplings, Hubs, Grounding Devices, Plugs, Reducers, Service Entrance and Unions Hazardous and Non-Hazardous

7F

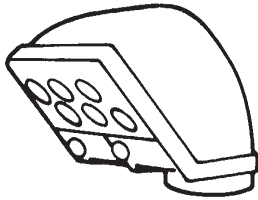
7F Elbows, Couplings,
Grounding Devices,
Plugs, Etc.

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Elbows	
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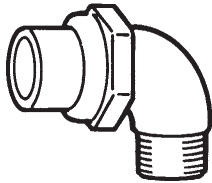
Elbows, Couplings, Hubs, Grounding Devices, Plugs, Reducers, Service Entrance and Unions

Application and Selection

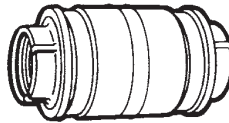
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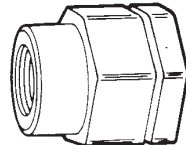
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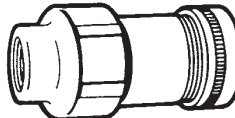
GCT 177



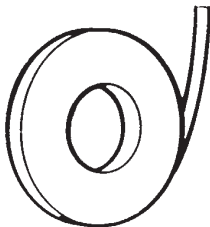
UNF 166



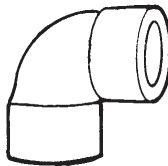
XJG 173



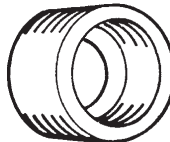
GC 177



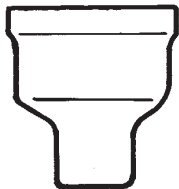
EL 167



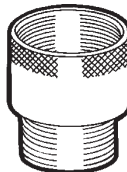
RE 169



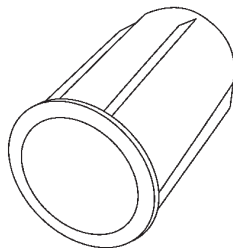
GCR 177



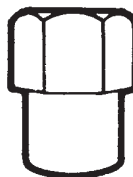
REA 169



LNR 179



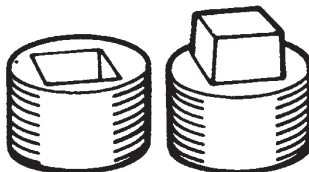
REC 169



UNYL 168



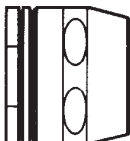
PLG 169



EC 170



HUB 176



XJGD
175



XJG-EMT
174

Application:

Service entrance heads, elbows, unions, couplings, grounding receptacle and stud and grounding straps with clamps are the miscellaneous fittings needed to complete an electrical conduit system from the overhead service entrance to machinery, lighting fixtures and/or final electrical outlets. These fittings are installed in conduit systems within non-hazardous areas to:

- Plug
- Connect
- Reduce
- Terminate
- Change direction
- Ground

Use in Hazardous Areas:

Most of the items shown above are also suitable for hazardous areas (see specific listings for compliance information).

Considerations for Selection:

Service Heads:

- Size required – determine from size and number of conductors in service and conduit or mast size.

- Type required – (threaded, slip fit, clamp) – determine from conduit used with service head.

Elbows, Unions, Reducers, Couplings and Grounding Receptacles/Connectors:

- Size required – determine from conduit size.

- Type required – determine from intended function in system (i.e. male and female thread for connecting conduit to outlet box etc.)

- Material and finish required – determine from environmental conditions (corrosive fumes, buried in concrete, etc.)

Options:

- Corro-free™ epoxy powder coat – add suffix S752

Quick Selector Chart

Series	Description	Size Range	Conduit Type	Standard Materials
XD	Expansion/deflection coupling	1" to 6"	Threaded rigid	<i>Feraloy</i> ® iron alloy hubs, neoprene outer jacket, tinned copper grounding strap
F	Threaded service entrance head	½" to 4" conduit	Threaded rigid	Copper-free aluminum
F	Clamp type service entrance head	¾" to 2" conduit	Threadless rigid or EMT	Copper-free aluminum
GCT	Ground connector and stud	.312" to .406"	Used to provide "quick connect" static electricity grounding connections with portable cable	Bronze connector body; aluminum cable clamp; brass stud
GC100	Grounding strap	50' coil	Used for bonding and grounding	Flexible copper, tinned
GCR	Grounding receptacle	¾" threaded grounding rod	Used to provide static electricity grounding connection	Bronze body, cap and chain; brass grounding stud
GC102	Grounding clamp	Adjustable	Used as clamp for GC100	Brass
HUB	Conduit hub	½" to 4"	Threaded rigid	Steel or <i>Feraloy</i> iron alloy
UNL	Union, 90° angle; for connecting conduit to cast boxes	½" - ½" to ¾" - ¾"	Threaded rigid	<i>Feraloy</i> iron alloy
UNY	Union, male; for connecting conduit to cast boxes	½" to 6"	Threaded rigid	Steel or <i>Feraloy</i> iron alloy
	Expansion union, male; for connecting conduit to cast boxes	½" to 1"	Threaded rigid	Steel
UNF	Union, female; for connecting conduit to conduit	½" to 6"	Threaded rigid	Steel or <i>Feraloy</i> iron alloy
	Expansion union, female; for connecting conduit to conduit	½" to 1"	Threaded rigid	Steel
UNA Male	Union, 90° to 180° adjustable; for connecting conduit to boxes for conduit support	½" to 1"	Threaded rigid	<i>Feraloy</i> iron alloy
EL-45°	45° elbow, female	12" to 4"	Threaded rigid	<i>Feraloy</i> iron alloy
EL-90°	90° elbow, male; 90° elbow, female; 90° elbow, male and female	½" to 1¼" male; ½" to 2½" female; ½" to 1¼" male and female	Threaded rigid	<i>Feraloy</i> iron alloy
RE	Reducer, threaded	½" - ½" to 6" - 5"	Threaded rigid	Steel or <i>Feraloy</i> iron alloy
REA	Adapter fitting	½" male to ¾" female; ¾" male to 1" female; 1" male to 1¼" female	Threaded rigid	Steel
REC	Reducer coupling	¾" - ½" to 5" - 4"	Threaded rigid	<i>Feraloy</i> iron alloy
PLG	Pipe plug, recessed head or square head	½" to 4"	Threaded rigid	Steel or <i>Feraloy</i> iron alloy
EC	Flexible coupling	½" to 4"	See catalog page 7F for details	
LNR	Conduit liner	½" to 4"	Threaded rigid & IMC	Polypropylene
XJG	Expansion Fitting	½" to 6"	Threaded rigid or IMC	<i>Feraloy</i> iron alloy
XJG-EMT	Expansion Fitting	½" to 4"	EMT	<i>Feraloy</i> iron alloy
XJGD	Expansion-Deflection	1" to 4"	Threaded rigid	<i>Feraloy</i> iron alloy

Cl. I, Div. 1 & 2, Groups A,B,C,D†
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III

Explosionproof
 Dust-Ignitionproof

Application:

UNY and UNF unions are installed in threaded thickwall conduit systems:

- UNY – to connect conduit to a conduit fitting, junction box or device enclosure
- UNF – to connect conduit to conduit, or to provide a means for future modification of the conduit system

UNA unions are used in conduit and fitting installations when entrance angle is between 90° and 180°.

EL elbows are installed in conduit run or in box or fitting hub:

- to change direction in threaded rigid conduit run by 90°, or when terminating at a box or fitting

Features:

UNY, UNF and UNL unions have:

- compact design which permits assembly with a minimum of clearance to other adjacent conduit and/or equipment
- strong and durable construction

UNA unions:

- have a single clamping nut on angle, making it both a union and a connector
- permit conduit joints at angles between 90° and 180°

EL elbows have a smooth interior and are both strong and compact.

Standard Materials:

- UNY, UNF unions – 1/2" to 1" – steel
- UNY, UNF unions – 1 1/4" to 6" – *Feraloy*® iron alloy
- UNL, UNA unions – *Feraloy* iron alloy
- EL elbows – *Feraloy* iron alloy or ductile iron

Standard Finishes:

- Steel – electrogalvanized with chromate treatment
- *Feraloy* iron alloy, malleable iron – electrogalvanized and aluminum acrylic paint

Options:

- Copper-free aluminum – add suffix SA to Cat. No. (not available on UNA or 5" and 6" UNY/UNF)

† See compliances for classification of each product.

Certifications and Compliances:

• NEC/CEC:

Class I, Division 1 & 2, Groups A,B,C,D
 Class II, Div. 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
 EL 1/2", 3/4", 1"
 UNF/UNY 105, -215, -205, -305
 UNL 105, -125, -215, -205

Class I, Division 1 & 2, Groups B,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
 UNF/UNY406, -506,
 -606, -706, -806,
 -905, -1005

Class I, Division 1 & 2, Groups C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
 EL, UNF, UNL, UNY -
 all sizes

Class I, Division 1 & 2, Group D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
 UNA

- UL Standard: 886
- CSA Standard: C22.2 No. 30

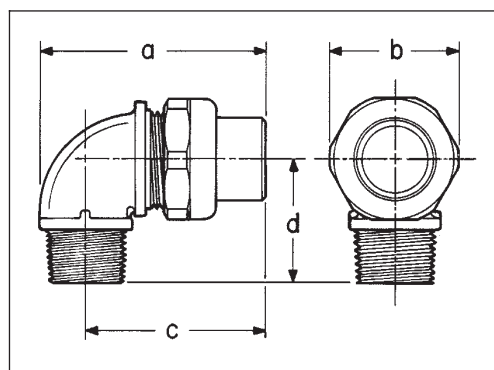


UNL

90° Angle

Size	Cat. #
1/2 to 1/2	UNL105
3/4 female to 1/2 male	UNL125
1/2 female to 3/4 male	UNL215
3/4 to 3/4	UNL205

Dimensions



1/2" - 4"



5" - 6"

UNY Male

Size	Cat. #
1/2	UNY105
1/2 female to 3/4 male	UNY215
3/4	UNY205
1	UNY305
1 1/4	UNY405
1 1/4	UNY406
1 1/2	UNY505
1 1/2	UNY506
2	UNY605
2	UNY606
2 1/2	UNY705
2 1/2	UNY706
3	UNY805
3	UNY806
3 1/2	UNY905
4	UNY1005
5	UNY012
6	UNY014



1/2" - 4"

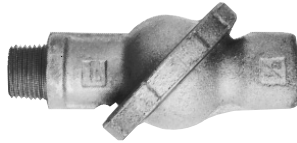


5" - 6"

UNF Female

Size	Cat. #
1/2	UNF105
3/4 to 1/2	UNF215
3/4	UNF205
1	UNF305
1 1/4	UNF405
1 1/4	UNF406
1 1/2	UNF505
1 1/2	UNF506
2	UNF605
2	UNF606
2 1/2	UNF705
2 1/2	UNF706
3	UNF805
3	UNF806
3 1/2	UNF905
4	UNF1005
5	UNF012
6	UNF014

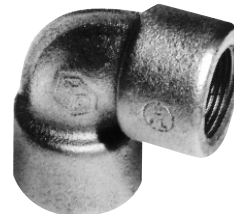
	UNY	Max.	UNF	Max.
Size	Length	Dia.	Length	Dia.
1/2	2 3/8	1 1/2	1 13/16	1 1/2
3/4-1/2	2 7/16	1 13/16	1 3/4	1 13/16
3/4	2 7/16	1 13/16	1 3/4	1 13/16
1	2 3/4	1 7/8	2	1 7/8
1 1/4	3 3/16	2 3/4	2 1/4	2 3/4
1 1/2	3 3/16	3 1/16	2 5/8	3 1/16
2	3 3/4	3 13/16	2 9/16	3 13/16
2 1/2	4 5/8	4 5/16	3 3/16	4 5/16
3	5	5 1/16	3 7/16	5 1/16
3 1/2	5 1/2	5 11/16	4 1/8	5 11/16
4	5 5/8	6 3/16	4 1/8	6 3/16
5	5 1/4	8 3/16	3 13/16	8 3/16
6	5 3/8	9 5/16	3 13/16	9 5/16
	UNL			
Dim.	105	125	215	205
a	2 11/16	2 11/16	2 7/8	2 7/8
b	1 17/32	1 13/16	1 13/16	1 13/16
c	2 1/16	2 1/16	2 1/4	2 1/4
d	1 7/16	1 7/16	1 5/8	1 5/8



Male (with removable nipple)



90° Male



90° Female



45° Female



90° Male and female

UNA

Male

Size	Cat. #
1/2	UNA16
3/4	UNA26
1	UNA36

EL

90° Male

Size	Cat. #
1/2	EL195
3/4	EL295
1	EL395

45° Female

Size	Cat. #
1/2	EL1
3/4	EL2
1	EL3
1 1/4	EL4
1 1/2	EL5
2	EL6
2 1/2	EL7
3	EL8
3 1/2	EL9
4	EL10

90° Female

Size	Cat. #
1/2	EL19*
3/4	EL29*
1	EL39*
1 1/4	EL49*
1 1/2	EL59*
2	EL69*
2 1/2	EL79

90° Male and Female

Size	Cat. #
1/2	EL196*
3/4	EL296*
1	EL396*
1 1/4	EL496

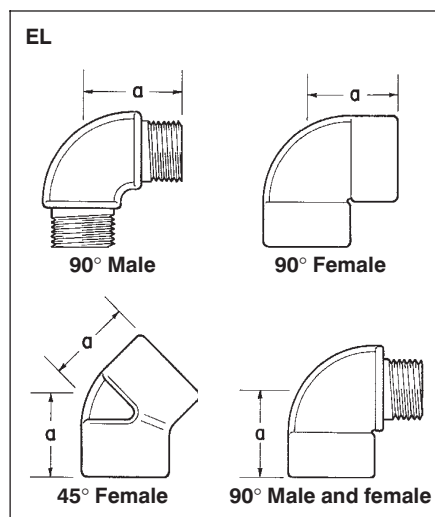
* Available in copper free aluminum – add suffix SA to catalog number.

Dimensions

UNA

Male

Size	Length	Width
1/2	4 5/16	2 5/8
3/4	4 13/16	2 7/8
1	5 11/16	3 1/2



EL

45° Female

90° Male

90° Female

90° Male & Female

Size	a	a	a	a
1/2	1 3/16	1 7/16	1 17/32	1 17/32
3/4	1 3/8	1 5/8	1 3/4	1 5/8
1	1 21/32	1 7/8	2	1 7/8
1 1/4	1 3/4		2 1/4	2 1/8
1 1/2	1 15/16		4	
2	2 1/4		5	
2 1/2	2 3/4		6 7/16	
3	3 1/6			
3 1/2	3 7/16			
4	3 5/8			

† See compliances for classification of each product.

Application:

UNF/UNY expansion unions are designed to be used in all threaded rigid metal† conduit systems indoors and outdoors, in hazardous locations to:

- connect conduit to conduit
- connect conduit to a junction box or device enclosure
- compensate for conduit cut too short
- allow for expansion and contraction of conduit
- connect stub-ups to threaded conduit
- replace sections of conduit runs

Features:

- Compact design
- Internal beryllium copper grounding spring to insure positive grounding continuity.
- Knurled surface on body and sleeve allows secure gripping with wrench.
- Steel construction for maximum strength.
- Available in two styles – short length where space is limited, long length when extra expansion is required.

Standard Materials:

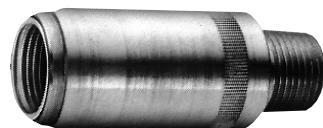
- Body and sleeve – steel
- Grounding spring – beryllium copper

Standard Finishes:

- Steel – electrogalvanized with chromate finish
- Beryllium copper – natural

Certifications and Complies:

- NEC/CEC:
 Class I, Division 1 & 2, Groups C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



UNYL



UNYL with sleeve extended

UNY

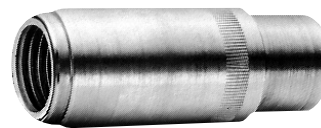
Male – Short

Conduit Size	Cat. #
1/2	UNY17
3/4	UNY27
1	UNY37

UNYL

Male – Long

Conduit Size	Cat. #
1/2	UNYL17
3/4	UNYL27
1	UNYL37



UNFL



UNFL with sleeve extended

UNF

Female – Short

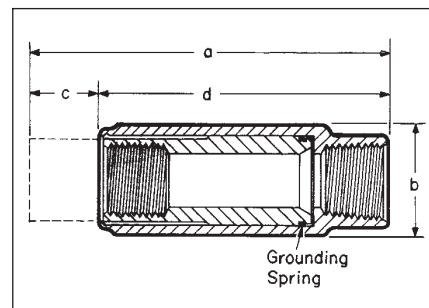
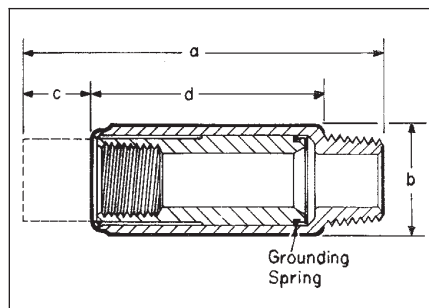
Conduit Size	Cat. #
1/2	UNF17
3/4	UNF27
1	UNF37

UNFL

Female – Long

Conduit Size	Cat. #
1/2	UNFL17
3/4	UNFL27
1	UNFL37

Dimensions



Size	Dimension			
	a*	b	c**	d
UNY				
1/2	3 5/16	1 3/16	1/2	2 1/16
3/4	3 3/8	1 7/16	1/2	2 1/8
1	3 13/16	1 11/16	5/8	2 1/4
UNYL				
1/2	4 5/16	1 3/16	1	2 9/16
3/4	4 1/2	1 7/16	1 1/16	2 11/16
1	5 3/16	1 11/16	1 5/16	2 15/16

Size	Dimension			
	a*	b	c**	d
UNF				
1/2	3 3/8	1 3/16	1/2	2 7/8
3/4	3 7/16	1 7/16	1/2	2 5/16
1	3 13/16	1 11/16	5/8	3 3/16
UNFL				
1/2	4 3/8	1 3/16	1	3 3/8
3/4	4 9/16	1 7/16	1 1/16	3 1/2
1	5 1/8	1 11/16	1 5/16	3 13/16

† Suitable with intermediate Metal Conduit in non-hazardous locations

* Overall length at maximum expansion

** Maximum expansion

Reducers, Couplings and Plugs

Cl. I, Div. 1 & 2, Groups A[†], B[‡], C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

7F

7F
Elbows, Couplings,
Fitting Devices,
Plugs, Etc.

Application:

RE and REC reducers are used in threaded heavy wall conduit systems.

RE reduces conduit hubs to a smaller size.

REA adapters enlarge drilled and tapped openings by 1 NPT size.

REC connects two different sizes of conduit together or is used to replace a coupling and reducer in an installation.

PLG plugs are used for closing threaded conduit hubs.

Features:

RE reducers have:

- integral bushing which prevents damage to wires
- full, clean cut tapered threads

REC reducers have:

- integral bushings in both ends which prevents damage to wires
- funnel shaped interior to guide the wires from large to small conduit, making it easy to pull wires

REA adapters have:

- Smooth integral bushing to protect wire insulation
- Knurled body for easy wrenching

PLG plugs:

- have clean tapered threads
- are available in two styles, flush (recessed), or square head type

Standard Materials:

- RE reducers – RE1108 through RE54 in steel; all others in *Feraloy*[®] iron alloy
- REA adapters – steel
- REC reducers – REC21 and REC32 in steel; all others in *Feraloy* iron alloy
- PLG plugs – *Feraloy* iron alloy and/or steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized with chromate treatment

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups A, B, C, D
Class II, Division 1, Groups E, F, G
Class II, Division 2, Groups F, G
Class III

(see listings for specific Cat. Nos. suitable for Groups A or B)

- UL Standard: 886
- CSA Standard: C22.2 No. 30

Options:

- Copper-free aluminum – add suffix SA to Cat. No.



RE

Size

1/2-1/8
1/2-1/4
1/2-3/8
3/4-1/2
1-1/2
1-3/4
1 1/4-1/2
1 1/4-3/4
1 1/4-1
1 1/2-1/2
1 1/2-3/4
1 1/2-1
1 1/2-1 1/4
2-1/2
2-3/4
2-1
2-1-1/4
2-1-1/2
2 1/2-1
2 1/2-1 1/4
2 1/2-2
3-1
3-1-1/4
3-1-1/2
3-2
3-2-1/2
3 1/2-2
3 1/2-2 1/2
3 1/2-3
4-2
4-2-1/2
4-3
4-3-1/2
5-4
6-5

Cat.

RE1108*
RE1208*
RE1308
RE21†
RE31†
RE32†
RE41†
RE42†
RE43†
RE51†
RE52†
RE53†
RE54†
RE61†
RE62†
RE63†
RE64†
RE65†
RE73†
RE74†
RE75†
RE76†
RE83†
RE84†
RE85†
RE86†
RE87†
RE96†
RE97†
RE98†
RE106†
RE107†
RE108†
RE109†
RE01210
RE01412



REC

Large Hub Size

3/4
1
1
1 1/4
1 1/4
1 1/2
1 1/2
1 1/2
2
2
2
2 1/2
3
3 1/2
4
5

Small Hub Size

1/2
1/2
3/4
3/4
1
3/4
1
1
1 1/4
1
1 1/2
1 1/2
2
2 1/2
3
4

Cat.

REC21†
REC31†
REC32
REC42
REC43
REC52
REC53
REC54
REC602
REC603
REC604
REC605
REC75
REC86
REC97*
REC108*
REC01210*



REA

Male Hub Size

1/2
3/4
1

Female Hub Size

3/4
1
1 1/4

Cat.

REA12†
REA23†
REA34†



Recessed



Square Head
PLG

Recessed

Size

1/4
1/2
3/4
1
1 1/4
1 1/2
2
2 1/2
3
3 1/2
4

Cat.

PLG28†
PLG1†
PLG2†
PLG3†
PLG4†
PLG5†
PLG6†
PLG7†
PLG8†
PLG9†
PLG10†

Square Head

1/2
3/4
1
1 1/4
1 1/2
2
2 1/2
3
3 1/2
4

PLG15†
PLG25†
PLG35†
PLG45†
PLG55†
PLG65†
PLG75
PLG85
PLG95
PLG105

† Suitable for use in Class I, Groups A and B areas.

‡ Suitable for use in Class I, Group B areas.

* Not available in aluminum.

1/2"–2" Brass Construction

All Stainless Steel with suffix – S516

2 1/2"–4" Stainless Steel construction only

Cl. I†, Div. 1 & 2, Groups A,B,C,D

Cl. II, Div. 1, Groups E,F,G

Cl. II, Div. 2, Groups F,G

Cl. III

Explosionproof

Dust-

Ignitionproof

Wet Locations

Application:

EC couplings are used:

- in hazardous areas where a flexible member is required in a conduit system to accomplish difficult bends, or to allow for movement or vibration of connected equipment or units

Features:

- Rugged design to withstand explosive pressure (Class I)
- Mechanical abuse
- Liquid-tight for wet locations
- For use where lack of space makes use of rigid conduit difficult
- Wire duct liner in sizes 1/2" to 2" insulates against grounds and burn-through from short circuit
- No bonding jumpers required, metallic braid provides continuous electrical path
- ECGJH combination has two threaded male end fittings
- ECLK combination has one female union and one male threaded end fitting

Standard Materials:

- End fittings:
1/2" to 2" – forged brass
2 1/2" to 4" – stainless steel
- Female unions:
1/2" to 1" – steel
1 1/4" to 4" – *Feraloy*® iron alloy
- 1/2" to 2" have bronze braid covering and flexible brass inner core; packing is woven cotton braid impregnated with asphalt.
- 2 1/2" to 4" have a Type 304 stainless steel braid.

Standard Finishes:

- Brass and bronze – natural
- Steel – electrogalvanized with chromate treatment
- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Stainless steel – natural

Options:

Description **Suffix to be Added to Cat. #**

All stainless steel S516

For severely corrosive locations, a flexible PVC protective coating will be supplied. S758

Special coupling lengths available up to 144 inches.

To order, change last two digits in any standard catalog number to the two or three digit length desired in whole inches i.e. To order a 3/4" trade size 110 inches long, use catalog number ECGJH2110

Certifications and Compliances:

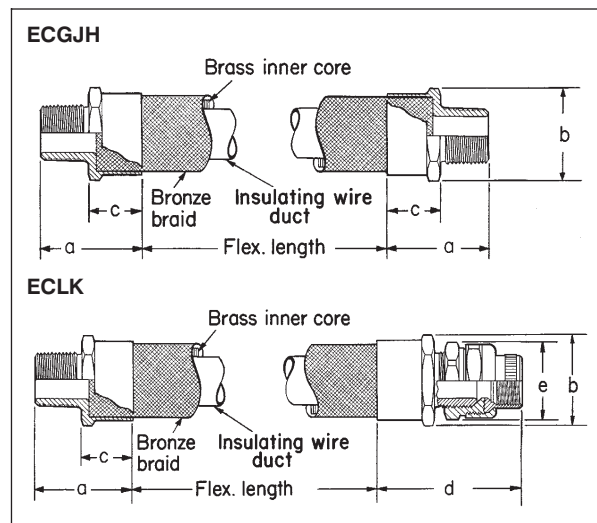
- NEC:
1/2" and 3/4" (Brass and S516) – Class I, Division 1 & 2, Groups A,B,C,D

1" to 2" (Brass and S516) – Class I, Division 1 & 2, Groups C,D
2 1/2" to 4" (Stainless Steel) – Class I, Division 1 & 2, Groups C,D

All sizes also for use in Class II, Division 1, Groups E,F,G, Division 2, Groups F,G and Class III
• UL Standard: 886

**ECGJH (Male connections both ends)**

Flexible Length	Size	Cat. #	Flexible Length	Size	Cat. #	Flexible Length	Size	Cat. #
4	1/2	ECGJH14	18	1	ECGJH318	27	2 1/2	ECGJH727
4	3/4	ECGJH24	18	1 1/4	ECGJH418	27	3	ECGJH827
6	1/2	ECGJH16	18	1 1/2	ECGJH518	27	4	ECGJH1027
6	3/4	ECGJH26	18	2	ECGJH618	30	1/2	ECGJH130
6	1	ECGJH36	18	2 1/2	ECGJH718	30	3/4	ECGJH230
8	1/2	ECGJH18	18	3	ECGJH818	30	1	ECGJH330
8	3/4	ECGJH28	18	4	ECGJH1018	30	1 1/4	ECGJH430
8	1	ECGJH38	21	1/2	ECGJH121	30	1 1/2	ECGJH530
10	1/2	ECGJH110	21	3/4	ECGJH221	30	2	ECGJH630
10	3/4	ECGJH210	21	1	ECGJH321	30	2 1/2	ECGJH730
10	1	ECGJH310	21	1 1/4	ECGJH421	30	3	ECGJH830
12	1/2	ECGJH112	21	1 1/2	ECGJH521	30	4	ECGJH1030
12	3/4	ECGJH212	21	2	ECGJH621	33	1/2	ECGJH133
12	1	ECGJH312	21	2 1/2	ECGJH721	33	3/4	ECGJH233
12	1 1/4	ECGJH412	21	3	ECGJH821	33	1	ECGJH333
12	1 1/2	ECGJH512	21	4	ECGJH1021	33	1 1/4	ECGJH433
12	2	ECGJH612	24	1/2	ECGJH124	33	1 1/2	ECGJH533
12	2 1/2	ECGJH712	24	3/4	ECGJH224	33	2	ECGJH633
12	3	ECGJH812	24	1	ECGJH324	33	2 1/2	ECGJH733
12	4	ECGJH1012	24	1 1/4	ECGJH424	33	3	ECGJH833
15	1/2	ECGJH115	24	1 1/2	ECGJH524	33	4	ECGJH1033
15	3/4	ECGJH215	24	2	ECGJH624	36	1/2	ECGJH136
15	1	ECGJH315	24	2 1/2	ECGJH724	36	3/4	ECGJH236
15	1 1/4	ECGJH415	24	3	ECGJH824	36	1	ECGJH336
15	1 1/2	ECGJH515	24	4	ECGJH1024	36	1 1/4	ECGJH436
15	2	ECGJH615	27	1/2	ECGJH127	36	1 1/2	ECGJH536
15	2 1/2	ECGJH715	27	3/4	ECGJH227	36	2	ECGJH636
15	3	ECGJH815	27	1	ECGJH327	36	2 1/2	ECGJH736
15	4	ECGJH1015	27	1 1/4	ECGJH427	36	3	ECGJH836
18	1/2	ECGJH118	27	1 1/2	ECGJH527	36	4	ECGJH1036
18	3/4	ECGJH218	27	2	ECGJH627			

Dimensions

†See certifications and compliances.

Couplings

1/2"–2" Brass Construction

All Stainless Steel with suffix – S516

2 1/2"–4" Stainless Steel construction only

Cl. I, Div. 1 & 2, Groups A,B,C,D† Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-
Cl. II, Div. 2, Groups F,G Ignitionproof
Cl. III Wet Locations

7F



7F
Elbows, Couplings,
Fitting Devices,
Plugs, Etc.

ECLK (ECGJH provide with UNF Female union – male connection 1 end, female connection 1 end)

Flexible Length	Size	Cat. #	Flexible Length	Size	Cat. #	Flexible Length	Size	Cat. #
4"	1/2	ECLK14	18"	1	ECLK318	27"	2 1/2	ECLK727
4"	3/4	ECLK24	18"	1 1/4	ECLK418	27"	3	ECLK827
6"	1/2	ECLK16	18"	1 1/2	ECLK518	27"	4	ECLK1027
6"	3/4	ECLK26	18"	2	ECLK618	30"	1/2	ECLK130
6"	1	ECLK36	18"	2 1/2	ECLK718	30"	3/4	ECLK230
8"	1/2	ECLK18	18"	3	ECLK818	30"	1	ECLK330
8"	3/4	ECLK28	18"	4	ECLK1018	30"	1 1/4	ECLK430
8"	1	ECLK38	21"	1/2	ECLK121	30"	1 1/2	ECLK530
10"	1/2	ECLK110	21"	3/4	ECLK221	30"	2	ECLK630
10"	3/4	ECLK210	21"	1	ECLK321	30"	2 1/2	ECLK730
10"	1	ECLK310	21"	1 1/4	ECLK421	30"	3	ECLK830
12"	1/2	ECLK112	21"	1 1/2	ECLK521	30"	4	ECLK1030
12"	3/4	ECLK212	21"	2	ECLK621	33"	1/2	ECLK133
12"	1	ECLK312	21"	2 1/2	ECLK721	33"	3/4	ECLK233
12"	1 1/4	ECLK412	21"	3	ECLK821	33"	1	ECLK333
12"	1 1/2	ECLK512	21"	4	ECLK1021	33"	1 1/4	ECLK433
12"	2	ECLK612	24"	1/2	ECLK124	33"	1 1/2	ECLK533
12"	2 1/2	ECLK712	24"	3/4	ECLK224	33"	2	ECLK633
12"	3	ECLK812	24"	1	ECLK324	33"	2 1/2	ECLK733
12"	4	ECLK1012	24"	1 1/4	ECLK424	33"	3	ECLK833
15"	1/2	ECLK115	24"	1 1/2	ECLK524	33"	4	ECLK1033
15"	3/4	ECLK215	24"	2	ECLK624	36"	1/2	ECLK136
15"	1	ECLK315	24"	2 1/2	ECLK724	36"	3/4	ECLK236
15"	1 1/4	ECLK415	24"	3	ECLK824	36"	1	ECLK336
15"	1 1/2	ECLK515	24"	4	ECLK1024	36"	1 1/4	ECLK436
15"	2	ECLK615	27"	1/2	ECLK127	36"	1 1/2	ECLK536
15"	2 1/2	ECLK715	27"	3/4	ECLK227	36"	2	ECLK636
15"	3	ECLK815	27"	1	ECLK327	36"	2 1/2	ECLK736
15"	4	ECLK1015	27"	1 1/4	ECLK427	36"	3	ECLK836
18"	1/2	ECLK118	27"	1 1/2	ECLK527	36"	4	ECLK1036
18"	3/4	ECLK218	27"	2	ECLK627			

Dimensions

ECGJH and ECLK

Size	a	b	c	d	e
1/2	17/8	1 1/2	1 1/8	3	1 9/16
3/4	2 1/16	1 7/8	1 3/16	3 1/4	1 13/16
1	2 1/2	2 1/8	1 1/2	3 5/8	1 7/8
1 1/4	2 7/8	2 15/16	1 7/8	4 3/16	2 3/4
1 1/2	3 5/16	3 1/2	1 7/8	5 3/16	3 1/16
2	3 3/4	4 1/4	2	5 1/16	3 13/16
2 1/2	3	4 7/16	1 5/8	5 1/16	4 5/16
3	3 1/8	4 9/16	1 3/4	5 5/8	5 1/16
4	4 5/8	4 15/16	3 1/4	7 1/2	6 3/16

Minimum Recommended Radius of Bend

Size	Radius	Size	Radius
1/2	10	2	16
3/4	12	2 1/2	16
1	14	3	18
1 1/4	14	4	30
1 1/2	16		

†See certifications and compliances.

Application:

XD couplings can be installed indoors, outdoors, buried underground, or embedded in concrete in non-hazardous areas. XD's are used with standard rigid conduit or PVC rigid conduit. (PVC requires rigid metal conduit nipples and rigid metal-to-PVC conduit adapters.) XD's provide a flexible and watertight connection for protection of conduit wiring systems from damage due to movement.

Typical applications include:

- Underground conduit feeder runs
- Runs between sections of concrete subject to relative movement
- Runs between fixed structures
- Conduit entrances in high-rise buildings
- Bridges
- Marinas, docks, piers

Features:

- XD couplings accommodate the following movements without collapsing or fracturing the conduit, and damaging the wires it contains:
 1. Axial expansion or contraction up to $\frac{3}{4}$ "
 2. Angular misalignment of the axes of the coupled conduit runs in any direction to 30°
 3. Parallel misalignment of the axes of coupled conduit runs in any direction to $\frac{3}{4}$ "
- Inner sleeve maintains constant I.D. in any position and provides a smooth insulated wireway for protection of wire insulation
- Watertight flexible neoprene outer jacket is corrosion resistant and protects the grounding strap and the attachment points of the hubs
- Tinned copper flexible braid grounding straps assure grounding continuity
- Stainless steel jacket clamps for strength and corrosion resistance
- Standard tapered electrical threads fit standard rigid conduit
- Integral hub bushing protects insulation of conductors

Standard Materials:

- Hubs – *Feraloy*® iron alloy
- Outer jacket – molded neoprene
- Jacket clamps – stainless steel
- Inner sleeve – molded plastic
- Grounding straps – tinned copper flexible braid

Standard Finishes:

- *Feraloy* – electrogalvanized
- Neoprene – natural (black)
- Molded plastic – natural (brown)

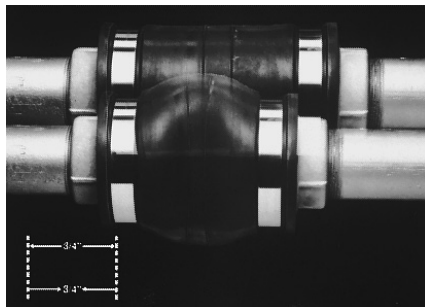
Certifications and

Compliances:

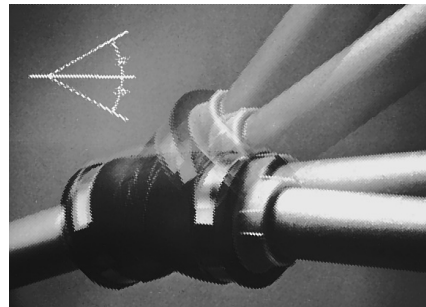
- UL standards: 514B

Size Ranges:

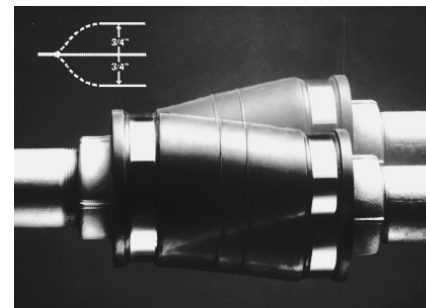
- 1" to 6" (Smaller sizes can be obtained by using reducing bushings)



1. Axial expansion/contraction.



2. Angular misalignment.



3. Parallel misalignment.

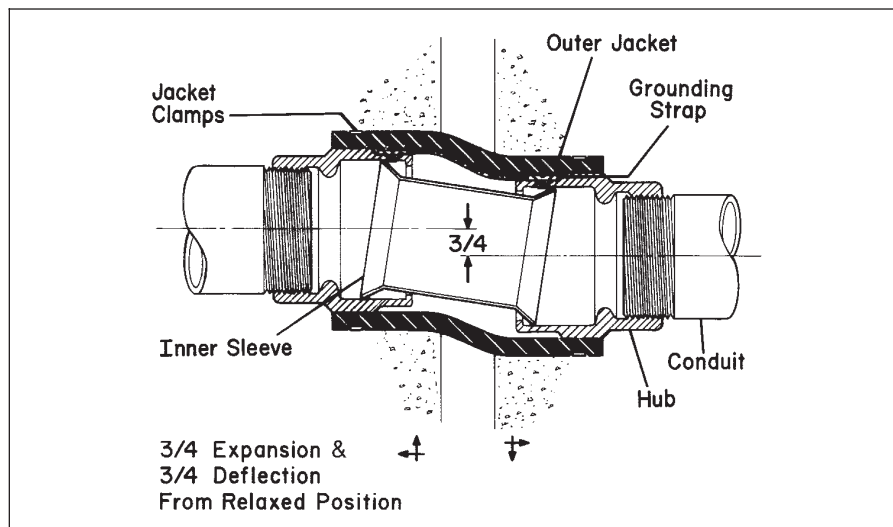
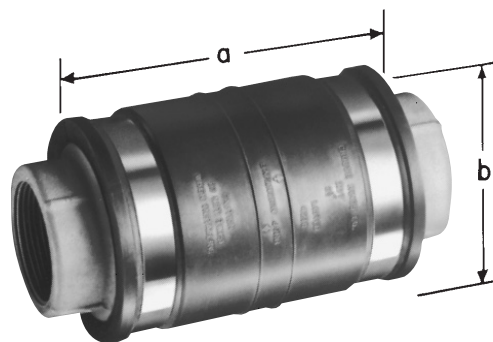
XD

Ordering Information

Hub Size	Cat. #	Hub Size	Cat. #
1	XD3	3	XD8
1 1/4	XD4	3 1/2	XD9
1 1/2	XD5	4	XD010
2	XD6	5	XD012
2 1/2	XD7	6	XD014

Dimensions

Hub Size	a	b
1	7	3 15/16
1 1/4	7 3/8	4 1/4
1 1/2	7 1/4	4 1/2
2	7 1/4	4 15/16
2 1/2	7 1/2	5 5/16
3	7 5/8	5 15/16
3 1/2	7 3/4	6 1/2
4	7 7/8	6 15/16
5	7 3/4	8
6	8 3/8	9



XJG Conduit Expansion Joints With Internal Grounding For Rigid Metal Conduit and IMC

Wet Locations

7F

Elbows, Couplings,
Reddy Devices,
Plugs, Etc.

Application:

XJG expansion couplings are used with rigid metal conduit and IMC:

- **without** the need for an external bonding jumper and clamps (up to 4")
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body

- Steel-electrogalvanized
- Copper-free aluminum - natural
- *Feraloy*[®] iron alloy - electrogalvanized (5" + 6" only)

Reducer

- ½" through 1" - Steel - electrogalvanized
- 1¼" through 6" - *Feraloy*[®] iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Gland Nut

- ½" through 1" - Steel - electrogalvanized
- 1¼" through 6" - *Feraloy*[®] iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Packing

- Teflon[®] (trademark of E.I. DuPont Co.)

Washer

- Steel - electrogalvanized
- Copper-free aluminum - natural

Gasket

- Vellum

Bushing

- ½" through 1" - Steel - electrogalvanized
- 1¼" through 6" - *Feraloy*[®] iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Ground Springs

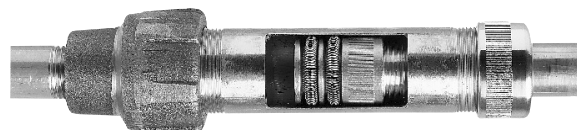
- Phosphor bronze - electrogalvanized

Ground Strap

- Braided tinned copper

U-Bolts

- Malleable iron - electrogalvanized



Patented Design

XJG – For use with rigid metal conduit and IMC

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper†	A Diameter	B Length	Bonding Jumper Length
½	4	XJG14	BJ14	1.75	6.75	20"
	8	XJG18	BJ18	1.75	10.75	30"
¾	4	XJG24	BJ24	2.12	6.75	20"
	8	XJG28	BJ28	2.12	10.75	30"
1	4	XJG34	BJ34	2.43	7.25	20"
	8	XJG38	BJ38	2.43	11.25	30"
1¼	4	XJG44	BJ44	3.19	7.56	24"
	8	XJG48	BJ48	3.19	11.56	30"
1½	4	XJG54	BJ54	3.68	7.87	24"
	8	XJG58	BJ58	3.68	11.87	30"
2	4	XJG64	BJ64	4.75	8.25	24"
	8	XJG68	BJ68	4.75	12.25	30"
2½	4	XJG74	BJ74	4.87	9.31	24"
	8	XJG78	BJ78	4.87	13.31	36"
3	4	XJG84	BJ84	5.37	10.00	30"
	8	XJG88	BJ88	5.37	14.00	36"
3½	4	XJG94	BJ94	6.62	9.81	30"
	8	XJG98	BJ98	6.62	13.81	36"
4	4	XJG104	BJ104	6.62	9.81	30"
	8	XJG108	BJ108	6.62	13.81	36"
5	8	XJ128‡	-	7.64	15.50	-
6	8	XJ148‡	-	9.56	16.00	-

Options:

Available in copper-free aluminum – add suffix SA to Cat. No. (not available on 5" and 6" sizes)

Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

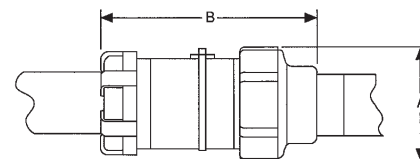
Size Ranges:

- ½" through 6" conduit size
- 4" and 8" maximum conduit movement

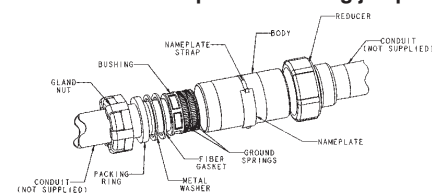
Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1
- Wet Locations

Dimensions



XJG shown with optional bonding jumper



* Teflon[®] is a registered trademark of E.I. DuPont Co.

† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

‡ XJ128 and XJ148 are not internally grounded. A pair of 36" bonding jumpers are provided with fitting.

XJG-EMT Conduit Expansion Joints With Internal Grounding For EMT Conduit

Application:

XJG expansion couplings are used with EMT Conduit:

- **without** the need for an external bonding jumper and clamps
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body

- Steel-electrogalvanized
- Copper-free aluminum - natural

Reducer

- 1/2" through 1" - Steel - electrogalvanized
- 1 1/4" through 4" - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Gland Nut

- 1/2" through 1" - Steel - electrogalvanized
- 1 1/4" through 4" - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Packing

- Teflon® (trademark of E.I. DuPont Co.)

Washer

- Steel - electrogalvanized

Gasket

- Vellum

Bushing

- 1/2" through 1" - Steel - electrogalvanized
- 1 1/4" through 4" - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Ground Springs

- Phosphor bronze - electrogalvanized

Ground Strap

- Braided tinned copper

U-Bolts

- Malleable iron - electrogalvanized

Options:

Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

Size Ranges:

- 1/2" through 4" conduit size
- 4" maximum conduit movement

Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1

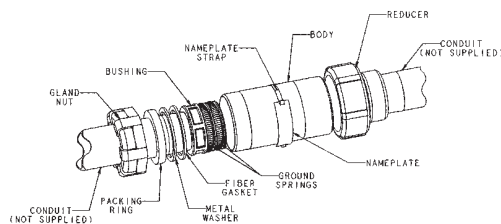


XJG-EMT – for use with EMT conduit

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper	A Diameter	B Length
1/2"	4"	XJG14-EMT	BJ14	1 3/4"	10 3/4"
3/4"	4"	XJG24-EMT	BJ24	2 1/8"	11"
1"	4"	XJG34-EMT	BJ34	2 7/16"	11 1/2"
1 1/4"	4"	XJG44-EMT	BJ44	3 1/8"	15 1/4"
1 1/2"	4"	XJG54-EMT	BJ54	3 5/8"	15 1/2"
2"	4"	XJG64-EMT	BJ64	4 3/4"	15 1/2"
2 1/2"	4"	XJG74-EMT	BJ74	4 7/8"	18 3/4"
3"	4"	XJG84-EMT	BJ84	5 3/8"	19 7/8"
3 1/2"	4"	XJG94-EMT	BJ94	6 5/8"	21 1/4"
4"	4"	XJG104-EMT	BJ104	6 5/8"	21 1/4"



XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.

† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

XJGD Combination Expansion/Deflection Coupling and Expansion Joint Internally Grounded

Wet Locations

7F

Elbows, Couplings,
Grids, Devices,
Plugs, Etc.

Application:

XJGD combination fittings are used with rigid metal conduit and IMC:

- to accommodate axial expansion, angular misalignment and parallel misalignment
- to couple together two (2) sections of conduit subject to longitudinal movement
- to maintain a ground connection *without the need for an external bonding jumper and clamps*
- in long conduit runs to prevent conduit from buckling and causing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature swings
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge

Standard Materials:

- Body, Hubs, Gland Nut, Washer, Bushing – *Feraloy*[®]
- Packing – Teflon[®]
- Gasket – vellum
- Ground Spring – phosphor bronze
- Outer Jacket – molded neoprene
- Jacket Clamps – stainless steel
- Inner Sleeve – molded plastic
- Ground Straps – tinned copper braid

Standard Finishes:

- *Feraloy*[®] – electrogalvanized

Certifications and

Compliances:

- UL standard: 514B



XJGD Ordering Information

Hub Size	Maximum Conduit Movement	Catalog Number	A Diameter	B Length
1"	4"	XJGD34	3 ¹⁵ / ₁₆ "	17 ³ / ₄ "
1 ¹ / ₄ "	4"	XJGD44	4 ¹ / ₄ "	18 ¹ / ₈ "
1 ¹ / ₂ "	4"	XJGD54	4 ¹ / ₂ "	18 ⁵ / ₈ "
2"	4"	XJGD64	4 ¹⁵ / ₁₆ "	19 ¹ / ₄ "
2 ¹ / ₂ "	4"	XJGD74	5 ⁵ / ₁₆ "	20 ³ / ₄ "
3"	4"	XJGD84	5 ¹⁵ / ₁₆ "	21 ⁵ / ₈ "
3 ¹ / ₂ "	4"	XJGD94	6 ¹ / ₂ "	21 ⁵ / ₈ "
4"	4"	XJGD104	8"	27 ³ / ₄ "

(Also see Myers Hubs on page 234)

Application:

HUB Conduit Hubs:

- provide a convenient means for installing a threaded conduit hub on a junction box or device enclosure
- are used to connect conduit to a sheet metal or cast enclosure
- are used with threaded rigid conduit or IMC, steel or aluminum; indoors or outdoors

Features:

- Smooth insulated throat provides easier wire pulling and protection for conductors during installation.
- Neoprene sealing gasket provides a watertight seal.
- Compact design permits close spacing of conduit.
- Wide range of sizes from 1/2" to 4".

Standard Materials:

- 1/2" to 4" malleable iron

Standard Finishes:

- Feraloy iron alloy – electrogalvanized and aluminum acrylic paint

Size Ranges:

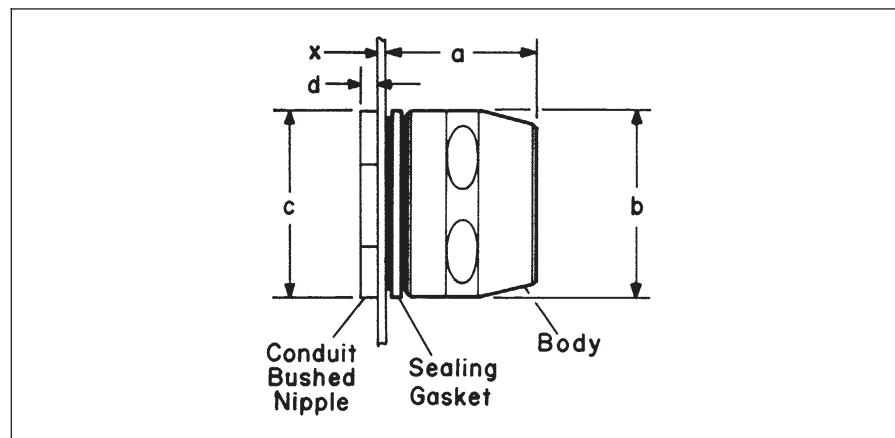
- 1/2" to 4"

Certifications and**Compliances:**

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC/CEC:
Class I, Division 2, Groups A,B,C,D
Per NEC 501-4(b), 502-4(a) and 503-3(a)

**Conduit
Size****Cat. #**

1/2	HUB1
3/4	HUB2
1	HUB3
1 1/4	HUB4
1 1/2	HUB5
2	HUB6
2 1/2	HUB7
3	HUB8
3 1/2	HUB9
4	HUB10

Dimensions

Cat. #	Conduit Size	a	b	c	d	x
HUB1	1/2	1	1 1/4	1	1/8	9/64
HUB2	3/4	1 1/8	1 9/16	1 3/8	5/32	1/4
HUB3	1	1 3/8	1 7/8	1 5/8	3/16	9/32
HUB4	1 1/4	1 1/2	2 5/16	2	1/4	7/16
HUB5	1 1/2	1 5/8	2 1/2	2 3/8	1/4	7/16
HUB6	2	1 11/16	3	2 13/16	1/4	7/16
HUB7	2 1/2	2 3/16	3 5/8	3 7/16	1/4	7/16
HUB8	3	2 7/16	4 1/4	4 1/16	1/4	7/16
HUB9	3 1/2	2 7/16	4 3/4	4 1 1/16	5/16	3/4
HUB10	4	2 9/16	5 1/4	5 1/16	5/16	1 1/8

NOTE: Dimension "x" is maximum wall thickness of box that will meet the requirement for three full threads engagement of nipple and fitting body when liquidtight box connector or rigid conduit hub is installed in a knockout or slip hole.

Application:

GCR grounding receptacles are used to provide static electricity grounding connections; particularly suited for, but not limited to, use in aircraft hangar floors and airport aprons.

GCT ground connector and studs are used to provide "quick-connect" static electricity grounding connections with portable cable.

GC grounding strap and clamp are suitable for bonding and grounding equipment in wiring systems, such as meter circuits, service entrance equipment, and appliances per NEC requirements.

Features:

GCR grounding receptacles have:

- grounding stud integral with housing
- grounding stud designed to accept standard battery clip
- thread at bottom for attaching to $\frac{3}{4}$ " threaded grounding rod
- cover attached to receptacle by chain to prevent loss of cover
- corrosion resistant material

GCT grounding connector and studs have:

- substantial clip tension for grounding
- integral cable clamp to prevent cable from breaking free of connector or fraying at connector
- lock washer on stud to maintain good electrical contact

GC strap:

- is pliable, strong and corrosion resistant
- assures a lasting bond. Prongs on strap clamp engage strap perforations, preventing slippage.

Standard Materials:

- GCR – Bronze body, cap and chain
Brass grounding stud
- GCT – Bronze connector body, aluminum cable clamp, brass stud
- Strap – flexible copper
- Clamp – brass

Standard Finishes:

- Bronze, brass, aluminum parts – natural
- Flexible copper strap – tinned

Certifications and Complies:

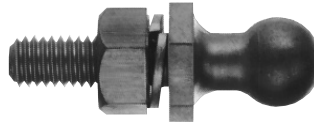
- UL Standard:
GC strap and clamps – 467
- CSA Standard: C22.2 No. 41



GCT Grounding Connector

Cable Dia.
.312" to .406"

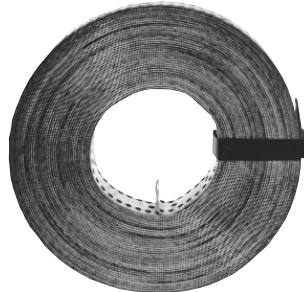
Cat. #
GCT8



GCT Stud*

Description	Thread Size	Cat. #
Brass	$\frac{3}{8}$ -16	GCT2

* Not a replacement for grounding stud in GCR receptacle.



GC Grounding Strap

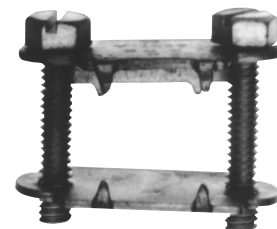
Used with GC102 Strap Clamp

Description	Cat. #
50' coil, 1" wide	GC100



GCR Receptacles For Static Electricity Grounding

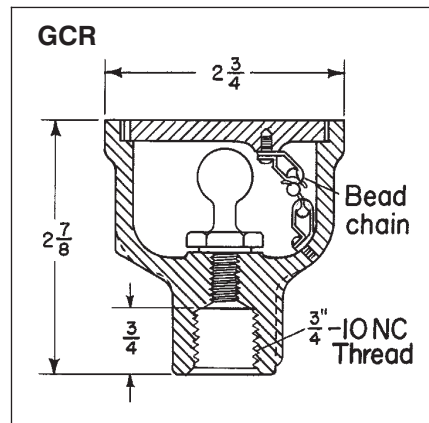
Description	Thread Size	Cat. #
With cap and chain	$\frac{5}{16}$ -18	GCR210



Strap Clamp

Description	Cat. #
Brass	GC102

Dimensions



Application:

F type service entrance heads are used:

- for overhead service entrance to buildings
- with threaded rigid, threadless rigid or threadless thinwall (EMT) conduit and rigid conduit masts

Features:

Two types available:

- threaded rigid – threads to conduit.
- threadless rigid or EMT – clamps to conduit.
- Available knockouts in covers allow use with variety of sizes and numbers of wires.
- Simple construction and easy assembly.
- Consists of only two pieces plus the insulating knockout cover.
- Easy to install.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18



1/2" size



3/4" – 2" size



1/2" – 4" size



Clamp type

F Service Heads

Threaded Rigid

Conduit Size	Number and Dia. of Cover Knockouts	Cat. #	Replace-ment Cover Cat. #
1/2	6 - 9/32	F186	CF690
3/4	2 - 3/8 and 3 - 13/32	F285	5-H
1	2 - 7/16 and 3 - 1/2	F385	5-NS
1 1/4	2 - 27/64 and 3 - 5/8	F485	5-NL
1 1/2	2 - 27/64 and 3 - 5/8	F585	5-NL
2	2 - 7/8, 1 - 13/16, 1 - 11/16, 1 - 9/16 and 1 - 21/32	F686	CF60
2 1/2	2 - 17/16, 1 - 17/32, 1 - 1 1/64, 1 - 61/64 and 1 - 55/64	F766	CF707
3	2 - 17/16, 1 - 17/32, 1 - 1 1/64, 1 - 61/64 and 1 - 55/64	F866	CF707
3 1/2	3 - 1 3/4, 1 - 17/16, 1 - 1 5/16 and 1 - 1 3/16	F966	CF708
4	3 - 1 3/4, 1 - 17/16, 1 - 1 5/16 and 1 - 1 3/16	F1066	CF708

Clamp Type – Threaded Rigid or EMT

Conduit Size	Number and Dia. of Cover Knockouts	Cat. #	Replace-ment Cover Cat. #
3/4	2 - 3/8 and 3 - 13/32	F235	5-H
1	2 - 7/16 and 3 - 1/2	F335	5-NS
1 1/4	2 - 27/64 and 3 - 5/8	F435	5-NL
1 1/2	2 - 27/64 and 3 - 5/8	F535	5-NL
2	2 - 7/8, 1 - 13/16, 1 - 11/16, 1 - 9/16 and 1 - 21/32	F636	CF60

Overall Dimensions of Replacement Covers for F Series Service Heads

Cat. #	Dim.
CF690	1 1/2 dia.
5-H	1 31/32 dia.
5-NS	2 15/64 dia.
5-NL	2 19/32 dia.
CF60	3 9/16 dia.
CF707	7 13/16 x 3 11/16
CF708	10 1/4 x 4 3/4

Application:

LNR conduit liners are installed in rigid metal conduit or IMC:

- to provide a smooth wire entry from conduit into enclosures to protect wires from abrasion as they are pulled.
- with thin wall or thick wall enclosures.
- entering drilled and tapped openings or slip holes.
- entering an enclosure vertically or horizontally.
- regardless of where the conduit ends in relation to the enclosure wall.

Features:

- UL listed and CSA certified.
- No need for threaded bushings, reducers, or special machining.
- Corrosion and heat resistant polypropylene material.
- Smooth flange providing easy wire pulling and protects conductors being installed.
- Space saving.
- Molded ribs ensure a tight fit, preventing the liner from sliding out while conductors are being pulled.
- Quick and easy to install.

Standard Materials:

- Polypropylene

Standard Finishes:

- Natural (clear)

Sizes:

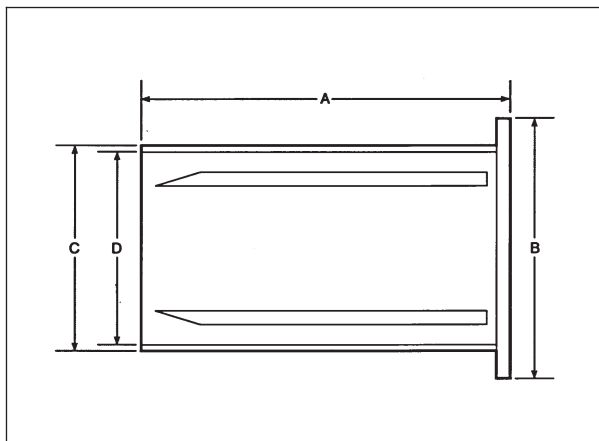
- 1/2" through 4"

Certifications and Compliances:

- NEC Article 346-8.
- UL Standard 514B.
- CSA Standard C22.2 No. 18.
- U.S. Patent No. 5,383,688.



Dimensions:



Ordering Information:

Cat. #	Size	A	B	C	D
LNR1	1/2"	1 3/16"	7/8"	5/8"	9/16"
LNR2	3/4"	1 9/16"	1 1/8"	13/16"	3/4"
LNR3	1"	2 1/16"	1 3/8"	1 1/16"	7/8"
LNR4	1 1/4"	2 1/16"	1 3/4"	1 3/8"	1 1/4"
LNR5	1 1/2"	2 9/16"	2"	1 5/8"	1 7/16"
LNR6	2"	2 9/16"	2 7/16"	2 1/16"	1 7/8"
LNR7	2 1/2"	2 7/8"	2 7/16"	2 1/4"	
LNR8	3"	2 7/8"	3 9/16"	3 1/16"	2 7/8"
LNR9	3 1/2"	3 1/16"	4 1/16"	3 9/16"	3 3/8"
LNR10	4"	3 1/16"	4 9/16"	4"	3 7/8"

Notes Page

[illegible]

Description	Page No.
Application/Selection	182, 183
Breathers & Drains	
Standard	
ECD Series	195
CD Series (Non Hazardous)	196
Universal	
ECD Series	195
Sealing Compound	
Chico A	193
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Sealing Fiber	
Chico X	193
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EZD Series	187
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Application:**Seals:**

Seals are installed in conduit runs to prevent the passage of gases, vapors or flames from one portion of the electrical installation to another through the conduit, limiting any explosion to the enclosure and preventing precompression or "pressure piling."

- While not a National Electrical Code requirement, many engineers consider it good practice to sectionalize long conduit runs by inserting seals not more than 50' to 100' apart, depending on the conduit size, to minimize the effects of "pressure piling."

Breathers:

- Breathers (vents), are installed in the top of enclosures to provide ventilation to minimize condensation in enclosures.

Drains:

- Drains are used in humid atmospheres or in wet locations where it is likely that water can gain entrance to the interiors of enclosures or raceways. The raceways should be inclined so that water will not collect in enclosures or on seals, but will be led to low points where it may pass out through ECD drains.

- Frequently the arrangement of raceway runs makes this method impractical if not impossible. In such instances, EZD or EYD drain seal fittings should be used. These fittings prevent harmful accumulations of water above the seal.

Considerations for Selection:**Seals:**

- Select the proper sealing fitting for the hazardous vapor involved; i.e., Class I, Division 1 & 2, Groups A, B, C or D.
- Select the appropriate seal for new or retrofit installations.
- Select a sealing fitting for the proper use in respect to mounting position. This is particularly critical when the conduit runs between hazardous and non-hazardous areas. Improper positioning of a seal may permit hazardous gases or vapors to enter the system beyond the seal and permit them to escape into another portion of the hazardous area or to enter a non-hazardous area. Some seals are designed to be mounted in any position; others are restricted to vertical mounting.

NOTE: The amount of *Chico*® fiber and compound required for any seal is determined by volume, hub size and mounting position of the seal.

Drains:

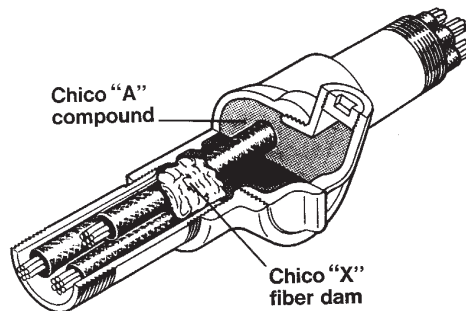
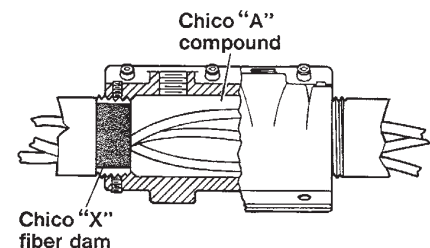
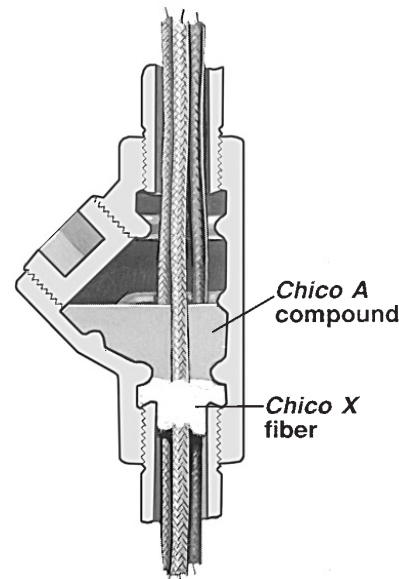
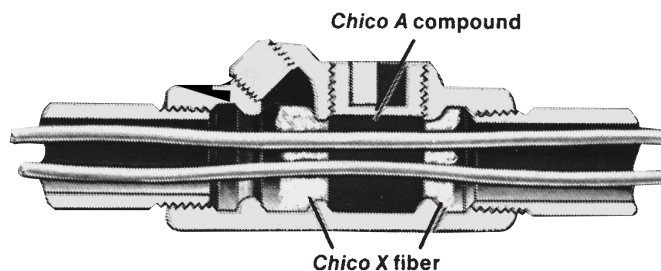
- in locations which are usually considered dry, surprising amounts of water frequently collect in conduit systems. No conduit system is airtight, therefore, it may "breathe". Alternate increases and decreases in temperature and/or in barometric pressure, due to weather changes or due to the nature of the process

carried on in the location where the conduit is installed, will cause "breathing," resulting in condensation and water accumulation.

- In view of this likelihood, it is therefore good practice to insure against such water accumulations and probable subsequent insulation failures by installing breathers, drain seals, or inspection seals, even though conditions prevailing at the time of planning or installing do not indicate their need.

Options:

- *Corro-free*™ epoxy powder coat
..... add suffix - S752

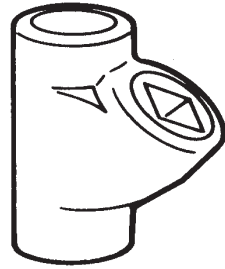
**EZS Horizontal seal****EYSR Retrofit seal****EYS 1
Vertical sealing****EYS Horizontal seal**

Condulet® Seals, Breathers and Drains

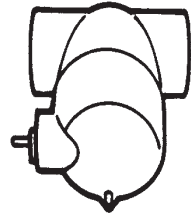
8F

Shape Selector Chart Quick Selector Chart

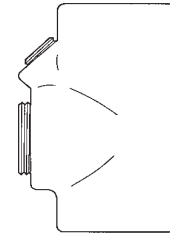
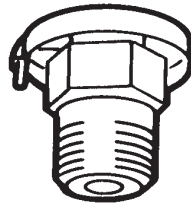
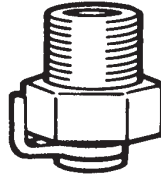
SERIES	PAGE	SERIES	PAGE	SERIES	PAGE	SERIES	PAGE	SERIES	PAGE
EYS	184	EZD	187	ECD Standard	195	ECD Universal	195	EYSX	188



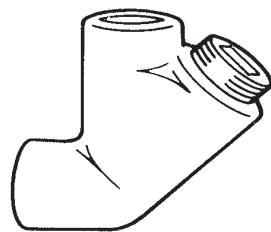
EYS
Elbow Seal 185



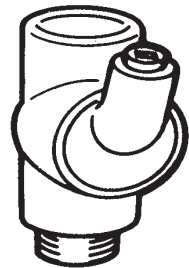
ES 191



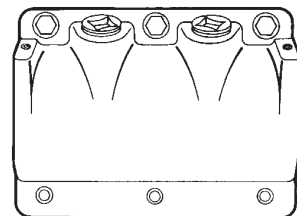
EYDX 189



EZS 185



EYSR 190



EYD 186



Quick Selector Chart

Series	Description	NEC Hazardous Group	For Conduit Angle
EYS	Seal	Class I, Groups A,B,C,D Class II, Groups E,F,G	Vertical and Horizontal
EYS 29	Elbow Seal	Class I, Groups C,D Class II, Groups E,F,G	90° turn
EYSR	Retrofit Seal/Drain Seal*	Class I, Div. 2, Groups C,D Class II, Div. 2, Groups E,F,G Class III	Vertical and Horizontal
EYSX	Expanded Fill Sealing Fittings	Class I, Groups B,C,D Class II, Groups E,F,G	Vertical and Horizontal
EZS	Seal	Class I, Groups C,D Class II, Groups E,F,G	All
ES	Sealing Hub	Class I, Groups C,D	Vertical
EYD	Seal and Drain	Class I, Groups B,C,D Class II, Groups F,G	Vertical
EYDX	Expanded Fill Sealing Fittings and Drain	Class I, Groups B,C,D Class II, Groups F,G	Vertical
EZD	Inspection Seal and Drain – Inspection Seal only	Class I, Groups C,D Class II, Groups E,F,G	Vertical
ECD	Standard Breather only Drain only	Class I, Groups B,C,D Class II, Groups E,F,G Class III	
ECD	Universal Drain – Breather	Class I, Groups C,D Class II, Groups F,G	
CD	Non - Hazardous Drain	–	–

* Drain purchased separately.

Application:

EYS and EZS sealing fittings:

- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- limit precompression or "pressure piling" in conduit systems

Sealing fittings are required:

- at each entrance to an enclosure housing an arcing or sparking device when used in Class I, Division 1 and 2 hazardous locations. To be located as close as practicable and, in no case, more than 18" from such enclosures
- at each conduit entrance of 2" size or larger to an enclosure or fitting housing terminals, splices or taps when used in Class I, Division 1 hazardous locations. To be located as close as practicable and, in no case, more than 18" from such enclosures
- in conduit systems when leaving Class I, Division 1 or Division 2 hazardous locations
- in cable systems when the cables either do not have a gas/vaportight continuous sheath or are capable of transmitting gases or vapors through the cable core when those cables leave the Class I, Division 1 or Division 2 hazardous locations

Features:

EYS and EZS sealing fittings include:

- minimum turning radius
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings in conduit hubs to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity

EYS sealing fittings are available for installation in either vertical only or in both horizontal or vertical positions.

EZS sealing fittings for installation at any angle; the covers with opening for sealing compound can be properly positioned to accept the compound.

Standard Materials:

- Bodies – *Feraloy*® iron alloy and/or ductile iron
- Plugs – *Feraloy* iron alloy and/or steel
- Removable nipples – steel

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized

Options:

- Copper-free aluminum bodies, nipples and enclosures – add suffix - SA*

Size Ranges:

- 1/2" – 6"

Certifications and Compliances:

NEC/CEC:

- **EYS1-3, 11-31, 16-36, 116-316**
Class I, Division 1 & 2, Groups A,B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- **EYS41-101, 416-1016**
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- **EYS29, 4-014, 46-0146**
EZS1-8, 16-86
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886
- CSA Standard: C22.2

Dimensions**EYS 16 Series**

Size	a	b	Turning Radius
1/2	3 ⁹ / ₃₂	1 ¹ / ₄	1 ⁵ / ₈
3/4	3 ¹² / ₁₆	1 ¹ / ₂	1 ²⁹ / ₃₂
1	4 ⁵ / ₁₆	1 ³ / ₄	2 ³ / ₈

EYS 46 Series

1 ¹ / ₄	5 ¹ / ₁₆	2 ³ / ₁₆	1 ²³ / ₃₂
1 ¹ / ₂	5 ¹ / ₂	2 ⁷ / ₁₆	2 ¹ / ₁₆
2	6 ¹ / ₄	3	2 ⁵ / ₁₆
2 ¹ / ₂	7 ¹ / ₂	3 ¹ / ₂	2 ¹¹ / ₁₆
3	8 ¹ / ₂	4 ¹ / ₄	3 ⁵ / ₁₆
3 ¹ / ₂	9 ³ / ₁₆	4 ³ / ₄	3 ⁷ / ₁₆ ‡
4	9 ³ / ₄	5 ¹ / ₄	3 ¹¹ / ₁₆ ‡
5	11 ¹ / ₁₆	6 ¹ / ₂	4 ¹⁹ / ₃₂ ‡
6	12 ¹ / ₈	7 ⁵ / ₈	5 ¹¹ / ₃₂ ‡

Vertical female



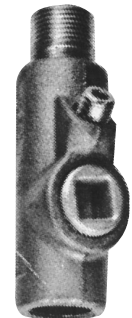
Vertical male & female



Vertical or horizontal female



Vertical or horizontal male & female

**EYS****For Sealing in Vertical Positions Only**

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches
1/2	EYS1*	EYS16*	1
3/4	EYS2*	EYS26*	2
1	EYS3*	EYS36*	3 ³ / ₄

For Sealing in Vertical or Horizontal Positions

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches	
			Vertical	Horizontal
1/2	EYS11*	EYS116*	1	1
3/4	EYS21*	EYS216*	2	2
1	EYS31*	EYS316*	3	3 ³ / ₄
1 ¹ / ₄	EYS41	EYS416	6	8
1 ¹ / ₂	EYS51	EYS516	10 ³ / ₄	12 ¹ / ₄
2	EYS61	EYS616	19	22 ³ / ₄
2 ¹ / ₂	EYS71	EYS716	25 ¹ / ₂	30
3	EYS81	EYS816	56	64 ¹ / ₂
3 ¹ / ₂	EYS91	EYS916	72	82
4	EYS101	EYS1016	95	110

NOTE: Sealing fittings are approved for use in hazardous locations only when *Chico*® Xfiber and *Chico A* sealing compound or Chico SpeedSeal are used to make the seal.

EYS 116 Series

a	b	Turning Radius
3 ¹¹ / ₁₆	1 ¹ / ₄	1 ⁵ / ₈
3 ¹¹ / ₁₆	1 ¹ / ₂	1 ¹ / ₄
4 ⁵ / ₁₆	1 ³ / ₄	1 ⁵ / ₈
5 ¹ / ₁₆	2 ³ / ₁₆	1 ²³ / ₃₂
5 ¹ / ₂	2 ⁷ / ₁₆	2 ¹ / ₁₆
6 ¹ / ₄	3	2 ⁵ / ₁₆
7 ¹ / ₂	3 ¹ / ₂	2 ¹¹ / ₁₆
8 ¹ / ₂	4 ¹ / ₄	3 ⁵ / ₁₆
9 ³ / ₁₆	4 ³ / ₄	3 ⁷ / ₁₆ ‡
9 ³ / ₄	5 ¹ / ₄	3 ¹¹ / ₁₆ ‡

* Available in copper-free aluminum – to order, add suffix SA to Cat. No.

‡ With cover removed.

Condulet® Sealing Fittings

Chico Sealing Compound and
Fiber Page 193

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

8F

Seals, Breathers
& Drains

Vertical or
horizontal
male & female



EYS

For Sealing in Vertical or
Horizontal Positions

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches*	
			Verti- cal	Hori- zontal
1 1/4	EYS4*	EYS46*	6	8
1 1/2	EYS5*	EYS56*	10 3/4	12 1/4
2	EYS6*	EYS66*	19	22 3/4
2 1/2	EYS7*	EYS76*	25 1/2	30
3	EYS8*	EYS86*	56	64 1/2
3 1/2	EYS9*	EYS96*	72	82
4	EYS10*	EYS106*	95	110
5	EYS012	EYS0126	200	222
6	EYS014	EYS0146	290	315

Elbow seal



EYS

Elbow Seal - For Sealing
in Vertical Positions

Hub Size	Cat. #	Approximate Internal Volume in Cubic Inches
3/4	EYS29	1 3/4

Male & Female hub



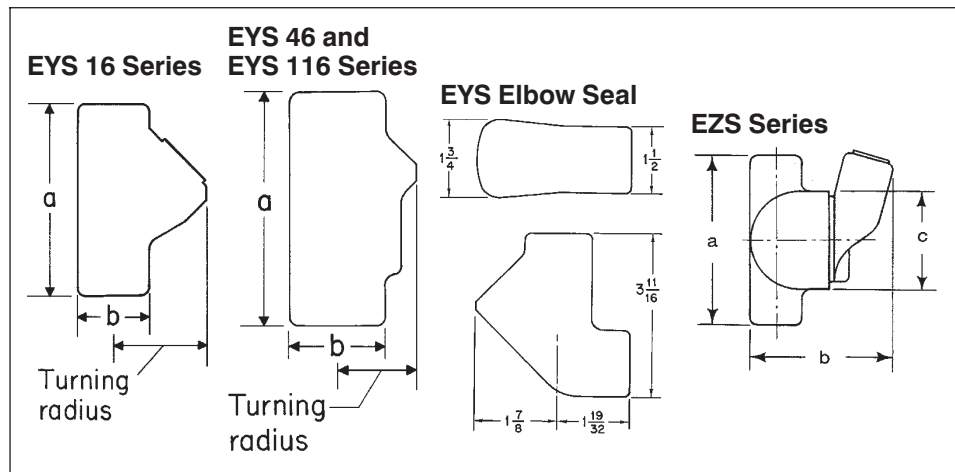
EZS

For Sealing
at Any Angle

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches	
			Verti- cal	Hori- zontal
1/2	EZS1	EZS16	6 1/4	6 1/4
3/4	EZS2	EZS26	6 1/2	6 1/2
1	EZS3	EZS36	10 1/4	10 1/4
1 1/4	EZS4	EZS46	12 1/2	12 1/2
1 1/2	EZS5	EZS56	14 1/2	14 1/2
2	EZS6	EZS66	46	46
2 1/2	EZS7	EZS76	55	55
3	EZS8	EZS86	90	90

* Available in copper-free aluminum – to order, add suffix SA to Cat. No.

Dimensions



EYS Elbow Seal

Size	a	b	Turning Radius (Vertical)
3/4	3 11/16	1 3/4	1 7/8

EZS Series

Size	a	b	c	Turning Radius†
1/2	4 3/16	3 5/8	2 1/2	1 7/8
3/4	4 3/16	3 5/8	2 1/2	1 7/8
1	4 15/16	3 31/32	3	2 1/8
1 1/4	5 1/16	4 13/32	3	2 5/16
1 1/2	5 3/16	4 9/16	3 1/4	2 11/32
2	7 1/16	5 13/32	5 3/16	3 9/32
2 1/2	7 15/16	5 27/32	5 3/16	3 3/8
3	8 5/8	6 1/2	5 7/8	3 7/8

† With cover removed.

Application:

EYD drain and EZD drain and inspection sealing fittings:

- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- prevent precompression or "pressure piling" in conduit systems

Drain sealing fittings are installed in vertical conduit runs and at low points in conduit systems to prevent accumulation of condensate above seal.

These sealing fittings are required as described on page 184.

Features:

EYD and EZD drain sealing fittings include:

- drain to provide continuous, automatic drainage of condensate
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity

EZD drain and inspection sealing fittings also include:

- removable covers for periodic inspection of seals
- barrier for sealing compound easily installed after dams are made and before compound is poured.

Standard Materials:

- Bodies, and inspection or drain covers – *Feraloy*® iron alloy and/or ductile iron
- Closure for drain – copper-free aluminum or ductile iron
- Small closure plug – *Feraloy* iron alloy and/or steel
- Drain – stainless steel
- Removable nipples – steel

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural
- Steel – electrogalvanized

Options:

- Copper-free aluminum bodies, nipples and enclosures – add suffix - SA*

Size Ranges:

- EYD – ½" – 4"
- EZD – ½" – 2"

Certifications and Compliances:

NEC/CEC:

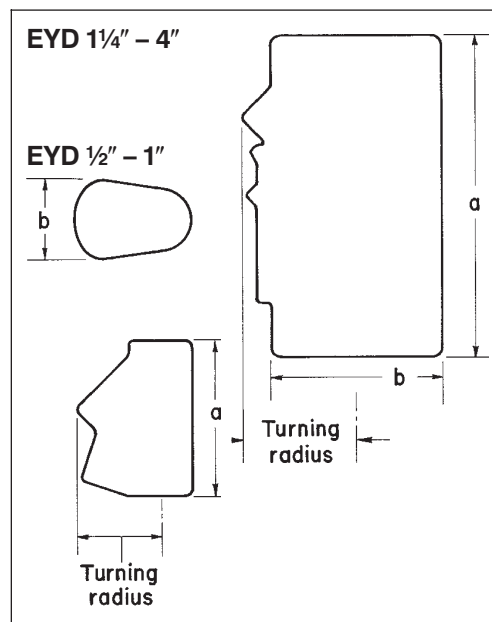
- **EYD11-101, 116-1016**
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- **EYD1-10, 16-106**
EZD10-60, 111-611
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886
- CSA Standard: C22.2

NOTE: Sealing Fittings are approved for use in hazardous locations only when *Chico*® X fiber and *Chico A* sealing compound or *Chico SpeedSeal* are used to make the seal.

EYD Drain Seal

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches
½	EYD1*	EYD16*	EYD11	EYD116	1
¾	EYD2*	EYD26*	EYD21	EYD216	2
1	EYD3*	EYD36*	EYD31	EYD316	3¾
1¼	EYD4*	EYD46*	EYD41	EYD416	8
1½	EYD5*	EYD56*	EYD51	EYD516	10¾
2	EYD6*	EYD66*	EYD61	EYD616	20
2½	EYD7*	EYD76*	EYD71	EYD716	35
3	EYD8*	EYD86*	EYD81	EYD816	57
3½	EYD9*	EYD96*	EYD91	EYD916	75
4	EYD10*	EYD106*	EYD101	EYD1016	105

Dimensions



EYD Drain Seal

Size	a	b	Turning Radius
½	3¾ ₃₂	1½	1⅝
¾	3⅞ ₁₆	1¾	1⅞ ₃₂
1	4⅝ ₁₆	2⅜ ₁₆	2⅜
1¼	5⅞ ₁₆	2⅞ ₁₆	1⅞ ₃₂ †
1½	5½	2⅞ ₁₆	2⅞ ₁₆ †
2	6¼	3	2⅞ ₁₆ †
2½	7½	3½	2⅞ ₁₆ †
3	8½	4¼	3⅞ ₁₆ †
3½	9⅞ ₁₆	4¾	3⅞ ₁₆ †
4	9¾	5¼	3⅞ ₁₆ †

\$ See Certifications and Compliances for classification of each product.

† With cover removed.

* Available in copper-free aluminum – to order, add suffix SA to Cat. No.

Condulet® Sealing Fittings with Drain and Inspection Cover

Chico Sealing Compound and Fiber
Page 193

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

8F

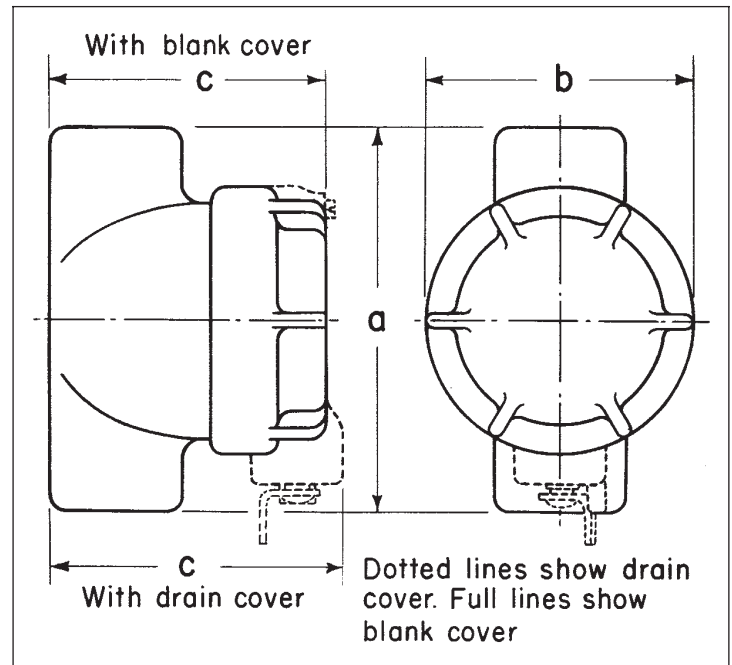
Seals, Breathers
& Drains



ESD With Drain Cover

Hub Size	Cat. #	Approximate Internal Volume in Cubic Inches
1/2	ESD111	5
3/4	ESD211	6
1	ESD311	10
1 1/4	ESD411	11
1 1/2	ESD511	13
2	ESD611	40

Dimensions



ESD Drain and Inspection Seals

Size	a	b	Drain Cover c	Turning Radius†
1/2	4 3/16	3	3 3/8	2 1/16
3/4	4 3/16	3	3 5/8	2 3/16
1	4 15/16	3 1/2	3 7/8	2 7/16
1 1/2	4 15/16	3 1/2	4 9/16	2 5/8
1 1/2	5 3/16	3 1/2	4 9/16	2 11/16
2	7 1/8	5 9/16	5 1/4	3 11/16

† With Cover removed.

EYSX Expanded Fill Sealing Fittings

Chico Sealing Compound and
Fiber Page 193

Cl. I, Div. 1 & 2, Groups B,C,D ♦ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G
Cl. III

Application:

EYSX Expanded Fill Sealing Fittings:

- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- limit precompression or "pressure piling" in conduit systems
- provide 40% wire fill capacity to allow uninterrupted runs in a conduit system

Sealing fittings are required:

- at each entrance to an enclosure housing an arcing or sparking device when used in Class I, Division 1 and 2 hazardous locations. To be located as close as practicable and, in no case, more than 18" from such enclosures
- at each entrance of 2" size or larger to an enclosure or fitting housing terminals, splices or taps when used in Class I, Division 1 hazardous locations. To be located as close as practicable and, in no case, more than 18" from such enclosures
- in conduit systems when leaving Class I, Division 1 or 2 hazardous locations
- in cable systems when the cables either do not have a gas/vaportight continuous sheath or are capable of transmitting gases or vapors through the cable core when those cables leave the Class I, Division 1 or 2 hazardous locations

Features:

EYSX Expanded Fill Sealing Fittings provide:

- a 40% wire fill capacity for expanded fill sealing
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings in conduit hubs to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity
- minimum turning radius

EYSX Expanded Fill Sealing Fittings are available for installation in both horizontal or vertical positions.

Standard Materials:

- Bodies – *Feraloy*® iron alloy and/or ductile iron or copper-free aluminum (SA Suffix)
- Closures – *Feraloy* iron alloy and/or steel or copper-free aluminum (SA Suffix)

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Copper-free aluminum – natural

Options:

- Copper-free aluminum bodies and enclosures - add suffix SA

Size Ranges:

- ½" – 4"

Certifications and Compliances:

NEC/CEC:

EYSX11 – EYSX81

Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

EYSX9, EYSX10, EYSX1 SA – EYSX10 SA

Class I, Division 1 and 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886

- CSA Standard: C22.2 No. 30

EYSX Expanded Fill Sealing Fittings For Sealing in Vertical or Horizontal Positions

Hub Size	Female Hub Cat. #	Internal Volume in Cubic Inches	
		Vertical	Horizontal
½	EYSX11*	2	2
½	EYSX1 SA	2	2
¾	EYSX21*	3	3¾
¾	EYSX2 SA	3	3¾
1	EYSX31	6	8
1	EYSX3 SA	6	8
1¼	EYSX41	19	22¾
1¼	EYSX4 SA	19	22¾
1½	EYSX51	19	22¾
1½	EYSX5 SA	19	22¾
2	EYSX61	56	64½
2	EYSX6 SA	56	64½
2½	EYSX71	72	82
2½	EYSX7 SA	72	82
3	EYSX81	95	110
3	EYSX8 SA	95	110
3½	EYSX9*	200	222
3½	EYSX9 SA	200	222
4	EYSX10*	200	222
4	EYSX10 SA	200	222

Vertical or horizontal female



NOTE: Sealing fittings are approved for use in hazardous locations only when *Chico*® X fiber and *Chico* A sealing compound or Chico SpeedSeal are used to make the seal.

NPT Size	A	B	Turning Radius
½	3 1/16	1 1/2	1 1/4
¾	4 5/16	1 3/4	1 3/8
1	5 1/16	2 3/16	1 23/32
1¼	6 1/4	3	2 5/16
1½	6 1/4	3	2 5/16
2	8 1/2	4 1/4	3 5/16
2½	9 3/16	4 3/4	3 1/16 ‡
3	9 3/4	5 1/4	3 11/16 ‡
3½	11 1/16	6 1/2	4 19/32 ‡
4	11 1/16	6 1/2	4 19/32 ‡

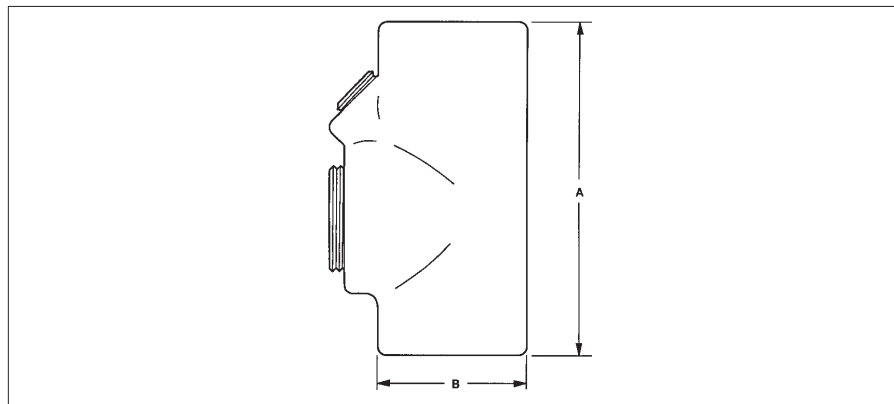
‡ With plug cover removed.

♦ See Certifications and Compliances for classification of each product.

* *Feraloy*®

‡ With cover removed.

Dimensions



EYDX Expanded Fill Sealing Fittings With Drains

Chico Sealing Compound and Fiber
Page 193

Cl. I, Div. 1 & 2, Groups B,C,D§
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

8F

8F Seals, Breathers & Drains

Application:

EYDX Expanded Fill Sealing Fittings with drains:

- restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures
- limit explosions to the sealed-off enclosure
- prevent precompression or "pressure piling" in conduit systems
- provide 40% wire fill capacity to allow uninterrupted runs in a conduit system

Drain sealing fittings are installed in vertical conduit runs and at low points in conduit systems to prevent accumulation of condensate above seal.

These sealing fittings are required as described on page 184.

Features:

EYDX Expanded Fill drain sealing fittings provide:

- a 40% wire fill capacity for expanded fill sealing
- drain to provide continuous, automatic drainage of condensate
- large openings with threaded closures to provide easy access to conduit hubs for making dams
- integral bushings to protect conductor insulation from damage
- taper-tapped hubs to ensure ground continuity

Standard Materials:

- Bodies and drain covers – *Feraloy*® iron alloy, and ductile iron or copper-free aluminum (SA Suffix)
- Closure for drain – copper-free aluminum or malleable iron
- Small closure plug – *Feraloy* iron alloy and/or steel or copper-free aluminum (SA Suffix)
- Drain – stainless steel

Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural
- Steel – electrogalvanized

Options:

- Copper-free aluminum bodies and closures - add suffix - SA

Size Ranges:

- EYDX – ½" – 3"

Certifications and Compliances:

NEC/CEC:

EYDX11 – EYDX81

Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III

EYDX1 SA – EYDX8 SA

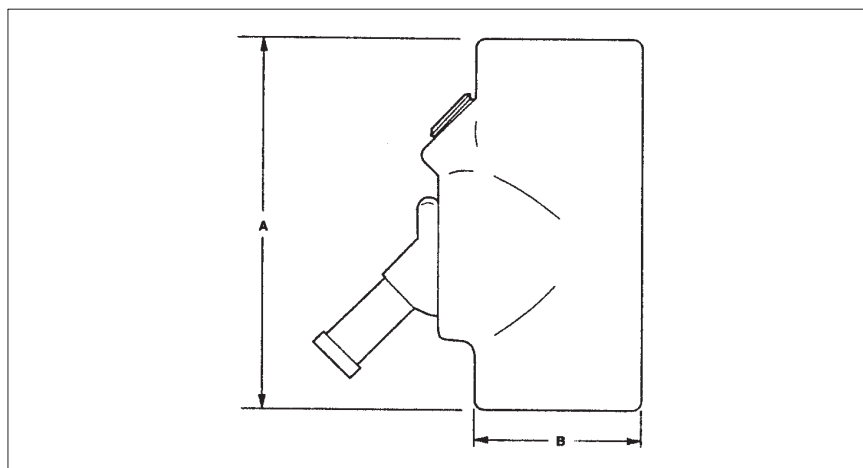
Class I, Division 1 and 2, Groups C,D
Class II, Division 1, Groups F,G
Class II, Division 2, Groups F,G
Class III

- UL Standard: 886

- CSA Standard: C22.2 No. 30

NOTE: Sealing Fittings are approved for use in hazardous locations only when *Chico*® X fiber and *Chico A* sealing compound or Chico SpeedSeal are used to make the seal.

Dimensions:



EYDX NPT Size	A	B	Turning Radius
½	3 11/16	1 ¾	1 29/32
¾	4 5/16	2 3/16	2 3/8
1	5 1/16	2 3/16	1 27/32†
1 ¼	6 ¼	3	2 5/16†
1 ½	6 ¼	3	2 5/16†
2	8 ½	4 ¼	3 3/16†
2 ½	9 3/16	4 ¾	3 7/16†
3	9 ¾	5 ¼	3 ½†

EYDX Expanded Fill Sealing Fittings

Hub Size	Female Hub Cat. #	Internal Volume in Cubic Inches
½	EYDX11*	2
½	EYDX1 SA	2
¾	EYDX21*	3 ¾
¾	EYDX2 SA	3 ¾
1	EYDX31	8
1	EYDX3 SA	8
1 ¼	EYDX41	20
1 ¼	EYDX4 SA	20
1 ½	EYDX51	20
1 ½	EYDX5 SA	20
2	EYDX61	57
2	EYDX6 SA	57
2 ½	EYDX71	75
2 ½	EYDX7 SA	75
3	EYDX81	105
3	EYDX8 SA	105

§ See Certifications and Compliances for classification of each product.

† With drain cover removed.

* *Feraloy*®

Application:**Application:**

EYSR retrofit sealing fittings are installed:

- in rigid metal conduit systems in Class I, Division 2 hazardous locations
- to replace installed Cooper Crouse-Hinds type EYS or EYD sealing fittings
- without disassembly of the conduit system
- in vertical or horizontal positions, indoors or outdoors
- to restrict the passage of gases, vapors, or flames from one portion of the electrical system to another at atmospheric pressures and normal ambient temperatures
- to limit explosions to the sealed-off enclosure
- to limit precompression or "pressure piling" in the conduit system
- to prevent accumulation of water in the conduit system when installed with an ECD15 drain

Features:

- Seal may be installed in the existing conduit run without disassembly of the conduit system saving time and labor
- Overall length and spacing requirements do not exceed those of standard EYS seals; permits close nesting of seals
- Pipe plugs permit the installation of a standard ECD 15 drain fitting (order separately) for use in vertical conduit runs to drain any water that might accumulate in the conduit system
- Steel set screws provide grounding continuity
- Suitable for vertical and horizontal installations for indoor and outdoor applications
- Available in 3/4" to 4" NPT sizes.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Pipe plugs, bolts and set screws – steel
- Gasket – neoprene

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Gasket – natural

Options:

- Copper-free aluminum – add suffix -SA to Cat. No.

Size Ranges:

- 3/4" - 4"

**Certifications and
Compliances:**

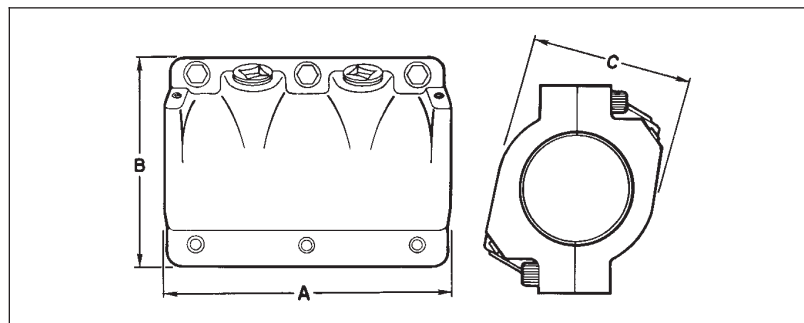
- NEC: Class I, Division 2, Groups C,D
Class II, Division 2, Groups E,F,G
- UL Standard: 886, 1203
- CEC: Class I, Division 1, Groups C,D
Class II, Division 1, Groups E,F,G
- CSA Standard: C22.2 No. 30

NOTE: EYSR sealing fittings are approved for use in hazardous locations only when Chico® A sealing compound and Chico X fiber are used to make the seal.



Hub Size	Cat. No.	Approximate Internal Volume in Cubic Inches*		Approximate Amount (oz.) of Fiber per Hub	
		Vert.	Horiz.	Vert.	Horiz.
3/4	EYSR2	3 1/2	5 3/4	1/16	1/8
1	EYSR3	4 3/4	9 1/2	1/8	1/4
1 1/4	EYSR4	7	13 1/2	1/4	1/2
1 1/2	EYSR5	12 1/4	24 1/4	1/2	1
2	EYSR6	25 3/4	40 1/2	1	2
2 1/2	EYSR7	48	75 1/2	1 1/2	3
3	EYSR8	86 1/2	126	2	4
3 1/2	EYSR9	147	210	4 1/2	9
4	EYSR10	186	252	4 1/2	9

* Use the approximate internal volume in cubic inches to determine how much Chico A sealing compound is required.

Dimensions

Cat. No.	A	B	C	Cat. No.	A	B	C
EYSR2	3 11/16	2 1/2	1 1/2	EYSR7	7 1/2	5	3 7/8
EYSR3	4 3/8	3 1/8	3 1/8	EYSR8	8 1/2	5 1/2	4 1/4
EYSR4	5	3 3/8	3	EYSR9	9 13/64	6 1/16	4 3/4
EYSR5	5 1/4	3 5/8	3	EYSR10	9 3/4	6 5/8	5 1/4
EYSR6	6 1/4	4	3				

ES Sealing Hubs

Chico Sealing Compound and Fiber Page 193

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Watertight

8F

Seals, Breathers
& Drains

Application:

ES sealing hubs are used to:

- seal vertical conduit risers at switchgear and motor control centers, sheet metal structures or cast boxes and enclosures
- Seal horizontal conduit runs at enclosures when used with TSC sealing compound.

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

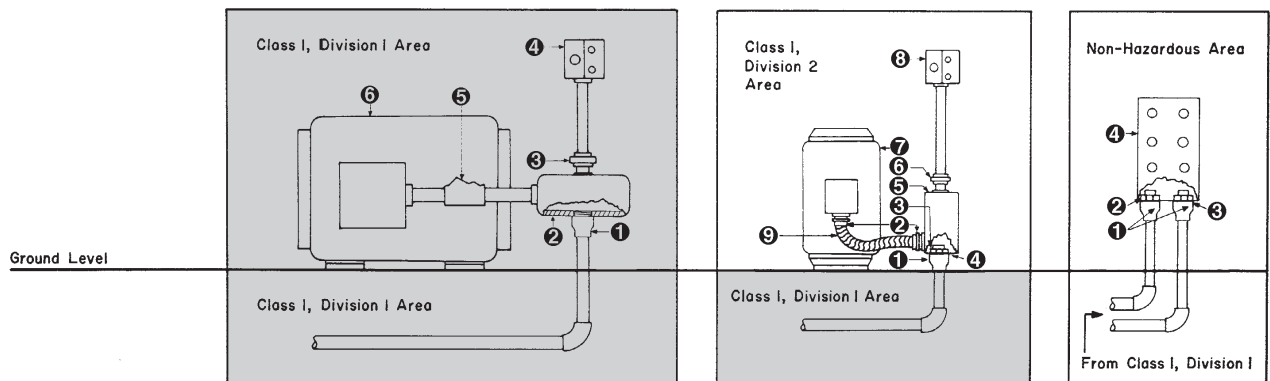
Options:

- ES sealing hubs, when used with SG armored gaskets and locknuts, provide a water and oiltight connection
- Sealing gaskets and locknuts – add suffix SG to Cat. No.

Certifications and Compliances:

- Class I, Division 1 & 2, Groups C & D
- UL Standard: 886
- CSA Standard: C22.2 No. 30

Typical Installations

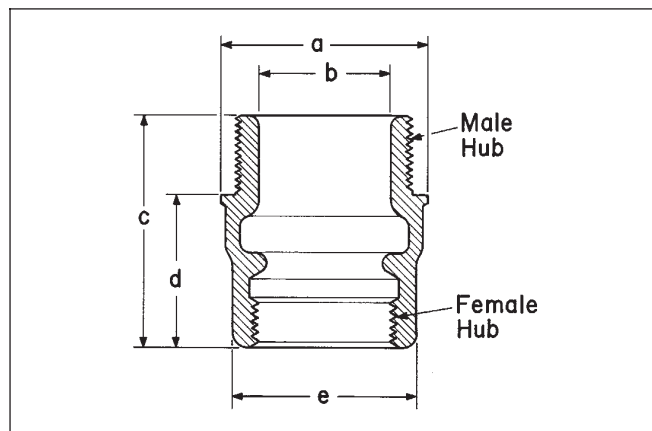


1. ES Sealing Hub 2. EJB Junction Box 3. UNY Union
4. EDS Factory Sealed Control Station 5. EYS Horizontal Seal 6. Explosion-Proof Motor

1. ES Sealing Hub 2. LT Connector 3. Locknut 4. Sealing Gasket 5. Junction Box 6. UNY Union 7. Synchronous Motor 8. EDS Factory Sealed Control Station 9. LT Conduit

1. ES Sealing Hub 2. Locknut 3. Sealing Gasket 4. Sheet Metal Structure, Motor Control Center, Panelboard, Unit Substation, Etc.

Dimensions



Cat. #	a	b	c	d	e
ES31	1 1/16	7/8	2	2 5/32	1 1/4
ES32	1 13/16	7/8	2	2 5/32	1 1/2
ES53	2 1/4	1 3/8	2 3/4	1 15/16	1 3/4
ES64	2 3/4	1 3/4	2 3/4	1 15/16	2 3/16
ES65	2 3/4	1 5/8	3 1/16	2	2 1/16
ES76	3 1/2	2 1/16	3 3/16	2	3
ES108	5 1/4	3 3/8	4 3/4	2 31/32	4 1/4
ES01210	6 5/8	4 5/8	6 3/4	4 27/32	5 1/4
ES014012	7 1/4	5 29/32	7 1/4	5 11/32	6 1/2

NOTE: Sealing hubs are approved for use in hazardous locations when *Chico*® X fiber and *Chico* A sealing compound are used to make the seal. Sealing hubs are approved for horizontal conduit runs for use in hazardous locations when used with TSC sealing compound, order 1 oz. tube as TSC1.



TSC Epoxy Sealing Compound

A two part epoxy sealing compound may be used to seal ES sealing hubs. It is quick and easy to measure, mix and install. The compound is kneaded until a uniform color is obtained. It is then packed around the conductors to effectively seal the cable.

Std. Ctn. Qty.	Tube Size	Cat. # **
10	0.5 oz	TSC05
10	1.0 oz	TSC1
5	4.0 oz	TSC4

** Order quantity of one (1) TSC05 or TSC1 equals 10 tubes; one (1) TSC4 equals 5 4.0 oz tubes.



Cooper Crouse-Hinds Secondary Process Sealing Fittings are designed to prevent the passage of gases under pressure through conduits, cables and conductors. They are ideal where volatile liquids or gases are stored, processed or transported under pressure. If the primary seal on an instrument should fail, the Cooper Crouse-Hinds Secondary Process Seal will prevent gases from migrating into the nonclassified location through the electrical system. This patent pending design is the first seal which is tested and certified for pressure applications.

Features & Benefits

- Exclusive, patent-pending design — the first third-party approved secondary process seal
 - Standard pressure applications up to 40 psi (2.8 bar)
 - High-pressure applications up to 500 psi (35 bar)
- Kit contains everything required for complete installation
 - EABX26-SA body with 3/4" tapered threaded hubs to provide ground continuity
 - GUA062-GB sealing cover
 - GUAC26-SA body and cover
 - Process seal vent
 - Pressure relief tube
 - ECD16 Breather
 - Chico SS2 SpeedSeal (2) 2 oz Cartridges
 - Chico X fiber packet
 - PLG2-SA 3/4" plug
 - RE21-SA 3/4" to 1/2" reducer
 - Solder Sleeve connectors (4)
 - High-pressure fitting for PSHP (high-pressure) version only
 - UNF205 Explosionproof union for PSHP (high-pressure) version only

Standard Materials & Finishes

- EAB Body — copper-free aluminum
- GUA Body and Cover — copper free aluminum
- High-pressure sealing fitting — Stainless steel with viton seal
- ECD16 breather — Stainless steel
- UNF205 Union — copper-free aluminum
- Reducers and Plugs — copper-free aluminum
- Process seal vent — silicon rubber
- Pressure relief tube — polyethylene

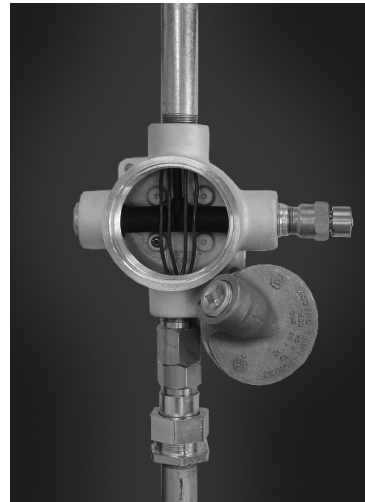
Ordering Information

Secondary Process Sealing Fitting Kit for Standard pressure up to 40 psi (2.8 bar)

Trade Size	Conductor Size	Catalog Number
3/4"	10-14 AWG	EABX26-SA-PS

High-Pressure Secondary Process Sealing Fitting Kit for pressure up to 500 psi (35 bar)

Trade Size	Conductor Size	Catalog Number
3/4"	10 AWG	EABX26-SA-PSHP10
3/4"	12 AWG	EABX26-SA-PSHP12
3/4"	14 AWG	EABX26-SA-PSHP14



Ratings

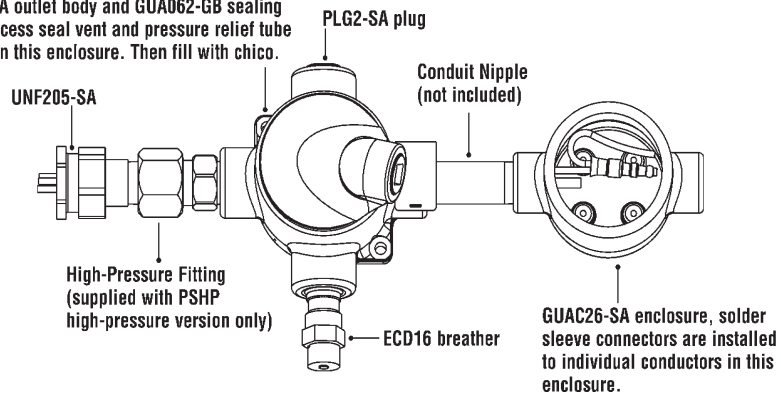
- Pressure ratings
 - Standard version — pressure up to 40 psi (2.8 bar)
 - High-pressure version — pressure up to 500 PSI (35 bar)
- Temperature range -25°C to +55°C

Certifications & Compliances

- Class I, Division 1 & 2, Groups C,D
- CSA LTR Number HazLoc 031120

Typical Installation

EABX26-SA outlet body and GUA062-GB sealing cover. Process seal vent and pressure relief tube installed in this enclosure. Then fill with chiko.



Chico® A and Chico® A-P Sealing Compound

Chico® X Fiber

Chico® SpeedSeal™

For Sealing Fittings and Hubs

Application:

Chico X fiber:

- forms a dam between the integral bushing of the sealing fitting and the end of the conduit and around the electrical conductors entering the hub

Chico A sealing compound:

- forms a seal around each electrical conductor and between them and inside of the sealing fitting to restrict the passage of gases, vapors or flames through the sealing fitting at atmospheric pressure and at normal ambient temperatures

Chico® SpeedSeal™ Compound:

- designed to separate and form an explosionproof seal around each electrical conductor in Crouse-Hinds EYS and EYD sealing fittings.
- restricts the passage of gasses, vapors or flames through the sealing fitting.
- creates a seal for Class I, Division 1, Groups C & D and Class II, Division 1, Groups E, F & G hazardous areas.

Features:

- Chico X fiber is a mineral wool that packs easily, forming around each conductor
- Chico A sealing compound is a water soluble powder, that can be easily mixed and poured. The compound, unusually dense, expands slightly when hardening and bonds to inner walls of sealing fittings. Compound hardens in 60-70 minutes
- Chico A cure time is 8 hours for class I, Group C and D applications and 72 hours for class I, Group A and B applications.
- Chico A has a 1 year shelf life from date of manufacture.
- Chico A ambient temperature range (after curing) is -40°F to +165°F.
- Chico A-P Intrapak®:

Packaged in two-compartment plastic pouch with precise amount of water for mixing. No mixing or measuring implements required.

A hard squeeze of the water compartment forces the water into the compartment containing the Chico compound. Mixing is completed by kneading the pouch for one minute.

The mixed sealing compound is poured directly into the sealing fitting – no funnel required. The package label indicates the size and quantity of sealing fittings each pouch will properly fill. Compound hardens in 60-70 minutes.

Chico® SpeedSeal™ Compound is a revolutionary material:

- installs a reliable seal in five minutes - *every time*
- hardens to a dense, strong mass that is suitable for Class I, Division 1, Groups C & D and Class II, Division 1, Groups E, F & G hazardous applications.
- UL and cUL Listed for use with 1/2" to 2" Copper Crouse-Hinds sealing fittings only.
- packaged in a 2 oz. or 6 oz. pre-measured cartridge, eliminating the need for measuring before mixing.
- packaged with a screw-on nozzle for accurate dispensing.
- expands four times its original size in the sealing fitting, eliminating the need to separate the individual conductors with Chico X fiber.
- Chico X fiber dams are not required in horizontal applications, reducing installation times.
- completely hardens in 20 minutes, simplifying use for OEMs.
- suitable for cold temperature environments without the costly need to build a temporary shelter around sealing fittings. All ice crystals must be removed from inside the conduit seal before dispensing Chico SpeedSeal compound. The Chico SpeedSeal compound should be kept above 10°C (50°F) prior to mixing. The sealing fitting must be kept at or above 4°C (40°F) during the 4 to 10 minute expansion/gel time of the compound.
- one year shelf-life.
- patent pending

Size Ranges:

- Chico A compound – 1 lb. to 5 lbs. (provides 23-115 cubic inches of compound)
- Chico X fiber – 2 oz. to 1 lb.
- Chico A-P (5 pouches per carton) – provides 25 and 55 cubic inches of compound.
- Chico SpeedSeal - 2 oz. or 6 oz. cartridge

NOTE: Cooper Crouse-Hinds sealing fitting are approved for use in hazardous locations only when Chico X fiber and Chico A Sealing Compound or Chico SpeedSeal are used to make the seal.

* A sixth pouch, containing an appropriate quantity of Chico X fiber, is included in these cartons.

† Number of cubic inches this amount will fill when set. See internal volume requirements for EYS, EZS, EYD, EZD and EYSR sealing fittings and ES sealing hubs (pages 184 to 191).

‡ Includes 1 oz. Chico X fiber.



Chico A Sealing Compound

Net Weight	Vol. Cu. In.†	Cat. #
1 lb.	23	Chico A3
1 lb.‡	23	Chico A4
5 lb.	115	Chico A05



Chico A-P Intrapak® (provided with Chico X fiber)

Sealing Compound and Water in Plastic Mixing Pouch

Cu. In. Fill per Pouch†	No. of Pouches per Carton	Carton Cat. #
5	5	Chico A19-PX*
11	5	Chico A39-PX*



Chico X Fiber

Net Weight	Cat. #
2 oz.	Chico X4
8 oz.	Chico X6
1 lb.	Chico X7

Chart for Approximate Amount of Fiber Per Hub

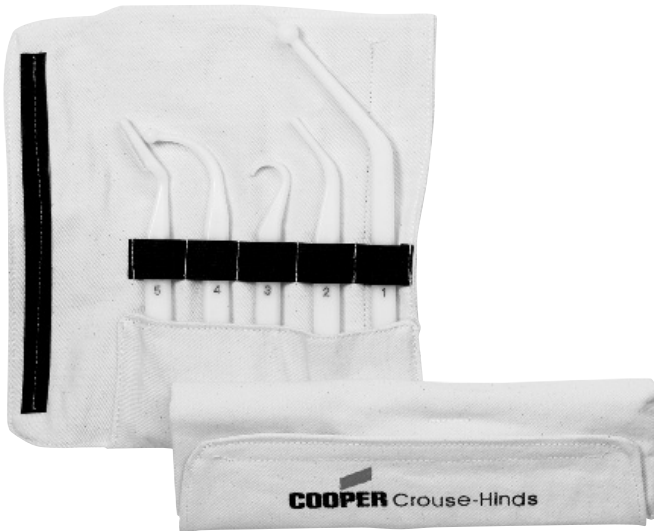
Hub Size	Ozs. Required
1/2	1/32
3/4	1/16
1	1/8
1-1/4	1/4
1-1/2	1/2
2	1
2 1/2	1 1/2
3	2
3 1/2	3
4	4 1/2
5	7
6	10



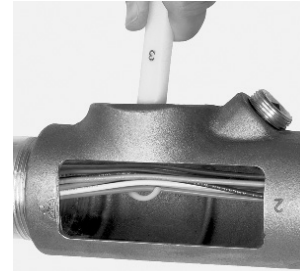
Chico SpeedSeal Ordering Information:

Sealing Fitting Catalog Number	Amount of SpeedSeal Material needed per fitting (in ounces)	SpeedSeal Catalog Number
EYS1, EYS16; EYS11, EYS116 EYD1, EYD16, EYD11, EYD116 EYS2, EYS26, EYS21, EYS216 EYD2, EYD26, EYD21, EYD216 EYSX11, EYDX11	1	CHICO SS2 (2 oz. Cartridge)
EYS3, EYS36, EYS31, EYS316 EYD3, EYD36, EYD31, EYD316 EYSX21, EYDX21	2	CHICO SS2 (2 oz. Cartridge)
EYS41, EYS416, EYS4, EYS46 EYD4, EYD46, EYD41, EYD416 EYS51, EYS516, EYS5, EYS56 EYD5, EYD56, EYD51, EYD516 EYSX31, EYDX31 EYSX41, EYDX41	3	CHICO SS6 (6 oz. Cartridge)
EYS61, EYS616, EYS6, EYS66 EYD6, EYD66, EYD61, EYD616 EYSX51, EYDX51	6	CHICO SS6 (6 oz. Cartridge)

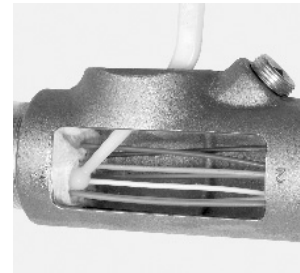
MSDS sheets are available at www.crouse-hinds.com



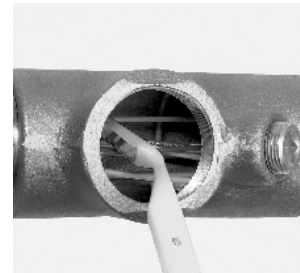
The Cooper Crouse-Hinds EYS Tool Kit lets you safely and reliably pack the fiber dam in explosionproof sealing fittings. Consisting of five patented, two-sided tools in a handy canvas bag, the EYS Tool Kit makes the critical steps of separating electrical conductors and packing fiber dams quick and easy.



The large hook on Tool #3 quickly lifts all the conductors.



With one of the packing tools, packing fiber in between and around electrical conductors is effortless.



The mirrored tool allows for proper inspection of the fiber dam in difficult to see areas.

Features and Benefits:

- The EYS Tool Kit consists of five tools and a canvas tool bag. Four tools have two unique ends for a total of 9 different tools.
- Each tool is numbered for easy identification.
- Tools are constructed of durable plastic with smooth and rounded surfaces that will not abrade the electrical insulation.
- The Hook tool (#3) with a large hook on one end and a small hook on the other end is designed to lift and separate individual wires.
- The Packing tools (#1, #2 & #4) have rounded ends designed for packing fiber in between and around electrical conductors.
- The Wedge tools (#2 & #5) are designed for hands-free separation of conductors while packing fiber.
- The Mirrored tool (#5) allows for easy inspection of the sealing fittings.
- All tools are sized and precisely angled to accommodate various sizes of fittings.
- The Canvas tool bag is designed to neatly store and protect tools while not in use.

Ordering Information:

Catalog Number

EYS-TOOL-KIT

Application:

- ECD drains and breathers are installed in enclosures or conduit systems to:
 - provide ventilation to minimize condensation
 - drain accumulated condensate
- At least one breather should be used with each drain
- A breather is installed in top of enclosure or upper section of conduit system
- A “standard” drain is installed in bottom of enclosure or in lower section of conduit system
- “Universal” breather or drain functions as a breather when mounted at the top of an enclosure, or as a drain when mounted in the bottom of an enclosure
- “Combination” breather and drain is used in those applications where the use of a top mounted breather is not practical due to limited space; or in offshore and marine installations where moisture may enter the enclosure through the breather located on top of enclosure
- Drains and breathers are installed in hubs or drilled and tapped openings

Features:

- ECD284, ECD384, ECD385 and ECD15 “Universal” drains and breathers have:
- patented labyrinth design, suitable for use in Class I, Division 1 & 2, Groups C,D and Class II, Division 1 & 2, Groups F,G areas
 - capability to pass 50 cc of water per minute and 0.2 cubic feet of air per minute at atmospheric pressure
 - ECD15 and ECD385 each have a well inside the inner, threaded end to provide for accumulation of sediment without clogging when used as a drain.
- “Standard” ECD drains and breathers have:
- thread-in-thread design, suitable for use in Class I, Division 1 & 2, Groups C,D; Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G and Class III areas
 - ECD 11, 13 have capability to pass 25 cc of water per minute and .05 cubic feet of air per minute at atmospheric pressure
 - ECD387 and ECD16 are a unique thread-in-shaft design for use in Class I, Division 1 & 2, Groups B,C,D; Class II, Division 1, Groups E,F,G; Class II, Division 2, Groups F,G; Class III areas. The ECD387 and ECD16 can pass 15cc of water per minute. The ECD16 can pass .01 cubic feet of air per minute.
- “Combination” ECD breather and drain:
- provides ventilation to minimize condensation and drains accumulated condensate – two functions performed by a single device installed in the bottom of an enclosure or conduit system
 - Have the capability to pass 25 cc of water per minute and .10 cubic feet of air per minute at atmospheric pressure
 - Thread-in-thread and labyrinth design, suitable for use in Class I, Division 1 & 2, Groups C and D; Class II, Division 1 & 2, Groups F and G; and Class III areas

Size Ranges

- 1/4" to 1/2"

ECD “Type 4X” Drain and Breather

Size	Drain Cat. #	Breather Cat. #
3/8	ECD38-N4D	ECD38-N4B
1/2	ECD1-N4D	ECD1-N4B

ECD “Standard” Drain and Breather

Size	Drain Cat. #	Breather Cat. #
1/4	ECD281	
3/8	ECD387	
1/2	ECD11	ECD13

ECD “Universal” Drain or Breather

Size	Cat. #
1/4	ECD284†
3/8	ECD384†
3/8	ECD385
1/2	ECD15
1/2	ECD16

ECD

“Combination” Drain and Breather

Size	Cat. #
1/2	ECD18

Standard Materials:

- ECD11, ECD15, ECD281, ECD284, ECD384, ECD385 – stainless steel
- ECD13 – stainless steel with aluminum cap
- ECD16, ECD-N4D, ECD-N4B – stainless steel
- ECD387 – stainless steel
- ECD18 – Stainless steel with neoprene tube

Certifications and Complies:

- NEC/CEC:
 - ECD 16, ECD387, ECD-N4D, ECD-N4B** – Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
 - ECD11, ECD13, ECD281** – Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
 - ECD18, ECD384, ECD15, ECD385** – Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups F,G
Class II, Division 2, Groups F,G
Class III
 - ECD284** – Class I, Division 1 & 2, Group C,D
Class II, Division 1, Groups F,G
Class II, Division 2, Groups F,G
- UL: Standard 886
- CSA Standard: C22.2 No. 30
- Type 4X: ECD-N4D and ECD-N4B

† Shorter overall length than ECD15 and ECD385. For use in confined spaces such as panelboard assemblies.



ECD11



ECD13



ECD15



ECD16



ECD18



Typical installation of drain and breather in a combination motor starter

- NOTES:** 1. At least 5 full threads of drain or breather must be engaged in matching female thread, taper-tapped in accordance with NEMA/EEMAC Standard FB-1, Type NTC or National Bureau of Standards Handbook H28, Part II, Table 7.6.
2. These breathers and drains can be factory installed on various explosion-proof equipment. See options on applicable equipment pages for suffixes to be used.

8F CD Series Ordinary Location Drain

Straight Body • Male Thread

Seals, Breathers
& Drains

Application:

CD Series drains are for use in conduit systems to:

- Drain accumulated condensate.
- Provide ventilation to minimize condensation.

Drains are installed in hubs or drilled and tapped openings.

Standard Materials:

- CD bodies and nuts – steel or aluminum
- CD screen – stainless steel

Standard Finishes:

- Steel – electrogalvanized with chromate treatment.

Certifications and Compliances:

- UL Standard 514B

Options:

- Copper-free aluminum construction – add suffix -SA

Ordering Information:

Size	Cat. #
1/2	CD1
3/4	CD2



NEMA 4X BREATHER/DRAIN

ATEX and CENELEC Range

I M2 II 2GD, E Exe I & II
(Stainless Steel & Brass only)
II 2GD, E Exe II (Nylon version)
CSA Class I, Division 2, Groups
A, B, C & D, Exe II

Enclosure Type 4X
IP66



Certifications and Compliances

- SIRA 99 ATEX 3050U
- I M2 II 2GD, E Exe I & II (Stainless Steel & Brass only)
- II 2GD, E Exe II (Nylon only)
- CSA Class I, Division 2, Groups A, B, C & D, Exe II
- Enclosure Type 4X
- IP66

Operating Temperature

- -50°C to +85°C

Application

For use in enclosures to provide a method to effectively drain moisture while allowing the enclosure to breathe.

Features

All NEMA 4X breather/drains offer:

- Castellated locknuts that allow moisture to pass between the enclosure and the locknut to the drain holes in the fitting.
- Available in brass, stainless steel (Type 316) or 30% glass filled nylon.
- Captive "O" ring on recess of the face of the breather/drain to optimize ingress protection.
- ATEX and CSA Certified for worldwide market acceptance.
- Available with metric or NPT threads.

Ordering Information

NEMA 4X Breather/Drain

Entry Method	Material	Catalog Number
M20	Brass	ACDPEB/M20/15
M20	Stainless Steel	ACDPES/M20/15
M20	Nylon	ACDPEBN/M20/15
M25	Brass	ACDPEB/M25/15
M25	Stainless Steel	ACDPES/M25/15
M25	Nylon	ACDPEBN/M25/15
1/2"	Brass	ACDPEB/050NPT/15
1/2"	Stainless Steel	ACDPES/050NPT/15
3/4"	Brass	ACDPEB/075NPT/15
3/4"	Stainless Steel	ACDPES/075NPT/15

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Steel Octagon Boxes & Ceiling Pans	213-216
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Steel Utility Boxes and Covers	234
Steel Specialty Boxes	235
Steel Masonry Boxes	236
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CP Technical Data – Switch & Outlet Boxes

Article 314 of the National Electrical Code® (NEC®) covers the installation and use of boxes. The article includes table references that guide the electrician in the selection of the proper size box necessary to safely accommodate electrical service requirements. The box capacity table is reproduced in part from NEC as a quick reference and guide. The NEC should be consulted for complete details.

Cooper Crouse-Hinds products are produced in accordance with the requirements of UL-514-A, UL-514-B, UL-514-C and are classified for fire resistance according to the standard, Fire Tests of Building Construction and Materials, ANSI/UL 263, ASTM E 119 and NFPA 251. This listing is based on products when used in a fire rated (2 HR) wall or ceiling. Cooper Crouse-Hinds steel boxes are listed with U.L. File #E23156 and Cooper Crouse-Hinds nonmetallic boxes are listed with U.L. File #E102328 and U.L. (2 HR. fire rated) File #R9933.

Cooper Crouse-Hinds switch and outlet boxes comply with the requirements of NEMA standard OS-1, NFPA 70-370 and Federal Spec. #W-J-800E.

Under File #E23156, Cooper Crouse-Hinds concentric and "Moon" KO style boxes, the following is stated "Suitable for bonding without any additional bonding means around concentric (or Eccentric) knockouts where used in circuits above or below 250V."

Cooper Crouse-Hinds NAED/DCI/UPC number is 786189-10 plus the 3-digit product number. On the outlet box 4-digit product number, the NAED/DCI/UPC number is 786189-0 plus the 4-digit product number and for the 5-digit product number, the NAED/DCI/UPC number is 786189 plus the 5-digit number.

Wall thickness on all Steel boxes is 0.0625"

COOPER CROUSE-HINDS SWITCH BOX DETAILS

Knockouts and Pry-outs

Cooper Crouse-Hinds conduit KOs have standard trade size dimensions. KOs are uniform and true for attachment of cable or conduit connectors. Pry-outs for cable entrance are slotted – a twist with screwdriver removes them. KOs and Pry-outs are precision stamped to permit easy removal, but remain sufficiently strong and sturdy when not removed.

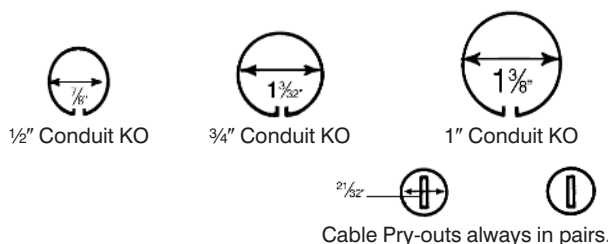


Table 314.16 (A) Metal Boxes

Box Dimension, Inches Trade Size or Type	Min. Cu. In. Cap.	Maximum Number of Conductors							
		No.18	No.16	No.14	No.12	No.10	No.8	No.6	
4x1 1/4 Round or Octagonal	12.5	8	7	6	5	5	4	2	
4x1 1/2 Round or Octagonal	15.5	10	8	7	6	6	5	3	
4x2 1/8 Round or Octagonal	21.5	14	12	10	9	8	7	4	
4x1 1/4 Square	18.0	12	10	9	8	7	6	3	
4x1 1/2 Square	21.0	14	12	10	9	8	7	4	
4x2 1/8 Square	30.3	20	17	15	13	12	10	6	
4 1/16x1 1/4 Square	25.5	17	14	12	11	10	8	5	
4 1/16x2 1/2 Square	29.5	19	16	14	13	11	9	5	
4 1/16x2 1/8 Square	42.0	28	24	21	18	16	14	8	
3x2x1 1/2 Device	7.5	5	4	3	3	3	2	1	
3x2x2 Device	10.0	6	5	5	4	4	3	2	
3x2x2 1/4 Device	10.5	7	6	5	4	4	3	2	
3x2x2 1/2 Device	12.5	8	7	6	5	5	4	2	
3x2x2 3/4 Device	14.0	9	8	7	6	5	4	2	
3x2x3 1/2 Device	18.0	12	10	9	8	7	6	3	
4x2 1/8x1 1/2 Device	10.3	6	5	5	4	4	3	2	
4x2 1/8x1 1/8 Device	13.0	8	7	6	5	5	4	2	
4x2 1/8x2 1/8 Device	14.5	9	8	7	6	5	4	2	
3 3/4x2x2 1/2 Masonry Box/Gang	14.0	9	8	7	6	5	4	2	
3 3/4x2x3 1/2 Masonry Box/Gang	21.0	14	12	10	9	8	7	4	
FS-Minimum Internal Depth 1 3/4 Single Cover Gang	13.5	9	7	6	6	5	4	2	
FD-Minimum Internal Depth 2 3/8 Single Cover Gang	18.0	12	10	9	8	7	6	3	
FS-Minimum Internal Depth 1 3/4 Single Cover Gang	18.0	12	10	9	8	7	6	3	
FD-Minimum Internal Depth 2 3/8 Multiple Cover Gang	24.0	16	13	12	10	9	8	4	

Table 314.16 (B) Volume Required per Conductor

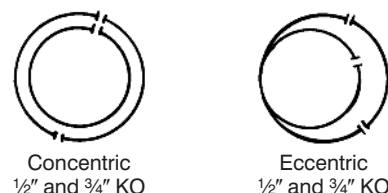
Size of Conductor	Free Space Within Box for Each Conductor
No. 18	1.5 cubic inches
No. 16	1.75 cubic inches
No. 14	2 cubic inches
No. 12	2.25 cubic inches
No. 10	2.5 cubic inches
No. 8	3 cubic inches
No. 6	5 cubic inches

For SI units: one cubic inch = 16.4 cm³.

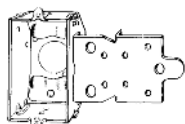
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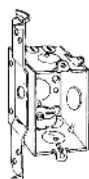
Cooper Crouse-Hinds 4" sq. drawn boxes feature a 1/2" and 3/4" "inverted" concentric KO – easily removed. Our 4" sq. welded feature our 1/2" eccentric KO which also features easy removability of both the 1/2" and 3/4" KOs. NOTE: These KOs are suitable for bonding without bonding jumpers around concentric (or eccentric) knockouts where used in circuits above or below 250V.



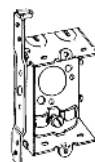
BRACKETS USED ON COOPER CROUSE-HINDS BOXES



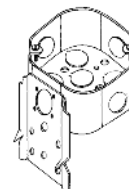
"F" BRACKET
Mounts on face of stud. See catalog number for set back. For wood studs.



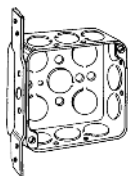
"D" BRACKET
Side mount bracket with set up hook & guide tabs for automatic positioning. Standard bracket set back is $\frac{5}{8}$ ". For wood and metal studs.



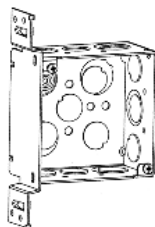
"S" BRACKET
Side mount brackets with set up hook for wood or metal studs. Standard bracket set back is $\frac{5}{8}$ ".



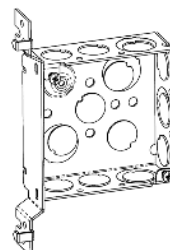
"C" BRACKET
Ceiling box bracket for wood studs.



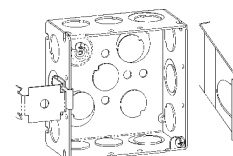
"VS" BRACKET
Plain flat mounted bracket for use on wood or metal studs. No set back.



"VMS" BRACKET
Side bracket for use with wood or metal studs. Provides set up tabs to position on face of stud.



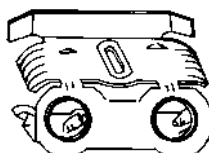
"VP" BRACKET
Side bracket with set up hooks for wood studs.



"SSB" BRACKET
Positions box on either side of a steel stud.

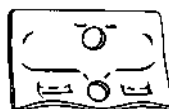
CLAMPS USED ON COOPER CROUSE-HINDS BOXES

Cat. No. TP900



MC-BX

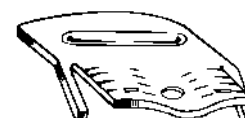
FOR ARMORED & METAL CLAD (MCI) CABLE



NM-1



NM-2

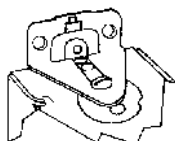


NM-4

FOR NONMETALLIC CABLE

MOUNTING EARS

Cat. No. TP901



ONE SCREW EAR

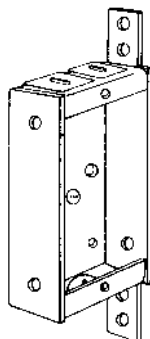
Mounting ears are available on many of our switch boxes. They are set forward in $\frac{1}{16}$ " the "old way" position. Two-screw ears are generally used on shallow boxes and one-screw ears on deep boxes.

Cat. No. TP902

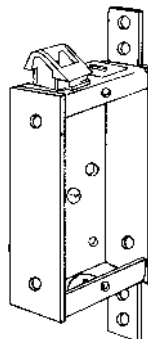


TWO SCREW EAR

1" DEEP SWITCH BOXES – NON-GANGABLE – 6.5 CUBIC INCH CAPACITY 1¹⁵/₁₆" WIDE × 3³/₄" LONG



TP101

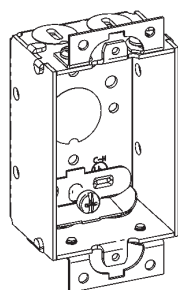


TP103

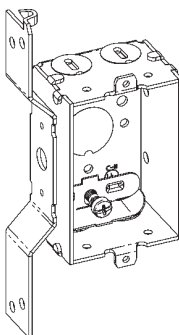
KNOCKOUTS

Product Number	Bracket	Plastic Clamp	Conduit	Cable	Std. Unit Pkg.	Wt. Lbs. Per 100
TP101	"S"	No	1-1/2"	2	25	38
TP103	"S"	Yes	1-1/2"	2	25	39

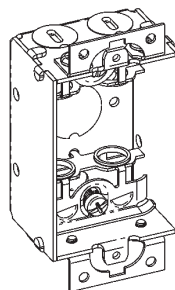
1 1/2" DEEP SWITCH BOXES – NON-GANGABLE – 7.5 CUBIC INCH CAPACITY 2" WIDE × 3" LONG



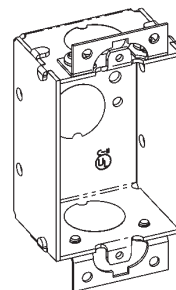
TP100



TP104



TP106



TP114

KNOCKOUTS

Product Number	Bracket	Ears	Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR NONMETALLIC CABLE – CLAMPS IN EACH END							
TP100	—	Yes	2-Cable	—	1-1/2"	50	43
TP104	"S", set 1/2"	—	2-Cable	—	1-1/2"	50	50

FOR ARMoured & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END

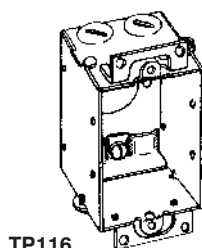
TP106	—	Yes	2-Cable	—	1-1/2"	50	44
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FOR CONDUIT – NO CLAMPS, FLUSH DEVICE

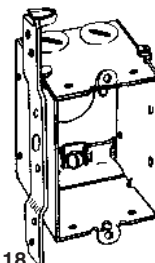
TP114	—	Yes	1-1/2"	—	1-1/2"	50	39
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2" DEEP SWITCH BOXES – GANGABLE – 10.0 CUBIC INCH CAPACITY

2" WIDE × 3" LONG,
FOR NONMETALLIC CABLE –
CLAMPS IN EACH END



TP116

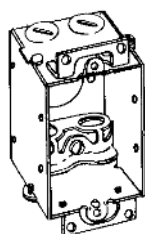


TP118

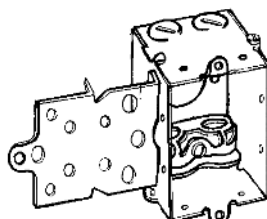
KNOCKOUTS

Product Number	Bracket	Ears	Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP116	—	Yes	2-Cable	—	1-1/2"	50	53
TP118	"S", Set 1/2"	—	2-Cable	—	1-1/2"	50	60

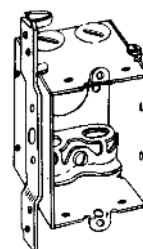
FOR ARMORED & METAL CLAD (MCI) CABLE –
CLAMPS IN EACH END



TP120



TP123

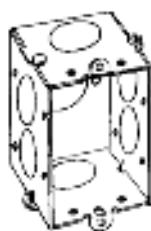


TP124

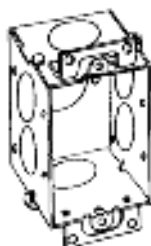
KNOCKOUTS

Product Number	Bracket	Ears	Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP120	—	Yes	2-Cable	—	1-1/2"	50	54
TP123	"F", Set 1/2"	—	2-Cable	—	1-1/2"	50	63
TP124	"S", Set 1/2"	—	2-Cable	—	1-1/2"	50	61

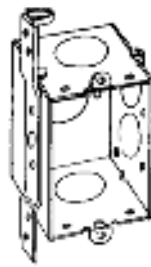
FOR CONDUIT – NO CLAMPS, FLUSH DEVICE



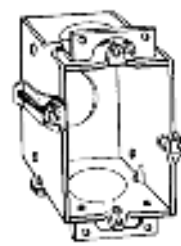
TP126



TP130



TP132

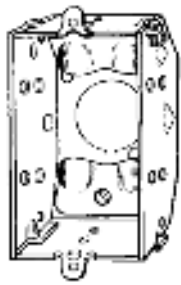


TP131
Hold Tite

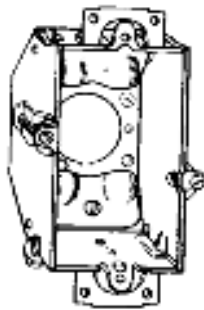
KNOCKOUTS

Product Number	Bracket	Ears	Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP126	—	—	1-1/2"	2-1/2"	1-1/2"	50	47
TP130	—	Yes	1-1/2"	2-1/2"	1-1/2"	50	48
TP132	"S", Set 1/2"	—	1-1/2"	2-1/2", 1 Side	1-1/2"	50	58
TP131	Hold-Tite	Yes	1-1/2-T	—	1-1/2"	50	52

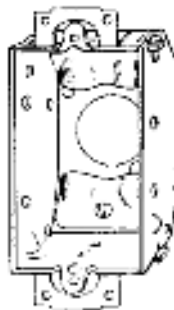
2 1/4" DEEP SWITCH BOXES – GANGABLE – BEVELED CORNERS
10.5 CUBIC INCH CAPACITY
2" WIDE × 3" LONG,
CLAMP SCREWS THROUGH BEVELED CORNERS



TP134



TP137
Hold-Tite



TP138

KNOCKOUTS

Product Number	Ears	Bumps	Each End	Each Side	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP134	—	Yes	2-Cable	—	1-1/2"	50	51
TP137	Yes	—	2-Cable	—	1-1/2"	50	57
TP138	Yes	—	2-Cable	—	1-1/2"	50	55

2½" DEEP SWITCH BOXES – GANGABLE – 12.5 CUBIC INCH CAPACITY
2" WIDE × 3" LONG
FOR NONMETALLIC CABLE – CLAMPS IN EACH END



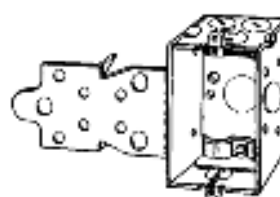
TP158



TP162



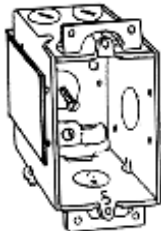
TP163



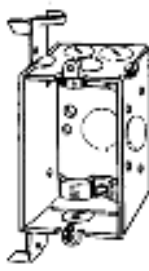
TP164
TP168



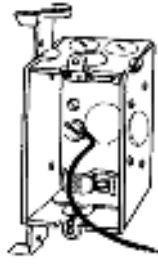
TP170



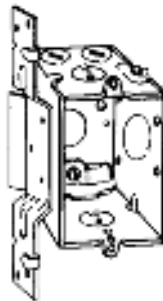
TP161



TP172



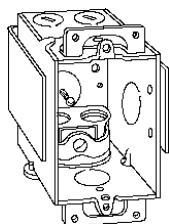
TP174



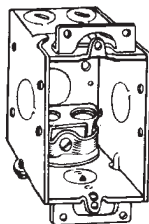
TP171

Product Number	Bracket	Ears	Ground Pigtail	Leveling Bumps	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
						Each Side	Bottom		
TP158	—	—	—	Yes	2-Cable, 1-½"	—	1-½"	50	59
TP115	—	Yes	Yes	—	2-Cable	1-½"	1-½"	50	63
TP161	Snap-In	Yes	—	—	2-Cable	1-½"	—	50	73
TP162	—	Yes	—	—	2-Cable	1-½"	1-½"	50	62
TP163	Hold-Tite	Yes	—	—	2-Cable	—	1-½"	50	65
TP164	"F", Set ½"	—	—	—	2-Cable, 1-½"	1-½"	1-½"	50	71
TP168	"F", Set ¼"	—	—	—	2-Cable, 1-½"	1-½"	1-½"	50	71
TP170	"S", Set ⅝"	—	—	—	2-Cable, 1-½"	1-½"	1-½"	50	69
TP172	"D", Set ⅝"	—	—	—	2-Cable, 1-½"	1-½"	1-½"	50	70
TP174	"D", Set ⅝"	—	Yes	—	2-Cable, 1-½"	1-½"	1-½"	50	71
TP171	"VP", Set ½"	—	—	—	2-Cable, 1-½"	1-½"	1-½"	50	73

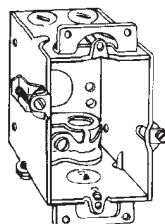
2½" DEEP SWITCH BOXES – GANGABLE – 12.5 CUBIC INCH CAPACITY 2" WIDE × 3" LONG FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



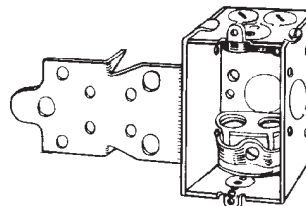
TP177



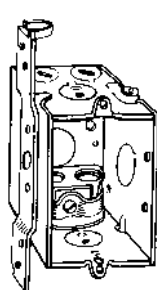
TP178



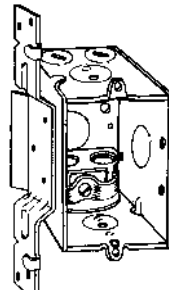
TP179
Hold-Tite



TP180



TP184

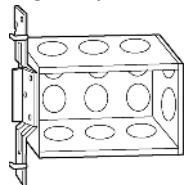


TP185

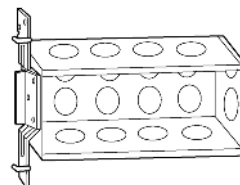
Product Number	Bracket	Ears	Each End	KNOCKOUTS			Std. Unit Pkg.	Wt. Lbs. Per 100
				Each Side	Bottom			
TP177	Snap-In	Yes	2-Cable	1-½"	—		50	74
TP178	—	Yes	2-Cable	1-½"	1-½"		50	63
TP179	Hold-Tite	Yes	2-Cable	—	1-½"		50	66
TP180	"F", Set ½"	—	2-Cable, 1-½"	1-½"	1-½"		50	72
TP184	"S", Set ⅝"	—	2-Cable, 1-½"	1-½"	1-½"		50	70
TP185	"VP", Set ½"	—	2-Cable, 1-½"	1-½"	1-½"		50	74

GANG SWITCH BOXES WITH VP BRACKET, SET BACK ½"

2½" DEEP – 3¾" HIGH – ½" AND ¾" CONCENTRIC KOS

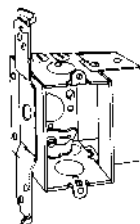
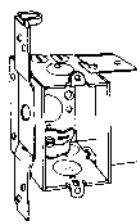


TP632



TP633

Product Number	Gang	Width	Each End	KNOCKOUTS			Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
				Each Side	Bottom				
TP632	3	5 ⅞"	2	3	6		5	143	46.5
TP633	4	7 ⅜"	2	4	8		5	179	62.0

2½" DEEP "EC" BOXES – GANGABLE – CUBIC INCH CAPACITY (SEE BELOW)**2" WIDE × 3" LONG
CLAMPS IN EACH END****TP188****TP190****TP196**

NOW... The Cubic Capacity of any of our new work 2½" Deep Switch Boxes can be increased to 18 cubic inches simply by adding our **"EC" Extender** to the sides of the box. This provides **5.5 extra** cubic inches of space necessary to conform to revisions in the National Electrical Code. **"EC"** boxes are stocked factory assembled in popular styles, however the **"EC" Extender** can be ordered separately for "Instant-On" assembly on the job with Cooper Crouse-Hinds Switch Boxes.

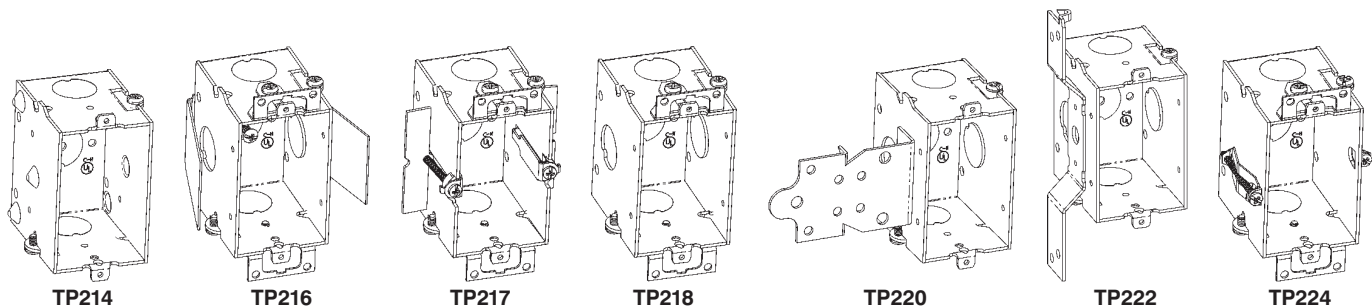
Product Number	Bracket	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
			Each Side	Bottom			
TP188	—	—	—	—	50	32	5.5
FOR NONMETALLIC CABLE							
TP190	"D", Set ⅝"	2-Cable, 1-½"	—	1-½"	25	89	18.0
TP196	"S", Set ⅝"	2-Cable, 1-½"	—	1-½"	25	89	18.0

CP Steel Switch Boxes

CP Steel Boxes

2½" DEEP SWITCH BOXES – GANGABLE – 12.5 CUBIC INCH CAPACITY

2" WIDE × 3" LONG
FOR CONDUIT – NO CLAMPS



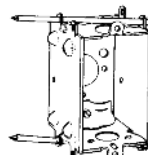
Product Number	Bracket	Ears	Leveling Bumps	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
					Each Side	Bottom		
TP214	—	—	Yes	1-½"	—	1-½"	50	55
TP216	Snap-In	Yes	—	1-½"	1-½"	—	50	69
TP217	—	Yes	—	1-½"	—	1-½"	50	64
TP218	—	Yes	—	1-½"	1-½"	1-½"	50	58
TP220	"F", Set ½"	—	—	1-½"	1-½", 1 Side	1-½"	50	66
TP222	"S", Set ⅝"	—	—	1-½"	1-½", 1 Side	1-½"	50	65
TP224	Hold-Tite	Yes	—	1-½"	—	1-½"	50	61

2½" DEEP SWITCH BOXES – "INSTANT ON" – 12.5 CUBIC INCH CAPACITY

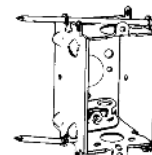
2" WIDE × 3" LONG
WITH BUMPS – CLAMPS IN EACH END (BUMPS LEVEL THE BOX AGAINST THE SIDE OF STUD, TOP TO BOTTOM, FRONT TO BACK)



TP206



TP210



TP213

Product Number	Clamps	Nails	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Each Side	Bottom		
TP206	Nonmetallic	—	2-Cable, 1-½"	—	1-½"	50	61
TP210	Nonmetallic	Angle	2-Cable, 1-½"	—	1-½"	50	66
TP213	Armored Cable	Angle	2-Cable, 1-½"	—	1-½"	50	66

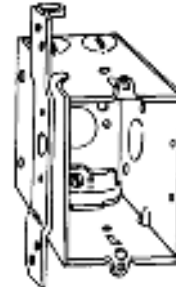
2³/₄" DEEP SWITCH BOXES – GANGABLE – 14.0 CUBIC INCH CAPACITY 2" WIDE × 3" LONG FOR NONMETALLIC CABLE – CLAMPS IN EACH END



TP660



TP662



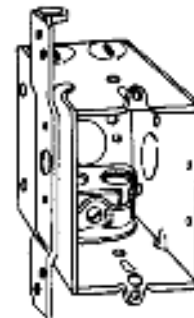
TP664

Product Number	Bracket	Ears	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Each Side	Bottom		
TP660	—	—	2-Cable	1-1/2"	1-1/2"	50	62
TP662	—	Yes	2-Cable	1-1/2"	1-1/2"	50	67
TP664	"S", Set 5/8"	—	2-Cable	1-1/2"	1-1/2"	50	70

FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP668

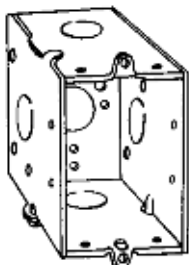


TP670

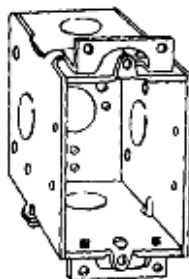
Product Number	Bracket	Ears	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Each Side	Bottom		
TP668	—	Yes	2-Cable	1-1/2"	1-1/2"	50	68
TP670	"S", Set 5/8"	—	2-Cable	1-1/2"	1-1/2"	50	71

2³/₄" DEEP SWITCH BOXES – GANGABLE – 14.0 CUBIC INCH CAPACITY

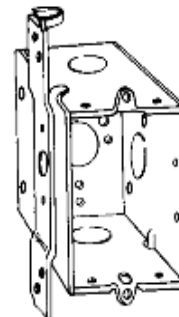
2" WIDE × 3" LONG
FOR CONDUIT – NO CLAMPS



TP672
TP674



TP676 (1 screw ear)
TP678 (2 screw ear)

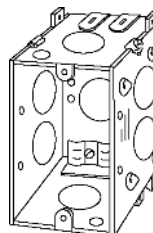


TP680
TP677

Product Number	Bracket	Ears	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Each Side	Bottom		
TP672	—	—	1-1/2"	1-1/2"	1-1/2"	50	59
TP674	—	—	1-3/4"	1-3/4"	1-1/2"	50	59
TP676	—	Yes	1-1/2"	1-1/2"	1-1/2"	50	61
TP678	—	Yes	1-3/4"	1-3/4"	1-1/2"	50	61
TP680	"S", Set 5/8"	—	1-1/2"	1-1/2", 1 Side	1-1/2"	50	70
TP677	"S", Set 5/8"	—	1-3/4"	1-3/4", 1 Side	1-1/2"	50	70

2¹/₂" DEEP SWITCH BOX – GANGABLE – 16.0 CUBIC INCH CAPACITY

2" WIDE × 3³/₄" LONG
FOR NON-METALLIC CABLE – CLAMPS IN EACH END



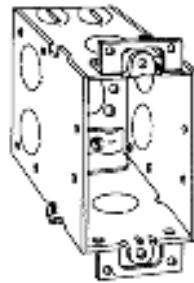
TP226

Product Number	Clamps	Bracket	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Each Side	Bottom		
TP226	Nonmetallic	External Nail	1-1/2"	2-1/2"	1-1/2"	50	35

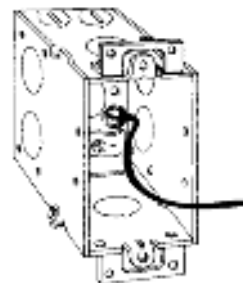
3½" DEEP SWITCH BOXES – GANGABLE – 18.0 CUBIC INCH CAPACITY
2" WIDE × 3" LONG
FOR NONMETALLIC CABLE – CLAMPS IN EACH END



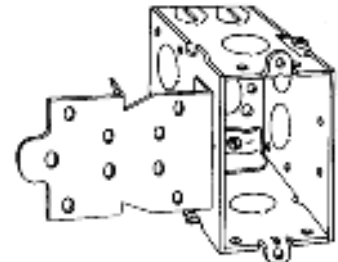
TP236



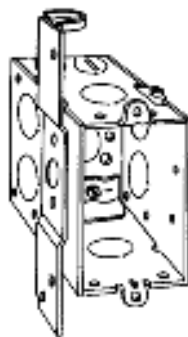
TP238



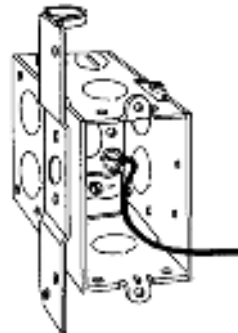
TP239



TP240



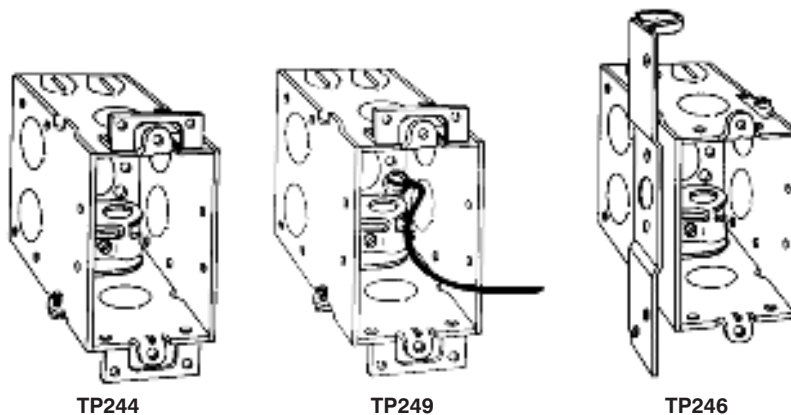
TP242



TP243

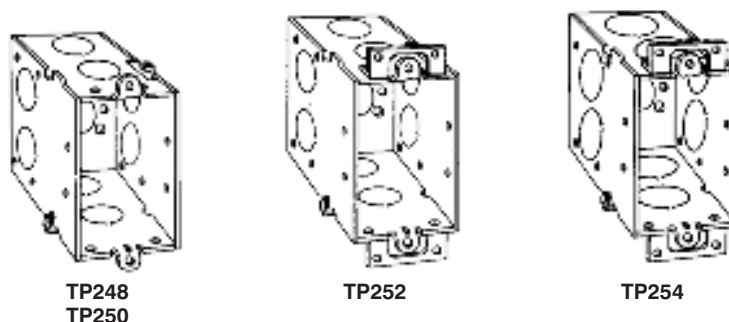
Product Number	Bracket	Ground Pigtail	Ears	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs Per 100
					Each Side	Bottom		
TP236	—	—	—	2-Cable, 1-½"	2-½"	1-½"	25	78
TP238	—	—	Yes	2-Cable, 1-½"	2-½"	1-½"	25	80
TP239	—	Yes	Yes	2-Cable, 1-½"	2-½"	1-½"	25	81
TP240	"F", Set ½"	—	—	2-Cable, 1-½"	2-½"	1-½"	25	88
TP242	"S", Set ⅞"	—	—	2-Cable, 1-½"	2-½"	1-½"	25	87
TP243	"S", Set ⅞"	Yes	—	2-Cable, 1-½"	2-½"	1-½"	25	88

3½" DEEP SWITCH BOXES – GANGABLE – 18.0 CUBIC INCH CAPACITY 2" WIDE × 3" LONG FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



Product Number	Bracket	Ground Pigtail	Ears	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs Per 100
					Each Side	Bottom		
TP244	—	—	Yes	2-Cable, 1-½"	2-½"	1-½"	25	81
TP249	—	Yes	Yes	2-Cable, 1-½"	2-½"	1-½"	25	82
TP246	"S", Set 7/8"	—	—	2-Cable, 1-½"	2-½"	1-½"	25	88

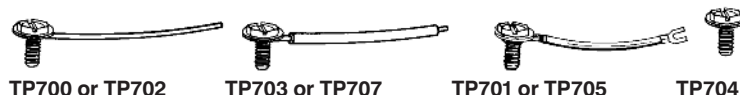
FOR CONDUIT – NO CLAMPS



Product Number	Bracket	Ears	Each End	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs Per 100
				Each Side	Bottom		
TP248	—	—	2-½"	2-½"	1-½"	25	74
TP250	—	—	2-¾"	2-¾"	1-½"	25	74
TP252	—	Yes	2-½"	2-½"	1-½"	25	76
TP254	—	Yes	2-¾"	2-¾"	1-½"	25	76

GROUNDING DEVICES

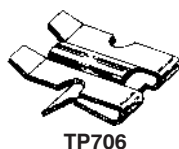
GROUNDING SCREW AND PIGTAIL



Product Number	Description	Std. Pkg.	Unit Pkg.	Wt. Lbs. Per 100
TP700	Grounding Screw with 6" Bare No. 14 Copper Wire	1000	50	1
TP701	Grounding Screw with Insulated No. 12 Stranded Wire – 8" overall	1000	50	2
TP702*	Grounding Screw with 6" Bare No. 12 Copper Wire	1000	50	2
TP703	Grounding Screw with 6" Insulated No. 12 Copper Wire	1000	50	2
TP705	Grounding Screw with Insulated No. 14 Stranded Wire – 8" overall	1000	50	1
TP707	Grounding Screw with 6" Insulated No. 14 Copper Wire	1000	50	1
TP704	#10-32 × 3/8" Grounding Screw	1000	100	.5

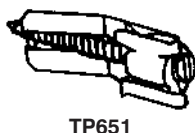
* TP702 is standard wire installed in Cooper Crouse-Hinds boxes

GROUNDING CLIP



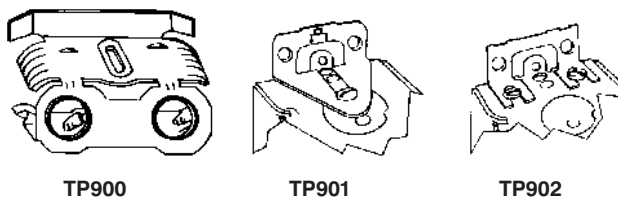
Product Number	Description	Std. Pkg.	Unit Pkg.	Wt. Lbs. Per 100
TP706	For Grounding Switch & Outlet Boxes Using Nonmetallic Sheathed Cables No. 14 & No. 12, with Grounding Wire	1000	100	.5

OLD WORK CLIP



Product Number	Description	Std. Pkg.	Unit Pkg.	Wt. Lbs. Per 100
TP651	Clips lock old-work steel switch boxes tightly to wall. Two required per box	250 sets	25 sets	4

REPLACEMENT PARTS



Product Number	Description	Unit Pkg.	Wt. Lbs. Per 100
TP900	MC-BX Clamp with Screws	200	17.3
TP901	One Screw Mounting Ear with Screws	200	3.2
TP902	Two-Screw Mounting Ear with Screws	200	2.7

HOLD-IT SWITCH BOX SUPPORTS

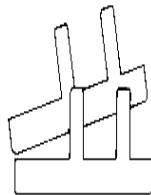


FIG. 1



FIG. 2

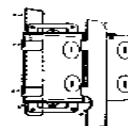
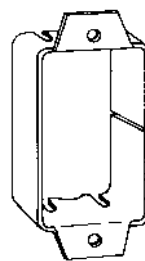


FIG. 3

Product Number	Description	Std. Pkg.	Carton Quantity	Wt. Lbs. Per 100
TP708	Two metal holders for mounting old-work switch boxes in all types of wall materials	500 Sets	50 Sets	5

SWITCH BOX EXTENSION



TP709

Product Number	Description	Std. Pkg.	Capacity Cu. In.	Wt. Lbs. Per 100
TP709	Fits snugly inside all 3" x 2" width boxes. Maximum adjustable depth 7/8". Furnished with mounting screws.	50	3.5	13

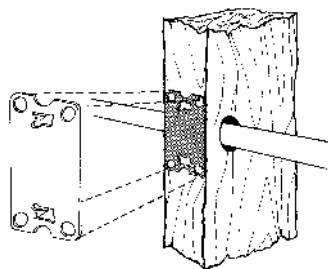
P-300 STEEL STUD SAFETY PLATE

MEETS REQUIREMENT OF NATIONAL ELECTRIC CODE

SAME SIZE AS FACE OF STUD

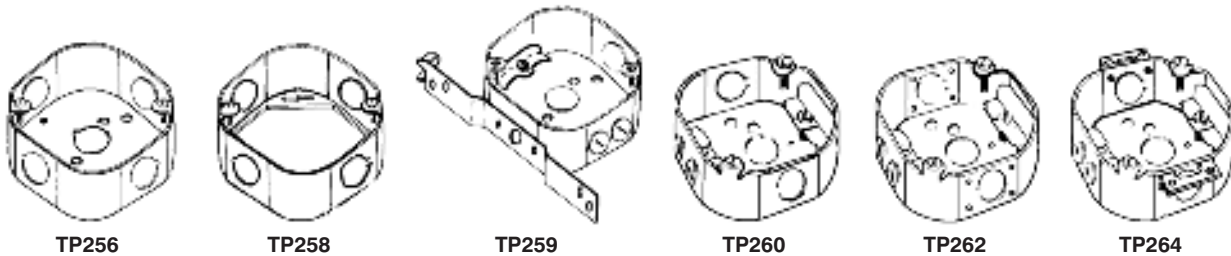
NO NAILS REQUIRED

PROTECTS ELECTRICAL CABLE AND COPPER WATER PIPES



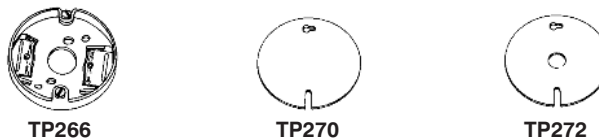
Product Number	Description	Std. Pkg.	Wt. Lbs. Per 100
TP659	2" x 3 1/2" Steel Plate	100	11

3 1/4" OCTAGON OUTLET BOXES* – 11.5 CUBIC INCH CAPACITY 1 1/2" DEEP



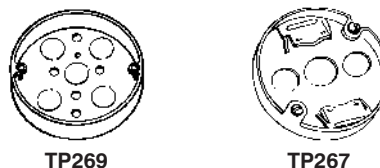
KNOCKOUTS					
Product Number	Description	Sides	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
FOR CONDUIT – NO CLAMPS					
TP256	—	4-1½"	1-1½"	50	41
TP258	Extension Ring	4-1½"	—	50	31
FOR NONMETALLIC CABLE WITH CLAMPS					
TP259	“S” Bracket, Set ½"	4-Cable, 1-1½"	1-1½"	50	53
TP260	—	4-Cable, 2-1½"	1-1½"	50	44
TP262	With Side Nail Holes	4-Cable, 2-1½"	1-1½"	50	43
TP264	Two Screw Ears	4-Cable, 2-1½"	1-1½"	50	47

3 1/4" ROUND CEILING PAN* – 4.0 CUBIC INCH CAPACITY 1/2" DEEP CLAMPS IN BOTTOM



Product Number	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs Per 100
	Cable	Conduit		
TP266	4	1-1/2"	50	30
3 1/4" ROUND COVERS				
TP270	Flat Blank		100	18
TP272	Flat, 1/2" KO in Center		100	18

4" ROUND CEILING PANS* – 6.0 CUBIC INCH CAPACITY 1/2" DEEP



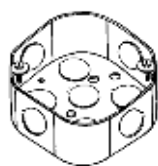
Product Number	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
		Sides	Bottom		
TP269	KOs Only	—	5-1/2"	50	35
TP267	KOs and Clamps	—	4-Cable, 3-1/2"	50	39

*Weight limit for 3 1/4" and 4" octagon outlet boxes and ceiling pans is 50lbs for fixture. Not suitable for fans.

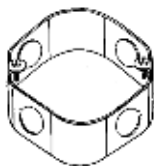
4" OCTAGON OUTLET BOXES† – 15.5 CUBIC INCH CAPACITY

1½" DEEP

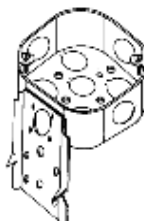
FOR CONDUIT – NO CLAMPS



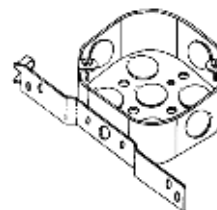
TP274, TP276, TP278,
TP834*



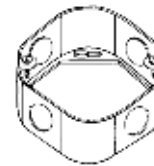
TP273



TP280



TP282



TP284, TP286

* For Air Plenum (No Mounting Holes)

Product Number	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
		Sides	Bottom		
TP274	—	4-½"	5-½"	50	50
TP273	Blank Bottom	4-½"	—	50	51
TP276	—	4-¾"	3-½", 2-¾"	50	50
TP278	—	2-½", 2-¾"	3-½", 2-¾"	50	50
TP280	"C" Bracket	4-½"	5-½"	50	60
TP282	"S" Bracket, Set ½"	3-½"	5-½"	50	58
Air Plenum					
TP834*	For Air Plenum	4-½"	5-½"	50	52

OCTAGON EXTENSION RINGS – (SLOT & KEY PERMIT MOUNTING WITHOUT REMOVING BOX SCREWS)

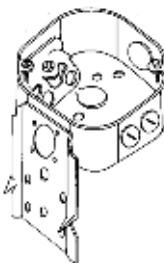
TP284‡	—	4-½"	—	50	36
TP286‡	—	2-½", 2-¾"	—	50	36

1½" DEEP

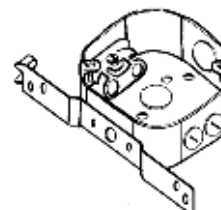
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP310



TP312



TP314

Product Number	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs Per 100
		Sides	Bottom		
TP310	—	4-Cable, 2-½"	1-½"	50	57
TP312	"C" Bracket	4-Cable, 2-½"	1-½"	50	66
TP314	"S" Bracket, Set ½"	4-Cable, 1-½"	1-½"	50	64

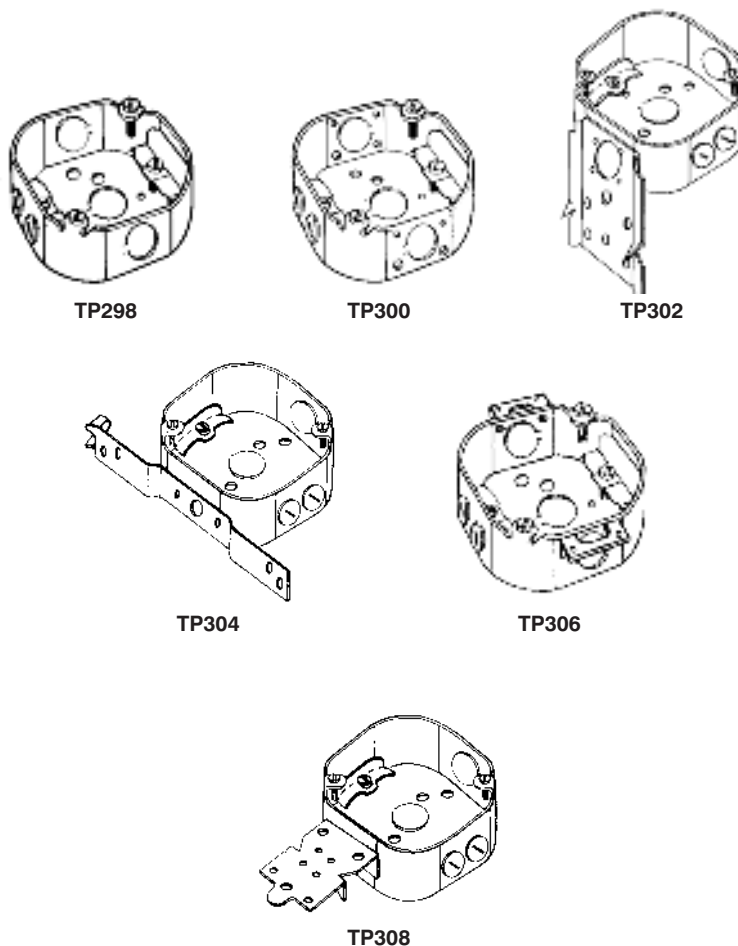
† Weight limit for ¾" and 4" octagon outlet boxes and ceiling pans is 50lbs for fixture. Not suitable for fans.

‡ CSA Certified

4" OCTAGON OUTLET BOXES – 15.5 CUBIC INCH CAPACITY

1½" DEEP

FOR NONMETALLIC CABLE – WITH CLAMPS



Product Number	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
		Sides	Bottom		
TP298	—	4-Cable, 2-½"	1-½"	50	56
TP300	With Side Nail Holes	4-Cable, 2-½"	1-½"	50	55
TP302	"C" Bracket	4-Cable, 2-½"	1-½"	50	65
TP304	"S" Bracket, Set ½"	4-Cable, 1-½"	1-½"	50	64
TP306	Two Screw Ears	4-Cable, 2-½"	1-½"	50	58
TP308	"F" Bracket, Set ½"	4-Cable, 1-½"	1-½"	50	64

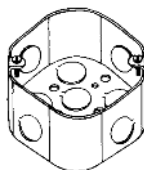
CP Steel Octagon Boxes

CP Steel Boxes

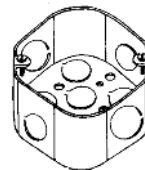
4" OCTAGON OUTLET BOXES – 21.5 CUBIC INCH CAPACITY

2 1/8" DEEP

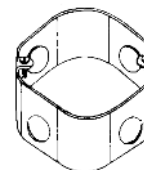
FOR CONDUIT – NO CLAMPS



TP288, TP290, TP294



TP292, TP838*



TP339

* For Air Plenum (No Mounting Holes)

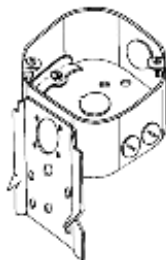
Product Number	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
		Sides	Bottom		
TP288	—	4- 1/2"	3- 1/2", 2- 3/4"	25	64
TP290	—	4- 3/4"	3- 1/2", 2- 3/4"	25	64
TP292	—	2- 1/2", 2- 3/4"	3- 1/2", 2- 3/4"	25	64
TP294	—	4- 1"	3- 1/2", 2- 3/4"	25	64
TP339	Blank Bottom	4- 1/2"	—	25	65
Air Plenum					
TP838*	Plenum	2- 1/2", 2- 3/4"	3- 1/2", 2- 3/4"	25	62

4" OCTAGON OUTLET BOXES – 21.5 CUBIC INCH CAPACITY

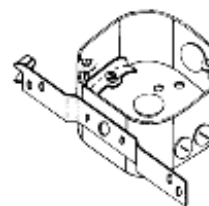
2 1/8" DEEP – WITH CABLE CLAMPS



TP316



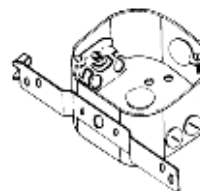
TP318



TP320



TP317



TP338

		KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
Product Number	Description	Sides	Bottom		
FOR NONMETALLIC CABLE					
TP316	—	4-Cable, 2-1/2"	1-1/2"	25	68
TP318	"C" Bracket	4-Cable, 2-1/2"	1-1/2"	25	88
TP320	"S" Bracket, Set 1/2"	4-Cable, 1-1/2"	1-1/2"	25	81
FOR ARMORED & METAL CLAD (MCI) – CABLE-CLAMPS IN EACH END					
TP317	—	4-Cable, 2-1/2"	1-1/2"	25	69
TP338	"S" Bracket, Set 1/2"	4-Cable, 1-1/2"	1-1/2"	25	82

4" OCTAGON BOX COVERS – CUBIC CAPACITY (SEE BELOW)

TP322
TP853*

TP323

TP326, TP331,
TP332, TP333

TP328



TP330



TP329



TP335



TP334



TP336

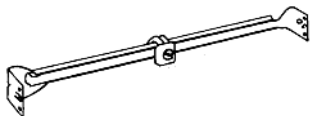
* For Air Plenum
† CSA Certified

Product Number	Description	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs. Per 100
TP322†	Flat Blank – Octagon Shape	—	50	22
TP323†	Flat Blank – Round Shape	—	50	24
TP333	Raised 1", Open With Ears 2¾"	7.0	25	30
TP332	Raised ½", Open With Ears 2¾"	3.3	50	22
TP326	Raised ⅝", Open With Ears 2¾"	3.8	50	20
TP331	Raised ¾", Open With Ears 2¾"	5.0	50	26
TP328†	Flat With ½" KO – Octagon Shape	—	50	22
TP330	Raised ⅝", With ½" KO	3.8	50	31
TP329†	Flat With ½" KO – Round Shape	—	50	24
TP335	Flat, For Toggle Switch	—	50	23
TP334	Flat, Single Receptacle 1⅜"	—	50	21
TP336	Flat, For Duplex Receptacle	—	50	18
Air Plenum				
TP853*	Flat, Blank With PVC Gasket	—	50	24

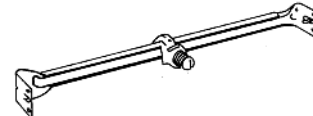
ADJUSTABLE BAR HANGERS

HOLDING PRONG... HOLDS BOX IN PLACE FOR NAILING – DESIGN RESISTS BENDING AND TWISTING – TP354 AND TP356 HAVE LOCKING TABS TO HOLD BAR IN POSITION

Weight Limits: 35 lbs. at 16", 15 lbs. at 24".



TP356



TP354

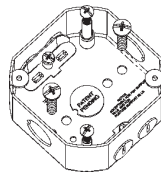
Product Number	Stud Spacing	Length	Stud	Std. Unit Pkg.	Wt. Lbs. Per 100
TP354	16" & 24"	14"-22½"	Yes	50	43
TP356	16" & 24"	14"-22½"	—	50	41

CP Ceiling Fan Box And Supports

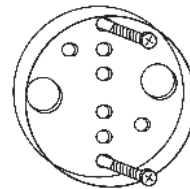
CP Steel Boxes

CEILING FAN BOXES – CUBIC INCH CAPACITY (SEE BELOW)

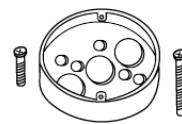
Weight Limits: TP261 – 35 lbs. max. for fans, 50 lbs. max. for fixture. TP301 – Fan is supported independent of outlet box, mounting screws go through box and into joist. Box will support fans up to 70 lbs. and fixtures up to 90 lbs. TP275 – 70 lbs, max. for fans, 90 lbs. max for fixtures.



TP275



TP261



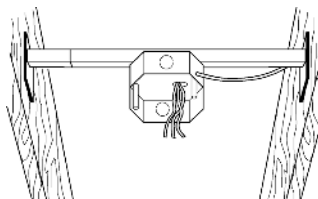
TP301

Product Number	Description	Cubic In. Capacity	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100	WEIGHT LIMITS	
			Sides	Bottom			Fans	Fixtures
TP275	1½" Deep, Clamps and Mounting Screws (polybagged)	15.5	4-Cable, 2-½"	1-½"	20	66.6	70 lbs.	90 lbs.
TP261	⅝" Deep with External Clamp and Mounting Screws (polybagged)	8.0	—	2-½"	20	50	35 lbs.	50 lbs.
TP301*	½" Deep, 4" Round, with NM Snap-In Connector, mtg. screws, Protective Cover (no bag)	6.8	—	3-½"	20	51	70 lbs.*	90 lbs.*

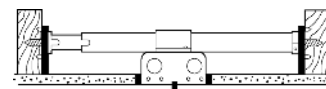
* TP301 fan is supported independent of outlet box

CEILING FAN BOXES AND SUPPORTS

Weight Limits: Up to 35 lbs. for fans.
Up to 50 lbs. for fixtures.



TP315



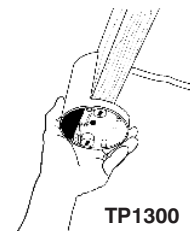
TP379

Product Number	Description	Stud Spacing	Capacity. Cu. In.	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Bottom	Side		
TP315*	Fan Box with New Work Bar Hanger	16"–24"	15.5	2-½"	2-½"	12	192
TP379	1 ½" Deep with Fan Brace Old Work Bar Hanger	16"–24"	15.5	2-½"	4-½"	12	207

* TP315 comes with Romex clamp installed on one side. The other 3 sides have a 1/2" KO, a bagged MC clamp and screw and a bagged plastic NM connector

CEILING FAN BOXES – PVC

Weight Limits: Fans and fixtures are supported independent of outlet box. Mounting screws go through box and into joist. Box will support up to 70 lbs. for fans and 90 lbs. for fixtures. Provided with Romex connector

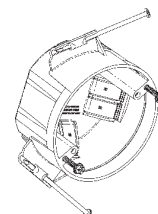


TP1300

Product Number	Description	Capacity Cu. In.	Knockouts	Integral Clamp	Std. Unit Pkg.	Wt. Lbs. Per 100
TP1300	4 ¼" diam., ½" deep pan section, 4" deep overall – with mtg. hardware & external clamp, protective cover	14.0	3-½"	1	24	34
TP1300-1	Same as 1300, packed in counter display	14.0	3-½"	1	24	35

NON-METALLIC CEILING FAN BOXES

- Made of heavy-duty, engineered thermoplastic material
- Offers the labor-saving feature of quick entry and integral clamping
- Eliminates the need to use a screwdriver to break open pry-outs
- The easy access entry-point serves as a wire clamp, eliminating time required to mechanically secure the wire to the box

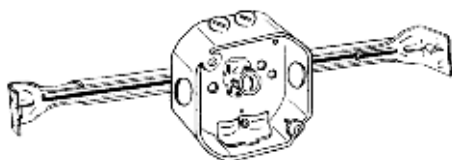


TP16511

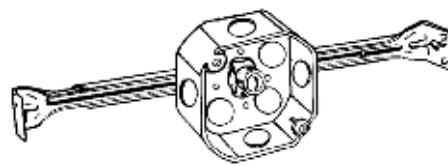
Product Number	Diameter	Mounting Method	Capacity Cu. In.	No. of Clamp Openings	Std. Unit Pkg.	Wt. Lbs. Per 100
TP16511	4"	Nails only	22.5	6	25	21

4" OCTAGON BOX AND ADJUSTABLE BAR SETS – 15.5 CUBIC INCH CAPACITY 1½" DEEP BOX SETS

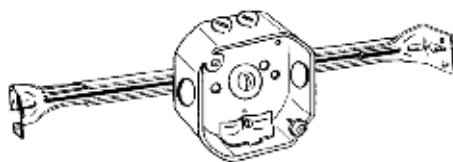
Weight Limits: 35 lbs. at 16", 15 lbs. at 24"



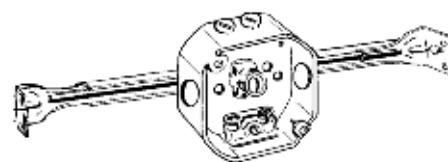
TP376



TP372*



TP377

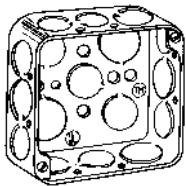


TP368

Product Number	Stud Spacing	Stud	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR CONDUIT – NO CLAMPS				
TP372*	16"–24"	Yes	25	85
FOR NONMETALLIC CABLE – WITH CLAMPS				
TP376	16"–24"	Yes	25	104
TP377	16"–24"	—	25	102
FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END				
TP368	16"–24"	Yes	25	100

* 4" Octagon Box and Adjustable Bar Sets have ½" KOs for conduit

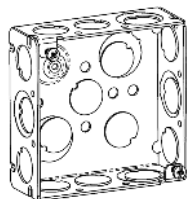
4" SQUARE OUTLET BOXES – 18.0 CUBIC INCH CAPACITY
1 1/4" DEEP – FOR CONDUIT



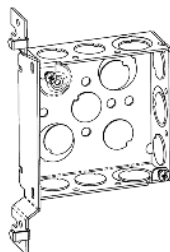
TP408

Product Number	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
			Sides	Bottom		
TP408	—	Drawn	12-1/2"	5-1/2"	50	61

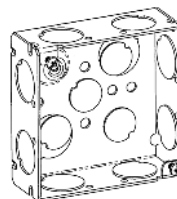
4" SQUARE OUTLET BOXES – 22.0 CUBIC INCH CAPACITY (WELDED)† 1½" DEEP – FOR CONDUIT 21.0 CUBIC INCH CAPACITY (DRAWN)



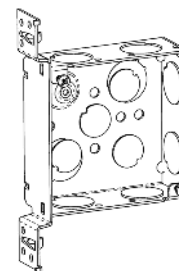
TP404/TP404PF



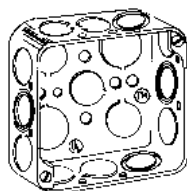
TP425



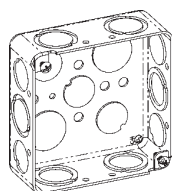
TP467



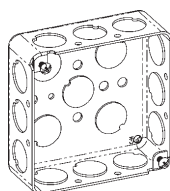
TP469



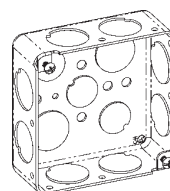
TP830*



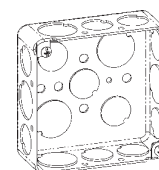
TP405



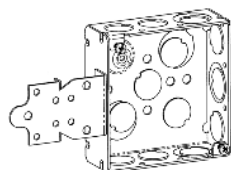
TP410



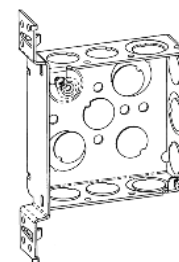
TP412
TP839*



TP414



TP418



TP423

* For Air Plenum (No Mounting Holes)

Product Number	Metal Stud Sizes	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Sides	Bottom		
TP404	—	—	Welded	8-½", 4-½" + ¾" E	2-½", 2-½" + ¾" E	50	72
TP404PF*	—	—	Welded	8-½", 4-½" + ¾" E	2-½", 2-½" + ¾" E	50	72
TP425	—	"VP"	Welded	6-½", 3-½" + ¾" E	2-½", 2-½" + ¾" E	25	82
TP423	All	"VMS"	Welded	6-½", 3-½" + ¾" E	2-½", 2-½" + ¾" E	25	81
TP405	—	—	Drawn	4-½", 6-½" & ¾"-C	3-½", 2-¾"	50	67
TP410	—	—	Drawn	12-½"	5-½"	50	67
TP412	—	—	Drawn	8-¾"	3-½", 2-¾"	50	67
TP414	—	—	Drawn	8-½", 4-¾"	3-½", 2-¾"	50	67
TP418	—	"F", Set Flush	Welded	6-½", 3-½" + ¾" E	2-½", 2-½" + ¾" E	25	84
TP467	—	—	Welded	8-¾"	2-½", 2-½" + ¾" E	50	72
TP469	ALL	"VMS"	Welded	6-¾"	2-½", 2-½" + ¾" E	25	81
Air Plenum							
TP830*	—	—	Drawn	8-½", 4-¾"	3-½", 2-¾"	50	72
TP839*	—	—	Drawn	8-¾"-C	3-½", 2-¾"	50	72

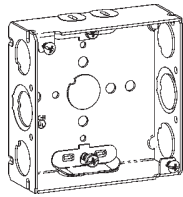
† All welded 4" square outlet boxes have a raised dimple for ground screw

* TP404PF includes ground screw with pigtail lead

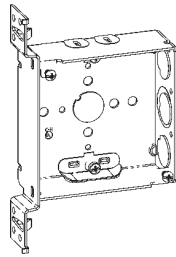
4" SQUARE OUTLET BOXES – 22.0 CUBIC INCH CAPACITY

1½" DEEP

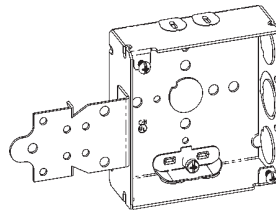
FOR NONMETALLIC CABLE – CLAMPS IN EACH END



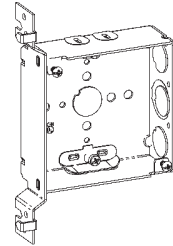
TP444



TP449

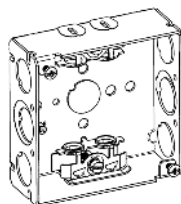
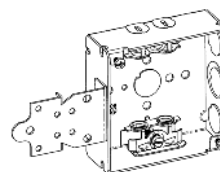
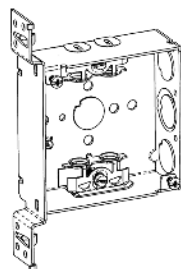
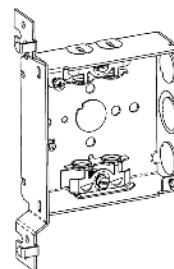


TP446



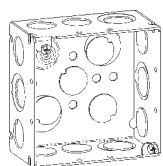
TP445

Product Number	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
			Sides	Bottom		
TP449	"VMS"	Welded	4-Cable, 2-½", 1-½" & ¾"-E	1-½"	25	85
TP444	—	Welded	4-Cable, 4-½", 2-½" & ¾"-E	1-½"	50	77
TP446	"F", Set Flush	Welded	4-Cable, 2-½", 1-½" & ¾"-E	1-½"	25	88
TP445	"VP"	Welded	4-Cable, 2-½", 1-½" & ¾"-E	1-½"	25	85

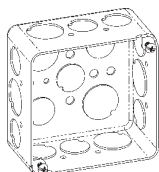
4" SQUARE OUTLET BOXES – 22.0 CUBIC INCH CAPACITY**1½" DEEP****FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END****TP454****TP456****TP459****TP461**

Product Number	Metal Stud Sizes	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Sides	Bottom		
TP459	All	"VMS"	Welded	4-Cable, 2-½", 1-½" & ¾"-E	1-½"	25	89
TP454	—	—	Welded	4-Cable, 4-½", 2-½" & ¾"-E	1-½"	50	81
TP456	—	"F", Set Flush	Welded	4-Cable, 2-½", 1-½" & ¾"-E	1-½"	25	92
TP461	—	"VP"	Welded	4-Cable, 2-½", 1-½" & ¾"-E	1-½"	25	89

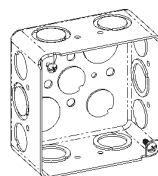
4" SQUARE OUTLET BOXES – 30.3 CUBIC INCH CAPACITY 2 1/8" DEEP WITH CONDUIT KOs



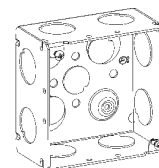
TP403/TP403PF



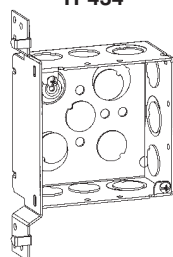
TP434



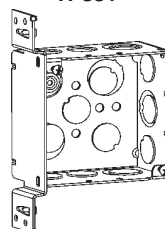
TP438
TP831*



TP432
TP436
TP840*



TP437



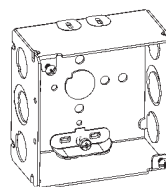
TP451

* For Air Plenum (No Mounting Holes)

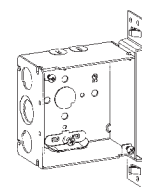
Product Number	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
			Sides	Bottom		
TP403	—	Welded	8-1/2", 4-1/2" & 3/4"-E	2-1/2", 2-1/2" & 3/4"E	25	84
TP403PF†	—	Welded	8-1/2", 4-1/2" & 3/4"-E	2-1/2", 2-1/2" & 3/4"E	25	84
TP432	—	Welded	8-3/4"	2-1/2", 2-1/2" & 3/4"E	25	84
TP436	—	Welded	8-1"	2-1/2", 2-1/2" & 3/4"E	25	84
TP434	—	Drawn	8-1/2", 4-3/4"	3-1/2", 2-3/4"	25	84
TP438	—	Drawn	4-1/2", 6-1/2" & 3/4"-C	3-1/2", 2-3/4"	25	84
TP451	"VMS"	Welded	6-1/2", 3-1/2" & 3/4"-E	2-1/2", 2-1/2" & 3/4"E	25	96
TP437	"VP"	Welded	6-1/2", 3-1/2" & 3/4"-E	2-1/2", 2-1/2" & 3/4"E	25	98
Air Plenum						
TP831*	—	Drawn	8-1/2", 4-3/4"	3-1/2", 2-3/4"	25	90
TP840*	—	Drawn	8-3/4"	3-1/2", 2-3/4"	25	90

† TP403PF includes ground screw with pigtail lead

2 1/8" DEEP – 30.3 CUBIC INCH CAPACITY FOR NONMETALLIC CABLE CLAMPS



TP450



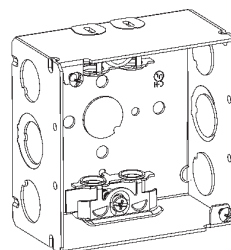
TP452

Product Number	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
			Sides	Bottom		
TP450	—	Welded	4-Cable, 4-1/2", 2-1/2" & 3/4"-E	1-1/2"	25	90
TP452	"VMS"	Welded	4-Cable, 2-1/2", 1-1/2" & 3/4"-E	1-1/2"	25	104

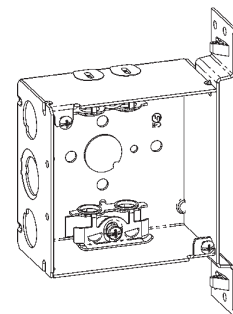
4" SQUARE OUTLET BOXES 30.3 CUBIC INCH CAPACITY

2 1/8" DEEP

FOR ARMORED & METAL CLAD (MCI) CABLE – CLAMPS IN EACH END



TP431

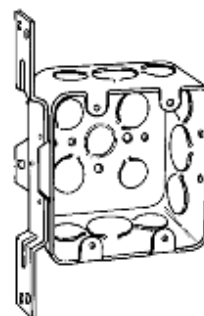


TP440

Product Number	Metal Stud Sizes	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
				Sides	Bottom		
TP431	—	—	Welded	4-Cable, 4-1/2", 2-1/2" & 3/4"-E	1-1/2"	25	91
TP440	All	"VMS"	Welded	4-Cable, 2-1/2", 1-1/2" & 3/4"-E	1-1/2"	25	103

4" SQUARE TWO-DEVICE BOXES – 30.3 CUBIC INCH CAPACITY

2 1/8" DEEP



TP391



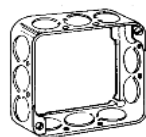
TP393, TP395

Product Number	Bracket	Description	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
			Sides	Bottom		
TP391	"VS"	Drawn	6-1/2", 3-3/4"	3-1/2", 2-3/4"	25	95
TP393	—	Drawn	12-1/2"	3-1/2", 2-3/4"	25	84
TP395	—	Drawn	8-1/2", 4-3/4"	3-1/2", 2-3/4"	25	84

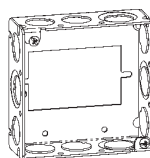
CP Steel Square Boxes & Covers

CP Steel Boxes

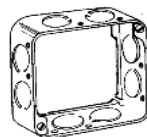
4" SQUARE EXTENSION RINGS – 21.0 CUBIC INCH CAPACITY 1½" DEEP WITH CONDUIT KNOCKOUTS



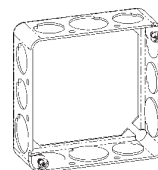
TP424



TP422



TP426



TP428,
TP833*, TP841*

* For Air Plenum (No Mounting Holes)

Product Number	KNOCKOUTS		Std. Unit Pkg.	Wt. Lbs. Per 100
	Sides	Bottom		
TP424	12-½"	—	50	46
TP422	8-½", 4-½" & ¾" E	—	50	50
TP426	8-¾"	—	50	46
TP428	8-½", 4-¾"	—	50	46

Air Plenum

TP833*	8-½", 4-¾"	—	50	48
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2½" DEEP WITH CONDUIT KNOCKOUTS

Air Plenum

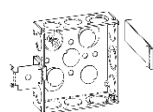
TP841*	8-½", 4-¾"	—	25	66
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Note: TP833 and TP841 require the use of TP854, purchased separately.

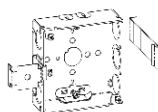


4" SQUARE BRACKETED OUTLET BOXES

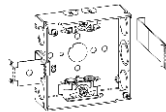
BRACKETED BOXES OFFER QUICK AND EASY INSTALLATION ONTO EITHER SIDE OF A STEEL STUD. FOR USE WITH CONDUIT, ARMORED/METAL CLAD CABLE OR NON-METALLIC SHEATHED CABLE.



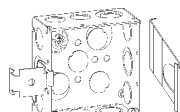
TP404SSB



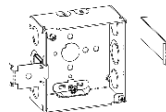
TP444SSB



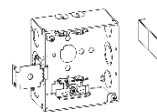
TP454SSB



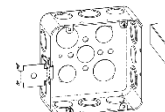
TP403SSB



TP450SSB



TP431SSB



TP563SSB

Catalog Number	Box Size	Box Depth	For Use With	Cubic Inch Capacity	Description	Bottom
TP404SSB	4"	1-½"	Conduit	22.0	8-½", 4-½" & ¾" E	2-½", 2-½" & ¾" E
TP444SSB	4"	1-½"	Non-metallic Sheathed Cable	22.0	4 Cable, 4-½", 2-½" & ¾" E	1-½"
TP454SSB	4"	1-½"	Armored/Metal Clad Cable	22.0	4 Cable, 4-½", 2-½" & ¾" E	1-½"
TP403SSB	4"	2-½"	Conduit	30.3	8-½", 4-½" & ¾" E	2-½", 2-½" & ¾" E
TP450SSB	4"	2-½"	Non-metallic Sheathed Cable	30.3	4 Cable, 4-½", 2-½" & ¾" E	1-½"
TP431SSB	4"	2-½"	Armored/Metal Clad Cable	30.3	4 Cable, 4-½", 2-½" & ¾" E	1-½"
TP563SSB	4-11/16"	2-½"	Conduit	42.0	6-½", 6-½" & ¾" -C	3-½", 2-¾"

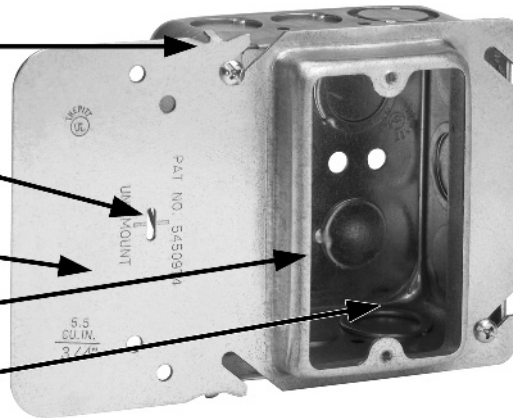
UNI-MOUNT™ COVERS

THE UNIMOUNT COMBINES THE FEATURES OF A MOUNTING DEVICE PLATE WITH THOSE OF A BOX SUPPORT; GIVING YOU ONE UNIVERSAL PLATE FOR ALL OF YOUR NEEDS. SPECIFICALLY DESIGNED FOR USE WITH METAL OR WOOD STUDS:

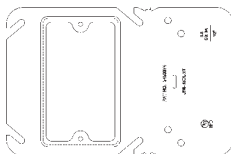
**NO FAR SIDE SUPPORT REQUIRED
UL LISTED AND CSA CERTIFIED †**



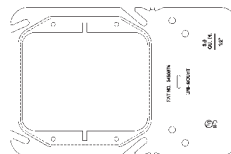
- Guide tabs ensure constant alignment on stud
- Stud alignment hole ensures consistent mounting height
- Rigid bracket design eliminates the need for far side support
- Available as a single or two device cover
- Universal design fits all 4" Square boxes



- Available in 1/2", 5/8" and 3/4" raised.
- Can be ordered preassembled to popular 4" square boxes.
- Fast and easy installation
- Can be used in multiple applications, resulting in less items to stock.
- Less labor intensive.
- Less material handling.
- No multiple assemblies to handle.
- Can be used in Class 2 communications outlets for low voltage without a box.
- UL listed and CSA certified.



Single Gang



Two Gang

Product Number	Description	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs. Per 100
SINGLE GANG				
TP30000	1/2" Raised	3.8	50	43
TP31000	5/8" Raised	4.3	50	46
TP32000	3/4" Raised	5.5	50	50
TWO GANG				
TP35000	1/2" Raised	6	50	38
TP36000	5/8" Raised	8	50	52
TP37000	3/4" Raised	9	50	54
LOW PROFILE SCREWS				
TP710	L.P. Screws	—	1000	.5

† CSA requires a far side support.

CP Steel Square Boxes & Covers



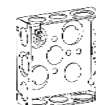
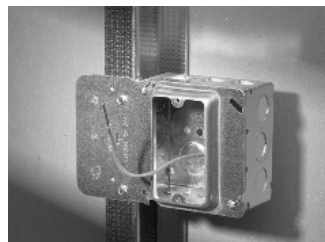
CP Steel Boxes

PRE-FABRICATED BOXES

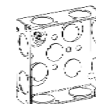
Cooper Crouse-Hinds new Pre-Fabricated Boxes take labor savings to a whole new level! Includes the Uni-Mount™ cover attached to a 4" square box with ground screw and lead installed.

Step 1 – Receive Uni-Mount™ Pre-Fabricated Box
(Includes Uni-Mount cover attached to box with ground screw + lead installed)

Step 2 – Attach to wood or metal stud. You're done!



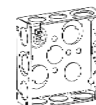
TP404
1 1/2" Deep – Welded
22.0" Cubic Capacity



TP403
2 1/2" Deep – Welded
22.0" Cubic Capacity



TP436
2 1/2" Deep – Welded
30.3" Cubic Capacity



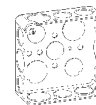
TP467
1 1/2" Deep – Welded
22.0" Cubic Capacity

Description Pre-Fabricated Box, Cover, Ground Screw and Lead Assembly	Catalog Number	Capacity Cu. In.	Std. Unit Pkg.	Wt. lbs Per 100
1 1/2" Welded Box, 1/2" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP30404PF	25.8	25	115
1 1/2" Welded Box, 5/8" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP31404PF	26.3	25	118
1 1/2" Welded Box, 5/8" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP31436PF	26.3	25	130
1 1/2" Welded Box, 5/8" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP31467PF	26.3	25	113
1 1/2" Welded Box, 3/4" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP32404PF	27.5	25	122
1 1/2" Welded Box, 3/4" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP32454PF	27.5	25	121
1 1/2" Welded Box, 1/2" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP35404PF	28.0	25	110
1 1/2" Welded Box, 5/8" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP36404PF	30.0	25	124
1 1/2" Welded Box, 5/8" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP36467PF	30.0	25	119
1 1/2" Welded Box, 3/4" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP37404PF	31.0	25	126
2 1/8" Welded Box, 1/2" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP30403PF	34.1	25	107
2 1/8" Welded Box, 5/8" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP31403PF	34.6	25	110
2 1/8" Welded Box, 3/4" Raised Single Gang Uni-Mount Cover, ground screw and lead	TP32403PF	35.8	25	114
2 1/8" Welded Box, 1/2" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP35403PF	36.3	25	102
2 1/8" Welded Box, 5/8" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP36403PF	38.3	25	116
2 1/8" Welded Box, 3/4" Raised Two Gang Uni-Mount Cover, ground screw and lead	TP37403PF	39.3	25	118

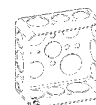
PREASSEMBLED BOXES

The Uni-Mount™ cover is available preassembled to four popular 4" square boxes for even greater labor savings and reduced costs.

Description Preassembled Uni-Mount™ Cover to 4" Square Box	Catalog Number	Capacity Cu. In.	Std. Unit Pkg.	Wt. lbs Per 100
For Conduit				
1 1/2" Drawn Box assembled to 1/2" Raised Single Gang Uni-Mount Cover	TP30414	24.8	25	110
1 1/2" Drawn Box assembled to 5/8" Raised Single Gang Uni-Mount Cover	TP31414	25.3	25	113
1 1/2" Drawn Box assembled to 3/4" Raised Single Gang Uni-Mount Cover	TP32414	26.5	25	117
1 1/2" Drawn Box assembled to 1/2" Raised Two Gang Uni-Mount Cover	TP35414	27.0	25	105
1 1/2" Drawn Box assembled to 5/8" Raised Two Gang Uni-Mount Cover	TP36414	29.0	25	119
1 1/2" Drawn Box assembled to 3/4" Raised Two Gang Uni-Mount Cover	TP37414	30.0	25	121
2 1/8" Drawn Box assembled to 1/2" Raised Single Gang Uni-Mount Cover	TP30434	34.1	25	127
2 1/8" Drawn Box assembled to 5/8" Raised Single Gang Uni-Mount Cover	TP31434	34.6	25	130
2 1/8" Drawn Box assembled to 3/4" Raised Single Gang Uni-Mount Cover	TP32434	35.8	25	134
2 1/8" Drawn Box assembled to 1/2" Raised Two Gang Uni-Mount Cover	TP35434	36.3	25	122
2 1/8" Drawn Box assembled to 5/8" Raised Two Gang Uni-Mount Cover	TP36434	38.3	25	136
2 1/8" Drawn Box assembled to 3/4" Raised Two Gang Uni-Mount Cover	TP37434	39.3	25	138
For AC/MC Cable				
1 1/2" Welded Box assembled to 1/2" Raised Single Gang Uni-Mount Cover	TP30454	24.8	25	114
1 1/2" Welded Box assembled to 5/8" Raised Single Gang Uni-Mount Cover	TP31454	25.3	25	117
1 1/2" Welded Box assembled to 3/4" Raised Single Gang Uni-Mount Cover	TP32454	26.5	25	121
1 1/2" Welded Box assembled to 1/2" Raised Two Gang Uni-Mount Cover	TP35454	27.0	25	109
1 1/2" Welded Box assembled to 5/8" Raised Two Gang Uni-Mount Cover	TP36454	29.0	25	123
1 1/2" Welded Box assembled to 3/4" Raised Two Gang Uni-Mount Cover	TP37454	30.0	25	125
2 1/8" Welded Box assembled to 1/2" Raised Single Gang Uni-Mount Cover	TP30431	34.1	25	134
2 1/8" Welded Box assembled to 5/8" Raised Single Gang Uni-Mount Cover	TP31431	34.6	25	137
2 1/8" Welded Box assembled to 3/4" Raised Single Gang Uni-Mount Cover	TP32431	35.8	25	141
2 1/8" Welded Box assembled to 1/2" Raised Two Gang Uni-Mount Cover	TP35431	36.3	25	129
2 1/8" Welded Box assembled to 5/8" Raised Two Gang Uni-Mount Cover	TP36431	38.3	25	143
2 1/8" Welded Box assembled to 3/4" Raised Two Gang Uni-Mount Cover	TP37431	39.3	25	145



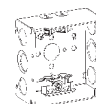
TP414
1 1/2" Deep – Welded
21.0" Cubic Capacity



TP434
2 1/2" Deep – Welded
30.3" Cubic Capacity



TP454
1 1/2" Deep – Welded
22.0" Cubic Capacity



TP431
2 1/2" Deep – Welded
30.3" Cubic Capacity

COVERS FOR 4" SQUARE BOXES – CUBIC INCH CAPACITY (SEE BELOW)

8-32 screw used on covers



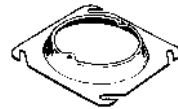
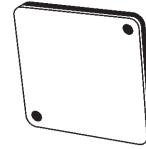
TP472



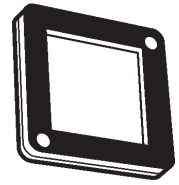
TP474



TP478

TP473, TP475, TP476,
TP477, TP479, TP483

TP850*



TP854*

*For Air Plenum

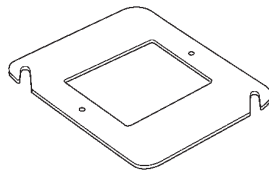
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP472†	Flat Blank	50	31	—
TP474	Flat Blank, Open With Ears 2¾"	50	21	—
TP478†	Flat with ½", ko	50	31	—
TP473	Raised ¼", Open With Ears 2¾"	50	23	1.3
TP476†	Raised ½", Open With Ears 2¾"	50	26	4.0
TP477	Raised ⅝", Open With Ears 2¾"	50	27	5.0
TP475	Raised ¾", Open With Ears 2¾"	25	31	6.0
TP479	Raised 1", Open With Ears 2¾"	25	34	7.0
TP483	Raised 1¼", Open With Ears 2¾"	25	37	8.5

Air Plenum

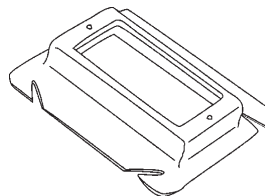
TP850*	Flat Blank Gasketed With Captive Screws	25	31	—
TP854*	Flat Ring Double Gasketed	25	12	—

† CSA Certified

ONE DEVICE



TP480

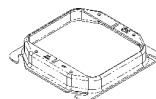
TP482, TP484, TP486,
TP488, TP489, TP490

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP480	Flat	50	20	—
TP482	¼" Raised	50	21	1.8
TP484	½" Raised	50	23	3.5
TP489	⅝" Raised	50	26	4.3
TP486	¾" Raised	50	30	5.5
TP488	1" Raised	50	34	6.8
TP490	1¼" Raised	25	39	8.8

TWO DEVICE



TP494

TP496, TP488, TP499,
TP500, TP501, TP502

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP494	Flat	50	12	—
TP496‡	¼" Raised	50	13	3.0
TP498‡	½" Raised	50	18	6.0
TP499‡	⅝" Raised	50	22	8.0
TP500‡	¾" Raised	50	24	9.0
TP501	1¼" Raised	25	31	14.0
TP502	1" Raised	25	30	11.7

‡ Slotted design for use with 4" square box partitions

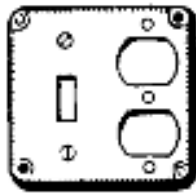
SURFACE COVERS FOR 4" SQUARE BOXES – 5.5 CUBIC INCH CAPACITY RAISED 1/2"



TP503



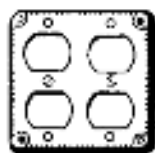
TP504



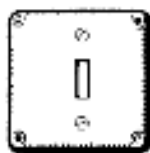
TP506



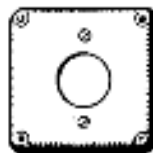
TP508



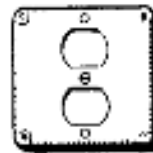
TP510



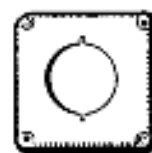
TP512



TP507
TP514
TP519



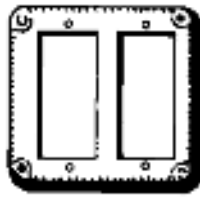
TP516



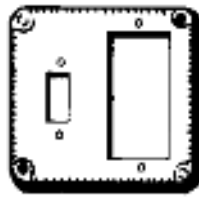
TP509
TP518



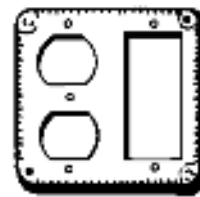
TP513



TP511



TP515

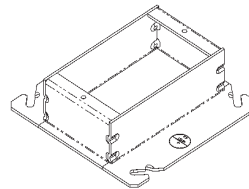


TP517

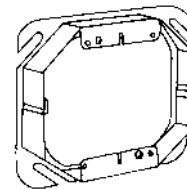
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP503†	Raised Blank	50	35
TP504†	For One Toggle Switch, One Single Receptacle 1 ¹³ / ₃₂ " Dia.	50	31
TP506†	For One Toggle Switch, One Duplex Receptacle	50	31
TP508	For Two Toggle Switches	50	35
TP510	For Two Duplex Receptacles	50	26
TP512	For One Toggle Switch	50	35
TP507	For One 20 Amp. Single Receptacle 1 ¹⁹ / ₃₂ " Dia.	50	37
TP514	For One Single Receptacle 1 ¹³ / ₃₂ " Dia.	50	34
TP519†	For One 30 Amp. Twist-Lock Single Receptacle 1 ²³ / ₃₂ " Dia.	50	37
TP516	For One Duplex Receptacle	50	31
TP509	For One 30–60 Amp. Receptacle (4-wire) 2 ⁷ / ₁₆ " Dia.	50	23
TP518	For One 30–50 Amp. Receptacle 2 ⁹ / ₆₄ " Dia.	50	34
TP513	For One GFCI Receptacle	50	31
TP511	For Two GFCI Receptacles	50	26
TP515	For One Toggle Switch, One GFCI Receptacle	50	31
TP517	For One Duplex Receptacle, One GFCI Receptacle	50	26

† CSA certified

**TILE WALL COVERS FOR 4" SQUARE BOXES –
CUBIC INCH CAPACITY (SEE BELOW)
APPLICATIONS: TYPICALLY USED WITH TILE
OR BRICK**



TP524



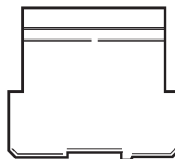
TP534

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
ONE DEVICE				
TP520	1/2" Raised	50	30	3.7
TP522	3/4" Raised	50	36	5.5
TP524	1" Raised	50	40	7.4
TP526	1 1/4" Raised	25	46	9.2
TP528	1 1/2" Raised	25	50	11.0
TP530	2" Raised	25	62	14.7
TWO DEVICE				
TP532	1/2" Raised	10	24	5.0
TP534	3/4" Raised	10	30	7.8
TP536	1" Raised	10	36	10.3
TP538	1 1/4" Raised	10	44	13.0
TP540	1 1/2" Raised	10	50	15.5
TP542	2" Raised	10	66	20.8

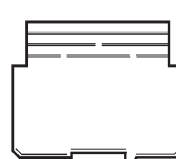
4" SQUARE BOX PARTITIONS



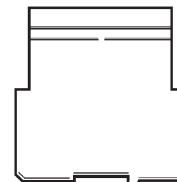
TP860



TP861



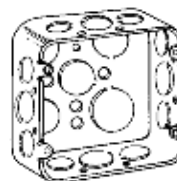
TP862



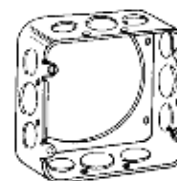
TP863

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
FOR 1 1/2" DEEP BOX WITH SQUARE CUT TILE WALL TWO-GANG COVERS			
TP860	For 1/2", 3/4", 1" Raised Covers	25	13
TP861	For 1 1/4", 1 1/2", 2" Raised Covers	25	18
FOR 2 1/8" DEEP BOX WITH SQUARE CUT TILE WALL TWO-GANG COVERS			
TP862	For 1/2", 3/4", 1" Raised Covers	25	16
TP863	For 1 1/4", 1 1/2", 2" Raised Covers	25	21

**4 11/16" SQUARE OUTLET BOXES –
29.5 CUBIC INCH CAPACITY
1 1/2" DEEP WITH CONDUIT KOs**



TP548



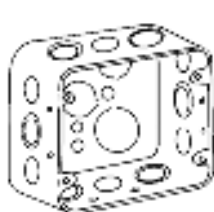
TP550

KNOCKOUTS				
Product Number	Sides	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
TP548	8-1 1/2", 4-3/4"	3-1 1/2", 2-3/4"	25	84
4 11/16" SQUARE EXTENSION RING				
TP550	8-1 1/2", 4-3/4"	—	25	66

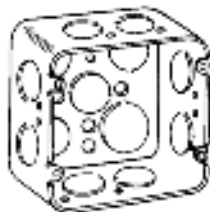
CP Steel Square Boxes

CP Steel Boxes

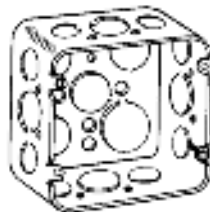
4¹¹/₁₆" SQUARE OUTLET BOXES – 42.0 CUBIC INCH CAPACITY 2¹/₈" DEEP WITH CONDUIT KOS



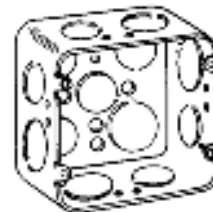
TP563



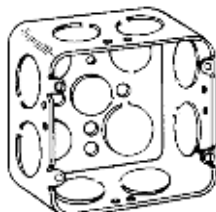
TP554
TP842*



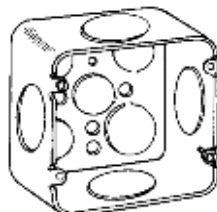
TP556
TP832*



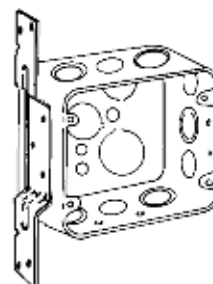
TP558
TP835*



TP560
TP836*



TP562



TP557



TP564
TP837*

* For Air Plenum (No Mounting Holes)

KNOCKOUTS					Std. Unit Pkg.	Wt. Lbs. Per 100
Product Number	Brackets	Sides	Bottom			
TP563	—	6-1/2", 6-1/2" & 3/4"-C	3-1/2", 2-3/4"		25	104
TP554	—	8-3/4"	3-1/2", 2-3/4"		25	104
TP556	—	8-1/2", 4-3/4"	3-1/2", 2-3/4"		25	104
TP558	—	4-3/4", 4-1"	3-1/2", 2-3/4"		25	104
TP560	—	8-1"	3-1/2", 2-3/4"		25	104
TP562	—	4-1-1/4"	3-1/2", 2-3/4"		25	104
TP557	"VS"	4-1/2", 5-1/2" & 3/4"C	3-1/2", 2-3/4"		25	120
Air Plenum						
TP835*	—	4-3/4", 4-1"	3-1/2", 2-3/4"		25	115
TP836*	—	8-1"	3-1/2", 2-3/4"		25	115
TP842*	—	12-3/4"	3-1/2", 2-3/4"		25	115
TP832*	—	8-1/2", 4-3/4"	3-1/2", 2-3/4"		25	115
4 ¹¹ / ₁₆ ", SQUARE EXTENSION RING						
TP564	—	8-1/2", 4-3/4"	—		25	84
Air Plenum						
TP837*	—	8-1/2", 4-3/4"	—		25	115

Note: TP837 requires the use of TP852, purchased separately.

4¹¹/₁₆" SQUARES COVERS – CUBIC INCH CAPACITY (SEE BELOW)



TP568



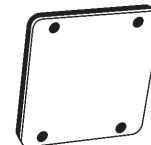
TP569, TP570, TP571,
TP573, TP575



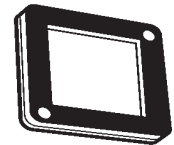
TP574, - TP582,
TP529, TP531



TP584, TP586, TP589,
TP593, TP541, TP543



TP851*



TP852*

* For Air Plenum

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu. In.
TP568†	Flat Blank	25	40	—
TP569	1/2" Raised, With Ears 2 3/4"	25	36	3.3
TP570	Raised 5/8", With Ears 2 3/4"	25	38	3.8
TP571	3/4" Raised, With Ears 2 3/4"	25	40	5.0
TP572†	Flat, With 1/2" KO	25	40	—
TP573	1" Raised, With Ears 2 3/4"	25	44	7.0
TP575	1 1/4" Raised, With Ears 2 3/4"	25	48	9.0
Air Plenum				
TP851*	Flat Blank Gasketed Captive Screws	50	42	—
TP852	Flat Ring Double Gasketed	25	20	—
ONE DEVICE				
TP574	1/4" Raised	25	32	1.8
TP576	1/2" Raised	25	36	3.3
TP578	3/4" Raised	25	42	5.0
TP579	5/8" Raised	25	39	4.3
TP580	1" Raised	25	46	6.8
TP582	1 1/4" Raised	25	52	8.8
TP529	1 1/2" Raised	25	64	11.3
TP531	2" Raised	25	76	15.0
TWO DEVICE				
TP590	Flat	25	21	—
TP583	1/4" Raised	25	26	3.0
TP584	1/2" Raised	25	30	6.0
TP587	5/8" Raised	25	32	8.0
TP586	3/4" Raised	25	34	8.8
TP589	1" Raised	25	38	11.7
TP593	1 1/4" Raised	25	42	14.0
TP541	1 1/2" Raised	25	63	18.8
TP543	2" Raised	25	79	24.5

† CSA Certified

4¹¹/₁₆" SQUARE SURFACE COVERS – 9.0 CUBIC INCH CAPACITY

1/2" DEEP



TP720



TP722



TP724
TP730
TP736



TP726



TP728



TP732



TP734

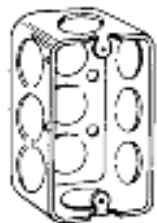


TP738

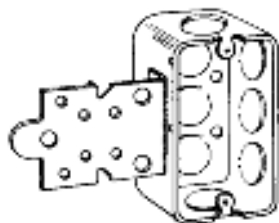
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP720	For One Toggle Switch	10	52
TP722	For One Duplex Receptacle	10	49
TP724	For One Single Receptacle 1 13/32" Dia.	10	53
TP730	For One 20 Amp Single Receptacle 1.620" Dia.	10	50
TP736	For One 1.730" Dia. Power Outlet	10	51
TP726	For Two Toggle Switches	10	52
TP728	For Two Duplex Receptacles	10	44
TP732	For One 2.125" Dia. Range/Dryer Receptacle	10	48
TP734	For One 2.480" Dia. Power Outlet	10	45
TP738	For One Ground Fault Interrupter	10	45
TP741	For Two GFI Receptacles	10	43

UTILITY BOXES – CUBIC INCH CAPACITY (SEE BELOW)

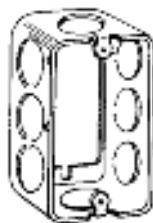
4" LONG X 2 1/8" WIDE



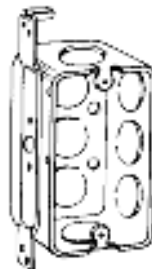
TP588
(TP647-1 1/4" Deep)



TP591



TP592, TP600,
TP602



TP598
(TP605-2 1/8" Deep)



TP594, TP596,
TP604, TP606,
TP595 (4 1/8" x 2 3/8")

KNOCKOUTS					
Product Number	Bracket	Sides	Bottom	Std. Unit Pkg.	Wt. Lbs. Per 100
1 1/4" DEEP – 8.5 CUBIC INCH CAPACITY					
TP647	—	8-1/2"	3-1/2"	50	40
1 1/2" DEEP – 10.3 CUBIC INCH CAPACITY					
TP588	—	8-1/2"	3-1/2"	50	42
TP591	"F", Set 1/4"	5-1/2"	3-1/2"	50	51
1 1/2" DEEP EXTENSION RINGS – 10.3 CUBIC INCH CAPACITY					
TP592	—	8-1/2"	—	50	36
1 7/8" DEEP – 13.0 CUBIC INCH CAPACITY					
TP594	—	8-1/2"	3-1/2"	50	50
TP596	—	6-3/4"	3-1/2"	50	50
TP598	"S", SET 1/2"	5-1/2"	3-1/2"	50	60
EXTENSION RINGS					
TP600	—	8-1/2"	—	50	41
TP602	—	6-3/4"	—	50	41
2 1/8" DEEP – 14.5 CUBIC INCH CAPACITY					
TP604	—	8-1/2"	3-1/2"	50	56
TP606	—	6-3/4"	3-1/2"	50	56
TP605	"S", Set 1/2"	5-1/2"	3-1/2"	50	66
2 1/8" DEEP – 18.5 CUBIC INCH CAPACITY					
TP595	—	8-1/2"	3-1/2"	50	60



TP608



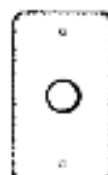
TP610



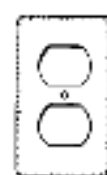
TP612



TP613



TP614



TP616

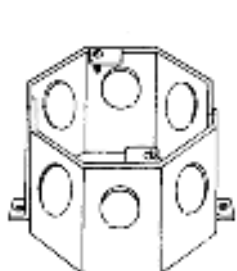


TP618

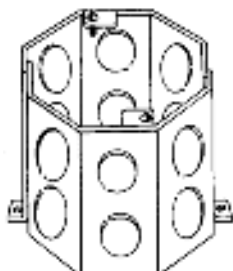
Product Number	Description	Std Unit Pkg.	Wt. Lbs Per 100
TP608*	Blank	100	10
TP610*	For 20 and 30 AMP, Twist Lock, 1 19/32" Diameter	100	9
TP612*	Single Receptacle, 1 19/32" Diameter	100	9
TP613*	For GFCI Device	100	7
TP614*	1/2" KO	100	10
TP616*	Duplex Receptacle	100	8
TP618*	One Toggle Switch	100	10

*CSA Certified

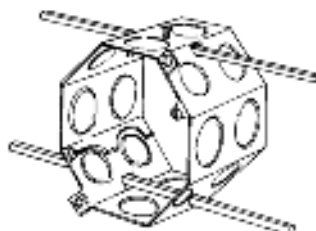
4" OCTAGON CONCRETE BOXES AND HUNG CEILING BOXES*



TP620, TP622, TP628



TP635, TP636, TP644

TP623, TP624
(bars not included)

TP348

KNOCKOUTS			Std. Unit Pkg.	Wt. Lbs. Per 100	Capacity Cu.In.
Product Number	Depth				
TP620	2"	1/2" & 3/4" Single Row	25	60	23.0
TP622	2 1/2"	1/2" & 3/4" Single Row	25	72	29.0
TP628	3"	1/2" & 3/4" Single Row	20	85	35.0
TP635	3 1/2"	1/2" Double Row	20	93	43.0
TP636	3 1/2"	1/2" & 3/4" Double Row	20	93	43.0
TP644	4"	1/2" & 3/4" Double Row	20	113	47.0
HUNG CEILING BOXES (WITH TP650 COVER, ORDER BARS SEPARATELY)					
TP623	3 1/2"	1/2" Double Row	20	93	43.0
TP624	3 1/2"	1/2" & 3/4" Double Row	20	93	43.0
BARS FOR HUNG CEILING BOXES					
TP348	30" bars (Bars Sold Separately)		40	60	—

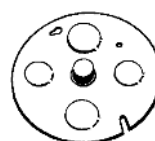
CONCRETE BOX PLATES



TP648



TP649



TP650



TP652

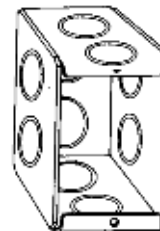
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP648	No Stud 3-1/2" & 2-3/4" KOs	50	28
TP649	Flat, Blank	50	28
TP650	3/8" Stud 2-1/2" & 2-3/4" KOs	50	33
TP652	Single Receptacle	50	24

*Weight limit for 4" octagon concrete boxes is 50lbs. Not suitable for fans.

MASONRY BOXES

2½" DEEP × 3¾" HIGH

½" AND ¾" CONCENTRIC KOs



TP682

KNOCKOUTS

Product Number	Gang	Width	Each Side	Each End	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100	Capacity Cu. In.
TP682	1	11½"	2	1	2	20	70	15.5
TP683	2	3¾"	2	2	4	10	103	31.0
TP684	3	5⅞"	2	3	6	5	129	46.5
TP685	4	7⅞"	2	4	8	5	165	62.0
TP686	5	9⅞"	2	5	10	5	189	77.5
TP687	6	11"	2	6	12	1	230	93.0

MASONRY BOXES

3½" DEEP × 3¾" HIGH

½" AND ¾" CONCENTRIC KOs



TP690

KNOCKOUTS

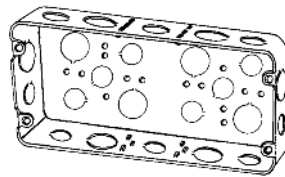
Product Number	Gang	Width	Each Side	Each End	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100	Capacity Cu. In.
TP690	1	11½"	2	2	2	20	84	22.0
TP691	2	3¾"	2	4	4	10	120	44.0
TP692	3	5⅞"	2	6	6	10	155	66.5
TP693	4	7⅞"	2	8	8	5	207	88.0
TP694	5	9⅞"	2	10	10	5	235	110.0
TP695	6	11"	2	12	12	1	287	132.0

MASONRY BOX PARTITIONS

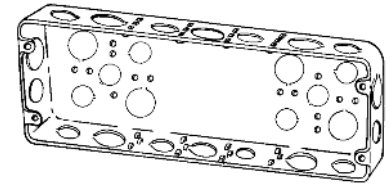
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP820	Nonmetallic Partition for 2½" Deep Masonry Boxes	25	3
TP821	Nonmetallic Partition for 3½" Deep Masonry Boxes	25	4

GANG BOXES

1 $\frac{5}{8}$ " DEEP $\times$ 4 $\frac{1}{2}$ " HIGH
1 $\frac{1}{2}$ " & 3 $\frac{3}{4}$ " KOs



TP630



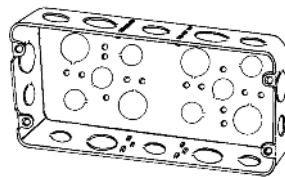
TP640

KNOCKOUTS

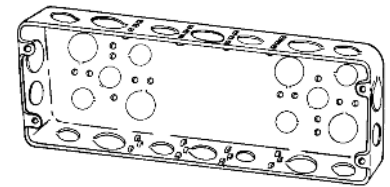
Product Number	Gang	Cubic Inches	Width	Each Side	Each End	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP629	2	45	6 $\frac{13}{16}$ "	2- $\frac{1}{2}$ ", 2- $\frac{3}{4}$ "	1- $\frac{1}{2}$ ", 1- $\frac{3}{4}$ "	3- $\frac{1}{2}$ ", 2- $\frac{3}{4}$ "	5	45
TP630	3	58	8 $\frac{5}{8}$ "	3- $\frac{1}{2}$ ", 2- $\frac{3}{4}$ "	1- $\frac{1}{2}$ ", 1- $\frac{3}{4}$ "	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	5	58
TP631	4	70	10 $\frac{7}{16}$ "	3- $\frac{1}{2}$ ", 3- $\frac{3}{4}$ "	1- $\frac{1}{2}$ ", 1- $\frac{3}{4}$ "	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	5	70
TP640	5	85	12 $\frac{1}{4}$ "	4- $\frac{1}{2}$ ", 3- $\frac{3}{4}$ "	1- $\frac{1}{2}$ ", 1- $\frac{3}{4}$ "	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	1	85
TP641	6	95	14 $\frac{1}{16}$ "	4- $\frac{1}{2}$ " 4- $\frac{3}{4}$ "	1- $\frac{1}{2}$ ", 1- $\frac{3}{4}$ "	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	1	95

GANG BOXES

2 $\frac{1}{2}$ " DEEP $\times$ 4 $\frac{1}{2}$ " HIGH
3 $\frac{3}{4}$ " & 1" KOs



TP871



TP873

KNOCKOUTS

Product Number	Gang	Cubic Inches	Width	Each Side	Each End	Bottom	Std. Unit Pkg.	Wt. Lbs Per 100
TP870	2	71	6 $\frac{13}{16}$ "	2- $\frac{3}{4}$ ", 1-1"	1- $\frac{3}{4}$ ", 1-1"	3- $\frac{1}{2}$ ", 2- $\frac{3}{4}$ "	10	147
TP871	3	90	8 $\frac{5}{8}$ "	4- $\frac{3}{4}$ ", 1-1"	1- $\frac{3}{4}$ ", 1-1"	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	10	183
TP872	4	110	10 $\frac{7}{16}$ "	2- $\frac{3}{4}$ ", 2-1"	1- $\frac{3}{4}$ ", 1-1"	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	5	216
TP873	5	132	12 $\frac{1}{4}$ "	3- $\frac{3}{4}$ ", 2-1"	1- $\frac{3}{4}$ ", 1-1"	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	5	263
TP874	6	150	14 $\frac{1}{16}$ "	3- $\frac{3}{4}$ " 3-1"	1- $\frac{3}{4}$ ", 1-1"	6- $\frac{1}{2}$ ", 4- $\frac{3}{4}$ "	5	282

GANG BOX PARTITIONS



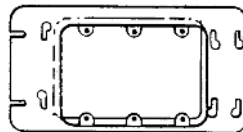
TP876



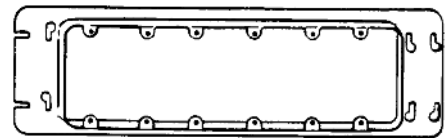
TP877

Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP876	For 1 $\frac{5}{8}$ " Deep Box	25	19
TP877	For 2 $\frac{1}{2}$ " Deep Box	50	24

GANG BOX COVERS RAISED $\frac{13}{16}$ " FOR PLASTER



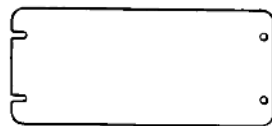
TP653



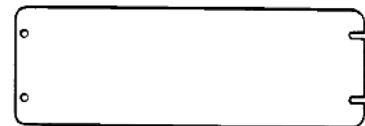
TP667

Product Number	Gang	Length	Std. Unit Pkg.	Wt. Lbs Per 100	Capacity Cu. In.
TP657	2	7"	5	53	8.5
TP653	3	8 $\frac{13}{16}$ "	5	60	13.5
TP655	4	10 $\frac{5}{8}$ "	5	66	18.3
TP661	5	12 $\frac{7}{16}$ "	5	75	23.0
TP667	6	14 $\frac{1}{4}$ "	5	85	28.3

GANG BOX COVERS, FLAT, BLANK



TP803



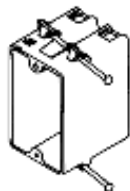
TP806

Product Number	Gang	Length	Std. Unit Pkg.	Wt. Lbs Per 100
TP802	2	7"	5	66
TP803	3	8 $\frac{13}{16}$ "	5	85
TP804	4	10 $\frac{5}{8}$ "	5	94
TP805	5	12 $\frac{7}{16}$ "	1	122
TP806	6	14 $\frac{1}{4}$ "	1	132

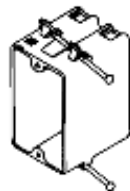
SWITCH BOXES – ANGLED NAILS



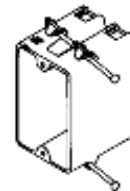
TP1600



TP1800



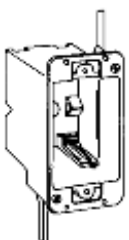
TP2000



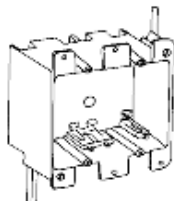
TP2300

Product Number	Bracket or Nails	Capacity Cu. in.	H	W	D	Std. Unit Pkg.	Wt. Lbs Per 100
TP1600	Nails	16.0	3 ³ / ₄ "	2 ¹ / ₄ "	2 ¹ / ₂ "	100	21
TP1800	Nails	18.0	3 ³ / ₄ "	2 ¹ / ₄ "	2 ³ / ₄ "	100	23
TP2000	Nails	20.3	3 ³ / ₄ "	2 ¹ / ₄ "	3 ³ / ₁₆ "	100	25
TP2300	Nails	22.5	3 ³ / ₄ "	2 ¹ / ₄ "	3 ⁷ / ₁₆ "	50	27

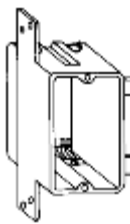
SWITCH BOXES – INTEGRAL CLAMPS



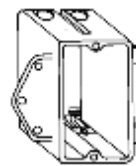
TP1690
(Old Work)



TP3490
(Old Work)



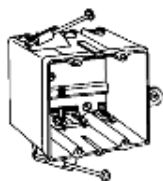
TP2020
(For Wood or Metal Studs)



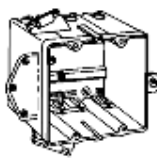
TP2030
(For Wood or Metal Studs)

Product Number	Bracket or Nails	Capacity Cu. in.	H	W	D	Std. Unit Pkg.	Wt. Lbs Per 100
TP1690	Swing Clips & Integral Clamps	16.0	3 ⁵ / ₈ "	2 ⁵ / ₁₆ "	2 ³ / ₄ "	50	20
TP3490	Swing Clips	34.0	3 ⁹ / ₁₆ "	4"	3 ¹ / ₁₆ "	25	29
TP2020	Side Bracket (5/8" offset)	20.3	3 ¹ / ₁₆ "	2 ¹ / ₄ "	3 ³ / ₁₆ "	50	24
TP2030	Face Bracket (1/2" offset)	20.3	3 ¹ / ₁₆ "	2 ¹ / ₄ "	3 ³ / ₁₆ "	50	24

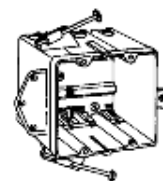
3" DEEP SWITCH BOXES – TWO GANG



TP3600



TP3630

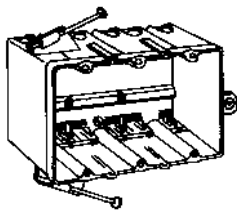


TP3635

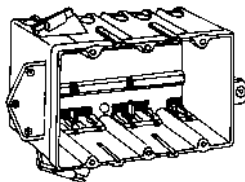
Product Number	Bracket or Nails	Capacity Cu. in.	H	W	D	Std. Unit Pkg.	Wt. Lbs Per 100
TP3600	Nails	36.0	3 ³ / ₄ "	4"	3"	25	37
TP3630*	Brackets	36.0	3 ³ / ₄ "	4"	3"	25	37
TP3635*	Brackets & Nails	36.0	3 ³ / ₄ "	4"	3"	25	39

* NOTE: Face Bracket on PVC Boxes are offset 1/2" unless stated otherwise

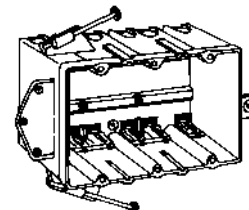
2¹¹/₁₆" DEEP SWITCH BOXES – THREE GANG



TP4600



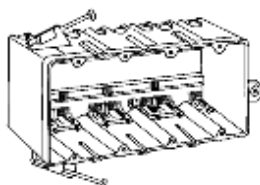
TP4630



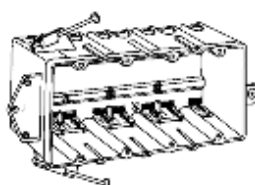
TP4635

Product Number	Bracket or Nails	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP4600	Nails	46.0	20	45
TP4630*	Brackets	46.0	20	43
TP4635*	Brackets & Nails	46.0	20	46

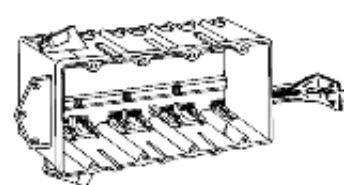
2¹¹/₁₆" DEEP SWITCH BOXES – FOUR GANG



TP6100**



TP6135**



TP6180**

Product Number	Bracket or Nails	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP6100	Nails	61.0	4	65
TP6135*	Nails & Brackets	61.0	4	66
TP6180*	Brackets & Bar Support	61.0	4	87

* NOTE: Face Bracket on PVC Boxes are offset 1/2" unless otherwise stated

** NOTE: Not 2-Hour Fire Rated.

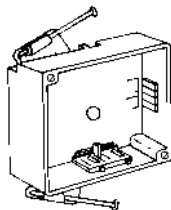
LOW VOLTAGE PARTITION – TWO, THREE OR FOUR GANG PVC



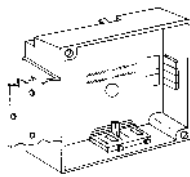
TP1000

Product Number	Bracket or Nails	Capacity Cu. In.	Std. Unit Pkg.	Master Pkg.	Wt. Lbs Per 100
TP1000	—	—	20	120	3

4" SQUARE WITH INTEGRAL CLAMPS – 20.3 CUBIC INCH CAPACITY 1 5/8" DEEP



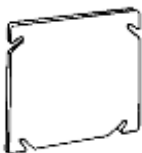
TP1900



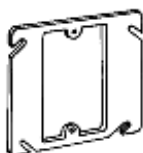
TP1930

Product Number	Bracket	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP1900	—	20.3	50	26
TP1930	"F" Bracket	20.3	50	40

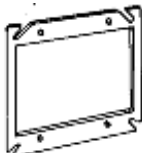
4" SQUARE PVC DEVICE COVERS



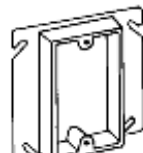
TP1009



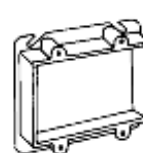
TP1010



TP1020



TP1013, TP1014



TP1023, TP1024

Product Number	Raised	Capacity Cu. In.	Std. Unit Pkg.	Wt. Lbs Per 100
TP1009	—	—	50	9
TP1010	—	—	50	6
TP1020	—	—	50	4
TP1013	1/2"	3.8	50	8
TP1014	5/8"	4.8	50	8
TP1023	1/2"	5.8	50	8
TP1024	5/8"	7.0	50	8

ROUND BLANK COVER – PVC

4 3/4" DIA.

(FOR 3 1/2" AND 4" ROUND CEILING BOXES)



TP1040, TP1045

Product Number	Color	Screws	Std. Unit Pkg.	Wt. Lbs Per 100
TP1040	Gray	—	100	10
TP1045*	White	White	100	12

*NOTE: TP1045 includes two white-headed wood and two #8-32" machine screws.

New! Speed-Mount™ Switchboxes

The labor saving Speed-Mount device installation feature is simple and easy to use. The device is attached by simply pressing the device mounting screw into the device hole in the box and turning the screw to lock it in place. The spring steel clip locks the screw securely in place. To remove the device, simply unscrew the screw in the traditional manner.

Applications:

Cooper Crouse-Hinds nonmetallic Speed-Mount Switchboxes are used:

- In branch circuit wiring as a splice point
- To mount wiring devices such as switches, receptacles, GFCI's, dimmers etc.
- To provide mechanical protection for wiring systems and electrical devices

Features:

- Available for use with wood or metal stud to meet any construction preference
- Quick entry feature on all nonmetallic boxes offers labor savings – no need to break out knockouts – simply push the nonmetallic cable into the box. No tools are required. No need to remove knockouts.
- Unique configuration of this quick entry feature on single gang boxes provides a self-feeding feature that eliminates the need to reach inside the box to pull the wire out.
- Integral labor saving clamping feature on two, three & four gang boxes. The multiple gang box unique quick entry also serves as a clamp, eliminating the need to mechanically secure the cable inside the box. There are no separate clamps or screws to install or tighten. Each entry into the multiple gang boxes has the quick entry feature allowing the installer to simply push the cable into the box without the need for tools or removal of knock-outs, so the cable can be inserted where it is required.
- Speed-Mount Switchboxes offer simple, labor saving press installation of devices. The device is attached by simply pressing the device mounting screw into the device hole and turning the screw to lock it in place. The spring steel clip locks the screw securely in place.

Material:

- PVC-Polyvinyl Chloride compound

Compliances:

- UL Listed
- Classified for use in fire rated (2 HR) wall or ceiling

Speed-Mount Switchbox Ordering Information:

Catalog No.	Capacity (CU. IN.)	Description	Bracket or Nails	Standard Unit Qty
TP 1802	18.0	single gang box	nails	100
TP 1832	18.0	single gang box	bracket	100
TP 2002	20.0	single gang box	nails	100
TP 2302	22.5	single gang box	nails	50
TP 2332	22.5	single gang box	bracket	50
TP 3602	36.0	2 gang box	nails	25
TP 3632	36.0	2 gang box	bracket	25
TP 4602	54.0	3 gang box	nails	20
TP 4632	54.0	3 gang box	bracket	20
TP 6102	72.0	4 gang box	nails	4
TP 6132	72.0	4 gang box	bracket	4

Far Side Support–For use with Speed-Mount™ Switchboxes**Application:**

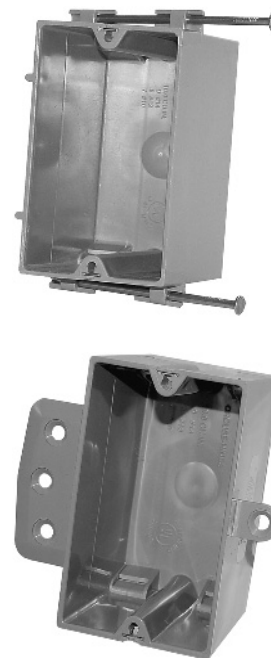
Far Side Support is designed for use with Speed-Mount™ switchboxes used with either wood or metal studs to provide a quick, easy economical way for far side support.

How to use:

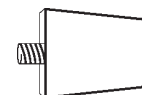
The multi-gang Speed-Mount™ boxes have a molded-in-hole in the back for attaching the TPFSS. The molded-in-hole has two flats as you look at the back of the box. There are also two flats on the TPFSS. To install, simply align the flats and push the TPFSS into the hole. Turn ¼ turn to lock into place.

The TPFSS is designed for use with steel studs with a depth of 3 5/8". For use with 2×4 wood studs, simply break off the tip at the notch of the TPFSS using a pair of pliers.

Catalog No.	Capacity (CU. IN.)	Description	Bracket or Nails	Standard Unit Qty
TPFSS	—	—	—	100



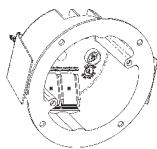
Our new Speed-Mount™ SWITCHBOXES provide significant labor savings through our quick cable entry feature and express device installation feature.



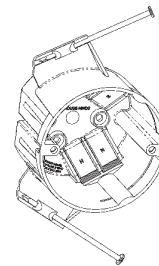
3½" NON-METALLIC CEILING BOXES

2⅞" DEEP

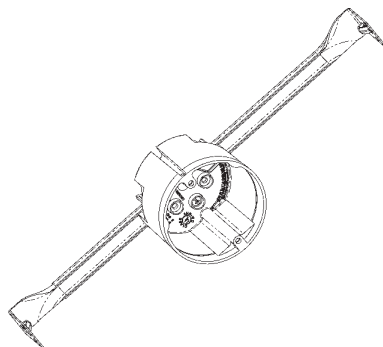
Weight limit is 50lbs for fixture except where indicated.



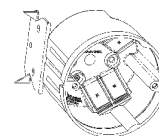
TP16200, TP16201 2⅞" Deep
Old Work



TP16310*, TP16311*



TP16307*
TP16308*



TP16317*
TP16318*

Product Number	Clamps	Ground Plate	Bracket Bar Hgr.	Capacity Cu. In.	No. of Clamp Openings	Std Unit Pkg.	Wt. Lbs Per 100
TP16200†	Yes	—	Snap	16.0	4	50	27
TP16201†	Yes	Yes	Snap	16.0	4	50	29
TP16310	Yes	—	Nails	19.3	4	50	18
TP16311	Yes	Yes	Nails	19.3	4	50	20
TP16307‡	Yes	—	14"-22½"	19.3	4	25	57
TP16308‡	Yes	Yes	14"-22½"	19.3	4	25	59
TP16317	Yes	—	"B"	19.3	4	50	26
TP16318	Yes	Yes	"B"	19.3	4	50	20

* Nail Bracket is set 1⅞" back from the face of the box.

† Weight limit 15lbs for ceiling mounted fixtures and 6lbs for wall mounted fixtures.

‡ Weight limit 15lbs at 24" stud spacing, 35lbs at 16" stud spacing.

LAMPHOLDER

Material: Plastic molded of heat and impact resistant material that prevents discoloring and reduces breakage



TP16098

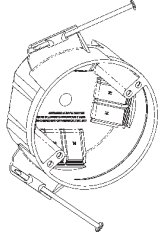


TP16099

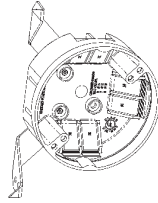
Product Number	Description	Std. Unit Pkg.	Wt. Lbs. Per 100
TP16098	Lampholder, Pull Chain	50	29
TP16099	Lampholder, Keyless, feed thru	50	23

4" NON-METALLIC CEILING BOXES

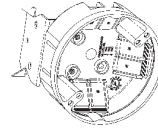
Weight limit is 50 lbs for fixture except where indicated



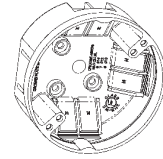
TP16111, TP16110



TP16012, TP16112



TP16007, TP16107



TP16002



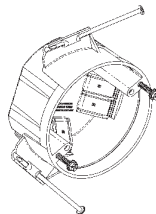
TP16022, TP16122

Product Number	Clamps	Ground Plate	Bracket or Bar Hgr.	Capacity Cu. In.	No. of Cable Pry-outs	Std Unit Pkg.	Wt. Lbs Per 100
1½" DEEP							
TP16002	Yes	—	—	14.8	4	50	12
TP16003	Yes	Yes	—	14.8	4	50	14
TP16012	Yes	—	"V"	14.8	4	50	24
TP16013	Yes	Yes	"V"	14.8	4	50	26
TP16007	Yes	—	"B"	14.8	4	50	26
TP16008	Yes	Yes	"B"	14.8	4	50	28
TP16022*	Yes	—	14"-22½"	14.8	4	25	56
TP16023*	Yes	Yes	14"-22½"	14.8	4	25	58
2¼" DEEP							
TP16111	Yes	—	Nails	22.5	4	50	19
TP16110	Yes	Yes	Nails	22.5	4	50	21
TP16112	Yes	—	"V"	20.8	4	50	27
TP16113	Yes	Yes	"V"	20.8	4	50	29
TP16107	Yes	—	"B"	20.8	4	50	28
TP16108	Yes	Yes	"B"	20.8	4	50	30
TP16122*	Yes	—	14"-22½"	20.8	4	20	59
TP16123*	Yes	Yes	14"-22½"	20.8	4	20	61

* Weight limit 15 lbs at 24" stud spacing, 35 lbs at 16" stud spacing.

4" NON-METALLIC CEILING FAN BOXES

WITH CLAMPS FOR NONMETALLIC CABLE.
ALL MOUNTING HARDWARE SUPPLIED, SUITABLE FOR SUPPORT OF FANS WEIGHING UP TO 35 LBS.



TP16511

Product Number	Diameter	Mounting Method	Capacity Cu. In.	No. of Clamp Openings	Std Unit Pkg.	Wt. Lbs Per 100
TP16511	4"	Nails only	20.8	6	25	21

RESIDENTIAL FLOOR BOXES FOR WOOD FLOORS

Application:

Copper Cooper Crouse-Hinds® Residential Floor Boxes are ideal for anywhere a receptacle is required in a hardwood floor finished with carpeting. Applications include the middle of a large room or places where a cord from a wall receptacle would be in the way. Potential residential and commercial uses include computer stations, home entertainment centers, home offices, commercial offices and boardrooms.

Features:

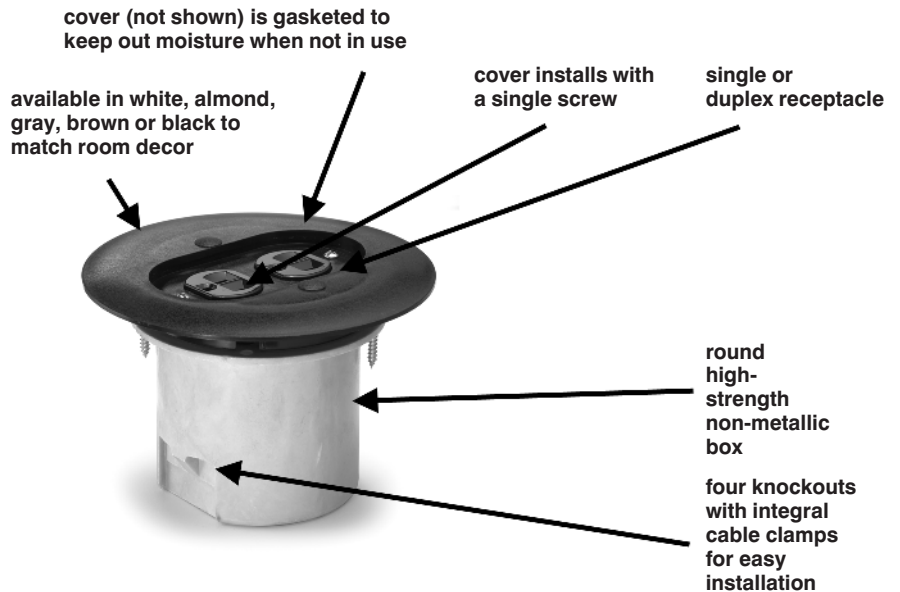
- easy to install – round fiberglass box fits in 3½" diameter hole, which may be cut with standard hole saw.
- fiberglass box includes four knockouts with integral clamps for easy installation of non-metallic cable.
- may be ordered with a single or duplex receptacle – 15 amps, 125 volts.
- flush cover is available in five different colors to match the room decor.
- cover is gasketed to keep moisture out of the receptacle when not in use.
- UL listed

Electrical Ratings:

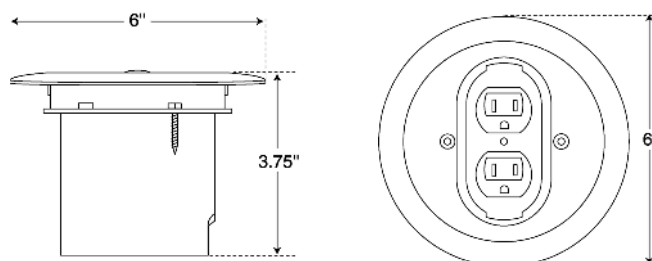
15A, 125V

Ordering Information:

Product Number	Description (Box with:)	Color of Cover	Knockouts	Std. Unit Pkg.	Wt. Lbs. Per 100
TP20010	Duplex receptacle	White	4 KOs With Clamps	4	121
TP20011	Duplex receptacle	Almond	4 KOs With Clamps	4	121
TP20012	Duplex receptacle	Gray	4 KOs With Clamps	4	121
TP20013	Duplex receptacle	Brown	4 KOs With Clamps	4	121
TP20014	Duplex receptacle	Black	4 KOs With Clamps	4	121
TP20015	Single receptacle	White	4 KOs With Clamps	4	121
TP20016	Single receptacle	Almond	4 KOs With Clamps	4	121
TP20017	Single receptacle	Gray	4 KOs With Clamps	4	121
TP20018	Single receptacle	Brown	4 KOs With Clamps	4	121
TP20019	Single receptacle	Black	4 KOs With Clamps	4	121



Dimensions:



CP Technical Data – Weatherproof Outlet Boxes

Cooper Crouse-Hinds weatherproof products are manufactured in compliance with U.L. requirements for weatherproof boxes and covers and meet U.L. Standard #514A. Cooper Crouse-Hinds lighting products comply with the U.L. requirements of standard UL 1598 and are suitable for wet locations.

Cooper Crouse-Hinds weatherproof products are rust and corrosion resistant made of rugged die-cast construction. Cooper Crouse-Hinds weatherproof products are provided with necessary gaskets, plugs and screws, making installation trouble free.

All products are powder coat painted and various colors are available.

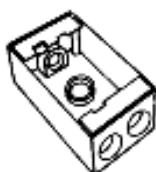
Cooper Crouse-Hinds weatherproof boxes and covers are individually shrink-wrapped. Cooper Crouse-Hinds weatherproof cast aluminum boxes are lugged except where noted and are provided with plugs. The self-closing weatherproof covers are zinc die-cast. The weatherproof lampholders have porcelain sockets and are rated up to 150 watts and have 8½" wire leads.

Vaporite fixtures are die-cast aluminum and the screw-on guards are die-cast zinc, with Allen-Head set screws for locking in place. The fixtures also have a neoprene gasket and porcelain clip-in socket.

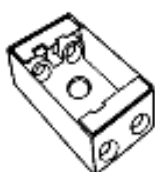
SINGLE GANG WEATHERPROOF OUTLET BOXES – 18.0 CUBIC INCH CAPACITY – 2" DEEP CAST ALUMINUM – UL LISTED FOR WET LOCATIONS



TP7010 – TP7018



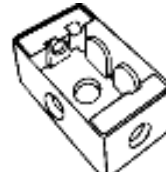
TP7026, TP7034



TP7042, TP7050



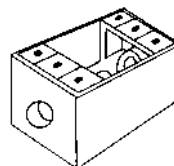
TP7058, TP7066



TP7071

Product Number	Description	Outlet Holes	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7010	With Lugs	3-½"	Gray	50	58.3
TP7011	With Lugs	3-½"	White	50	58.3
TP7012	With Lugs	3-½"	Bronze	50	58.3
TP7018	With Lugs	3-¾"	Gray	50	58.3
TP7026	With Lugs	4-½"	Gray	50	58.3
TP7034	With Lugs	4-¾"	Gray	50	58.3
TP7042	With Lugs	5-½"	Gray	50	58.3
TP7050	With Lugs	5-¾"	Gray	50	58.3
TP7058	Side Entry, With Lugs	5-½"	Gray	50	58.3
TP7066	Side Entry, With Lugs	5-¾"	Gray	50	58.3
TP7071	Horiz. Mounting, With Lugs	4-½"	Gray	50	58.3

SINGLE GANG DEEP WEATHERPROOF BOXES – 24.0 CUBIC INCH CAPACITY – 2 5/8" DEEP CAST ALUMINUM-UL LISTED FOR WET LOCATIONS



TP7074, TP7078, TP7082

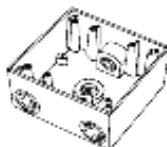
Product Number	Description	Outlet Holes	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7074	With Lugs	3-½"	Gray	25	80
TP7078	With Lugs	3-¾"	Gray	25	80
TP7082	With Lugs	3-1"	Gray	25	80

TWO GANG WEATHERPROOF OUTLET BOXES – 30.5 CUBIC INCH CAPACITY

2" DEEP, ALL TWO GANG BOXES HAVE 2 MOUNTING LUGS AS STANDARD
CAST ALUMINUM-UL LISTED FOR WET LOCATIONS



TP7086-TP7090



TP7094, TP7098



TP7102, TP7106



TP7110, TP7114

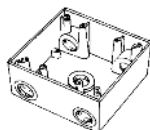


TP7118, TP7122

Product Number	Description	Std. Unit Carton	Color	Wt. Lbs Per 100
TP7086	3-1/2" Holes	10	Gray	83.3
TP7087	3-1/2" Holes	10	White	83.3
TP7088	3-1/2" Holes	10	Bronze	83.3
TP7090	3-3/4" Holes	10	Gray	83.3
TP7094	4-1/2" Holes	10	Gray	83.3
TP7098	4-3/4" Holes	10	Gray	83.3
TP7102	5-1/2" Holes	10	Gray	83.3
TP7106	5-3/4" Holes	10	Gray	83.3
TP7110	7-1/2" Holes	10	Gray	83.3
TP7114	7-3/4" Holes	10	Gray	83.3
TP7118	5-1/2" Holes	10	Gray	83.3
TP7122	5-3/4" Holes	10	Gray	83.3

TWO AND THREE GANG DEEP WEATHERPROOF OUTLET BOXES –

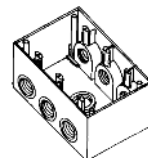
2 5/8" DEEP, ALL BOXES ARE STANDARD WITH MOUNTING LUGS
CAST ALUMINUM-UL LISTED FOR WET LOCATIONS



TP7126, TP7130, TP7134



TP7137, TP7138, TP7142

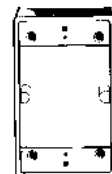


TP7143, TP7144

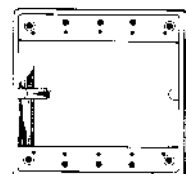
Product Number	Description	Color	Std. Unit Carton	Capacity Cu. In.	Wt. Lbs Per 100
TWO GANG DEEP WEATHERPROOF OUTLET BOXES					
TP7126	5-1/2" Holes	Gray	6	37	140
TP7130	5-3/4" Holes	Gray	6	37	140
TP7134	5-1" Holes	Gray	6	37	140
TP7137	7-1/2" Holes	Gray	6	37	140
TP7138	7-3/4" Holes	Gray	6	37	140
TP7142	7-1" Holes	Gray	6	37	140
THREE GANG DEEP WEATHERPROOF OUTLET BOXES					
TP7143	7-3/4" Holes	Gray	5	59	159
TP7144	7-1" Holes	Gray	5	59	159

ONE & TWO GANG WEATHERPROOF EXTENSIONS

1" DEEP, DIE-CAST ALUMINUM EXTENSION RING
GASKET AND MOUNTING SCREWS INCLUDED WITH COVER
UL LISTED FOR WET LOCATIONS



TP7120

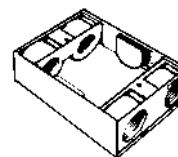


TP7123

Product Number	Description	Color	Std. Unit Carton	Capacity Cu. In.	Wt. Lbs Per 100
TP7120	Single Gang	Gray	25	9	27.2
TP7123	Two Gang	Gray	10	10	27.2

EXTENSION ADAPTER

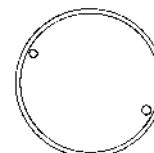
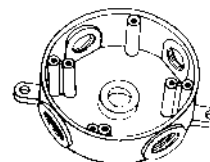
DIE-CAST ALUMINUM, UL LISTED FOR WET LOCATIONS
3 CLOSURE PLUGS, MOUNTING SCREW AND GASKET INCLUDED
WITH COVER



Product Number	Description	Color	Std. Unit Carton	Capacity Cu. In.	Wt. Lbs Per 100
TP7173	4-1/2" Holes	Gray	25	13.0	23.6
TP7174	4-3/4" Holes	Gray	25	13.0	27.8

4" ROUND WEATHERPROOF OUTLET BOXES – 15.5 CUBIC INCH CAPACITY

1 1/2" DEEP, DIE-CAST ALUMINUM, UL LISTED FOR WET LOCATIONS
4 CLOSURE PLUGS AND GROUND SCREW INCLUDED WITH BOX
GASKET AND 2 MOUNTING SCREWS INCLUDED WITH COVER



Product Number	Side Holes	Back Hole	Std. Unit Carton	Color	Wt. Lbs Per 100
TP7146	4-1/2"	1/2"	25	Gray	79.2
TP7148	4-1/2"	1/2"	25	White	79.2
TP7149	4-1/2"	1/2"	25	Bronze	79.2
TP7150	4-3/4"	3/4"	25	Gray	79.2
TP7158	Blank Cover Plate		50	Gray	20.8

WITH BLANK PLATE

TP7147	4-1/2"	1/2"	24	Gray	100
TP7151	4-3/4"	3/4"	24	Gray	100

2" DEEP ROUND WEATHERPROOF OUTLET BOX EXTENSION (18.3 CUBIC INCH CAPACITY)

TP7152	4-1/2"	—	25	Gray	58.3
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DIMENSIONAL DATA, PAGES 73-77

WEATHERPROOF COVERS

ONE & TWO GANG, SELF-CLOSING COVERS WITH GASKETS
UL LISTED, ZINC, DIE-CAST



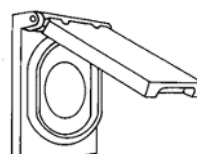
TP7199



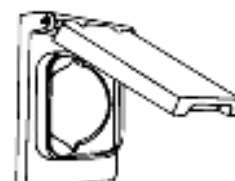
TP7202



TP7206 - TP7209



TP7214



TP7218



TP7220



TP7224



TP7228



TP7232

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7199	One Gang Vertical Duplex Cover	Gray	50	61.1
TP7202	One Gang - For Single Receptacle or Switch - 1.52\"	Gray	25	42.0
TP7206	One Gang - For Duplex Receptacle or Combination Switch	Natural	50	38.0
TP7207	One Gang - For Duplex Receptacle or Combination Switch	Gray	50	38.0
TP7208	One Gang - For Duplex Receptacle or Combination Switch	White	50	38.0
TP7209	One Gang - For Duplex Receptacle or Combination Switch	Bronze	50	38.0
TP7214	One Gang Vertical - For Single Receptacle or Switch 1.62\"	Gray	25	61.1
TP7218	One Gang - For 20, 30 and 50 A Receptacles (2.125\"	Gray	25	55.6
TP7220	Two Gang - For Two Single Receptacles and/or Switches	Gray	10	66.7
TP7224	Two Gang - For One Single Receptacle or Switch and One Duplex Receptacle, Switch or Combination Device	Gray	10	62.0
TP7228	Two Gang - For Two Duplex Receptacles, Switches or Combination Device	Gray	10	61.1
TP7232	One Gang Stay Open - For Duplex Receptacles, Switches or Combination Devices, Non UL Listed	Natural	50	38.0
TP7233	One Gang Stay Open - For Duplex Receptacles, Switches or Combination Devices, Non UL Listed	Gray	50	38.0

CLOSURE PLUGS - ZINC DIE-CAST†

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7940	1/2"	Gray	100	1.5
TP7942	1/2"	Bronze	100	1.5
TP7944	3/4"	Gray	50	2.1

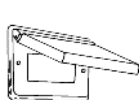
† CSA certified

CP Weatherproof Outlet Covers

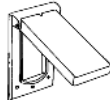
CP Weatherproof

WEATHERPROOF COVERS

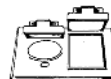
ONE & TWO GANG SELF-CLOSING GFI COVERS
WITH GASKETS, UL LISTED, ZINC DIE-CAST



TP7236 – TP7238



TP7240 – TP7242



TP7244



TP7248



TP7252

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7236	One Gang – For Horizontal GFI Devices	Gray	25	42
TP7237	One Gang – For Horizontal GFI Devices	White	25	42
TP7238	One Gang – For Horizontal GFI Devices	Bronze	25	42
TP7240	One Gang – For Vertical GFI Devices	Gray	25	54
TP7241	One Gang – For Vertical GFI Devices	White	25	54
TP7242	One Gang – For Vertical GFI Devices	Bronze	25	54
TP7244	Two Gang – For Vertical GFI Devices and One Single Switch or Receptacle	Gray	10	61.1
TP7248	Two Gang – For One Vertical GFI Device and One Duplex Receptacle, Switch or Combination Device	Gray	10	61.1
TP7252	Two Gang – For Two GFI Devices	Gray	10	55.6

WEATHERPROOF COVERS

FOR ONE & TWO GANG BOXES
“CONSTANT USE” DUPLEX/GFI COVER
UL & CSA LISTED, POLYCARBONATE



TP7490
3 1/8" Deep

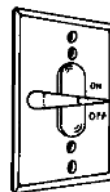


TP7495
2 1/4" Deep

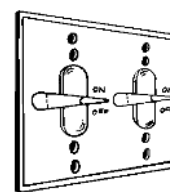
Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7490	One Gang, Vertical Mtg. For Duplex or GFI Device (Inserts Included)	Clear	6	41.7
TP7495	One or Two Gang, Vertical or Horizontal Mtg. For One Duplex or GFI Device (Inserts Included)	Clear	6	75

WEATHERPROOF COVERS

ONE & TWO GANG TOGGLE SWITCH COVERS
WITH GASKETS STAMPED ALUMINUM
UL LISTED



TP7256



TP7268

Product Number	Description	Std. Unit Carton	Wt. Lbs Per 100
TP7256	One Gang	50	12
TP7260	One Gang With 15A-125V Single Pole Switch	50	27.8
TP7268	Two Gang	10	16.7
TP7272	Two Gang With 2-15A 125V Single Pole Switch	10	33.3
TP7276	Two Gang With 2-15A 125V 3-Way Switch	10	33.3

ALUMINUM BLANK BOX WEATHERPROOF COVERS WITH GASKETS UL LISTED FOR WET LOCATIONS



TP7292 – TP7294



TP7296 – TP7298

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7292	One Gang	Gray	100	8.3
TP7293	One Gang	White	100	8.3
TP7294	One Gang	Bronze	100	8.3
TP7296	Two Gang	Gray	50	12.5
TP7297	Two Gang	White	50	12.5
TP7298	Two Gang	Bronze	50	12.5

ROUND AND RECTANGULAR WEATHERPROOF COVERS WITH GASKETS, ZINC DIE-CAST, UL LISTED FOR WET LOCATIONS



TP7300 – 7302



TP7304 – 7306



TP7308 – 7310



TP7312 – 7314



TP7316 – 7318



TP7320 – 7322

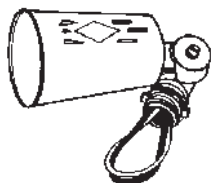


TP7158 – 7160

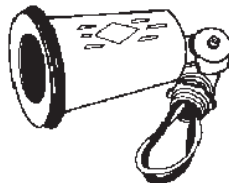
Product Number	Description	No. of Outlet Holes	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7300	4 1/2" Round	1-1/2"	Gray	25	20.8
TP7301	4 1/2" Round	1-1/2"	White	25	20.8
TP7302	4 1/2" Round	1-1/2"	Bronze	25	20.8
TP7304	4 1/2" Round	2-1/2"	Gray	25	33.3
TP7305	4 1/2" Round	2-1/2"	White	25	33.3
TP7306	4 1/2" Round	2-1/2"	Bronze	25	33.3
TP7308	4 1/2" Round	3-1/2"	Gray	25	33.3
TP7309	4 1/2" Round	3-1/2"	White	25	33.3
TP7310	4 1/2" Round	3-1/2"	Bronze	25	33.3
TP7312	Rectangular	1-1/2"	Gray	25	33.3
TP7313	Rectangular	1-1/2"	White	25	33.3
TP7314	Rectangular	1-1/2"	Bronze	25	33.3
TP7316	Rectangular	2-1/2"	Gray	25	33.3
TP7317	Rectangular	2-1/2"	White	25	33.3
TP7318	Rectangular	2-1/2"	Bronze	25	33.3
TP7320	Rectangular	3-1/2"	Gray	25	33.3
TP7321	Rectangular	3-1/2"	White	25	33.3
TP7322	Rectangular	3-1/2"	Bronze	25	33.3
TP7158	Blank Round	—	Gray	50	20.8
TP7159	Blank Round	—	White	50	20.8
TP7160	Blank Round	—	Bronze	50	20.8

WEATHERPROOF LAMPHOLDERS AND ACCESSORIES

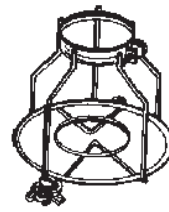
ZINC DIE-CAST CONSTRUCTION, UP TO 150 WATTS, WITH LAMP GASKET, UL LISTED



TP7162 – TP7165



TP7166

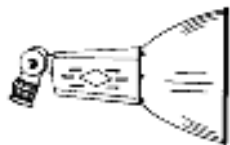


TP7176

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7162	Universal Par Lampholder	Natural	36	47.2
TP7163	Universal Par Lampholder	Gray	36	47.2
TP7164	Universal Par Lampholder	White	36	47.2
TP7165	Universal Par Lampholder	Bronze	36	47.2
TP7166	Universal Par Lampholder With External Gasket	Gray	36	50
TP7170	External Gasket Only	—	100	3
TP7176	Clamp-On Guard	—	24	50

WEATHERPROOF LAMPHOLDERS AND ACCESSORIES

ZINC DIE-CAST CONSTRUCTION, UP TO 150 WATTS, WITH LAMP GASKET, UL LISTED



TP7178



TP7186

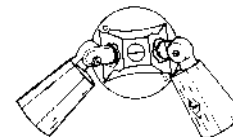


TP7188
(Aluminum)

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7178	Par Lampholder With Reflector	Gray	6	166.7
TP7186	Portable Par Lampholder With 6' Cord	Gray	12	100
TP7188	2 1/2" Outside Diameter Pole Fitter with 1/2" Male Thread	Gray	24	50

WEATHERPROOF LAMPHOLDER COMBINATIONS

ZINC DIE-CAST CONSTRUCTION, WITH GASKETS, UL LISTED



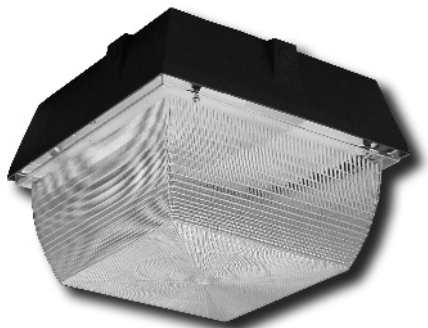
TP7330 – TP7332

Product Number	Description	Color	Std. Unit Carton	Wt. Lbs Per 100
TP7330	2 Par Lampholders and 3-Hole Round Cover	Gray	10	137.5
TP7331	2 Par Lampholders and 3-Hole Round Cover	White	10	137.5
TP7332	2 Par Lampholders and 3-Hole Round Cover	Bronze	10	137.5

Weatherproof Outdoor HID Luminaires

CP

Luminarea™ Series Area Luminaires



Cooper Crouse-Hinds Luminarea Luminaires are ideally suited for general and security lighting indoors or outdoors. Area luminaires are available in 2 sizes in 70 to 175 watt metal halide and 70 to 150 watt high pressure sodium. The bronze epoxy powder coated housing is designed for an extended, trouble-free life. The housing is gasketed for raintight (NEMA 3R) locations. The prismatic polycarbonate lens is vandal resistant for even light distribution. Typical applications include parking garages, storage areas, stairwells, corridors and lobbies.

CP Weatherproof

Key Features and Benefits

- Durable die cast aluminum housing for long product life.
- Architectural bronze powder paint finish for corrosive environments.
- Stainless steel hardware.
- Internal white reflector for maximum light output.
- Vandal resistant polycarbonate lens.
- Side and top plugged threaded entries for easy field wiring.
- High power factor ballast in multi-tap (120, 208, 240, 277 volt) or tri-tap (120, 277, 347 volt) configurations.
- Two housing sizes insure maximum utilization of space.
- Available in 70 to 175 watt metal halide or high pressure sodium versions.

Certifications and Compliances

- UL1598
- UL and cUL listed
- NEMA 3R raintight

Materials & Finishes

- Housing - Die Cast Aluminum
- Lens - Polycarbonate
- Gasket - Silicone
- Hardware - Stainless Steel

Ratings

- 70 to 175 watt metal halide and high pressure sodium.
- Multi-tap (120, 208, 240, 277 volts) or Tri-tap (120, 277, 347 volts)
- 480V

Ordering Information (For accessories & dimensions, see pages 256 & 257)

High Pressure Sodium					
Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
70	120/208/240/277	WLPG70HPS/MT	8" × 8" Housing	Medium	HPF
70	120/277/347	WLPG70HPS/TT	8" × 8" Housing	Medium	HPF
100	120/208/240/277	WLPG100HPS/MT	12" × 12" Housing	Medium	HPF
100	120/277/347	WLPG100HPS/TT	12" × 12" Housing	Medium	HPF
150	120/208/240/277	WLPG150HPS/MT	12" × 12" Housing	Medium	HPF
150	120/277/347	WLPG150HPS/TT	12" × 12" Housing	Medium	HPF

Metal Halide					
Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
70	120/208/240/277	WLPG70MH/MT	8" × 8" Housing	Medium	HPF
70	120/277/347	WLPG70MH/TT	8" × 8" Housing	Medium	HPF
100	120/208/240/277	WLPG100MH/MT	12" × 12" Housing	Medium	HPF
100	120/277/347	WLPG100MH/TT	12" × 12" Housing	Medium	HPF
175	120/208/240/277	WLPG175MH/MT	12" × 12" Housing	Medium	HPF
175	120/277/347	WLPG175MH/TT	12" × 12" Housing	Medium	CWA

Lamp not included.



Cooper Crouse-Hinds Luminarea floodlights are ideally suited for area and outdoor parking lot lighting. The floodlights are available in 3 housing sizes in 150 to 1000 watt metal halide or high pressure sodium. The bronze epoxy powder coated housing is designed for an extended, trouble-free life. The housing is gasketed for raintight (NEMA 3R) locations. Floodlights are available with an optional slip fitter or swivel bracket for mounting flexibility. Typical applications include parking lots, area lighting, street lighting, recreational lighting and security lighting.

Key Features and Benefits

- Durable die cast aluminum housing for long product life.
- Bronze powder paint finish for corrosive environments.
- Stainless steel hardware.
- Hinged lens for easy access to wiring and lamp chamber.
- Polished aluminum reflector maximizes light output.
- Side, bottom & rear plugged threaded entries for easy wiring.
- 150W & 175W fixture includes adjustable mounting bracket.
- 250 to 1000 watt fixtures must be ordered with separate slipfitter or swivel bracket (see page 256).
- Three housing sizes insure maximum utilization of space.
- Available in 150 to 1000 watt metal halide or high pressure sodium versions.

Certifications and Compliances

- UL1598
- UL and cUL listed
- NEMA 3R raintight

Materials & Finishes

- Housing - Die Cast Aluminum
- Lens - Tempered Glass
- Gasket - Silicone
- Hardware - Stainless Steel

Ratings

- 150 to 1000 watt metal halide and high pressure sodium.
- 250 and 400 watt metal halide available with pulse start.
- Multi-tap (120, 208, 240, 277 volts) or Tri-tap (120, 277, 347 volts)
- 480V

Ordering Information (For accessories & dimensions, see pages 256 & 257)

High Pressure Sodium					
Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
150	120/208/240/277	WLFL150HPS/MT ¹	Medium Housing	Medium	HPF
150	120/277/347	WLFL150HPS/TT ¹	Medium Housing	Medium	HPF
250	120/208/240/277	WLFL250HPS/MT ²	16" × 16" Housing	Mogul	CWA-HPF
250	120/277/347	WLFL250HPS/TT ²	16" × 16" Housing	Mogul	CWA
400	120/208/240/277	WLFL400HPS/MT ²	16" × 16" Housing	Mogul	CWA-HPF
400	120/277/347	WLFL400HPS/TT ²	16" × 16" Housing	Mogul	CWA
1000	120/208/240/277	WLFL1000HPS/MT ³	23" × 23" Housing	Mogul	CWA-HPF
1000	120/277/347	WLFL1000HPS/TT ³	23" × 23" Housing	Mogul	CWA

Metal Halide					
Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
175	120/208/240/277	WLFL175MH/MT ¹	Medium Housing	Medium	CWA
175	120/277/347	WLFL175MH/TT ¹	Medium Housing	Medium	CWA
250	120/208/240/277	WLFL250MH/MT ²	16" × 16" Housing	Mogul	CWA-HPF
250	120/208/240/277	WLFL250MH/MT-S828 ²	16" × 16" Housing, Pulse Start	Mogul	Pulse
250	120/277/347	WLFL250MH/TT ²	16" × 16" Housing	Mogul	CWA
400	120/208/240/277	WLFL400MH/MT ²	16" × 16" Housing	Mogul	CWA-HPF
400	120/208/240/277	WLFL400MH/MT-S828 ²	16" × 16" Housing, Pulse Start	Mogul	Pulse
400	120/277/347	WLFL400MH/TT ²	16" × 16" Housing	Mogul	CWA
1000	120/208/240/277	WLFL1000MH/MT ³	23" × 23" Housing	Mogul	CWA-HPF
1000	120/277/347	WLFL1000MH/TT ³	23" × 23" Housing	Mogul	CWA

Lamp not included.

1. 150W & 175W Floodlight - Comes with adjustable mounting bracket with 1/2" thread.

2. 250W & 400W Floodlight - Must buy swivel bracket or slipfitter separately (see accessories, page 256).

3. 1000W Floodlight - Must buy slipfitter separately (see accessories, page 256).

Weatherproof Outdoor HID Luminaires

CP

Luminarea™ Series Wallpack Luminaires



Cooper Crouse-Hinds Luminarea wallpacks are ideally suited for security and perimeter lighting indoors and outdoors. Wallpacks are available in 3 housing sizes in 100 to 400 watt metal halide or high pressure sodium. The bronze epoxy powder coated housing is designed for an extended, trouble-free life. The housing is gasketed for raintight (NEMA 3R) locations. The prismatic glass lens is designed for optimal light distribution to minimize the total number of luminaires required. Typical applications include office buildings, stores, restaurants, warehouses, banks and parking garages.

CP Weatherproof

Key Features and Benefits

- Durable die cast aluminum housing for long product life.
- Architectural bronze powder paint finish for corrosive environments.
- Stainless steel hardware.
- Hinged lens for easy access to wiring and lamp chamber.
- Glass prismatic lens provides superior light distribution.
- Top, side and rear plugged threaded entries for easy field wiring.
- High power factor ballast in multi-tap (120, 208, 240, 277 volt) or tri-tap (120, 277, 347 volt) configurations.
- Three housing sizes insure maximum utilization of space.
- Available in 100 to 400 watt metal halide or high pressure sodium versions.

Certifications and Compliances

- UL1598
- UL and cUL listed
- NEMA 3R raintight

Materials & Finishes

- Housing - Die Cast Aluminum
- Lens - Tempered Glass
- Gasket - Silicone
- Hardware - Stainless Steel

Ratings

- 100 to 400 watt metal halide and high pressure sodium.
- Multi-tap (120, 208, 240, 277 volts) or Tri-tap (120, 277, 347 volts)
- 480V

Ordering Information (For accessories & dimensions, see pages 256 & 257)

High Pressure Sodium					
Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
100	120/208/240/277	WLWP100HPS/MT	Small Housing	Medium	HPF
100	120/277/347	WLWP100HPS/TT	Small Housing	Medium	HPF
150	120/208/240/277	WLWP150HPS/MT	Medium Housing	Medium	HPF
150	120/277/347	WLWP150HPS/TT	Medium Housing	Medium	HPF
250	120/208/240/277	WLWP250HPS/MT	Large Housing	Mogul	CWA-HPF
250	120/277/347	WLWP250HPS/TT	Large Housing	Mogul	CWA
400	120/208/240/277	WLWP400HPS/MT	Large Deep Housing	Mogul	CWA
400	120/277/347	WLWP400HPS/TT	Large Deep Housing	Mogul	CWA

Metal Halide					
Watts	Voltage	Catalog Number	Description	Lamp Base	Ballast
100	120/208/240/277	WLWP100MH/MT	Small Housing	Medium	HPF
100	120/277/347	WLWP100MH/TT	Small Housing	Medium	HPF
175	120/208/240/277	WLWP175MH/MT	Medium Housing	Medium	CWA-HPF
175	120/277/347	WLWP175MH/TT	Medium Housing	Medium	CWA
250	120/208/240/277	WLWP250MH/MT	Large Housing	Mogul	CWA-HPF
250	120/208/240/277	WLWP250MH/MT-S828	Large Housing, Pulse Start	Mogul	Pulse
250	120/277/347	WLWP250MH/TT	Large Housing	Mogul	CWA
400	120/208/240/277	WLWP400MH/MT	Large Deep Housing	Mogul	CWA
400	120/208/240/277	WLWP400MH/MT-S828	Large Deep Housing, Pulse Start	Mogul	Pulse
400	120/277/347	WLWP400MH/TT	Large Deep Housing	Mogul	CWA

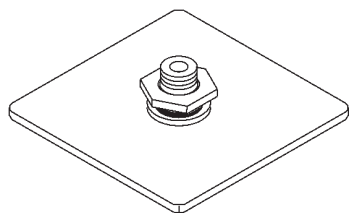
Lamp not included.

CP Weatherproof Outdoor HID Luminaires

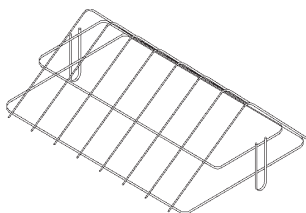
Luminarea™ Series Accessories

CP Weatherproof

WALLPACKS

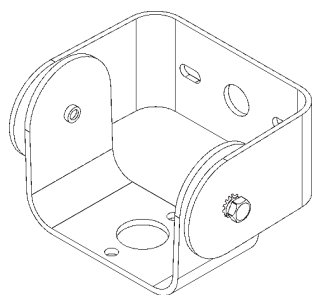


Mounting Plate

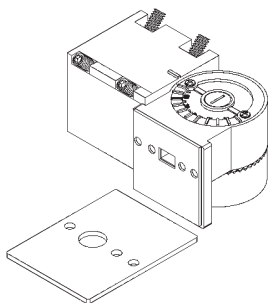


Wire Guards

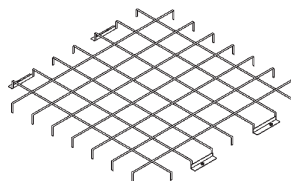
FLOODLIGHTS



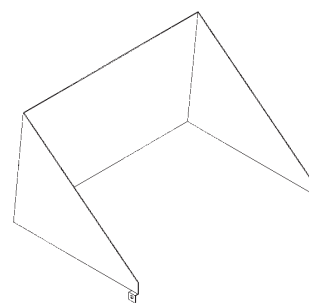
Swivel Bracket



Slipfitters



Wire Guards



Glare Shields

Ordering Information

Accessories for Wallpacks & Area Luminaires

Catalog Number	Description
WLWMP-1	Mounting Plate for 100W Wallpack & Area Luminaire
WLWPWG-1	Wire Guard for 100 W Wallpack
WLWPWG-2	Wire Guard for 150/175W Wallpack
WLWPWG-3	Wire Guard for 250 & 400W Wallpack

Accessories for Floodlights

Catalog Number	Description
WLFLSB-3	Swivel Bracket for 250 & 400W Floodlight
WLFLSF-3	Slipfitter for 250 and 400W Floodlight
WLFLSF-4	Slipfitter for 1000W Floodlight
WLFLWG-3	Wire Guard for 250 & 400W Floodlight
WLFLWG-4	Wire Guard for 1000W Floodlight
WLFLGS-2	Glare Shield for 150/175W Medium Floodlight
WLFLGS-3	Glare Shield for 250 & 400W Floodlight
WLFLGS-4	Glare Shield for 1000W Floodlight

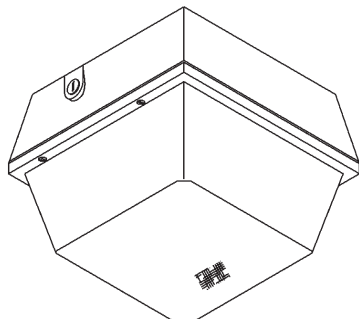
Weatherproof Outdoor HID Luminaires

CP

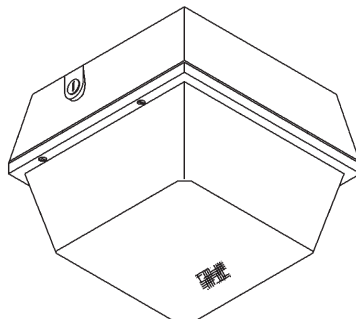
Luminarea™ Series Dimensions & Weights

Area Luminaires (Inches)

Weight: 15lbs.



70W
8.75W x 7.5H x 8.75D

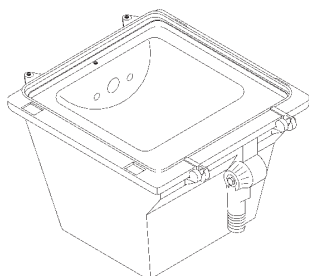


100W to 175W
12.25W x 8.5H x 12.25D

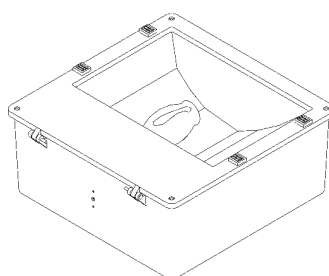
CP Weatherproof

Floodlight Luminaires (Inches)

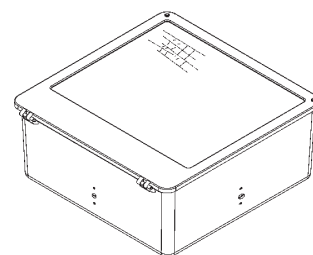
Weight: 15lbs.



150W & 175W
9.0W x 6.75H x 5.75D



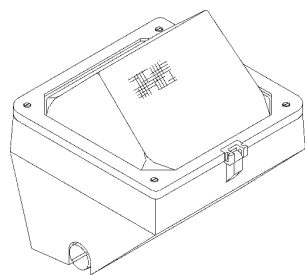
250W & 400W
16.0W x 16.0H x 7.25D



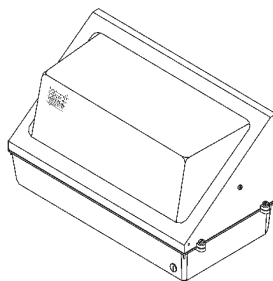
1000W
23.0W x 23.0H x 10.25D

Wallpack Luminaires (Inches)

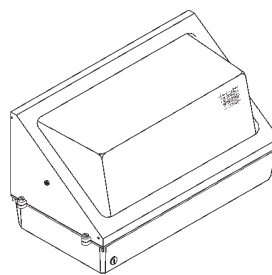
Weight: 15lbs.



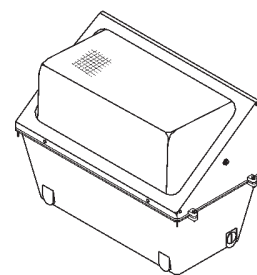
100W
8.5W x 9.375H x 7.0D



150W & 175W
13.0W x 9H x 7.25D



250W
18.0W x 9.0H x 9.75D



400W
18.0W x 9.0H x 12.75D

CP Vapor Proof Lighting Incandescent

CP Weatherproof

VAPOR PROOF FIXTURES – GASKETED CORROSION RESISTANT DIE-CAST CONSTRUCTION, GLASS GLOBES, DIE-CAST GUARDS, UL LISTED



TP7600, TP7601,
TP7800, TP7801,
TP7860



TP7610, TP7611,
TP7805



TP7620, TP7810
TP7621, TP7811



TP7630, TP7815



TP7640, TP7820



TP7650, TP7825

Product Number	Description	Hole Size	Watts	Std. Unit Carton	Wt. Lbs Per 100
4" BOX MOUNTED					
TP7600	Clear Globe, Cast Guard	1/2"	100	1	325
TP7601	Clear Globe, Cast Guard	3/4"	100	1	324
TP7800	Clear Globe, Wire Guard	1/2"	200	1	516.7
TP7801	Clear Globe, Wire Guard	3/4"	200	1	516
TP7860	Fluorescent Clear Globe, Wire Guard	1/2"	13	1	413
TP7610	Clear Globe	1/2"	100	1	258.3
TP7611	Clear Globe	3/4"	100	1	258
TP7805	Clear Globe	1/2"	200	1	283.3
PENDANT MOUNT					
TP7620	Clear Globe, Cast Guard	1/2"	100	1	300
TP7621	Clear Globe, Cast Guard	3/4"	100	1	299
TP7810	Clear Globe, Wire Guard	1/2"	200	1	350
TP7811	Clear Globe, Wire Guard	3/4"	200	1	349
TP7630	Clear Globe	1/2"	100	1	208.4
TP7815	Clear Globe	1/2"	200	1	258.4
SURFACE MOUNT, FITS 3" and 4" ROUND BOXES					
TP7640	Clear Globe, Cast Guard		100	1	275
TP7820	Clear Globe, Wire Guard		200	1	333.3
TP7650	Clear Globe		100	1	216.7
TP7825	Clear Globe		200	1	180

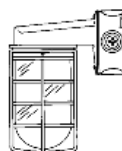
DIMENSIONAL DATA, PAGES 73-77



TP7660, TP7830



TP7670, TP7835



TP7680, TP7840, TP7870



TP7690, TP7845

Product Number	Description	Watts	Std. Unit Carton	Wt. Lbs Per 100
RIGHT ANGLE BRACKET FIXTURES				
TP7660	Clear Globe, Cast Guard	100	1	300
TP7830	Clear Globe, Wire Guard	200	1	516.7
TP7670	Clear Globe	100	1	200
TP7835	Clear Globe	200	1	400
BOX MOUNTED				
TP7680	Clear Globe, Cast Guard	100	1	350
TP7840	Clear Globe, Wire Guard	200	1	560
TP7690	Clear Globe	100	1	250
TP7845	Clear Globe	200	1	450
FLUORESCENT				
TP7870	Clear Globe, Wire Guard	13	1	462

VAPOR PROOF COMPONENTS

Product Number	Description	Watts	Std. Unit Carton	Wt. Lbs. Per 100
PENDANT CAP, PORCELAIN SOCKET GASKET AND SCREWS				
TP7496	Grey, 1/2"	100	10	18
TP7497	Grey, 3/4"	100	10	18
TP7498	Grey, 1/2"	200	10	10
TP7499	Grey, 3/4"	200	10	10
CEILING BOX CAP, SOCKET GASKET AND SCREWS				
TP7447	Grey	100	10	12
TP7448	Grey	200	10	12
CEILING MOUNT BOX WITH GASKETS, PORCELAIN SOCKET AND SCREWS				
TP7450	Grey, 1/2"	100	10	19
TP7478	Grey, 3/4"	100	10	19
TP7451	Grey, 1/2"	200	10	19
TP7479	Grey, 3/4"	200	10	19
RIGHT ANGLE BRACKET GASKET, SOCKET, SCREWS				
TP7445	Grey	100	10	21
TP7446	Grey	200	6	12
RIGHT ANGLE BRACKET ATTACHED BOX, GASKET, SOCKET AND SCREWS				
TP7440	Grey, 1/2"	100	1	3
TP7441	Grey, 3/4"	100	1	3
TP7442	Grey, 1/2"	200	1	1.5
TP7443	Grey, 3/4"	200	1	1.5



VAPOR PROOF FIXTURE ACCESSORIES



TP7460 – TP7466



TP7468 – TP7472



TP7474, TP7475



TP7476



TP7477

Product Number	Description	Watts	Std. Unit Carton	Wt. Lbs Per 100
TP7460	Glass Amber Globe, 130°F Max	100	12	98
TP7462	Glass Amber Globe	100	12	120
TP7463	Glass Blue Globe	100	12	120
TP7464	Glass Green Globe	100	12	120
TP7466	Glass Clear Globe	200	6	200
TP7468	Lexan Clear Prismatic	75	12	58.4
TP7469	Lexan Blue Prismatic	60	12	58.4
TP7470	Lexan Red Prismatic	75	12	58.4
TP7471	Lexan Amber Prismatic	75	12	58.4
TP7472	Lexan White	75	12	58.4
TP7474	Bayonet Mount Die-Cast Guard	100	12	108.4
TP7475	Wire Guard	200	6	183.4
TP7476	Clamp-On Wire Guard	100	12	62.5
TP7477	Adapter Plate	—	12	62.5

CP Commercial Products Fixture Hangers

Flexible Fixture Hangers

Cooper Crouse-Hinds **TPSFH & TPRFH** flexible fixture hangers are used in commercial or light industrial applications where HID high bay and low bay lighting fixtures are used. Specific applications include storage facilities, shipping warehouses, retail and DIY facilities.

Features & Benefits:

- Suitable for use with 1/2" or 3/4" fixture conduit stems these hangers allow the conduit stem of the fixture (luminaire) to swing in any direction. Maximum swing angle is 26° from vertical max slope angles 22 1/2°
- Available in two styles; one for attachment to round or octagonal steel boxes, the other for attachment to 4" square steel boxes.
- Both styles are quickly and easily attached by two screws.
- Hangers are drilled and tapped for use with 3/4" conduit stem as standard and come supplied with a 3/4"-1/2" reducer for 1/2" conduit stem applications.

Certifications and Compliances:

- UL Listed - UL 1598
- CSA C22.2 No. 250
- Suitable for Damp Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Zinc Chromate for corrosion resistance



Ordering Information

Description	Support Wt. (lbs)	Catalog No.
For use with 4" Round or Octagon Boxes	50	TPRFH12
For use with 4" Square boxes	50	TPSFH12

Swiv-L-Drop™ Canopy Fixture Hangers

The Swiv-L-Drop Canopy hanger utilizes a patented spring design to provide vibration and shock protection for pendant mounted fixtures in both horizontal and vertical directions. Designed to fit 3" or 4" outlet boxes the Swiv-L-Drop is for use with 1/2" fixture conduit stems. The smooth, white canopy provides an aesthetically pleasing appearance and installs quickly and easily without the use of tools.

Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Canopy - painted white

Sway Adapters

The Sway Adapter installs quickly and easily to pendant mounted fixtures and compensates for shocks and motion due to movements, vibration, earthquakes or other sources by allowing for lateral movement up to 45 degrees. The Sway Adapter can be used independently or in conjunction with the Swiv-L-Drop hanger. The Sway Adapter is also finished in an aesthetically pleasing white painted finish and is designed for use with 1/2" conduit stems and has 3/8" male threads.

Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: sway adapter - painted white



Ordering Information

Description	Support Wt. (lbs)	Catalog No.
Swiv-L-Drop Canopy Hanger for use with 3" or 4" Outlet boxes for use with 1/2" Conduit Stems.	50*	S-1-1/2
For use with 3/8" Conduit Stems.	50*	S-1-3/8

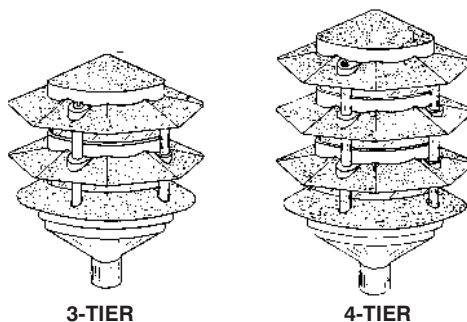
*65 lbs. rated with a minimum 12-inch stem if fully supported by other than an outlet box.



Ordering Information

Description	Catalog No.
Sway adapter for use with 1/2" Conduit Stem (male thread is 3/8")	SA-1W

ZINC DIE-CAST CONSTRUCTION, PORCELAIN SOCKET GLASS GLOBES, 3-20" WIRE LEADS, UL LISTED

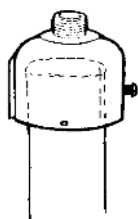


3-TIER

4-TIER

Product Number	Description	Color	Watts	Std. Unit Pkg.	Wt. Lbs Per 100
TP7700	3-Tier	Green	60	6	366.7
TP7701	3-Tier	Black	60	6	366.7
TP7702	3-Tier	Bronze	60	6	366.7
TP7703	3-Tier	White	60	6	366.7
TP7710	4-Tier	Green	100	6	416.7
TP7711	4-Tier	Black	100	6	416.7
TP7712	4-Tier	Bronze	100	6	416.7
TP7713	4-Tier	White	100	6	416.7
TP7720	4-Tier, Fluorescent	Green	7	6	433.3
TP7721	4-Tier, Fluorescent	Black	7	6	433.3
TP7722	4-Tier, Fluorescent	Bronze	7	6	433.3
TP7723	4-Tier, Fluorescent	White	7	6	433.3

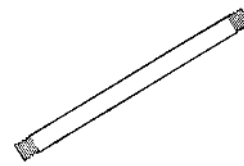
GARDEN LIGHT ACCESSORIES



TP7188



TP7770



TP7771 - TP7774

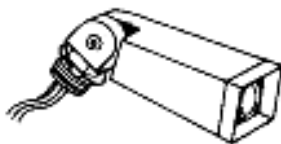
Product Number	Description	Color	Std. Unit Pkg.	Wt. Lbs Per 100
TP7188	2 1/2" Diameter Pole Top Filter with 1/2" Male Thread (Aluminum)	Gray	24	50
TP7770	7" Ground Spike with Male Thread (Zinc)	—	12	33.3
TP7771	12" Heavy Duty Stem	Green	24	83.4
TP7773	12" Heavy Duty Stem	Bronze	24	83.4
TP7774	18" Heavy Duty Stem	Green	12	150

DIMENSIONAL DATA, PAGES 72-75

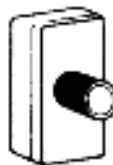
PHOTOELECTRIC LIGHTING CONTROLS



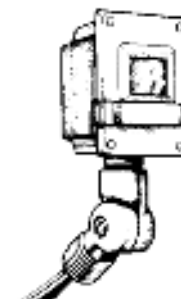
TP7920



TP7924 - TP7925



TP7927 - TP7928



TP7930

Product Number	Description	Std. Unit Pkg.	Wt. Lbs Per 100
TP7920	300W Photo Cell With Plate 120V	10	50
TP7924	300W Swivel Photo Cell 120V	10	8.3
TP7925	1200W Swivel Photo Cell 120V	10	8.3
TP7927	300W Photo Cell 120V	10	8.3
TP7928	1000W Photo Cell 208-277V	10	8.3
TP7930	1800W Swivel 1/2" Stem Photo Cell 120V	10	33.3

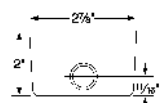
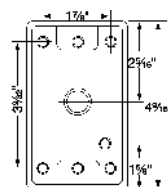
CLOSURE PLUGS - ZINC DIE-CAST†

Product Number	Description	Std. Unit Pkg.	Color	Wt. Lbs Per 100
TP7940	1/2"	100	Gray	1.5
TP7942	1/2"	100	Bronze	1.5
TP7944	3/4"	50	Gray	2.1

† CSA Certified

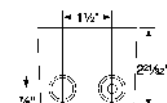
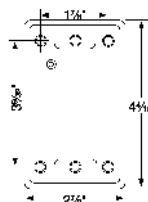
DIMENSIONAL DATA

Single Gang Boxes



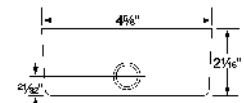
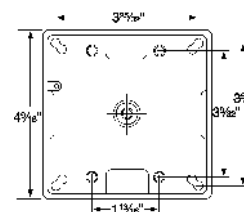
TP7010 - TP7071

Single Gang Deep Boxes



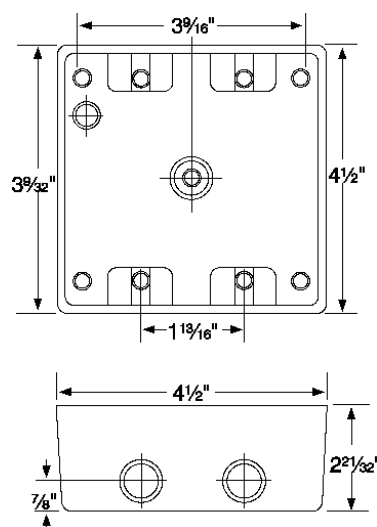
TP7074 - TP7082

Two Gang Boxes



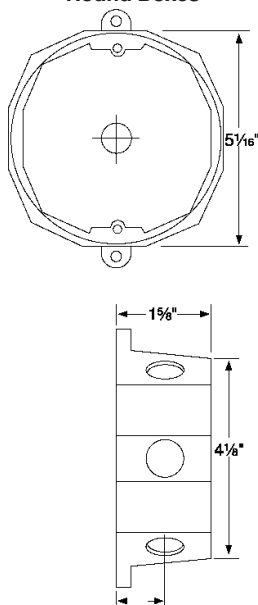
TP7086 - TP7122

Two Gang Deep Boxes



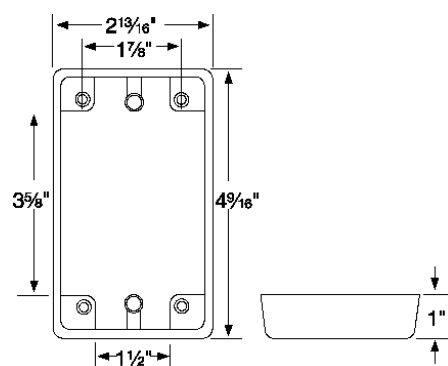
TP7126 - TP7142

Round Boxes



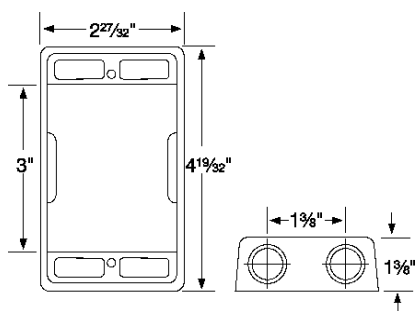
TP7146

Extension Rings and Flanged Boxes



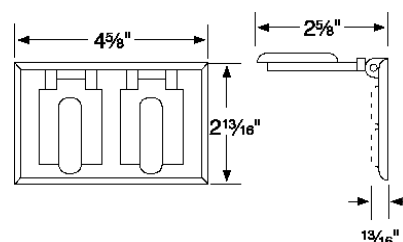
TP7120

Extension Rings and Flanged Boxes



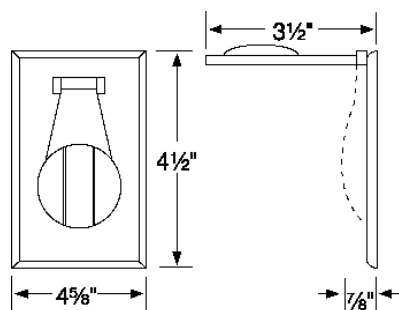
TP7173 - TP7174

Single Gang, Duplex Receptacle Covers



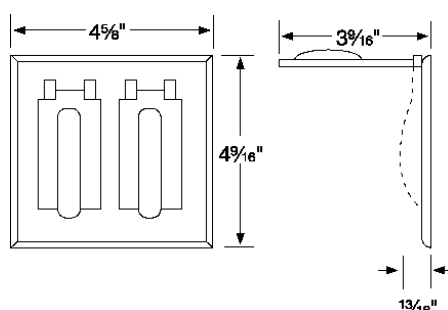
TP7206 - TP7209

Single Gang, Single Receptacle Covers - Vertical Mount



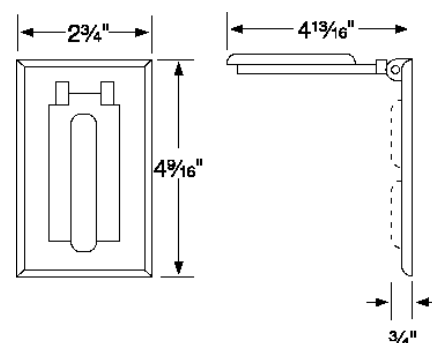
TP7202

Two Gang, Single Receptacle Covers



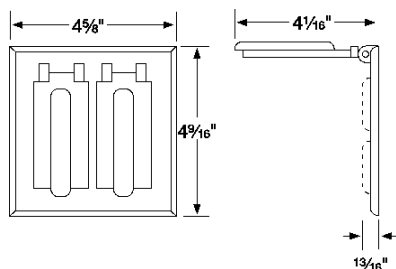
TP7220

Single Gang, Duplex Receptacle Covers - Vertical Mount



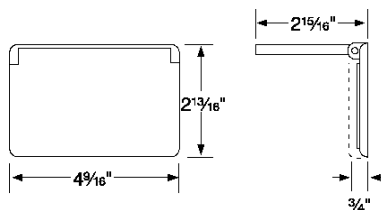
TP7199

Two Gang, Duplex Receptacle Covers



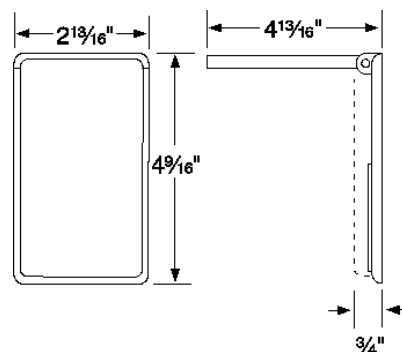
TP7228

Single Gang, GFCI Covers
Horizontal Mount



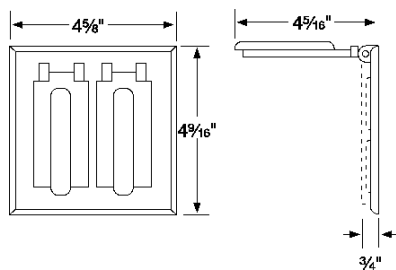
TP7236 - TP7238

Single Gang, GFCI Covers
Vertical Mount



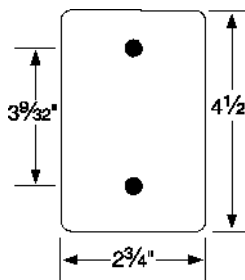
TP7240 - TP7242

Two Gang, GFCI Covers



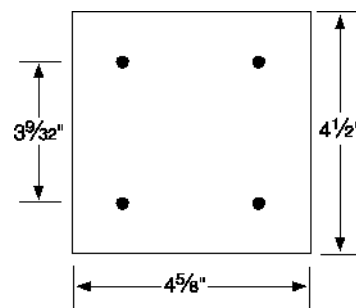
TP7248

Blank Covers



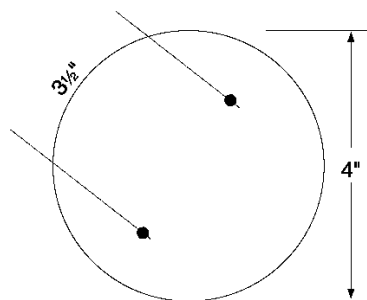
TP7292 - TP7294

Blank Covers



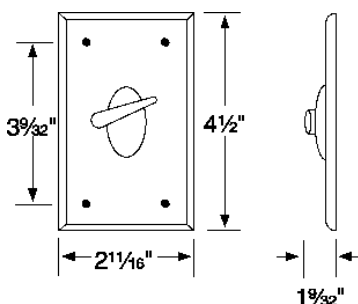
TP7296 - TP7298

Blank Covers



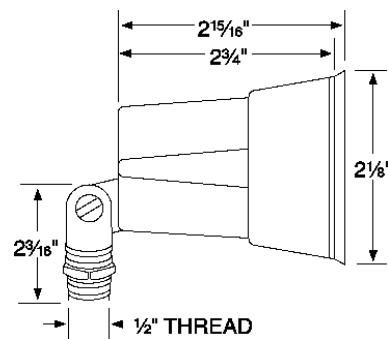
TP7158

Single Gang, Switch Covers
Vertical Mount



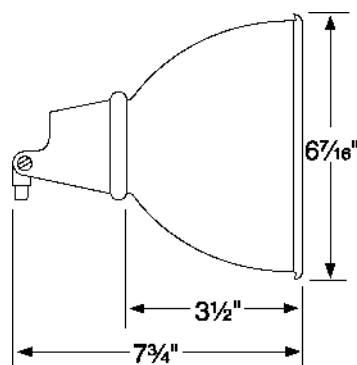
TP7256

Lampholders



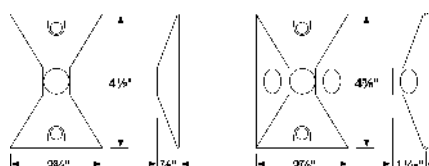
TP7162 - TP7165

Hooded Lampholder



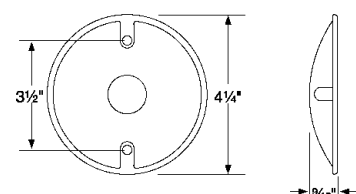
TP7178

Rectangular Lampholder Covers



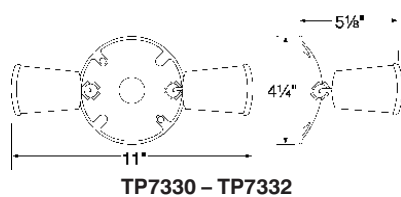
TP7312 - TP7322

Round Lampholder Covers

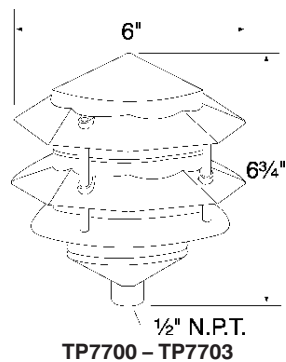


TP7300 - TP7310

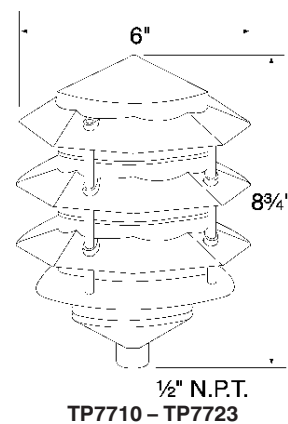
Lampholder Assemblies



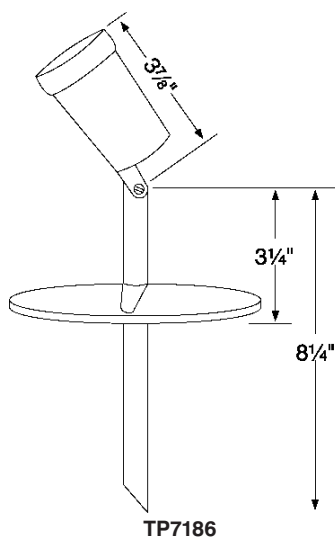
Garden Lights



Garden Lights



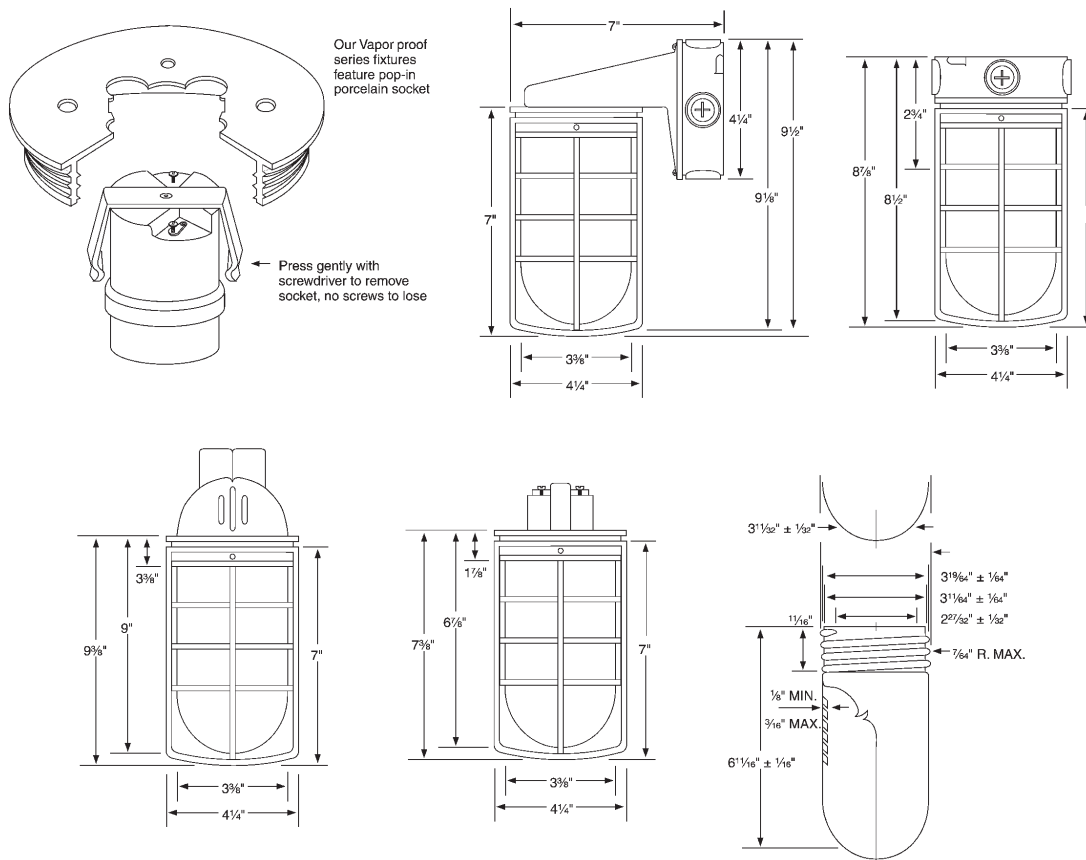
Spike Lights



VAPOR PROOF DIMENSIONS 200 WATT

Product Number	Length	Overall Width	Depth
TP7830	12½"	5½"	6⅝"
TP7840	12½"	5½"	8"
TP7820	7½"	4½"	—
TP7810	11½"	5½"	—
TP7800	10¾"	5½"	—

100 WATT DIMENSIONS



Vapor Proof Lighting

Our Glass Globe Vapor proof fixtures comply with the latest U.L. requirements for standard 1598, for enclosed and gasketed incandescent fixtures.

Suitable For Wet Locations

Corrosion resistant, rugged die-cast construction castings. These lights are designed for indoor and outdoor industrial or commercial locations, gasketing allows their use in outdoor locations.

Designed by our engineers for fast, easy on the job site installation. Cooper Crouse-Hinds Vapor proof series fixtures are perfect for permanent or temporary lighting. Screw on cast guards are supplied with allen head set screws locking it in place to help prevent vandalism. Unit features snap-in, snap-out, copper screw shell porcelain sockets with screws backed out.

- Fixtures may be purchased complete or as components.
- Fixtures constructed of Die-Cast Aluminum, Guards are Zinc Die-Cast.
- Heat Resistant Clear Globe Available on 100 watt series.
- Wire Guard Available.

Clear glass is standard, colors are available, plastic (polycarbonate) globes which are virtually unbreakable are available in colors and are used as an alternative to glass globe-guard combinations (not recommended to exceed 60 watts).

Myers Scru-tite™ and Ground hub are used in the termination of electrical circuits through wall of the enclosure

Features

- Vibration proof
- Grounding screw for added safety
- Captive o-ring gasket
- No welding
- Posi-Lok insulated throat (insuliner)
- Fit standard knockouts
- Easy installation
- Controlled thread lengths
- NPSL on male thread
- No sharp edges (along parting line)

Material

- Nut: Zamek-2, Zamek-3, Aluminium (Al 360), Stainless (316)
- Body: Zamek-2, Zamek-3, Aluminium (Al 360), Stainless (316)
- Insuliner: Lexan
- O-Ring: Gasket Vi Ton
- Ground Screw: steel

Standard Finishes

- Aluminum: Natural
- Zinc: Natural

Optional Material/Finishes

- Stainless: Natural
- Aluminium: PVC
- Zinc: Chrome-plate, PVC

Certifications

NEC/CEC: Class I, Division 2
Class II, Division 1 & 2
Class III, Division 1 & 2
UL Listed - UL Standard 514B
CSA Certified - Certified by UL to CSA standard C22.2 No. 18
NEMA Type 2, 3, 3R, 4, 4X, 12 (std hub)
NEMA Type 2, 3, 3R, 4, 12 (ground hub)

HUB BASIC SCRUI-TITE® – NEMA 2, 3, 3R, 4, 4X and 12 ZINC – Optional nickel-chrome plate finish available.†

UL File No. E-27258	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	ST-03†	3/8"	25	250	12
	ST-1†	1/2"	25	375	20
	ST-2†	3/4"	25	250	32
	ST-3†	1"	25	250	40
	ST-4†	1 1/4"	10	100	60
	ST-5†	1 1/2"	10	100	70
	ST-6†	2"	10	60	90
	ST-7	2 1/2"	5	50	200
	ST-8	3"	2	30	250
	ST-9	3 1/2"	2	12	300
	ST-10	4"	2	12	350
	ST-11*	5"	1	8	600
	ST-12*	6"	1	8	800

* not supplied with insulator.

HUB BASIC SCRUI-TITE® – NEMA 2, 3, 3R, 4, 4X and 12 ALUMINUM

UL File No. E-27258	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	STA-1	1/2"	25	375	8
	STA-2	3/4"	25	250	16
	STA-3	1"	25	250	16
	STA-4	1 1/4"	25	100	30
	STA-5	1 1/2"	10	100	30
	STA-6	2"	10	60	50
	STA-7	2 1/2"	5	50	80
	STA-8	3"	2	30	100
	STA-9	3 1/2"	2	12	150
	STA-10	4"	2	12	150
	STA-11	5"	1	8	300
	STA-12	6"	1	8	300

STAINLESS STEEL GROUND HUB – NEMA 2, 3, 3R, 4, 4X and 12 STAINLESS STEEL – Type 316

UL File No. E-59509	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	SSTG-1	1/2"	10	10	20
	SSTG-2	3/4"	10	10	30
	SSTG-3	1"	10	10	43
	SSTG-4	1 1/4"	5	5	55
	SSTG-5	1 1/2"	5	5	73
	SSTG-6	2"	5	5	95
	SSTG-7	2 1/2"	2	2	
	SSTG-8	3"	2	2	
	SSTG-9	3 1/2"	2	2	
	SSTG-10	4"	2	2	

Applications: Ideal for pharmaceutical, chemical and food processing, pulp/paper and nuclear industries. Resistant to a variety of chemicals, including acetic, citric and salt water. The O-ring is a special "Viton (75)" and has excellent chemical resistance. Hub is provided with a stainless steel ground nut.

† Optional Nickel-Chrome Plate Finish, add suffix "-CP". See price list.

**GROUND HUB – NEMA 2, 3, 3R, 4, 4X and 12
ZINC**

UL File No. E-59509



Cat. #	Size	Unit Quantity	Std. Pkg.	Weight Lbs. Per 100	Max. Copper Grd. Wire Size CSA	UL
STG-1	1/2"	25	325	20	#8	#8
STG-2	3/4"	25	225	30	#8	#8
STG-3	1"	25	150	43	#8	#8
STG-4	1 1/4"	10	100	55	#8	#8
STG-5	1 1/2"	10	90	73	#6	#8
STG-6	2"	10	60	95	#4	#8
STG-7	2 1/2"	5	35	190	#2	#6
STG-8	3"	2	26	263	1/0	#6
STG-9	3 1/2"	2	12	300	2/0	#6
STG-10	4"	2	12	350	2/0	#4
STG-11*	5"	1	8	625	2/0	#2
STG-12*	6"	1	8	750	3/0	#1

* Not supplied with insulator

**GROUND HUB – NEMA 2, 3, 3R, 4, 4X and 12
ALUMINUM - TYPE 360**

STAG-1	1/2"	25	375	10	#8	#8
STAG-2	3/4"	25	250	14	#8	#8
STAG-3	1"	25	250	18	#8	#8
STAG-4	1 1/4"	10	100	25	#8	#8
STAG-5	1 1/2"	10	100	33	#6	#8
STAG-6	2"	10	60	45	#4	#8
STAG-7	2 1/2"	5	50	90	#2	#6
STAG-8	3"	2	30	125	1/0	#6
STAG-9	3 1/2"	2	12	138	2/0	#6
STAG-10	4"	2	12	150	2/0	#4
STAG-11	5"	1	8	325	3/0	#2
STAG-12	6"	1	8	350	3/0	#1

**GROUND HUB BASIC SCRU-TITE® – ATEX/IEC APPROVED
ZINC**

CENELEC Approval with DEMKO

D 98E. 124658U Class I, ZONE 1, AEx e II

UL File No. 187273 Class I, ZONE 1, Ex e II



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STGK-1	1/2"	10	10	20
STGK-2	3/4"	10	10	30
STGK-3	1"	10	10	43
STGK-4	1 1/4"	5	5	55
STGK-5	1 1/2"	5	5	73
STGK-6	2"	5	5	95

STAINLESS STEEL – TYPE 316

ATEX Approval with DEMKO

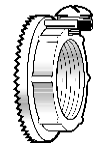
D 98E. 124658U Class I, ZONE 1, AEx e II

UL File No. E-187273 Class I, ZONE 1, Ex e II

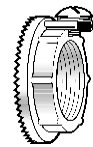


SSTGK-1	1/2"	10	10	20
SSTGK-2	3/4"	10	10	30
SSTGK-3	1"	10	10	43
SSTGK-4	1 1/4"	5	5	55
SSTGK-5	1 1/2"	5	5	73
SSTGK-6	2"	5	5	95

Applications: Ideal for pharmaceutical, chemical and food processing, pulp/paper and nuclear industries. Resistant to a variety of chemicals, including acetic, citric and salt water. The O-ring is a special "Viton (75)" and has excellent chemical resistance. Hub is provided with a stainless steel ground nut.

**GROUND NUT
ZINC**

Catalog Number	Size	Unit Quantity	Std. Pkg.	Weight Lbs. Per 100	Max. Copper Grd. Wire Size CSA	UL
STGN-1	1/2"	25	375	6	#8	#8
STGN-2	3/4"	25	375	10	#8	#8
STGN-3	1"	25	375	13	#8	#8
STGN-4	1 1/4"	10	150	15	#8	#8
STGN-5	1 1/2"	10	150	23	#6	#8
STGN-6	2"	10	150	30	#4	#8

**GROUND NUT
ALUMINUM**

STAGN-1	1/2"	25	375	3	#8	#8
STAGN-2	3/4"	25	375	5	#8	#8
STAGN-3	1"	25	375	6	#8	#8
STAGN-4	1 1/4"	10	150	8	#8	#8
STAGN-5	1 1/2"	10	150	10	#6	#8
STAGN-6	2"	10	150	13	#4	#8

**CAP-OFF
ZINC**

STC-1	1/2"	25	375	13
STC-2	3/4"	25	325	20
STC-3	1"	25	225	28
STC-4	1 1/4"	10	150	40
STC-5	1 1/2"	10	120	53
STC-6	2"	10	90	70

**CAP-OFF
ALUMINUM**

STAC-1	1/2"	25	375	6
STAC-2	3/4"	25	375	8
STAC-3	1"	25	375	12

**THROUGH-BULKHEAD FITTING
ZINC**

STTB-1	1/2"	5	75	30
STTB-2	3/4"	5	75	50
STTB-3	1"	5	75	70
STTB-4	1 1/4"	5	50	85
STTB-5	1 1/2"	5	50	110
STTB-6	2"	5	25	160
STTB-7	2 1/2"	4	20	244
STTB-8	3"	2	20	312
STTB-9	3 1/2"	2	12	350
STTB-10	4"	2	12	400

**THROUGH-BULKHEAD FITTING
ALUMINUM**



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STTBA-1	1/2"	5	75	20
STTBA-2	3/4"	5	75	35
STTBA-3	1"	5	75	30
STTBA-4	1 1/4"	5	50	40
STTBA-5	1 1/2"	5	50	50
STTBA-6	2"	5	25	70
STTBA-7	2 1/2"	4	20	106
STTBA-8	3"	2	20	138

**THROUGH-BULKHEAD FITTING without nipples
ZINC**



STTTB-1	1/2"	5	75	35
STTTB-2	3/4"	5	75	60
STTTB-3	1"	5	75	75
STTTB-4	1 1/4"	5	50	85
STTTB-5	1 1/2"	5	50	120
STTTB-6	2"	5	25	170

**THROUGH-BULKHEAD FITTING without nipples
ALUMINUM**



STTTBA-1	1/2"	5	75	15
STTTBA-2	3/4"	5	75	25
STTTBA-3	1"	5	75	35
STTTBA-4	1 1/4"	5	50	40
STTTBA-5	1 1/2"	5	50	50
STTTBA-6	2"	5	25	75

**NON-HAZARDOUS DRAIN PLUG
STAINLESS STEEL**

UL File No. E23223



SSTC-1	1/2"	25	25	13
SSTC-1CD	1/2"	25	25	13

Note: SSTC-1 is for knockouts and is supplied with a locknut and straight threads.
SSTC-1CD is for threaded openings and is supplied without locknut and NPT threads.
Not gasketed to allow for water drainage

**NON-HAZARDOUS DRAIN PLUG
ALUMINUM**

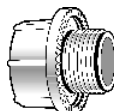
UL File No. E23223



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STAC-1ST	1/2"	25	25	6
STAC-1CD	1/2"	25	25	6

Note: STAC-1ST is for knockouts and is supplied with a locknut and straight threads.
STAC-1CD is for threaded openings and is supplied without locknut and NPT threads.
Not gasketed to allow for water drainage

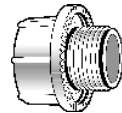
**METRIC TO NPT ADAPTER
ZINC**



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
STM-1	M20 to 1/2"	25	25	12
STM-2	M25 to 3/4"	25	25	32
STM-3	M32 to 1"	25	25	32
STM-4	M40 to 1 1/4"	25	25	40
STM-5	M50 to 1 1/2"	10	10	50
STM-6	M63 to 2"	10	10	70

Note: The Myers Metric to NPT hub adapter is used to convert a threaded metric entry to a NPT entry. The female thread is NPT and the male thread is metric.

**METRIC TO NPT ADAPTER
STAINLESS STEEL**



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSTM-1	M20 to 1/2"	10	10	12
SSTM-2	M25 to 3/4"	10	10	20
SSTM-3	M32 to 1"	10	10	32
SSTM-4	M40 to 1 1/4"	5	5	40
SSTM-5	M50 to 1 1/2"	5	5	50
SSTM-6	M63 to 2"	5	5	70

CONDUIT HUBS – MALLEABLE IRON

(Insulated Throat)

Features:



- Male thread type
- Tapered female thread for rigid conduit and IMC
- Recessed O-ring gasket assures raintight and dust tight connections
- Insulated throat provides smooth pulling surface
- Locking screw on the nut doubles as a grounding screw for added safety
- Complete size range from 1/2" to 6"
- Hubs fit standard knockouts. No special tools required

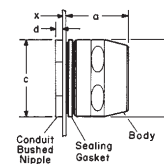
Certifications and Compliances:

- Class I, Division 2 – NEC 501.4(B)
- Class II, Divisions 1 & 2 – NEC 502.4(A)(B)
- Class III, Division 1 & 2 – NEC 503.3(A)(B)
- UL Listed – UL Standard 514B
- cUL Listed – Certified by UL to CSA Standard C22.2 No. 18
- NEMA: FB-1
- Suitable for wet locations



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
MHUB1	1/2"	25	100	18
MHUB2	3/4"	25	100	25
MHUB3	1"	5	50	50
MHUB4	1 1/4"	5	25	25
MHUB5	1 1/2"	2	20	20
MHUB6	2"	1	10	10
MHUB7	2 1/2"	1	10	10
MHUB8	3"	1	5	5
MHUB9	3 1/2"	1	5	5
MHUB10	4"	1	2	2
MHUB11	5"	1	1	1
MHUB12	6"	1	1	1

**Conduit
Hub
Dimension**

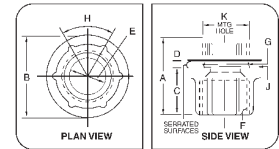


Cat. #	Conduit Size	a	b	c	d	x
HUB1	1/2"	1	1 1/4	1	1/8	9/64
HUB2	3/4"	1 1/8	1 9/16	1 3/8	5/32	1/4
HUB3	1"	1 3/8	1 7/8	1 5/8	3/16	9/32
HUB4	1 1/4"	1 1/2	2 5/16	2	1/4	7/16
HUB5	1 1/2"	1 5/8	2 1/2	2 3/8	1/4	7/16
HUB6	2"	1 11/16	3	2 13/16	1/4	7/16
HUB7	2 1/2"	2 3/16	3 5/8	3 7/16	1/4	7/16
HUB8	3"	2 7/16	4 1/4	4 1/16	1/4	7/16
HUB9	3 1/2"	2 7/16	4 3/4	4 1 1/16	5/16	3/4
HUB10	4"	2 9/16	5 1/4	5 1/16	5/16	1 1/8

NOTE: Dimension "x" is maximum wall thickness of box that will meet the requirement for three full threads engagement of nipple and fitting body when liquidtight box connector or rigid conduit hub is installed in a knockout or slip hole.

SCHEDULE OF DIMENSIONS

PIPE SIZE	CAT. NO.	A	B	C	D	E		F	G	H	J "O" RING		K	
						MIN.	MAX.				C.S.	O.D.	MIN.	MAX.
1/4	ST-02	1-3/32	15/16	21/32	1/8	.350	.364	1/4 NPT	1/4 NPS	60°	3/21	3/4	35/64	9/16
3/8	ST-03	1-3/32	1-1/8	21/32	1/8	.468	.493	3/8 NPT	3/8 NPS	60°	3/32	15/16	43/64	11/16
1/2	ST-1	1-11/32	1-7/16	13/16	3/16	.591	.622	1/2 NPT	1/2 NPS	60°	1/8	1-1/2	55/64	7/8
3/4	ST-2	1-15/32	1-23/32	29/32	3/16	.783	.824	3/4 NPT	3/4 NPS	60°	1/8	1-7/16	1-1/16	1-1/8
1	ST-3	1-21/32	2	1-1/32	1/4	.997	1.049	1 NPT	1 NPS	60°	1/8	1-3/4	1-21/64	1-3/8
1-1/4	ST-4	1-11/16	2-3/8	1-1/32	1/4	1.311	1.380	1-1/4 NPT	1-1/4 NPS	60°	1/8	2-1/8	1-43/64	1-3/4
1-1/2	ST-5	1-11/16	2-3/4	1-1/32	1/4	1.529	1.610	1-1/2 NPT	1-1/2 NPS	60°	1/8	2-1/2	1-59/64	2
2	ST-6	1-3/4	3-1/4	1-3/32	1/4	1.964	2.067	2 NPT	2 NPS	60°	1/8	3	2-25/64	2-1/2
2-1/2	ST-7	2-7/32	3-3/4	1-9/32	1/4	2.346	2.469	2-1/2 NPT	2-1/2 NPS	60°	1/8	3-1/2	2-57/64	3
3	ST-8	2-5/16	4-3/8	1-3/8	1/4	2.915	3.068	3 NPT	3 NPS	45°	1/8	4-1/8	3-33/64	3-5/8
3-1/2	ST-9	2-3/8	5	1-7/16	1/4	3.371	3.548	3-1/2 NPT	3-1/2 NPS	45°	1/8	4-5/8	4-1/64	4-1/8
4	ST-10	2-7/16	5-1/2	1-1/2	1/4	3.825	4.026	4 NPT	4 NPS	45°	1/8	5-1/8	4-33/64	4-5/8
5	ST-11	2-15/16	6-7/8	2	1/4	4.795	5.047	5 NPT	5 NPS	45°	1/8	6-1/2	5-37/64	5-11/16
6	ST-12	3	7-11/16	2	5/16	5.762	6.065	6 NPT	6 NPS	45°	1/8	7-1/4	6-41/64	6-3/4



PLAN VIEW SIDE VIEW

"D" dimension indicated maximum panel thickness which hub will accommodate.

TOLERANCE	CAT. NO.	MATERIAL
DECIMAL	+/- .010	ST ZINC
FRACTIONAL	+/- 1/16	STA ALUMINUM
ANGULAR & DRAFT	+/- 2°	SSTG STAINLESS

Dimensions and materials specified are subject to change without prior notice.

SPACING CHART FOR MYERS HUBS
CONDUIT OR PIPE SIZE

HOLE SIZE.	COND. SIZE.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
9/16	1/4	1 1/16													
1 1/16	3/8	1 5/32	1 1/4												
7/8	1/2	1 5/16	1 13/32	1 9/16											
1 1/8	3/4	1 7/16	1 17/32	1 11/16	1 13/16										
1 3/8	1	1 19/32	1 11/16	1 27/32	1 31/32	2 1/8									
1 3/4	1 1/4	1 25/32	1 7/8	2 1/32	2 5/32	2 5/16	2 1/2								
2	1 1/2	1 31/32	2 1/16	2 7/32	2 11/32	2 1/2	2 11/16	2 7/8							
2 1/2	2	2 27/32	2 5/16	2 15/32	2 19/32	2 3/4	2 15/16	3 1/8	3 3/8						
3	2 1/2	2 15/32	2 9/16	2 23/32	2 27/32	3	3 3/16	3 3/8	3 5/8	3 7/8					
3 5/8	3	2 25/32	2 7/8	3 1/32	3 5/32	3 5/16	3 1/2	3 11/16	3 5/16	4 3/16	4 1/2				
4 1/8	3 1/2	3 3/32	3 3/16	3 11/32	3 15/32	3 5/8	3 13/16	4	4 1/4	4 1/2	4 13/16	5 1/8			
4 5/8	4	3 11/32	3 7/16	3 19/32	3 23/32	3 7/8	4 1/16	4 1/4	4 1/2	4 3/4	5 1/16	5 3/8	5 3/4		
5 1/16	5	4 1/32	4 1/8	4 9/32	4 13/32	4 9/16	4 3/4	4 15/16	5 3/16	5 7/16	5 3/4	6 1/16	6 5/16	7 1/8	
6 3/4	6	4 13/32	4 1/2	4 21/32	4 25/32	4 15/16	5 1/8	5 5/16	5 9/16	5 13/16	6 1/8	6 7/16	6 11/16	7 3/8	7 3/4
		1 9/32	1 1/16	2 7/32	3 1/32	1 1/8	1 5/16	1 1/2	1 3/4	2	2 5/16	2 5/8	2 7/8	3 9/16	3 15/16

Minimum space from center of pipe or conduit to nearest obstruction.

1. Dimensions in black squares are centers for conduits of same size. Example: How close may 3" conduits be spaced?

Answer 4 1/2".

2. Dimensions in grey squares are for centers of conduits NOT of the same size. Example: What is the minimum spacing for 2" and 3/4" conduit?

Read down column marked 3/4" to figure opposite 2" and find dimensions is 2 11/32".

3. Minimum spacing dimensions as shown will give approximately 1/8" clearance between locking nuts.

Flexible Fixture Hangers

Cooper Crouse-Hinds **TPSFH & TPRFH** flexible fixture hangers are used in commercial or light industrial applications where HID high bay and low bay lighting fixtures are used. Specific applications include storage facilities, shipping warehouses, retail and DIY facilities.

Features & Benefits:

- Suitable for use with 1/2" or 3/4" fixture conduit stems these hangers allow the conduit stem of the fixture (luminaire) to swing in any direction. Maximum swing angle is 26° from vertical max slope angles 22 1/2°
- Available in two styles; one for attachment to round or octagonal steel boxes, the other for attachment to 4" square steel boxes.
- Both styles are quickly and easily attached by two screws.
- Hangers are drilled and tapped for use with 3/4" conduit stem as standard and come supplied with a 3/4"-1/2" reducer for 1/2" conduit stem applications.

Certifications and Compliances:

- UL Listed - UL 1598
- CSA C22.2 No. 250
- Suitable for Damp Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Zinc Chromate for corrosion resistance



Ordering Information

Description	Support Wt. (lbs)	Catalog No.
For use with 4" Round or Octagon Boxes	50	TPRFH12
For use with 4" Square boxes	50	TPSFH12

Swiv-L-Drop™ Canopy Fixture Hangers

The Swiv-L-Drop Canopy hanger utilizes a patented spring design to provide vibration and shock protection for pendant mounted fixtures in both horizontal and vertical directions. Designed to fit 3" or 4" outlet boxes the Swiv-L-Drop is for use with 1/2" fixture conduit stems. The smooth, white canopy provides an aesthetically pleasing appearance and installs quickly and easily without the use of tools.

Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Canopy - painted white



Ordering Information

Description	Support Wt. (lbs)	Catalog No.
Swiv-L-Drop Canopy Hanger for use with 3" or 4" Outlet boxes for use with 1/2" Conduit Stems.	50*	S-1-1/2
For use with 3/8" Conduit Stems.	50*	S-1-3/8

*65 lbs. rated with a minimum 12-inch stem if fully supported by other than an outlet box.

Sway Adapters

The Sway Adapter installs quickly and easily to pendant mounted fixtures and compensates for shocks and motion due to movements, vibration, earthquakes or other sources by allowing for lateral movement up to 45 degrees. The Sway Adapter can be used independently or in conjunction with the Swiv-L-Drop hanger. The Sway Adapter is also finished in an aesthetically pleasing white painted finish and is designed for use with 1/2" conduit stems and has 3/8" male threads.

Certifications and Compliances:

- UL Listed - UL 1598
- Suitable for Dry Locations

Standard Materials & Finishes:

- Material: Sheet Steel
- Finish: Sway Adapter - painted white



Ordering Information

Description	Catalog No.
Sway adapter for use with 1/2" Conduit Stem (male thread is 3/8")	SA-1W

CP Thin Wall Conduit Fittings (For EMT Conduit)

- Compression Type Fittings
- Set Screw Type Fittings
- Combination Couplings
- Straight Connectors
- Couplings

CP Thinwall Fittings

COMPRESSION TYPE FITTINGS – RAIN TIGHT CONNECTORS

The Cooper Crouse-Hinds Raintight EMT connectors are used to join EMT conduit to a box or enclosure in Raintight environments. The design prevents water seepage into conduit, box or enclosure.

Features and Benefits

- All steel construction with zinc electroplate finish provides for durable corrosion resistance
- Flat surface on Gland nut provides smooth, flat surface for easy wrenching
- Distinct black gland nut provides quick raintight identification
- Integral gasketed compression ring secures and seals for reliable installation
- Interior shoulder conduit stop provides positive seating of conduit inside the body
- Gasket on male threads of box connector seals installation for raintight connection between the box and the connector
- Available in insulated and non-insulated versions to meet any customer preference
- Angled teeth on locknut for secure bite into enclosure
- Extruded locknut with shoulder provides more threads for more secure installation
- Concrete tight
- Standard material: Steel
- Standard finish: Zinc plated

Certifications and Compliances

- UL Listed
- cUL Listed

Concrete Tight

Straight Connectors – Insulated – Raintight

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	1650RT	1/2"	50	250	11
	1651RT	3/4"	25	125	17
	1652RT	1"	25	100	23
	1653RT	1 1/4"	10	50	41
	1654RT	1 1/2"	10	50	50
	1655RT	2"	5	25	67
	1656RT	2 1/2"	2	10	177
	1657RT	3"	1	5	234

Straight Connectors – Non-Insulated – Raintight

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	650RT	1/2"	50	250	11
	651RT	3/4"	25	125	17
	652RT	1"	25	100	23
	653RT	1 1/4"	10	50	41
	654RT	1 1/2"	10	50	50
	655RT	2"	5	25	67
	656RT	2 1/2"	2	10	177
	657RT	3"	1	5	234

Couplings – Raintight

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	660RT	1/2"	50	250	14
	661RT	3/4"	25	125	21
	662RT	1"	25	100	28
	663RT	1 1/4"	10	50	49
	664RT	1 1/2"	10	50	60
	665RT	2"	5	25	79
	666RT	2 1/2"	2	10	187
	667RT	3"	1	5	245

COMPRESSION TYPE FITTINGS – STEEL

New Space-Saver EMT Connector - Compression

UL File No. E-22132

Features:

- Used to join EMT conduit to a box or enclosure
- Designed with the male threads on the locknut, the Space-Saver takes up virtually no room inside the box and the smooth pulling surface eliminates the need for a bushing or insulated throat
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration
- Knurled wrenching surface for easy tightening
- Zinc electroplated for corrosion resistance
- Concrete tight when taped

Certifications and Compliances:

- UL Listed
- cUL Listed

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	SSC50	1/2"	50	250	8
	SSC75	3/4"	25	100	12
	SSC100	1"	25	100	12

COMPRESSION TYPE FITTINGS – STEEL

Application:

Thinwall conduit fittings are used:

- to join EMT to a box or enclosure
- to couple two ends of EMT conduit

Features: Compression Type

- Unique raised bump design affords fast, positive locking of compression nuts
- Male Hub Threads - NPSM
- Steel Locknuts
- Heavy Steel Walls
- Standard Material: Steel
- Standard Finish: Zinc Plated

Concrete Tight

Straight Connectors – Insulated

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	1650	1/2"	50	250	11
	1651	3/4"	25	125	16
	1652	1"	25	100	25
	1653	1 1/4"	10	50	43
	1654	1 1/2"	10	50	54
	1655	2"	5	25	76
	1656	2 1/2"	2	10	190
	1657	3"	1	5	300
	1658	3 1/2"	1	5	330
	1659	4"	1	5	360

Straight Connectors – Non-Insulated

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	650S	1/2"	50	250	9
	651S	3/4"	25	125	16
	652	1"	25	100	25
	653	1 1/4"	10	50	43
	654	1 1/2"	10	50	54
	655	2"	5	25	76
	656	2 1/2"	2	10	190
	657	3"	1	5	300
	658	3 1/2"	1	5	280
	659	4"	1	5	360

Thin Wall Conduit Fittings (For EMT Conduit)

- Set Screw Type Fittings
- Compression Type Fittings
- Combination Couplings

CP

CP
Thinwall
Fittings

COMPRESSION TYPE FITTINGS – STEEL

Couplings

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
660S	1/2"	50	250	12
661S	3/4"	25	125	18
662	1"	25	100	27
663	1 1/4"	10	50	46
664	1 1/2"	10	50	63
665	2"	5	25	92
666	2 1/2"	2	10	250
667	3"	1	5	410
668	3 1/2"	1	5	390
669	4"	1	5	485

SET SCREW TYPE FITTINGS

New Space-Saver EMT Connector - Set Screw

UL File No. E-22132

Features:

- Used to join EMT conduit to a box or enclosure
- Designed with the male threads on the locknut, the Space-Saver takes up virtually no room inside the box, and the smooth pulling surface eliminates the need for a bushing or insulated throat
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration
- Knurled wrenching surface for easy tightening
- Tri-head set screw may be installed using a slotted, Philips or Robertson head screwdriver
- Zinc electroplated for corrosion resistance
- Concrete tight when taped



Certifications and Compliances:

- UL Listed
- cUL Listed



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SSBC50	1/2"	50	250	8
SSBC75	3/4"	25	100	12
SSBC100	1"	25	100	12

COMBINATION COUPLINGS – STEEL

Concrete Tight

EMT (Compression) to Rigid (Threaded) Compression Type NPT Female Hubs

UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
690S	1/2"	25	250	9
691	3/4"	20	200	13
692	1"	10	100	19

SET SCREW TYPE FITTINGS

Features: Set Screw Type

- Pre-set & Staked Robertson Head Screws
- Male Hub Threads - NPSM
- Steel Locknuts
- Heavy Steel Walls
- Standard Material: Steel
- Standard Finish: Zinc Plated

Concrete Tight

Straight Connectors – Insulated

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
1450	1/2"	50	250	9
1451	3/4"	25	100	14
1452	1"	20	100	23
1453*	1 1/4"	10	50	46
1454*	1 1/2"	10	50	50
1455*	2"	5	25	78
1456*+	2 1/2"	2	10	130
1457*+	3"	1	5	140
1458*+	3 1/2"	1	5	180
1459*+	4"	1	5	225

* Two Tightening Screws

Straight Connectors – Non-Insulated

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
450S	1/2"	50	250	9
451	3/4"	25	100	15
452	1"	20	100	23
453*	1 1/4"	10	50	46
454*	1 1/2"	10	50	50
455*	2"	5	25	77
456*+	2 1/2"	2	10	130
457*+	3"	1	5	140
458*+	3 1/2"	1	5	180
459*+	4"	1	5	225

* Two Tightening Screws

Couplings

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
460	1/2"	50	250	9
461	3/4"	25	125	16
462	1"	20	100	23
463*	1 1/4"	10	50	42
464*	1 1/2"	10	50	50
465*	2"	5	25	77
466*+	2 1/2"	2	10	130
467*+	3"	1	5	140
468*+	3 1/2"	1	5	240
469*+	4"	1	1	250

†Four Tightening Screws

UL and cUL Listed for EMT, IMC and Rigid Conduit

CP Thin Wall Conduit Fittings (For EMT Conduit)

- Set Screw Type Fittings
- Compression Type Fittings
- Combination Couplings

Thin Wall
Fittings

COMBINATION COUPLINGS – STEEL

EMT (Set Screw) to Rigid (Set Screw) • Standard material: Steel
UL File No. E-19819 • Standard finish: Zinc plated

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	420	1/2"	25	100	17
	421	3/4"	20	100	25
	422	1"	10	50	37

SET SCREW TYPE FITTINGS – DIE CAST ZINC

Straight Connectors – Insulated

UL File No. E-22132
• Standard material: Zinc
• Standard finish: Natural



	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	1450DC	1/2"	50	500	5
	1451DC	3/4"	30	300	8
	1452DC	1"	15	150	11
	1453DC*	1 1/4"	8	80	20
	1454DC*	1 1/2"	6	60	25
	1455DC*	2"	8	40	37
	1456DC*	2 1/2"	36	24	59
	1457DC*	3"	24	20	78
	1458DC*	3 1/2"	16	12	101
	1459DC*	4"	16	12	120

* Two Tightening Screws

Straight Connectors – Non-Insulated

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	450DC	1/2"	50	500	5
	451DC	3/4"	30	300	7
	452DC	1"	15	150	11
	453DC*	1 1/4"	8	80	21
	454DC*	1 1/2"	6	60	25
	455DC*	2"	8	40	36
	456DC*	2 1/2"	36	24	58
	457DC*	3"	24	20	77
	458DC*	3 1/2"	16	12	98
	459DC*	4"	16	12	117

* Two Tightening Screws

Couplings

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	460DC	1/2"	35	350	5
	461DC	3/4"	22	220	7
	462DC	1"	12	120	13
	463DC*	1 1/4"	9	90	18
	464DC*	1 1/2"	6	60	28
	465DC*	2"	8	30	36
	466DC*	2 1/2"	18	12	64
	467DC*	3"	14	10	81
	468DC*	3 1/2"	8	8	98
	469DC*	4"	8	8	116

* Four Tightening Screws

Offset Connectors – Non-Insulated

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	2400	1/2"	10	100	11
	2401	3/4"	10	100	18
	2402	1"	10	100	25

COMPRESSION TYPE FITTINGS – DIE CAST ZINC

Straight Connectors – Insulated

UL File No. E-22132

• Standard material: Zinc
• Standard finish: Natural



	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	1650DC	1/2"	45	450	8
	1651DC	3/4"	30	300	11
	1652DC	1"	18	180	17
	1653DC	1 1/4"	12	120	31
	1654DC	1 1/2"	8	80	39
	1655DC	2"	3	30	56
	1656DC†	2 1/2"	36	36	93
	1657DC†	3"	20	20	120
	1658DC†	3 1/2"	16	16	149
	1659DC†	4"	16	16	172

Straight Connectors – Non-Insulated

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	650DC	1/2"	45	450	8
	651DC	3/4"	30	300	11
	652DC	1"	18	180	17
	653DC	1 1/4"	12	120	31
	654DC	1 1/2"	8	80	39
	655DC	2"	3	30	56
	656DC†	2 1/2"	36	36	93
	657DC†	3"	20	20	120
	658DC†	3 1/2"	16	16	149
	659DC†	4"	16	16	172

Couplings

UL File No. E-22132

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	660DC	1/2"	35	350	11
	661DC	3/4"	20	200	16
	662DC	1"	15	150	22
	663DC	1 1/4"	8	80	40
	664DC	1 1/2"	5	50	48
	665DC	2"	2	20	64
	666DC†	2 1/2"	18	18	124
	667DC†	3"	15	15	144
	668DC†	3 1/2"	12	12	190
	669DC†	4"	8	8	228

† Concrete Tight when taped

COMBINATION COUPLINGS – DIE CAST ZINC

EMT (Set Screw) to Rigid (Set Screw) Concrete Tight

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	2420	1/2"–1 1/2"	50	500	8
	2421	3/4"–3 1/4"	25	250	12

Thin Wall Conduit Fittings (For EMT Conduit)

- Combination Couplings
- 90° Pulling Elbows
- Straps
- Clamps

- Clampbacks/Spacers
- Clamps "Snap-On"
- Nailing Straps

CP

CP Thinwall
Fittings

COMBINATION COUPLINGS – DIE CAST ZINC

EMT (Set Screw) to Flexible Steel (Clamp)

UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
780DC	1/2"–3/8"	50	500	8

90 DEGREE PULLING ELBOWS – DIE CAST ZINC

Features:

- Supplied threaded and with set screw for use with EMT or rigid conduit
- Removable cover facilitates wire pulling

EMT To Box (also threaded for rigid to box)

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
810DC	1/2"	10	100	31
811DC	3/4"	5	50	31

EMT To EMT (also threaded for rigid conduit)

UL File No. E-22132



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
820DC	1/2"	10	100	28
821DC	3/4"	5	50	35
822DC	1"	5	25	64
823DC	1 1/4"	2	20	66

STRAPS – STEEL GALVANIZED

Two Hole

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
497-1	1/2"	250	250	2
497-2	3/4"	150	150	3
497-3	1"	100	100	5
497-4	1 1/4"	50	50	8
497-5	1 1/2"	50	50	13
497-6	2"	25	25	14
496-9	2 1/2"	25	25	19
496-10	3"	25	25	23
496-11	3 1/2"	25	25	93
496-12	4"	10	10	108

CLAMPS – MALLEABLE IRON

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
516	2 1/2"	5	25	104
517	3"	2	10	120
518	3 1/2"	2	10	150
519	4"	2	10	220

CLAMPBACKS/SPACERS – IRON

Application:

- Provides space between conduit and mounting surface
- Standard material: Malleable Iron
- Standard finish: Zinc plated

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CB1	1/2"	25	250	8
CB2	3/4"	25	250	10
CB3	1"	25	100	12
CB4	1 1/4"	25	100	21
CB5	1 1/2"	25	100	42
CB6	2"	10	50	40
CB7	2 1/2"	10	50	49
CB8	3"	10	50	62
CB9	3 1/2"	10	10	91
CB10	4"	10	10	110
CB11	5"	5	5	135
CB12	6"	5	5	225

CLAMPS "SNAP-ON" – STEEL

Application:

- To support EMT conduit to mounting surface

Heavy Gauge

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
200	1/2"	100	500	5
201	3/4"	100	500	6
202	1"	100	500	6
203	1 1/4"	50	250	13
204	1 1/2"	25	100	17
205	2"	25	25	20
206*	2 1/2"	25	25	64
207*	3"	25	25	71
208*	3 1/2"	10	10	120
209*	4"	10	10	130

*Not UL Listed

NAILING STRAPS – CAST STEEL

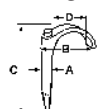
Support EMT, IMC and rigid conduit to mounting surface

- Standard material: Cast Steel
- Standard finish: Zinc Plated



Cat. #	Conduit Sizes	Unit Quantity	Standard Package	Weight Lbs. Per 100
NS-1	1/2" EMT 3/8" Rigid	100	1000	2
NS-2	3/4" EMT 1/2" Rigid	100	1000	2
NS-3	1" EMT 3/4" Rigid	100	1000	3

Nailing Straps Dimensions – Inches



Cat. #	A	B	C	D
NS-1	3/16	1	1 7/8	3/4
NS-2	3/4	1 1/4	2	1 5/16
NS-3	3/16	1 1/2	2 1/2	1 1/8

CP Rigid/Intermediate Grade Conduit Fittings Concrete Tight

- Type CPR Compression Fittings
- Set Screw Type Fittings

CP Rigid Intermediate

TYPE CPR COMPRESSION FITTINGS

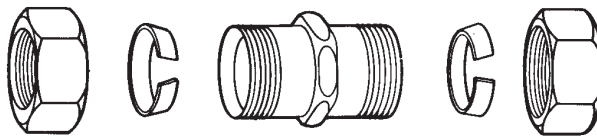
Features/Benefits:

- UL Listed for use with IMC as well as metallic rigid conduit.
- Unequalled versatility for the installer.
- Unique gland ring design tightens up in fewer turns; provides outstanding pull-out strength; saves time and adds confidence.
- Advanced, thoughtful design and premium materials team up for an installation you can be proud of.

Applications:

Use type CPR compression fittings for:

- both IMC and metallic rigid conduit.
- new work in poured concrete.
- maintenance, repairs and alterations.
- connections at panels and boxes.
- new, altered or damaged stubups.
- applicable locations where field threading is impractical or undesirable.



Compliance:

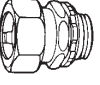
- UL 514B Fittings for Conduit and Outlet Boxes

Material Specifications:

- Bodies – malleable iron
- Compression nuts – iron
- Compression rings – stainless steel
- Locknuts – zinc plated steel
- Insuliners – glass-reinforced polypropylene

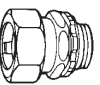
Straight Connectors – Insulated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	CPR11	1/2"	50	250	19
	CPR12	3/4"	25	125	23
	CPR13	1"	10	50	42
	CPR14	1 1/4"	10	50	64
	CPR15	1 1/2"	5	25	87
	CPR16	2"	5	25	113
	CPR17	2 1/2"	2	10	130
	CPR18	3"	1	5	220
	CPR19	3 1/2"	1	5	280
	CPR20	4"	1	5	320

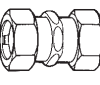
Straight Connectors – Non-Insulated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	CPR1	1/2"	50	250	19
	CPR2	3/4"	25	125	23
	CPR3	1"	10	50	42
	CPR4	1 1/4"	10	50	64
	CPR5	1 1/2"	5	25	87
	CPR6	2"	5	25	113
	CPR7	2 1/2"	2	10	130
	CPR8	3"	1	5	220
	CPR9	3 1/2"	1	5	280
	CPR10	4"	1	5	320

Couplings

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	CPR21	1/2"	25	125	26
	CPR22	3/4"	20	100	38
	CPR23	1"	10	50	59
	CPR24	1 1/4"	5	25	85
	CPR25	1 1/2"	5	25	124
	CPR26	2"	2	10	162
	CPR27	2 1/2"	2	10	220
	CPR28	3"	1	5	320
	CPR29	3 1/2"	1	5	380
	CPR30	4"	1	5	440

SET SCREW TYPE FITTINGS

Straight Connectors – Insulated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	150S	1/2"	50	200	16
	151	3/4"	25	100	27
	152	1"	5	50	40
	153	1 1/4"	10	50	50
	154	1 1/2"	5	25	76
	155*	2"	2	10	110
	1456*	2 1/2"	2	10	210
	1457*	3"	1	5	282
	1458*	3 1/2"	1	5	380
	1459*	4"	1	1	400
	•160I*†	5"	1	1	850
	•161I*†	6"	1	1	1100

* Two Tightening Screws

• Not CSA Certified

† Malleable Iron

Straight Connectors – Non-Insulated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	150-P	1/2"	50	200	16
	151-P	3/4"	25	100	26
	152-P	1"	5	50	40
	153-P	1 1/4"	10	50	50
	154-P	1 1/2"	5	25	76
	155-P*	2"	2	10	110
	456‡	2 1/2"	2	10	210
	457‡	3"	1	5	281
	458‡	3 1/2"	1	5	380
	459‡	4"	1	1	400
	•160-P*†	5"	1	1	850
	•161-P*†	6"	1	1	1100

* Two Tightening Screws

• Not CSA Certified

† Malleable Iron

‡ Four Tightening Screws

Rigid/Intermediate Grade Conduit Fittings Concrete Tight

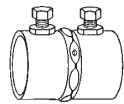
CP

- Set Screw Type Fittings

SET SCREW TYPE FITTINGS

Couplings

UL File No. E-19189



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
160	1/2"	25	100	27
161	3/4"	20	100	40
162	1"	5	50	52
163	1 1/4"	10	50	70
164	1 1/2"	5	25	104
165*	2"	2	10	160
466*	2 1/2"	2	10	300
467*	3"	1	5	400
468*	3 1/2"	1	1	500
469*	4"	1	1	600
●170C*†	5"	1	1	1500
●171C*†	6"	1	1	1800

* Four Tightening Screws

● Not CSA Certified

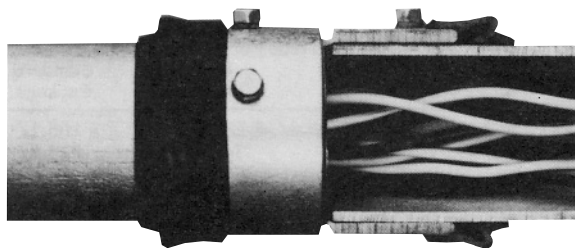
† Malleable Iron

CP
Rigid
Intermediate

CP Rigid/Intermediate Grade Conduit Fittings Concrete Tight Raintight (SSR Series)

- Set Screw Type Fittings
- Combination Couplings

CP Rigid Intermediate



U.S. Patent #3951436

Material Specifications:

- Bodies
 - Connectors – 1/2" - 2" steel
 - Couplings – 1/2" - 2" steel
- Boots – injection molded PVC attached with special epoxy.
- Setscrews hardened steel coated with special sealing resin compound.

Compliance:

- UL 514B – Fittings for cable and conduit

Applications:

Rainboot™ connectors and couplings are used with rigid conduit for IMC, steel or aluminum. Outdoors or indoors. Use Rainboot fittings for:

- conduit systems expansion and alterations.
- maintenance and repair operations.
- new, altered or damaged stubups.
- connections at panels and boxes.
- embedment in concrete.
- installations in tight quarters: near corners, walls, ceilings, overhangs, obstacles or adjacent raceways.
- situations where threading equipment or heavy pipe wrenches are impractical.
- conduit systems in NEC wet locations.

Features/Benefits:

- The only line of rigid/IMC threadless fittings suitable for raintight applications.
- The only alternative to field threading in NEC wet locations.
- May be installed in any position.
- Tough and durable, long lasting, trouble free installations.
- Requires only a 3/8" wrench for installation.
- Full line – 1/2" through 2".
- Faster, easier method to install raintight rigid/IMC raceway systems.

SET SCREW TYPE FITTINGS

Straight Connectors – Insulated

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	SSR11	1/2"	20	100	20
	SSR12	3/4"	20	100	30
	SSR13	1"	20	100	40
	SSR14	1 1/4"	5	25	64
	SSR15	1 1/2"	5	25	85
	SSR16	2"	4	4	97

Straight Connectors – Non-Insulated

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	SSR 1	1/2"	20	100	21
	SSR 2	3/4"	20	100	23
	SSR 3	1"	20	100	40
	SSR 4	1 1/4"	5	25	64
	SSR 5	1 1/2"	5	25	85
	SSR 6*	2"	4	4	96

* Two Tightening Screws
For sealing at enclosure, use Type SG sealing gaskets (see page 296).

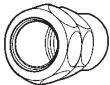
Couplings

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	SSR21	1/2"	20	100	31
	SSR22	3/4"	20	100	45
	SSR23	1"	5	25	64
	SSR24	1 1/4"	5	25	86
	SSR25	1 1/2"	4	25	116
	SSR26**	2"	4	4	165

** Four Tightening Screws

COMBINATION COUPLINGS – STEEL

Concrete Tight
EMT (Compression) To Rigid (Threaded)
UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	690S	1/2"-1 1/2"	25	250	9
	691	3/4"-3 1/4"	20	200	13
	692	1"-1"	10	100	19



Rigid/Intermediate Grade Conduit Fittings

- Combination Couplings
- Fitting Locknuts
- Grounding Locknuts

- Conduit Locknuts
- Insulated Throat Bushings

CP

CP
Rigid
Intermediate

COMBINATION COUPLINGS

(Concrete Tight)
EMT (Set Screw) To Rigid
(Set Screw)

- Standard material: Steel
- Standard finish: Zinc Plated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	420	1/2"-1/2"	25	100	17
	421	3/4"-3/4"	20	100	25
	422	1"-1"	10	50	37

COMBINATION COUPLINGS - MALLEABLE IRON

Flexible Steel (Squeeze Type) To Rigid (Threaded)

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	65	1/2"-1/2"	10	100	17
	66	3/4"-3/4"	10	100	22
	67	1"-1"	5	25	31
	68	1 1/4"-1 1/4"	5	25	31

COMBINATION COUPLINGS - DIE CAST ZINC

(Concrete Tight)
EMT (Set Screw) To Rigid (Set Screw)

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	2420	1/2"-1/2"	50	500	8
	2421	3/4"-3/4"	25	250	12
					

FITTING LOCKNUTS

STEEL

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	11X	1/2"	500	2500	1
	12X	3/4"	100	1000	2
	13X	1"	50	500	5
	14X	1 1/4"	100	500	7
	15X	1 1/2"	50	250	8
	16X	2"	50	250	13
	17X	2 1/2"	25	100	14
	18X	3"	20	100	19
	19X	3 1/2"	10	50	24
	20X	4"	10	50	29

GROUNDING LOCKNUTS

STEEL

For use with bushing to bond 1/2" to 4" rigid conduit to boxes, cabinets or other enclosures, only where a locknut is exposed.

UL File No. E-6225

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	GL-11	1/2"	100	1000	4
	GL-12	3/4"	50	500	4
	GL-13	1"	50	500	6
	GL-14	1 1/4"	50	250	8
	GL-15	1 1/2"	50	250	10
	GL-16	2"	25	100	20
	GL-17	2 1/2"	20	100	25
	GL-18	3"	10	50	42
	GL-19	3 1/2"	10	50	60
	GL-20	4"	5	25	80

CONDUIT LOCKNUTS

3/8" - 2" STEEL, 2 1/2" - 6" MALLEABLE IRON

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	10	3/8"	100	2500	1
	11	1/2"	100	2500	1
	12	3/4"	100	1000	2
	13	1"	50	500	5
	14	1 1/4"	100	500	7
	15	1 1/2"	50	250	8
	16	2"	50	250	13
	17	2 1/2"	20	100	26
	18	3"	10	50	42
	19	3 1/2"	10	50	54
	20	4"	5	25	68
	22	5"	2	2	110
	23	6"	1	1	154

INSULATED THROAT BUSHINGS

Malleable Iron Threaded 105°C Rated Plastic Throat Liner

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	1031	1/2"	100	1000	3
	1032	3/4"	100	500	4
	1033	1"	50	250	7
	1034	1 1/4"	50	250	15
	1035	1 1/2"	10	100	19
	1036	2"	20	100	22
	1037	2 1/2"	10	50	44
	1038	3"	10	50	54
	1039	3 1/2"	5	25	72
	1040	4"	5	25	95
	•1041	5"	1	1	100
	•1042	6"	1	1	127

Set Screw Type - Threadless 105°C Rated Plastic Throat Liner

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	S1031	1/2"	100	1000	3
	S1032	3/4"	100	500	4
	S1033	1"	50	250	7
	S1034	1 1/4"	50	250	15
	S1035	1 1/2"	10	100	19
	S1036	2"	20	100	22
	S1037	2 1/2"	10	50	44
	S1038	3"	10	50	54
	S1039	3 1/2"	5	25	72
	S1040	4"	5	25	95
	S1041	5"	1	1	100
	S1042	6"	1	1	127

• Not UL Listed

CP Rigid/Intermediate Grade Conduit Fittings

- Insulated Throat Grounding Bushings
- Threaded and Threadless
- Copper or Aluminum Ground Lug
- 105°C Rated

CP Rigid Intermediate

INSULATED THROAT GROUNDING BUSHINGS

IRON-105°C Rated Plastic Throat Liner

Copper Lug – For Copper Grounding Conductors – Threaded

UL File No. E-6225

	Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
	GLL-1C	1/2"	#4 – #14	50	500	8
	GLL-2C	3/4"	#4 – #14	50	250	12
	GLL-3C	1"	#4 – #14	50	250	14
	GLL-4C	1 1/4"	#4 – #14	25	125	19
	GLL-4-10C	1 1/4"	#1/0 – #8	25	125	30
	GLL-5C	1 1/2"	#4 – #14	10	100	21
	GLL-5-10C	1 1/2"	#1/0 – #8	10	100	32
	GLL-6C	2"	#4 – #14	10	50	29
	GLL-6-10C	2"	#1/0 – #8	10	50	40
	GLL-7C	2 1/2"	#1/0 – #8	10	50	65
	GLL-7-30C	2 1/2"	#3/0 – #6	10	50	88
	GLL-7-250C	2 1/2"	250MCM – #6	10	50	97
	GLL-8C	3"	#1/0 – #8	5	25	77
	GLL-8-30C	3"	#3/0 – #6	5	25	100
	GLL-8-250C	3"	250MCM – #6	5	25	109
	GLL-9C	3 1/2"	#3/0 – #6	1	1	125
	GLL-9-250C	3 1/2"	250MCM – #6	1	1	134
	GLL-10C	4"	#3/0 – #6	1	1	145
	GLL-10-250C	4"	250MCM – #6	1	1	154
	GLL-11C	5"	#3/0 – #6	1	1	165
	GLL-11-250C	5"	250MCM – #6	1	1	174
	GLL-12C	6"	#3/0 – #6	1	1	195
	GLL-12-250C	6"	250MCM – #6	1	1	204

Aluminum Lug – For Copper Or Aluminum Grounding Conductors – Threaded 105°C Rated Plastic Throat Liner

UL File No. E-6225

	Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
	GLL-1	1/2"	#4 – #14	50	500	5
	GLL-2	3/4"	#4 – #14	50	250	9
	GLL-3	1"	#4 – #14	50	250	12
	GLL-4	1 1/4"	#4 – #14	25	125	19
	GLL-4-10	1 1/4"	#1/0 – #8	25	125	23
	GLL-5	1 1/2"	#4 – #14	10	100	24
	GLL-5-10	1 1/2"	#1/0 – #8	10	100	28
	GLL-6	2"	#4 – #14	10	50	26
	GLL-6-10	2"	#1/0 – #8	10	50	32
	GLL-7	2 1/2"	#1/0 – #8	10	50	53
	GLL-7-30	2 1/2"	#3/0 – #6	10	50	60
	GLL-7-250	2 1/2"	250MCM – #6	10	50	67
	GLL-8	3"	#1/0 – #8	5	25	70
	GLL-8-30	3"	#3/0 – #6	5	25	72
	GLL-8-250	3"	250MCM – #6	5	25	76
	GLL-9	3 1/2"	#3/0 – #6	1	1	100
	GLL-9-250	3 1/2"	250MCM – #6	1	1	100
	GLL-10	4"	#3/0 – #6	1	1	110
	GLL-10-250	4"	250MCM – #6	1	1	120
	GLL-11	5"	#3/0 – #6	1	1	140
	GLL-11-250	5"	250MCM – #6	1	1	143
	GLL-12	6"	#3/0 – #6	1	1	160
	GLL-12-250	6"	250MCM – #6	1	1	163

Copper Lug – For Copper Grounding Conductors – Threadless – Set Screw Type 105°C Rated Plastic Throat Liner

UL File No. E-6225

	Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
	GLS-1C	1/2"	#4 – #14	50	500	8
	GLS-2C	3/4"	#4 – #14	50	250	12
	GLS-3C	1"	#4 – #14	50	250	14
	GLS-4C	1 1/4"	#4 – #14	25	125	19
	GLS-4-10C	1 1/4"	#1/0 – #8	25	125	30
	GLS-5C	1 1/2"	#4 – #14	10	100	21
	GLS-5-10C	1 1/2"	#1/0 – #8	10	100	32
	GLS-6C	2"	#4 – #14	10	50	29
	GLS-6-10C	2"	#1/0 – #8	10	50	40
	GLS-7C	2 1/2"	#1/0 – #8	10	50	65
	GLS-7-30C	2 1/2"	#3/0 – #6	10	50	88
	GLS-7-250C	2 1/2"	250MCM – #6	10	50	97
	GLS-8C	3"	#1/0 – #8	5	25	77
	GLS-8-30C	3"	#3/0 – #6	5	25	100
	GLS-8-250C	3"	250MCM – #6	5	25	109
	GLS-9C	3 1/2"	#3/0 – #6	1	1	125
	GLS-9-250C	3 1/2"	250MCM – #6	1	1	134
	GLS-10C	4"	#3/0 – #6	1	1	145
	GLS-10-250C	4"	250MCM – #6	1	1	154
	GLS-11C	5"	#3/0 – #6	1	1	165
	GLS-11-250C	5"	250MCM – #6	1	1	174
	GLS-12C	6"	#3/0 – #6	1	1	195
	GLS-12-250C	6"	250MCM – #6	1	1	204

Aluminum Lug – For Copper Or Aluminum Grounding Conductors – Threadless – Set Screw Type 105°C Rated Plastic Throat Liner

UL File No. E-6225

	Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
	GLS-1	1/2"	#4 – #14	50	500	5
	GLS-2	3/4"	#4 – #14	50	250	9
	GLS-3	1"	#4 – #14	50	250	12
	GLS-4	1 1/4"	#4 – #14	25	125	19
	GLS-4-10	1 1/4"	#1/0 – #8	25	125	23
	GLS-5	1 1/2"	#4 – #14	10	100	24
	GLS-5-10	1 1/2"	#1/0 – #8	10	100	28
	GLS-6	2"	#4 – #14	10	50	26
	GLS-6-10	2"	#1/0 – #8	10	50	32
	GLS-7	2 1/2"	#1/0 – #8	10	50	53
	GLS-7-30	2 1/2"	#3/0 – #6	10	50	60
	GLS-7-250	2 1/2"	250MCM – #6	10	50	67
	GLS-8	3"	#1/0 – #8	5	25	70
	GLS-8-30	3"	#3/0 – #6	5	25	72
	GLS-8-250	3"	250MCM – #6	5	25	76
	GLS-9	3 1/2"	#3/0 – #6	1	1	100
	GLS-9-250	3 1/2"	250MCM – #6	1	1	100
	GLS-10	4"	#3/0 – #6	1	1	110
	GLS-10-250	4"	250MCM – #6	1	1	120
	GLS-11	5"	#3/0 – #6	1	1	140
	GLS-11-250	5"	250MCM – #6	1	1	143
	GLS-12	6"	#3/0 – #6	1	1	160
	GLS-12-250	6"	250MCM – #6	1	1	163

Rigid/Intermediate Grade Conduit Fittings

- Insulated Bushings
- Insulated Throat Bushings
- Insulated Throat Grounding Bushings

CP

CP
Rigid
Intermediate

INSULATING BUSHINGS

UL File No. E-19189

- Materials: Plastic



Rated 105°C Cat. #	Rated 150°C Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
931	H-931	1/2"	50	500	1
932	H-932	3/4"	50	500	1
933	H-933	1"	50	200	2
934	H-934	1 1/4"	50	200	3
935	H-935	1 1/2"	25	100	3
936	H-936	2"	25	100	4
937	H-937	2 1/2"	10	50	8
938	H-938	3"	10	50	10
939	H-939	3 1/2"	5	25	11
940	H-940	4"	5	25	11
941		5"	5	5	40
942	H-942	6"	5	5	42

INSULATED THROAT BUSHINGS

Features:

- Plastic liner will not chip, crack, swell or shrink. It resists corrosion, chemicals and temperature extremes.

Standard Materials:

- Body - Malleable Iron
- Insuliner - ULTEM1000 rated at 150°C

Standard Finish:

- Body - Zinc Plated

IRON - 150°C RATED Threaded

UL File No. E-19189



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
H1031	1/2"	100	1000	6
H1032	3/4"	100	500	8
H1033	1"	50	250	11
H1034	1 1/4"	50	250	14
H1035	1 1/2"	10	100	17
H1036	2"	20	100	24
H1037	2 1/2"	10	50	51
H1038	3"	10	50	62
H1039	3 1/2"	5	25	85
H1040	4"	5	25	104
H1041	5"	1	1	130
H1042	6"	1	1	167

Set Screw Type - Threadless 150°C Rated Thermo Plastic Throat Liner

UL File No. E-19189



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
HS1031	1/2"	100	1000	6
HS1032	3/4"	100	500	7
HS1033	1"	50	250	10
HS1034	1 1/4"	50	250	13
HS1035	1 1/2"	10	100	15
HS1036	2"	20	100	21
HS1037	2 1/2"	10	50	42
HS1038	3"	10	50	51
HS1039	3 1/2"	5	25	65
HS1040	4"	5	25	80
HS1041	5"	1	1	100
HS1042	6"	1	1	128

INSULATED THROAT GROUNDING BUSHINGS

Features:

- Resilient plastic liner, resists corrosion, chemicals and temperature extremes.
- Insuliner - ULTEM1000 rated at 150°C
- 1 Set screw provided with each fitting locks bushing in any desired position
- External stainless steel hardware as standard

Standard Finish:

- Body - Zinc Plated

IRON - 150°C RATED

Copper Lug - For Copper Grounding Conductors - Threaded

UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
HGLL1C	1/2"	#4 - #14	50	500	12
HGLL2C	3/4"	#4 - #14	50	250	14
HGLL3C	1"	#4 - #14	50	250	17
HGLL4C	1 1/4"	#4 - #14	25	125	20
HGLL4-10C	1 1/4"	#1/0 - #8	25	125	32
HGLL5C	1 1/2"	#4 - #14	10	100	23
HGLL5-10C	1 1/2"	#1/0 - #8	10	100	35
HGLL6C	2"	#4 - #14	10	50	30
HGLL6-10C	2"	#1/0 - #8	10	50	42
HGLL7C	2 1/2"	#1/0 - #8	10	50	69
HGLL7-30C	2 1/2"	#3/0 - #6	10	50	92
HGLL7-250C	2 1/2"	250MCM - #6	10	50	101
HGLL8C	3"	#1/0 - #8	5	25	80
HGLL8-30C	3"	#3/0 - #6	5	25	103
HGLL8-250C	3"	250MCM - #6	5	25	112
HGLL9C	3 1/2"	#3/0 - #6	1	1	126
HGLL9-250C	3 1/2"	250MCM - #6	1	1	135
HGLL10C	4"	#3/0 - #6	1	1	145
HGLL10-250C	4"	250MCM - #6	1	1	155
HGLL11C	5"	#3/0 - #6	1	1	171
HGLL11-250C	5"	250MCM - #6	1	1	180
HGLL12C	6"	#3/0 - #6	1	1	210
HGLL12-250C	6"	250MCM - #6	1	1	317

Aluminum Lug - For Copper Or Aluminum Grounding Conductors - Threaded

UL File No. E-6225



Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
HGLL-1	1/2"	#4 - #14	50	500	9
HGLL-2	3/4"	#4 - #14	50	250	11
HGLL-3	1"	#4 - #14	50	250	14
HGLL-4	1 1/4"	#4 - #14	25	125	17
HGLL4-10	1 1/4"	#1/0 - #8	25	125	24
HGLL-5	1 1/2"	#4 - #14	10	100	20
HGLL5-10	1 1/2"	#1/0 - #8	10	100	24
HGLL-6	2"	#4 - #14	10	50	27
HGLL6-10	2"	#1/0 - #8	10	50	31
HGLL-7	2 1/2"	#1/0 - #8	10	50	58
HGLL7-30	2 1/2"	#3/0 - #6	10	50	67
HGLL7-250	2 1/2"	250MCM - #6	10	50	70
HGLL-8	3"	#1/0 - #8	5	25	69
HGLL8-30	3"	#3/0 - #6	5	25	78
HGLL8-250	3"	250MCM - #6	5	25	81
HGLL-9	3 1/2"	#3/0 - #6	1	1	101
HGLL9-250	3 1/2"	250MCM - #6	1	1	104
HGLL-10	4"	#3/0 - #6	1	1	120
HGLL10-250	4"	250MCM - #6	1	1	123
HGLL-11	5"	#3/0 - #6	1	1	145
HGLL11-250	5"	250MCM - #6	1	1	150
HGLL-12	6"	#3/0 - #6	1	1	185
HGLL12-250	6"	250MCM - #6	1	1	186

CP Rigid/Intermediate Grade Conduit Fittings

- Insulated Throat Grounding Bushings
- Three Piece Conduit Couplings
- Conduit Bushed Nipples

CP Rigid Intermediate

INSULATED THROAT GROUNDING BUSHINGS

Features:

- Resilient plastic liner resists corrosion, chemicals and temperature extremes
- Insuliner - ULTEM1000 rated at 150°C
- 2 Set-screws provided with each fitting, locks bushings in any desired position
- Standard Finish: Zinc Plated

IRON - 150°C RATED

Set Screw Type - Copper Lug - For Copper Grounding Conductors - Threadless

UL File No. E-6225

	Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
	HGLS1C	1/2"	#4 - #14	50	500	12
	HGLS2C	3/4"	#4 - #14	50	250	13
	HGLS3C	1"	#4 - #14	50	250	16
	HGLS4C	1 1/4"	#4 - #14	25	125	19
	HGLS4-10C	1 1/4"	#1/0 - #8	25	125	31
	HGLS5C	1 1/2"	#4 - #14	10	100	21
	HGLS5-10C	1 1/2"	#1/0 - #8	10	100	33
	HGLS6C	2"	#4 - #14	10	50	27
	HGLS6-10C	2"	#1/0 - #8	10	50	39
	HGLS7C	2 1/2"	#1/0 - #8	10	50	60
	HGLS7-30C	2 1/2"	#3/0 - #6	10	50	83
	HGLS7-250C	2 1/2"	250MCM - #6	10	50	92
	HGLS8C	3"	#1/0 - #8	5	25	70
	HGLS8-30C	3"	#3/0 - #6	5	25	92
	HGLS8-250C	3"	250MCM - #6	5	25	100
	HGLS9C	3 1/2"	#3/0 - #6	1	1	105
	HGLS9-250C	3 1/2"	250MCM - #6	1	1	115
	HGLS10C	4"	#3/0 - #6	1	1	100
	HGLS10-250C	4"	250MCM - #6	1	1	130
	HGLS-11C	5"	#3/0 - #6	1	1	140
	HGLS11-250C	5"	250MCM - #6	1	1	150
	HGLS-12C	6"	#3/0 - #6	1	1	170
	HGLS12-250C	6"	250MCM - #6	1	1	180

Set Screw Type - Aluminum Lug - For Copper Or Aluminum Grounding Conductors - Threadless

UL File No. E-6225

	Cat. #	Trade Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
	HGLS1	1/2"	#4 - #14	50	500	9
	HGLS2	3/4"	#4 - #14	50	250	10
	HGLS3	1"	#4 - #14	50	250	13
	HGLS4	1 1/4"	#4 - #14	25	125	16
	HGLS4-10	1 1/4"	#1/0 - #8	25	125	20
	HGLS5	1 1/2"	#4 - #14	10	100	18
	HGLS5-10	1 1/2"	#1/0 - #8	10	100	22
	HGLS6	2"	#4 - #14	10	50	24
	HGLS6-10	2"	#1/0 - #8	10	50	28
	HGLS7	2 1/2"	#1/0 - #8	10	50	50
	HGLS7-30	2 1/2"	#3/0 - #6	10	50	58
	HGLS7-250	2 1/2"	250MCM - #6	10	50	60
	HGLS8	3"	#1/0 - #8	5	25	58
	HGLS8-30	3"	#3/0 - #6	5	25	67
	HGLS8-250	3"	250MCM - #6	5	25	70
	HGLS9	3 1/2"	#3/0 - #6	1	1	80
	HGLS9-250	3 1/2"	250MCM - #6	1	1	85
	HGLS10	4"	#3/0 - #6	1	1	90
	HGLS10-250	4"	250MCM - #6	1	1	100
	HGLS11	5"	#3/0 - #6	1	1	115
	HGLS11-250	5"	250MCM - #6	1	1	120
	HGLS12	6"	#3/0 - #6	1	1	145
	HGLS12-250	6"	250MCM - #6	1	1	150

THREE PIECE CONDUIT COUPLINGS

Application:

Used to join two lengths of threaded conduit. Couples conduit when conduit can be turned.

MALLEABLE IRON (Concrete Tight)

- Heavy duty casting
- Standard Finish: Zinc Plated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	190M	1/2"	25	125	23
	191	3/4"	25	100	35
	192	1"	10	50	60
	193	1 1/4"	5	25	91
	194	1 1/2"	5	25	167
	195	2"	5	5	215
	196	2 1/2"	2	10	430
	197	3"	1	5	463
	198	3 1/2"	1	5	655
	199	4"	1	1	800
	188†	5"	1	1	1200
	189†	6"	1	1	2100

† Not UL Listed

CONDUIT BUSHED NIPPLES

Use:

- Use thru knockout to connect box to conduit coupling.
- Use with a locknut to connect two boxes side by side or back to back.
- Use with a locknut to connect fixture housing to continuous runs.

MALLEABLE IRON Non-Insulated Threaded NPSM for rigid conduit and IMC

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	50*	1/2"	50	500	3
	51	3/4"	25	250	8
	52	1"	10	100	13
	53	1 1/4"	10	100	19
	54	1 1/2"	10	50	30
	55	2"	10	50	37
	56	2 1/2"	5	25	68
	57	3"	5	25	92
	58	3 1/2"	1	5	130
	59	4"	1	5	200
	60†	5"	1	1	350
	61†	6"	1	1	425

* Steel

† Not UL Listed

Insulated

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	1050*	1/2"	50	500	3
	1051	3/4"	25	250	4
	1052	1"	10	100	11
	1053	1 1/4"	10	100	19
	1054	1 1/2"	10	50	30
	1055	2"	10	50	37
	1056	2 1/2"	5	25	72
	1057	3"	5	25	96
	1058	3 1/2"	1	5	113
	1059	4"	1	5	187
	1060	5"	1	1	350
	1061	6"	1	1	450

* Steel

Rigid/Intermediate Grade Conduit Fittings

- Conduit Bushed Nipples
- 90° Pull Elbows
- Offset Conduit Nipples

- Knockout Snap-In Blanks
- Push Plugs

CP

CONDUIT BUSHED NIPPLES – DIE CAST ZINC

Non-Insulated
UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	50D	1/2"	100	1000	4
	51D	3/4"	50	500	5
	52D	1"	25	250	10
	53D	1 1/4"	25	100	11
	54D	1 1/2"	25	100	20
	55D	2"	10	40	30
	56D	2 1/2"	10	40	40
	57D	3"	10	40	49
	58D	3 1/2"	10	40	68
	59D	4"	5	20	70

90 DEGREE PULL ELBOWS – MALLEABLE IRON

Features:

- Raintight
- Furnished with Neoprene gasketed steel cover
- Furnished with Steel lock nut
- Furnished with Stamped Steel cover
- Threaded for rigid conduit and IMC
- For outdoor use
- Standard Finish: Zinc plated

(Gasketed – Liquidtight)

Male To Female
UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	810	1/2"	20	100	34
	811	3/4"	10	50	56
	812	1"	5	25	88
	813	1 1/4"	2	10	92
	814	1 1/2"	2	10	200
	815	2"	1	5	344

Female To Female
UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	820	1/2"	20	100	36
	821	3/4"	10	50	49
	822	1"	5	25	94
	823	1 1/4"	2	10	140
	824	1 1/2"	2	10	200
	825	2"	1	5	344

90 DEGREE PULL ELBOWS – DIE CAST ZINC

(Gasketed – Liquidtight)

Male To Female; Combination Rigid and EMT
UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	810DC	1/2"	10	100	31
	811DC	3/4"	5	50	31
					

Female To Female; Combination Rigid and EMT

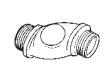
UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	820DC	1/2"	10	100	28
	821DC	3/4"	5	50	35
	822DC	1"	5	25	64
	823DC	1 1/4"	2	20	66

OFFSET CONDUIT NIPPLES – MALLEABLE IRON

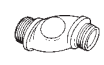
Features:

- Threaded NPSM for rigid conduit and IMC
- Standard Finish: Zinc Plated
- USE: To offset the axis of raceways 3/4 of an inch

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	300	1/2"	25	100	24
	301	3/4"	25	100	34
	302	1"	10	50	49
	303	1 1/4"	10	50	54

OFFSET CONDUIT NIPPLES – DIE CAST ZINC

UL File No. E-19189

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	300DC	1/2"	10	100	9
	301DC	3/4"	10	100	15
	302DC	1"	10	100	21
	303DC	1 1/4"	5	50	33
	304	1 1/2"	5	50	40
	305	2"	2	20	65

KNOCKOUT SNAP-IN BLANKS – STEEL

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	335	1/2"	100	1000	2
	336	3/4"	100	1000	2
	337	1"	50	500	2
	338	1 1/4"	50	250	3
	339	1 1/2"	25	250	5
	340	2"	20	200	7

PUSH PLUGS – PLASTIC*

	Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	PPC-50	1/2"	100	1000	1
	PPC-75	3/4"	100	1000	1
	PPC-100	1"	50	500	1
	PPC-125	1 1/4"	50	200	1
	PPC-150	1 1/2"	25	100	1
	PPC-200	2"	25	100	1
	PPC-250	2 1/2"	—	100	2
	PPC-300	3"	—	100	3
	PPC-350	3 1/2"	—	50	6
	PPC-400	4"	—	50	8

*Temperature Rating: 180° – 200°F
Tensile Strength: 600 – 2300 PSI

CP Rigid/Intermediate Grade Conduit Fittings

- Bushing Pennies
- Knockout Reducing Washers
- Nailing Straps

- Clamps
- Clampbacks/Spacers
- Straps

CP Rigid Intermediate

BUSHING PENNIES – STEEL

A penny under a bushing will seal the end of conduit during construction.



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
90	1/2"	100	1000	1
91	3/4"	100	1000	1
92	1"	100	1000	1
93	1 1/4"	50	500	1
94	1 1/2"	50	500	2
95	2"	50	50	3
96	2 1/2"	50	50	5
97	3"	50	50	7
98	3 1/2"	50	50	10
99	4"	50	50	14

KNOCKOUT REDUCING WASHERS – STEEL



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
342	3/4"-1 1/2"	100	2500	1
343	1"-1 1/2"	100	100	2
344	1"-3/4"	100	100	2
345	1 1/4"-1 1/2"	100	100	3
346	1 1/4"-3/4"	100	100	2
347	1 1/4"-1"	100	100	2
348	1 1/2"-1 1/2"	50	50	5
349	1 1/2"-3/4"	50	50	4
350S	1 1/2"-1"	50	50	4
351	1 1/2"-1 1/4"	50	50	3
352	2"-1 1/2"	50	50	7
353	2"-3/4"	50	50	7
354	2"-1"	50	50	6
355	2"-1 1/4"	50	50	5
356	2"-1 1/2"	50	50	3
360	2 1/2"-1 1/2"	25	250	7
361	2 1/2"-3/4"	25	250	7
362	2 1/2"-1"	25	250	7
363	2 1/2"-1 1/4"	25	250	7
364	2 1/2"-1 1/2"	25	250	7
365	2 1/2"-2"	25	250	7
366	3"-1"	25	250	14
367	3"-1 1/4"	25	250	14
368	3"-1 1/2"	25	250	14
369	3"-2"	25	250	14
370S	3"-2 1/2"	25	250	14
371	3"-1 1/2"	25	100	25
372	3 1/2"-2"	25	100	25
373	3 1/2"-2 1/2"	25	100	25
374	3 1/2"-3"	25	100	25
375	4"-2"	25	100	35
376	4"-2 1/2"	25	100	35
377	4"-3"	25	100	35
378	4"-3 1/2"	25	100	35

NAILING STRAPS – CAST STEEL

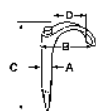
Support rigid conduit and IMC to mounting surface

- Standard material: Cast Steel
- Standard finish: Zinc plated



Cat. #	EMT	Conduit Sizes Rigid	Unit Quantity	Standard Package	Weight Lbs. Per 100
NS-1	1/2"	3/8"	100	1000	2
NS-2	3/4"	1/2"	100	1000	2
NS-3	1"	3/4"	100	1000	3

Nailing Straps Dimensions – Inches



Cat. #	A	B	C	D
NS-1	3/16	1	1 7/8	3/4
NS-2	3/4	1 1/4	2	1 5/16
NS-3	3/16	1 1/2	2 1/2	1 1/8

CLAMPS – MALLEABLE IRON

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
510	1/2"	50	500	6
511	3/4"	50	250	8
512	1"	50	250	13
513	1 1/4"	25	100	20
514	1 1/2"	20	100	30
515	2"	10	50	64
516*	2 1/2"	5	25	104
517*	3"	2	10	120
518*	3 1/2"	2	10	150
519*	4"	2	10	220
520+	5"	1	5	380
521+	6"	1	5	690

* Also for use with Thinwall (EMT) Conduit
+ Not UL Listed

CLAMPBACKS/SPACERS – MALLEABLE IRON

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
CB1	1/2"	25	250	8
CB2	3/4"	25	250	10
CB3	1"	25	100	12
CB4	1 1/4"	25	100	21
CB5	1 1/2"	25	100	42
CB6	2"	10	50	40
CB7	2 1/2"	10	50	49
CB8	3"	10	50	62
CB9	3 1/2"	10	10	91
CB10	4"	10	10	110
CB11+	5"	5	5	135
CB12+	6"	5	5	225

+ Not UL Listed

STRAPS – STEEL GALVANIZED

(Two Hole)

UL File No. E-184283



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
496-2	3/8"	250	250	2
496-3	1/2"	150	150	2
496-4	3/4"	100	100	3
496-5	1"	50	50	7
496-6	1 1/4"	50	50	8
496-7	1 1/2"	50	50	10
496-8	2"	25	25	15
496-9	2 1/2"	25	25	19
496-10	3"	25	25	23
496-11	3 1/2"	25	25	93
496-12	4"	10	10	108

Rigid/Intermediate Grade Conduit Fittings

- Clamps "Snap-On"
- Clamps
- Cable And Conduit Hangers

- Beam Clamps/Insulator Supports
- Conduit Clamps

CP

CP
Rigid
Intermediate

CLAMPS "SNAP-ON" – STEEL

UL File No. E-184283

(Heavy Gauge)

Application:

- To support rigid conduit and IMC to mounting service



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
410*	1/2"	100	500	5
411*	3/4"	100	500	6
412*	1"	50	250	11
413*	1 1/4"	50	250	13
414	1 1/2"	25	100	20
415	2"	25	25	22
206	2 1/2"	25	25	64
207	3"	25	25	71
208	3 1/2"	10	10	120
209	4"	10	10	130

* CSA Certified

CLAMPS – STEEL

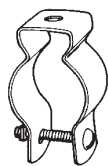
(Light Gauge)



Cat. #	Conduit Sizes Rigid	Size of Strap Inside	Unit Quantity	Standard Package	Weight Lbs. Per 100
566	1/4"	.540	500	500	2
567	3/8"	.675	200	1000	2

CABLE AND CONDUIT HANGERS – STEEL

With Bolts

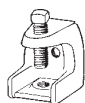


Cat. #	Conduit Sizes Rigid	Conduit Size EMT	Unit Quantity	Standard Package	Weight Lbs. Per 100
0B	1/2"	3/8" & 1/2"	100	100	6
1-B	3/4"	3/4"	100	100	6
2-B	1"	1"	100	100	8
2 1/2-B	1 1/4"	—	100	100	10
3-B	1 1/2"	1 1/4"	100	100	11
4-B	—	1 1/2"	100	100	16
5-B	2"	2"	50	50	23
6-B	2 1/2"	2 1/2"	50	50	29
7-B	3"	3"	25	25	31
8-B	3 1/2"	3 1/2"	10	10	38
9-B	4"	4"	10	10	38

BEAM CLAMPS/INSULATOR SUPPORTS – MALLEABLE IRON

UL File No. E-184283

- Standard finish: Zinc Plated



Cat. #	Base Size	Jaw Open	Max. Wt. Support	Wt. Tapped Unit Qty.	Std. Pkg.	Wt. Lbs./100
528*	3/4"	5/8"	230	10 – 24	25	100 14
529*	3/4"	5/8"	230	1/4" – 20	25	100 13
530	1"	3/4"	230	10 – 24	25	100 23
531	1"	3/4"	230	1/4" – 20	25	100 24
532	1 1/2"	3/4"	290	5/16" – 1850	50	47
533	2"	7/8"	330	3/8" – 16	25	81
534	2 1/2"	7/8"	800	1/2" – 13	25	155

* Not UL listed

BEAM CLAMPS/INSULATOR SUPPORTS – STEEL



Cat. #	Base Size	Jaw Opening	Tapped Holes	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
529-S	3/4"	5/8"	1/4" – 20	50	50	13

CONDUIT CLAMPS

Application:

Right Angle - to attach the conduit run at a 90° angle to a beam or structural member

Right Angle Type – ElectroGalvanized – Iron



Cat. #	Trade Size	Load Rating Lbs	Standard Package	Weight Lbs. Per 100
RAC50HD	1/2"	30	50	37
RAC75HD	3/4"	50	50	40
RAC100HD	1"	60	50	42
RAC125HD	1 1/4"	75	25	49
RAC150HD	1 1/2"	80	25	54
RAC200HD	2"	100	25	71
RAC250HD	2 1/2"	125	10	95
RAC300HD	3"	165	10	107
RAC350HD	3 1/2"	200	10	120
RAC400HD	4"	330	10	131

Application:

Parallel Type - to attach the conduit run parallel to a beam or structural member

Parallel Type – ElectroGalvanized – Iron



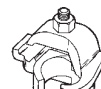
Cat. #	Trade Size	Load Rating Lbs	Standard Package	Weight Lbs. Per 100
PARC50HD	1/2"	30	50	50
PARC75HD	3/4"	50	50	53
PARC100HD	1"	60	50	60
PARC125HD	1 1/4"	75	25	70
PARC150HD	1 1/2"	80	25	82
PARC200HD	2"	100	25	132
PARC250HD	2 1/2"	125	25	192
PARC300HD	3"	165	10	194
PARC350HD	3 1/2"	200	10	216
PARC400HD	4"	330	10	232

CONDUIT CLAMPS

Applications:

Edge Type - to attach the conduit run at a 90° angle to a thin beam or structural member.

Edge Type – ElectroGalvanized – Iron



Cat. #	Trade Size	Standard Package	Weight Lbs. Per 100
ETC50HD	1/2"	50	63
ETC75HD	3/4"	50	69
ETC100HD	1"	50	82
ETC125HD	1 1/4"	25	95
ETC150HD	1 1/2"	25	108
ETC200HD	2"	25	121
ETC250HD	2 1/2"	25	153
ETC300HD	3"	10	214

Conduit Beam Clamp — J Type – Iron

UL File No. E-184283



Cat. #	Size	Max Weight Support	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
JCC1	1/2"	150	25	25	35
JCC2	3/4"	150	25	25	43
JCC34	1" & 1 1/4"	225	10	10	90
JCC56	1 1/2" & 2"	300	5	5	190
JCC78	2 1/2" & 3"	500	2	2	380
JCC910	3 1/2" & 4"	700	2	2	575

CONDUIT REDUCERS – STEEL/FERALLOY®



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
251	3/4"-1/2"	50	50	4
252	1"-1/2"	25	25	13
253	1 1/4"-1/2"	10	10	30
254	1 1/2"-1/2"	10	10	43
255	2"-1/2"	5	5	83
260	1"-3/4"	25	25	7
261	1 1/4"-3/4"	10	10	23
262	1 1/2"-3/4"	10	10	40
263	2"-3/4"	5	5	79
268	1 1/4"-1"	10	10	18
269	1 1/2"-1"	10	10	27
270S	2"-1"	5	5	66
275	1 1/2"-1 1/4"	10	10	13
276	2"-1 1/4"	5	5	24
281	2"-1 1/2"	5	5	27
282	2 1/2"-1"	10	10	120
283	2 1/2"-1 1/4"	10	10	130
285	2 1/2"-2"	10	10	150
288	3"-1 1/2"	5	5	210
289	3"-2"	2	2	160
290M	3"-2 1/2"	5	5	120
291	3 1/2"-2"	2	10	200
292	3 1/2"-2 1/2"	2	10	225
293	3 1/2"-3"	2	10	150
294	4"-2"	2	10	270
295	4"-2 1/2"	2	10	270
296	4"-3"	2	10	260
297	4"-3 1/2"	2	10	160
298	5"-4"	1	1	385
299	6"-5"	1	1	475

PLUGS – CAST IRON

Recessed



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
PLG1M	1/2"	50	50	6
PLG2M	3/4"	50	50	11
PLG3M	1"	25	25	22
PLG4M	1 1/4"	25	25	34
PLG5M	1 1/2"	10	10	48
PLG6M	2"	10	10	82
PLG7M	2 1/2"	2	2	150
PLG8M	3"	2	2	222
PLG9M	3 1/2"	1	1	340
PLG10M	4"	1	1	380

Square Head



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
PLG15M	1/2"	50	50	12
PLG25M	3/4"	50	50	16
PLG35M	1"	25	25	25
PLG45M	1 1/4"	25	25	34
PLG55M	1 1/2"	10	10	48
PLG65M	2"	10	10	80
PLG75M	2 1/2"	1	1	116
PLG85M	3"	1	1	185
PLG95M	3 1/2"	1	1	232
PLG105M	4"	1	1	310

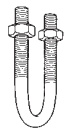
Rigid/Intermediate Grade Conduit Fittings

- Heavy-Duty Conduit U-Bolts with Hex Nuts
- Plugs
- Conduit Hubs®
- Split Conduit Couplings

CP

HEAVY-DUTY CONDUIT U-BOLTS WITH HEX NUTS

Electrogalvanized – Iron



Cat. #	Trade Size	Thread Size	Standard Package	Weight Lbs. Per 100
UBM50HD	1/2"	5/16"-18	200	12
UBM75HD	3/4"	5/16"-18	200	14
UBM100HD	1"	5/16"-18	100	17
UBM125HD	1 1/4"	5/16"-18	50	19
UBM150HD	1 1/2"	5/16"-18	50	21
UBM200HD	2"	3/8"-16	50	28
UBM250HD	2 1/2"	3/8"-16	25	37
UBM300HD	3"	3/8"-16	25	42
UBM350HD	3 1/2"	3/8"-16	20	46
UBM400HD	4"	3/8"-16	20	51

SPLIT CONDUIT COUPLINGS

Body-Ductile Iron
Clamping Hardware-Electrogalvanized Steel
Gasket-Neoprene



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
TCC1	1/2"	10	20	39
TCC2	3/4"	10	20	45
TCC3	1"	10	20	68
TCC4	1 1/4"	5	20	82
TCC5	1 1/2"	5	20	116
TCC6	2"	5	20	111
TCC7	2 1/2"	2	10	283
TCC8	3"	2	10	323
TCC9	3 1/2"	1	5	395
TCC10	4"	1	5	506
TCC12	5"	1	1	944
TCC14	6"	1	1	1218

CONDUIT HUBS – CAST IRON

(Insulated Throat)

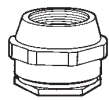
UL File No. E-19189

Applications:

Conduit hubs are ideal for terminating electrical conduit through the walls of enclosures. Designed for use indoors or outdoors with rigid conduit and IMC, specific applications include food processing plants, distilleries, breweries, sewage disposal plants, chemical plants, paper processing mills and refineries.

Features:

- Male thread is on the nut for space saving
- Quick and easy when installing rigid conduit nipple between two existing enclosures
- Insulated throat provides smooth pulling surface
- Furnished with SG sealing gasket
- Hub fits standard knockouts. No special tools required

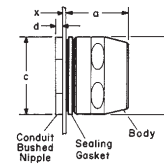


Furnished with
SG Sealing
Gaskets



Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
HUB1	1/2"	25	100	18
HUB2	3/4"	10	100	36
HUB3	1"	5	50	51
HUB4	1 1/4"	5	20	75
HUB5	1 1/2"	2	20	94
HUB6	2"	1	10	119
HUB7	2 1/2"	1	5	238
HUB8	3"	1	5	300
HUB9	3 1/2"	1	5	388
HUB10	4"	1	5	544

Conduit Hub Dimension



Cat. #	Conduit Size	a	b	c	d	x
HUB1	1/2"	1	1 1/4	1	1/8	9/64
HUB2	3/4"	1 1/8	1 9/16	1 3/8	5/32	1/4
HUB3	1"	1 3/8	1 7/8	1 5/8	3/16	9/32
HUB4	1 1/4"	1 1/2	2 5/16	2	1/4	7/16
HUB5	1 1/2"	1 5/8	2 1/2	2 3/8	1/4	7/16
HUB6	2"	1 11/16	3	2 13/16	1/4	7/16
HUB7	2 1/2"	2 3/16	3 5/8	3 7/16	1/4	7/16
HUB8	3"	2 7/16	4 1/4	4 1/16	1/4	7/16
HUB9	3 1/2"	2 7/16	4 3/4	4 1 1/16	5/16	3/4
HUB10	4"	2 9/16	5 1/4	5 1/16	5/16	1 1/8

NOTE: Dimension "x" is maximum wall thickness of box that will meet the requirement for three full threads engagement of nipple and fitting body when liquidtight box connector or rigid conduit hub is installed in a knockout or slip hole.

CONDUIT HUBS – MALLEABLE IRON

(Insulated Throat)

Features:



- Male thread type
- Tapered female thread for rigid conduit and IMC
- Recessed O-ring gasket assures raintight and dust tight connections
- Insulated throat provides smooth pulling surface
- Locking screw on the nut doubles as a grounding screw for added safety
- Complete size range from 1/2" to 6"
- Hubs fit standard knockouts. No special tools required

Certifications and Compliances:

- Class I, Division 2 – NEC 501.4(B)
- Class II, Divisions 1 & 2 – NEC 502.4(A)(B)
- Class III, Division 1 & 2 – NEC 503.3(A)(B)
- UL Listed – UL Standard 514B
- cUL Listed – Certified by UL to CSA Standard C22.2 No. 18
- NEMA: FB-1
- Suitable for wet locations



Cat. #	Trade Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
MHUB1	1/2"	25	100	18
MHUB2	3/4"	25	100	25
MHUB3	1"	5	50	50
MHUB4	1 1/4"	5	25	25
MHUB5	1 1/2"	2	20	20
MHUB6	2"	1	10	10
MHUB7	2 1/2"	1	10	10
MHUB8	3"	1	5	5
MHUB9	3 1/2"	1	5	5
MHUB10	4"	1	2	2
MHUB11	5"	1	1	1
MHUB12	6"	1	1	1

CP Series 5 Combination Conduit Outlet Bodies For EMT and IMC or Rigid Conduit

- Combination Conduit Outlet Bodies
- Die Cast Aluminum
- Available in SnapPack™
- Stainless Steel Cover Screws

EMT CONDUIT OUTLET BODIES – CAST ALUMINUM†

UL File No. E-15022

Applications

Die cast aluminium Series 5 Conduit Bodies are used in conduit systems to:

- Act as pull outlets for conductors being installed
- Provide openings for making splices and taps in conductors
- Act as mounting outlets for lighting fixtures and wiring devices
- Connect conduit sections
- Provide taps for branch conduit runs
- Make 90 degree bends in conduit runs
- Provide for access to conductors for maintenance and future system changes
- Conduit bodies are supplied with threaded hubs for use with IMC or Rigid conduit and set screws for use with EMT conduit

Type C



Cat. #	Trade Size	Internal Vol. in Cu. In.	Unit Qty	Std. Pkg	Wt Lbs. Per 100
C15-MT	1/2"	4.25	10	100	27
C25-MT	3/4"	7.0	10	50	40
C35-MT	1"	10.8	5	25	64
C45-MT	1 1/4"	32.3	2	10	165
C55-MT	1 1/2"	32.3	2	10	150
C65-MT	2"	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body and cover assembled and shipped together, change "-MT" to "-MTC" in catalog number i.e.: LB25-MTC

Type LL



LL15-MT	1/2"	4.25	10	100	27
LL25-MT	3/4"	7.0	10	50	40
LL35-MT	1"	10.8	5	25	64
LL45-MT	1 1/4"	32.3	2	10	165
LL55-MT	1 1/2"	32.3	2	10	150
LL65-MT	2"	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body and cover assembled and shipped together, change "-MT" to "-MTC" in catalog number i.e.: LB25-MTC

Type LR



LR15-MT	1/2"	4.25	10	100	27
LR25-MT	3/4"	7.0	10	50	40
LR35-MT	1"	10.8	5	25	64
LR45-MT	1 1/4"	32.3	2	10	165
LR55-MT	1 1/2"	32.3	2	10	150
LR65-MT	2"	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body and cover assembled and shipped together, change "-MT" to "-MTC" in catalog number i.e.: LB25-MTC

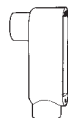
Type T



T15-MT	1/2"	4.25	10	100	27
T25-MT	3/4"	7.0	10	50	40
T35-MT	1"	10.8	5	25	64
T45-MT	1 1/4"	32.3	2	10	165
T55-MT	1 1/2"	32.3	2	10	150
T65-MT	2"	64.0	1	5	270

† SnapPack™ EMT conduit bodies consisting of body, cover and gasket assembled and shipped together, change "-MT" to "-MTC" in catalog number i.e.: LB25-MTC

Type LB



Cat. #	Trade Size	Internal Vol. in Cu. In.	Unit Qty	Std. Pkg	Wt Lbs. Per 100
LB15-MT	1/2"	4.25	10	100	27
LB25-MT	3/4"	7.2	10	50	40
LB35-MT	1"	10.8	5	25	56
LB45-MT	1 1/4"	28.8	2	10	132
LB55-MT	1 1/2"	32.3	2	10	175
LB65-MT	2"	66.5	1	5	240
LB75-MT*	2 1/2"	Over 100	1	1	450
LB85-MT*	3"	Over 100	1	1	460
LB95-MT*	3 1/2"	Over 100	1	1	800
LB105-MT*	4"	Over 100	1	1	900

† SnapPack™ EMT conduit bodies consisting of body, cover and gasket assembled and shipped together, change "-MT" to "-MTC" in catalog number i.e.: LB25-MTC

* Fittings greater than 2" are set-screw only (not combination threaded & set-screw)

Covers, Aluminum



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
150	1/2"	50	250	5
250	3/4"	50	250	6
350	1"	50	250	20
450	1 1/4"-1 1/2"	50	50	25
650	2"	25	25	25
850D	2 1/2"-3"	10	10	78
950D	3 1/2"-4"	5	5	140

Gaskets, Neoprene



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
GASK015N	1/2"	100	100	2
GASK025N	3/4"	100	100	2
GASK035N	1"	50	50	3
GASK045N	1 1/4"-1 1/2"	50	50	6
GASK065N	2"	25	25	10
GASK085N	2 1/2"-3"	10	10	20
GASK095N	3 1/2"-4"	10	10	30

Series 5 Conduit Outlet Bodies For Rigid/IMC Conduit

- Rigid Conduit Outlet Bodies
- Die Cast Aluminum
- Available in SnapPack™†

CP

CP
Outlet Bodies

RIGID CONDUIT OUTLET BODIES – CAST ALUMINUM

Type C †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
C15	1/2"	4.25	10	100	27
C25	3/4"	7.0	10	50	40
C35	1"	10.8	5	25	64
C45	1 1/4"	32.3	2	10	165
C55	1 1/2"	32.3	2	10	150
C65	2"	64.0	1	5	270
C75	2 1/2"	Over 100	1	1	500
C85	3"	Over 100	1	1	600
C95*	3 1/2"	Over 100	1	1	900
C105*	4"	Over 100	1	1	1000

*Not UL Listed

Type LL †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LL15	1/2"	4.25	10	100	30
LL25	3/4"	7.0	10	50	48
LL35	1"	10.8	5	25	64
LL45	1 1/4"	32.3	2	10	140
LL55	1 1/2"	32.3	2	10	160
LL65	2"	63.0	1	5	270
LL75	2 1/2"	Over 100	1	1	500
LL85	3"	Over 100	1	1	600
LL95	3 1/2"	Over 100	1	1	900
LL105	4"	Over 100	1	1	1000

Type LR †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LR15	1/2"	4.25	10	100	26
LR25	3/4"	7.0	10	50	48
LR35	1"	10.8	5	25	64
LR45	1 1/4"	32.3	2	10	140
LR55	1 1/2"	32.3	2	10	160
LR65	2"	63.0	1	5	260
LR75	2 1/2"	Over 100	1	1	500
LR85	3"	Over 100	1	1	600
LR95	3 1/2"	Over 100	1	1	900
LR105	4"	Over 100	1	1	1000

Type T †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
T15	1/2"	4.25	10	100	32
T25	3/4"	7.0	10	50	46
T35	1"	10.8	5	25	70
T45	1 1/4"	32.3	2	10	175
T55	1 1/2"	32.3	2	10	185
T65	2"	64.0	1	2	300
T75	2 1/2"	Over 100	1	1	550
T85	3"	Over 100	1	1	650
T95*	3 1/2"	Over 100	1	1	950
T105*	4"	Over 100	1	1	1050

*Not UL Listed

Type LB †



Cat. #	Trade Size	Internal Volume in Cubic Inches	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LB15	1/2"	4.25	10	100	27
LB25	3/4"	7.2	10	50	40
LB35	1"	10.8	5	25	56
LB45	1 1/4"	28.8	2	10	132
LB55	1 1/2"	32.3	2	10	175
LB65	2"	66.5	1	5	240
LB75	2 1/2"	Over 100	1	1	450
LB85	3"	Over 100	1	1	460
LB95	3 1/2"	Over 100	1	1	800
LB105	4"	Over 100	1	1	900

Covers, Aluminum



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
150	1/2"	50	250	5
250	3/4"	50	250	6
350	1"	50	250	20
450	1 1/4"-1 1/2"	50	50	25
650	2"	25	25	25
850D	2 1/2"-3"	10	10	78
950D	3 1/2"-4"	5	5	140

Gaskets, Neoprene



Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
GASK015N	1/2"	100	100	2
GASK025N	3/4"	100	100	2
GASK035N	1"	50	50	3
GASK045N	1 1/4"-1 1/2"	50	50	6
GASK065N	2"	25	25	10
GASK085N	2 1/2"-3"	10	10	20
GASK095N	3 1/2"-4"	10	10	30

Options:

†SnapPack™ pre-packaged body, cover and neoprene gasket add suffix CGN ie. LB25-CGN

Conduit Outlet Bodies Series 5 Dimensions

- Rigid and combination Rigid or IMC and EMT Conduit Outlet Bodies
- Die Cast Aluminum

Type LB Dimensions – Threaded & Set Screw

Conduit

Size	A	B	C	D	E	F
1/2"	1 11/32"	1 57/64"	1/2"	2 11/64"	4 13/32"	1 5/32"
3/4"	1 39/64"	4 49/64"	3/4"	2 7/16"	5 1/8"	1 3/8"
1"	1 3/4"	5 3/8"	1"	2 3/4"	5 15/16"	1 23/32"
1 1/4"	2 39/64"	7 15/64"	1 1/4"	3 39/64"	7 7/8"	2 15/64"
1 1/2"	2 19/32"	7 17/64"	1 1/2"	3 23/32"	7 7/8"	2 3/8"
2"	3 13/64"	9 39/64"	2"	4 1/4"	10 15/64"	2 29/32"
2 1/2"	4 1/2"	12 3/16"	2 1/2"	5 5/32"	12 3/4"	3 13/32"
3"	4 15/32"	12 17/64"	3"	5 21/32"	12 43/64"	4 1/64"
3 1/2"	5 39/64"	15 1/32"	3 1/2"	6 61/64"	15 35/64"	5 5/32"
4"	5 39/64"	15 1/32"	4"	6 61/64"	15 35/64"	5 5/32"

Type C Dimensions – Threaded & Set Screw

Conduit

Size	A	B	C	D	E	F
1/2"	1 5/16"	3 27/32"	1/2"	1 1/2"	4 27/32"	1 1/8"
3/4"	1 17/32"	4 19/32"	3/4"	1 5/8"	5 41/64"	1 1/4"
1"	1 3/4"	5 11/32"	1"	1 29/32"	6 1/2"	1 1/2"
1 1/4"	2 17/32"	7 1/4"	1 1/4"	2 3/4"	8 1/2"	2 1/4"
1 1/2"	2 17/32"	7 1/4"	1 1/2"	2 3/4"	8 1/2"	2 1/4"
2"	2 7/32"	9 7/16"	2"	3 13/32"	10 3/4"	2 3/4"
2 1/2"	4 1/2"	12 1/4"	2 1/2"	4 1/2"	13"	4 1/2"
3"	4 1/2"	12 1/4"	3"	4 1/2"	13"	4 1/2"
3 1/2"	5 1/2"	15"	3 1/2"	5 9/16"	16 5/16"	5 1/2"
4"	5 1/2"	15"	4"	5 9/16"	16 5/16"	5 1/2"

Type LL Dimensions – Threaded & Set Screw

Conduit

Size	A	B	C	D	E	F
1/2"	1 3/32"	3 7/8"	1/2"	2"	4 9/32"	1 13/32"
3/4"	1 1/4"	4 21/32"	3/4"	2 11/32"	5 1/8"	1 13/32"
1"	1 1/2"	5 23/64"	1"	2 1/2"	5 99/64"	1 7/8"
1 1/4"	2 1/4"	7 17/64"	1 1/4"	3 13/32"	7 55/64"	2 7/8"
1 1/2"	2 1/4"	7 17/64"	1 1/2"	3 13/32"	7 55/64"	2 7/8"
2"	2 3/4"	9 15/32"	2"	3 27/32"	10 13/64"	3 27/64"
2 1/2"	4 5/8"	12 1/4"	2 1/2"	5 3/4"	13"	4 1/2"
3"	4 5/8"	12 1/4"	3"	5 3/4"	13"	4 1/2"
3 1/2"	5 7/16"	15"	3 1/2"	6 1/8"	16 9/16"	5 9/16"
4"	5 7/16"	15"	4"	6 1/8"	16 9/16"	5 9/16"

Type LR Dimensions – Threaded & Set Screw

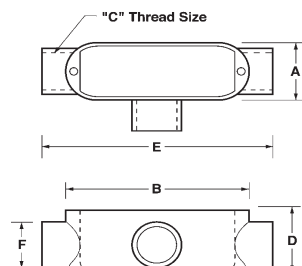
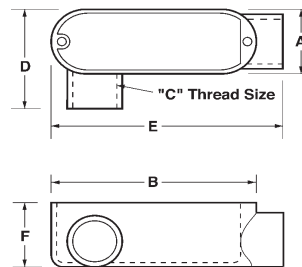
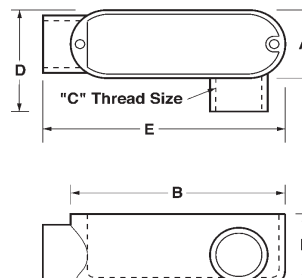
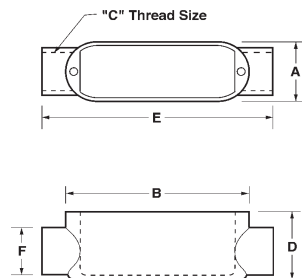
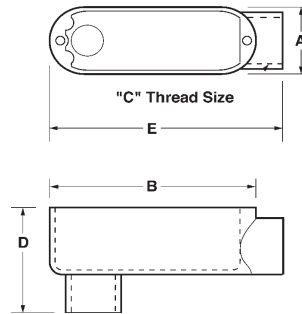
Conduit

Size	A	B	C	D	E	F
1/2"	1 7/64"	3 7/8"	1/2"	2"	4 9/32"	1 13/32"
3/4"	1 1/4"	4 21/32"	3/4"	2 11/32"	5 1/8"	1 13/32"
1"	1 1/2"	5 23/64"	1"	2 1/2"	5 59/64"	1 7/8"
1 1/4"	2 1/4"	7 17/64"	1 1/4"	3 13/32"	7 55/64"	2 7/8"
1 1/2"	2 1/4"	7 17/64"	1 1/2"	3 13/32"	7 55/64"	2 7/8"
2"	2 3/4"	9 15/32"	2"	3 27/32"	10 13/64"	3 27/64"
2 1/2"	4 7/16"	12 1/4"	2 1/2"	5 13/16"	12 1/4"	4 1/2"
3"	4 5/8"	12 1/4"	3"	5 13/16"	12 1/4"	4 1/2"
3 1/2"	5 7/16"	15"	3 1/2"	6 1/8"	15"	6 1/4"
4"	5 7/16"	15"	4"	6 1/8"	15"	6 1/4"

Type T Dimensions – Threaded & Set Screw

Conduit

Size	A	B	C	D	E	F
1/2"	1 5/16"	3 27/32"	1/2"	1 3/8"	4 27/32"	2 1/16"
3/4"	1 17/16"	4 39/64"	3/4"	1 41/64"	5 19/32"	2 11/32"
1"	1 25/32"	5 3/8"	1"	1 29/32"	6 1/2"	2 19/32"
1 1/4"	2 1/2"	7 1/4"	1 1/4"	2 3/4"	8 1/2"	3 35/64"
1 1/2"	2 1/2"	7 1/4"	1 1/2"	2 3/4"	8 1/2"	3 35/64"
2"	3 1/4"	9 7/16"	2"	3 27/64"	10 13/16"	4 3/64"
2 1/2"	4 1/2"	12 1/4"	2 1/2"	4 1/2"	13"	5 25/32"
3"	4 1/2"	12 1/4"	3"	4 1/2"	13"	5 25/32"
3 1/2"	5 1/2"	15"	3 1/2"	5 9/16"	16 5/16"	6 13/16"
4"	5 1/2"	15"	4"	5 9/16"	16 5/16"	6 13/16"



Conduit Outlet Bodies Form 5

- Rigid Conduit Outlet Bodies
- Malleable Iron
- Stainless Steel Cover Screws

CP

CP
Outlet Bodies

Applications

Form 5 Malleable Iron Conduit Bodies are used in conduit systems to:

- Act as pull outlets for conductors being installed
- Provide openings for making splices and taps in conductors
- Act as mounting outlets for lighting fixtures and wiring devices
- Connect conduit sections
- Provide taps for branch conduit runs
- Make 90 degree bends in conduit runs
- Provide for access to conductors for maintenance and future system changes

Features

- Interchangeable with Appleton Form 35® Conduit Bodies
- Built-in rollers on 1¼" to 4" C and LB bodies to facilitate wire pulling
- Smooth and rounded integral bushings for protection of wire insulation
- Solid neoprene gaskets may be converted to open type by pulling out perforated center section
- Stainless steel cover screws
- Domed sheet steel covers provide additional cubic capacity

Standard Materials

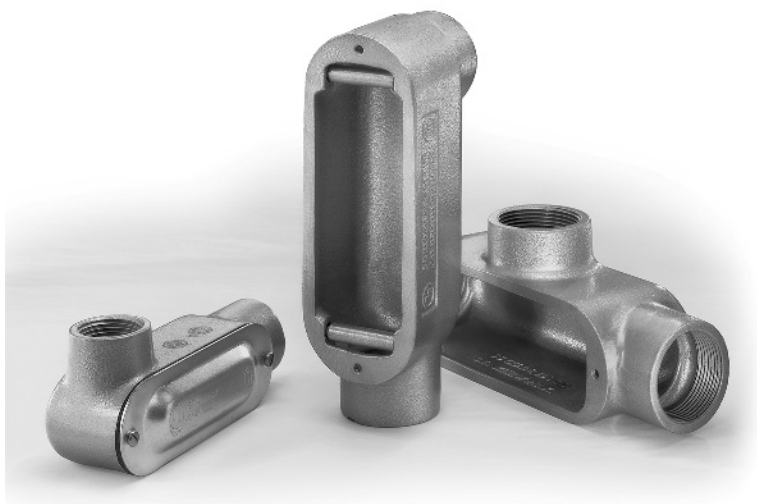
- Bodies – Malleable iron
- Gaskets – Neoprene
- Covers – sheet steel or malleable
- Cover screws – stainless steel

Standard Finishes

- Malleable iron – electrogalvanized and aluminum acrylic paint
- Neoprene – natural
- Sheet steel – electrogalvanized
- Stainless steel – natural

Certifications and Compliances

- UL Standard 514B
- cUL to CSA Standard C22.2 No. 18



Form 35 is a registered trademark of Appleton Electric/EGS.

- Rigid Conduit Outlet Bodies
- Malleable Iron

Ordering Information

Cat. #	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type LB †					
LB50M	1/2"	4.5	10	10	N/A
LB75M	3/4"	7.5	10	10	3 #6 AWG MAX.
LB100M	1"	12.5	10	10	3 #4 XHHW MAX.
LB125M†	1 1/4"	32.0	5	5	3 #2 XHHW MAX.
LB150M†	1 1/2"	35.3	5	5	3 #1/0 XHHW MAX.
LB200M†	2"	73.0	1	1	3 #4/0 XHHW MAX.
LB250M†	2 1/2"	142.0	1	1	3 #300 MCM XHHW MAX.
LB300M†	3"	173.0	1	1	3 #400 MCM XHHW MAX.
LB350M†	3 1/2"	292.0	1	1	3 #500 MCM XHHW MAX.
LB400M†	4"	324.0	1	1	3 #500 MCM XHHW MAX.

Type LL †					
LL50M	1/2"	4.5	10	10	N/A
LL75M	3/4"	7.5	10	10	3 #6 AWG MAX.
LL100M	1"	12.5	10	10	3 #4 XHHW MAX.
LL125M	1 1/4"	32.0	5	5	3 #2 XHHW MAX.
LL150M	1 1/2"	33.0	5	5	3 #2 XHHW MAX.
LL200M	2"	68.0	1	1	3 #4/0 XHHW MAX.
LL250M	2 1/2"	142.0	1	1	3 #300 MCM XHHW MAX.
LL300M	3"	173.0	1	1	3 #350 MCM XHHW MAX.
LL350M	3 1/2"	292.0	1	1	3 #350 MCM XHHW MAX.
LL400M	4"	324.0	1	1	3 #350 MCM XHHW MAX.

Type C †					
C50M	1/2"	4.5	10	10	N/A
C75M	3/4"	7.5	10	10	3 #6 AWG MAX.
C100M	1"	12.5	10	10	3 #4 XHHW MAX.
C125M†	1 1/4"	35.0	5	5	3 #2 XHHW MAX.
C150M†	1 1/2"	35.3	5	5	3 #1/0 XHHW MAX.
C200M†	2"	75.0	1	1	3 #4/0 XHHW MAX.
C250M†	2 1/2"	153.0	1	1	3 #300 MCM XHHW MAX.
C300M†	3"	181.0	1	1	3 #300 MCM XHHW MAX.
C350M†	3 1/2"	290.0	1	1	3 #350 MCM XHHW MAX.
C400M†	4"	320.0	1	1	3 #350 MCM XHHW MAX.

† 1 1/4" - 4" LB and C Bodies supplied with built in rollers to facilitate wire pulling.
 ‡ SnapPack™ pre-packaged body, cover and neoprene gasket - add suffix CG.
 Available on sizes 1/2"-2"

Cat. #	Size	Internal Volume (Cu. In.)	Unit Qty	Std. Pkg	Max. # of Conductors
Type LR ‡					
LR50M	1/2"	4.5	10	10	N/A
LR75M	3/4"	7.5	10	10	3 #6 AWG MAX.
LR100M	1"	12.5	10	10	3 #4 XHHW MAX.
LR125M	1 1/4"	32.0	5	5	3 #2 XHHW MAX.
LR150M	1 1/2"	35.3	5	5	3 #2 XHHW MAX.
LR200M	2"	68.0	1	1	3 #4/0 XHHW MAX.
LR250M	2 1/2"	142.0	1	1	3 #300 MCM XHHW MAX.
LR300M	3"	173.0	1	1	3 #350 MCM XHHW MAX.
LR350M	3 1/2"	292.0	1	1	3 #350 MCM XHHW MAX.
LR400M	4"	324.0	1	1	3 #350 MCM XHHW MAX.

Type T ‡					
T50M	1/2"	6.0	10	10	N/A
T75M	3/4"	9.5	10	10	3 #6 AWG MAX.
T100M	1"	15.0	10	10	3 #4 XHHW MAX.
T125M	1 1/4"	33.0	5	5	3 #2 XHHW MAX.
T150M	1 1/2"	36.0	5	5	3 #1 XHHW MAX.
T200M	2"	76.0	1	1	3 #2/0 XHHW MAX.
T250M	2 1/2"	142.0	1	1	3 #300 MCM XHHW MAX.
T300M	3"	173.0	1	1	3 #300 MCM XHHW MAX.
T350M	3 1/2"	292.0	1	1	3 #350 MCM XHHW MAX.
T400M	4"	324.0	1	1	3 #350 MCM XHHW MAX.

Type TB					
TB50M	1/2"	6.0	10	10	N/A
TB75M	3/4"	9.5	10	10	3 #6 AWG MAX.
TB100M	1"	15.0	10	10	3 #6 AWG MAX.
TB125M	1 1/4"	33.0	5	5	3 #6 AWG MAX.
TB150M	1 1/2"	36.0	5	5	3 #4 XHHW MAX.
TB200M	2"	76.0	1	1	3 #1/0 XHHW MAX.

Type X					
X50M	1/2"	6.0	10	10	N/A
X75M	3/4"	9.5	10	10	3 #6 AWG MAX.
X100M	1"	15.0	10	10	3 #4 XHHW MAX.
X125M	1 1/4"	33.0	5	5	3 #2 XHHW MAX.
X150M	1 1/2"	36.0	5	5	3 #1/0 XHHW MAX.
X200M	2"	76.0	1	1	3 #2/0 XHHW MAX.

Sheet steel
Covers

K50S	1/2"	50	50
K75S	3/4"	50	50
K100S	1"	25	25
K125S	1 1/4" & 1 1/2"	20	20
K200S	2"	5	5
K250S	2 1/2" & 3"	5	5
K350S	3 1/2" & 4"	5	5

Cast Iron Covers

K50CM	1/2"	50	50
K75CM	3/4"	50	50
K100CM	1"	25	25
K125CM	1 1/4" & 1 1/2"	20	20
K200CM	2"	5	5
K250CM	2 1/2" & 3"	5	5
K350CM	3 1/2" & 4"	5	5

Neoprene
Gaskets with perforated Center

GK50N	1/2"	100	100
GK75N	3/4"	100	100
GK100N	1"	50	50
GK125N	1 1/4" & 1 1/2"	25	25
GK200N	2"	25	25
GK250N	2 1/2" & 3"	25	25
GK350N	3 1/2" & 4"	25	25

Sheet Steel
Cover with Integral Gasket

K50SG	1/2"	50	14
K75SG	3/4"	50	16
K100SG	1"	25	46
K125SG	1 1/4" & 1 1/2"	20	62
K200SG	2"	5	70
K250SG	2 1/2" & 3"	5	190
K350SG	3 1/2" & 4"	5	340

NEW!

Conduit Outlet Bodies

Form 5

Dimensions

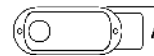
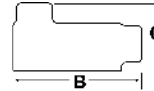
- Rigid Conduit Outlet Bodies
- Malleable Iron

CP

(in inches)

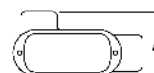
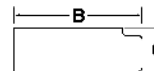
Form 5 Iron LB

Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
A	1.34	1.50	1.80	2.60	2.60	3.12	4.31	4.31	5.62	5.62
B	4.68	5.37	6.20	8.12	8.12	10.50	13.60	13.87	16.25	16.60
C	2.05	2.25	2.65	2.75	2.83	4.42	5.40	5.90	6.90	7.21



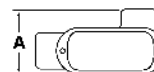
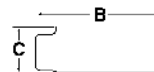
Form 5 Iron LL

Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
A	2.05	2.25	2.65	2.75	3.50	4.12	5.71	5.87	7.13	7.13
B	4.68	5.37	6.20	8.12	8.12	10.50	13.60	13.87	16.50	16.50
C	1.37	1.70	1.90	2.75	2.83	3.31	3.90	4.75	6.81	7.19



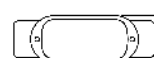
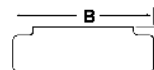
Form 5 Iron LR

Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
A	2.05	2.25	2.65	2.75	3.50	4.12	5.71	5.87	6.10	6.95
B	4.68	5.37	6.20	8.12	8.12	10.50	13.60	13.87	6.25	16.25
C	1.37	1.70	1.90	2.75	2.83	3.31	3.90	4.75	5.62	5.62



Form 5 Iron C

Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
A	1.34	1.50	1.80	2.60	2.60	3.12	4.31	4.31	4.88	4.88
B	5.38	6.00	7.05	9.00	9.00	11.50	15.00	15.12	18.13	18.13
C	1.37	1.70	1.90	2.75	2.83	3.31	3.90	4.75	5.19	5.56



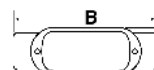
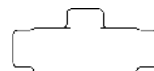
Form 5 Iron T

Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
A	2.05	2.25	2.65	2.75	3.50	4.12	5.71	5.87	6.81	7.15
B	5.38	6.00	7.05	9.00	9.00	11.50	15.00	15.12	18.13	18.13
C	1.34	1.50	1.80	2.60	2.60	3.12	4.31	4.31	5.19	5.56



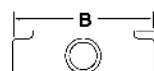
Form 5 Iron TB

Size	1/2	3/4	1	1 1/4	1 1/2	2
A	1.34	1.50	1.80	2.60	2.60	3.12
B	5.38	6.00	7.05	9.00	9.00	11.50
C	2.05	2.25	2.65	2.75	2.83	4.42



Form 5 Type X

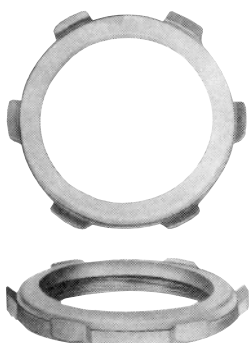
Size	1/2	3/4	1	1 1/4	1 1/2	2
A	2.79	2.93	3.56	4.43	4.43	5.4
B	5.41	6.08	7.1	9.1	9.1	11.75
C	1.75	1.97	2.25	2.55	2.75	3.45



CP Sealing Locknuts

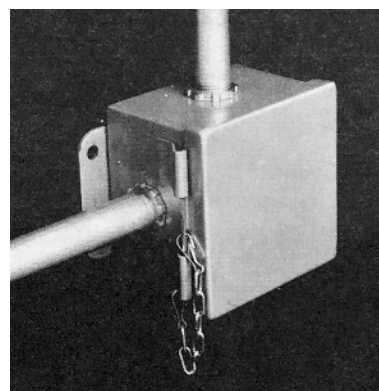
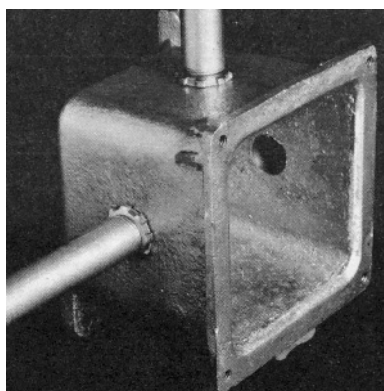
UL File No. E-19189

CP Sealing Locknuts



U.S. Patent #4022262

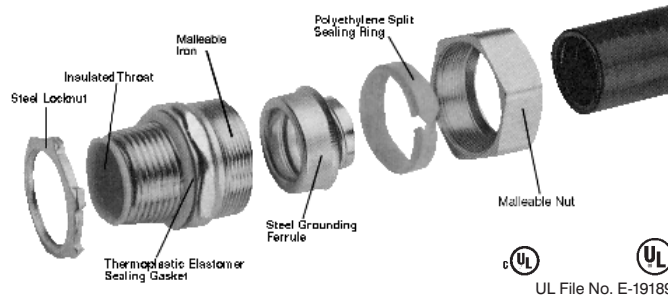
- Integrally fused PVC gasket provides positive seal against water, oils and other liquids.
- Designed for use with raintight, watertight and oiltight enclosures, NEMA 2, 3, 3R, 4 and 12.



Only one Sealing Locknut is required to:

- functionally replace rigid threaded enclosure connectors.
- provide raintight, watertight, or oiltight seal in any position.
- provide positive ground connection.
- provide economies in installation and fitting costs.
- UL Listed Raintight.
- UL Listed Liquidtight.
- Can be used with either sheet metal or standard cast metal boxes.
- CSA Certified watertight.
- 1/2" – 2" Heavy-duty steel.
- 2 1/2" – 6" Malleable iron.

Cat. #	Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
SL1	1/2"	100	100	2
SL2	3/4"	50	500	2
SL3	1"	25	250	3
SL4	1 1/4"	25	250	8
SL5	1 1/2"	25	100	10
SL6	2"	25	100	14
SL7	2 1/2"	10	50	36
SL8	3"	10	50	38
SL9	3 1/2"	10	50	58
SL10	4"	5	25	72
SL11	5"	2	2	110
SL12	6"	1	1	190



UL File No. E-19189

Applications:

Typical applications for liquidtight conduit and the Liquidator include the wiring of machine tools . . . motors . . . transformers . . . food processing equipment . . . robotics . . . air conditioning units . . . illuminated store front signs and billboards . . . etc. The flexible metallic conduit and fittings protect conductors from mechanical damage due to vibration and movement and seals out cutting oils, coolants, water, dust, etc.

Applications such as these can be found in, but are not limited to, industries such as:

- machine tool manufacturers.
- electric power generating plants.
- waste treatment facilities.
- paint manufacturing facilities.
- automobile manufacturing facilities.
- aerospace industries.
- breweries.
- food processing plants.
- dairies.
- pulp and paper mills.
- petroleum refineries.
- chemical and petrochemical plants.

Compliances:

- NEC: Class I, Division 2
Class II, Divisions 1 and 2
Class III, Divisions 1 and 2
- UL Standards: 514B, 467
- CSA Standard: C22.2 No. 18

FEATURES AND BENEFITS:

Product Features

- UL and cUL Listed
- Provided protection in wet locations
- Straight available in 3/8" through 6" sizes; 45° and 90° available in 3/8" through 4" sizes.
- Malleable iron bodies and gland nuts with zinc electroplate; steel ferrules and locknuts with zinc electroplate.
- Cupped grounding ferrule is distortion-free and reusable.
- Split polyethylene sealing ring is reversible.
- Grooves inside sealing ring. Jacket of liquidtight conduit will cold flow into grooves.
- Reusable design.
- Hex surfaces on gland nut and body.
- Thermoplastic elastomer sealing gasket effectively seals out water, oil, dust and dirt.
- Steel locknut bites into box.
- Available with or without insulated throats.
- Insulated throat versions, 105°C rated nylon.

Standard Materials:

- Body – Straight: 3/8" through 6" – malleable iron or aluminum
45° and 90°; 3/8" through 4" – malleable iron or aluminum
- Gland nut – malleable iron or aluminum
- Ferrule – 3/8" through 6" – steel
- Gland nut sealing ring – polyethylene
- Sealing gasket – thermoplastic elastomer
- Locknut – steel

Standard Finishes:

- Steel and malleable iron – zinc electroplate
- Polyethylene, thermoplastic elastomer, aluminum and die cast – natural

User Benefits

- Assurance of safe and reliable performance. End user peace of mind.
- Meets NEC and UL requirements for use in wet locations. Reduces downtime and replacement costs.
- Complete selection of styles and sizes. Easy selection from one source, saves time and money.
- High strength and excellent corrosion resistance. Long service life, eliminates the need for replacement.
- Provides excellent pullout strength and grounding for safety of personnel and equipment.
- Easy to install. Cannot be installed incorrectly. Saves labor.
- Eliminates leakage, potential downtime and replacement costs. Protection against vibration.
- Can be disassembled and reused. Cost savings.
- Easy wrenching. Fast, easy installation results in labor savings.
- Eliminates leakage, potential downtime and replacement costs.
- Provides a reliable ground and safety of personnel and equipment. Won't vibrate loose.
- One-stop source to meet user needs. Saves time and money.

STRAIGHT CONNECTORS – NON-INSULATED – MALLEABLE IRON

	Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	LT-38	3/8"	25	100	18
	LT-50	1/2"	25	100	20
	LT-75	3/4"	25	100	26
	LT-100	1"	5	50	45
	LT-125	1 1/4"	5	25	69
	LT-150	1 1/2"	2	20	85
	LT-200	2"	1	10	120
	LT-250	2 1/2"	1	5	340
	LT-300	3"	1	5	430
	LT-350	3 1/2"	1	5	510
	LT-400	4"	1	5	600
	LT-500†	5"	1	1	800
	LT-600†	6"	1	1	1075

† Not UL Listed or CSA Certified

STRAIGHT CONNECTORS – INSULATED – MALLEABLE IRON

	Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	LTB-38	3/8"	25	100	18
	LTB-50	1/2"	25	100	20
	LTB-75	3/4"	25	100	26
	LTB-100	1"	5	50	45
	LTB-125	1 1/4"	5	25	69
	LTB-150	1 1/2"	2	20	86
	LTB-200	2"	1	10	120
	LTB-250	2 1/2"	1	5	340
	LTB-300	3"	1	5	430
	LTB-350	3 1/2"	1	5	510
	LTB-400	4"	1	5	600
	LTB-500†	5"	1	1	800
	LTB-600†	6"	1	1	1075

† Not UL Listed or CSA certified

STRAIGHT CONNECTORS – NON-INSULATED – ALUMINUM

	Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	LT38-SA	3/8"	25	100	12
	LT50-SA	1/2"	25	100	12
	LT75-SA	3/4"	25	100	14
	LT100-SA	1"	10	50	28
	LT125-SA	1 1/4"	5	25	34
	LT150-SA	1 1/2"	2	20	48
	LT200-SA	2"	1	10	54
	LT250-SA	2 1/2"	1	5	121
	LT300-SA	3"	1	5	174
	LT350-SA	3 1/2"	1	5	245
	LT400-SA	4"	1	5	279

45° ANGLE CONNECTORS — NON-INSULATED – MALLEABLE IRON

	LT-3845	3/8"	25	100	27
	LT-5045	1/2"	25	100	29
	LT-7545	3/4"	10	50	41
	LT-10045	1"	10	50	70
	LT-12545	1 1/4"	5	25	93
	LT-15045	1 1/2"	2	10	137
	LT-20045	2"	1	5	199
	LT-25045	2 1/2"	1	1	600
	LT-30045	3"	1	1	925
	LT-35045	3 1/2"	1	1	1150
	LT-40045	4"	1	1	1450

45° ANGLE CONNECTORS – INSULATED – MALLEABLE IRON

	LTB-3845	3/8"	25	100	27
	LTB-5045	1/2"	25	100	29
	LTB-7545	3/4"	10	50	41
	LTB-10045	1"	10	50	70
	LTB-12545	1 1/4"	5	25	93
	LTB-15045	1 1/2"	2	10	137
	LTB-20045	2"	1	5	195
	LTB-25045	2 1/2"	1	1	600
	LTB-30045	3"	1	1	925
	LTB-35045	3 1/2"	1	1	1150
	LTB-40045	4"	1	1	1450

90° ANGLE CONNECTORS – NON-INSULATED – MALLEABLE IRON

	LT-3890	3/8"	25	100	31
	LT-5090	1/2"	25	100	33
	LT-7590	3/4"	10	50	48
	LT-10090	1"	10	50	76
	LT-12590	1 1/4"	5	25	112
	LT-15090	1 1/2"	2	10	155
	LT-20090	2"	1	5	230
	LT-25090	2 1/2"	1	1	900
	LT-30090	3"	1	1	1383
	LT-35090	3 1/2"	1	1	1875
	LT-40090	4"	1	1	2325

90° ANGLE CONNECTOR – INSULATED – MALLEABLE IRON

	Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	LTB-3890	3/8"	25	100	30
	LTB-5090	1/2"	25	100	33
	LTB-7590	3/4"	10	50	48
	LTB-10090	1"	10	50	76
	LTB-12590	1 1/4"	5	25	112
	LTB-15090	1 1/2"	2	10	155
	LTB-20090	2"	1	5	230
	LTB-25090	2 1/2"	1	1	900
	LTB-30090	3"	1	1	1380
	LTB-35090	3 1/2"	1	1	1825
	LTB-40090	4"	1	1	2325

90° ANGLE CONNECTOR – NON-INSULATED – ALUMINUM

	LT3890-SA	3/8"	25	100	19
	LT5090-SA	1/2"	25	100	18
	LT7590-SA	3/4"	10	50	24
	LT10090-SA	1"	10	50	40
	LT12590-SA	1 1/4"	5	25	48
	LT15090-SA	1 1/2"	2	10	61
	LT20090-SA	2"	1	5	86

COMBINATION COUPLINGS FOR COUPLING LIQUIDTIGHT TO THREADED RIGID/IMC CONDUIT

	LTR-38*	3/8"	25	100	17
	LTR-50	1/2"	25	100	29
	LTR-75	3/4"	25	100	33
	LTR-100	1"	5	50	59
	LTR-125	1 1/4"	2	20	105
	LTR-150	1 1/2"	2	20	105
	LTR-200	2"	1	10	160

* For 3/8" Liquidtight to 1/2" Rigid/IMC

SELF RETAINING PVC GASKET WITH STEEL RING

UL File no. E-22133

	Cat. #	Conduit Size	Unit Quantity	Standard Package	Weight Lbs. Per 100
	SG1	3/8"-1/2"	100	100	1
	SG2	3/4"	50	50	2
	SG3	1"	50	50	2
	SG4	1 1/4"	25	25	2
	SG5	1 1/2"	25	25	4
	SG6	2"	25	25	3
	SG7	2 1/2"	10	10	5
	SG8	3"	10	10	10
	SG9	3 1/2"	10	10	12
	SG10	4"	10	10	10
	SG11	5"	5	5	15
	SG12	6"	5	5	22

Liquidtight Conduit Fittings

CP

● Grounding Type Liquidtight Flexible Metallic Conduit Fittings

LIQUIDATOR™ LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FITTINGS WITH GROUND LUG



UL File No. E-6225

Application:

Lazy-Lug liquidtight conduit fittings provide an easy, versatile method to use an external grounding conductor with liquidtight flexible metallic conduit as permitted by the National Electrical Code. This section allows an external bonding jumper to be used with a 6-foot or shorter length of liquidtight conduit.

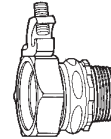
Features/Benefits:

- Open lug design allows installer to quickly lay in the grounding conductor.
- Aluminum lug – for copper or aluminum grounding conductors.
- Copper lug – for copper grounding conductors.

Compliance:

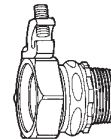
UL Standard 514B – Fittings for Conduit and Outlet Boxes
UL Standard 467 – Grounding and Bonding Equipment

STRAIGHT CONNECTORS – NON-INSULATED – MALLEABLE IRON – ALUMINUM LUG



Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LT38G	3/8"	#4-#14	25	100	18
LT50G	1/2"	#4-#14	25	100	20
LT75G	3/4"	#4-#14	25	100	26
LT100G	1"	#4-#14	5	50	45
LT125G	1 1/4"	#4-#14	5	25	69
LT150G	1 1/2"	#4-#14	2	20	85
LT200G	2"	#4-#14	1	10	120
LT250G	2 1/2"	#1/0-#8	1	5	340
LT300G	3"	#1/0-#8	1	5	430
LT350G	3 1/2"	#3/0-#6	1	5	510
LT400G	4"	#3/0-#6	1	5	600
LT500G†	5"	250MCM-#6	1	1	800
LT600G†	6"	250MCM-#6	1	1	1100

STRAIGHT CONNECTORS – INSULATED – MALLEABLE IRON – ALUMINUM LUG

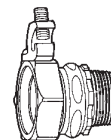


LTB38G	3/8"	#4-#14	25	100	18
LTB50G	1/2"	#4-#14	25	100	20
LTB75G	3/4"	#4-#14	25	100	26
LTB100G	1"	#4-#14	5	50	45
LTB125G	1 1/4"	#4-#14	5	25	69
LTB150G	1 1/2"	#4-#14	2	20	86
LTB200G	2"	#4-#14	1	10	120
LTB250G	2 1/2"	#1/0-#8	1	5	340
LTB300G	3"	#1/0-#8	1	5	430
LTB350G	3 1/2"	#3/0-#6	1	5	510
LTB400G	4"	#3/0-#6	1	5	600
LTB500G†	5"	250MCM-#6	1	1	720
LTB600G†	6"	250MCM-#6	1	1	750

† Not UL Listed

Note: For other connector and lug combinations, consult factory.

STRAIGHT CONNECTORS – NON-INSULATED – ALUMINUM – ALUMINUM LUG

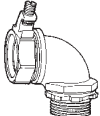


LT38G SA	3/8"	#4-#14	25	25	12
LT50G SA	1/2"	#4-#14	25	25	12
LT75G SA	3/4"	#4-#14	25	25	14
LT100G SA	1"	#4-#14	5	5	28
LT125G SA	1 1/4"	#4-#14	5	5	34
LT150G SA	1 1/2"	#4-#14	2	2	48
LT200G SA	2"	#4-#14	1	1	54
LT250G SA	2 1/2"	#1/0-#8	1	1	121
LT300G SA	3"	#1/0-#8	1	1	174
LT350G SA	3 1/2"	#3/0-#6	1	1	245
LT400G SA	4"	#3/0-#6	1	1	279

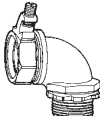
45° ANGLE CONNECTORS – INSULATED – MALLEABLE IRON – ALUMINUM LUG

Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LTB3845G	3/8"	#4-#14	25	100	29
LTB5045G	1/2"	#4-#14	25	100	41
LTB7545G	3/4"	#4-#14	10	50	41
LTB10045G	1"	#4-#14	10	50	70
LTB12545G	1 1/4"	#4-#14	5	25	93
LTB15045G	1 1/2"	#4-#14	2	10	137
LTB20045G	2"	#4-#14	1	5	195
LTB25045G	2 1/2"	#1/0-#8	1	1	600
LTB30045G	3"	#1/0-#8	1	1	925
LTB35045G	3 1/2"	#3/0-#6	1	1	1150
LTB40045G	4"	#3/0-#6	1	1	1450

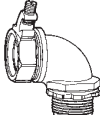
90° ANGLE CONNECTORS – NON-INSULATED – MALLEABLE IRON – ALUMINUM LUG

	LT3890G	3/8"	#4-#14	25	100	32
	LT5090G	1/2"	#4-#14	25	100	33
	LT7590G	3/4"	#4-#14	10	50	48
	LT10090G	1"	#4-#14	10	50	76
	LT12590G	1 1/4"	#4-#14	5	25	112
	LT15090G	1 1/2"	#4-#14	2	10	155
	LT20090G	2"	#4-#14	1	5	230
	LT25090G	2 1/2"	#1/0-#8	1	1	900
	LT30090G	3"	#1/0-#8	1	1	1383
	LT35090G	3 1/2"	#3/0-#6	1	1	1875
	LT40090G	4"	#3/0-#6	1	1	2325

90° ANGLE CONNECTORS – INSULATED – MALLEABLE IRON – ALUMINUM LUG

	LTB3890G	3/8"	#4-#14	25	100	30
	LTB5090G	1/2"	#4-#14	25	100	33
	LTB7590G	3/4"	#4-#14	10	50	48
	LTB10090G	1"	#4-#14	10	50	76
	LTB12590G	1 1/4"	#4-#14	5	25	112
	LTB15090G	1 1/2"	#4-#14	2	10	155
	LTB20090G	2"	#4-#14	1	5	230
	LTB25090G	2 1/2"	#1/0-#8	1	1	900
	LTB30090G	3"	#1/0-#8	1	1	1300
	LTB35090G	3 1/2"	#3/0-#6	1	1	1800
	LTB40090G	4"	#3/0-#6	1	1	2300

90° ANGLE CONNECTORS – NON-INSULATED – ALUMINUM ALUMINUM LUG

	LT3890G-SA	3/8"	#4-#14	25	25	19
	LT5090G-SA	1/2"	#4-#14	25	25	18
	LT7590G-SA	3/4"	#4-#14	10	25	24
	LT10090G-SA	1"	#4-#14	10	5	40
	LT12590G-SA	1 1/4"	#4-#14	5	5	48
	LT15090G-SA	1 1/2"	#4-#14	2	2	61
	LT20090G-SA	2"	#4-#14	1	1	86

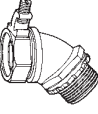
Note: For other connector and lug combinations, consult factory.

GROUNDING TYPE LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT FITTINGS

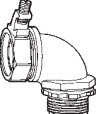
STRAIGHT CONNECTORS – INSULATED – COPPER LUG

Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. Per 100
LTB38GC	3/8"	#4-#14	25	100	20
LTB50GC	1/2"	#4-#14	25	100	22
LTB75GC	3/4"	#4-#14	25	100	28
LTB100GC	1"	#4-#14	5	50	47
LTB125GC	1 1/4"	#4-#14	5	25	71
LTB150GC	1 1/2"	#4-#14	2	20	88
LTB200GC	2"	#4-#14	1	10	122
LTB250GC	2 1/2"	#1/0-#8	1	5	351
LTB300GC	3"	#1/0-#8	1	5	441
LTB350GC	3 1/2"	#3/0-#6	1	5	532
LTB400GC	4"	#3/0-#6	1	5	622

45° ANGLE CONNECTORS – INSULATED – COPPER LUG

	LTB3845GC	3/8"	#4-#14	25	100	31
	LTB5045GC	1/2"	#4-#14	25	100	43
	LTB7545GC	3/4"	#4-#14	10	50	43
	LTB10045GC	1"	#4-#14	10	50	72
	LTB12545GC	1 1/4"	#4-#14	5	25	95
	LTB15045GC	1 1/2"	#4-#14	2	10	139
	LTB20045GC	2"	#4-#14	1	5	197
	LTB25045GC	2 1/2"	#1/0-#8	1	1	611
	LTB30045GC	3"	#1/0-#8	1	1	936
	LTB35045GC	3 1/2"	#3/0-#6	1	1	1172
	LTB40045GC	4"	#3/0-#6	1	1	1472

90° ANGLE CONNECTORS – INSULATED – COPPER LUG

	LTB3890GC	3/8"	#4-#14	25	100	32
	LTB5090GC	1/2"	#4-#14	25	100	35
	LTB7590GC	3/4"	#4-#14	10	50	50
	LTB10090GC	1"	#4-#14	10	50	78
	LTB12590GC	1 1/4"	#4-#14	5	25	114
	LTB15090GC	1 1/2"	#4-#14	2	10	157
	LTB20090GC	2"	#4-#14	1	5	232
	LTB25090GC	2 1/2"	#1/0-#8	1	1	911
	LTB30090GC	3"	#1/0-#8	1	1	1311
	LTB35090GC	3 1/2"	#3/0-#6	1	1	1822
	LTB40090GC	4"	#3/0-#6	1	1	2322

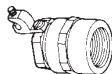
Note: For other connector and lug combinations, consult factory.

Liquidtight Conduit Fittings

- Combination Couplings for Coupling Liquidtight to Threaded Rigid/IMC – Grounding Type – Aluminum Lug
- Wire Mesh Grips for Liquidtight Metallic Conduit Fittings
- LiQuik™ Liquidtight Fittings

CP

COMBINATION COUPLINGS FOR COUPLING LIQUIDTIGHT TO THREADED RIGID/IMC – GROUNDING TYPE – ALUMINUM LUG

	Cat. #	Conduit Size	Lug Size	Unit Qty.	Std. Pkg.	Weight Lbs. per 100
	LTR38G*	3/8"	#4-#14	25	100	24
	LTR50G	1/2"	#4-#14	25	100	30
	LTR75G	3/4"	#4-#14	25	100	35
	LTR100G	1"	#4-#14	5	50	59
	LTR125G	1 1/4"	#4-#14	5	25	81
	LTR150G	1 1/2"	#4-#14	2	20	107
	LTR200G	2"	#4-#14	1	10	162

* For 3/8" Liquidtight to 1/2" Rigid/IMC

Note: For other connector and lug combinations, consult factory.

Copper lugs are available also. Consult factory for details.

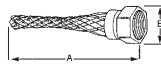
WIRE MESH GRIPS FOR LIQUIDTIGHT METALLIC CONDUIT FITTINGS



Application:

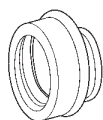
Wire mesh grips are used with Liquidator liquidtight conduit fittings to prevent conduit pullout due to stress, tension, strain, vibration, or movement. Typical applications include the wiring of machine tools, motors, transformers, food processing, equipment, robotics, or any application that requires a flexible liquidtight conduit connection.

WIRE MESH GRIP – DIMENSIONS

	Cat. #	Conduit Size	Dimensions A	Dimensions B	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
	WMG38	3/8"	6 7/16"	1 1/4"	10	50	10
	WMG50	1/2"	6 1/8"	1 7/16"	10	50	12
	WMG75	3/4"	6 5/16"	1 5/8"	10	50	17
	WMG100	1"	8 3/16"	1 15/16"	10	50	21
	WMG125	1 1/4"	10 3/4"	2 3/8"	2	10	37
	WMG150	1 1/2"	11 13/16"	2 3/4"	2	10	56
	WMG200	2"	14 7/16"	3 5/16"	1	5	79

REPLACEMENT LIQUIDTIGHT FERRULES

FOR STEEL CONNECTORS ONLY.



Cat. #	Conduit Size	Unit Quantity	Standard Package
FEA38	3/8"	100	100
FEA50	1/2"	100	100
FEA75	3/4"	100	100
FEA100	1"	100	100
FEA125	1 1/4"	50	50
FEA150	1 1/2"	50	50
FEA200	2"	10	10
FEA250	2 1/2"	10	10
FEA300	3"	10	10
FEA350	3 1/2"	10	10
FEA400	4"	10	10

LiQuik™ LIQUIDTIGHT FITTINGS

No disassembly required! The LiQuik liquidtight fittings are quick and easy to install in 2 steps, offering huge labor saving potential. Available in trade sizes 3/8"–2" straight insulated.

New LiQuik Assembly Installation

1. Slide conduit inside the fully assembled connector.
2. Turn the connector assembly or the conduit until the ferrule threads engage the spirals in the conduit. The pins in the ferrule are locked inside the holes in the connector body, preventing the ferrule from turning. Tighten the nut against the connector.



LiQuik™ LIQUIDTIGHT FITTINGS – STRAIGHT, NON-INSULATED



Cat. #	Conduit Size	Dimensions A	Dimensions B	Dimensions C	Dimensions D	Unit Qty	Weight Lbs. Per 100
LTQ38	3/8"	1/2"	1 1/8"	1/2"	1 1/8"	25	15
LTQ50	1/2"	1/2"	1 1/4"	1/2"	1 1/4"	25	18
LTQ75	3/4"	3/4"	1 1/4"	1/2"	1 9/16"	25	29
LTQ100	1"	1"	1 7/16"	5/8"	1 13/16"	5	40
LTQ125	1 1/4"	1 1/4"	1 1/2"	1 1/16"	2 1/4"	5	55
LTQ150	1 1/2"	1 1/2"	1 5/8"	3/4"	2 7/16"	2	71
LTQ200	2"	2"	1 3/4"	3/4"	3"	1	99

LiQuik™ LIQUIDTIGHT FITTINGS – STRAIGHT, INSULATED



Cat. #	Conduit Size	Dimensions A	Dimensions B	Dimensions C	Dimensions D	Unit Qty	Weight Lbs. Per 100
LTQB38	3/8"	3/8"	1 1/8"	9/16"	1 1/8"	25	16
LTQB50	1/2"	1/2"	1 1/4"	9/16"	1 1/4"	25	18
LTQB75	3/4"	3/4"	1 1/4"	9/16"	1 9/16"	25	29
LTQB100	1"	1"	1 7/16"	1 1/16"	1 13/16"	5	40
LTQB125	1 1/4"	1 1/4"	1 1/2"	3/4"	2 1/4"	5	56
LTQB150	1 1/2"	1 1/2"	1 5/8"	13/16"	2 7/16"	2	71
LTQB200	2"	2"	1 3/4"	13/16"	3"	1	100

REPLACEMENT LiQuik FERRULES

Cat. #	Conduit Size	Weight Lbs. Per 100
LTQF38	3/8"	100
LTQF50	1/2"	100
LTQF75	3/4"	100
LTQF100	1"	100
LTQF125	1 1/4"	50
LTQF150	1 1/2"	50
LTQF200	2"	10

CP Liquidtight Conduit Fittings LTK Low Profile Series

Applications

Flexible metallic (liquidtight) conduit used with Cooper Crouse-Hinds® Liquidtight fittings is designed to protect conductors from mechanical damage due to vibration and movement while sealing out cutting oils, coolants, water, dust, ect. Typical applications include the wiring of machine tools, motors, transformers, food processing equipment, robotics, air conditioning units, illuminated signs, etc.

The low profile liquidtight fittings are designed specifically for OEM applications that require close side-by-side mounting of multiple liquidtight fittings in tight spaces.

Standard Materials

- Body – steel(straight fittings), malleable iron (angle fittings)
- Gland nut – steel
- Ferrule – steel
- Gland nut sealing ring – nylon
- Sealing gasket – polypropylene

Standard Finishes

- Steel – zinc electroplate
- Malleable iron – zinc electroplate
- Nylon – natural
- Polypropylene – natural

Certifications and Comiances

- NEC: Class I, Division 2 (Zone 2)
Class II, Division 1 and 2
Class III, Division 1 and 2
- UL Standards: 514B, 467
- CSA Standard: C22.2 No. 18

Ordering Information: Straight Connectors

Conduit Size	Non-insulated Cat.No.	Insulated Cat.No.
3/8"	LTK38	LTBK38
1/2"	LTK50	LTBK50
3/4"	LTK75	LTBK75
1"	LTK100	LTBK100
1 1/4"	LTK125	LTBK125
1 1/2"	LTK150	LTBK150
2"	LTK200	LTBK200

45° Connectors

Conduit Size	Non-insulated Cat.No.	Insulated Cat.No.
3/8"	LTK3845	LTBK3845
1/2"	LTK5045	LTBK5045
3/4"	LTK7545	LTBK7545
1"	LTK10045	LTBK10045
1 1/4"	LTK12545	LTBK12545
1 1/2"	LTK15045	LTBK15045
2"	LTK20045	LTBK20045

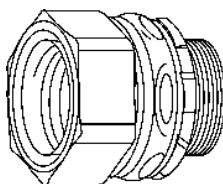
90° Connectors

Conduit Size	Non-insulated Cat.No.	Insulated Cat.No.
3/8"	LTK3890	LTBK3890
1/2"	LTK5090	LTBK5090
3/4"	LTK7590	LTBK7590
1"	LTK10090	LTBK10090
1 1/4"	LTK12590	LTBK12590
1 1/2"	LTK15090	LTBK15090
2"	LTK20090	LTBK20090

Replacement Ferrules

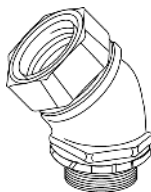
Conduit Size	Cat. No.
3/8"	LTKF38
1/2"	LTKF50
3/4"	LTKF75
1"	LTKF100
1 1/4"	LTKF125
1 1/2"	LTKF150
2"	LTKF200

Dimensions Straight Connectors



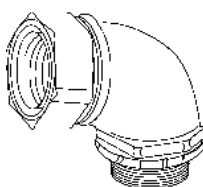
Over Round	Corner Hex	N.P.T. Thread Length
A (in.)	A (in.)	B (in.) C (in.)
1 3/32	1 1/32	1 3/16 1 9/32
1 3/16	1 1/8	1 11/32 1 9/32
1 7/16	1 3/8	1 7/16 1 9/32
1 3/4	1 11/16	1 5/8 2 1/32
2 5/32	2 1/16	1 27/32 4 3/64
2 3/8	2 9/32	2 2 23/32
2 7/8	2 25/32	2 1/8 2 3/32

45° Connectors



Over Round	Corner Hex	Over	N.P.T. Thread Length
A (in.)	A (in.)	B (in.)	C (in.) D (in.)
1 3/32	1 1/32	1 7/32	1 1/32 1 9/32
1 3/16	1 1/8	1 5/16	1 1/32 1 9/32
1 7/16	1 3/8	1 3/8	1 1/8 1 13/32
1 3/4	1 11/16	1 21/32	1 1/4 2 1/32
2 5/32	2 1/16	1 23/32	1 11/32 1 1/16
2 3/8	2 9/32	2	1 15/32 2 3/32
2 7/8	2 25/32	2 9/32	1 5/8 2 3/32

90° Connectors



Over Round	Corner Hex	Over	N.P.T. Thread Length
A (in.)	A (in.)	B (in.)	C (in.) D (in.)
1 3/32	1 1/32	1 19/32	1 1/4 9/16
1 3/16	1 1/8	1 21/32	1 1/4 9/16
1 7/16	1 3/8	1 25/32	1 17/32 9/16
1 3/4	1 11/16	2 3/16	1 27/32 2 1/32
2 5/32	2 1/16	3 3/8	1 15/16 1 1/16
2 3/8	2 9/32	2 5/8	2 3/32 2 3/32
2 7/8	2 25/32	3 1/16	2 13/32 2 3/32

Cord And Cable Connectors

CG Series Color-Coded Cord Grips

CP

CP
Cord and Cable

Applications

CG Series color-coded grips with neoprene bushings are for use with portable cords, including S, SO, STO, ST, SJ, SJT, SJTO, and SVO.

CG cord grips are installed to:

- provide a means for passing a cord into an enclosure
- form a watertight seal for cord
- provide pullout protection for cord, ensuring a secure connection

Features

- Neoprene bushings are color coded by cable diameter for quick and easy identification of proper cord grip.
- Rugged construction protects cord from damage.
- Compact design permits close spacing of fittings on panel applications.
- Tightening one nut creates watertight seal.
- Available in straight, 45° and 90° entrance configurations.

Standard Materials/Finishes

- Straight Body – electrogalvanized steel
- Angled Body – electrogalvanized malleable iron
- Nut – electrogalvanized steel
- Bushing – neoprene/natural

Certifications & Compliances

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- Suitable for NEMA 4 enclosures and other wet locations
- Suitable for use in hazardous locations when installed in accordance with NEC 501.4(B), 502.4(A) and 503.3(A). For Class I, Div.2, Class II, Div. 1 and 2 and Class III, Div. 1 and 2.

STRAIGHT BODY



Cat. #	Trade Size	Color Code	Cable Range		Unit Quantity	Std. Pkg.	Wt. Lbs. Per 100
			Min.	Max.			
CG50-250	1/2"	Red	0.15	0.25	25	100	10
CG50-350	1/2"	White	0.25	0.35	25	100	10
CG50-450	1/2"	Blue	0.35	0.45	25	100	10
CG50-560	1/2"	Green	0.45	0.56	25	100	10
CG50-650	1/2"	Brown	0.55	0.65	25	100	10
CG75-250	3/4"	Red	0.15	0.25	10	50	14
CG75-350	3/4"	White	0.25	0.35	10	50	14
CG75-450	3/4"	Blue	0.35	0.45	10	50	14
CG75-560	3/4"	Green	0.45	0.56	10	50	14
CG75-650	3/4"	Brown	0.55	0.65	10	50	14
CG75-750	3/4"	Yellow	0.65	0.75	10	50	14
CG75-850	3/4"	Purple	0.75	0.85	10	50	14
CG100-560	1"	Green	0.45	0.56	5	25	20
CG100-650	1"	Brown	0.55	0.65	5	25	20
CG100-750	1"	Yellow	0.65	0.75	5	25	20
CG100-850	1"	Purple	0.75	0.85	5	25	20
CG100-950	1"	Gray	0.85	0.95	5	25	20
CG100-1050	1"	Black	0.95	1.05	5	25	20
CG125-850	1-1/4"	Purple	0.75	0.85	5	25	40
CG125-950	1-1/4"	Gray	0.85	0.95	5	25	40
CG125-1050	1-1/4"	Black	0.95	1.05	5	25	40
CG125-1150	1-1/4"	Orange	1.05	1.15	5	25	40
CG125-1250	1-1/4"	Red	1.15	1.25	5	25	40
CG125-1375	1-1/4"	White	1.25	1.375	5	25	40
CG150-1050	1-1/2"	Black	0.95	1.05	2	10	70
CG150-1150	1-1/2"	Orange	1.05	1.15	2	10	70
CG150-1250	1-1/2"	Red	1.15	1.25	2	10	70
CG150-1375	1-1/2"	White	1.25	1.375	2	10	70

CP Cord And Cable Connectors CG Series Color-Coded Cord Grips

CP Cord and Cable

45° BODY



Cat. #	Trade Size	Color Code	Cable Range		Unit Quantity	Std. Pkg.	Wt. Lbs. Per 100
			Min.	Max.			
CG5045-250	1/2"	Red	0.15	0.25	10	50	24
CG5045-350	1/2"	White	0.25	0.35	10	50	24
CG5045-450	1/2"	Blue	0.35	0.45	10	50	24
CG5045-560	1/2"	Green	0.45	0.56	10	50	24
CG5045-650	1/2"	Brown	0.55	0.65	10	50	24
CG7545-250	3/4"	Red	0.15	0.25	10	50	36
CG7545-350	3/4"	White	0.25	0.35	10	50	36
CG7545-450	3/4"	Blue	0.35	0.45	10	50	36
CG7545-560	3/4"	Green	0.45	0.56	10	50	36
CG7545-650	3/4"	Brown	0.55	0.65	10	50	36
CG7545-750	3/4"	Yellow	0.65	0.75	10	50	36
CG7545-850	3/4"	Purple	0.75	0.85	10	50	36
CG10045-560	1"	Green	0.45	0.56	5	25	68
CG10045-650	1"	Brown	0.55	0.65	5	25	68
CG10045-750	1"	Yellow	0.65	0.75	5	25	68
CG10045-850	1"	Purple	0.75	0.85	5	25	68
CG10045-950	1"	Gray	0.85	0.95	5	25	68
CG10045-1050	1"	Black	0.95	1.05	5	25	68

90° BODY



Cat. #	Trade Size	Color Code	Cable Range		Unit Quantity	Std. Pkg.	Wt. Lbs. Per 100
			Min.	Max.			
CG5090-250	1/2"	Red	0.15	0.25	10	50	26
CG5090-350	1/2"	White	0.25	0.35	10	50	26
CG5090-450	1/2"	Blue	0.35	0.45	10	50	26
CG5090-560	1/2"	Green	0.45	0.56	10	50	26
CG5090-650	1/2"	Brown	0.55	0.65	10	50	26
CG7590-250	3/4"	Red	0.15	0.25	10	50	48
CG7590-350	3/4"	White	0.25	0.35	10	50	48
CG7590-450	3/4"	Blue	0.35	0.45	10	50	48
CG7590-560	3/4"	Green	0.45	0.56	10	50	48
CG7590-650	3/4"	Brown	0.55	0.65	10	50	48
CG7590-750	3/4"	Yellow	0.65	0.75	10	50	48
CG7590-850	3/4"	Purple	0.75	0.85	10	50	48
CG10090-560	1"	Green	0.45	0.56	5	25	68
CG10090-650	1"	Brown	0.55	0.65	5	25	68
CG10090-750	1"	Yellow	0.65	0.75	5	25	68
CG10090-850	1"	Purple	0.75	0.85	5	25	68
CG10090-950	1"	Gray	0.85	0.95	5	25	68
CG10090-1050	1"	Black	0.95	1.05	5	25	68

Cord And Cable Connectors

NCG Series Nonmetallic Cord Grips

CP

CP
Cord and Cable

Applications

For use with portable cord, NCG Series watertight cord grips terminate and protect conductors from mechanical damage due to vibration and movement. A neoprene bushing seals out oils, coolants, water, dust and other abusive agents. NCG cord grips may be used with types S, SO, STO, SJ, SJT, SJTO and SVO portable cords.

Typical applications include the termination of wiring for:

- machine tools
- motors
- transformers
- food processing equipment
- robotics
- air conditioning units
- illuminated signs
- terminal boxes
- control cabinets

Standard Materials

- cable gland body and nut - polyamide 6
- bushing - neoprene
- locknut - polyamide 6

Features

- Available in 3/8" to 1" trade sizes.
- Neoprene bushings cover a large cable range, reducing the number of different fittings required.
- Polyamide nonmetallic construction stands up to most corrosive environments.
- Polyamide locknut available, order separately.
- UL listed and cUL third party certified.
- Rain-tight and watertight construction for outdoor use.
- Tightening one nut creates watertight seal.

Certifications & Compliances

- UL Standard 514B
- cUL to CSA Standard C22.2 No.18
- IP 68
- NEMA 4X Watertight
- Zone 2, Division 2 use per Code



Ordering Information

TRADE SIZE	CABLE RANGE INCHES (MM)	CATALOG NUMBER	CARTON QTY.
3/8"	0.1-0.35 (2.5-8)	NCG38-35	25
1/2"	0.20-0.50 (5-12)	NCG50-50	25
3/4"	0.35-0.75 (9-18)	NCG75-75	25
1"	0.55-1.00 (14-25)	NCG100-100	20



Locknuts – must be ordered separately

TRADE SIZE	CATALOG NUMBER	CARTON QTY.
3/8"	10N	25
1/2"	11N	25
3/4"	12N	25
1"	13N	20

CP Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Non-Metallic Sheathed Cable and Portable Cord Connectors
- Non-Metallic Sheathed Cable Connectors
- Armored Cable and Flexible Metallic Conduit Connectors
- Armored Cable and Flexible Metallic Conduit Connectors
- Armored, Metal Clad, and Non-Metallic Cable, and Flexible Metallic Conduit
- Flexible Metallic Conduit Connectors

ARMORED, METAL CLAD AND FLEXIBLE METALLIC CONDUIT CONNECTORS – STEEL

ACB Series Connectors:

Application:

ACB Series Connectors are used to connect armored cable, metal clad cable or flexible metallic conduit to a box or enclosure.

Features and Benefits:

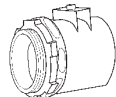
- Dual gripping saddle design on the connector safely secures cable or conduit in place and prevents loosening from vibration.
- Insulated throat provides a smooth pulling surface that won't strip cable.
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration.
- Tri-head set screw may be installed using a slotted, Phillips or Robertson head Screwdriver.
- Steel connector is zinc electroplated for corrosion resistance.

Certifications and Compliances

- UL Listed
- cUL Listed

Materials and Finishes:

- Body: Steel – Zinc electroplated
- Saddle: Steel – Zinc electroplated
- Screw: Steel – Zinc electroplated
- Insulated throat: Thermoplastic – Natural



Cat. #	Trade Size	Cable Opening Max.	Min.	Unit Qty	Std Pkg
ACB38	3/8"	0.656	0.437	50	200
ACB50	1/2"	0.937	0.750	25	100
ACB75	3/4"	1.125	0.906	10	50
ACB100	1"	1.468	1.250	5	25
ACB125	1 1/4"	1.500	1.312	5	10
ACB150	1 1/2"	1.750	1.562	5	10
ACB200	2"	2.031	1.812	1	5
ACB250	2 1/2"	3.062	2.812	1	5
ACB300	3"	3.562	3.312	1	5
ACB350	3 1/2"	4.060	3.620	1	1
ACB400	4"	4.560	4.120	1	1

ARMORED, METAL CLAD AND FLEXIBLE METALLIC CONDUIT COUPLINGS – STEEL

ACC Series Combination Couplings:

Application:

ACC combination couplings are used to join EMT conduit to armored cable, metal clad cable or flexible metallic conduit.

Features and Benefits:

- Dual gripping saddle design on the coupling safely secures cable or conduit in place and prevents loosening from vibration
- Steel compression ring & nut provide a strong, secure termination point for EMT conduit.
- Tri-Head set screw may be installed using a slotted, Phillips or Robertson head screwdriver.
- Steel combination coupling is zinc electroplated for corrosion resistance.



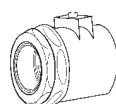
Materials and Finishes:

- Body: Steel – Zinc electroplated
- Saddle: Steel – Zinc electroplated
- Screw: Steel – Zinc electroplated

Certifications and Compliances

- UL Listed
- cUL Listed

Compression Coupling:



Cat. #	Trade Size	Cable Opening Max.	Min.	Unit Qty	Std Pkg
ACC38	3/8"	0.656	0.437	50	200
ACC50	1/2"	0.937	0.750	25	100
ACC75	3/4"	1.125	0.906	10	50

Set-Screw Coupling:



Cat. #	Trade Size	Unit Qty.	Weight Lbs. Per 100
ACCSS38*	3/8"	50	9
ACCSS50	1/2"	25	12
ACCSS75	3/4"	10	14

* not UL Listed

ARMORED, METAL CLAD AND FLEXIBLE METALLIC CONDUIT – STEEL

Space Saver ACB Series Connector

UL File No. E-22132

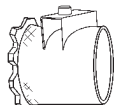


Features:

- Designed with the male threads on the locknut, the Space-Saver takes up virtually no room inside the box, and the smooth pulling surface eliminates the need for a bushing or insulated throat
- Angled teeth on locknut bite into enclosure, preventing loosening from vibration
- Knurled wrenching surface for easy tightening
- Tri-head set screw may be installed using a slotted, Philips or Robertson head screwdriver
- Zinc electroplated for corrosion resistance
- Concrete tight when taped

Certifications and Compliances:

- UL Listed
- cUL Listed



Cat #	Trade Size	KO Size	Cable Opening max.	min.	Dim A	Dim B	Unit Qty	Wt Lbs./100
SSACB38	3/8"	1/2"	0.640	0.280	1 3/8"	3/4"	50	9
SSACB50	1/2"	1/2"	0.930	0.635	1 3/8"	1 1/16"	25	12
SSACB75	3/4"	3/4"	1.125	0.810	1 1/2"	1 1/4"	10	14

Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Non-Metallic Sheathed Cable and Portable Cord Connectors
- Non-Metallic Sheathed Cable Connectors
- Armored Cable and Flexible Metallic Conduit Connectors
- Armored, Metal Clad, and Non-Metallic Cable, and Flexible Metallic Conduit
- Flexible Metallic Conduit Connectors

CP

NON-METALLIC SHEATHED CABLE AND PORTABLE CORD CONNECTORS – STEEL

Clamp Type

UL File No. E-22132



Cat. #	K.O. Size	Clamp Opening Min.	Clamp Opening Max.	Width	Unit Qty	Std Pkg	Wt Lbs./100
631	3/4"	3/64"	13/16"	13/16"	20	200	14
			For 2 conductor No.'s 8, 6 3 conductor No.'s 8, 6				
632	1"	3/8"	1 1/64"	1 1/64"	10	100	21
			For 2 conductor No.'s 8, 6 3 conductor No.'s 8, 6				

NON-METALLIC SHEATHED CABLE CONNECTORS – DIE CAST ZINC

UL File No. E-10438



Cat. #	Trade Size	K.O. Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
759DC	3/8"	1/2"	100	1000	4
			For 2 conductor No.'s 14, 12, 10 3 conductor No.'s 14, 12		
2631	3/4"	3/4"	50	500	9
			For 3 conductor No.'s 8, 6		
2632	1"	1"	25	250	12
			For 3 conductor No.'s 6, 4		
2633	1 1/4"	1 1/4"	10	100	22
			For 3 conductor No.'s 3, 2		
2670	1 1/2"	1 1/2"	5	50	25
			For 3 conductor No. 2/0		
2671	2"	2"	10	40	40
			For 3 conductor No. 4/0		

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Set Screw Type

UL File No. E-19188



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
702-V	3/8"	5/8"	7/16"	100	500	7
			For 2 conductor No.'s 14, 12 3 conductor No.'s 14, 12 4 conductor No. 14, 5/16" flex			

QUICK-LOK® CONNECTORS FOR ARMORED AND METAL CLAD CABLE AND FMC – STEEL

UL File No. E-19188

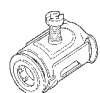
Features:

- No Locknut required
- Single-unit or duplex construction with captive clamp
- Connects 50 MC, AC, and Flex RW cable sizes with just three fittings
- Easy to install: tilt, insert and snap down
- Single unit construction eliminates loose component parts, integral green plastic insulated throat bushing provides maximum protection for wire installation
- Concrete tight when taped

Standard Materials & Finishes:

Material: Tubular Steel

Finish: Zinc plated



Cat. #	Trade Size	Unit Qty.	Std. Pkg.	Wt. Lbs./100
QLK50S	1/2" single	50	500	9
		For 14/4 to 10/3 For 3/8" FMC		
QLK75	3/4"	25	250	11.5
		For 10/3 to 6/3 For 3/8" and 1/2" FMC		
QLK50D	1/2" duplex	25	250	11
		For 14/4 to 10/3		

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Duplex Type

UL File No. E-19188



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
Straight 699*	3/8"	5/8"	9/16"	25	100	20
90 Degree 700*	3/8"	5/8"	9/16"	25	100	14

ARMORED, METAL CLAD, AND NON-METALLIC CABLE, AND FLEXIBLE METALLIC CONDUIT – DIE CAST ZINC

Duplex Type

UL File No. E-19188



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
2699*	3/8"	5/8"	9/16"	25	250	13

* UL Listed as grounding means.

FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Standard Materials & Finishes:

Material: Malleable Iron

Steel Locknut

Finishes: Zinc plated

Squeeze Type

UL File No. E-19189



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
707	3/8"	5/8"	3/8"	100	500	7
708	1/2"	1 5/16"	5/8"	50	200	14
709	3/4"	1 1/8"	3/4"	20	100	22
710	1"	1 3/8"	1"	20	100	31
711	1 1/4"	1 21/32"	1 5/16"	10	50	46
712	1 1/2"	1 7/8"	1 1/2"	5	25	79
713	2"	2 1/2"	2"	2	10	101
714	2 1/2"	2 7/8"	2 3/8"	2	10	161
715	3"	3 9/16"	3"	1	5	220
721	3 1/2"	4"	2 13/32"	1	1	470
722	4"	4 19/32"	3 13/32"	1	1	610

Straight – Insulated

UL File No. E-19189



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
1708	3/8"	5/8"	3/8"	100	500	8
1707	1/2"	1 5/16"	5/8"	50	200	14
1709	3/4"	1 1/8"	3/4"	20	100	17
1710	1"	1 3/8"	1"	20	100	26
1711	1 1/4"	1 21/32"	1 5/16"	10	50	42
1712	1 1/2"	1 7/8"	1 1/2"	5	25	77
1713	2"	2 1/2"	2"	2	10	100
1714	2 1/2"	2 7/8"	2 3/8"	2	10	160
1715	3"	3 9/16"	3"	1	5	221
1721	3 1/2"	4"	3 13/32"	1	1	470
1722	4"	4 19/32"	3 13/32"	1	1	610

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

CP Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Armored Cable and Flexible Metallic Conduit Connectors
- Flexible Metallic Conduit Fittings

CP Cable Fittings

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – DIE CAST ZINC

Squeeze Type* - Straight - Insulated
UL File No. E-19188



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
1707DC	3/8"	50	500	6
1708DC	1/2"	30	300	8
1709DC	3/4"	18	180	11
1710DC	1"	12	120	16
1711DC	1 1/4"	8	80	21
1712DC	1 1/2"	6	60	28
1713DC	2"	4	40	36
1714DC	2 1/2"	3	18	85
1715DC	3"	2	12	109
1721DC	3 1/2"	1	6	144
1722DC	4"	1	6	183

Squeeze Type* - Straight - Non-Insulated

Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
707DC	3/8"	50	500	6
708DC	1/2"	30	300	8
709DC	3/4"	18	180	11
710DC	1"	12	120	16
711DC	1 1/4"	8	80	21
712DC	1 1/2"	6	60	28
713DC	2"	4	40	36
714DC	2 1/2"	3	18	85
715DC	3"	2	12	109
721DC	3 1/2"	1	6	144
722DC	4"	1	6	183

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Features:

Male hub treads - NPSM

Standard Materials and Finishes

Malleable Iron

- Finish: Zinc Plated

Steel locknut

Stamped steel covers

Clamp Type* 45° Angle – Non-Insulated

UL File No. E-19188
or E-19189



723



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
723	3/8"	2 1/32"	1 7/32"	50	200	14
		For 2 conductor No.'s 14, 12, 10 3 conductor No.'s 14, 12, 10 4 conductor No.'s 14, 12				
735	1/2"	1 5/16"	9/16"	25	100	18
		Flexible metallic conduit 5/16" and 3/8"				
737	3/4"	1 1/8"	2 5/32"	25	100	24
		For 2 conductor No. 8 Flexible metallic conduit 1/2"				
		For 2 conductor No.'s 6, 4 3 conductor No.'s 6, 4 Flexible metallic conduit 3/4"				

45° Angle – Insulated

UL File No. E-19188
or E-19189



1735



Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./ 100
1723	3/8"	2 1/32"	1 7/32"	50	200	14
1735	1/2"	1 5/16"	9/16"	25	100	17
1737	3/4"	1 1/8"	2 5/32"	25	100	24

Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Armored Cable and Flexible Metallic Conduit Connectors
- Flexible Metallic Conduit Fittings

CP

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – DIE CAST ZINC

Squeeze Type* 90° Angle – Non-Insulated

UL File No. 19189



	Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
	724DC	3/8"	25	250	8
	736DC	1/2"	15	150	11
	738DC	3/4"	12	120	15
	739DC†	1"	5	50	25
	740DC†	1 1/4"	4	40	41
	741DC†	1 1/2"	2	12	117
	742DC†	2"	2	12	119
	744DC	2 1/2"	1	10	286
	745DC	3"	1	4	405
	746DC	3 1/2"	1	4	560
	747DC	4"	1	3	642

Squeeze Type* 90° Angle – Insulated

UL File No. 19189

	Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
	1724DC	3/8"	25	250	8
	1736DC	1/2"	15	150	11
	1738DC	3/4"	12	120	15
	1739DC†	1"	5	50	25
	1740DC†	1 1/4"	4	40	41
	1741DC†	1 1/2"	2	12	117
	1742DC†	2"	2	12	119
	1744DC	2 1/2"	1	10	286
	1745DC	3"	1	4	405
	1746DC	3 1/2"	1	4	560
	1747DC	4"	1	3	642

† For flexible metallic conduit only

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

ARMORED CABLE AND FLEXIBLE METALLIC CONDUIT CONNECTORS – MALLEABLE IRON

Clamp Type* 90° Angle – Non-Insulated

UL File No. E-19188

or E-19189

	Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
	724	3/8"	21/32"	17/32"	50	200	15
			For 2 conductor No.'s 14, 12, 10				
			3 conductor No.'s 14, 12, 10				
			4 conductor No.'s 14, 12				
			Flexible metallic conduit 5/16" and 3/8"				
	740	1/2"	15/16"	9/16"	25	100	19
	738	3/4"	1 1/8"	13/16"	20	100	31
	739	1"	1 13/32"	1"	5	25	50
	740	1 1/4"	1 21/32"	1 1/4"	2	10	113
	741	1 1/2"	1 7/8"	1 1/2"	1	10	188
	742	2"	2 1/2"	1 5/16"	1	5	236
	744	2 1/2"	3"	2-192"	1	1	400
	745	3"	3 1/2"	3"	1	1	600
	746	3 1/2"	4"	3 13/32"	1	1	1150
	747	4"	4 19/32"	3 31/32"	1	1	1460

90° Angle – Insulated

UL File No. E-19188

or E-19189

	Cat. #	Trade Size	Diam. of Opening for Cable	Diam. of Bushed Hole	Unit Qty	Std Pkg	Wt Lbs./100
	1736	1/2"	15/16"	9/16"	25	100	19
	1738	3/4"	1 1/8"	13/16"	20	100	31
	1739	1"	1 13/32"	1"	5	25	50
	1740	1 1/4"	1 21/32"	1 1/4"	2	10	113
	1741	1 1/2"	1 7/8"	1 1/2"	1	10	188
	1742	2"	2 1/2"	1 5/16"	1	5	236
	1744	2 1/2"	3"	2 1/2"	1	1	400
	1745	3"	3 1/2"	3"	1	1	600
	1746	3 1/2"	4"	3 13/32"	1	1	1150
	1747	4"	4 19/32"	3 31/32"	1	1	1460

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

CP Cable Fittings

CP Non-Metallic, Armored Cable, and Flexible Metallic Conduit Fittings

- Flexible Metallic Conduit Fittings
- Combination Couplings
- "Back to Back" Box Connector

CP Cable Fittings

FLEXIBLE METALLIC CONDUIT FITTINGS – DIE CAST ZINC

Straight Connectors – Non-Insulated

Screw-in Type

UL File No. E-19189



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
770DC	3/8"	80	800	5
771DC	1/2"	60	600	5
772DC	3/4"	35	350	9
773DC	1"	15	150	13
774DC	1 1/4"	10	100	24
775DC	1 1/2"	6	60	35
776DC	2"	3	30	52

Couplings

Screw-in Type

UL File No. 19189

Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
791DC	1/2"	40	400	4
792DC	3/4"	25	250	8
793DC	1"	15	150	12
794DC	1 1/4"	10	100	21
795DC	1 1/2"	6	60	31
796DC	2"	3	30	44

COMBINATION COUPLINGS – DIE CAST ZINC

EMT (Set Screw) to Flexible Steel (Clamp)*

UL File No. E-19189



Cat. #	Trade Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
780DC	1/2" to 3/8"	50	500	8

* UL Listed flexible metallic conduit fittings are suitable as grounding means under NEC 350-5 and suitable for hazardous location use per Class I, Division 2, NEC 501-4(b).

"BACK TO BACK" BOX CONNECTOR – DIE CAST ZINC



Cat. #	Size	Unit Qty	Std Pkg	Weight Lbs. Per 100
5050	1/2"	25	250	8

ANTI-SHORT BUSHINGS



Cat. #	FMC Trade Size	Armoured Cable Size	Unit Qty	Std Pkg
ASB 0	5/16"	14-2, 14-3, 12-2	100	22,500
ASB 1	3/8"	14-4, 12-3, 6-1, 4-1	100	18,000
ASB 2	7/16"	12-4, 10-2, 10-3, 2-1	50	10,000
ASB 3	1/2"	10-4, 8-2, 8-3, 1-1	50	5,250
ASB 4	3/4"	8-4, 6-4, 6-3, 6-2, 4-3, 4-2	50	3,000
ASB 5	1"	3-1, 2-1, 2-1/0, 1-300 MCM, 1-350 MCM, 1-400 MCM, 1-450 MCM, 1-500 MCM	25	3,125
ASB 6	1 1/4"	4-1, 4-1/0, 4-2/0, 3-1/0, 3-2/0, 3-3/0, 2-2/0, 2-3/0, 2-4/0, 1-600 MCM, 1-650 MCM, 1-700 MCM, 1-750 MCM, 1-800 MCM, 1-900 MCM	10	1,500
ASB 7	1 1/2"	4-3/0, 4-4/0, 3-4/0, 3-250 MCM, 3-300 MCM, 2-250 MCM, 2-300 MCM, 2-350 MCM, 1-1000 MCM	10	1,000
ASB 8	2" to 2 1/2"	4-250 MCM, 4-300 MCM, 4-350 MCM, 4-400 MCM, 4-450 MCM, 4-500 MCM, 3-350 MCM, 3-400 MCM, 3-450 MCM, 3-500 MCM, 2-400 MCM, 2-450 MCM, 2-500 MCM	10	1,000

Bushings are packed in clear poly bags.

Anti-short bushings have a temperature rating of 90°C

Service Entrance and Grounding Fittings

- Service Entrance Elbows – Aluminum
- Entrance Caps
- Service Entrance Cable Connectors
- Perforated Strap
- Ground Straps
- Ground Clamp

CP

CP Grounding Fittings

SERVICE ENTRANCE FITTINGS

SERVICE ENTRANCE ELBOWS – ALUMINUM

Gasketed

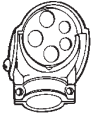
UL File No. E-19189

	Cat. #	Size	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
	SLB1	1/2"	10	50	25
	SLB2	3/4"	10	50	30
	SLB3	1"	5	25	51
	SLB4	1 1/4"	2	10	83
	SLB5	1 1/2"	1	5	117
	SLB6	2"	1	5	192

SERVICE ENTRANCE CAPS FOR EMT AND RIGID CONDUIT – ALUMINUM

Clamp Type

UL File No. E-22133

	Cat. #	Size	Holes in Insulator	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
	EH1**	1/2"	4-19/64"	10	50	52
	EH2**	3/4"	2-3/8 3-13/32"	10	50	60
	EH3	1"	2-7/16 3-1/2"	5	25	48
	EH4	1 1/4"	2-7/16 3-5/8"	5	25	50
	EH5	1 1/2"	2-19/32 1-7/16 3-3/4"	3	15	110
	EH6	2"	2-3/4 3-1" 1-17/32"	5	5	140
	EH7	2 1/2"	3-7/8 1-1" 3-1-5/16"	1	1	400
	EH8	3"	4-1-1/8 3-1-3/4"	1	1	650
	EH9	3 1/2"	4-1-1/8 3-1-3/4"	1	1	650
	EH10	4"	4-1-1/8 3-1-3/4"	1	1	600

** Zinc

SERVICE ENTRANCE CABLE CONNECTORS – MALLEABLE IRON

Non-watertight for Oval Cable

UL File No. E-22134

	Cat. #	K.O. Size	Clamp Opening Min.	Clamp Opening Width Max.	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
	631	3/4"	33/64"	13/16"	20	200	14
							For 2 conductor No.'s 8, 6 3 conductor No.'s 8, 6
	632	1"	3/8"	1 1/64"	10	100	21
							For 2 conductor No.'s 8, 6 3 conductor No.'s 8, 6

SERVICE ENTRANCE CABLE CONNECTORS – DIE CAST ZINC

Non-watertight for Oval Cable

UL File No. E-10438

	Cat. #	K.O. Size	Clamp Opening Min.	Clamp Opening Width Max.	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
	2631	3/4"	.300"	.075" .075"	50	500	9
	2632	1"	.350"	.920" .920"	25	250	12
	2633	1 1/4"	.335"	.960" .960"	10	100	22
	2670	1 1/2"	.350"	1.00" 1.00"	5	50	25
	2671	2"	.700"	1.30" 1.30"	10	40	40

PERFORATED STRAP – STEEL

10 Foot Coils



Cat. #	Description	Standard Package	Weight Lbs. Per 100
3000	3/4 x .035 Galvanized 1/4" holes – 1/2" to 1" Centers	100	10

GROUND CLAMP – DIE CAST ZINC

For Bare or Insulated Wire or Armored Grounding Cable



	Cat. #	Grounding Conductor Electrode Clamping Range	Lug Conductor Range	Unit Qty.	Std. Pkg.	Wgt. Lbs. Per 100
	141DC	1/2", 3/4", 1"	#8-#2	25	250	16

Application:

Junction boxes, designed for hazardous and non-hazardous locations, are used in a variety of industries to perform the following functions:

- as a pull box
- to provide enclosures for splices and taps
- as a mounting box for multi-device control stations
- for housing apparatus, instruments, and other devices

Considerations for Selection:

- Environmental location – the physical location of the junction box will call for proper construction of the box to meet National Electrical Code requirements and

will affect the material and finish needed to meet weather and corrosive conditions, if present.

- Number and size of conductors – combined with the function to be performed (i.e., splicing, pull box), determines the amount of space needed, and therefore, the required physical dimensions of the box.
- Conduit layout – determines the number, size, and location of the conduit openings in the box. It will also determine the type of mounting required (i.e., flush or surface positioning of the box).
- Flexibility required – if changes in the electrical system are anticipated, the box chosen should be easily adaptable, either by construction (i.e., detachable hub plates) or size to the future system.

Options and Accessories:

A wide variety of options and accessories for special application are available for the various junction box families. These can be selected once the type of junction box has been determined. These options are shown on the individual pages. Some of the options available include:

- Special covers
- Hinged covers
- Materials and finishes
- Equipment mounting plates
- Openings for control station and other device mounting
- *Corro-free*™ epoxy powder coat – information available on request

Quick Selector Chart

Junction Boxes	Environmental Capability/Type Designation	Size Range † L, W, D Inside	Max. Conduit Opening Size	Mtg.	Type of Conduit Opening	Cover Type	Page No.
WAB	Raintight/Type 3, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Unflanged	111
WCB	Raintight/Type 3, Watertight/Type 4, Dust-tight/Type 12	4 x 4 x 2 to 24 x 24 x 8	5	Surface	Drilled and tapped, slip holes	Overlapping	112
WJB	Raintight/Type 3, Watertight/Type 4	4 x 4 x 3 to 36 x 24 x 24	6	Surface	Drilled and tapped, slip holes	Flanged	113
WJBF	Raintight/Type 3, Watertight/Type 4	4 x 4 x 4 to 36 x 24 x 24	6	Flush	Drilled and tapped, slip holes	External flanged recessed sidewalk	114
WEB	Raintight/Type 3	4 x 4 x 3 to 36 x 36 x 12	6	Flush	Drilled and tapped, slip holes	Internal Flanged	115

† Length and width are inside dimensions. Depth is inside dimension without cover.

Lightning Service™ Delivery Identification – Looking for junction boxes to meet tight deadlines? Then specify Lightning Service. All products available with Lightning Service delivery will be marked with a checkmark. Look for pages with the Lightning Service Logo located at the top of the page.

Lightning Service is available for over 90 of the most popular size boxes in five different styles.

Shipped within 24 hours: All enclosures marked with a check mark are available in 24 hours without drilled and tapped openings or a mounting plate.

Shipped within 72 hours: All enclosures marked with a check mark are available in 72 hours with standard drilled and tapped openings and/or a mounting plate.



In Canada: Enclosures without openings or mountings plate shipped within 1 week. Enclosures with standard openings or mounting plate shipped within 2 weeks

WAB Junction Boxes

Heavy Duty

Unflanged for Surface Mounting

See ordering info. on following pages

See dimensions on following pages

Dust-proof
Weatherproof

CP



CP
Junction Boxes

Application:

Where a heavy duty dustproof or weatherproof enclosure is desired, WAB boxes are installed in conduit system to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Flat neoprene gasket cemented to the cover.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for 1/4" – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- Feraloy® iron alloy body
- Heavy-gauge steel cover
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- Feraloy iron alloy and heavy gauge steel – hot dip galvanized

Options:

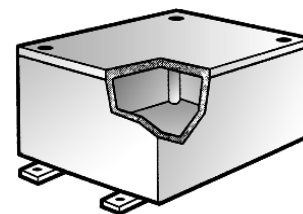
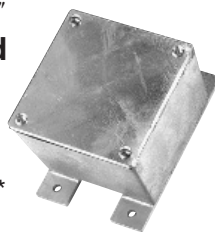
- Factory installed mounting plate... add suffix –MP.
- See Ordering Information, beginning pg. 316 for:
 - Drilled and tapped conduit holes
 - Slip holes

Size Ranges:

- 4" x 4" x 2" to 24" x 24" x 8"

Certifications and Complies:

- UL Standard: 50
- Dust-proof
- Weatherproof
- H20 Vehicle Load Rating *



Flat Covers

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WAB040402	5/32	4	4	2	✓
WAB040403	3/16	4	4	3	✓
WAB040404	1/4	4	4	4	✓
WAB050503	1/4	5	5	3	✓
WAB050504	1/4	5	5	4	✓
WAB060403	1/4	6	4	3	✓
WAB060404	7/32	6	4	4	✓
WAB060603	1/4	6	6	3	✓
WAB060604	3/16	6	6	4	✓
WAB060606	9/32	6	6	6	✓
WAB080403	5/16	8	4	3	✓
WAB080604	7/32	8	6	4	✓
WAB080606	5/16	8	6	6	✓
WAB080804	5/16	8	8	4	✓
WAB080806	5/16	8	8	6	✓
WAB080808	5/16	8	8	8	✓
WAB090604	5/16	9	6	4	✓
WAB100604	1/4	10	6	4	✓
WAB100804	1/4	10	8	4	✓
WAB100806	9/32	10	8	6	✓
WAB101006	1/4	10	10	6	✓
WAB120604	9/32	12	6	4	✓
WAB120606	9/32	12	6	6	✓
WAB120806	9/32	12	8	6	✓
WAB120808	3/8	12	8	8	✓
WAB121204	9/32	12	12	4	✓
WAB121206	9/32	12	12	6	✓
WAB121208	9/32	12	12	8	✓
WAB160606	1/4	16	6	6	✓
WAB161208	5/16	16	12	8	✓
WAB181206	5/16	18	12	6	✓
WAB181208	5/16	18	12	8	✓
WAB181210	3/8	18	12	10	✓
WAB181806	3/8	18	18	6	✓
WAB181812	7/16	18	18	12	✓
WAB241212	7/16	24	12	12	✓
WAB242408	1 1/32	24	24	8	✓

* Self certify to H20 vehicle load rating equivalent to 16,000 lbs. on cover center.

✓ – available with Lightning Service™

WCB Junction Boxes

Heavy Duty

Overlapping Cover for Surface Mounting

See ordering info. on following pages
See dimensions on following pages

Dust-tight
Weatherproof
Watertight
Raintight



Application:

Where a heavy duty dust-tight, weatherproof, raintight, or watertight enclosure is desired, WCB boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

- Flat neoprene gasket cemented to cover.
- Overlapping cover sheds environment.
- Wide range of drilled and tapped and slip hole conduit entrance sizes and locations permits maximum flexibility of use in conduit system.
- Internal equipment mounting pads available blind tapped for 1/4" – 20 mounting screws.
- Blind tapped into internal mounting pads.
- Mounting straps are standard on all boxes.

Standard Materials:

- *Feraloy*® iron alloy cover and body
- Neoprene gaskets
- Stainless steel cover screws
- Steel mounting straps

Standard Finishes:

- *Feraloy* iron alloy – hot dip galvanized

Options:

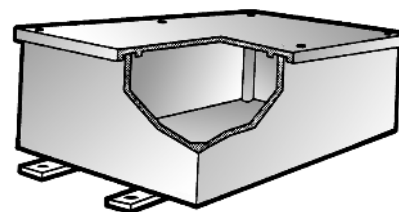
- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 316, for:
Drilled and tapped conduit holes
Slip holes

Size Ranges:

- 4" x 4" x 2" to
24" x 24" x 8"

Certifications and Compliances:

- UL Standard: 50
- Dust-tight
- Weatherproof
- Raintight
- Watertight



Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WCB040402	5/32	4	4	2	
WCB040403	3/16	4	4	3	✓
WCB040404	1/4	4	4	4	✓
WCB050503	1/4	5	5	3	✓
WCB050504	1/4	5	5	4	✓
WCB060403	1/4	6	4	3	✓
WCB060404	7/32	6	4	4	✓
WCB060603	1/4	6	6	3	✓
WCB060604	3/16	6	6	4	✓
WCB060606	9/32	6	6	6	✓
WCB080403	5/16	8	4	3	
WCB080604	7/32	8	6	4	✓
WCB080606	5/16	8	6	6	✓
WCB080804	5/16	8	8	4	✓
WCB080806	5/16	8	8	6	✓
WCB080808	5/16	8	8	8	✓
WCB090604	5/16	9	6	4	✓
WCB100604	1/4	10	6	4	
WCB100804	1/4	10	8	4	✓
WCB100806	9/32	10	8	6	✓
WCB101006	1/4	10	10	6	✓
WCB120604	9/32	12	6	4	✓
WCB120606	9/32	12	6	6	✓
WCB120806	9/32	12	8	6	✓
WCB120808	3/8	12	8	8	
WCB121204	9/32	12	12	4	✓
WCB121206	9/32	12	12	6	✓
WCB121208	9/32	12	12	8	✓
WCB160606	1/4	16	6	6	
WCB161208	5/16	16	12	8	✓
WCB181206	5/16	18	12	6	✓
WCB181208	5/16	18	12	8	
WCB181210	3/8	18	12	10	
WCB181806	3/8	18	18	6	✓
WCB181812	7/16	18	18	12	✓
WCB241212	7/16	24	12	12	
WCB242408	11/32	24	24	8	✓

✓ – available with Lightning Service™

WJB Junction Boxes

Heavy Duty

Flanged for Surface Mounting

See ordering info. on following pages

See dimensions on following pages

Weatherproof
Watertight
Raintight

CP



CP
Junction Boxes

Application:

WJB boxes are standard with mounting straps and are primarily designed for surface mounting. WJB heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Neoprene gasket cemented to cover.
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system.
- Internal equipment mounting pads may be drilled and tapped for 1/4" – 20 mounting screws.
- Blind tapped into internal mounting pads.

Standard Materials:

- Feraloy® iron alloy body
- Heavy-gauge steel – cover and mounting straps
- Neoprene gaskets

Standard Finishes:

- Feraloy iron alloy and heavy-gauge steel – hot-dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 316 for:
 - Drilled and tapped conduit holes
 - Slip holes

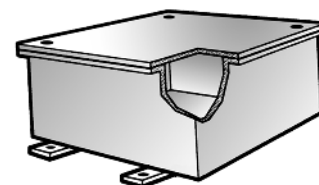
Size Ranges:

- 4" x 4" x 3" to 36" x 24" x 24"

* Self certify to H20 vehicle load rating equivalent to 16,000 lbs. on cover center.
✓ – available with Lightning Service™

Certifications and Compliances:

- UL Standard: 50
- CSA Standard C22.2
- Weatherproof
- Watertight
- CEC: Class II, E, F, G Class III
- Encl. 3-4
- H20 Vehicle Load Rating *



Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJB040403	1/4	4	4	3	
WJB040404	1/4	4	4	4	✓
WJB060404	1/4	6	4	4	
WJB060604	1/4	6	6	4	✓
WJB060606	1/4	6	6	6	✓
WJB080604	1/4	8	6	4	
WJB080606	1/4	8	6	6	✓
WJB080804	1/4	8	8	4	✓
WJB080806	1/4	8	8	6	
WJB080808	1/4	8	8	8	
WJB100806	1/4	10	8	6	
WJB100808	1/4	10	8	8	
WJB101006	1/4	10	10	6	✓
WJB101008	1/4	10	10	8	
WJB120606	1/4	12	6	6	
WJB120806	1/4	12	8	6	
WJB120808	1/4	12	8	8	
WJB120810	1/4	12	8	10	
WJB121206	5/16	12	12	6	✓
WJB121208	5/16	12	12	8	✓
WJB121212	5/16	12	12	12	
WJB121218	5/16	12	12	18	
WJB140806	5/16	14	8	6	
WJB141410	5/16	14	14	10	
WJB161206	5/16	16	12	6	
WJB161208	5/16	16	12	8	
WJB161606	5/16	16	16	6	
WJB180806	5/16	18	8	6	
WJB180808	5/16	18	8	8	
WJB181006	5/16	18	10	6	
WJB181206	5/16	18	12	6	
WJB181208	5/16	18	12	8	✓
WJB181210	5/16	18	12	10	
WJB181212	5/16	18	12	12	
WJB181218	3/8	18	12	18	
WJB181806	3/8	18	18	6	
WJB181808	3/8	18	18	8	
WJB181812	3/8	18	18	12	
WJB181818	3/8	18	18	18	
WJB241208	3/8	24	12	8	
WJB241212	3/8	24	12	12	
WJB241808	3/8	24	18	8	
WJB241810	3/8	24	18	10	
WJB241812	3/8	24	18	12	
WJB241818	9/16	24	18	18	
WJB242412	9/16	24	24	12	
WJB242418	9/16	24	24	18	
WJB242424	9/16	24	24	24	
WJB302412	9/16	30	24	12	
WJB302418	9/16	30	24	18	
WJB362418	9/16	36	24	18	
WJB362424	9/16	36	24	24	



See ordering info. on following pages
See dimensions on following pages
Weatherproof
Watertight
Raintight
NEMA 3,4

Application:

WJBF boxes are standard with mounting feet and have a recessed flat checkered sidewalk cover for mounting in walls or floors. They may be ordered less mounting feet. WJBF heavy duty junction boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch conduit runs
- provide access to conductor for maintenance and future system changes
- enclose and protect electrical equipment

Features:

- Covers are suitable for vehicular traffic (H20 loading)
- Neoprene gasket cemented to cover
- Wide range of drilled and tapped conduit entrance sizes and locations permits extreme flexibility of use in conduit system
- Internal equipment mounting pads may be drilled and tapped for 1/4" – 20 mounting screws
- Blind tapped into internal mounting pads

Standard Materials:

- Feraloy® iron alloy – body
- Heavy-gauge steel (checkered) – cover, mounting straps
- Neoprene gaskets

Standard Finishes:

- Feraloy iron alloy and heavy-gauge steel – hot dip galvanized

Options:

- Factory installed mounting plate... add suffix -MP.
- See Ordering Information, beginning pg. 316, for:
 - Drilled and tapped conduit holes
 - Slip holes

Size Ranges:

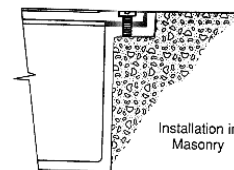
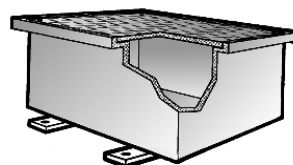
- 4" x 4" x 4" to 36" x 24" x 24"

Certifications and Compliances:

- UL Standard: 50
- CSA Standard C22.2 No. 40
- Weatherproof
- Watertight
- CEC:
- Class II, Division 1, Groups E,F,G
- Class III
- Encl. 3, 4
- H20 Vehicle Load Rating *

✓ – available with Lightning Service™

* Self certify to H20 vehicle load rating equivalent to 16,000 lbs. on cover center.



Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)	Lightning Service
WJBF040404	1/4	4	4	4	✓
WJBF060404	1/4	6	4	4	✓
WJBF060604	1/4	6	6	4	✓
WJBF060606	1/4	6	6	6	✓
WJBF080604	1/4	8	6	4	✓
WJBF080606	1/4	8	6	6	✓
WJBF080804	1/4	8	8	4	✓
WJBF080806	1/4	8	8	6	✓
WJBF080808	1/4	8	8	8	✓
WJBF100806	1/4	10	8	6	
WJBF100808	1/4	10	8	8	
WJBF101006	1/4	10	10	6	✓
WJBF101008	1/4	10	10	8	✓
WJBF120606	1/4	12	6	6	
WJBF120806	1/4	12	8	6	
WJBF120808	1/4	12	8	8	✓
WJBF120810	5/16	12	8	10	
WJBF121206	1/4	12	12	6	✓
WJBF121208	1/4	12	12	8	✓
WJBF121212	5/16	12	12	12	✓
WJBF121218	5/16	12	12	18	
WJBF140806	1/4	14	8	6	
WJBF141410	5/16	14	14	10	
WJBF161206	1/4	16	12	6	
WJBF161208	1/4	16	12	8	✓
WJBF161606	1/4	16	16	6	
WJBF180806	1/4	18	8	6	
WJBF180808	1/4	18	8	8	
WJBF181006	5/16	18	10	6	
WJBF181206	5/16	18	12	6	
WJBF181208	5/16	18	12	8	✓
WJBF181210	3/8	18	12	10	
WJBF181212	5/16	18	12	12	
WJBF181218	3/8	18	12	18	
WJBF181806	3/8	18	18	6	
WJBF181808	3/8	18	18	8	
WJBF181812	3/8	18	18	12	✓
WJBF181818	3/8	18	18	18	
WJBF241208	3/8	24	12	8	
WJBF241212	3/8	24	12	12	
WJBF241808	3/8	24	18	8	
WJBF241810	3/8	24	18	10	✓
WJBF241812	3/8	24	18	12	
WJBF241818	3/8	24	18	18	
WJBF242412	3/8	24	24	12	
WJBF242418	3/8	24	24	18	
WJBF242424	3/8	24	24	24	
WJBF302412	3/8	30	24	12	
WJBF302418	3/8	30	24	18	
WJBF362418	3/8	36	24	18	
WJBF362424	3/8	36	24	24	

WEB Junction Box

Heavy Duty Internal Recess Flange for Flush Mounting

Dust-tight
Raintight
NEMA 3

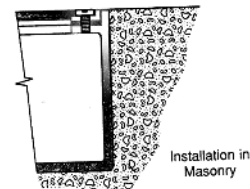
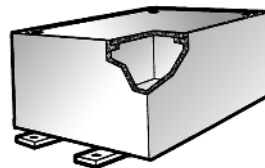
CP

CP
Junction Boxes

Application:

WEB Junction Boxes are installed:

- Where a heavy duty, dust-tight or raintight enclosure is desired
- To act as pull box for conductors
- To provide openings and space for making splices and taps in conductors
- To provide for branch conduit runs
- To provide access to conductors for maintenance and future system changes
- To enclose and protect electrical devices



Features:

- Flat neoprene gasket cemented to cover
- Internal equipment mounting pads
- Standard attachable heavy-gauge steel straps for mounting box
- Stainless-steel cover screws
- Internal ground screw
- Optional drilled and tapped conduit entries or slip holes
- Optional mounting plate

Standard Materials:

- Body - *Feraloy*® iron alloy, hot dip galvanized
- Cover - heavy-gauge steel, hotdip galvanized
- Cover screws - stainless steel
- Mounting Strap - heavy-gauge steel, electrogalvanized
- Gasket - neoprene

Certifications and Compliances:

- UL Standard 50
- CSA certified C22.2

Options:

- All boxes are available with optional mounting plate, add suffix -MP.
See ordering information beginning on pg. 316 for:
- Drilled and tapped conduit holes
 - Slip holes

Ordering Information

Cat. #	Wall Thickness (in.)	Length (in.)	Width (in.)	Depth (in.)
WEB040403	7/32	4	4	3
WEB040404	1/4	4	4	4
WEB060604	9/32	6	6	4
WEB060606	1/4	6	6	6
WEB080804	9/32	8	8	4
WEB080806	1/4	8	8	6
WEB121206	9/32	12	12	6
WEB160606	9/32	16	6	6
WEB160806	1/4	16	8	6
WEB180808	5/16	18	8	8
WEB240606	9/32	24	6	6
WEB240808	5/16	24	8	8
WEB241010	3/8	24	10	10
WEB241210	5/16	24	12	10
WEB241212	5/16	24	12	12
WEB241812	3/8	24	18	12
WEB361212	3/8	36	12	12
WEB361812	3/8	36	18	12
WEB362412	7/16	36	24	12
WEB363612	7/16	36	36	12

CP W Series Junction Boxes

Ordering Information

DRILLED AND TAPPED CONDUIT OPENINGS OR SLIP HOLES

All W-Series cast-iron junction boxes may be ordered with drilled and tapped conduit openings or slip holes – subject to minimum spacing limitations listed in Table 1.

To order a box from the factory with conduit openings:

Options 1:

Send in a sketch of the box with openings specified (subject to spacing limitations specified in Table 1). **OR**

Option 2:

Step 1: Select one of the four standard arrangements in Table 2, based on number and location of conduit entries.

Step 2: Pick a symbol from Table 3 for each opening in the arrangement (see example).

Step 3: Table 4 lists the maximum size and number of conduit openings by box size and the spacing dimensions. Use Table 4 to verify the openings selected are permitted.

Example – Catalog number logic:

1. Select box required: WAB121208.
2. User wants one 1/2" drilled and tapped hole in the top of the box, two 1" drilled and tapped holes on both sides and three 1/2" slip holes in the bottom of the box.
3. Select arrangement 3 because it allows up to three openings per side.
4. Next the symbols for the openings are substituted and written in clockwise order starting with location "a". The catalog number is written in three parts; part 1 – box number, part 2 – arrangement number, part 3 – symbols for the conduit openings.
5. For this example the box would be ordered as:

WAB121208-3-0AO C0C 1A1A1A C0C

Box Cat. # Arrangement # Symbols for openings

Table 1
Minimum spacing between centers of conduits

Size of Conduit	6"	5"	4"	3 1/2"	3"	2 1/2"	2"	1 1/2"	1 1/4"	1"	3/4"	1/2"
1/2"	5	4 3/8	3 5/8	3 3/8	3	2 5/8	2 3/8	2	1 7/8	1 3/4	1 5/8	1 1/2
3/4"	5 1/8	4 1/2	3 3/4	3 1/2	3 1/8	2 3/4	2 1/2	2 1/8	2	1 7/8	1 3/4	
1"	5 1/4	4 5/8	4	3 5/8	3 1/4	3	2 5/8	2 3/8	2 1/4	2		
1 1/4"	5 1/2	4 7/8	4 1/8	3 7/8	3 1/2	3 1/8	2 7/8	2 1/2	2 3/8			
1 1/2"	5 5/8	5	4 1/4	4	3 5/8	3 1/4	3	2 5/8				
2"	6	5 3/8	4 5/8	4 1/4	3 7/8	3 3/8	3 1/4					
2 1/2"	6 1/4	5 5/8	4 7/8	4 5/8	4 1/4	3 7/8						
3"	6 5/8	6	5 3/8	5	4 5/8							
3 1/2"	7	6 1/4	5 5/8	5 1/4								
4"	7 1/4	6 5/8	5 7/8									
5"	8	7 1/4										
6"	8 5/8											

Table 2
Standard conduit arrangements

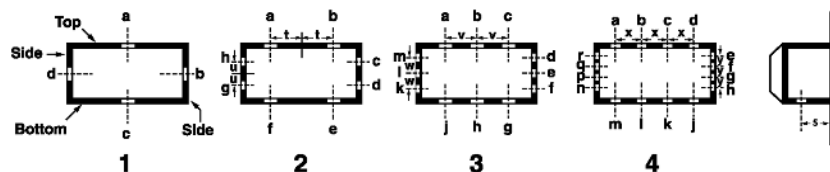
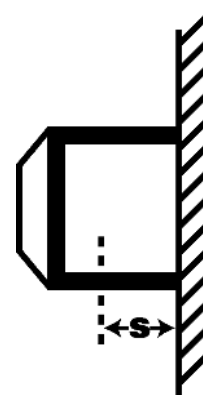


Table 3
Symbols for openings

Conduit Size	Drilled and Tapped Hole	Slip Hole
1/2"	A	1A
3/4"	B	1B
1"	C	1C
1 1/4"	E	1E
1 1/2"	F	1F
2"	G	1G
2 1/2"	H	1H
3"	J	1J
3 1/2"	K	1K
4"	L	1L
5"	M	1M
6"	N	1N
None	0 (Zero)	0 (Zero)



S = Dimension from wall to hole center line

Ordering Information

Table 4

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings Top and Bottom†				Sides				Spacing Dimensionst						
	1	2	3	4	1	2	3	4	s	t	u	v	w	x	y
040402	¾	¾	—	—	¾	¾	—	—	1¼	⅞	⅞	—	—	—	—
040403	1¼	¾	—	—	1¼	¾	—	—	1⅝	⅞	⅞	—	—	—	—
040404	2	¾	—	—	2	¾	—	—	2¼	⅞	⅞	—	—	—	—
050503	1¼	¾	—	—	1¼	¾	—	—	1⅝	1¼	1¼	—	—	—	—
050504	2	1	—	—	2	1	—	—	2¼	1¼	1¼	—	—	—	—
060403	1¼	¾	¾	—	1¼	¾	—	—	1⅝	1⅝	⅞	1¾	—	—	—
060404	2	1½	¾	—	2	¾	—	—	2¼	1⅝	⅞	1¾	—	—	—
060603	1¼	1¼	¾	—	1¼	1¼	¾	—	1¼	1⅝	1⅝	1¾	1¾	—	—
060604	2	1½	¾	—	2	1½	¾	—	2¼	1⅝	1⅝	1¾	1¾	—	—
060606	4	1½	¾	—	4	1½	¾	—	3⅝	1⅝	1⅝	1¾	1¾	—	—
080403	1¼	1¼	1	¾	1¼	¾	—	—	1⅝	1⅝	⅞	2½	—	—	—
080604	2	2	1	¾	2	1½	¾	—	2¼	1⅝	1⅝	2½	1¾	1¾	—
080606	4	2	1	¾	4	1½	¾	—	3⅝	1⅝	1⅝	2½	1¾	1¾	—
080804	2	2	1	¾	3	2	1	¾	2¼	1⅝	1⅝	2½	2½	1¾	1¾
080806	4	2	1	¾	4	2	1	¾	3⅝	1⅝	1⅝	2½	2½	1¾	1¾
080808	4	2	1	¾	4	2	1	¾	4¼	1⅝	1⅝	2½	2½	1¾	1¾
090604	2	1¼	1½	1	2	1½	¾	—	2¼	2¼	1⅝	3	1¾	2	—
100604	2	2	1½	1	2	1½	¾	—	2¼	2½	1⅝	2¾	1¾	2½	—
100804	2	2	1½	1	2	2	1	¾	2¼	2½	1⅝	2¾	2½	2½	1¾
100806	4	3	1½	1	4	2	1	¾	3⅝	2½	1⅝	2¾	1¾	2½	1¾
100808	5	3	1½	1	5	2	1	¾	4½	2½	1⅝	2¾	2½	2½	1¾
101006	4	3	1½	1	3	3	1½	1	2⅝	2½	2½	2¾	2¾	2½	2½
101008	5	3	1½	1	5	3	1½	1	4¼	2½	2½	2¾	2¾	2½	2½
120604	2	2	2	1½	2	1½	¾	—	2¼	3	1⅝	4	1¾	2¾	—
120606	4	4	2½	1½	4	1½	¾	—	3⅝	3	1⅝	4	1¾	2¾	—
120806	4	4	2½	2½	4	2	1	¾	3⅝	3	1⅝	4	2½	2¾	1¾
120808	5	4	2½	2½	5	2	1	¾	4¼	3	1⅝	4	2½	2¾	1¼
121204	2	2	2	1½	2	2	2	1½	2¼	3	3	4	4	2¾	2¾
121206	4	4	2½	1½	4	4	2½	1½	3⅝	3	3	4	4	2¾	2¾
121208	5	4	2½	1½	5	4	2½	1½	4¼	3	3	4	4	2¾	2¾
121212	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
121218	6	4	2½	1½	6	4	2½	1½	5	3	3	4	4	2¾	2¾
140806	4	4	3	2	4	2	1	¾	3⅝	3½	1⅝	4½	2½	3½	1¾
141206	4	4	3	2	4	4	2½	1½	3⅝	3½	3	4½	4	3½	2¾
141410	6	4	3	2	6	4	3	2	5	3½	3½	4½	4½	3½	3½
160606	4	4	3½	2½	4	1½	¾	—	3⅝	4	1½	5⅝	2	4	—
160806	4	4	3½	2½	4	2½	1½	¾	3⅝	4	2	5⅝	2⅝	4	2
161206	4	4	3½	2½	4	4	2½	1½	3⅝	4	3	5⅝	4	4	3
161208	5	5	3½	2½	5	4	2½	1½	4¼	4	3	5⅝	4	4	3
161606	4	4	3½	2½	4	4	3½	2½	3⅝	4	4	5⅝	5⅝	4	4
180806	4	4	4	2½	4	2½	1¼	¾	3⅝	4½	2	6	2⅝	4½	2
180808	5	5	4	2½	5	2½	1¼	¾	4¼	4½	2	6	2⅝	4½	2
181206	4	4	4	2½	4	4	2½	1½	3⅝	6½	2⅞	5½	3⅞	4	2¾
181208	5	5	4	2½	5	4	2½	1½	4¼	4½	3	5½	4	4	2¾
181210	6	5	4	2½	6	4	2½	1½	5	4¼	3	5½	4	4	2¾

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.
‡Top and bottom are the longer dimensions on enclosures which are not square.

CP W Series Junction Boxes

Ordering Information

Table 4 (continued)

W Series Cat. #	Maximum Size and Number of Drilled and Tapped Conduit Openings								Spacing Dimensions†							
	Top and Bottom‡				Sides											
	1	2	3	4	1	2	3	4	s	t	u	v	w	x	y	
181212	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¼	
181218	6	5	4	2½	6	4	2½	1½	5	4½	3	5½	4	4	2¾	
181806	4	4	4	2½	5	5	4	2½	3¾	4½	4	6	5¾	4½	4	
181808	5	5	4	2½	5	5	3½	2½	4¼	4½	4	6	5¾	4½	4	
181812	6	6	4	2½	6	6	4	2½	5	4½	4½	6	6	4½	4½	
240606	4	4	4	4	4	1½	¾	—	3¾	6¾	1¾	8	1¾	6	—	
240808	5	5	5	4	5	2½	1¼	¾	4¼	6¾	4½	8	2¾	6	2	
241010	6	6	5	4	6	3	1½	1	5	6½	2½	7	2¾	5¾	2½	
241208	5	5	5	4	5	4	2½	1½	4¼	6½	2¾	7	3¾	5¾	2¾	
241210	6	6	5	4	6	4	2½	1½	5	6½	3	7	4	5¾	2¾	
241212	6	6	5	4	6	4	2½	1½	5	6½	2¾	7	3¾	5¾	2¾	
241808	5	5	5	4	5	5	4	2½	4¼	6½	4½	7	5¾	5¾	4	
241810	6	6	5	4	6	6	4	2½	5	6½	4½	7	5¾	5¾	4	
241812	6	6	5	4	6	5	4	2½	5	6½	4½	7	5¾	5¾	4	
242408	5	5	5	4	5	5	5	4	4¼	6½	6½	7	7½	5¾	5¾	
242412	6	6	5	4	6	6	5	4	5	6½	6½	7	7½	5¾	5¾	
242424	6	6	5	4	6	6	5	4	6½	6¾	6½	7	7½	5¾	5¾	
302412	6	6	6	5	6	6	5	4	5	7½	6¾	10	8	7½	6	
361212	6	6	6	6	6	4	2½	1½	5	8¾	3	12	4	9	2¾	
361812	6	6	6	6	6	5	4	2½	5	8¾	4½	12	4½	9	4	
362412	6	6	6	6	6	6	5	4	5	8¾	6¾	12	8	9	6	
363612	6	6	6	6	6	6	6	6	5	8¾	8¾	12	12	9	9	

†Spacing dimensions apply to drilled and tapped holes. Space has been provided for a locknut and bushing when drilled and tapped holes are required.

‡Top and bottom are the longer dimensions on enclosures which are not square.

Application:

XD couplings can be installed indoors, outdoors, buried underground, or embedded in concrete in non-hazardous areas. XD's are used with standard rigid conduit or PVC rigid conduit. (PVC requires rigid metal conduit nipples and rigid metal-to-PVC conduit adapters.) XD's provide a flexible and watertight connection for protection of conduit wiring systems from damage due to movement.

Typical applications include:

- Underground conduit feeder runs
- Runs between sections of concrete subject to relative movement
- Runs between fixed structures
- Conduit entrances in high-rise buildings
- Bridges
- Marinas, docks, piers

Features:

- XD couplings accommodate the following movements without collapsing or fracturing the conduit, and damaging the wires it contains:
 1. Axial expansion or contraction up to $\frac{3}{4}$ "
 2. Angular misalignment of the axes of the coupled conduit runs in any direction to 30°
 3. Parallel misalignment of the axes of coupled conduit runs in any direction to $\frac{3}{4}$ "
- Inner sleeve maintains constant I.D. in any position and provides a smooth insulated wireway for protection of wire insulation
- Watertight flexible neoprene outer jacket is corrosion resistant and protects the grounding strap and the attachment points of the hubs
- Tinned copper flexible braid grounding straps assure grounding continuity
- Stainless steel jacket clamps for strength and corrosion resistance
- Standard tapered electrical threads fit standard rigid conduit
- Integral hub bushing protects insulation of conductors

Standard Materials:

- Hubs – *Feraloy*® iron alloy
- Outer jacket – molded neoprene
- Jacket clamps – stainless steel
- Inner sleeve – molded plastic
- Grounding straps – tinned copper flexible braid

Standard Finishes:

- *Feraloy* – electrogalvanized
- Neoprene – natural (black)
- Molded plastic – natural (brown)

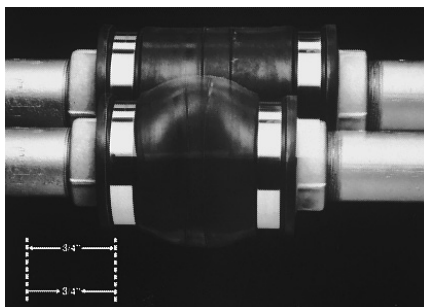
Certifications and

Compliances:

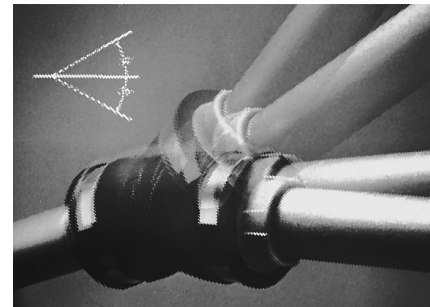
- UL standards: 514B

Size Ranges:

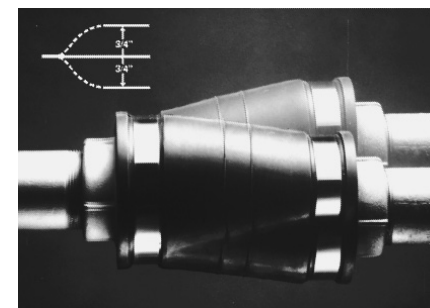
- 1" to 6" (Smaller sizes can be obtained by using reducing bushings)



1. Axial expansion/contraction.



2. Angular misalignment.



3. Parallel misalignment.

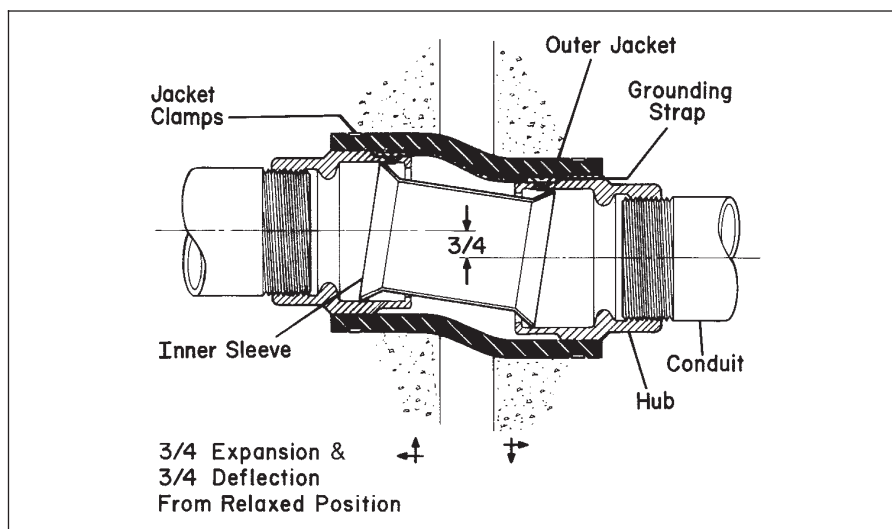
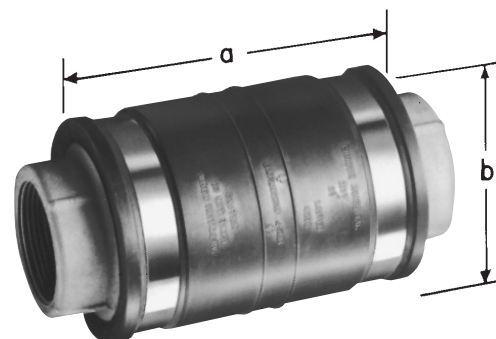
XD

Ordering Information

Hub Size	Cat. #	Hub Size	Cat. #
1	XD3	3	XD8
1 1/4	XD4	3 1/2	XD9
1 1/2	XD5	4	XD010
2	XD6	5	XD012
2 1/2	XD7	6	XD014

Dimensions

Hub Size	a	b
1	7	3 15/16
1 1/4	7 3/8	4 1/4
1 1/2	7 1/4	4 1/2
2	7 1/4	4 15/16
2 1/2	7 1/2	5 5/16
3	7 5/8	5 15/16
3 1/2	7 3/4	6 1/2
4	7 7/8	6 15/16
5	7 3/4	8
6	8 3/8	9



Application:

XJG expansion couplings are used with rigid metal conduit and IMC:

- **without** the need for an external bonding jumper and clamps (up to 4")
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge
- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body

- Steel-electrogalvanized
- Copper-free aluminum - natural
- Feraloy® iron alloy - electrogalvanized (5" + 6" only)

Reducer

- ½" through 1" - Steel - electrogalvanized
- 1¼" through 6" - Feraloy® iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Gland Nut

- ½" through 1" - Steel - electrogalvanized
- 1¼" through 6" - Feraloy® iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Packing

- Teflon® (trademark of E.I. DuPont Co.)

Washer

- Steel - electrogalvanized
- Copper-free aluminum - natural

Gasket

- Vellum

Bushing

- ½" through 1" - Steel - electrogalvanized
- 1¼" through 6" - Feraloy® iron alloy - electrogalvanized and aluminum paint
- Copper-free aluminum - natural

Ground Springs

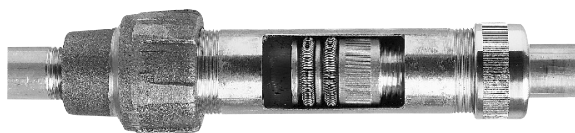
- Phosphor bronze - electrogalvanized

Ground Strap

- Braided tinned copper

U-Bolts

- Malleable iron - electrogalvanized



Patent Pending*

XJG – For use with rigid metal conduit and IMC

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper	A Diameter	B Length	Bonding Jumper Length
½	4	XJG14	BJ14	1.75	6.75	20"
	8	XJG18	BJ18	1.75	10.75	30"
¾	4	XJG24	BJ24	2.12	6.75	20"
	8	XJG28	BJ28	2.12	10.75	30"
1	4	XJG34	BJ34	2.43	7.25	20"
	8	XJG38	BJ38	2.43	11.25	30"
1¼	4	XJG44	BJ44	3.19	7.56	24"
	8	XJG48	BJ48	3.19	11.56	30"
1½	4	XJG54	BJ54	3.68	7.87	24"
	8	XJG58	BJ58	3.68	11.87	30"
2	4	XJG64	BJ64	4.75	8.25	24"
	8	XJG68	BJ68	4.75	12.25	30"
2½	4	XJG74	BJ74	4.87	9.31	24"
	8	XJG78	BJ78	4.87	13.31	36"
3	4	XJG84	BJ84	5.37	10.00	30"
	8	XJG88	BJ88	5.37	14.00	36"
3½	4	XJG94	BJ94	6.62	9.81	30"
	8	XJG98	BJ98	6.62	13.81	36"
4	4	XJG104	BJ104	6.62	9.81	30"
	8	XJG108	BJ108	6.62	13.81	36"
5	8	XJ128†	—	7.64	15.50	—
6	8	XJ148†	—	9.56	16.00	—

Options:

Available in copper-free aluminum – add suffix SA to Cat. No.

Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

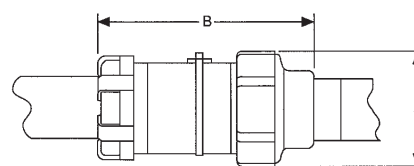
Size Ranges:

- ½" through 6" conduit size
- 4" and 8" maximum conduit movement

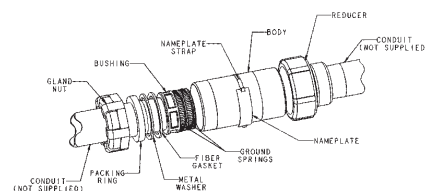
Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1
- Wet Locations

Dimensions



XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.

† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

XJG-EMT Conduit Expansion Joints With Internal Grounding For EMT Conduit

CP

CP Junction Box Accessories

Application:

XJG expansion couplings are used with EMT Conduit:

- **without** the need for an external bonding jumper and clamps
- to couple together two (2) sections of conduit subject to longitudinal movement
- in long conduit runs to permit linear movement caused by thermal expansion and contraction.
- on long conduit runs to prevent conduit from buckling and ensuing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature ranges
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge

- **with optional redundant visible grounding strap**

Standard Materials and Finishes

Body

- Steel-electrogalvanized
- Copper-free aluminum - natural

Reducer

- 1/2" through 1" - Steel - electrogalvanized
- 1 1/4" through 4" - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Gland Nut

- 1/2" through 1" - Steel - electrogalvanized
- 1 1/4" through 4" - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Packing

- Teflon® (trademark of E.I. DuPont Co.)

Washer

- Steel - electrogalvanized

Gasket

- Vellum

Bushing

- 1/2" through 1" - Steel - electrogalvanized
- 1 1/4" through 4" - *Feraloy*® iron alloy - electrogalvanized and aluminum paint

Ground Springs

- Phosphor bronze - electrogalvanized

Ground Strap

- Braided tinned copper

U-Bolts

- Malleable iron – electrogalvanized

Options:

Available with redundant† ground strap for visible indication of grounding – order separately (BJ Series)

Size Ranges:

- 1/2" through 4" conduit size
- 4" maximum conduit movement

Certifications and Compliances:

- UL Standard: 514B
- CSA Standard: C22.2 No. 18
- NEC Articles 250-77 and 300-7 (b)
- NEMA FB1

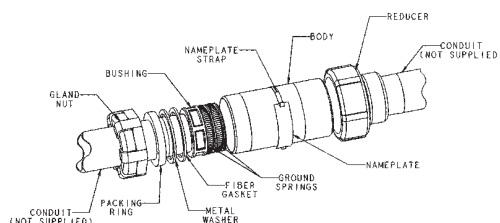


XJG-EMT – for use with EMT conduit

Conduit Size	Maximum Conduit Movement	Catalog Number	Optional Bonding Jumper	A Diameter	B Length
1/2"	4"	XJG14-EMT	BJ14	1 3/4"	10 3/4"
3/4"	4"	XJG24-EMT	BJ24	2 1/8"	11"
1"	4"	XJG34-EMT	BJ34	2 7/16"	11 1/2"
1 1/4"	4"	XJG44-EMT	BJ44	3 1/8"	15 1/4"
1 1/2"	4"	XJG54-EMT	BJ54	3 5/8"	15 1/2"
2"	4"	XJG64-EMT	BJ64	4 3/4"	15 1/2"
2 1/2"	4"	XJG74-EMT	BJ74	4 7/8"	18 3/4"
3"	4"	XJG84-EMT	BJ84	5 3/8"	19 7/8"
3 1/2"	4"	XJG94-EMT	BJ94	6 5/8"	21 1/4"
4"	4"	XJG104-EMT	BJ104	6 5/8"	21 1/4"



XJG shown with optional bonding jumper



* Teflon® is a registered trademark of E.I. DuPont Co.

† XJG expansion couplings use a metallic bushing and ground springs to create a high integrity internal ground connection. External ground straps offer a redundant ground path and easy visible indication of ground

XJGD Combination Expansion/Deflection Coupling and Expansion Joint Internally Grounded

Wet Locations

Application:

XJGD combination fittings are used with rigid metal conduit and IMC:

- to accommodate axial expansion, angular misalignment and parallel misalignment
- to couple together two (2) sections of conduit subject to longitudinal movement
- to maintain a ground connection *without the need for an external bonding jumper and clamps*
- in long conduit runs to prevent conduit from buckling and causing circuit failures
- indoors or outdoors where conduit expansion occurs and there are wide temperature swings
- in conduit runs that cross structural joints
- in conduit runs to prevent damage to conduit supports such as in a building or on a bridge

Standard Materials:

- Body, Hubs, Gland Nut, Washer, Bushing – *Feraloy*[®]
- Packing – Teflon[®]
- Gasket – vellum
- Ground Spring – phosphor bronze
- Outer Jacket – molded neoprene
- Jacket Clamps – stainless steel
- Inner Sleeve – molded plastic
- Ground Straps – tinned copper braid

Standard Finishes:

- *Feraloy*[®] – electrogalvanized

Certifications and Compliances:

- UL standard: 514B

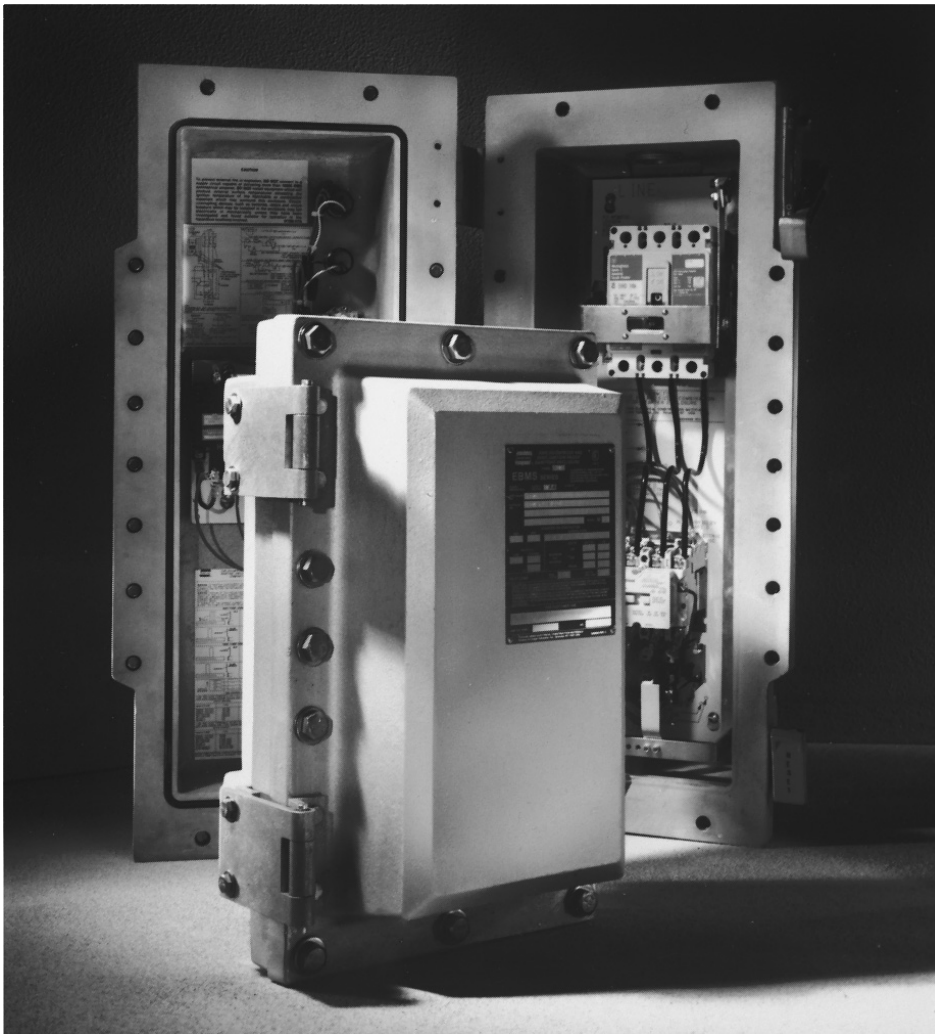


XJGD Ordering Information

Hub Size	Maximum Conduit Movement	Catalog Number	A Diameter	B Length
1"	4"	XJGD34	3 ¹⁵ / ₁₆ "	17 ³ / ₄ "
1 ¹ / ₄ "	4"	XJGD44	4 ¹ / ₄ "	18 ¹ / ₈ "
1 ¹ / ₂ "	4"	XJGD54	4 ¹ / ₂ "	18 ⁵ / ₈ "
2"	4"	XJGD64	4 ¹⁵ / ₁₆ "	19 ¹ / ₄ "
2 ¹ / ₂ "	4"	XJGD74	5 ⁵ / ₁₆ "	20 ³ / ₄ "
3"	4"	XJGD84	5 ¹⁵ / ₁₆ "	21 ⁵ / ₈ "
3 ¹ / ₂ "	4"	XJGD94	6 ¹ / ₂ "	21 ⁵ / ₈ "
4"	4"	XJGD104	8"	27 ³ / ₄ "

Industrial Control & Circuit Breakers

Section C



C Combination
Motor Starters

C Industrial Control and Circuit Breakers

Table of Contents

Section C of the Cooper Crouse-Hinds Product Catalog lists motor control, circuit breakers, control stations and enclosures. Information on application, features, standard materials, standard finishes, size ranges, compliances, options, and accessories are presented for ease of product selection.

A technical section (6C), contains additional data relating to motor controls and circuit breakers that can be incorporated in Cooper Crouse-Hinds enclosures.

Information relating to product families in Section C is grouped as follows†:

Section 1C

Combination Motor Starters (for hazardous areas)

Combination magnetic line starters and enclosures for across-the-line motor starting, motor disconnect, motor and line protection, and start-stop operations.

For hazardous areas
EBMC
EPC

Section 2C

Motor Starters (for hazardous and non-hazardous areas)

Line starters and enclosures for manual and magnetic across-the-line starting of motors, motor protection, and remote and manual starting and stopping.

Magnetic starters	Manual starters
EBMS	EFD
EPC	EDS
	EMN
	MC
	GHG

Section 3C

Circuit Breakers (for hazardous areas)

For use in conjunction with variety of heating, lighting, and power circuits to provide disconnect means and short circuit protection.

For hazardous areas
EBMB FLB
EFD
EPC
EIB

Section 4C

Control Stations (for hazardous and non-hazardous areas)

For means of remote and local motor control, visual indicators and circuit control and selection. Offers a selection of push buttons, pilot lights, selector switches.

For hazardous areas		For non-hazardous areas
AFAX, AFA	DSD	AFU
AFS	EMP	MC
AFUX, AFU	Flex	
EDSCM	Station	
EFS	OAC	
EGL	EGF	
D2X		
EDS		

For hazardous and non-hazardous areas EJB control panels.

Section 5C

Factory Sealed Control Devices (for hazardous and non-hazardous areas)

For means of remote and local motor control, visual indicators and circuit control and selection. Offers a selection of push buttons, pilot lights, selector switches.

Factory sealed devices:

- reduce installation problems
- eliminate external seals
- lower installation costs
- improve reliability

EDS	EFD/EFS
EDSC	D2X

Section 6C

Technical Information

Complete data and listings for circuit breaker selection, motor starter and heater tables and listings, wiring diagrams, etc.

Section 7C

Rack Assemblies (for hazardous and non-hazardous areas)

For motor control centers in outdoor and/or hazardous areas.

For hazardous areas	For non-hazardous areas
ERK	WRK
DRK	

Section 8C

Intrinsically Safe Products

For protection of instrumentation in hazardous locations.

SB	GRD Bar
SA	SF
	IS Labels

† A detailed index for the entire catalog is located in the General Section of the catalog; a detailed index for each product section appears on the tab divider for each section.

Description	Page No.
Application/Selection	326
Combination Line Starters and Enclosures	
Single speed, non-reversing, with circuit breakers & disconnect switches	
EBMC Series	327-332
EPC Series	336-338
EBMC Series with Advantage* Starter	334, 345
Single speed, non-reversing, with motor circuit protectors	
EBMC Series	333
EPC Series	339

* Advantage is a trademark of Cutler-Hammer Inc.

Application, Selection Quick
Selector Chart**Application:**

Combination line starters are housed in enclosures suitable for specific environments, and are used for:

- across-the-line starting of polyphase ac induction motors
- providing disconnect means
- branch circuit protection
- motor running protection
- remote starting and stopping

Considerations for Selection:

Considerations for selection of proper enclosure:

- The environment of the enclosure location in accordance with NEC/CEC and NEMA/EEMAC requirements
- The characteristics of the starter and breaker to be enclosed
- See "Quick-Selector", below for guidance

Options and Accessories:

Some of the options and accessories available for particular applications are:

- push buttons
- selector switches
- control transformers
- extra overload relays
- extra interlock contacts
- neutral connectors (both insulated and grounded)
- breathers and drains

See individual listings for specific options.

Many are available in kit form for field addition to existing units

Materials and Finishes:

- Standard material is copper-free aluminum with natural finish
- Optional finish is *Corro-free*™ epoxy for use in exceptionally corrosive atmospheres

Quick Selector Chart

Enclosures for Combination Motor Starters						
Enclosures	NEC/CEC – Hazardous Area Certifications and Compliance	NEMA/EEMAC Enclosure Type	NEMA/EEMAC Starters	Manufacturers Equipment Enclosed		
			Single Speed Non-Reversing	Starter	Breaker/Switch	Cover Type
EBMC	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4*, 7BCD, 9EFG, 12	0 – 5	Allen-Bradley G.E. Square D Cutler-Hammer	G.E. Square D Cutler-Hammer	Bolted/Ground Joint/Gasketed
EPC	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4, 7CD, 9EFG, 12	0 – 3	Allen-Bradley Cutler-Hammer G.E. Square D	G.E. Square D Cutler-Hammer	Threaded

* Without EMP control devices

EBMC Combination Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4†,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

1C

Application:

Spectrum EBM™ hinged cover motor control enclosures are used:

- for general motor control and circuit protection – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter
- in areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent
- for across-the-line starting, stopping, speed changing and reversing of polyphase ac induction motors
- to provide line disconnect means and short circuit protection
- to provide motor overload and undervoltage protection
- for service entrance, feeder or branch circuit protection for lighting, heating, appliance and motor circuits
- on switchracks or other assemblies where it's desired that motor control be centrally located

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction (less than 0.4 of 1%)
- Component operating handles located through the right side wall of the body permits visual confirmation of correct component assembly and operation
- Total compliance to the wiring end room requirements of the National Electrical Code*/Canadian Electrical Code
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure
- Copper-free aluminum hinges allow the cover to swing well out of the way
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' starters and breakers
- Simple, straightforward installation of breaker and starter on pre-drilled mounting plate within enclosure. Mounting plate also field removable
- Circuit breaker motor circuit protector external operating handle can be padlocked in either "ON" or "OFF" positions
- Neoprene cover gasket permanently attached to the cover seals out moisture
- Bodies have top and bottom drilled and tapped entrances for power conduits plus one at the bottom for control conduit. Removable reducers are supplied, as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap-on mounting feet



Interior components are readily accessible with ample end room for wiring

- Optional EMPS control devices may be added to enclosure cover
- Steel bracket for lifting larger enclosures during installation supplied as standard

Certifications & Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2; Groups B,C,D
 - Class II, Division 1; Groups E,F,G
 - Class II, Division 2; Groups F,G
 - Class III
- UL Standards UL1203 – Hazardous (classified) locations
- UL Subject 2062 - High AIC rating (Interrupting Capacity) For Groups C & D only
- CSA Standard: C22.2 No. 30
- NEMA/EEMAC: 3, 3R, 4†, 7BCD, 9EFG, 12

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Cover bolts, washer and retractile springs – stainless steel
- Interior parts – sheet steel, electrogalvanized

Electrical Rating Range:

- Motor starters – NEMA/EEMAC sizes 0-5
- Circuit breakers – 100, 150, 225, 250, 400, 600, 800, 1000† ampere frame sizes
- Motor circuit protectors – 150, 250, 400 ampere frame sizes



Side operators leave cover free for control options

1C Combination Motor Starters

* National Electrical Code is a Registered Trademark of the National Fire Protection Association.

† 1000 Ampere Frame (max. 800 ampere trip)

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMC Combination Line Starters and Enclosures

Single Speed Non-Reversing
3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4⁺,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Options:

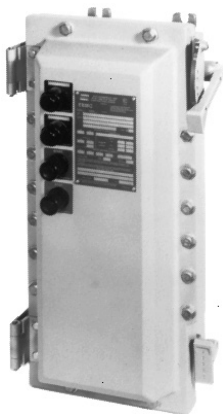
The following options are available from the factory by adding suffix to catalog number – suffixes are added alphanumerically.

Catalog Number System Example

EBMC1FB-(A)-DT30FAL36-W643-(B)

(A) Options in this position are additions to the enclosure itself and should be listed alphanumerically.

(B) Options in this position are modifications to the starter and/or circuit breaker and should be listed alphanumerically.



EBMC Series motor control enclosures with combination line starters.

When specifying any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order **DSL** Legend Plates for identification and marking of the device(s) being used.

Description

- Ambient compensated circuit breaker trip setting AC
- Less overload relays (lighting contactor) CL
- Less overload relays (motor contactor) CM
- Control Circuit Transformer, 100VA for NEMA/EEMAC sizes 0-2, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not provided) FTSP100
- Control Circuit Transformer, 200VA for NEMA/EEMAC size 3, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not provided) FTSP200
- Control Circuit Transformer, 300VA for NEMA/EEMAC size 4, 5 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not provided) FTSP300
- Pilot light, 120VAC, red jewel, w/blank indicating plate J1
- Pilot light, 120VAC, green jewel, w/blank indicating plate J3
- LED pilot lights (in place of standard incandescent lamps) LED
- Less heaters in starter overload relay 0
- Start-Stop pushbuttons (requires 2 spaces) PB23‡
- On-Off selector switch RR2‡
- Hand-Off-Auto selector switch RR3‡
- Space heater, 120 Volt, 25 Watts R11
- Space heater, 240 Volt, 25 Watts R22
- Space heater, 480 Volt, 25 Watts R44
- Automatic reset overload relay S1
- Insulated neutral w/2 connectors S146
- Std. drain, Class I, B,C & D; Class II, E, F & G; Class III S756‡
- Std. breather & drain, Class I, B,C & D; Class II, E, F & G; Class III S756V‡
- Side conduit entrances (check factory for application) S366
- Back conduit entrances (check factory for application) S367
- External epoxy finish S752
- Internal and external epoxy finish S753
- Additional control contacts, N.O. or N.C. – for single speed, non-reversing starters only (number limited by design of starter. Details on specific makes and sizes on request.)
 - Auxiliary contacts on starter 1 N.O. & 1 N.C. S781
 - Auxiliary contacts on starter 2 N.O. & 2 N.C. S782
 - Auxiliary contacts on starter 3 N.O. & 3 N.C. S783
- Auxiliary switch on Circuit Breaker 1A and 1B contacts S784
- Auxiliary switch on Circuit Breaker 2A and 2B contacts S785
- 12 Point term. block – 30 Amp, 300V S786
- General purpose control relay, 4 pole N.O., contacts rated 10A @600V, coil 120VAC, 50-60 hertz S787*

Suffix to be added to Cat. No. **Position in Cat. No.**

* Use of this option with NEMA/EEMAC Size 0, or 1 starters necessitates using the larger "D" size enclosure.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMC Combination Line Starters and Enclosures

Single-Speed Non-Reversing
3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

1C

Options:

● When specifying non-standard markings on any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order **DSL** Legend Plates for identification and marking of the device(s) being used.

● Insert Legend Plate(s) Catalog Number (i.e. DSL16) immediately after optional device in the EBM Catalog Number.

Example:
EBMC1FB-J1-DSL14-J3-DSL09-DT30FAL36-W643

● If EMP devices are to be added in the field, DSL Legend Plates must be ordered separately as they are not furnished with the EMP/EMPS devices.

Use the charts below to select the appropriate legend plate(s) for your application. Markings shown in **bold print** are etched; all others are stamped.

Single Function Legend Plates

Marking	Cat. #
Automatic	DSL16
Blank	DSL01
Blank with single field	DSL02
Close	DSL21
Down	DSL23
Emerg. Stop	DSL17
Fast	DSL46
Forward	DSL18
Hand	DSL15
In	DSL24
Jog	DSL10
Lower	DSL27
On	DSL07
Off	DSL08
Open	DSL20
Out	DSL25
Power On	DSL14
Raise	DSL26
Reset	DSL12
Reverse	DSL19
Run	DSL09
Safe	DSL85
Slow	DSL47
Start	DSL05
Stop	DSL06
Test	DSL13
Trip	DSL11
Up	DSL22

Two Function Legend Plates

Marking	Cat. #
Blank with 2 fields	DSL03
For-Rev	DSL30
Hand-Auto	DSL29
In-Out	DSL35
Off-On	DSL48
Open-Close	DSL32
Raise-Lower	DSL36
Run-Jog	DSL28
Safe-Run	DSL86
Start-Stop	DSL37
Slow-Fast	DSL65
Up-Down	DSL33

Three Function Legend Plates

Marking	Cat. #
Auto-Off-Hand	DSL49
Blank with 3 fields	DSL04
Fast-Off-Slow	DSL41
For-Off-Rev	DSL40
Hand-Off-Auto	DSL39
Run-Off-Jog	DSL38
Open-Off-Close	DSL43
Raise-Off-Lower	DSL87
Slow-Off-Fast	DSL88
Up-Off-Down	DSL44
1-Off-2	DSL42

Note: Background color for all legend plates is black with the following exceptions:

Marking	Plate Color
Start	Green
Stop	Red
Emerg. Stop	Red

1C Combination Motor Starters

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

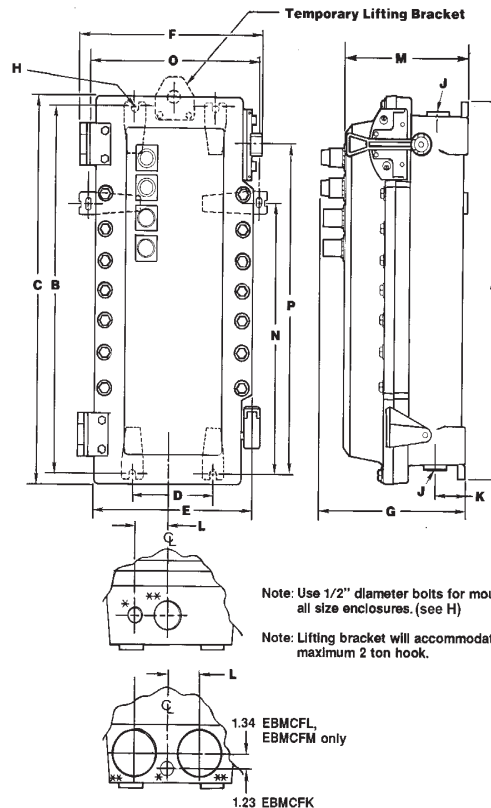


EBMC Combination Line Starters and Enclosures

Dimensions (inches)†

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4+,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight



* 1" Conduit entrance for control conductors (top & bottom).

** Conduit entrance for power conductors (top & bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

	Enclosure Only Cat. No.	Enclosure Size Symbol	A	B	C	D	E	F	G	J** Conduit Entry Trade size		K	L	M	N	O	P
										D&T♦	w/RE						
Size 0, 1 FVNR combination line starter§	EBMCFB✓	B	25.75	24.75	26.90	6.00	13.03	14.78	12.13	2"	1.5"	3.25	3.13	10.25	—	—	22.00
Size 2 FVNR combination line starter	EBMCFD✓	D	28.25	27.25	29.40	6.00	13.03	14.67	12.13	3"	2.5"	3.25	3.13	10.25	—	—	24.50
Size 3 FVNR combination line starter	EBMCFG***	G	38.13	36.50	39.28	6.00	13.03	14.78	12.13	3"	2.5"	3.25	3.13	10.25	—	—	34.06
	EBMCFH✓	H	37.50	36.50	38.65	6.00	14.65	16.65	13.54	3"	2.5"	3.25	3.94	11.66	—	—	33.75
Size 4 FVNR combination line starter	EBMCFK***	K	43.12	41.50	42.65	12.00	17.65	20.46	12.80	(2) 3"	(2) 2.5"	3.25	3.00	10.78	—	—	19.97
	EBMCFL✓	L	53.47	51.50	53.28	12.00	17.90	20.58	15.00	(2) 4"	(2) 3.5"	4.00	3.50	13.03	41.50	18.40	29.88
Size 5 FVNR combination line starter	EBMCFM✓	M	64.22	62.50	64.03	12.00	17.90	21.08	15.00	(2) 4"	(2) 3.5"	4.00	3.50	13.03	41.50	18.40	34.46

§ Use EBMCFD enclosure when LVR1 or S787 options are ordered with Size 0 or 1 combination starters.

† Dimensions are approximate, not for construction purposes.

*** For Cutler-Hammer W200 Advantage® starters.

♦ Drilled & Tapped.

✓ – available with Lightning Service™ delivery.
See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMC Combination Line Starters and Enclosures

Single-Speed Non-Reversing with Circuit Breakers

3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4†,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

1C



Ordering Information:

To order an enclosure complete with starter and breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes on page 332.

Select the complete Cat. No. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters.
♦ ♦ Starters are furnished with three heaters when heater ratings are fully specified.

Enclosures only can be ordered. Select from listings below. For starters that can be accommodated see Table 1 in Section 6C. Circuit breakers are also listed in Section 6C.
Instantaneous magnetic trip circuit breakers (magnetic circuit

interrupters) can be supplied. See listings in Section 6C.
Combination starters with motor circuit protectors for single speed, non-reversing motors are listed on page 333. Listings of circuit protectors are shown in Table 14 in Section 6C.

Motor Starter			Circuit Breaker			Enclosure	
Max. HP	Line	NEMA	Amp	Frame	Frame	Without	With
Poly-phase	Volts	Size	Rating	Volts	Types	Breaker & Starter Cat. No.	Breaker & Starter Cat. No. ♦ ♦
2	120	0	30	240	FAL, TEB	EBMCFB✓	EBMC0FB-†30 ♦ 32-†613
2	120	0	30	480	FAL, TED, EHD	EBMCFB✓	EBMC0FB-†30 ♦ 34-†613
2	120	0	30	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†30 ♦ 36-†613
3	240	0	20	240	FAL, TEB	EBMCFB✓	EBMC0FB-†20 ♦ 32-†623
3	240	0	20	480	FAL, TED, EHD	EBMCFB✓	EBMC0FB-†20 ♦ 34-†623
3	240	0	20	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†20 ♦ 36-†623
5	480	0	15	480	FAL, TED, EHD	EBMCFB✓	EBMC0FB-†15 ♦ 34-†643
5	480	0	15	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†15 ♦ 36-†643
5	600	0	15	600	FAL, TED, FDB	EBMCFB✓	EBMC0FB-†15 ♦ 36-†663
5	240	1	30	240	FAL, TEB	EBMCFB✓	EBMC1FB-†30 ♦ 32-†623
5	240	1	30	480	FAL, TED, EHD	EBMCFB✓	EBMC1FB-†30 ♦ 34-†623
5	240	1	30	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†30 ♦ 36-†623
7½	240	1	50	240	FAL, TEB	EBMCFB✓	EBMC1FB-†50 ♦ 32-†623
7½	240	1	50	480	FAL, TED, EHD	EBMCFB✓	EBMC1FB-†50 ♦ 34-†623
7½	240	1	50	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†50 ♦ 36-†623
10	480	1	30	480	FAL, TED, EHD	EBMCFB✓	EBMC1FB-†30 ♦ 34-†643
10	480	1	30	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†30 ♦ 36-†643
10	600	1	30	600	FAL, TED, FDB	EBMCFB✓	EBMC1FB-†30 ♦ 36-†663
10	240	2	50	240	FAL, TEB	EBMCFD✓	EBMC2FD-†50 ♦ 32-†623
10	240	2	50	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†50 ♦ 34-†623
10	240	2	50	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†50 ♦ 36-†623
15	240	2	70	240	FAL, TEB	EBMCFD✓	EBMC2FD-†70 ♦ 32-†623
15	240	2	70	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†70 ♦ 34-†623
15	240	2	70	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†70 ♦ 36-†623
15	480	2	40	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†40 ♦ 34-†643
15	480	2	40	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†40 ♦ 36-†643
15	600	2	40	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†40 ♦ 36-†663
20	480	2	50	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†50 ♦ 34-†643
20	480	2	50	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†50 ♦ 36-†643
20	600	2	50	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†50 ♦ 36-†663
25	480	2	70	480	FAL, TED, EHD	EBMCFD✓	EBMC2FD-†70 ♦ 34-†643
25	480	2	70	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†70 ♦ 36-†643
25	600	2	70	600	FAL, TED, FDB	EBMCFD✓	EBMC2FD-†70 ♦ 36-†663
20	240	3	90	240	FAL, TEB	EBMCFH✓	EBMC3FH-†90 ♦ 32-†623
25	240	3	100	240	FAL, TEB	EBMCFH✓	EBMC3FH-†100 ♦ 32-†623
30	240	3	125	480	TEB	EBMCFH✓	EBMC3FH-†125 ♦ 34-†623
30	480	3	70	480	FAL, TED, EHD	EBMCFH✓	EBMC3FH-†70 ♦ 34-†643
30	480	3	70	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†70 ♦ 36-†643
30	600	3	70	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†70 ♦ 36-†663

♦ † See page 332 for footnotes.

✓ – available with Lightning Service™ delivery.
See Section G for complete details.



EBMC Combination Line Starters and Enclosures

Single-Speed Non-Reversing with Circuit Breakers and Fusible Disconnect Switches

3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations
 NEMA 3,3R,4,4+,7BCD,9EFG,12 Watertight

Motor Starter			Circuit Breaker			Enclosure	
Max. HP	Line Volts	NEMA Size	Amp Rating	Frame Volts	Frame Types	Without Breaker & Starter Cat. No.	With Breaker & Starter Cat. No. ♦♦
40	480	3	90	480	FAL, TED, EHD	EBMCFH✓	EBMC3FH-†90 ♦ 34-*643
40	480	3	90	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†90 ♦ 36-*643
40	600	3	90	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†90 ♦ 36-*663
50	480	3	100	480	FAL, TED, EHD	EBMCFH✓	EBMC3FH-†100 ♦ 34-*643
50	480	3	100	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†100 ♦ 36-*643
50	600	3	100	600	FAL, TED, FDB	EBMCFH✓	EBMC3FH-†100 ♦ 36-*663
40	240	4	175	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†175 ♦ 36-*623
50	240	4	200	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†200 ♦ 36-*623
60	480	4	125	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†125 ♦ 36-*643
60	600	4	100	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†100 ♦ 36-*663
75	480	4	150	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†150 ♦ 36-*643
75	600	4	125	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†125 ♦ 36-*663
100	480	4	200	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†200 ♦ 36-*643
100	600	4	150	600	TFK/ JD/ KAL, TFJ, JDB	EBMCFL✓	EBMC4FL-†150 ♦ 36-*663
125	480	5	300	600	TJK/ KD/ LAL, TJJ, KDB	EBMCFM✓	EBMC5FM-†300 ♦ 36-*643
150	480	5	400	600	TJK/ KD/ LAL, TJJ, KDB	EBMCFM✓	EBMC5FM-†400 ♦ 36-*643

Motor Starter			Fusible Disconnect Switch			With Disconnect Switch & Starter Cat. No.	
Max. HP	Line Volts	NEMA Size	Amp Rating	Max. Volts	Switch Type		
5	600	0	30	600	DS161R	EBMC0FD-WFD30J36-W643	
10	600	1	30	600	DS161R	EBMC1FD-WFD30J36-W643	
25	600	2	60	600	DS262R	EBMC2FD-WFD60J36-W643	
30	600	3	100	600	DS363R	EBMC3FD-WFD100J36-W643	

† Circuit Breakers:	
Manufacturer	Symbol
Cutler-Hammer	WT
General Electric	TT
Square D	DT

NEMA Size	Without Switch & Starter Cat. No.
0	EBMCFD-FD
1	EBMCFD-FD
2	EBMCFD-FD
3	EBMCFH-FD

♦ Select Circuit Breaker **Frame Type** based on Frame Size, Voltage, and Manufacturer desired:

♦♦ Starters are furnished with 3 heaters, when heater ratings are fully specified.

* Motor Starters:

Manufacturer	Symbol
Allen Bradley	AB
Square D	D
General Electric	G
Cutler-Hammer	W

	100 Amp. Frame and 150 Amp. Frame			225 Amp. Frame and 250 Amp. Frame	400 Amp. Frame
Manufacturer	240VAC	480VAC	600VAC	600VAC	600VAC
Cutler-Hammer	—	EHD	FDB	JD – Interchangeable Trip Unit JDB – Non-Interchangeable Trip Unit	KD – Interchangeable Trip Unit KDB – Non-Interchangeable Trip Unit
General Electric	TEB	TED	TED	TFK – Interchangeable Trip Unit TFJ – Non-Interchangeable Trip Unit	TJK – Interchangeable Trip Unit TJJ – Non-Interchangeable Trip Unit
Square D	FAL	FAL	FAL	KAL	LAL

✓ – available with Lightning Service™ delivery.
 See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMC Combination Line Starters

Single-Speed Non-Reversing with Motor Circuit Protectors

3-Pole 60 hertz, 600VAC Maximum

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

1C



Ordering Information:

Select the complete catalog no. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motors or specify ampere rating of heaters.

◆◆ Starters are furnished with three heaters when heater ratings are fully specified. For starter catalog numbers refer to Table 1 in Section 6C. For motor circuit protector, refer to Table 14 in Section 6C.

Motor Starter

Max. HP Polyphase	Volts	NEMA Size	MCP Amp Rating	Enclosure W/O Starter & MCP Catalog No.	Enclosure W/Starter & MCP Catalog No. ◆◆
3	240	0	15	EBMCFB✓	EBMC0FB-†15A ◆36-**623
3	480	0	7	EBMCFB✓	EBMC0FB-†7A ◆36-**643
3	600	0	7	EBMCFB✓	EBMC0FB-†7A ◆36-**663
5	480	0	15	EBMCFB✓	EBMC0FB-†15A ◆36-**643
5	600	0	15	EBMCFB✓	EBMC0FB-†15A ◆36-**663
7½	240	1	30	EBMCFB✓	EBMC1FB-†30A ◆36-**623
7½	480	1	15	EBMCFB✓	EBMC1FB-†15A ◆36-**643
10	480	1	30	EBMCFB✓	EBMC1FB-†30A ◆36-**643
10	600	1	15	EBMCFB✓	EBMC1FB-†15A ◆36-**663
10	240	2	50	EBMC2FD✓	EBMC2FD-†50A ◆36-**623
15	240	2	100	EBMC2FD✓	EBMC2FD-†100A ◆36-**623
15	480	2	30	EBMC2FD✓	EBMC2FD-†30A ◆36-**643
20	600	2	30	EBMC2FD✓	EBMC2FD-†30A ◆36-**663
25	480	2	50	EBMC2FD✓	EBMC2FD-†50A ◆36-**643
25	600	2	50	EBMC2FD✓	EBMC2FD-†50A ◆36-**663
30	240	3	100	EBMCFH✓	EBMC3FH-†100A ◆36-**623
30	600	3	50	EBMCFH✓	EBMC3FH-†50A ◆36-**663
50	480	3	100	EBMCFH✓	EBMC3FH-†100A ◆36-**643
50	600	3	100	EBMCFH✓	EBMC3FH-†100A ◆36-**663
50	240	4	250 [Ⓢ]	EBMCFL✓	EBMC4FL-†250* ◆36-**623
100	480	4	250 [Ⓢ]	EBMCFL✓	EBMC4FL-†250* ◆36-**643
100	600	4	250 [Ⓢ]	EBMCFL✓	EBMC4FL-†250* ◆36-**663
60	240	5	250 [Ⓢ]	EBMCFM✓	EBMC5FM-†250* ◆36-**623
100	240	5	400	EBMCFM✓	EBMC5FM-†400* ◆36-**623
125	480	5	250 [Ⓢ]	EBMCFM✓	EBMC5FM-†250* ◆36-**643
150	600	5	250 [Ⓢ]	EBMCFM✓	EBMC5FM-†250* ◆36-**663
200	480	5	400	EBMCFM✓	EBMC5FM-†400* ◆36-**643
200	600	5	400	EBMCFM✓	EBMC5FM-†400* ◆36-**663

Ⓢ General Electric motor circuit protectors are 225 Amp. Rated.

† Motor Circuit Protectors:

Manufacturer	Symbol
Cutler-Hammer	WP
General Electric	TP
Square D	DP

◆ Select Motor Circuit Protector **Frame Type** based on Frame Size and Manufacturer desired:

	150 Amp. Frame	250 Amp. Frame	400 Amp. Frame
Cutler-Hammer	HMCP	HMCP	HMCP
	(F-Frame)	(J-Frame)	(K-Frame)
General Electric	TEC	TJC	
Square D	FAL	KAL	LAL

** Motor Starters:

Manufacturer	Symbol
Allen Bradley	AB
Square D	D
General Electric	G
Cutler-Hammer	W

✓ – available with Lightning Service™ delivery. See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

* After the MCP amp rating the following character symbol must be entered to designate the trip range. Consult factory for other trip ranges available.

Cutler-Hammer (WP)

MCP Amp Rating	Symbol	Trip Range
7	A	21 to 70
15	A	45 to 150
30	A	90 to 300
50	A	150 to 500
100	A	300 to 1000
250	J	1250 to 2500
400	G	1250 to 2500

General Electric (TP)

MCP Amp Rating	Symbol	Trip Range
7	A	18 to 90
15	A	42 to 198
30	A	90 to 390
50	A	180 to 660
100	A	300 to 1308
225	B	1000 to 2250
400	C	1000 to 3300

Square D (DP)

MCP Amp Rating	Symbol	Trip Range
7	A	18 to 70
15	A	50 to 180
30	A	100 to 350
50	A	150 to 580
100	A	300 to 1100
250	H	1250 to 2500
400	E	1250 to 2500

Application:

Spectrum EBM-E series of hinged cover motor control enclosures are used:

- for general motor control and circuit protection – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter.
- in areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- for across-the-line starting and stopping of polyphase ac induction motors.
- to provide line disconnect means and short circuit protection (EBMC).
- to provide motor overload and undervoltage protection.
- for feeder or branch circuit protection for lighting, heating, appliance, and motor circuits (EBMC).
- on switch racks or other assemblies where it's desired that motor control be centrally located.

Features:

- Total compliance to the wiring end room requirements of the National Electrical Code®.
- Solid state electronic Cutler-Hammer Advantage™ starter.
- Smaller enclosures required than for conventional starter applications.
- Elimination of heater elements, contact chatter, and welding due to low voltage supply.
- Precise overcurrent protection and constant coil power.
- Same performance and labor-saving benefits from the versatile Spectrum EBM Enclosure product line.
- Universal mounting plates and hardware for all major manufacturers' components.
- Mercury switch electronic overload reset.
- Optional EMPS control devices may be added to enclosure cover.

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers, and retractile springs – stainless steel

Electrical Rating Ranges:

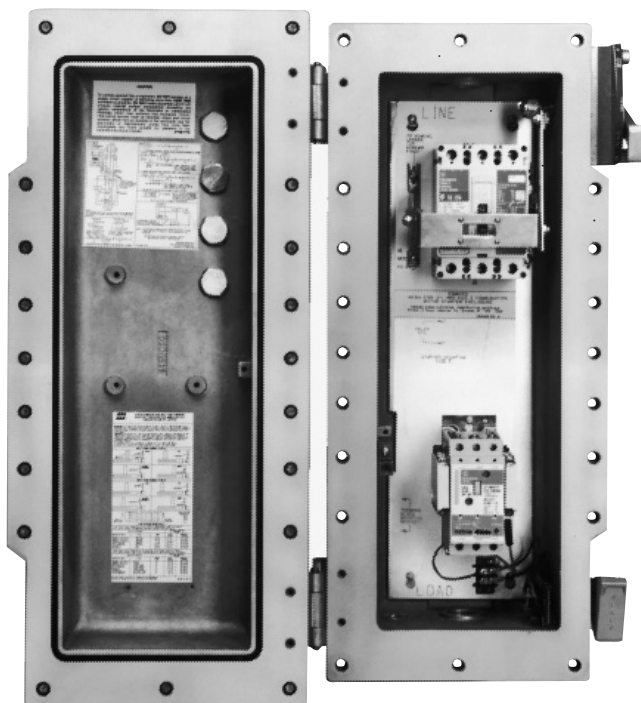
- Motor starters – NEMA sizes 1-5

**Certifications and
Compliances:**

- NEC Class I, Division 1 & 2, Groups B,C,D
/CEC: Class II, Division 1, Groups E,F,G,
Class II, Division 2, Groups F,G
Class III
- UL Standards: UL1203 – Hazardous (classified) locations
- CSA Standard: C22.2 No. 30
- UL Subject 2062 - High AIC Ratings (Interrupting Capacity)

Volt	RMS Symm-Amperes
240	65,000
480	50,000
600	25,000

- NEMA: 3, 3R, 4 $\frac{1}{2}$, 7BCD, 9EFG, 12

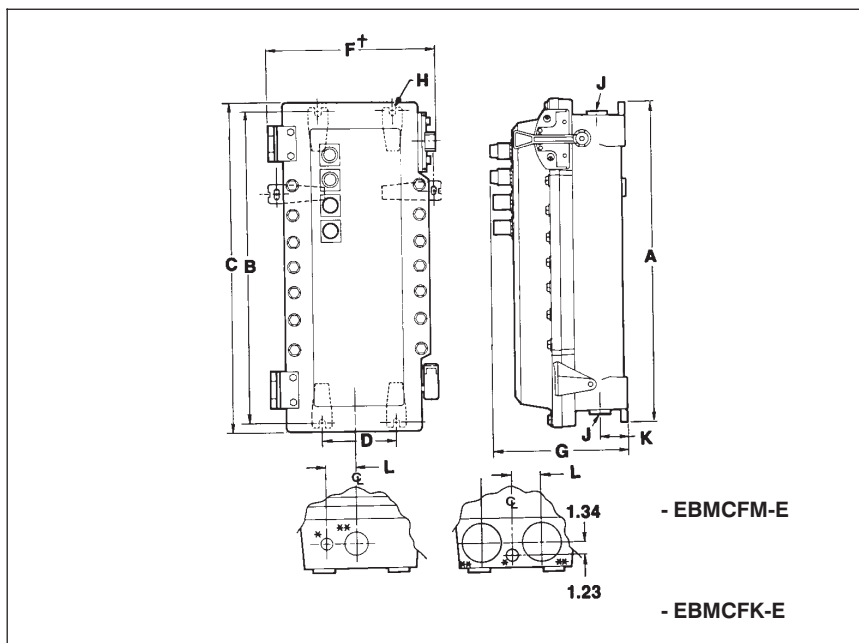


Spectrum EBM-E Series Combination Line Starter with Advantage Starter.

Options:

See page 310 for options for the EBM enclosures supplied with Cutler-Hammer Advantage starters. The following suffixes cannot be ordered with this style equipment: C, LVR1, O, S.

Dimensions (inches) - see page 335 for dimensions of different enclosure sizes



*Advantage is a trademark of Cutler-Hammer Products.

† Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

Spectrum EBM Enclosures

Supplied with Cutler-Hammer
Advantage™ Starters

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III,
Type 3,3R,4,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

1C

1C
Combination
Motor Starters

DIMENSIONS (inches)

Enclosure Only Cat. No.	Dimensions		C	D	F	**J Conduit Entry			
	A	B				Trade Size D&T	w/RE	K	L
EBMCFB-E	25.75	24.75	26.90	6.00	13.53	2"	1.5"	3.25	3.13
EBMCFG-E	38.13	36.50	39.28	6.00	12.53	3"	2.5"	3.25	3.13
EBMCFK-E	43.12	41.50	42.65	12.00	11.40	(2) 3"	(2) 2.5"	3.25	3.25
EBMCFM-E	64.22	62.50	64.03	12.00	15.40	(2) 4"	(2) 3.5"	4.00	4.00

"H" – Use 1/2" diameter bolts for all enclosures listed above.

* 1" D&T conduit entry for control conductors supplied with PLG plug (top and bottom).

** Conduit entrance for power conductors (top & bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

Ordering Information – Combination Line Starters

● To order an enclosure complete with motor starter and circuit breaker (or motor circuit protector), insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes.

EBM "E" Series Combination Line Starters and Enclosures for Cutler-Hammer Advantage Starters, Single Speed Non-Reversing

Motor Starter			Circuit Breaker			Enclosure	
Max. HP	Line Volt	NEMA Size	Amp Trip	Frame Volts	Frame Type	Without Breaker & Starter Cat. # ♦	With Breaker (or Motor Circuit Protector) & Cutler-Hammer Advantage Starter Cat. #
7½	240	1	50	240	FAL, TEB	EBMCFB-E	EBMC1FB-†50*32-W6213-E
7½	240	1	50	480	FAL, TED, EHD	EBMCFB-E	EBMC1FB-†50*34-W6213-E
7½	240	1	50	600	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†50*36-W6213-E
10	480	1	30	480	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†30*34-W6413-E
10	480	1	30	600	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†30*36-W6413-E
10	600	1	30	600	FAL, TED, FDB	EBMCFB-E	EBMC1FB-†30*36-W6613-E
15	240	2	70	240	FAL, TEB	EBMCFB-E	EBMC2FB-†70*32-W6213-E
15	240	2	70	480	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†70*34-W6213-E
15	240	2	70	600	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†70*36-W6213-E
25	480	2	70	480	FAL, TED, EHD	EBMCFB-E	EBMC2FB-†70*34-W6413-E
25	480	2	70	600	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†70*36-W6413-E
25	600	2	50	600	FAL, TED, FDB	EBMCFB-E	EBMC2FB-†50*36-W6413-E
30	240	3	125	240	FAL, TEB	EBMCFG-E	EBMC3FG-†125*32-W6213-E
30	240	3	125	480	FAL, TED, EHD	EBMCFG-E	EBMC3FG-†125*34-W6213-E
30	240	3	125	600	FAL, TED, FDB	EBMCFG-E	EBMC3FG-†125*36-W6213-E
50	480	3	100	480	FAL, TED, EHD	EBMCFG-E	EBMC3FG-†100*34-W6413-E
50	480	3	100	600	FAL, TED, FDB	EBMCFG-E	EBMC3FG-†100*36-W6413-E
50	600	3	90	600	FAL, TED, FDB	EBMCFG-E	EBMC3FG-†90*36-W6613-E
50	240	4	200	600	TFK, JD, KAL, TFJ, JDB	EBMCFK-E	EBMC4FK-†200*W36-W6213-E
100	480	4	200	600	TFK, JD, KAL, TFJ, JDB	EBMCFK-E	EBMC4FK-†200*36-W6413-E
100	600	4	150	600	TFK, JD, KAL, TFJ, JDB	EBMCFK-E	EBMC4FK-†150*36-W6613-E
75	240	5	400	600	TJK, KD, LAL, TJJ, KDB	EBMCFM-E	EBMC5FM-†400*36-W6213-E
150	480	5	400	600	TJK, KD, LAL, TJJ, KDB	EBMCFM-E	EBMC5FM-†400*36-W6413-E
200	600	5	400	600	TJK, KD, LAL, TJJ, KDB	EBMCFM-E	EBMC5FM-†400*36-W6613-E

†With Circuit Breakers:

Manufacturer	Symbol
Cutler-Hammer	WT
General Electric	TT
Square D	DT

†With Motor Circuit Protectors:
(Note: Only units with a frame volts
of 600 are available with Motor
Circuit Protectors):

Manufacturer	Symbol
Cutler-Hammer	WP
General Electric	TP
Square D	DP

* Select **Circuit Breaker Frame Type** based on Frame Size, Voltage, and Manufacturer desired.

Mfg.	100 Amp Frame and 150 Amp Frame			225 Amp Frame and 250 Amp Frame	400 Amp Frame
	240VAC	480VAC	600VAC	600VAC	600VAC
Cutler-Hammer	—	EHD	FDB	JD – Interchangeable Trip Unit JDB – Non-Interchangeable Trip Unit	KD – Interchangeable Trip Unit KDB – Non-Interchangeable Trip Unit
General Electric	TEB	TED	TED	TFK – Interchangeable Trip Unit TFJ – Non-Interchangeable Trip Unit	TJK – Interchangeable Trip Unit TJJ – Non-Interchangeable Trip Unit
Square D	FAL	FAL	FAL	KAL	LAL

* Select **Motor Circuit Protector Frame Type** based on Frame Size and Manufacturer desired. Before the frame type a character symbol must be entered to designate the trip range. See page 333 for appropriate symbol.

	150 Amp Frame (600 V)	250 Amp Frame (600 V)	400 Amp Frame (600 V)
	HMCP (F-Frame)	HMCP (J-Frame)	HMCP (K-Frame)
Cutler-Hammer	HMCP (F-Frame)	HMCP (J-Frame)	HMCP (K-Frame)
General Electric	TEC	TFC	TJC
Square D	FAL	KAL	LAL

♦ Note: "Enclosures only" are supplied with necessary operators, linkages, and mercury switch electronic overload resets.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

Application:

EPC combination line starters and enclosures are used:

- for across-the-line starting of polyphase ac induction motors
- in locations which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in damp, wet or corrosive locations
- for installation indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnecting means, motor branch circuit protection, motor running protection, undervoltage protection and remote starting and stopping due to the combination of thermal-magnetic circuit breaker and magnetic motor starter

Features:

- Quick-opening covers – less than two turns to remove or install
- Three section design for ease of installation
- Water-shedding construction with female threads on top cover, male threads on bottom cover, and top cover skirted
- Specially located stops and locks insure adequate thread engagement and prevent overtightening
- Separate replaceable mounting bracket attached to the rear of the body provides three-point suspension for quick installation and leveling – one keyhole slot at top and two open slots at bottom
- Bodies have two taper-tapped conduit hubs with integral bushings on the top, and two more directly below
- Universal mounting plate and reset mechanism will accommodate any of the motor starters and circuit breakers in catalog listing
- When interior mounting plate is removed, feeder and branch circuit conductors are easily pulled into the wiring chamber. The interior assembly, with breaker and starter attached, is then replaced, final connections made, and covers assembled
- External handle, which operates breaker can be padlocked in either “ON” or “OFF” positions
- Breaker is trip-free of the handle, therefore it will open under short circuit or overload, even if the external handle is locked in the “ON” position
- Furnished with third overload relay as standard

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

* Application is limited by starter, contactor, circuit breaker or motor circuit protector design – Consult Factory

Electrical Rating Range:

- Starters – Sizes 0 to 3 inclusive
- Breakers – 100 and 150 ampere frame sizes
- Motor Circuit Protectors – 100 ampere frame size

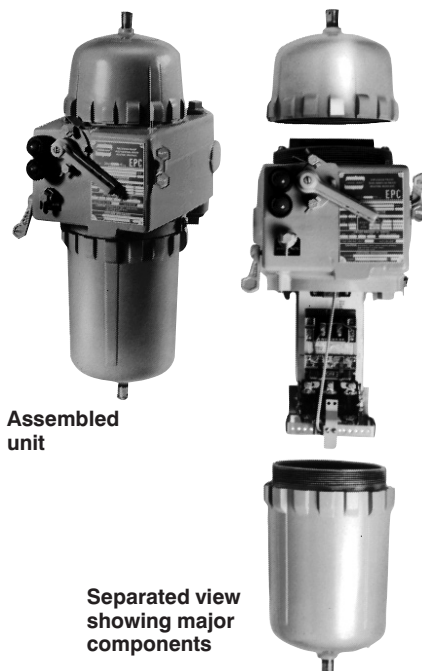
Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups C, D
Class II, Division 1, Groups E, F, G
Class II, Division 2, Groups F, G
Class III
- NEMA/EEMAC: 3, 4, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standards: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No. and many are available in kit form or for field addition to existing units:

See page 352 for listing of kits

**Description**

		Suffix to add to Encl. Cat. #
Control circuit transformer 600/480/240-120 volts, 50 or 60 hertz (Sizes 0 and 1 – 100-50 VA, Size 2 – 100-200 VA, Size 3 – 200-350 VA)		
Fusible – Secondary	.....	FT
Primary and secondary	.....	FTPS
Auxiliary Contacts on Starter or Contactor*		
1 N.O./1 N.C.	.....	S781
2 N.O./2 N.C.	.....	S782
3 N.O./3 N.C.	.....	S783
Auxiliary Switch on Circuit Breaker or Motor Circuit Protector*		
1A/1B (1P2T)	.....	S784
2A/2B (2P2T)	.....	S785
Side bosses drilled and tapped same size as standard hubs (except 15" dia. – 1" size)	.....	S366
Back boss drilled and tapped same size as standard hubs (except 15" dia. – 1" size)	.....	S367
Pushbuttons (heavy duty):		
START-STOP	 PB3	
Selector switches (standard duty):		
ON-OFF	 RR2	
HAND-OFF-AUTO	 RR3	
Pilot lights:		
Red, 120 volt	 J1	
Green, 120 volt	 J3	
LED pilot lights, in place of standard incandescent lamps	 LED	
Pilot light transformers:		
240 volt†	 T2	
480 volt†	 T4	
600 volt†	 T5	
Space heaters:		
120 volt	 R11	
240 volt	 R22	
480 volt	 R44	
Automatic reset overload relay	 S1	
Less overload relays (lighting contactor)	 CL	
Less overload relays (motor contactor)	 CM	
† Required for pilot lights on other than 120 volt control circuits. One required for each lamp.		
Separate ac control circuit		Specify
Insulated neutral with 2 connectors (50, 100 & 225 amp)	.....	S146
Grounded neutral stud with 3 connectors (50, 100 & 225 amp)	.....	S178
Pilot light holes drilled, tapped and plugged for future addition of pilot lights – one hole	.....	S541
– two holes	.....	S542
Standard Breather (Class I, Groups C,D, Class II, Groups E,F,G, Class III)	.....	S219
Standard Drain (Class I, Groups C,D, Class II, Groups E,F,G, Class III)	.....	S198
Standard Breather and Drain (Class I, Groups C,D, Class II, Groups E,F,G, Class III)	.....	S198V
Universal Breather – Drain (Class I, Groups C,D, Class II, Groups F,G)	.....	S454†
(2) Universal Breather – Drains (Class I, Groups C,D, Class II, Groups F,G)	.....	S454V†
Less heaters	.....	0

† Not suitable for NEMA 4.

EPC Combination Line Starters and Enclosures

Dimensions* (inches)

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

1C

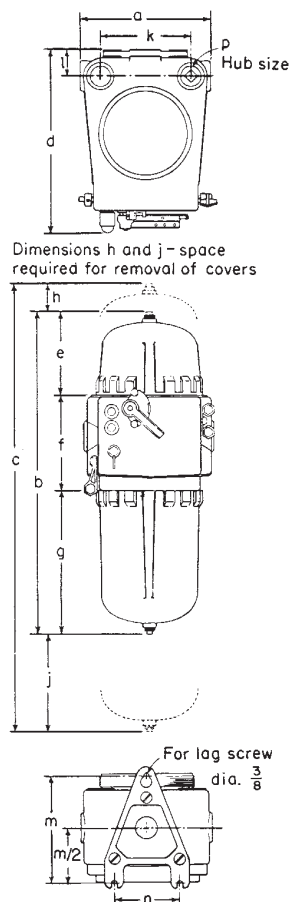
1C Combination Motor Starters

Single-Speed Non-Reversing Sizes 0, 1, 2, and 3 starters

Cat. # EPC Int. Dia.	87 7"	813 11"	87-FTPS or 87-FT 7"	813-FTPS or 813-FT 11"
	Dimensions		Dimensions ♦	
a	10 ⁵ / ₈	16 ¹ / ₈	10 ⁵ / ₈	16 ¹ / ₈
b	26 ¹ / ₁₆	38 ¹ / ₂	31 ¹ / ₁₆	41 ¹ / ₂
c	35 ¹¹ / ₁₆	61	47 ¹¹ / ₁₆	67 ¹ / ₂
d	14 ¹¹ / ₁₆	20 ¹ / ₄	14 ¹¹ / ₁₆	20 ¹ / ₄
e	6 ³ / ₄	9 ¹ / ₈	11 ³ / ₄	12 ¹ / ₈
f	7 ¹¹ / ₁₆	8 ⁵ / ₈	7 ¹¹ / ₁₆	8 ⁵ / ₈
g	11 ⁵ / ₈	20 ³ / ₄	11 ⁵ / ₈	20 ³ / ₄
h	2	4 ¹ / ₂	9	8
j	7 ⁵ / ₈	18	7 ⁵ / ₈	18
k	7 ³ / ₈	12	7 ³ / ₈	12
l	2 ¹ / ₁₆	2 ⁵ / ₈	2 ¹ / ₁₆	2 ⁵ / ₈
m	9 ³ / ₈	11	9 ³ / ₈	11
n	5 ¹ / ₄	5 ¹ / ₂	5 ¹ / ₄	5 ¹ / ₂
p	1 ¹ / ₄	2 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₂

♦ For units with Control Circuit Transformer (suffix FT or FTPS)

7" 9" 11" Internal diameter



* Dimensions are approximate, not for construction purposes.

EPC Combination Line Starters and Enclosures

Single Speed, Non-Reversing
3-Pole 60 hertz, 600 VAC Maximum

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

With Circuit Breakers

Ordering Information:

To order an enclosure complete with starter and breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes below.

Select the complete Cat. No. below and specify hp, voltage,

frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters.

◆◆ Starters are furnished with three heaters when heater ratings are fully specified.

Enclosures only can be ordered. Select from listings below. For starters that can be accom-

modated see Table 1 in Section 6C. Circuit breakers are also listed in Section 6C. Specific reference table is shown in the listings below.

Instantaneous magnetic trip circuit breakers (magnetic circuit interrupters) can be supplied. See listings in Section 6C.

Combination starters with motor circuit protectors or single speed, non-reversing motors are listed on page 339. Listings of circuit protectors are shown in Table 16 in Section 6C.

Motor Starter			Circuit Breaker				Enclosure			
Max. HP								Without Starter & Circuit Breaker Cat. #	With Starter & Circuit Breaker Cat. # ♦ ♦	
Poly-phase	Volts	NEMA Size	Amp Rating	Frame	Section 6C Table	Hub Size	Int. Dia.			
2	120	0	30	EB	7	1¼	7	EPC87	EPC870-†30ED-#613	
3	240	0	20	EHD	7	1¼	7	EPC87	EPC870-†20EHD-#623	
3	480	0	15	EHD	8	1¼	7	EPC87	EPC870-†15EHD-#643	
3	480	0	15	FDB	9	1¼	7	EPC87	EPC870-†15FD-#643	
3	600	0	15	FD	6	1¼	7	EPC87	EPC870-†15FD-#653	
5	240	1	30	EHD	7	1¼	7	EPC87	EPC871-†30EHD-#623	
5	480	0	15	EHD	8	1¼	7	EPC87	EPC870-†15EHD-#643	
5	480	0	15	FDB	9	1¼	7	EPC87	EPC870-†15FD-#643	
5	600	0	15	FDB	9	1¼	7	EPC87	EPC870-†15FD-#653	
7½	240	1	50	EHD	7	1¼	7	EPC87	EPC871-†50EHD-#623	
7½	480	1	30	EHD	8	1¼	7	EPC87	EPC871-†30EHD-#643	
7½	480	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-#643	
7½	600	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-#653	
10	480	1	30	EHD	8	1¼	7	EPC87	EPC871-†30EHD-#643	
10	480	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-#643	
10	600	1	30	FDB	9	1¼	7	EPC87	EPC871-†30FD-#653	
40	480	3	90	EHD	8	2½	11	EPC813	EPC813-†90EHB-#643	
40	480	3	90	FDB	9	2½	11	EPC813	EPC813-†90FB-#643	
40	600	3	90	FDB	9	2½	11	EPC813	EPC813-†90FB-#653	
50	480	3	100	EHD	8	2½	11	EPC813	EPC813-†100EHB-#643	
50	480	3	100	FDB	9	2½	11	EPC813	EPC813-†100FB-#643	
50	600	3	100	FDB	9	2½	11	EPC813	EPC813-†100FB-#653	

† Circuit Breakers:

Manufacturer	Symbol	Frames 100/150AMP		
		240V	480V	600V
General Electric	TT	TEB	TED*	TED*
Square D	DT	FAL*	FAL*	FAL*
Cutler-Hammer	WT	EHD	EHB	FB, FDB

‡ Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D***	D
Cutler-Hammer	W

* Specify voltage

*** When Square D starter is used in EPC813, EPC-KIT 32 must be ordered

EPC Combination Line Starters

Single-Speed Non-Reversing with Motor Circuit Protectors

3-Pole 60 hertz, 600 VAC Maximum

Cl. I, Div. 1 & 2, Groups C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,4,7CD,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

1C

1C Combination Motor Starters

Ordering Information:

Select the complete catalog no. below and specify hp, voltage, frequency, rpm, type and full load ampere rating of motors or specify ampere rating of heaters.

◆◆ Starters are furnished with three heaters when heater ratings are fully specified. For starter catalog numbers refer to Table 1 in Section 6C. For motor circuit protector, refer to Table 14 in Section 6C.

Current limiters may be ordered by specification ◆.

Motor Starter			Enclosure with Motor Circuit Protector and Starter ◆◆	
Max. HP Polyphase	Volts	NEMA Size	Amp Rating	Cat. #
3	240	0	15	EPC870-†15HMCP-‡623
3	480	0	7	EPC870-†7HMCP-‡643
3	600	0	7	EPC870-†7HMCP-‡653
5	480	0	15	EPC870-†15HMCP-‡643
5	600	0	15	EPC870-†15HMCP-‡653
7½	240	1	30	EPC871-†30HMCP-‡623
7½	480	1	15	EPC871-†15HMCP-‡643
10	600	1	15	EPC871-†15HMCP-‡653
10	480	1	30	EPC871-†30HMCP-‡643

◆◆ General Electric or Cutler-Hammer MCPs only.

† Motor Circuit Protectors

Manufacturer	Symbol
General Electric	TP
Square D	DP
Cutler-Hammer	WP

‡ Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D	D
Cutler-Hammer	W

Notes Page

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Description	Page No.
Application/Selection	342
Magnetic Line Starters & Enclosures	
Single speed, non-reversing	
EBMS Series	343-346
EPC Series	349-351
EBMS Series with Advantage* Starter	347, 348
Manual Line Starters & Enclosures	
EMN Series	353
Manual Motor Starting Switches & Enclosures	
EFD Series	354
MC Series	360, 361
EDS Series	355-357
GHG 635 Series	358, 359
Special Feature Kits	
For EPC Series	352

* Advantage is a trademark of Cutler-Hammer Inc.

Application and Selection

Quick Selector Chart

Application:

Line starters are housed in enclosures suitable for specific environments, and are used for:

- across-the-line starting of motors
- motor running protection
- undervoltage protection
- remote or manual starting and stopping

Selection:

Considerations for selection of proper enclosure:

- The environment of the enclosure location in accordance with NEC/CEC and NEMA/EEMAC requirements
- The characteristics of the starter to be enclosed
- See "Quick-Selector" below for guidance

Options:

Many options are available on:

- material and finishes where special atmospheric conditions prevail
- special features for specific applications. See individual listings for available options, many of which are available in kit form for field addition to existing units.

Quick Selector Chart

Enclosures for Starters	Enclosures	NEC/CEC – Hazardous Area Compliance	NEMA/EEMAC Enclosure Type	Starter Type	NEMA/EEMAC Size Starters Single Speed Non-reversing	Motor Phase and Type	Manufacturers Equipment Enclosed – Starter	Cover Type
MC		None	3,4,12	Manual		Single-AC	Cutler-Hammer	Gasketed
EPC		Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,4,7CD, 9EFG,12	Magnetic	0-2	Poly-AC	Allen-Bradley Cutler-Hammer G.E. Square D	Threaded
EBMS		Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,4,7BCD, 9EFG,12	Magnetic	0-5	Poly-AC	Allen-Bradley G.E. Square D Cutler-Hammer	Bolted/ Ground Joint/ Gasketed
EMN		Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7CD, 9EFG,12	Manual	0-1P	Single and Poly-AC	Allen-Bradley Cutler-Hammer G.E. Square D	Bolted/ Ground Joint
EDS, EDSC†		Cl. I, Div. 1 & 2, Groups B*,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7CD, 9EFG,12	Manual		DC and Single AC	Allen-Bradley G.E. Cutler-Hammer	Bolted/ Ground Joint
EFD		Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7BCD, 9EFG,12	Manual		DC and Single and Poly-AC	G.E. Square D	Bolted/ Ground Joint

† Factory sealed units listed on pages 440 and 441.

* Check listings for Group B suitability.

EBMS Magnetic Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

2C

2C Motor Starters

Application:

Spectrum EBM™ hinged cover motor control enclosures are used:

- For general motor control – indoors or outdoors – in damp, wet, dirty, dusty hazardous locations, without the need for a protective shelter.
- In areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- For across-the-line starting, stopping, speed changing and reversing of polyphase AC induction motors.
- To provide motor overload and undervoltage protection.
- On switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction (less than 0.4 of 1%).
- Motor starter operating handle located through the right side wall of the body permits visual confirmation of correct component assembly and operation.
- Total compliance to the wiring end room requirements of the National Electrical Code® and Canadian Electrical Code.
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body.
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' starters.
- Simple, straightforward installation of starter on pre-drilled mounting plate within enclosure. Mounting plate also field removable.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

- Neoprene cover gasket permanently attached to the cover seals out moisture.
- Bodies have top and bottom drilled and tapped entrances for power conduits plus one at the bottom for control conduit. Removable reducers are supplied as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap-on mounting feet.
- Optional EMPS control devices may be added to enclosure cover.
- Steel bracket for lifting larger enclosures during installation supplied as standard.

Certifications & Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- UL Standards: UL1203 – Hazardous (classified) Locations
- NEMA: 3,3R,4‡,7BCD,9EFG,12
- CSA Standard: C22.2 No. 30

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shaft and bushing – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers and retractile springs – stainless steel

Electrical Rating Range:

- Motor starters – NEMA/EEMAC sizes 0-5

National Electrical Code is a Registered Trademark of the National Fire Protection Association.



Spectrum EBM motor control enclosures accommodate popular makes of starters.

Options

The following options are available from the factory by adding suffix to catalog number. Suffixes are added alphanumerically.

Catalog Number System Example

EBMS1FB-(A)-W6413-(B)

(A) Options in this position are additions to the enclosures and should be listed alphanumerically.

(B) Options in this position are modifications to the motor starter and should be listed alphanumerically.

Description

- Less Overload Relays (lighting contactor)
- Less overload relays (motor contactor)
- Control Circuit Transformer, 100VA for NEMA/EEMAC sizes 0-2, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not included)
- Control Circuit Transformer, 200VA for NEMA/EEMAC size 3, 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not included)
- Control Circuit Transformer, 300VA for NEMA/EEMAC size 4, 5 600/480/240-120, 50/60 Hertz, with provision for fusing both primary leads and one secondary lead (fuses not included)
- Pilot Light, 120VAC, Red Jewel, w/blank indicating plate
- Pilot Light, 120VAC, Green Jewel, w/blank indicating plate
- Less Heaters in Starter Overload Relay
- Start-Stop Pushbuttons (requires 2 spaces)
- On-Off Selector Switch
- Hand-Off-Auto Selector Switch
- Space Heater, 120 Volt, 25 Watts
- Space Heater, 240 Volt, 25 Watts
- Space Heater, 480 Volt, 25 Watts
- Automatic Reset Overload Relay
- Std. Drain, Class I, B,C&D; Class II, EF&G; Class III
- Std. Breather & Drain, Class I, B,C&D; Class II, EF&G; Class III
- Side Conduit Entrances (check factory for application)
- Back Conduit Entrances (check factory for application)
- External Epoxy Finish
- Internal and External Epoxy Finish
- Additional control contacts, N.O. or N.C. – for single speed, non-reversing starters only (number limited by design of starter. Details on specific makes and sizes on request.)
 - Aux. Contacts on starter 1 N.O. & 1 N.C.
 - Aux. Contacts on starter 2 N.O. & 2 N.C.
 - Aux. Contacts on starter 3 N.O. & 3 N.C.
- 12 Point Term. Block – 30 Amp, 300V.
- General Purpose Control Relay, 4 Pole N.O., contacts rated 10A @ 600V, coil 120VAC, 50-60 Hz

Suffix to be added to Cat. No. **Position in Cat. No.**

CL	A
CM	A
FTPS100	A
FTPS200	A
FTPS300	A
J1 ①	A
J3 ①	A
0	B
PB23 ①‡	A
RR2 ①‡	A
RR3 ①‡	A
R11	A
R22	A
R44	A
S1	A
S756‡	A
S756V‡	A
S366	A
S367	A
S752	A
S753	A
S781	B
S782	B
S783	B
S786	A
S787*	A

① When specifying non-standard markings on any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order DSL Legend Plates for identification and marking of the device(s) being used. See page 329 for DSL Legend Plate listings.

* Use this option with NEMA/EEMAC Size 0 or 1 starters necessitates a larger enclosure. Use "B" size enclosure.

Example:

W/O	Enclosure	Enclosure for
Starter	Cat. No.	S787
	EBMSFA	EBMSFB

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMS Magnetic Line Starters and Enclosures

**Single-Speed Non-Reversing
3-Pole 60 hertz, 600 VAC Maximum**

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4 ‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

2C

Ordering Information:

- To order an enclosure complete with motor starter, insert the manufacturer's symbol in the designated position (see ‡) of the catalog number. Symbols are shown in the footnotes.
- Also specify HP, voltage, frequency, RPM, type and full load ampere rating of motor – or specify ampere rating of heaters.

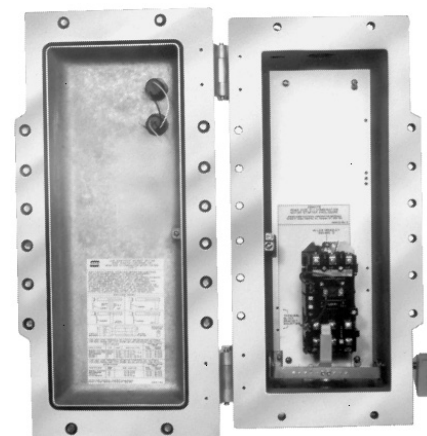
◆◆ Motor starters are furnished with three heaters when heater ratings are fully specified.

• Enclosures without starters may be ordered. Select from the listings below. For catalog numbers of manufacturers motor starters that can be accommodated see Section 6C of this catalog.

EBMS Series Enclosures for Magnetic Line Starters Single Speed Non-Reversing

Motor Starter			Enclosure	
Max. HP Poly- phase	Volts	NEMA Size	Without Starter Cat. No.	With Starter Cat. No. ◆◆
2	120	0	EBMSFA	EBMS0FA-*613
3	120	1	EBMSFA	EBMS1FA-*613
3	240	0	EBMSFA	EBMS0FA-*623
5	480	0	EBMSFA	EBMS0FA-*643
5	600	0	EBMSFA	EBMS0FA-*663
7½	120	2	EBMSFB	EBMS2FB-*613
7½	240	1	EBMSFA	EBMS1FA-*623
10	480	1	EBMSFA	EBMS1FA-*643
10	600	1	EBMSFA	EBMS1FA-*663
15	120	3	EBMSFH	EBMS3FH-*613
15	240	2	EBMSFB	EBMS2FB-*623
25	480	2	EBMSFB	EBMS2FB-*643
25	600	2	EBMSFB	EBMS2FB-*663
30	240	3	EBMSFH	EBMS3FH-*623
50	480	3	EBMSFH	EBMS3FH-*643
50	600	3	EBMSFH	EBMS3FH-*663
50	240	4	EBMSFH	EBMS4FH-*623
100	480	4	EBMSFH	EBMS4FH-*643
100	600	4	EBMSFH	EBMS4FH-*663
100	240	5	EBMSFL	EBMS5FL-*623
200	480	5	EBMSFL	EBMS5FL-*643
200	600	5	EBMSFL	EBMS5FL-*663

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.



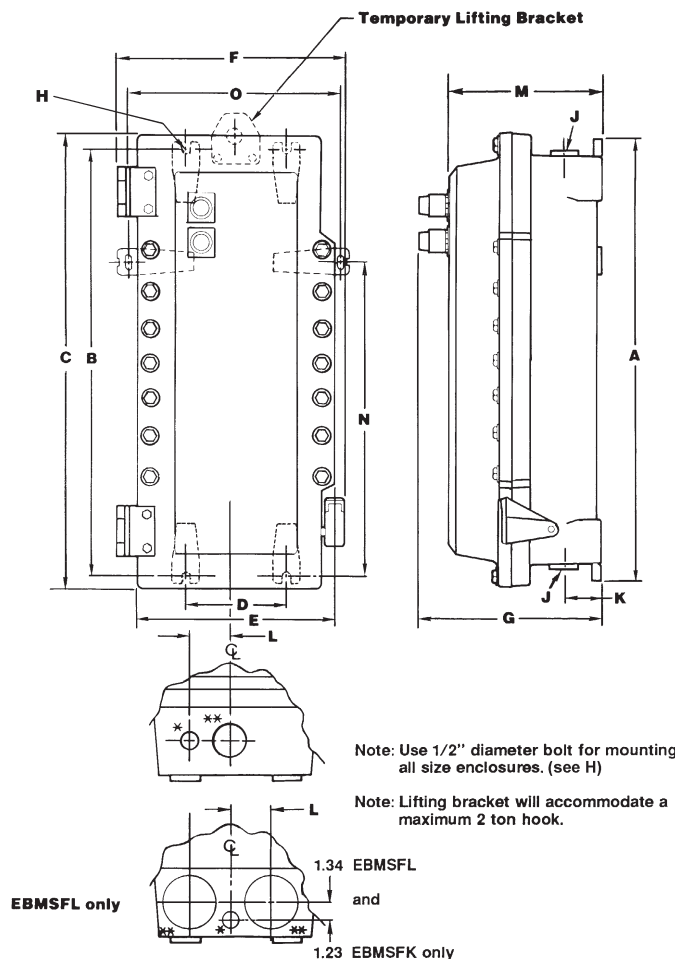
EBMS Series starter enclosures are available with magnetic line starters. NEMA sizes 0-5.

2C
Motor Starters

* Motor starters:

Manufacturer	Symbol
Allen Bradley	AB
Square D	D
General Electric	G
Cutler-Hammer	W

Single-Speed Non-Reversing Sizes 0, 1, 2, 3, 4 and 5 Starters



Dimensions are approximate, not for construction purposes.

										**J Conduit Entry Trade Size							
Enclosure Only Cat. No.	Enclosure Size Symbol	A	B	C	D	E	F	G	D&T◆	w/RE	K	L	M	N	O		
Size 0,1																	
FVNR	EBMSFA	A	18.25	17.25	19.00	6.00	12.63	14.38	12.13	2"	1.5"	3.25	3.13	10.25	—	—	
Size 2																	
FVNR	EBMSFB	B	25.75	24.75	26.50	6.00	12.63	14.38	12.13	2"	1.5"	3.25	3.13	10.25	—	—	
Size 3,4																	
FVNR	EBMSFD***	D	28.25	27.25	29.00	6.00	12.63	14.06	12.13	3"	2.5"	3.25	3.13	10.25	—	—	
Starter	EBMSFH	H	37.50	36.50	38.25	6.00	14.25	16.00	13.54	3"	2.5"	3.25	3.94	11.66	—	—	
Size 5																	
FVNR	EBMSFK***	K	43.12	41.50	42.25	12.00	17.25	19.88	11.00	(2) 3"	(2) 2.5"	3.25	3.00	10.78	—	—	
Starter	EBMSFL	L	53.25	51.50	52.88	12.00	17.50	20.18	15.00	(2) 4"	(2) 3.5"	4.00	3.50	13.03	41.50	18.00	

§ Use EBMSFB enclosure when S787 option is ordered with size 0 or 1 starter.

* 1" Drilled & Tapped conduit entry for control conductors supplied with PLG plug (top & bottom)

** Conduit entrance for power conductors (top and bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

*** For Cutler-Hammer W200 Advantage® starters.

♦ Drilled & Tapped.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

Spectrum™ EBM Enclosures

Supplied with Cutler-Hammer Advantage™ Starters

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

2C

2C
Motor Starters

Application:

Spectrum EBM-E series of hinged cover motor control enclosures are used:

- for general motor control – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter.
- in areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- for across-the-line starting and stopping of polyphase ac induction motors.
- to provide motor overload and undervoltage protection.
- on switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Total compliance to the wiring end room requirements of the National Electrical Code® 1993.
- Solid state electronic Cutler-Hammer Advantage™ starter.
- Smaller enclosures required than for conventional starter applications.
- Elimination of heater elements, contact chatter, and welding due to low voltage supply.
- Precise overcurrent protection and constant coil power.
- Same performance and labor-saving benefits from the versatile Spectrum EBM Enclosure product line.
- Universal mounting plates and hardware for all major manufacturers' components.
- Mercury switch electronic overload reset.
- Optional EMPS control devices may be added to enclosure cover.

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers, and retractile springs – stainless steel

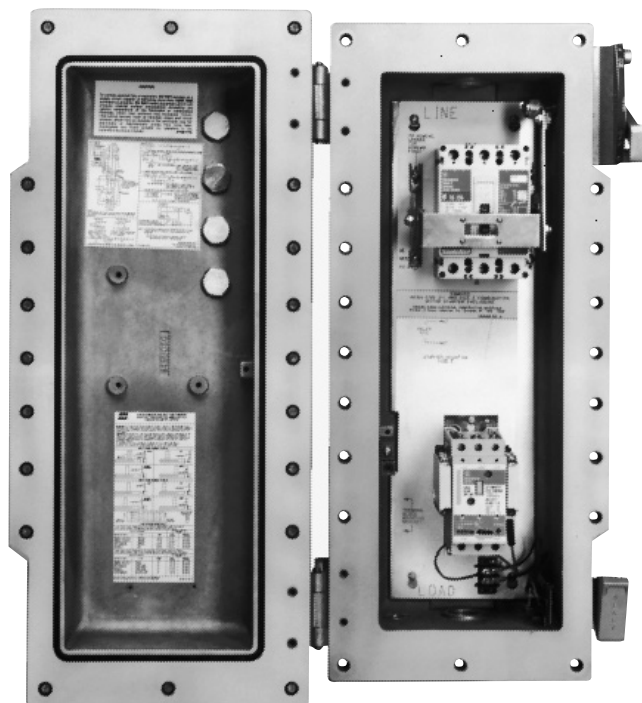
Electrical Rating Ranges:

- Motor starters – NEMA sizes 1-5

Certifications and Complies:

- NEC/CEC:
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G,
Class II, Division 2, Groups F,G
Class III
- UL Standards: UL1203 – Hazardous (classified) locations
- CSA Standard: C22.2 No. 30
- NEMA: 3, 3R, 4 ‡, 7BCD, 9EFG, 12

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

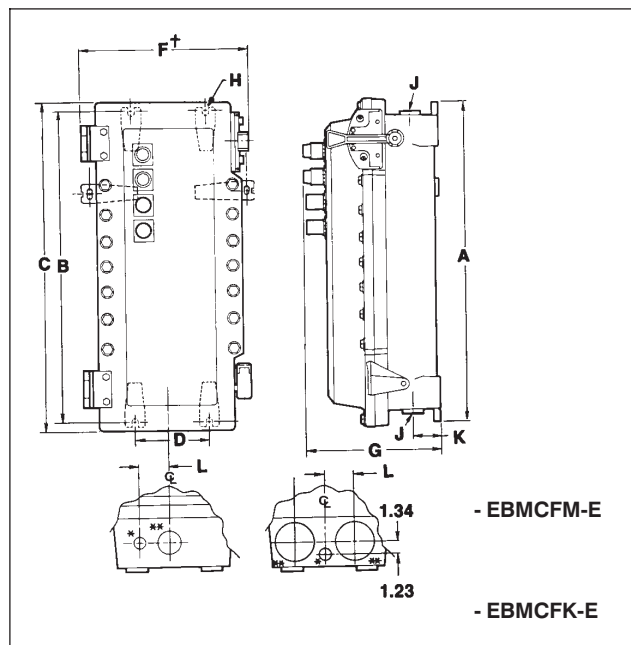


*Spectrum EBM-E Series Combination Line Starter with Advantage Starter shown.
Circuit breakers not provided in EBMS series.*

Options: (Starter only)

See page 344 for options for the EBM enclosures supplied with Cutler-Hammer Advantage starters. The following suffixes cannot be ordered with this style equipment: 0, S1.

Dimensions (inches):



Dimensions are approximate, not for construction purposes.

Ordering Information – Starters

- To order an enclosure, determine the electrical requirements of the system and locate the corresponding catalog number from the chart below.
- Enclosures can be ordered without starters, universal mounting plates with templates will still be provided.

EBM “E” Series Enclosures for Cutler-Hammer Advantage Starters
Single Speed, Non-Reversing

Motor Starter			Enclosure	
Max. HP	Poly-phase	Volts	Without Starter Cat. #†	With Starter Cat. #
7½	240	1	EBMSFA-E	EBMS1FA-W6213-E
10	480	1	EBMSFA-E	EBMS1FA-W6413-E
10	600	1	EBMSFA-E	EBMS1FA-W6613-E
15	240	2	EBMSFA-E	EBMS2FA-W6213-E
25	480	2	EBMSFA-E	EBMS2FA-W6413-E
25	600	2	EBMSFA-E	EBMS2FA-W6613-E
30	240	3	EBMSFD-E	EBMS3FD-W6213-E
50	240	4	EBMSFD-E	EBMS4FD-W6213-E
50	480	3	EBMSFD-E	EBMS3FD-W6413-E
50	600	3	EBMSFD-E	EBMS3FD-W6613-E
100	240	5	EBMSFK-E	EBMS5FK-W6213-E
100	480	4	EBMSFD-E	EBMS4FD-W6413-E
100	600	4	EBMSFD-E	EBMS4FD-W6613-E
200	480	5	EBMSFK-E	EBMS5FK-W6413-E
200	600	5	EBMSFK-E	EBMS5FK-W6613-E

† Note: “Enclosures only” are supplied with necessary operators, linkages, and mercury switch electronic overload resets.

DIMENSIONS (inches)

Enclosure Only Cat. No.	Dimensions						**J Conduit Entry			
	A	B	C	D	F	G	Trade Size D&T ♦	w/RE	K	L
EBMSFA-E	18.25	17.25	19.40	6.00	14.78	12.13	2"	1.5"	3.25	3.13
EBMSFD-E	28.25	27.25	29.40	6.00	14.46	12.13	3"	2.5"	3.25	3.13
EBMSFK-E	43.12	41.50	42.65	12.00	20.58	15.00	(2) 3"	(2) 2.5"	2.50	3.00

“H” – Use ½" diameter bolts for all enclosures listed above.

* 1" Drilled & Tapped conduit entry for control conductors supplied with PLG plug (top & bottom).

** Conduit entrance for power conductors (top & bottom). (All conduit entrances supplied with RE reducer and PLG plug.)

♦ Drilled & Tapped.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EPC Magnetic Line Starters and Enclosures

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

2C

2C
Motor Starters

Application:

EPC magnetic line starters and enclosures are used:

- for across-the-line starting of polyphase ac induction motors
- in locations, made hazardous, due to the presence of flammable vapors, gases or highly combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide motor running protection, undervoltage protection, and remote starting and stopping

Features:

- Quick-opening covers – less than two turns to remove or install
- Three section design for ease of installation
- Water-shedding construction with female threads on top cover, male threads on bottom cover, and top cover skirted
- Specially located stops and locks ensure adequate thread engagement and prevent overtightening
- Separate replaceable mounting bracket attached to the rear of the body provides three-point suspension for quick installation and leveling – one keyhole slot at top and two open slots at bottom
- Bodies have two taper tapped conduit hubs with integral bushings on the top, and two more directly below
- Universal mounting plate and reset mechanism will accommodate any of the motor starters in catalog listing
- When interior mounting plate is removed, line and load conductors are easily pulled into the wiring chamber. The interior assembly with starter attached is then replaced, final connections made, and covers assembled
- Furnished with third overload relay as standard

Standard Materials:

- Bodies and covers – copper-free aluminum
- Reset handle – copper-free aluminum
- Reset shaft – stainless steel
- Interior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

Electrical Rating Ranges:

- Starter Sizes 0 to 2 inclusive

* Application limited by starter or contactor design – consult factory

† Required for pilot lights on other than 120 volt control circuits. One required for each lamp

‡ Not suitable for NEMA 4

Certifications & Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Cl. III
- NEMA/EEMAC: 3, 4, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No. and many are available in kit form for field addition to existing units:
See page 352 for listing of kits

Description

Control circuit transformer 600/480/240-120 volts, 50 or 60 hertz (Sizes 0 and 1 – 50VA, 100VA, Size 2 – 100VA-200VA)

Fusible – Secondary	FT
Primary and secondary	FTPS
Automatic reset overload relay	S1
Less overload relays (lighting contactor)	CL
Less overload relays (motor contactor)	CM
Auxiliary Contacts:*	
1NO/1NC	S781
2NO/2NC	S782
3NO/3NC	S783

Pilot light holes drilled, tapped and plugged for future addition of pilot lights –	
one hole	S541
two holes	S542

Side bosses drilled and tapped same size as standard hubs	S366
Back boss drilled and tapped same size as standard hubs	S367
Standard Breather (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S219
Standard Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198
Standard Breather and Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198V
Universal Breather-Drain (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454†
(2) Universal-Breather Drains (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454V‡

Pushbuttons (heavy duty):	
START-STOP	PB3‡
Selector switches (standard duty):	
ON-OFF	RR2‡
HAND-OFF-AUTO	RR3‡
Pilot lights:	
Red, 120 volt	J1
Green, 120 volt	J3

Pilot light transformers:	
240 volt†	T2
480 volt†	T4
600 volt†	T5
Space heaters:	
120 volt	R11
240 volt	R22
480 volt	R44



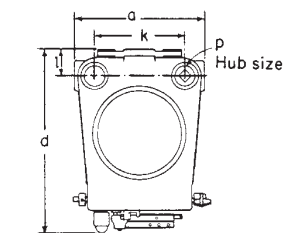
Dimensions (inches)*

Single-Speed Non-Reversing Sizes 0, 1, and 2 Starters

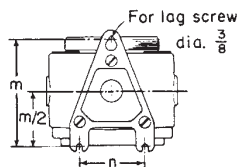
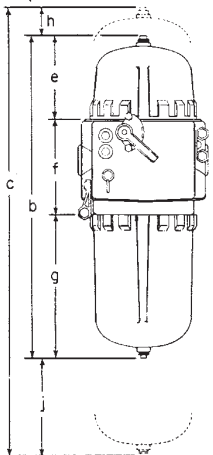
Cat. # EPC Int. Dia.	97 7"	97-FT 97-FTPS 7"
	Dimensions	Dimensions ♦
a	10 ⁵ / ₈	10 ⁵ / ₈
b	19 ¹³ / ₁₆	24 ¹³ / ₁₆
c	25 ¹³ / ₁₆	37 ¹³ / ₁₆
d	14 ¹¹ / ₁₆	14 ¹¹ / ₁₆
e	6 ³ / ₄	11 ³ / ₄
f	7 ¹¹ / ₁₆	7 ¹¹ / ₁₆
g	5 ³ / ₈	5 ³ / ₈
h	2	9
j	4	4
k	7 ³ / ₈	7 ³ / ₈
l	2 ¹ / ₁₆	2 ¹ / ₁₆
m	9 ³ / ₈	9 ³ / ₈
n	5 ¹ / ₄	5 ¹ / ₄
p	1 ¹ / ₄	1 ¹ / ₄

♦ For units with Control Circuit Transformer (suffix FT or FTSP)

7" 9" Internal diameter



Dimensions h and j - space required for removal of covers



* Dimensions are approximate, not for construction

EPC Magnetic Line Starters and Enclosures

**Single-Speed Non-Reversing
3-Pole 60 hertz, 600VAC Maximum**

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

2C

Ordering Information:

To order an enclosure complete with starter, insert the manufacturer's symbol in the designated position of the catalog number. Symbols are shown in the footnote at the bottom of this page. Specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters. ♦ ♦ Starters are furnished with three heaters when heater ratings are fully specified.

Enclosures only can be ordered. Select from listings. For starters that can be accommodated see Table 1 in Section 6C.

Detailed information on starter and heater selection is given in Section 6C.

Motor Starter			Enclosure			
Max. HP Polyphase	Volts	NEMA/EEMAC Size	Hub Size	Int. Dia.	Without Starter Cat. #	With Starter Cat. # ♦ ♦
2	120	0	1¼	7	EPC97	EPC970-†613
3	120	1	1¼	7	EPC97	EPC971-†613
3	240	0	1¼	7	EPC97	EPC970-†623
5	480	0	1¼	7	EPC97	EPC970-†643
5	600	0	1¼	7	EPC97	EPC970-†653
7½	240	1	1¼	7	EPC97	EPC971-†623
10	480	1	1¼	7	EPC97	EPC971-†643
10	600	1	1¼	7	EPC97	EPC971-†653

† Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D	D
Cutler-Hammer	W

2C
Motor Starters

Pushbutton Station and Selector Switch Kits

EPC magnetic line starter and EPC combination line starter enclosures are provided as standard with switch operating shaft holes drilled, tapped and plugged. Pushbutton stations and selector switches can be assembled in these enclosures in the field, using kits listed below.

Applies to 7", 9", 11" EPC

Description	Cat. #
START-STOP pushbutton station assembly	EPC-PB3-KIT
Replacement pushbutton station only for EPC-PB3-KIT	16320-N
ON-OFF selector switch assembly (2 position)	EPC-RR2-KIT
Replacement switch only for EPC-RR2-KIT	ESWP126
HAND-OFF-AUTO selector switch assembly (3 position)	EPC-RR3-KIT
Replacement switch only for EPC-RR3-KIT	ESWP126

Pilot Light Kits

When EPC magnetic line starter and EPC combination line starter enclosures have been ordered with pilot light holes drilled, tapped and plugged (Cat. No. suffix S541 and S542), pilot lights can be assembled in the field, using kits listed below.

Description	Applies to	Cat. #
Pilot light assembly less transformer	7", 9", 11" EPC	EMP015-J†-KIT
Pilot light assemblies with transformer and transformer mounting strap (for single pilot light) suffix S541	7" EPC only 9" EPC only 11" EPC only	EPC87-J†-T†-KIT EPC892-J†-T†-KIT EPC813-J†-T†-KIT
2 pilot light assemblies with 2 transformers and transformer mounting strap (for double pilot light) suffix S542	7" EPC only 9" EPC only 11" EPC only	EPC87-J†-J†-T†-KIT EPC892-J†-J†-T†-KIT EPC813-J†-J†-T†-KIT
Replacement pilot light transformer only (240V primary)	All units	15129-A
Replacement pilot light transformer only (480V primary)	All units	15130-A
Replacement pilot light transformer only (600V primary)	All units	15131-A

† Insert color symbol from table below and add primary voltage symbol (T2 for 240, T4 for 480 or T5 for 600 volts). Example: EPC87-J†-J†-T†-KIT with red and green pilot lights for 480 volts is EPC-J1-J3-T4-KIT.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

EMN Manual Line Starters and Enclosures

600VAC Maximum

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

2C

Application:

EMN manual line starters and enclosures are used:

- for manual across-the-line starting of single and polyphase ac motors
- to provide motor running protection and manual starting and stopping
- in locations made hazardous due to the presence of flammable vapors, gases, or high combustible dusts
- for installation in petroleum refineries, chemical and petrochemical plants, and other process industry facilities
- in damp, wet, or corrosive locations

Features:

- Compact, rectangular enclosure makes optimum use of internal space
- Operating handle may be padlocked in either "ON" or "OFF" position
- Compact design allows installation in area where space is limited
- Furnished with drilled and tapped conduit openings
- Polyphase manual starters are furnished with third overload relay as standard

Standard Materials:

- Bodies, covers and toggle operator – copper-free aluminum
- Operating shaft – stainless steel
- Internal operating bail – sheet steel or aluminum

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

Electrical Rating Ranges:

- Starter sizes 0, 1, 1P

Certifications & Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- NEMA/EMMAC: 3, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 14

Options:

- The following special options are available from factory by adding suffix to Cat. #:

Description	Suffix to be Added to Encl. Cat. #
Standard Breather (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S219
Standard Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198
Standard Breather and Drain (Cl. I, Groups C,D; Cl. II, Groups E,F,G; Cl. III)	S198V
Universal Breather-Drain (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454
(2) Universal Breather-Drains (Cl. I, Groups C,D; Cl. II, Groups F,G)	S454V



Ordering Information:

Specify hp, voltage, frequency, number of phases, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters.

Two pole starters require one heater; three pole starters have three heaters. See page 446 for starter and heater selection. For starter Cat. No. refer to Table 3 in Section 6C.

Motor Starter

NEMA Size	Poles (Phase)	Max. AC HP Ratings		
		115V	208/240V	480/600V
M-0	2 (1PH)	1	2	
M-1	2 (1PH)	2	3	
M-1P	2 (1PH)	3	5	
M-0	3 (3PH)	2	3	5
M-1	3 (1PH)	2	3	
	3 (3PH)	3	7½	10

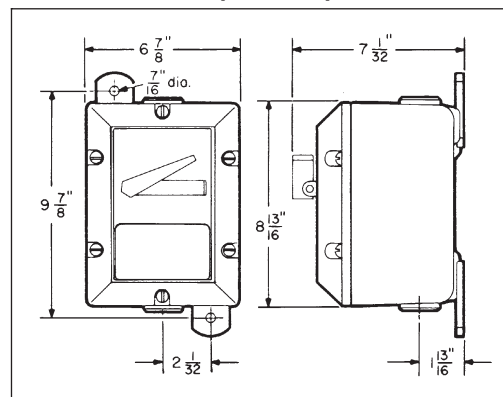
Enclosure With Starter Cat.

EMN24-W20
EMN24-W21
EMN24-W21P
EMN24-W30
EMN24-W31

Enclosure Without Starter

Starter Manufacturer	Enclosure Cat. #§
Cutler-Hammer	EMN24

Dimensions* (inches)



§ Enclosures are furnished with two 1¼" drilled and tapped openings with 1¼" to 1" reducers.

* Dimensions are approximate, not for construction purposes.

Cl. I, Div. 1 & 2, Groups B*,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7B*CD,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

EFD manual motor starting and stopping switch enclosures are used:

- for manual starting of small ac or dc motors
- in locations, made hazardous, due to the presence of flammable vapors, gases or highly combustible dusts
- for installation at petroleum refineries, chemical and petrochemical plants and in other process industry facilities where similar hazards exist

Features:

- Enclosure is small and compact
- Accurately ground flange on both body and cover for flame-tight joint
- Switch can be padlocked in either "ON" or "OFF" positions
- Dead end (EFD) or through feed (EFDC) hubs in 3/4" to 1" size

Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Operating handle – type 6/6 nylon
- Operating shaft – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Type 6/6 nylon – natural (black)
- Stainless steel – natural

Certifications and Compliances:

- NEC/CEC:
 Class I, Division 1 & 2, Groups B*,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- NEMA: 3, 7B*CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Suffix to be
 Added to Encl.

Description

For use in Group B Hazardous areas. . . GB*

Cat. #



EFD dead end



EFDC through feed

Without Overload Protection With Switches

Poles	Cat. #	Switch Ratings Amps		HP		
2	Square D Class 2510 Type KO-1	250VAC 30	600VAC 20	115VAC 1	230VAC 2	460-575VAC 3
3	GE-TC2368S	30A., 240VAC, 7-1/2 hp 20A., 600VAC, 15 hp				

Dead end

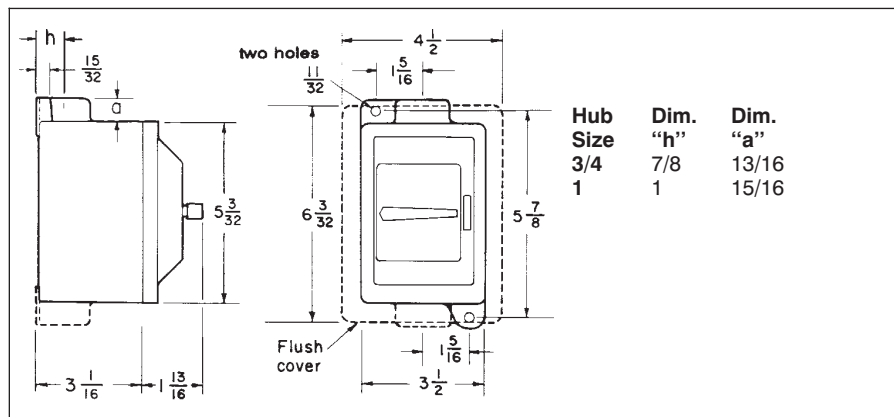
Poles	Hub Size	With Switch Cat. #
2	3/4	EFD218-T8
	1	EFD318-T8
3	3/4	EFD2419
	1	EFD3419

Through feed

Poles	Hub Size	With Switch Cat. #
2	3/4	EFDC218-T8
	1	EFDC318-T8
3	3/4	EFDC2419
	1	EFDC3419

Dimensions (inches)

Dimensions are approximate, not for construction purposes



* Add GB suffix. Seals must be installed within 1-1/2" of each conduit opening for Group B usage.

EDS Factory Sealed Manual Motor Starting Switches and Enclosures

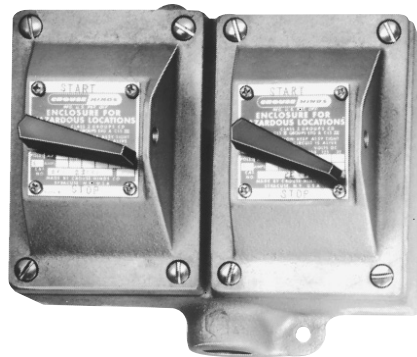
Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

2C



EDSC2199



EDS2299

Application:

Factory sealed enclosures are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:

- to prevent arcing of enclosed device from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
 - in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
 - in non-hazardous areas where sturdy, durable enclosures are required
 - in conjunction with magnetic starters or contactors for remote control of motors
- Manual motor starting switch enclosures are used:
- for manual starting of small ac or dc motors
 - to provide manual starting and stopping and, in the case of units with heaters, motor running protection

Features:

Factory sealed devices have many distinct advantages:

- reduce installation problems
- eliminate external seals
- lower installation costs
- improve safety
- mounting lugs and taper tapped hubs with integral bushings
- large machine screws for fastening covers to bodies
- lockout hole for padlock having 1/4" hasp is provided
- close tolerances in machining of wide, mating flanges and journaled shafts and bearings produce flametightness of enclosure joints
- dead end (EDS) or through feed (EDSC) hubs – 3/4" or 1" sizes

Options:

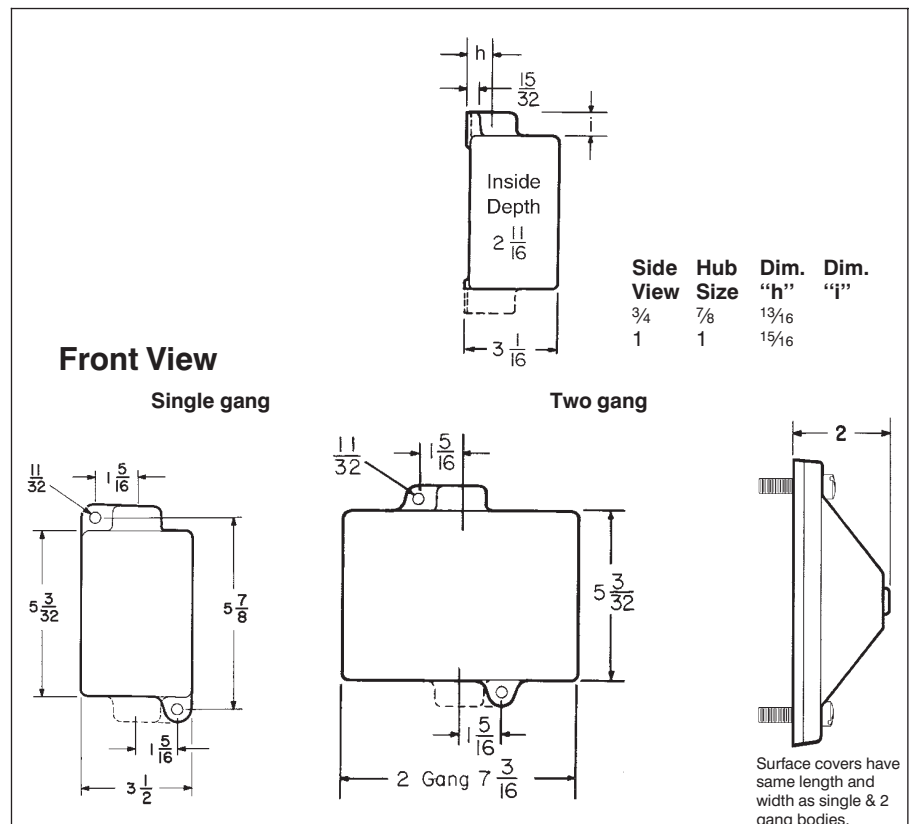
Description

For use in Group B hazardous areas. GB*
Bodies and covers (single and two gang units) – copper-free aluminum. SA

Standard Materials:

- Bodies – *Feraloy*® iron alloy (U.S.); copper-free aluminum (Canada).
- Shafts & bushings – stainless steel
- Sealing enclosures – copper-free aluminum

Dimensions (inches) Dimensions are approximate, not for construction purposes.



* Seals must be installed within 1 1/2" of each conduit opening in Division 1

2C Motor Starters

EDS Factory Sealed Manual Motor Starting Switches and Enclosures

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

With Allen-Bradley Bulletin 600 Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC	Cat. #
1	1 hp		A-B BUL 600 TOX4
2	1 hp	¾ hp	A-B BUL 600 TOX5

Single Gang

Poles	Hub Size	Dead end Cat. #	Through feed Cat. #
1	¾	EDS2199†	EDSC2199†
	1	EDS3199†	EDSC3199†
2	¾	EDS21100†	EDSC21100†
	1	EDS31100†	EDSC31100†

Two Gang

1	¾	EDS2299†	EDSC2299†
	1	EDS3299†	EDSC3299†
2	¾	EDS22100†	EDSC22100†
	1	EDS32100†	EDSC32100†

With General Electric Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115 Volts DC	230 Volts DC	Cat. #
1	1 hp	1 hp	¼ hp	GE-CR101-Y
2	1 hp	1 hp	1 hp	GE-CR101-H

Single Gang

Poles	Hub Size	Dead end Cat. #	Through feed Cat. #
1	¾	EDS21093†	EDSC21093†
	1	EDS31093†	EDSC31093†
2	¾	EDS21094†	EDSC21094†
	1	EDS31094†	EDSC31094†

Two Gang

1	¾	EDS22093†	EDSC22093†
	1	EDS32093†	EDSC32093†
2	¾	EDS22094†	EDSC22094†
	1	EDS32094†	EDSC32094†

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

Heater Table (Allen-Bradley)

Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number
0.17	P1	2.92	P22
0.21	P2	3.09	P23
0.25	P3	3.32	P24
0.32	P4	3.77	P25
0.39	P5	4.16	P26
0.46	P6	4.51	P27
0.57	P7	4.93	P28
0.71	P8	5.43	P29
0.79	P9	6.03	P30
0.87	P10	6.83	P31
0.98	P11	7.72	P32
1.08	P12	8.24	P33
1.19	P13	8.9	P34
1.30	P14	9.6	P35
1.43	P15	10.8	P36
1.58	P16	12.0	P37
1.75	P17	13.5	P38
1.88	P18	15.2	P39
2.13	P19		
2.40	P20		
2.58	P21		

Heater Table (General Electric)

Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number
.48	G2	3.01	G22
.53	G3	3.27	G23
.58	G4	3.56	G24
.65	G5	3.88	G25
.71	G6	4.22	G26
.78	G7	4.60	G27
.86	G8	5.00	G28
.95	G9	5.43	G29
1.04	G10	5.90	G30
1.14	G11	6.41	G31
1.25	G12	6.98	G32
1.37	G13	7.60	G33
1.49	G14	8.25	G34
1.63	G15	8.95	G35
1.78	G16	9.75	G36
1.95	G17	10.6	G37
2.13	G18	11.4	G38
2.32	G19	12.5	G39
2.53	G20	13.6	G40
2.76	G21	14.8	G41
		16.0	G42

† Includes one interchangeable heater. Select heater from the table below individual listings and use symbol number as second section of the Cat. No. Example: EDS2199-P5. Insert symbol 0 (zero) to omit heater.

* Add GB suffix. Seals must be installed within 1½" of each conduit opening for Group B usage.

EDS Factory Sealed Manual Motor Starting Switches and Enclosures

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

2C

2C
Motor Starters

With Cutler-Hammer Switches

Maximum HP Ratings

Poles	120-240 Volts AC	32 Volts DC	120 Volts DC	240 Volts DC	Cat. #
1	1 hp	¼ hp	¼ hp	¼ hp	WEST-MST01
2	1 hp	¼ hp	1 hp	1 hp	WEST-MST02

Single Gang

Poles	Hub Size	Dead end Cat. #	Through feed Cat. #
1	¾ 1	EDS21101† EDS31101†	EDSC21101† EDSC31101†
2	¾ 1	EDS21102† EDS31102†	EDSC21102† EDSC31102†

Two Gang

1	¾ 1	EDS22101† EDS32101†	EDSC22101† EDSC32101†
2	¾ 1	EDS22102† EDS32102†	EDSC22102† EDSC32102†

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

Heater Table (Cutler-Hammer)

Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number
.43	W 1	2.95	W21
.48	W 2	3.27	W22
.53	W 3	3.59	W23
.58	W 4	3.99	W24
.64	W 5	4.39	W25
.71	W 6	4.79	W26
.78	W 7	5.26	W27
.87	W 8	5.83	W28
.95	W 9	6.39	W29
1.03	W10	7.03	W30
1.15	W11	7.74	W31
1.27	W12	8.46	W32
1.35	W13	9.35	W33
1.51	W14	10.30	W34
1.67	W15	11.35	W35
1.83	W16	12.47	W36
1.99	W17	13.67	W37
2.23	W18	15.12	W38
2.47	W19	16.00	W39
2.71	W20		

† Includes one interchangeable heater. Select heater from the table below individual listings and use symbol number as second section of the Cat. No. Example: EDS21101-W5. Insert symbol 0 (zero) to omit heater.

* Add GB suffix. Seals must be installed within 1½" of each conduit opening for Group B usage.

Explosion Protected Manual Motor Starters

**25 Amp, 690 VAC Non-Metallic
Enclosure**

UL/cUL Listed Class I,
Division 2, Groups A, B, C, D
Class I, Zones 1 and 2,
AEx de HB + H₂, T5, T6
Class II, Division 1,
Groups E, F, G (cUL)

CENELEC - PTB 99,
ATEX 1162 CERTIFIED
EEx de IIC, T6, Zones
1 and 2 EEx de IIC,
T6 Zones 21 and 22
IP66, NEMA 4X

Application

Explosion protected manual motor starters are used in a metallic conduit or cable system for surface mounting to protect motors against overload and phase failure.

Features

- Explosion protected factory sealed circuit breaker and manual motor starter
- Innovative break-line in cover allows full wiring access, making installation quick and easy.
- Switch handle provides clear indication of switch position
- Lockable handle meets OSHA lockout/tagout requirements, provision for 3 padlocks
- Large rotary handle provides easy gripping with gloved hands
- Captive cover screws

Certifications & Compliances

- UL/cUL Listed
- Class I, Division 2, Groups A, B, C, D
- Class I, Zones 1 and 2, Ex de IIB+H₂, T6
- Class II, Division 1, Groups E, F, G (cUL)
- CENELEC - PTB 99-ATEX 1162
- EEx de IIC, T6, Zones 1 and 2.
- IP 66, NEMA 4X

Standard Materials

Enclosure - Fiberglass-reinforced polyester

- Nonmetallic, corrosion resistant
- Increased safety Ex-e protection
- Impact Resistant
- NEMA 4X, IP 66 Protection
- Enclosure meets UL 94-VO
- UV rated

Enclosure Gasket - Silicon

Handle - Impact-resistant thermoplastic

Cover Screws - Stainless steel

Conduit Entries: Zinc Myers Hubs

Brass Mounting plate - Ground continuity



Technical Data

Type of Protection	(A)Ex ed IIC T5, T6
Rated Voltage	Up to 690 VAC
Rated Current	Up to 25 A
Rated Current, aux. contact	2 A
Short Circuit	See table on next page
Under voltage trip	Tripping at 15% - 75% V-rated Switching - on when V > 80% V-rated
Connection Terminals	Up to 10mm²
Connection terminals, aux. contact	2 × 2.5 mm²
Conduit or Cable entries	2 × 3/4" Myers hubs
Weight	5.5 lbs./ 2.5 Kg.

Explosion Protected Manual Motor Starters

25 Amp, 690 VAC Non-Metallic
Enclosures

UL/cUL Listed Class I,
Division 2, Groups A, B, C, D
Class I, Zones 1 and 2,
AEx de HB + H₂, T5, T6
Class II, Division 1,
Groups E, F, G (cUL)

CENELEC - PTB 99,
ATEX 1162 CERTIFIED
EEx de IIC, T6, Zones
1 and 2 EEx de IIC,
T6 Zones 21 and 22
IP66, NEMA 4X

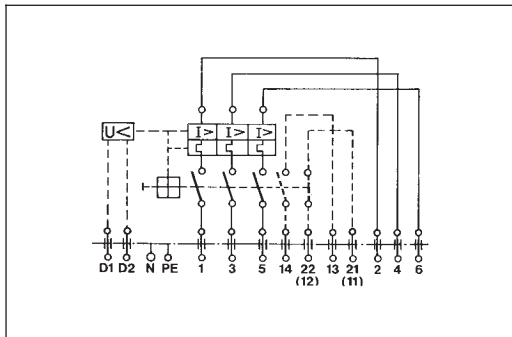
2C

2C
Motor Starters

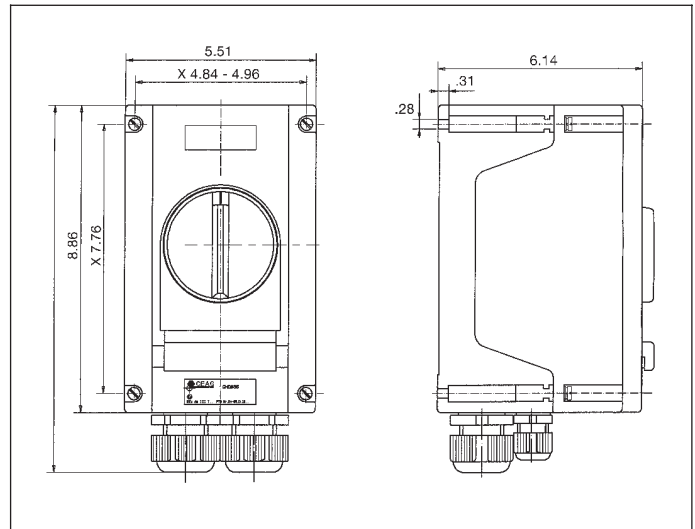
Short Circuit Protection

Setting Range	230 VAC AIC	400 VAC AIC	500 VAC AIC	690 VAC AIC
0.1 A - 1.6 A	Short-circuit proof. No back-up fuse required			
1.6 A - 2.5 A				40
2.5 A - 4.0 A				10
4.0 A - 6.3 A				3
6.3 A - 9.0 A				3
9.0 A - 12.5 A	50	20	3	
12.5 A - 16.0 A	50	20	3	
16.0 A - 20.0 A	50	20	2	
20.0 A - 25.0 A	50	50	20	2

Wiring Diagram



Dimensions (Inches)



Ordering Information:

Setting Range or rated current	Catalog Number
0.1 - 0.16 A	GHG 635 1101 L0101
0.16 - 0.25 A	GHG 635 1101 L0102
0.25 - 0.40 A	GHG 635 1101 L0103
0.40 - 0.63 A	GHG 635 1101 L0104
0.63 - 1.0 A	GHG 635 1101 L0105
1.0 - 1.6 A	GHG 635 1101 L0106
1.6 - 2.5 A	GHG 635 1101 L0107
2.5 - 4.0 A	GHG 635 1101 L0108
4.0 - 6.3 A	GHG 635 1101 L0109
6.3 - 9.0 A	GHG 635 1101 L0110
9.0 - 12.5 A	GHG 635 1101 L0111
12.5 - 16 A	GHG 635 1101 L0112
16 - 20 A	GHG 635 1101 L0113
20 - 25 A	GHG 635 1101 L0114

Accessory Options

- 1 = without aux. contact
2 = with aux contact 1 NO + 1 NC

Application:

MC manual motor starting switches and enclosures are used:

- for manual starting of small ac and dc motors of one horsepower or less (see page 361 for ratings)
- in damp, wet or corrosive locations such as dairies, meat packing plants, chemical plants and outdoor locations
- to provide motor running protection and manual starting and stopping

Features:

- Enclosure is compact and gasketed to meet NEMA/EEMAC 4 requirements for watertightness
- Switch can be padlocked in either the "ON" or "OFF" positions
- Provided with dead end (MC) or through-feed (MCC) hubs – $\frac{1}{2}$ " and $\frac{3}{4}$ " sizes – with mounting feet

Standard Materials:

- Body and cover – *Feraloy*® iron alloy
- Operating handle – copper-free aluminum
- Operating shaft – stainless steel

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

**Certifications and
Compliances:**

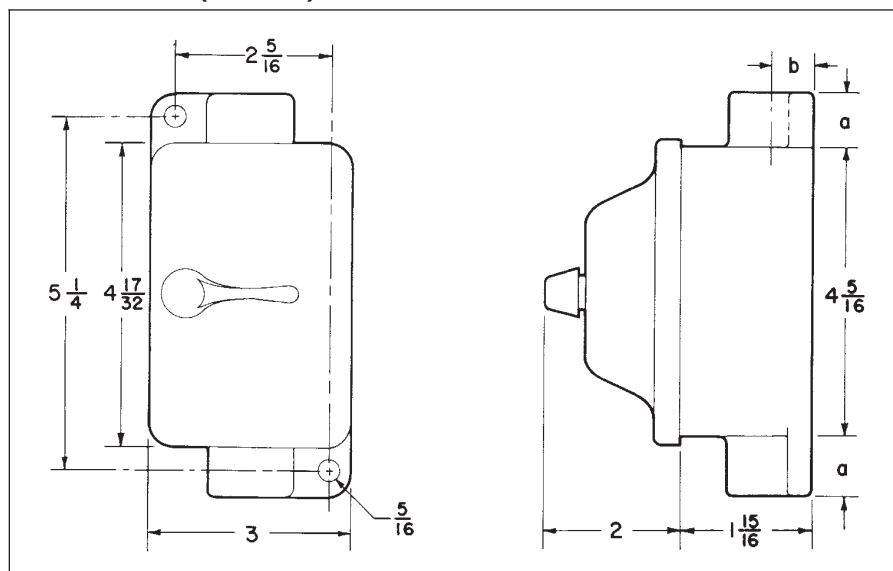
- NEMA/EEMAC: 3, 4, 12
- UL Standard: 508
- CSA Standard: C22.2 No. 14



MC dead end



MCC through feed

Dimensions (inches)*

Hub Size	$\frac{1}{2}$	$\frac{3}{4}$
a	$\frac{7}{8}$	$\frac{7}{8}$
b	$\frac{5}{8}$	$\frac{3}{4}$

* Dimensions are approximate, not for construction purposes.

MC Manual Motor Starting Switches

Manufacturer	Poles	Cat. #
Cutler-Hammer	1	MST01
Cutler-Hammer	2	MST02

Maximum Horsepower Ratings

Volts	1-Pole	2-Pole
120/240 AC	1	1
32 DC	1/4	1/4
120/240 DC		1
240 DC	1/4	

MC Single Gang (Dead End)

Poles	Hub Size	Enclosure	
		With Switch Cat. #	Without Switch Cat. #
1	1/2	MC1211†	MC1212B
1	3/4	MC2211†	MC2212B
2	1/2	MC1212†	MC1212B
2	3/4	MC2212†	MC2212B

MCC Single Gang (through feed)

Poles	Hub Size	Enclosure	
		With Switch Cat. #	Without Switch Cat. #
1	1/2	MCC1211†	MCC1212B
1	3/4	MCC2211†	MCC2212B
2	1/2	MCC1212†	MCC1212B
2	3/4	MCC2212†	MCC2212B

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) may be used to indicate heater omitted.

Heater Table

Full Load Motor Current	Heater Rating	Cooper Crouse-Hinds Symbol Number
.40 — .43	.50	W1
.44 — .48	.55	W2
.49 — .53	.61	W3
.54 — .58	.67	W4
.59 — .64	.74	W5
.65 — .71	.81	W6
.72 — .78	.89	W7
.79 — .87	.98	W8
.88 — .95	1.10	W9
.96 — 1.03	1.20	W10
1.04 — 1.15	1.30	W11
1.16 — 1.27	1.45	W12
1.28 — 1.35	1.60	W13
1.36 — 1.51	1.70	W14
1.52 — 1.67	1.90	W15
1.68 — 1.83	2.10	W16
1.84 — 1.99	2.30	W17
2.00 — 2.23	2.50	W18
2.24 — 2.47	2.80	W19
2.48 — 2.71	3.10	W20
2.72 — 2.95	3.40	W21
2.96 — 3.27	3.70	W22
3.28 — 3.59	4.10	W23
3.60 — 3.99	4.50	W24
4.00 — 4.39	5.00	W25
4.40 — 4.79	5.50	W26
4.80 — 5.26	6.00	W27
5.27 — 5.83	6.60	W28
5.84 — 6.39	7.30	W29
6.40 — 7.03	8.00	W30
7.04 — 7.74	8.80	W31
7.75 — 8.46	9.70	W32
8.47 — 9.35	10.60	W33
9.36 — 10.30	11.70	W34
10.31 — 11.35	12.90	W35
11.36 — 12.47	14.20	W36
12.48 — 13.67	15.60	W37
13.68 — 15.12	17.10	W38
15.13 — 16.00	18.60	W39

† Includes one interchangeable heater. Select heater from table above and use symbol number as second section of the Cat. No.
Example: MC1211-W5

Notes Page

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General Information and Dimensions	
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225/250 ampere frame	
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EBMB Series	368
400 ampere frame	
EBMB Series	368
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225/250 ampere frame	
FLB Series	381
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400 ampere frame	
EBMB Series	368
600/800 ampere frame	
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1000 Ampere Frame	
EBMB Series	368

Application and Selection Quick Selector Chart

Application:

Circuit breakers and their appropriate enclosures are used:

- in conjunction with service entrance, lighting, heating, appliance and motor protection circuits
- to provide disconnect means
- for short circuit protection and thermal time delay overload protection
- in various types of damp, wet, corrosive and hazardous areas

Considerations for Selection:

Considerations for selection of proper enclosure:

- The environment of the enclosure location in terms of NEC/CEC compliance and NEMA/ EEMAC type required
- The size and type of circuit breaker required for the particular application
- See "Quick Selector" below for guidance

Options:

Many options are available on:

- material and finishes where special atmospheric conditions prevail
 - special features for specific applications.
- See individual listings for available options

Quick Selector Chart

Enclosures for Circuit Breakers

Encl.	NEC/CEC – Hazardous Area Certifications and Compliances	NEMA/ EEMAC Encl. Type	Circuit Breaker						
			Type	Am- pere Rating Range	Voltage Range	Manufacturer and Frame Size	No. of Poles	Inter- change- able Trip	Enclosure Cover Construction
EFD, EFDC	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7BCD, 9EFG	Thermal-Magnetic	15-30	120AC	Sq. D – QOU	1	No	Bolted/ Ground Joint
EBMB	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3R,4,7BCD, 9EFG,12	Thermal-Magnetic	15-800	120AC/125DC to 600AC/250DC	G.E. – TEB, TED, TFJ, TFK, TJJ, TJK, TKMA Sq. D – FAL, KAL, LAL, MAL Cut.-Ham. – EHD, FD, FDB, JD, JDB, KD, KDB,	1,2,3	Yes	Bolted/ Ground Joint/ Gasketed
EPC	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,4,7CD, 9EFG	Thermal-Magnetic	15-250	120AC/125DC to 600AC/250DC	G.E. – TEB, TED, TFJ Sq. D – FAL, KAL Cut.-Ham. – EHD, FD, FDB, JD, JDB	1,2,3	Yes	Threaded
FLB	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7CD, 9EFG	Thermal-Magnetic	15-225	120AC/125DC to 600AC/250DC	G.E. – TEB, TED, TFJ, TFK Sq. D – FAL, KAL Cut.-Ham. – EHD, FD, FDB, JD, JDB	1,2,3	Yes	Threaded
GUSC*	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3,7BCD, 9EFG	Electro-Magnetic	1/4-35 1/4-3	115-230 AC 120DC	Heinemann #0131	1	No	Threaded
EIB	Cl. I, Div. 1 & 2, Groups B,C,D Cl. I, Zones 1 & 2 Cl. II, Div. 1, Groups E,F,G Cl. III	3,3R,4, 7BCD, 9EFG	Magnetic	15-100	480 AC	Cut. Ham. – EG	3	No	Bolted/ Ground Joint

* Enclosure only.

EIB Series

Compact Circuit Breaker Assemblies With Covers

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. I, Zones 1 & 2
Cl. II, Div. 1, Groups E,F,G
Class III
NEMA 3, 3R, 4, 7BCD, 9EFG
UL Standard: 886 cUL to CSA C22.2 No. 30

3C



The EIB Series of compact circuit breaker assemblies is an innovative line of explosion-proof motor control now being offered by Cooper Crouse-Hinds. The EIB series utilizes the EJB style D enclosure with its bolted construction, NEMA 4 environmental protection and Class I, Division 1, Group B, C and D hazardous area ratings. The EIB series is a cost-effective solution for circuit breaker protection and utilizes the Cutler-Hammer Type EG circuit breakers. Circuit breaker protection is available from 15 to 100 amps.

Features:

- Small compact footprint
- Rotary handle operator mounted on cover assembly
- No internal fork operator
- Trip position easily identified
- Neoprene cover gasket
- Detachable mounting feet
- Stainless steel hinges
- (2) 1½" NPT conduit entries, one on top and one on bottom

Standard Materials:

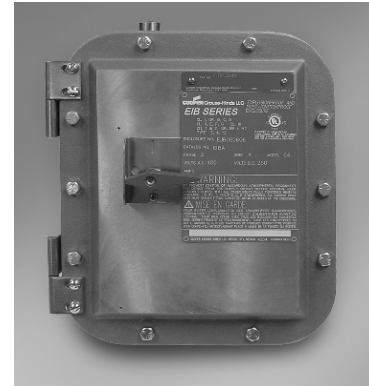
- Body and Cover — Copper-free aluminum
- Gasket — Neoprene
- Cover Bolts — Steel
- Hinges — Stainless Steel
- Mounting Plate Sheet — Aluminum

Benefits:

- Less mounting space required and reduced enclosure cost
- Definite on, off and trip positions
- Will not damage breaker toggle
- Can identify from a distance
- Provides UL Type 4 (hosetight) environmental rating
- Provides flexible mounting alternatives, no need to replace the entire enclosure if a mounting foot is broken
- Easy access to inside enclosure for wiring and maintenance
- For easy top or bottom feed of conductors
- For field addition of breather and/or drain; holes come plugged

Finishes:

- Copper-free Aluminum — natural
- Steel — Electro-galvanized



Certifications:

- Class I, Divisions 1 & 2, Groups B, C & D
- Class I, Zones 1 & 2
- Class II, Division 1, Groups E, F and G
- Class III
- Enclosure type 3, 3R, and 4, 7BCD, 9EFG
- NEMA 3, 3R, 4, 7BCD, 9EFG
- UL Standard 886
- cUL to CSA C22.2 No. 30
- * Not applicable when ordered with the S756V option

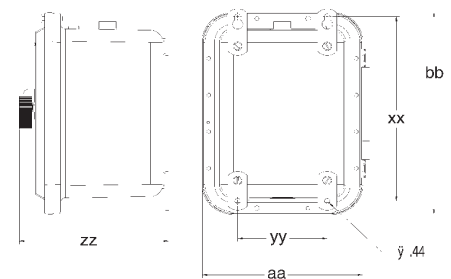
Electrical Ratings:

- 480 volts
- 3 poles
- 10,000 AIC max.

Weights:

EIBA 39 lbs
EIBB 58 lbs

Dimensions:



	Size A	Size B
aa	10.47"	12.53"
bb	12.47"	16.53"
xx	11.13"	15.13"
yy	5.0"	7.0"
zz	9.6"	11.66"
Mounting Holes	7/16"	7/16"

Ordering Information:

Circuit Breaker Rating (amps)	Enclosure Only	Enclosure with Circuit Breaker
15	EIBA	EIBA3015
20	EIBA	EIBA3020
25	EIBA	EIBA3025
30	EIBA	EIBA3030
35	EIBA	EIBA3035
40	EIBB	EIBB3040
45	EIBB	EIBB3045
50	EIBB	EIBB3050
60	EIBB	EIBB3060
70	EIBB	EIBB3070
80	EIBB	EIBB3080
90	EIBB	EIBB3090
100	EIBB	EIBB3100

Options:

	add suffix
Insulated Neutral Lug	S146
Grounded Neutral Lug kit w/connectors for 50, 100 & 225 amps	S178
External Ground Stud	S214
Breather and drain	S756V
Epoxy Powder Coat Finish (exterior only)	S752
Epoxy Powder Coat Finish (exterior and interior)	S753

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,3R,4,4 $\frac{1}{2}$,7BCD,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Application:

Spectrum EBM™ hinged cover motor control enclosures are used:

- For general motor control and circuit protection – indoors and outdoors – in damp, wet, dirty, dusty hazardous locations without the need for a protective shelter.
- In areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.
- To provide line disconnect means and short circuit protection.
- For service entrance, feeder or branch circuit protection for lighting, heating, appliance and motor circuits.
- On switchracks or other assemblies where it's desired that motor control be centrally located.

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction (Less than 0.4 of 1%).
- Circuit breaker operating handle located through the right side wall of the body permits visual confirmation of correct component assembly and operation.
- Total compliance to the wiring end room requirements of the National Electrical Code®.
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body.
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' breakers.
- Simple, straightforward installation of breaker on pre-drilled mounting plate within enclosure. Mounting plate also field removable.
- Circuit breaker external operating handle can be padlocked in either "ON" or "OFF" positions.
- Neoprene cover gasket permanently attached to the cover seals out moisture.
- Bodies have top and bottom drilled and tapped entrances for power conduits and control conduits. Removable reducers are supplied, as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap-on mounting feet.
- Optional EMPS control devices may be added to enclosure cover.
- Steel bracket for lifting larger enclosures during installation supplied as standard.

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- UL Standard: UL1203 – Hazardous (classified) locations/CSA Standards: C22.2 No. 30
- UL subject 2062 –
 - High A.I.C. Rating (Interrupting Capacity) For Groups C & D only.

Volt	RMS Symm. Amperes
240	65,000
480	50,000
600	25,000
- NEMA 3, 3R, 4, 4 $\frac{1}{2}$, 7BCD, 9EFG, 12

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shaft and bushing – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers and retractile springs – stainless steel

Electrical Rating Ranges:

- Circuit breakers – 100, 150, 225, 250, 400, 600, 800, 1000** ampere frame sizes

National Electrical Code is a Registered Trademark of The National Fire Protection Association.

** 1000 Ampere Frame (max. 800 ampere trip)



Spectrum EBM motor control enclosures accommodate popular makes of circuit breakers.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMB Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C

3C
Circuit Breakers

Options:

The following options are available from factory by adding suffix to catalog number. Suffixes are added alphanumerically.

Catalog Number System

EBMBB-(A)-WT30FDB36-(B)

(A) Options in this position are additions to the enclosure and should be listed alphanumerically.

(B) Options in this position are modifications to the circuit breaker and should be listed alphanumerically.



EBMB Series circuit breaker enclosures are available with breakers from 100 to 1000** amp frame sizes.

** 1000 Ampere Frame (max. 800 ampere trip.)

Description	Suffix to be added to Cat. No.	Position in Cat. No.
• Ambient compensated circuit breaker trip setting	AC	B
• Pilot light, 120VAC, red jewel, w/blank indicating plate	J1①	A
• Pilot light, 120VAC, green jewel, w/blank indicating plate	J3①	A
• LED pilot lights in place of standard incandescent pilot lamps	LED	A
• Start-stop pushbuttons (requires 2 spaces)	PB23①‡	A
• Space heater, 120 volt, 25 watts.	R11	A
• Space heater, 240 volt, 25 watts.	R22	A
• Space heater, 480 volt, 25 watts.	R44	A
• Insulated neutral w/2 connectors	S146	A
• Grounded neutral stud w/3 connectors (50, 100, 225 amp)	S178	A
• Std. drain, Class I, B,C & D; Class II, E F & G, Class III.	S756 ‡	A
• Std. breather & drain, Class I, B,C & D; Class II, E F & G; Class III.	S756V ‡	A
• Side conduit entrances (check factory for application)	S366	A
• Back conduit entrances (check factory for application)	S367	A
• External epoxy finish.	S752	A
• Internal and external epoxy finish.	S753	A
• Aux. switch on circuit breaker, 1A & 1B contacts	S784	B
• Aux. switch on circuit breaker, 2A & 2B contacts	S785	B
• 12 point term. block – 30 amp, 300 V	S786	A
• General purpose control relay, 4 pole N.O., contacts rated 10A @ 600V, coil 120VAC, 50-60 Hertz	S787	A

① When specifying any one of the following options with Spectrum EBM™ Motor Controls (J1, J3, PB23, RR2, RR3) it is necessary to order **DSL** Legend Plates for non-standard markings of the device(s) being used. See page 329 for DSL Legend Plate listings

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.



EBMB Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4+,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

● To order an enclosure complete with circuit breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown below.

● Enclosures can be ordered without circuit breakers. Select from listings below. For manufacturer's catalog numbers of circuit breakers that may be used with Spectrum EBM motor control enclosures see section 6C.

EBMB Series Enclosures for Circuit Breakers

Circuit Breaker

Enclosures

Poles ①	Voltage Rating	Circuit Breaker Frame Size	Without Circuit Breaker Cat. No.	Circuit Breaker Amp Rating	With Circuit Breaker Cat. No.
3	240VAC or 125-250VDC	100 Amp. Frame	EBMBA②✓	15A thru 70A	EBMBA-DT□FAL32✓
3	240VAC or 125-250VDC	150 Amp. Frame	EBMBA③④✓	10A thru 70A	EBMBA-TT□TEB32✓
3	480VAC or 250VDC	100 Amp. Frame	EBMBA②✓	15A thru 70A	EBMBA-†□◆34✓
3	480VAC or 250VDC	150 Amp. Frame	EBMBA③④✓	10A thru 70A	EBMBA-TT□TED34✓
3	600VAC	100 Amp. Frame	EBMBA②✓	15A thru 70A	EBMBA-DT□FAL36✓
3	600VAC	150 Amp. Frame	EBMBA③④⑤✓	10A thru 70A	EBMBA-†□◆36✓
3	240VAC or 125-250VDC	100 Amp. Frame	EBMBB②✓	15A thru 100A	EBMBB-DT□FAL32✓
3	240VAC or 125-250VDC	150 Amp. Frame	EBMBB③④✓	10A thru 150A③	EBMBB-TT□TEB32✓
3	480VAC or 250VDC	100 Amp. Frame	EBMBB②✓	15A thru 100A	EBMBB-†□◆34✓
3	480VAC or 250VDC	150 Amp. Frame	EBMBB③④✓	10A thru 150A	EBMBB-TT□TED34✓
3	600VAC	100 Amp. Frame	EBMBB②✓	15A thru 100A	EBMBB-DT□FAL36✓
3	600VAC	150 Amp. Frame	EBMBB③④⑤✓	15A thru 150A	EBMBB-†□◆36✓
3	600VAC	250 Amp. Frame	EBMBG⑥⑦✓	70A thru 250A	EBMBG-†□◆36
3	600VAC or 250VDC	400 Amp. Frame	EBMBK⑧✓	100A thru 400A⑥	EBMBK-†□◆36
3	600VAC or 250VDC	600 Amp. Frame	EBMBL⑨✓	250A thru 600A	EBMBL-WT□◆36
3	600VAC or 250VDC	800 Amp. Frame	EBMBL⑩✓	300A thru 800A	EBMBL-WT□◆36
3	600VAC or 250VDC	1000 Amp. Frame	EBMBL✓	125A thru 800A (max.)	EBMBL-DT□◆36

† Circuit Breakers:

Manufacturer	Symbol
Cutler-Hammer	WT
General Electric	TT
Square D	DT

◆ Select Circuit Breaker Frame Type based on Frame size, voltage, and manufacturer desired:

Manufacturer	100 Amp. Frame 240VAC 480VAC 600VAC	150 Amp. Frame 240VAC 480VAC 600VAC	250 Amp. Frame⑥⑦ 600VAC	400 Amp. Frame 600VAC	600 Amp. Frame 600VAC	800 Amp. Frame 600VAC	1000 Amp. Frame 600VAC
Cutler-Hammer	— EHD —	— — FDB	JD—Interchangeable Trip Unit JDB—Non-Interchangeable Trip Unit	KD—Interchangeable Trip Unit KDB—Non-Interchangeable Trip Unit	LD	MD	—
General Electric	TEB — —	— TED TED	TFK—Interchangeable Trip Unit TFJ—Non-Interchangeable Trip Unit	TJK—Interchangeable Trip Unit TJJ—Non-Interchangeable Trip Unit	TJK	TKMA	—
Square D	FAL FAL FAL	— — —	KAL	LAL	—	—	MAL

□ Select Trip Setting from below:

100 Amp. Frame (EHD, FAL)② – 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
150 Amp. Frame (TDB, TEB, TED)③④⑤ – 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150
225/250 Amp. Frame (JD, JDB, KAL, TFJ, TFK)⑥⑦ – 70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250
400 Amp. Frame (KD, KDB, LAL, TJJ, TJK)⑧ – 100, 125, 150, 175, 200, 225, 250, 300, 350, 400
600 Amp. Frame (LD, TJK)⑨ – 250, 300, 350, 400, 450, 500, 600
800 Amp. Frame (MD, TKMA)⑩ – 300, 350, 400, 450, 500, 600, 700, 800
1000 Amp. Frame (MAL) – 125, 150, 175, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 800

Footnotes:

- ① Depending on availability from the circuit breaker manufacturer 1 and 2 pole can be furnished. Information on request.
- ② EBMBA will accept 15 thru 70 amp. trip, EBMBB will accept 15 thru 100 amp. trip.
- ③ EBMBA will accept 10 thru 70 amp. trip, EBMBB will accept 10 thru 150 amp. trip.
- ④ General Electric TEB frame available 10 thru 100 amp. trip. TED frame available 10 thru 150 amp. trip.
- ⑤ Westinghouse FDB frame available 15 thru 150 amp. trip.
- ⑥ General Electric TFJ and TFK types are 225 amp. frame, available 70 thru 225 amp. trip.
- ⑦ Westinghouse JD and JDB types are 250 amp. frame, available 70, 90, 100 and 125 thru 250 amp. trip.
- ⑧ Westinghouse KD and KDB frames available 100 thru 400 amp. trip. Square D LAL and General Electric TJJ and TJK frames available 125 thru 400 amp. trip.
- ⑨ Westinghouse LD frame available 300 thru 400 and 500, 600 amp. trip.
- ⑩ Westinghouse MD frame available 400 and 500 thru 800 amp. trip.

✓ – available with Lightning Service™ delivery.
See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

EBMB Circuit Breakers and Enclosures

Dimensions (inches)

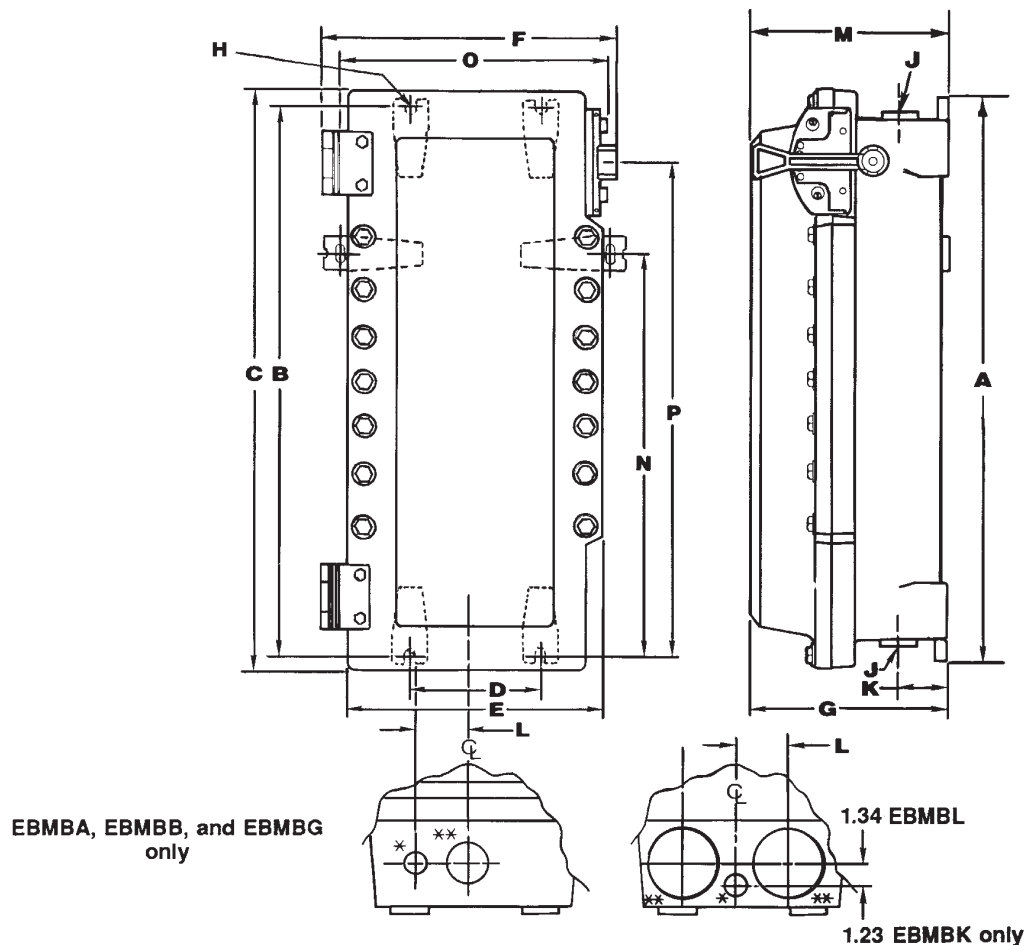
Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C



Dimensions are approximate, not for construction purposes.



3C Circuit Breakers

* 1" Drilled & Tapped (D & T) conduit entry for control conductors supplied with PLG plug top and bottom.

** Conduit entrance(s) for power conductors (top and bottom). (All conduit entrance(s) supplied with RE reducer and PLG plug.)

*** Use 1/2" diameter bolts for mounting all enclosures. (see H) Note: Lifting bracket will accommodate a maximum 2 ton hook.

	Enclo- sure Only Cat. No.	Enclo- sure Size Symbol	Dimensions								** J Conduit Entry Trade Size		Dimensions					
			A	B	C	D	E	F	G	D&T◆	w/RE	K	L	M	N	O	P	
100 Amp Frame	EBMBA✓	A	18.25	17.25	19.40	6.00	13.03	14.78	10.25	2"	1.5"	3.25	3.13	10.25	—	—	14.50	
100 and 150 Amp Frame	EBMBB✓	B	25.75	24.75	26.90	6.00	13.03	14.78	10.25	2"	1.5"	3.25	3.13	10.25	—	—	22.00	
225 and 250 Amp Frame	EBMBG✓	G	37.50	36.50	39.28	6.00	13.03	14.78	10.25	3.0"	2.5"	3.25	3.13	10.25	—	—	34.06	
400 Amp Frame	EBMBK✓	K	43.12	41.50	42.65	12.00	17.65	20.28	10.92	(2)3"	(2)2.5"	3.25	3.00	10.92	—	—	29.23	
600, 800 and 1000† Amp Frame	EBMBL✓	L	53.25	51.50	53.28	12.00	17.90	20.58	13.03	(2)4"	(2)3.5"	4.00	3.50	13.13	41.50	18.40	29.88	

† 1000 Ampere Frame (max. 800 ampere trip)

✓ – available with Lightning Service™ delivery. See Section G for complete details.

♦ Drilled & Tapped.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

Application:

EPC Circuit breakers and enclosures are used:

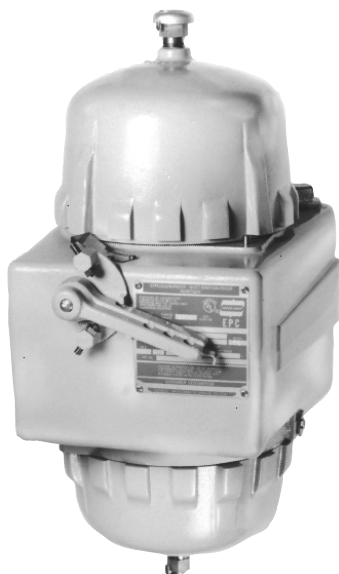
- for service entrance*, feeder or branch circuit protection for lighting, heating, appliance and motor circuits
- in areas made hazardous due to the presence of flammable vapors, gases or combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical or petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

- Quick-opening covers – less than two turns to remove or install
- Three section design for ease of installation
- Water-shedding construction with female threads on top cover, male threads on bottom cover, and top cover skirted
- Specially located stops and locks insure adequate thread engagement and prevent overtightening
- Separate replaceable mounting bracket attached to the rear of the body provides three-point suspension for quick installation and leveling – one keyhole slot at top and two open slots at bottom
- Bodies have two taper-tapped conduit hubs with integral bushings on the top, and two more directly below
- Mounting plates are supplied with all necessary holes and hardware to attach any of the circuit breakers shown in the catalog listings. Breaker and interior mounting frames are easily removed as a unit, providing free access to the wiring chamber
- Breaker is operated by an external handle which can be padlocked in either “ON” or “OFF” positions by as many as three padlocks. Breaker is trip-free of the handle and will open under short circuit or overload, even if the handle is locked in the “ON” position

Standard Materials:

- Bodies and covers – copper-free aluminum
- Operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

**Standard Finishes:**

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized

Electrical Rating Ranges:

- 100, 150, 225, 250 ampere frame sizes

Certifications & Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- NEMA: 3, 4, 7CD, 9EFG
- UL Standard: 698
- CSA: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description

		Suffix to be Added to Encl. Cat. #
Auxiliary Switch†		
1A/1B (1P2T)		S784
2A/2B (2P2T)		S785
Insulated neutral with 2 connectors (100, 150 and 225 amp.)		S146
Grounded neutral stud with 3 connectors (100, 150 and 225 amp.)		S178
Side bosses drilled and tapped same size as standard hubs		S366
Back boss drilled and tapped same size as standard hubs		S367
Standard Breather (Class I, Groups C, D; Class II, Groups E, F, G; Class III)		S219
Standard Drain (Class I, Groups C, D; Class II, Groups E, F, G; Class III)		S198
Standard Breather and Drain (Class I, Groups C, D; Class II, Groups E, F, G; Class III)		S198V
Universal Breather-Drain (Class I, Groups C, D; Class II, Groups F, G)		S454§
(2) Universal Breather-Drains (Class I, Groups C, D; Class II, Groups F, G)		S454V§

* Suffix S146 insulated material must be used to comply with NEC requirements for service entrance

† Application is limited by circuit breaker design – Consult Factory.

§ Not Suitable for NEMA 4

EPC Circuit Breakers and Enclosures

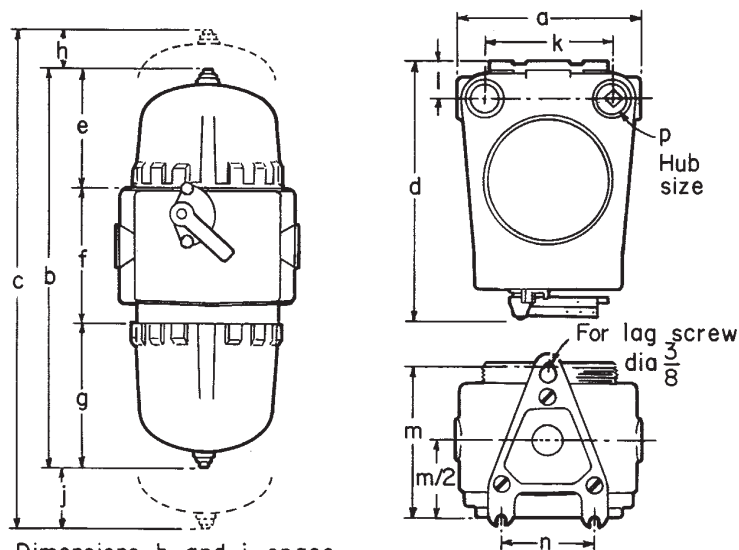
Dimensions* (inches)

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C

3C Circuit Breakers



Cat. # EPC	377	387	317
Int. Dia.	7"	7"W	11"
a	10 $\frac{5}{8}$	12 $\frac{13}{16}$	16 $\frac{1}{8}$
b	19 $\frac{13}{16}$	19 $\frac{13}{16}$	25 $\frac{1}{2}$
c	23 $\frac{13}{16}$	23 $\frac{13}{16}$	35 $\frac{1}{2}$
d	14 $\frac{3}{8}$	14 $\frac{3}{8}$	20 $\frac{1}{4}$
e	6 $\frac{3}{4}$	6 $\frac{3}{4}$	9 $\frac{1}{8}$
f	7 $\frac{11}{16}$	7 $\frac{11}{16}$	8 $\frac{5}{8}$
g	5 $\frac{3}{8}$	5 $\frac{3}{8}$	7 $\frac{3}{4}$
h	2	2	4 $\frac{1}{2}$
j	2	2	5 $\frac{1}{2}$
k	7 $\frac{3}{8}$	9 $\frac{1}{4}$	12
l	2 $\frac{1}{16}$	2 $\frac{1}{16}$	2 $\frac{5}{8}$
m	9 $\frac{3}{8}$	9 $\frac{3}{8}$	11
n	5 $\frac{1}{4}$	5 $\frac{1}{4}$	5 $\frac{1}{2}$
p	1 $\frac{1}{4}$	2	2 $\frac{1}{2}$

* Dimensions are approximate, not for construction

EPC Circuit Breakers and Enclosures

100/150A Frame, Thermal Magnetic,
120-240 VAC, 125-250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

To order an enclosure complete with circuit breaker where there is a choice of manufacturer, insert the manufacturer's symbol in the designated position of the catalog number.

Enclosures only can be ordered.

Select from listings. For circuit breakers that can be accommodated see Table indicated in Section 6C.

Detailed information on circuit breaker selection is given in Section 6C.

Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Int. Dia.	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. #
2	240VAC or 125-250VDC	7	7	1¼	15	EPC377	EPC377-◆◆15EB-2
					20		EPC377-◆◆20EB-2
					30		EPC377-◆◆30EB-2
					40		EPC377-◆◆40EB-2
					50		EPC377-◆◆50EB-2
					70		EPC377-◆◆70EB-2
			7W	2	90	EPC387	EPC377-◆◆90EB-2
					100		EPC377-◆◆100EB-2
					70		EPC387-◆◆70EB-2
					90		EPC387-◆◆90EB-2
					100		EPC387-◆◆100EB-2
3	240VAC*	7	7	1¼	15	EPC377	EPC377-◆◆15EB-3
					20		EPC377-◆◆20EB-3
					30		EPC377-◆◆30EB-3
					40		EPC377-◆◆40EB-3
					50		EPC377-◆◆50EB-3
					70		EPC377-◆◆70EB-3
			7W	2	90	EPC387	EPC377-◆◆90EB-3
					100		EPC377-◆◆100EB-3
					70		EPC387-◆◆70EB-3
					90		EPC387-◆◆90EB-3
					100		EPC387-◆◆100EB-3

* Square D 240VAC/125-250VDC

◆◆ Circuit Breakers

Manufacturer	Frame	Symbol
General Electric	TEB	TT
Square D	FAL	DT
Cutler-Hammer	ED	WT

EPC Circuit Breakers and Enclosures

100/150A Frame, Thermal Magnetic,
480-600 VAC, 250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C

3C
Circuit Breakers

Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Int. Dia.	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. #
2	480VAC or 250VDC	8	7	1¼	15	EPC377	EPC377-15EHD-2
					20		EPC377-20EHD-2
					30		EPC377-30EHD-2
					40		EPC377-40EHD-2
					50		EPC377-50EHD-2
					70		EPC377-70EHD-2
			7W	2	90	EPC387	EPC377-90EHD-2
					100		EPC377-100EHD-2
					70		EPC387-70EHD-2
					90		EPC387-90EHD-2
					100		EPC387-100EHD-2
					100		EPC387-100EHD-2
3	480VAC†	8	7	1¼	15	EPC377	EPC377-15EHD-3
					20		EPC377-20EHD-3
					30		EPC377-30EHD-3
					40		EPC377-40EHD-3
					50		EPC377-50EHD-3
					70		EPC377-70EHD-3
			7W	2	90	EPC387	EPC377-90EHD-3
					100		EPC377-100EHD-3
					70		EPC387-70EHD-3
					90		EPC387-90EHD-3
					100		EPC387-100EHD-3
					100		EPC387-100EHD-3
2	600VAC or 250VDC	9	7	1¼	15	EPC377	EPC377-15FDB-2
					20		EPC377-20FDB-2
					30		EPC377-30FDB-2
					40		EPC377-40FDB-2
					50		EPC377-50FDB-2
					70		EPC377-70FDB-2
			7W	2	90	EPC387	EPC377-90FDB-2
					100		EPC377-100FDB-2
					70		EPC387-70FDB-2
					90		EPC387-90FDB-2
					100		EPC387-100FDB-2
					110*		EPC387-110FDB-2
3	600VAC§	9	7	1¼	125*	EPC377	EPC387-125FDB-2
					150*		EPC387-150FDB-2
					15	EPC377	EPC377-15FDB-3
					20		EPC377-20FDB-3
					30		EPC377-30FDB-3
					40		EPC377-40FDB-3
			7W	2	50	EPC387	EPC377-50FDB-3
					70		EPC377-70FDB-3
					90		EPC377-90FDB-3
					100		EPC377-100FDB-3
					70		EPC387-70FDB-3
					90		EPC387-90FDB-3
					100		EPC387-100FDB-3
					100*		EPC387-110FDB-3
					125*		EPC387-125FDB-3
					150*		EPC387-150FDB-3

† Square D 480VAC/250VDC
§ Square D 600VAC/250VDC
* Square D FAL Frame, 100A Max.

‡ Circuit Breakers
Manufacturer
General Electric
Square D
Cutler-Hammer
Frame
TED
FAL
EHD

Symbol
TT
DT
WT

◆ Circuit Breakers
Manufacturer
General Electric
Square D
Cutler-Hammer
Frame
TED
FAL
FD, FDB

Symbol
TT
DT
WT

EPC Circuit Breakers and Enclosures

225/250A Frame, Thermal Magnetic,
600VAC/250VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure				
Poles	Voltage Rating	Section 6C Table	Int. Dia.	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Cat. #
2	600VAC or 250VDC	10	11	2½	125	EPC317	EPC317-‡125JB-2
					150		EPC317-‡150JB-2
					175		EPC317-‡175JB-2
					200		EPC317-‡200JB-2
					225		EPC317-‡225JB-2
3	600VAC	10	11	2½	250*	EPC317	EPC317-‡250JB-2
					125		EPC317-‡125JB-3
					150		EPC317-‡150JB-3
					175		EPC317-‡175JB-3
					200		EPC317-‡200JB-3
					225		EPC317-‡225JB-3
					250*		EPC317-‡250JB-3

‡ Circuit Breakers

Manufacturer	Frame	Symbol
Cutler-Hammer	JDB	WT
General Electric	TFJ	TT
Square D	KAL	DT

* General Electric TFJ Frame, 225A Max.

FLB Circuit Breakers and Enclosures

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C

3C Circuit Breakers

Application:

FLB circuit breakers and enclosures are used:

- for service entrance, feeder or branch circuit protection for lighting, heating, appliance and motor circuits
- in areas made hazardous due to the presence of flammable vapors, gases or combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

- Semi-cylindrical body shape for maximum strength at lowest practical weight
- Round threaded covers at each end, set at an angle to provide ready access to interior for ease of wiring
- Breaker is operated by an external handle which can be padlocked in either "ON" or "OFF" positions. Breaker is trip-free of the handle and will open under short circuit or overload even if the handle is locked in the "ON" position
- Bodies have vertical through feed conduit hubs of sizes given in the listings

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

Standard Finishes:

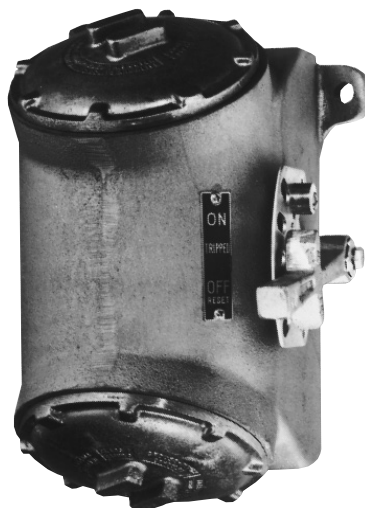
- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – zinc electroplate with chromate finish

Electrical Rating Ranges:

- 100 and 225 ampere frame sizes

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA/EEMAC: 3, 4, 7CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2 No. 30



Options:

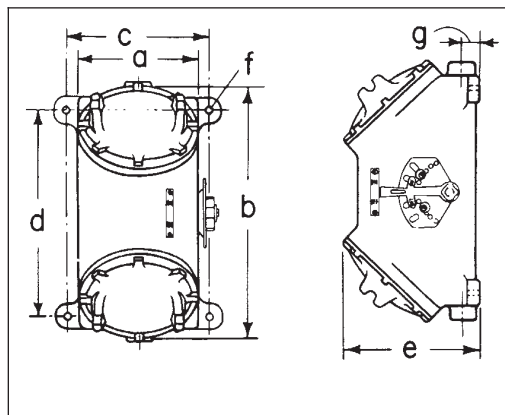
- The following special options are available from factory by adding suffix to Cat. No.:

Description

2 lugs for neutral connections (50, 100 and 225 amp.)	S146
Ground neutral stud with 3 connectors (50, 100 and 225 amp.)	S168
Standard Breather (Class I, Groups C,D; Class II, Groups E,F,G; Class III)	S219
Standard Drain (Class I, Groups C,D; Class II, Groups E,F,G; Class III)	S198
Standard Breather and Drain (Class I, Groups C,D; Class II, Groups E,F,G; Class III)	S198V
Universal Breather – Drain (Class I, Groups C,D; Class II, Groups F,G)	S454 *
(2) Universal Breather – Drains (Class I, Groups C,D; Class II, Groups F,G)	S454V *
Specify Auxiliary Switch **	
1A/1B (1P2T)	S784
2A/2B (2P2T)	S785

Suffix to be
Added to Encl.
Cat. #

Dimensions (inches)§



	a	b	c	d	e	f	g
†FLB140, 220, 221	5 1/4	10 1/4	6 1/4	7 1/4	7	7/16	1 1/8
FLB115, 141, 147, 148, 171, 172, 173, 175, 222, 361, 116, 142, 149, 174, 177, 223, 362	7 1/2	13 3/8	8 1/2	9 3/4	9 1/8	7/16	1 3/4
FLB224, 225, 264, 265, 267, 346	13 3/4	22 1/2	16 1/4	9 7/8	15 1/2	2 1/32	2 7/16

† With two mounting feet, one at upper right and one at lower left

* Not suitable for NEMA 4/EEMAC

** Application is limited by circuit breaker design – Consult Factory

§ Dimensions are approximate, not for construction purposes.

FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic,
120 VAC/125 VDC, 240 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Ordering Information:

To order an enclosure complete with circuit breaker where there is a choice of manufacturer, insert the manufacturer's symbol in the designated position of the catalog number.

Enclosures only can be ordered.

Select from listings. For circuit breakers that can be accommodated see Table indicated in Section 6C.

Detailed information on circuit breaker selection is given in Section 6C.

Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker General Electric "TEB" Cat. #
1	120VAC or 125VDC	7	¾	15	FLB220	FLB220-TT15-1
				20		FLB220-TT20-1
				30		FLB220-TT30-1
				40		FLB220-TT40-1
				50		FLB220-TT50-1
2	240VAC or 125- 250VDC	7	1	15	FLB221	FLB221-TT15-2
				20		FLB221-TT20-2
				30		FLB221-TT30-2
				40		FLB221-TT40-2
				50		FLB221-TT50-2
			1½	70	FLB223	FLB223-TT70-2
				90		FLB223-TT90-2
				100		FLB223-TT100-2
3	240VAC	7	1¼	15	FLB222	FLB222-TT15-3
				20		FLB222-TT20-3
				30		FLB222-TT30-3
				40		FLB222-TT40-3
				50		FLB222-TT50-3
			1½	70	FLB223	FLB223-TT70-3
				90		FLB223-TT90-3
				100		FLB223-TT100-3

FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic,
120-480 VAC, 125-250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C



3C
Circuit Breakers

100 Ampere Frame Size with Non-Interchangeable Trip 240VAC Max.

Circuit Breaker			Enclosure						
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Square D “FAL” Cat. #			
1	120VAC or 125VDC	7	¾	15	FLB171	FLB171-DT15-1			
				20		FLB171-DT20-1			
				30		FLB171-DT30-1			
				40		FLB171-DT40-1			
				50		FLB171-DT50-1			
2	240VAC or 125-250VDC	7	1	15	FLB172	FLB172-DT15-2			
				20		FLB172-DT20-2			
				30		FLB172-DT30-2			
				40		FLB172-DT40-2			
				50		FLB172-DT50-2			
		1½	FLB174	70	FLB174-DT70-2				
				90	FLB174-DT90-2				
				100	FLB174-DT100-2				
				3	7	1¼	15	FLB173	FLB173-DT15-3
							20		FLB173-DT20-3
30	FLB173-DT30-3								
40	FLB173-DT40-3								
50	FLB173-DT50-3								
1½	FLB174	70	FLB174-DT70-3						
		90	FLB174-DT90-3						
		100	FLB174-DT100-3						

100 Ampere Frame Size with Non-Interchangeable Trip 480VAC Max.

480VAC Max.				Cutler-Hammer "EHD" Cat. #	General Electric "TED" Cat. #		
2	480VAC or 250VDC	8	1	15	FLB140-WT15-2	FLB140-TT15-2	
				20	FLB140-WT20-2	FLB140-TT20-2	
				30	FLB140-WT30-2	FLB140-TT30-2	
				40	FLB140-WT40-2	FLB140-TT40-2	
				50	FLB140-WT50-2	FLB140-TT50-2	
			1½	70	FLB142-WT70-2	FLB142-TT70-2	
				90	FLB142-WT90-2	FLB142-TT90-2	
				100	FLB142-WT100-2	FLB142-TT100-2	
				3	480VAC	8	1¼	15	FLB141-WT15-3	FLB141-TT15-3
20	FLB141-WT20-3	FLB141-TT20-3					
30	FLB141-WT30-3	FLB141-TT30-3					
40	FLB141-WT40-3	FLB141-TT40-3					
50	FLB141-WT50-3	FLB141-TT50-3					
1½	70	FLB142-WT70-3	FLB142-TT70-3				
	90	FLB142-WT90-3	FLB142-TT90-3				
	100	FLB142-WT100-3	FLB142-TT100-3				

✓ – available with Lightning Service™ delivery. See Section G for complete details.

FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic,
480 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure							
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker Square D “FAL” Cat. #				
2	480VAC or 250VDC	8	1¼	15	FLB147	FLB147-DT15-2				
				20		FLB147-DT20-2				
				30		FLB147-DT30-2				
				40		FLB147-DT40-2				
				50		FLB147-DT50-2				
			1½	70	FLB149	FLB149-DT70-2				
				90		FLB149-DT90-2				
				100		FLB149-DT100-2				
				3		8	1¼	15	FLB148	FLB148-DT15-3
								20		FLB148-DT20-3
30	FLB148-DT30-3									
40	FLB148-DT40-3									
50	FLB148-DT50-3									
1½	70	FLB149	FLB149-DT70-3							
	90		FLB149-DT90-3							
	100		FLB149-DT100-3							

FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic,
600 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C

3C
Circuit Breakers

Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker
2	600VAC or 250VDC	9	1¼	15	FLB115	Cutler-Hammer "FDB" Cat. #
				20		FLB115-WT15-2
				30		FLB115-WT20-2
				40		FLB115-WT30-2
				50		FLB115-WT40-2
			1½	70	FLB116	FLB115-WT50-2
				90		FLB116-WT70-2
				100		FLB116-WT90-2
						FLB116-WT100-2
3	600VAC	9	1¼	15	FLB115	FLB115-WT15-3
				20		FLB115-WT20-3
				30		FLB115-WT30-3
				40		FLB115-WT40-3
				50		FLB115-WT50-3
			1½	70	FLB116	FLB116-WT70-3
				90		FLB116-WT90-3
				100		FLB116-WT100-3
3	600VAC	9	1¼	15	FLB361	General Electric "TED" Cat. #
				20		FLB361-TT15-3
				30		FLB361-TT20-3
				40		FLB361-TT30-3
				50		FLB361-TT40-3
			1½	70	FLB362	FLB361-TT50-3
				90		FLB362-TT70-3
				100		FLB362-TT90-3
						FLB362-TT100-3

FLB Circuit Breakers and Enclosures

100A Frame, Thermal Magnetic,
600 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Non-Interchangeable Trip

Circuit Breaker			Enclosure						
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker			
						Square D "FAL" Cat. #			
2	600VAC or 250VDC	9	1¼	15	FLB175	FLB175-DT15-2			
				20		FLB175-DT20-2			
				30		FLB175-DT30-2			
				40		FLB175-DT40-2			
				50		FLB175-DT50-2			
			1½	70	FLB177	FLB177-DT70-2			
				90		FLB177-DT90-2			
				100		FLB177-DT100-2			
			3		9	1¼	15	FLB175	FLB175-DT15-3
							20		FLB175-DT20-3
30	FLB175-DT30-3								
40	FLB175-DT40-3								
50	FLB175-DT50-3								
1½	70	FLB177				FLB177-DT70-3			
	90					FLB177-DT90-3			
	100					FLB177-DT100-3			

FLB Circuit Breakers and Enclosures

225A Frame, Thermal Magnetic,
600 VAC/250 VDC

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

3C

3C
Circuit Breakers

Non-Interchangeable Trip

Circuit Breaker			Enclosure			
Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker
2	600VAC or 250VDC	10	2½	125	FLB264	Cutler-Hammer "JDB"*** Cat. #
				150		FLB264-WT125-2
				175		FLB264-WT150-2
				200		FLB264-WT175-2
				225		FLB264-WT200-2
3	600VAC	10	2½	125	FLB264	FLB264-WT225-2
				150		FLB264-WT125-3
				175		FLB264-WT150-3
				200		FLB264-WT175-3
				225		FLB264-WT200-3
2	600VAC or 250VDC	10	2½	125	FLB346	General Electric "TFJ" Cat. #
				150		Square D "KAL" Cat. #
				175		FLB346-DT125-2
				200		FLB346-DT150-2
				225		FLB346-DT175-2
3	600VAC	10	2½	125	FLB224 or FLB346	FLB346-DT200-2
				150		FLB346-DT225-2
				175		FLB224-TT125-3
				200		FLB224-TT150-3
				225		FLB224-TT175-3
3	600VAC	10	2½	175	FLB224 or FLB346	FLB224-TT200-3
				200		FLB224-TT225-3
				225		FLB346-DT175-3
				200		FLB346-DT200-3
				225		FLB346-DT225-3

Interchangeable Trip

Poles	Voltage Rating	Section 6C Table	Hub Size	Ckt. Bkr. Amp Rating	Without Circuit Breaker Cat. #	With Circuit Breaker
2	600VAC or 250VDC	11	3	125	FLB267	Cutler-Hammer "JD"* Cat. #
				150		FLB267-WT125-2
				175		FLB267-WT150-2
				200		FLB267-WT175-2
				225		FLB267-WT200-2
3	600VAC	11	3	125	FLB267 or FLB225	FLB267-WT225-2
				150		FLB267-WT125-3
				175		FLB267-WT150-3
				200		FLB267-WT175-3
				225		FLB267-WT200-3
3	600VAC	11	3	125	FLB267 or FLB225	FLB267-WT225-3
				150		FLB225-TT125-3
				175		FLB225-TT150-3
				200		FLB225-TT175-3
				225		FLB225-TT200-3
3	600VAC	11	3	125	FLB267 or FLB225	FLB225-TT225-3
				150		FLB267-WT125-3
				175		FLB267-WT150-3
				200		FLB267-WT175-3
				225		FLB267-WT200-3
3	600VAC	11	3	125	FLB267 or FLB225	FLB267-WT225-3
				150		FLB225-TT125-3
				175		FLB225-TT150-3
				200		FLB225-TT175-3
				225		FLB225-TT200-3

* Formerly "KB"

** Formerly "JB"

Application:

EFD circuit breakers and enclosures are used:

- for branch circuit protection for lighting, appliance, and motor circuits
- in areas made hazardous due to the presence of flammable vapors, gases or combustible dusts
- in corrosive locations
- for installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

- Small, compact enclosures with accurately ground, wide flange on both body and cover for flamtight joint
- Dead-end (EFD) or through feed (EFDC) hubs $\frac{3}{4}$ " to 1" sizes
- Breaker mounted on cover and back wired for ease of installation
- Breaker can be padlocked in "ON" or "OFF" positions with trip-free handle mechanism

Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Operating handles – type 6/6 nylon
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Type 6/6 nylon – black
- Stainless steel – natural

Electrical Ratings:

- Single pole – 120/240 vac max.
- Trip ratings – 15, 20 and 30 amp.

Certifications & Compliances:

- NEC:
 Class I, Division 1 & 2, Groups B*,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- NEMA 3,7B*CD,9EFG,12

Options:

- For use in Group B hazardous areas – add suffix GB to catalog number.*



EFD dead end



EFDC through feed

With Square D Type "QOU" Circuit Breakers

Hub Size	15 Amp Cat. #	20 Amp Cat. #	30 Amp Cat. #
$\frac{3}{4}$	EFD21104	EFD21105	EFD21106
1	EFD31104	EFD31105	EFD31106

EFD Single Gang (Dead end)

$\frac{3}{4}$	EFD21104	EFD21105	EFD21106
1	EFD31104	EFD31105	EFD31106

EFDC Single Gang (through feed)

$\frac{3}{4}$	EFDC21104	EFDC21105	EFDC21106
1	EFDC31104	EFDC31105	EFDC31106

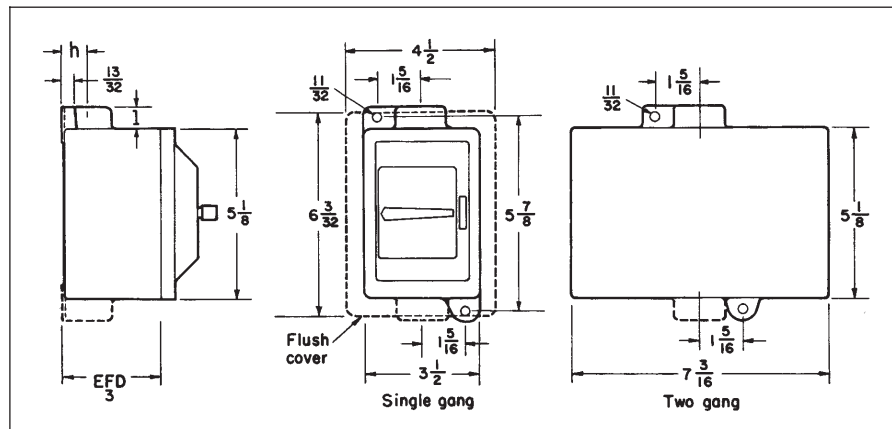
EFD Two Gang (Dead end)

$\frac{3}{4}$	EFD22104	EFD22105	EFD22106
1	EFD32104	EFD32105	EFD32106

EFDC Two Gang (through feed)

$\frac{3}{4}$	EFDC22104	EFDC22105	EFDC22106
1	EFDC32104	EFDC32105	EFDC32106

Dimensions (inches)**



Hub Size	Dim. "h"	Dim. "l"
$\frac{3}{4}$	$\frac{7}{8}$	$\frac{13}{16}$
1	1	$\frac{15}{16}$

** Dimensions are approximate, not for construction purposes.

* Seals must be installed within $\frac{1}{2}$ " of each conduit opening, for Group B use.

Description	Page No.
Application/Selection	384, 385
Controls for Bulk Solids Handling	
AFA/AFAX Conveyor Alignment Switches	417
AFU/AFUX Conveyor Control Safety Switches	416
Custom Control Panels	
EJB Series	415
Grounding Indicator/Control	
EGL	419
Static Discharge Reel	420
Mine Signal Switches	
AFU Series	418
Pushbuttons, Pilot Lights and Selector Switches	
Panel Mounted	
EMP Series	409-414
Surface Mounted – Factory Sealed	
EDS Pushbutton, Selector Switches	431-441
Flexstation Control Station Components	388-391, 397, 400
EFS Fire Alarm Station	402
EFS Pilot Lights	386, 387
EMP Pilot Lights, Pushbuttons, Selector Switches	409-414
Surface Mounted – Non-Sealed	
EFS Pilot Lights	386, 387
MC Pushbutton, Pilot Lights, Selector Switches	403-405
DSD Pilot Light, Pushbutton, Receptacle, Selector Switch Covers	394-396
DSD-SR HP Rated Selector Switch	401
EDSCM Modular Series Bodies	392, 393
OAC Pushbuttons, Selector Switches	406-408
Attachable Pendant Pushbutton Stations	
FLEXITITE Series	422-425
Ground Fault Control Stations	
EGF Series	421
Control Station Covers	
NC-CH Series	398, 399

Application and Selection, Quick Selector Chart

Application:

Control stations are used as a remote means of:

- motor control
- visual indication of equipment performance
- on-off control of circuits
- circuit selection

Considerations for Selection:

- The environment of the control station location and requirements for construction in terms of NEC/CEC compliances and NEMA/EEMAC type.
- Function to be performed
- Desirability of factory sealing as compared to field sealing
- Factory sealing has distinct advantages
 - Less installation problems
 - Less time consuming
 - Less change of error
 - Lower installed cost
 - Accommodates future changes to circuitry
 - Greater reliability
- The number of controls required, and the space available for installation. Where space is limited, panel or junction box mounting with many combinations are available
- See "Quick Selector Chart" for guidance

Options:

Many options are available on:

- material and finishes where special atmospheric conditions prevail
 - special features for specific applications.
- See individual control station listings for available options

Quick Selector Chart

Control Station	NEC/CEC – Hazardous Area Compliance	NEMA/EEMAC Type	Function	Factory Sealed	No. of Devices or Units	Type of Mounting	Cover Style
MC, MCC		3, 4	Pushbutton Pilot light Selector switch		1-5*	Surface 1-5 gang	Gasketed
AFU, AFUX (conveyor control switch)	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4, 7CD, 9EFG	Emergency stop		1-2†	Surface 1 gang	Ground Joint and Gasketed
AFU (signal switch)		3	"ON-OFF" "START-STOP" Pull cord		1†	Surface 1 gang	Not applicable
AFA, AFAX	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 4, 7CD, 9EFG	Conveyor belt alignment switch		1-2*	Surface 1 gang	Ground Joint and Gasketed
EDS, EDSC§	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7B(Div. 2)CD, 9EFG	Pilot light Pushbutton Selector switch	Pilot light Pushbutton Selector switch §	1-2*	Surface 1-2 gang	Ground joint
DSD-SR	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 5, 7CD, 9EFG, 12	Selector Switch		1	Surface 1 gang	Ground joint
Flex Station	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7B(Div. 2)CD, 9EFG	Pilot light Pushbutton	Pilot light Pushbutton	1-2-3	Surface 1-2 gang	Ground joint

* Number of devices per unit

† Number of units in combination

§ Factory sealed units; listed on pages 431 through 441

Application and Selection,
Quick Selector Chart

Quick Selector Chart (continued)

Control Station	NEC/CEC – Hazardous Area Compliance	NEMA/ EEMAC Type	Function	Factory Sealed	No. of Devices or Units	Type of Mounting	Cover Style
EDSCM	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7CD, 9EFG	Pilot light Pushbutton Selector switch		1-15*	Surface 1-15 gang	Ground joint
EFS §	Cl. I, Div. 1 & 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7BCD, 9EFG	Pilot light Pushbutton Selector switch	Pilot light § Pushbutton Selector switch	1-2*	Surface 1 gang	Ground joint
OAC	Cl. I, Div. 1, Groups A,B,C,D Cl. I, Div. 2, Groups A,B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7ABCD, 9EFG, 12	Pushbutton Selector switch	Pushbutton Selector switch	1-2*	Surface 1 gang	Threaded
EMP	Cl. I, Div. 1, Groups C,D Cl. I, Div. 2, Groups B,C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	3, 7CD, 9EFG	Pushbutton Pilot light Selector switch Combination	Pilot light Pushbutton Selector switch	1-78*	Surface junction box	Ground joint
EGL	Cl. I, Div. 1 & 2, Groups C,D Cl. II, Div. 1, Groups E,F,G Cl. II, Div. 2, Groups F,G Cl. III	7CD, 9EFG	Static ground indicator		1	Surface	Ground joint

* Number of devices per unit

† Number of units in combination

§ Factory sealed units; listed on pages 431 through 441

Application:

EFS pilot lights are used:

- in areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- for installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to visually indicate at a remote location that the desired function is being performed

Features:

- Small, compact enclosures with accurately ground flange on both body and cover for flame-tight joint
- Pilot lights are factory sealed. Conventional external seals are not required
- Dead end (EFS) or through feed (EFSC) hubs – ½" to 1" sizes

Standard Materials:

- Bodies – *Feraloy*® iron alloy (U.S.) and copper-free aluminum (Canada)
- Pilot light covers – *Feraloy* iron alloy
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Electrical Rating Range:

- Pilot lights – 110 to 600vac

Certifications & Complies:

- NEC/CEC: Class I, Groups B*,C,D
Class II, Groups E,F,G
Class III
- NEMA/EEMAC: 3, 7B*CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2

Options:

- The following special options are available from factory by adding suffix to Cat. No.

Description

Pilot lights for circuit voltages up to 600 volts maximum (standard voltage range 110-125)	See Listings
LED pilot lights in place of standard incandescent pilot lamps	LED
Bodies and covers — copper-free aluminum	SA
24 VDC operation on pilot lights	S300

**Suffix to be
Added to Encl.
Cat. #**



EFS2190 Pushbutton



EFS11271 Selector Switch

**For Factory Sealed Pushbutton Stations and Selector Switches,
see Section 5C.**

* External conduit seal required only on 1 inch hub size in Division 1, Group B within 5 feet (1.5 meters).

EFS Factory Sealed Pilot Lights

Pushbutton, Selector Switch Stations – Section 5C

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C

Pilot lights listed below are factory sealed and do not require external seals*. Lamps are 6 watt, type S6, candelabra base for use on 110-125 volt circuits.

LED pilot lights can be provided in place of standard incandescent lamps by adding suffix LED after the color symbols. See Options on page 386

Enclosures with single pilot covers **only** can be equipped with a transformer for each lamp for high voltages as shown.

Transformer Voltages Above 125

Nominal Volts 50-60 hertz Transformer	Primary Voltage Range	Cat. No. Suffix
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5



EFS Single Gang

Enclosure with Single Pilot Light ♦

Hub Size	Dead End Cat. #	Through Feed Cat. #
1/2	EFS11524-†	EFSC11524-†
3/4	EFS21524-†	EFSC21524-†
1	EFS31524-†	EFSC31524-†

Enclosure with Double Pilot Lights ♦

1/2	EFS11561-†	EFSC11561-†
3/4	EFS21561-†	EFSC21561-†
1	EFS31561-†	EFSC31561-†

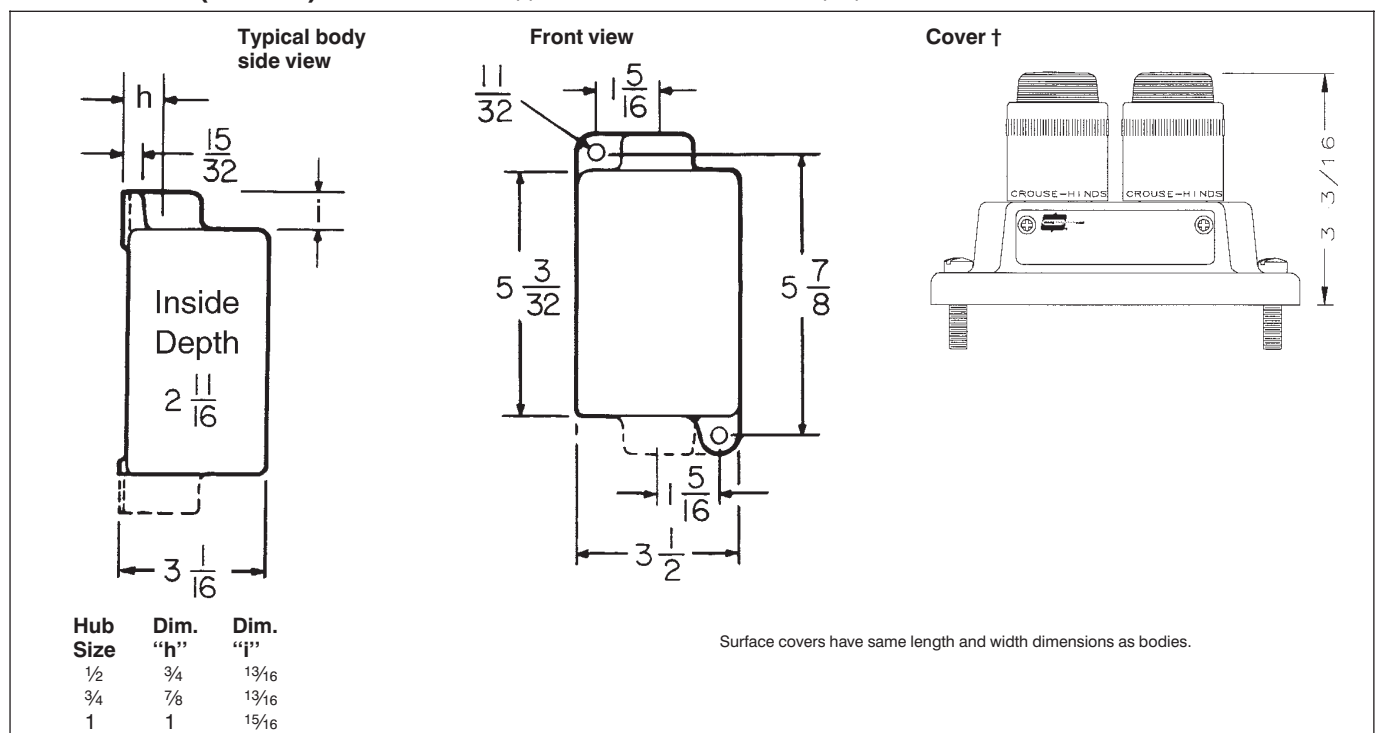
* External conduit seal required for 1 inch hub size in Division 1, Group B within 5 feet (1.5 meters) of enclosure.

† Add color symbol for each pilot light from table below. Example: EFS11561 with red and green lights is EFS11561-J1-J3

Color	Symbol	Color	Symbol	Color	Symbol
Red	J1	Amber	J6	Blue	J11
Green	J3	Clear	J10		

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after color symbol.

Dimensions (inches) Dimensions are approximate, not for construction purposes.



Class I, Div. 1 & 2, Groups B (Div. 2 only)* C, D
 Class II, Div. 1 & 2, Groups E, F, G
 Class III
 Zone 1 & 2 Groups IIB*
 NEMA 3R, 7B*(Div. 2)CD, 9 EFG, 12

Application:

Five modular components - operators, contact blocks, covers, legend plates, and bodies - are combined to provide a variety of control stations which are:

- For use indoors or outdoors, in areas which are hazardous due to the presence of flammable gases and vapors, or combustible dust.
- Used in conjunction with magnetic starters or contactors for remote control of motors and other electrical apparatus.
- For installation in petroleum refineries, chemical petrochemical, and other industrial process facilities; grain processing and storage facilities; and other heavy industrial applications where Class I, Class II, or Class III hazards are present.

Features:

- Momentary contact pushbuttons, maintained contact pushbuttons, and pilots lights offer a choice of functions.
- Selector switches in 2 or 3 position configurations including keyed and spring return options.
- Single-hole, two-hole, and three-hole covers for one, two, or three devices respectively per station.
- Rugged control devices for safe, reliable operation in industrial applications.
- Bodies, with extra room for wire pulling and termination, also include two integral mounting feet for fast, secure installation.
- Bodies have 1/2", 3/4", or 1" dead-end or through-feed conduit hubs with integral bushing for protection of wire insulation.
- Covers and bodies are available in Feraloy® or copper-free aluminum for light weight and corrosion resistance.
- DL legend plates have large lettering to give clear indication of device function. Space is available for field markings.

Standard Materials:

- Bodies, covers - Feraloy® or copper-free aluminum.
- Pushbuttons and guards - Type 6/6 nylon.
- Operating shafts, bearings - Stainless Steel.

Standard Finishes:

- Feraloy® iron-alloy - electrogalvanized and aluminum acrylic paint.
- Copper-free aluminum - natural.
- Stainless Steel - natural.

Electrical Ratings:

- Pushbuttons and selector switches - 600 VAC heavy duty (NEMA A600).
- Pilot lights - 120 VAC.



Certifications and Compliances:

- NEC: Class I, Div. 1&2, Groups B* (Div. 2), C, D
 Class II, Div. 1&2, Groups E, F, G
 Class III
- Zone 1&2 Groups IIB*
- NEMA: 3R, 7B (Div. 2)CD, 9EFG, 12
- UL Standard: 698

* For Class I, Division 1, Group B or Zone 1 Hydrogen applications, use the EFS(C) complete control station catalog numbers found in Section 5C.

Options:

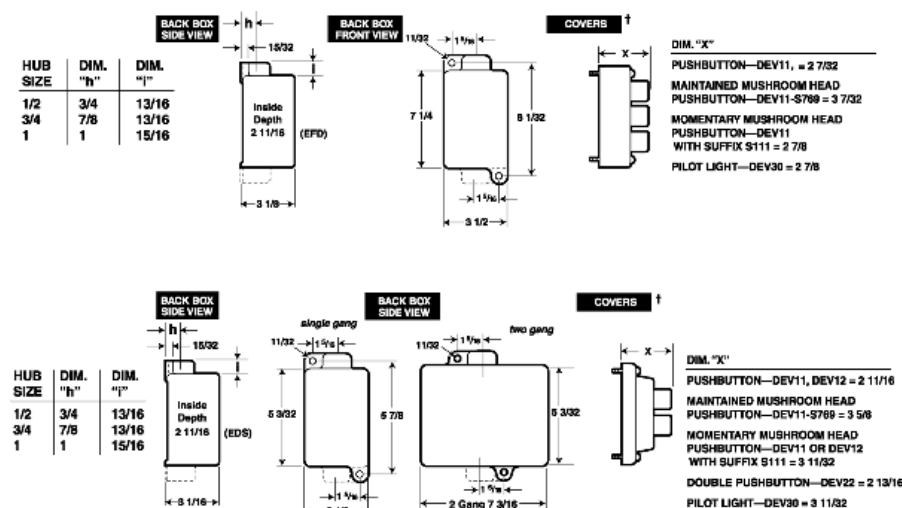
Description

- Corro-free™ epoxy finish for use in severely corrosive environments.

Suffix

FlexStation covers and bodies. S752

Dimensions** (Inches):



FlexStation™ Control Station Components

Ordering Information

Class I, Div. 1 & 2, Groups B (Div. 2 only) C, D
Class II, Div. 1 & 2, Groups E, F, G
Class III
NEMA 3R, 7B(Div. 2)CD, 9EFG, 12
IEC Zone 1 & 2 Groups IIB

4C

4C
Control Stations

STEP 1 – Select operator

Pushbutton front operated, standard black button



Description	Cat. #
Single button for 1 contact block	DEV11
Single button for 2 contact blocks	DEV12
Double buttons for 2 contact blocks	DEV22

Options	Suffix to be added to Cat. #
---------	------------------------------

Specify color for each pushbutton button (ex: DEV11G, DEV22GR).
Color is black if unspecified.

Green button (unmarked)	G
Red button (unmarked)	R
Momentary red mushroom head style (not available with lockout or with DEV22)	S111
Lockout with bar and chain (available on DEV11 and DEV12)	S153
Maintained red mushroom head style (lockout comes standard, do not specify S153; not available on DEV22)	S769

Pilot Light factory sealed, incandescent lamp



Description	Cat. #
Pilot light with red jewel	DEV30 J1
Pilot light with green jewel	DEV30 J3
Pilot light with amber jewel	DEV30 J6
Pilot light with clear jewel	DEV30 J10
Pilot light with blue LED and clear jewel	DEV30 J11-LED

Options	Suffix to be added to Cat. #
---------	------------------------------

LED lamps (standard clear jewel with colored lamp)	LED
24 V lamp (not available with transformer feature)	S300
240/120 V pilot light transformer	T2
480/120 V pilot light transformer	T4
600/120 V pilot light transformer	T5

Selector Switch with standard lockout



Description	Cat. #
2-position (pos. 1 – N.O., pos. 2 – N.C.) for use with 1 or 2 contact blocks	DEV42
3-position (pos. 1 – N.O., pos. 2 – Open, pos. 3 – N.C.) for use with 1 or 2 contact blocks	DEV43
3-position (pos. 1 – N.C., pos. 2 – N.O., pos. 3 – N.O. for Switch A) (pos. 1 – N.O., pos. 2 – N.O., pos. 3 – N.C. for Switch B) for use with 2 contact blocks	DEV44

Options	Suffix to be added to Cat. #
---------	------------------------------

Spring return to center from right (For DEV43 or DEV44 only)	S634
Spring return to center from left (For DEV43 or DEV44 only)	S635
Spring return to center from right and left (For DEV43 or DEV44 only)	S842
Key Operated – removable from all positions	S847 K1
Key Operated – removable from left position for DEV42 or from center for DEV43 and DEV44	S847 K2
Key Operated – removable from right position for DEV42 or from left for DEV43 and DEV44	S847 K3
Key Operated – removable from right position for DEV43 and DEV44	S847 K4

STEP 2 – Select contact block (if required)

Contact Block



Description	Cat. #
Contact block, 1 NO/1 NC, 10A, 600VAC, A600 rating	ESWP126

*Each control station will accept a maximum of three contact blocks. Select device operators accordingly. DEV12, DEV22 and DEV44 may not be used on a three-operator (DS443-SA) cover. DEV42 and DEV43 may not be used on a three-operator cover when using them with two contact blocks.

STEP 3 – Select desired legend plates

Device Legend Plates – for special markings order DL01 – “desired marking”

Cat. #	Inscription	Cat. #	Inscription
DL01	Blank w/no fields	DL97	Alarm-Silence
DL02	Blank w/single field	DL95	Auto-Manual
DL03	Blank w/2 fields	DL92	Fast-Slow
DL16	Automatic	DL30	Forward-Reverse
DL21	Close	DL29	Hand-Auto
DL23	Down	DL35	In-Out
DL17	Emergency Stop	DL93	Local-Remote
DL46	Fast	DL98	Maint-Manual
DL18	Forward	DL48	Off-On
DL15	Hand	DL91	On-Off
DL24	In	DL32	Open-Close
DL10	Jog	DL36	Raise-Lower
DL27	Lower	DL28	Run-Jog
DL08	Off	DL33	Up-Down
DL07	On	DL86	Safe-Run
DL20	Open	DL65	Slow-Fast
DL25	Out	DL96	Start-Emergency Stop
DL14	Power On	DL37	Start-Stop
DL26	Raise	DL90	Stop-Start
DL12	Reset	DL99	Test-Reset
DL19	Reverse	DL94	Trip-Reset
DL09	Run		
DL85	Safe		
DL47	Slow		
DL05	Start		
DL06	Stop		
DL13	Test		
DL11	Trip		
DL22	Up		

STEP 4 – Select Cover Covers

Description	Cat. #
Blank cover with single hole (Single gang)	DS441
Blank cover with 2 holes (Single gang)	DS442
Blank cover with 3 holes (To be used with EFD(C)1491-SA, 2491-SA or 3491-SA series of back boxes)	DS443-SA
Replacement cover plug for unused device operator openings	0206765

Options	Suffix to be added to Cat. #
Aluminum body (mandatory suffix on DS443 must be included in catalog number)	SA
Exterior epoxy powder coat finish	S752
Interior & exterior epoxy powder coat finish. Not available on three operator cover (DS443-SA)	S753

FlexStation™ Control Station Components

Ordering Information

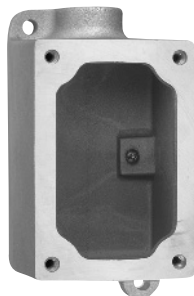
Class I, Div. 1 & 2, Groups B (Div. 2 only) C, D
 Class II, Div. 1 & 2, Groups E, F, G
 Class III
 NEMA 3R, 7B(Div. 2)CD, 9EFG, 12
 IEC Zone 1 & 2 Groups IIB

4C

4C
Control Stations

STEP 5 – Select back box

Back Boxes (for use with DS441 and DS442 covers or with 1 gang and 2 gang DS/DSD Series covers)



Dead End	Through Feed	Hub Size	Back Box Arrangement
EDS171	EDSC171	1/2"	Single gang back box
EDS271	EDSC271	3/4"	Single gang back box
EDS371	EDSC371	1"	Single gang back box
EDS172	EDSC172	1/2"	Double gang back box
EDS272	EDSC272	3/4"	Double gang back box
EDS372	EDSC372	1"	Double gang back box
Options			Suffix to be added to Cat. #
Aluminum Body			SA
Exterior epoxy powder coat finish			S752
Interior & exterior epoxy powder coat finish			S753

Back Boxes (for use with DS443-SA cover or with 1½ gang DS511 (3-operator) Series covers)



Dead End	Through Feed	Hub Size	Back Box Arrangement
EFD1491-SA	EFDC1491-SA	1/2"	1½ gang back box
EFD2491-SA	EFDC2491-SA	3/4"	1½ gang back box
EFD3491-SA	EFDC3491-SA	1"	1½ gang back box
Options			Suffix to be added to Cat. #
Exterior epoxy powder coat finish			S752
Interior & exterior epoxy powder coat finish			S753

Cl. I, Div. 1, Groups C,D ♦
 Cl. I, Div. 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7B(Div. 2)CD,9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

For use with DSD device cover sub-assemblies listed on catalog pages 394 to 396.

Applications:

Modular control device bodies are for *surface mounting combinations of control device equipment for use in:*

- Industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas where atmospheres may contain hazardous gases or dusts, and arcing of enclosed devices must not ignite the surrounding atmosphere.
- Conjunction with magnetic starters or contactors for remote control and monitoring of motors.
- Manual starting and stopping of small AC or DC motors.
- Controlling and supplying energy to portable electrical devices such as motor generator sets, compressors, conveyors, portable tools, etc.

Features:

EDSCM Modular Control Stations have many distinct advantages over multiple individual units:

- Reduce installation costs. A multi-gang device assembly can be installed in less time than several single-gang units.
- Seals not required between gangs.
- Improved appearance. No exposed conduit runs between devices.
- Light weight. Fifteen-gang aluminum device body can be installed by one person.
- Mounting feet are provided on the top and bottom of every gang to facilitate installation.
- Two and three gang tandem bodies have 1¼" thru-feed inward horizontal hubs and 1" or 2" vertical thru-feed hubs. Pipe plugs are installed in one horizontal hub and both vertical hubs.
- Single-gang device bodies have 1" thru-feed inward horizontal hubs and ¾" thru-feed vertical hubs. Pipe plugs are installed in one horizontal hub and both vertical hubs.
- All hubs are taper tapped and have integral bushings.
- Close nipples, which are used to join two or more device bodies together, are furnished with EDSCM 21, 32, 33, 62 and 63 units.
- Any combination of bodies can be joined together horizontally.

Standard Materials:

- Copper-free aluminum

Finish:

- Natural

Certifications and Compliances:

(When used with DSD device sub-assemblies) ♦:

- Class I, Division 1 & 2, Groups C,D
- Class I, Division 2, Group B,C,D
- Class II, Division 1, Groups E,F,G
- Class II, Division 2, Groups F,G
- Class III
- NEMA/EEMAC 3,7B(Div.2)CD,9EFG
- U.L. Standard 894, 698
- CSA Standard: C22.2 No. 30

NOTE: In Class I areas all conduit runs entering bodies must be sealed. As many as five bodies can be joined horizontally without an intervening seal.



Series EDSCM

The EDSCM Series consists of five basic device bodies that can be joined together to make multi-gang control stations.



Description

Single Gang
 Tandem Two Gang
 Tandem Two Gang
 Tandem Three Gang
 Tandem Three Gang

Thru-Feed Hub Size

¾"
 1"
 2"
 1"
 2"

Cat.

EDSCM21
 EDSCM32
 EDSCM62
 EDSCM33
 EDSCM63

♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only.

EDSCM Modular Multi-Gang Control Device Bodies

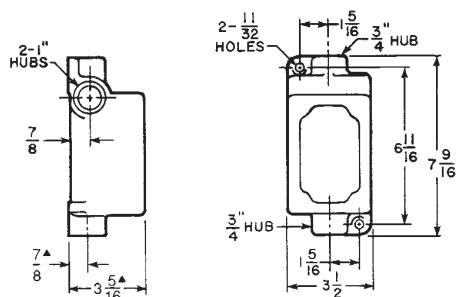
Cl. I, Div. 1, Groups C,D ♦
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B(Div. 2)CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

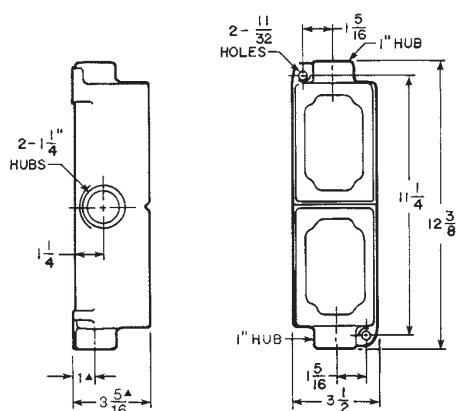
4C

4C
Control Stations

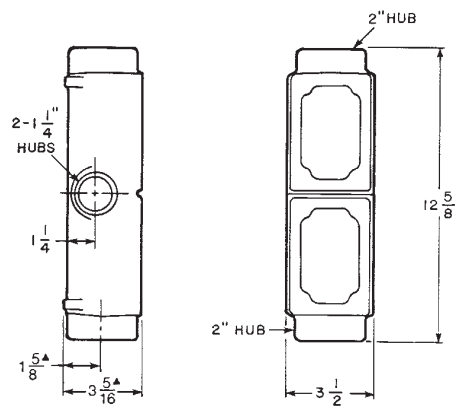
Dimensions (inches):



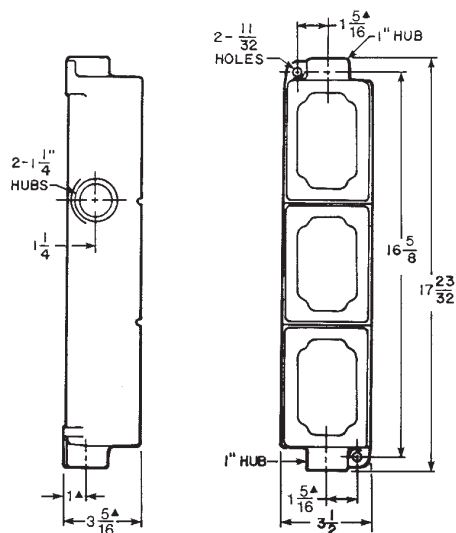
EDSCM21



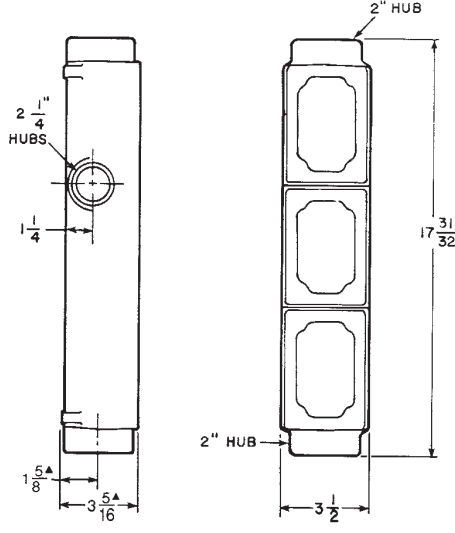
EDSCM32



EDSCM62



EDSCM33



EDSCM63

♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only. Receptacles comply with U.L. Standard 886 only.
* Dimensions are approximate, not for construction purposes.

For use with EDSCM modular control device bodies listed on catalog page 392 and EDS/EDSC back boxes on page 397.

Features:

- Large machine screws for fastening covers to bodies
- Lockout hole for padlock having 1/4" hasp is provided when used with covers for front lever and side rocker type operation
- Lockout provisions on front operated pushbutton (marked "STOP" and "OFF") and all selector switch covers
- For covers with front lever and side rocker type operating handles, threaded type shafts and bushings are used to ensure flametightness
- Accurately ground flange for flametight joint when mated with ground flange on back box

Standard Materials:

- Covers, front operated – *Feraloy* iron alloy and copper-free aluminum
- Covers, side operated – Copper-free aluminum
- Shafts and shaft bushings – stainless steel
- Rocker handles, pushbuttons and guards – type 6/6 nylon
- Sealing enclosures – copper-free aluminum
- CPS delayed action receptacle cover:
 - Receptacle housing – copper-free aluminum
 - Insulation – diallyl phthalate (DAP)
 - Contacts – brass

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Certifications and Compliances:

(When used with EDSCM & EDS bodies):

- NEC/CEC:
 - Class I, Division 1 & 2, Groups C, D ♦
 - Class I, Division 2, Groups B, C, D
 - Class II, Division 1, Groups E, F, G
 - Class II, Division 2, Groups F, G
 - Class III
- NEMA/EEMAC: 3, 7B(Div. 2)CD, 9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30

Pushbuttons, Pilot Lights & Selector Switches:

(When used with EFS bodies):

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B, C, D
 - Class II, Division 1, Groups E, F, G
 - Class II, Division 2, Groups F, G
 - Class III
- NEMA/EEMAC: 3, 7BCD, 9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30

Options:

The following special options are available by adding suffix to Cat. No.:

Description

Lockout provision on front operated pushbutton cover (standard on buttons marked "STOP" and "OFF")	S153
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635
Emergency "STOP" button momentary – front operated mushroom button breaks normally closed contacts	S111
Bodies and covers – copper-free aluminum	SA
For 24 VDC operation on pilot lights	S300
Maintained contact mushroom head with lockout and guard	S769

* For pushbuttons, pilot lights, & selector switches, use EFS back box with required external conduit seal for 1 inch hub size, within 5 feet for Class I, Division 1, Group B applications.



Suffix to be
Added to Cover
Cat. #

Manual Motor Starters

Poles	Max. H.P.	Max. Volts A.C.	Cat. #
With Allen-Bradley Bulletin 600 Switches**			

1	1	115-230	DSD910
2	1	115-230	DSD911

With General Electric Switches**

1	1	115-230	DSD912§
2	1	115-230	DSD913§

With Cutler-Hammer Switches**

1	1	115-230	DSD914§
2	1	115-230	DSD915§

With Arrow-Hart Switches Without Overload Protection

2	5	250 (30A)	DSD916
2	7.5	600 (30A)	DSD916
3	7.5	250 (30A)	DSD917
3	15	600 (20A)	DSD917



♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only. Receptacles comply with U.L. Standard 886 only.

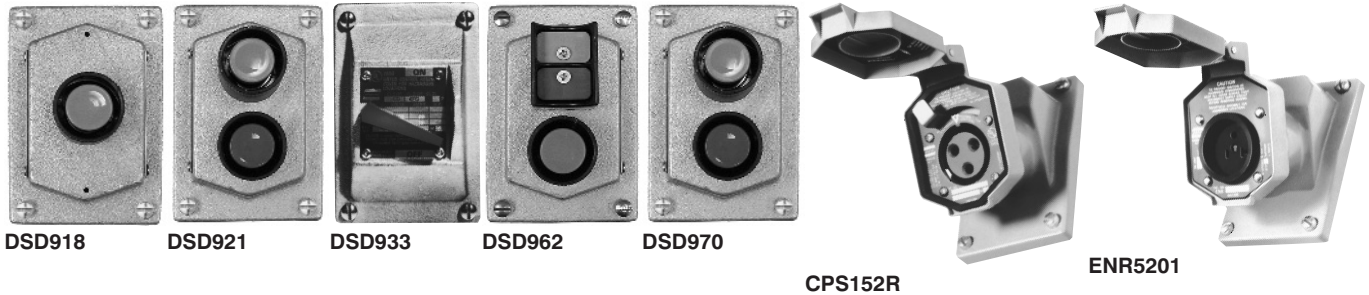
§ A comparable factory sealed cover will fit on the EDSCM21 body, EDS and EDSC bodies (listed on page 397), and in bottom gang of EDSCM33 and EDSCM63 bodies. To order, add suffix S701 to catalog number.

** Includes one interchangeable heater. Select heater (from tables on pages 356 and 357). Symbol 0 (zero) may be used to indicate heater omitted.

DSD Cover and Device Sub-Assemblies

Cl. I, Div. 1&2, Groups B*,C,D ♦ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

4C



For use with EDSCM modular control device bodies listed on catalog page 392 & EFS/EDS back boxes listed on catalog page 397.

Front Operated Pushbutton Stations 600 VAC Heavy Duty, Factory Sealed

Number of Cover Buttons	Normal Position	Diagram	Cat. #
1	1 Circuit Universal		DSD918
1	2 Circuits Universal		DSD919
	2 Circuits**		DSD920**
2	2 Circuits Universal		DSD921
2	2 Circuits** Start-Stop unless otherwise specified		DSD922**
2	2 Circuits Universal Mushroom Head		DSD970
3	3 Circuits Universal		DSD962

Front Operated General Use Snap Switch

Style	Amperes		Cat. #
	120 VAC	277 VAC	
1-Pole	20	20	DSD933‡
2-Pole	20	20	DSD934‡
3-Pole	♦ ♦	♦ ♦	DSD935***
3-Way	20	20	DSD936‡
4-Way	20	20	DSD937‡
1-Pole	30	30	DSD939***
2-Pole	30	30	DSD940***
3-Way	30	30	DSD941***

*** Cannot be factory sealed.

♦ ♦ 16 Amp., 125V.
10 Amp., 250V.

** Two universal contact blocks, must be wired as two circuits with one normally open and one normally closed.

‡ To order a comparable factory sealed cover for EDS, EDSC, EDSCM21 and the bottom gang of EDSCM33 and EDSCM63 bodies, add suffix S697.

* See note on catalog page 394 for Division 1, Group B applications.

Delayed Action Receptacles Factory Sealed

Rating	Cat. #
20 A, 1 HP, 125-250 VAC 60 Hertz 20 A, 18 VDC	CPS152R (2 wire, 3 pole)
30 A, 1½ HP, 125-250 VAC 60 Hertz; 7 A, ½ HP, 480 VAC, 60 Hertz	CPS532R (2 wire, 3 pole)
30 A, 3 HP, 125-250 VAC 60 Hertz; 7A, 1 HP, 480 VAC, 60 Hertz	CPS732R (3 wire, 4 pole)

General Purpose, Dead Front, Factory Sealed

Rating	Cat. #	NEMA Config.
20 A, 125 VAC	ENR5201	5-20R
20 A, 250 VAC	ENR6202	6-20R

♦ When a CPS receptacle cover device is used, the assembly meets requirements for Class I, Groups C and D areas only.

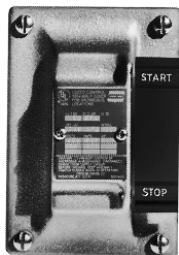
§ Specify marking required for external pushbuttons or nylon rocker handles. Standard markings available, are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC
EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	

4C Control Stations

Cl. I, Div. 1&2, Groups B*,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7B*CD,9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations



DSD951



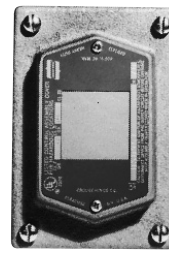
DSD925



DSD947-J1-J1



DSD958



DSD957



DSD961-J1

For use with EDSCM modular control device bodies listed on catalog page 392 & EFS/EDS back boxes listed on catalog page 397.

Side Operated Pushbutton Station 600 VAC Heavy Duty, Factory Sealed

Normal Position

	Diagram	Cat. #§
1 Circuit Universal		DSD949
2 Circuits Universal		DSD950
2 Circuits 1 Open - A 1 Closed - B Start-Stop unless otherwise specified		DSD951

Selector Switches Maintained Contact 600 VAC Heavy Duty

	Style	Position 1	Position 2	Position 3	Cat. #††
Two Position	Two Circuit	A1	A2		DSD923
	Four Circuit	A1	A2		DSD924
		B1	B2		
		B2			
Three Position	Two Circuit	A1	A2		DSD925
		A1	A2		DSD926
		B1	B2		
		B2			
Four Position	Four Circuit	A1	A2		DSD927
		A1	A2		
		B1	B2		
		B2			

Pilot Light Devices ♦ Factory Sealed

Description	Diagram	Cat. #
With one pilot light		DSD948-J†
With two pilot lights (Not available with a transformer)		DSD947-J†-J†
With one pilot light and transformer		DSD948-J†-T**
With one pilot light and pushbutton station		DSD958-J†
With one pilot light and 2 pushbutton station		DSD961-J†
With one pilot light & transformer and 2 pushbutton station		DSD961-J†-T**

Blank Cover

Cat. # DSD957

§ See table on page 395.

†† Specify indicating plate markings.

Standard indicating plate markings available are as follows:

Two-Position

RUN, JOG HAND, AUTOMATIC FORWARD, REVERSE	FAST, SLOW/ OPEN, CLOSE UP, DOWN ON, OFF	IN, OUT RAISE, LOWER START, STOP
---	---	--

Three-Position

JOG, OFF, RUN AUTOMATIC, OFF, HAND FORWARD, OFF, REVERSE FAST, OFF, SLOW	1, OFF, 2 OPEN, OFF, CLOSE UP, OFF, DOWN
---	--

† Add color symbol for each pilot light from table below.

Color	Symbol	Color	Symbol	Color	Symbol
Red	J1	Amber	J6	Blue	J11
Green	J3	Clear	J10		

** Add suffix below for transformer primary voltage:

Transformers – Voltages above 125

Nom. Volts 50-60 hertz Transformer	Primary Voltage Range	Suffix Added to Cat. #
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to Cat. No. after last color symbol.

* See note on catalog page 394 for Division 1, Group B applications.

EDS and EDSC Single and Multi-Gang Device Bodies and EFS and EFSC Single Gang Device Bodies

Cl. I, Div. 1 & 2, Groups B,C,D ♦ Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B ♦ CD,9EFG,12

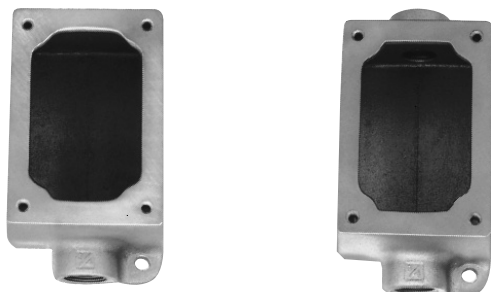
4C

Both EFS and EFSC single gang body family and EDS and EDSC single and two-gang standard, two or three-gang tandem device bodies are designed for use with the DS covers listed below, and the DSD covers shown on pages 394 through 396.

Single and two-gang standard bodies have external dead end or thru-feed conduit hubs, with integral bushings, in sizes 1/2", 3/4" and 1". Tandem bodies have thru-feed 1" hubs.

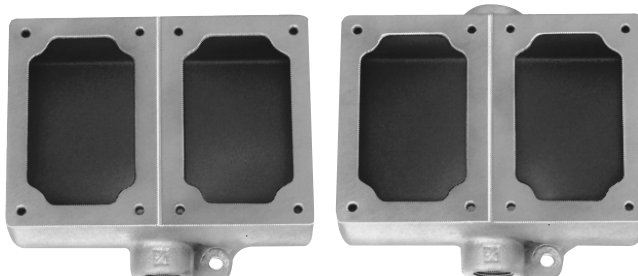
Each body contains 1 internal ground screw and boss per gang and external mounting feet.

Order bodies and covers separately.



Single Gang Feraloy

Hub Size	Deep – 2 1/16" Deep		Shallow – 2" Deep	
	Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
1/2"	EDS171	EDSC171	EFS171	EFSC171
3/4"	EDS271	EDSC271	EFS271	EFSC271
1"	EDS371	EDSC371	EFS371	EFSC371

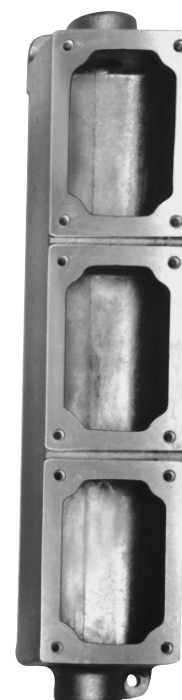


Two Gang Feraloy

Hub Size	Dead End Cat. #	Through Feed Cat. #
1/2"	EDS172	EDSC172
3/4"	EDS272	EDSC272
1"	EDS372	EDSC372

Three Gang Tandem Copper-free Aluminum

Hub Size	Cat. #
1"	EDSC378



Common Cover Assemblies

These covers may be used with the above bodies or as replacements for the cover portions of the control device assemblies listed on pages 392, 431, 435 & 436.

Description	Diagram	Cat. #
With one pilot light		DS455-J†
With one pilot light and transformer		DS476-J†-T‡
With two pilot lights		DS456-J†-J†
With one push button		DS429§
With two push buttons		DS454§
With one push button and one pilot light		DS510-J†§

♦ Subject to compliance limitations of device covers selected. Only EFS & EFSC bodies with the appropriate covers are for use in Div. 1, Group B areas.

† Insert color symbol. See table on page 396.

‡ Insert symbol for transformer primary voltage.

See tables on page 396. Example: DS476 with red pilot light and 440 volt transformer is DS476-J1-T4.

§ See marking requirements on page 395.

4C Control Stations



OPEN
FRONT
COVER



HINGED
COVER

Added environmental protection for Cooper Crouse-Hinds® control stations is now available from a patented “slip on” series of covers. Easy to install, these enclosures are available in hinged and open front styles.

- Clear UV stabilized Lexan® polycarbonate plastic.
 - ◆ Allows the end-user to see enclosed controls.
 - ◆ Strong enough to withstand the rough treatment found in the industrial work place.
- Ideal for corrosive and adverse areas providing added product endurance.
- Short pay back period.
 - ◆ Downtime due to weather or accidental bumping is eliminated.
 - ◆ Plant shutdowns caused by inoperable or accidentally operated push button devices are non-existent.
- Lock out/tag out capabilities.
 - ◆ For conformance to OSHA requirements.
 - ◆ Provides increased personnel safety.
- Quick and easy slip on installation requires no tools.
- Colored covers are available (e.g. red for emergency, yellow for fire alarm, etc.).

Hinged and Open Front

SECURED ACCESS HINGED COVER**APPLICATIONS:**

- High moisture areas due to weather, steam, or wash down procedures.
- Areas where dirt, dust, mud, sand, etc. interferes with equipment operation.
- Prevention of accidental equipment operation.
- Instances requiring equipment lock out/tag out.

FEATURES & BENEFITS:

- Heavy duty, impact-resistant, polycarbonate cover with stainless steel or heavy duty Lexan hinge.
- Clear material allows visibility of all controls.
- Superior sealing provided by heavy-duty neoprene gaskets. Lock out/tag out ability provides personnel safety.
- Unique patented design allows installation in seconds without any interruption of service.
- Specific chemical resistant covers available (may not be clear) - consult factory for minimum order quantity.
- Capability to engineer cover to fit any size device - consult factory.

ORDERING INFORMATION:**HINGED COVERS****Single Gang Application**

EDS(C) and EFD(C) control stations
EFS(C) control stations
MC(C) control stations
FS(C) back box with cover assembly
FD(C) back box with cover assembly
EGF11 and EGF12 (Ground Fault)
N2S(C) Krydon: 1 & 2 devices
N2D(C) Krydon: 1 & 2 devices
GHG432 control station

Catalog Number

NC-CH1
NC-CH1-EFS
NC-CH1-MC
NC-CH1-FS
NC-CH1-FD
NC-CH1-EGF 11
NC-CH1-N2S
NC-CH1-N2D
NC-CH1-GHG

Single Gang (Long) Application

EFD(C) (3 device)
N2S(C) Krydon: 3 devices
N2S(C) Krydon: 4 devices

Catalog Number

NC-CH1-3L
NC-CH1-N2S-3L
NC-CH1-N2S-4L

Double Gang Application

EDS(C) control stations
EDSCM32: 2 gang tandem
EDSCM33: 3 gang tandem
FS(C) back box with cover
FD(C) back box with cover
EDSC378 - 3 gang tandem assembly

Catalog Number

NC-CH2
NC-CH2L
NC-CH3L
NC-CH2-FS
NC-CH2-FD
NC-CH1-MC3

QUICK ACCESS OPEN FRONT COVER**APPLICATIONS:**

- Areas requiring quick access to control device.
- Areas of high moisture from weather or dripping liquid.
- Prevention of accidental equipment operation.
- Areas with possible damage from bumping or banging.

FEATURES & BENEFITS:

- Heavy duty, impact-resistant, polycarbonate cover.
- Clear material allows visibility of all controls.
- Unique patented design allows installation in seconds without any interruption of service.
- Specific chemical resistant covers available (may not be clear) - consult factory for minimum order quantity.
- Capability to engineer cover to fit any size device - consult factory.

OPEN FRONT COVERS**Single Gang Application**

EDS(C) and EFD(C) control stations
EFS(C) control stations
MC(C) control stations
FS(C) back box with cover assembly
FD(C) back box with cover assembly
EGF11 and EGF12 (Ground Fault)
N2S(C) Krydon: 2 device assembly
N2D(C) Krydon: 3 device assembly

Catalog Number

NC-CH1-QA
NC-CH1-EFS-QA
NC-CH1-MC-QA
NC-CH1-FS-QA
NC-CH1-FD-QA
NC-CH1-EGF-QA
NC-CH1-N2S-QA
NC-CH1-N2D-QA

Single Gang (Long) Application

EFD(C): 3 device control stations
N2S(C) Krydon: 3 device assembly
N2S(C) Krydon: 4 device assembly

Catalog Number

NC-CH1-3L-QA
NC-CH1-N2S-3L-QA
NC-CH1-N2S-4L-QA

Double Gang Application

EDS(C) control stations
EDSCM32: 2 gang tandem
EDSCM 33: 3 gang tandem
FS(C) back box with cover assembly
FD(C) back box with cover assembly

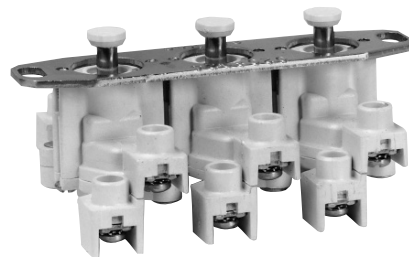
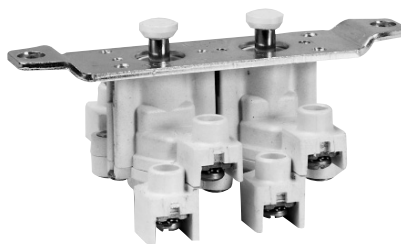
Catalog Number

NC-CH2-QA
NC-CH2L-QA
NC-CH3L-QA
NC-CH2-FS-QA
NC-CH2-FD-QA

Custom covers can be supplied but must be accompanied by either a sample of the device to be covered or a copy of a drawing with all actual measurements of the device to be covered. Covers can also be color-coded. Consult factory.

Control Stations Replacements for Pushbuttons and Selector Switches

600 VAC Heavy Duty



ED Series Pushbuttons*

Complete with Mounting Strap and Hardware

Where Used	1 Circuit Universal	2 Circuits Universal	2 Circuits 1 Open - A 1 Closed - B	3 Circuits Universal
	Cat. #	Cat. #	Cat. #	
MC, EDS and EFS pushbutton stations and selector switches.	ED11	ED12	ED12**	
OAC pushbutton stations and selector switches	ED21	ED22	ED22**	
EWC pushbutton stations		ED32	ED32**	
EMP pushbutton stations	ED38	ED35		
EMP selector switches	ED38	ED35		
EFD Factory sealed pushbutton stations and selector switches (M90)	ED11	ED12	ED12**	
DSD962 pushbutton cover			ED13	

Contact Ratings

600 VAC Heavy Duty (NEMA A600)

Volts	Max. Current (Amperes)		Voltamperes		Continuous Current (Amperes)
	Make	Break	Make	Break	
120	60	6.0	7200	720	10
240	30	3.0	7200	720	10
480	15	1.5	7200	720	10
600	12	1.2	7200	720	10

Direct Current (NEMA P150)

125	1.1	1.1	138	138	5
-----	-----	-----	-----	-----	---

Contact Block Only (less strap)

Catalog #
ESWP126



CF859



CF705

External Operating Buttons

Where Used

MC, EFS, and EFD – current design with nylon guards

EMPS019, EMP019, EMPS029 and EMP029 – single operator FS, EFS, and EFD – previous design with aluminum guards

Colors Available Cat.

Red, Green, Black CF859-K1 ‡

Red, Green, Black CF705-K1 ‡

Note: CF859-K1 and CF705-K1 come with 5 buttons

* ESWP126 is the contact block without the mounting strap.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

‡ Standard markings available are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC
EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	

DSD-SR

Horsepower Rated 30 A, 600 V
Selector Switch Front Operated

Class I, Groups C & D
Class II, Groups E, F & G
Class III
Enclosure 3, 5 & 12

4C

4C
Control Stations

Ordering Information

Switch Function	Catalog Number	Number of Poles	Number of Positions	Connecting Diagram	
ON/OFF	DSD-SR30120	1	2		1-6 Pole
	DSD-SR30220	2	2		
	DSD-SR30320	3	2		
	DSD-SR30420	4	2		
	DSD-SR30520	5	2		
	DSD-SR30620	6	2		
DOUBLE-THROW without OFF	DSD-SR30121	1	2		1-3 Pole
	DSD-SR30221	2	2		
	DSD-SR30321	3	2		
DOUBLE-THROW without OFF with electrically isolated contacts	DSD-SR30123	1	2		1-3 Pole
	DSD-SR30223	2	2		
	DSD-SR30323	3	2		
DOUBLE-THROW with OFF	DSD-SR30132	1	3		1-3 Pole
	DSD-SR30232	2	3		
	DSD-SR30332	3	3		
DOUBLE-THROW with OFF and electrically isolated contacts	DSD-SR30134	1	3		1-3 Pole
	DSD-SR30234	2	3		
	DSD-SR30334	3	3		

Electrical Specification

Voltage	Horsepower Rating	
	3PH	1PH
120	3	1.5
240	7.5	3
480	10	5
600	10	5

Maximum Current: 30 A
Heavy-duty A600 rating

Options

Lockout for 2 position switch,
handle in either position . . . SX178

Lockout for 3 position switch,
handle in either position . . . S349



DSD-SR cover assembly shown mounted to an EDS back box

4C EFS Fire Alarm Station

Cl. I, Div. 1, Groups B*,C,D
 Cl. I, Div. 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7B*CD,9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations



EFS21095

Break Glass Fire Alarm Station

Hub Size	Dead End Cat. #	Through Feed Cat. #
3/4	EFS21095	EFSC21095

* **Class I, Group B option:** Units listed above can be modified for Class I, Division 1, Group B usage. Add suffix GB to the Cat. No. Example: EFS21095-GB. Seals must be installed within 1 1/2" of each conduit opening.

Application:

EFS Fire Alarm Stations are used:

- in areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- for installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- to indicate at a remote location that a fire exists in the area

Features:

- Small, compact enclosures with accurately ground flange on both body and cover for flame-tight joint

Standard Materials:

- Bodies – *Feraloy*® iron alloy (U.S.) and copper-free aluminum (Canada)

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized with aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Certifications & Compliances:

- NEC/CEC: Class I, Groups B*,C,D
 Class II, Groups E,F,G
 Class III
- NEMA/EMAC: 3, 7B*CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2
- As indicated under catalog listings, certain units can be supplied for Class I, Division 1, Group B (NEMA/EMAC 7B). Seals must be installed within 1 1/2" of each conduit opening.

Option:

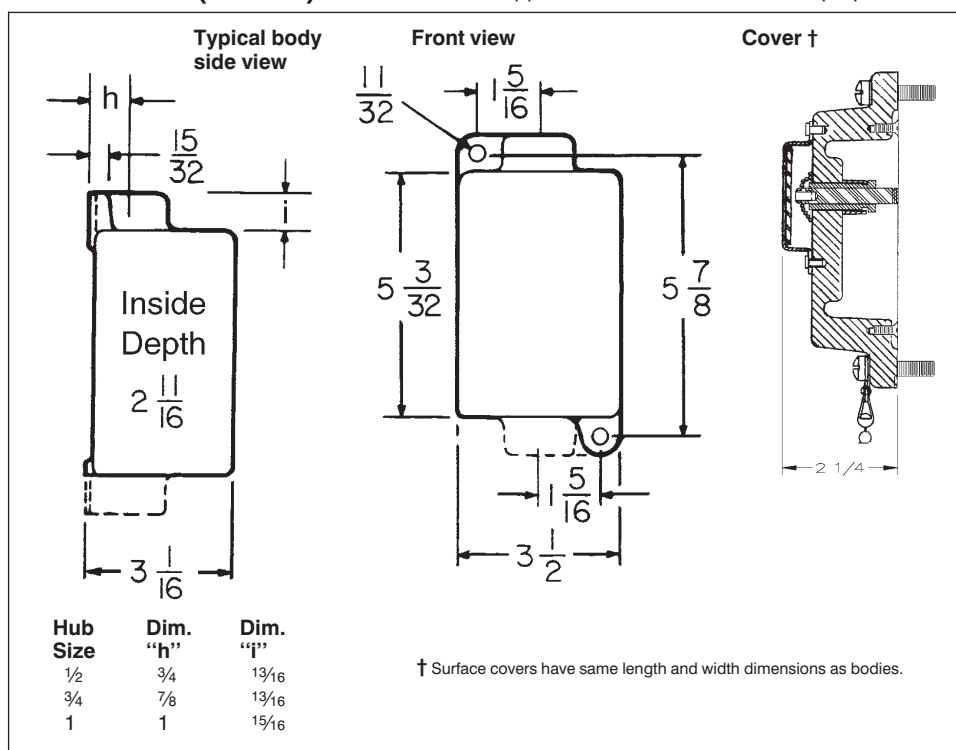
- The following special option is available from factory by adding suffix to Cat. No.

Description

Where indicated in the catalog listings, units suitable for Class I, Division 1, Group B usage can be supplied GB*

Dimensions (inches)

Dimensions are approximate, not for construction purposes.



MC and MCC Pushbutton Stations Selector Switches and Pilot Lights

NEMA 3, 4
Watertight

4C

4C
Control Stations

Application:

MC pushbuttons or selector switches are used:

- in conjunction with magnetic starters or contactors for remote control of motors
- MC pilot lights are used:
- to visually indicate at a remote point that the desired function is being performed (motor running, etc.)
- MC pushbuttons, selector switches or pilot lights are used:
- in damp, wet or corrosive locations such as dairies, meat packing plants, chemical plants and outdoor locations

Features:

- Enclosures are compact in design, and gasketed to meet NEMA/EEMAC 3 or 4 requirements as noted in catalog listings
- Pushbutton stations with side rocker handle are furnished with a lockout arrangement on "STOP" position as standard
- Dead end (MC) or through feed (MCC) hubs – 1/2" and 3/4" sizes – with mounting feet
- Standard lockout on "STOP" and "OFF" button on front operated pushbutton covers.
- Standard lockout on selector switch covers. Locks two or three position switch handle in any position.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Cover with side rocker handle – copper-free aluminum
- Front pushbutton, selector switch and pilot light covers – *Feraloy* iron alloy
- Rocker handle and pushbutton guards – type 6/6 nylon
- Selector switch handle – copper-free aluminum
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Type 6/6 nylon – black
- Stainless steel – natural

Certifications and Compliances:

- NEMA/EEMAC 3, 4
- UL Standard: 508
- CSA Encl. 3,4,5

Options:

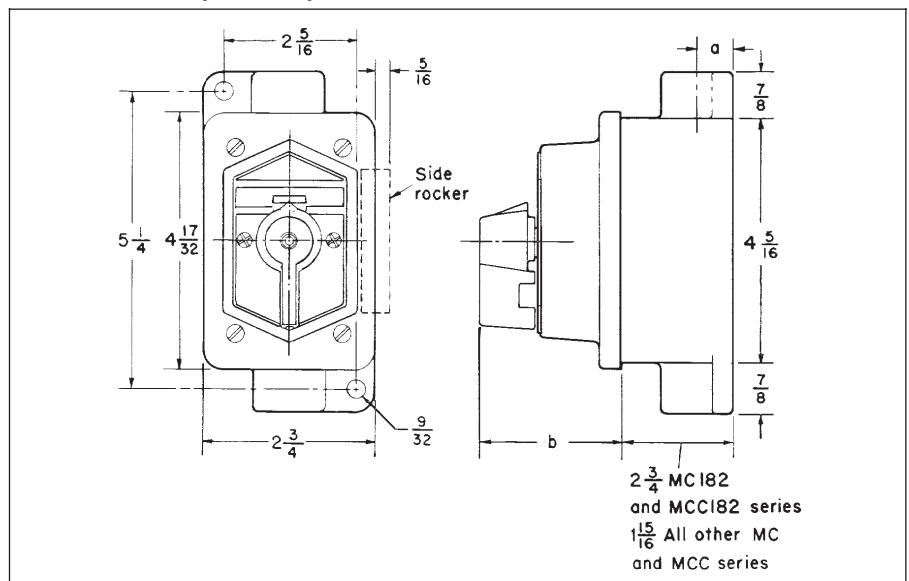
- The following special options are available by adding suffix to Cat. No.:

Description

Lockout provision on front operated pushbutton (standard on buttons marked "OFF" and "STOP")	S153
Neoprene covers for front operated pushbuttons. Meets NEMA 4 requirements and prevents accumulation of dirt around operating shafts	S323
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635
Multiple gang bodies. Two gang, two gang tandem and three, four or five gang bodies can be supplied with combinations of single gang devices	Specify
LED pilot lights in place of standard incandescent pilot lamps	LED

Suffix to be
Added to Encl.
Cat. #

Dimensions (inches)*



Hub
Size

1/2	5/8
3/4	3/4

Type of Cover

Side Rocker Handle	1 1/2
Front Pushbutton	2 3/8
Selector Switch	2 3/8
Pilot Light	1 1/16

* Dimensions are approximate, not for construction purposes.


 MC dead end
side rocker handle

 MCC through feed
side rocker handle

 MC dead end
front push button

 MCC through feed
front push button

With Side Rocker Handles Watertight, NEMA 3, 4

Normal Positions	Marking†	Diagram	Replacement Contact Blocks‡	Enclosure with Rocker Handles		
				Hub Size	Dead End Cat. #	Through Feed Cat. #
1 Circuit Universal	Specify		ED11	1/2 3/4	MC1810U1 MC2810U1	MCC1810U1 MCC2810U1
2 Circuits Universal	Specify		ED12	1/2 3/4	MC1810U MC2810U	MCC1810U MCC2810U
2 Circuits 1 Open - A 1 Closed - B	START-STOP unless otherwise specified		ED12*	1/2 3/4	MC1810 MC2810	MCC1810 MCC2810

With Front Push Buttons ♦ F Weather Resistant, NEMA 3

Normal Positions	Marking†	Diagram	Replacement Contact Blocks‡	Enclosure with Push Buttons		
				Hub Size	Dead End Cat. #	Through Feed Cat. #
1 Circuit Universal	Specify		ED11	1/2 3/4	MC1910U1 MC2910U1	MCC1910U1 MCC2910U1
2 Circuits Universal	Specify		ED12	1/2 3/4	MC1910U MC2910U	MCC1910U MCC2910U
2 Circuits 1 Open - A 1 Closed - B	START-STOP unless otherwise specified		ED12*	1/2 3/4	MC1910 MC2910	MCC1910 MCC2910

* Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

† Standard markings available, heat stamped in nylon rocker handle are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC

EMERGENCY OPEN	DOWN RAISE
FORWARD CLOSE	IN LOWER
REVERSE UP	OUT

‡ For replacement push buttons see page 395.

♦ Watertight NEMA 4 with Neoprene button covers, see suffix S323 under options.

MC and MCC Selector Switches and Pilot Lights

600 VAC Heavy Duty

Watertight
NEMA 3,4

4C



MC dead end selector switch

Selector Switches

Furnished with pushbutton contact blocks, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below.

Maintained Contact				Replacement Contact blocks*	Enclosure with Selector Switch†		
Style	Position 1	Position 2	Position 3		Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1			ED11	1/2 3/4	MC11271 MC21271	MCC11271 MCC21271
	A2						
Two-Position, Four-Circuit	A1			ED12	1/2 3/4	MC11272 MC21272	MCC11272 MCC21272
	A2						
	B1						
	B2						
Three-Position, Two-Circuit	A1			ED11	1/2 3/4	MC11273 MC21273	MCC11273 MCC21273
	A2						
Three-Position, Four-Circuit	A1			ED12	1/2 3/4	MC11274 MC21274	MCC11274 MCC21274
	A2						
	B1						
	B2						
Three-Position, Four-Circuit	A1			ED12	1/2 3/4	MC11275 MC21275	MCC11275 MCC21275
	A2						
	B1						
	B2						



MC dead end pilot light

Pilot Lights ♦

Primary			Enclosure with Jewel Cover and Lamp		
Voltage Range	Lamp Base	Lamp Watts	Hub Size	Dead End Cat. #	Through Feed Cat. #
110-125	Candelabra	6	1/2	MC180-J1	MCC180-J1
110-125	Candelabra	6	3/4	MC280-J1	MCC280-J1
220-250	Intermediate	10	1/2	MC184-J1	MCC184-J1
220-250	Intermediate	10	3/4	MC284-J1	MCC284-J1
440-480	Candelabra	6	1/2	MC182-J1	MCC182-J1
440-480	Candelabra	6	3/4	MC282-J1	MCC282-J1

* For replacement contact blocks see page 400.

† Specify indicating plate markings. Standard markings available are shown on page 400.

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED after color symbol (J1).

OAC Pushbutton Stations and Heavy Duty Selector Switches

600 VAC Standard
Factory Sealed**

Cl. I, Div. 1 & 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7ABCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

Application:

OAC Units are used:

- in areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist
- in areas which are hazardous due to the presence of acetylene and hydrogen, or gases or vapors of equivalent hazard such as manufactured gas
- in conjunction with magnetic starters or contactors for remote control of motors

Features:

- Water-shedding construction with female threaded bottom opening and male threaded cover
- Threaded cover is deep dome type, which surrounds the enclosed device
- All enclosures are suitable for hazardous area use
- Pushbutton stations have a guarded rocker type operating handle at the front arranged for padlocking to prevent unauthorized operation
- Selector switches have a lever type operating handle at the top
- Provided with vertical through feed conduit hubs of sizes indicated in the listings.
- Units are factory sealed for Cl. I, Div. 1 and 2, Groups B,C,D.
- Standard lockout on selector switches. Locks two or three-position switch handle in any position.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers and operating handle – copper-free aluminum
- Operating shafts – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Electrical Rating Ranges:

- Pushbutton stations, and selector switches-
Air Break – heavy duty 600vac maximum

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups A, B, C, D
Class II, Division 1, Groups E, F, G
Class II, Division 2, Groups F, G
Class III
- NEMA/EEMAC: 3, 4, 7ABCD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

Options:

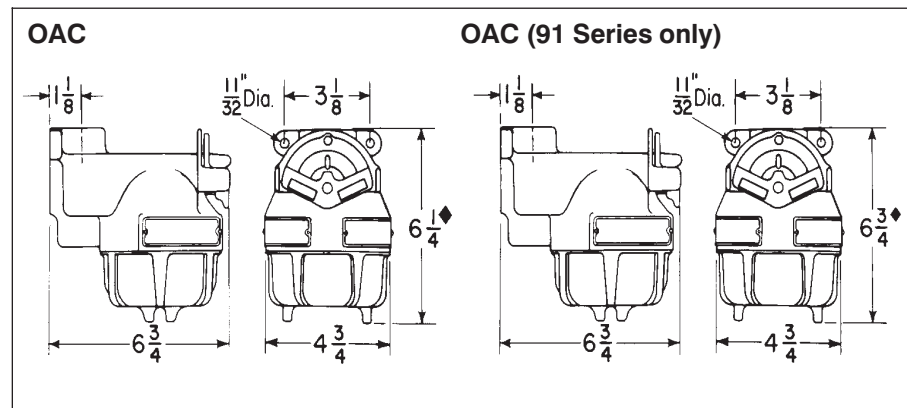
- The following special options are available from factory by adding suffix to Cat. No.

Suffix to be
Added to Encl.
Cat. #

Description

Back boss drilled and tapped for 3/4" and 1" sizes. Specify
Three-position selector switches with modified operation:
Momentary contact clockwise operation, spring return to center, S634
maintained contact counter-clockwise operation S634
Momentary contact counter-clockwise operation, spring return to
center, maintained contact clockwise operation. S635

Dimensions (inches)*



◆ For cover removal, add 2 1/2" to dimension.

* Dimensions are approximate, not for construction purposes.

**Factory sealed for Class I, Div. 1 & 2, Groups B,C,D.

OAC Pushbutton Stations

600 VAC

Heavy Duty Standard

Factory Sealed**

Cl. I, Div. 1 & 2, Groups A,B,C,D

Cl. II, Div. 1, Groups E,F,G

Cl. II, Div. 2, Groups F,G

Cl. III

NEMA 3,4,7ABCD,9EFG,12

Explosionproof

Dust-Ignitionproof

Raintight

Wet Locations

Watertight

4C



Specify operating handle markings. See table below listing.

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits Universal	2 Circuits*
Oper. Handles	Single	Double	Single Operating Both Buttons	Double
Replacement Pushbuttons†	ED21	ED22	ED22	ED22*
Diagram				
Hub Size	Cat. #			
3/4	OAC2101	OAC2133	OAC2139	OAC2103
1	OAC3101	OAC3133	OAC3139	OAC3103



With momentary left handle and maintained right handle. For momentary "START", maintained "STOP" and similar applications. Specify operating handle markings. See table below.

Normal Pos.	2 Circuits Universal
Diagram	

Enclosure with Pushbuttons

Hub Size.	Cat. #
3/4	OAC2291
1	OAC3291

OAC Control Stations

** Factory sealed for Class I, Div. 1 & 2, Groups B,C,D

* Two universal contact blocks, must be wired as two circuits, one normally open and one normally closed.

Standard markings available are as follows:

START	OFF	RESET	LIGHT ON
STOP	RUN	TRIP	HAND
ON	JOG	TEST	AUTOMATIC
EMERGENCY	OPEN	DOWN	RAISE
FORWARD	CLOSE	IN	LOWER
REVERSE	UP	OUT	

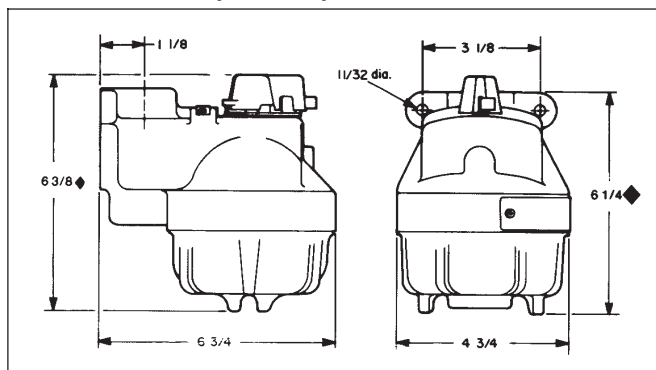
Furnished with pushbutton contact blocks, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below.

Specify indicating plate markings. See table below listings.



Style	Position 1	Position 2	Position 3	Replacement contact blocks†	Enclosure with Selector Switch	
					Hub Size	Cat. #
Two-Position, Two-Circuit	A1			ED21	3/4 1	OAC2471
	A2					OAC3471
Two-Position, Four-Circuit	A1			ED22	3/4 1	OAC2472
	A2					OAC3472
	B1					OAC3472
	B2					OAC3472
Three-Position, Two-Circuit	A1			ED21	3/4 1	OAC2473
	A2					OAC3473
Three-Position, Four-Circuit	A1			ED22	3/4 1	OAC2474
	A2					OAC3474
	B1					OAC3474
	B2					OAC3474
	A1			ED22	3/4 1	OAC2475
	A2					OAC3475
	B1					OAC3475
	B2					OAC3475

Dimensions* (inches)



Standard markings are available as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN-OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE-LOWER
FORWARD, REVERSE	UP, DOWN	START-STOP
	ON, OFF	

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

◆ For cover removal, add 2 1/2" to dimension.

* Dimensions are approximate. Not for construction purposes.

** See page 406.

EMP Panel Mounted Pushbutton Stations, Selector Switches, Pilot Lights and Combinations

Factory Sealed

Cl. I, Div. 1, Groups C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C

4C
Control Stations

Application:

EMP panel mounted pushbutton stations, selector switches, pilot lights and combinations are used:

- together with instruments, gauges and meters all mounted on a panel of sheet steel or other suitable material in the fabrication of control boards
- in areas made hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in corrosive locations
- indoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist

Features:

- Compact enclosures which require a minimum of panel space, making them ideally suited for flow chart control boards
- Enclosures made in single, two and three gang sizes
- Accurately ground; wide flange on both body and cover for flame-tight joint
- Only the device operators and pilot lights protrude through the panel. Enclosures are behind the panel so that conduit and wiring is concealed
- Pilot lights are relamped from the front of the panel by unscrewing the knurled jewel assembly
- Mounting made easy – a 1½" diameter hole is drilled for each threaded barrel and any panel up to ¾" thick can be used; locking nuts clamp the assemblies to the panel and permit alignment with conduit and other fittings behind the panel
- Furnished with vertical through feed hubs – 1" size
- Units are factory sealed for Class I, Division 1 and 2, Groups C and D.

Standard Materials:

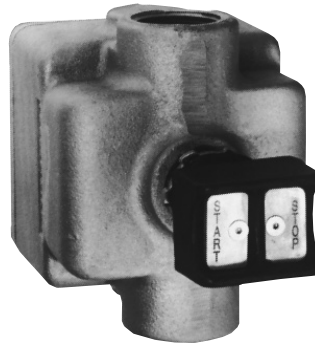
- Bodies and covers – *Feraloy*® iron alloy
- Threaded barrels – copper-free aluminum
- Operating shafts – stainless steel
- Single pushbutton and selector switch operators – phenolic
- Double pushbutton operators – copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – barrels, black anodized; operators, natural
- Stainless steel – natural
- Phenolic – natural

Electrical Rating Ranges:

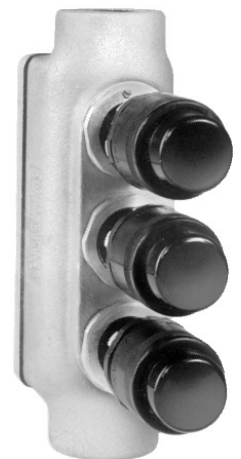
- Pushbutton stations and selector switches: heavy duty 600vac maximum
- Pilot lights: 110 to 600vac



EMP43



EMP501



EMP3000

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1, Groups C,D
 - Class I, Division 2, Groups B,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- NEMA/EMAC: 3, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

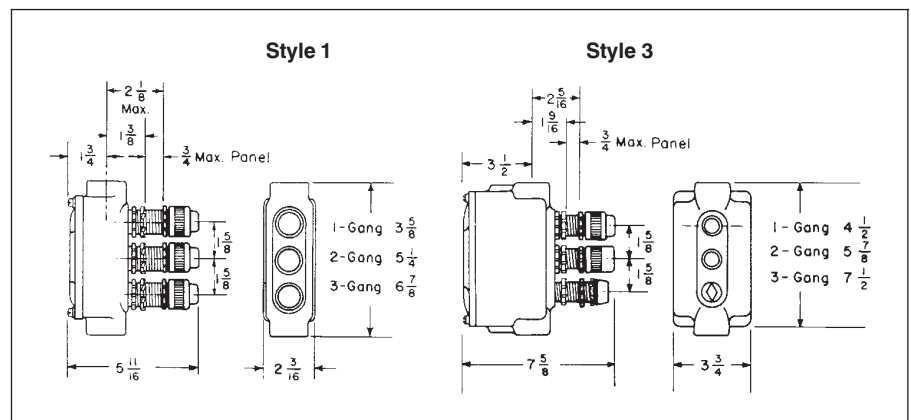
Description

Lockout on single pushbutton operator only. Locks normally closed contacts in open position	S153
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635
Pilot lights for circuit voltages up to 600 volts maximum (standard voltage range 110-125)	See Listings
Combination of devices other than those listed can be supplied	Specify
LED pilot lights in place of standard incandescent pilot lamps	LED

Suffix to be
Added to Encl.
Cat. #

Dimensions (inches)

Dimensions are approximate, not for construction purposes.



EMP Panel Mounted Pushbutton Stations, Selector Switches, Pilot Lights and Combinations

Factory Sealed, 600 VAC Heavy Duty

Cl. I, Div. 1, Groups C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Pilot lights include 6 watt bayonet base lamps for use on 110-125 volt circuits. For higher voltages, pilot lights can be equipped with a transformer as shown in the table

Style 3 bodies are used when transformers are supplied.

LED pilot lights can be provided in place of standard incandescent pilot lamps. Add suffix LED after color symbols in catalog number. See suffixes on page 411.

Selector switches use momentary contact pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequence shown in the diagrams below.

Pilot Lights* with Selector Switches

No. Pilot Lights and Nominal Voltage	No. of Selector Switches ♦	Body Style	Gang	Diagram			Hub Size	Cat. #
				Pos. 1	Pos. 2	Pos. 3		
1 (120V)	1 (ED38)	3	Two				1	EMP506-††
2 (120V)	1 (ED38)	3	Three				1	EMP9006-††

Selector Switches

No. of Selector Switches ♦	Body Style	Gang	Diagram			Hub Size	Cat. #
			Position 1	Position 2	Position 3		
1 (ED38)	3	Single				1	EMP44†
1 (ED35)	3	Single				1	EMP45†
1 (ED38)	3	Single				1	EMP46†
1 (ED35)	3	Single				1	EMP47†
1 (ED35)	3	Single				1	EMP48†

Pilot Lights*

No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (120V)	1	Single		1	EMP10-†
1 (440V)	3	Single		1	EMP40-†-T4
2 (120V)	1	Two		1	EMP200-†
2 (440V)	3	Two		1	EMP500-†-T4
3 (120V)	1	Three		1	EMP3000-†
3 (440V)	3	Three		1	EMP9000-†-T4

Transformers for Voltages Above 125

Nom. Volts 50-60 Cycle Transformer	Primary Voltage Range	Suffix Added to Cat. #
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5

Pilot lights include 6 watt, type S6, candleabra base lamps for use on 110-125 volt circuits.

Pushbuttons with Selector Switches and Pilot Lights*

No. and Type of Pushbuttons ♦	No. of Selector Switches ♦	No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram			Hub Size	Cat. #
					Pos. 1	Pos. 2	Pos. 3		
1 (ED38)	1 (ED38)	1 (120V)	3	Three				1	EMP9016-††

EMP Panel Mounted Push Button Stations Selector Switches, Pilot Lights and Combinations

Factory Sealed, 600 VAC Heavy Duty

Cl. I, Div. 1, Groups C,D
Cl. I, Div. 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C

4C
Control Stations

Push Buttons

No. and Type of Push Buttons ♦	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	3	Single		1	EMP41†
1 (ED35)	3	Single		1	EMP42†
2 (ED35)	3	Single		1	EMP43†
2 (ED38)	3	Two		1	EMP511†
3 (ED38)	3	Three		1	EMP9111†

Push Button with Pilot Lights*

No. and Type of Push Buttons ♦	No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	1 (120V)	3	Two		1	EMP501-††
1 (ED35)	1 (120V)	3	Two		1	EMP502-††
1 (ED35)	1 (120V)	3	Two		1	EMP503-††
1 (ED38)	2 (120V)	3	Three		1	EMP9001-††
1 (ED35)	2 (120V)	3	Three		1	EMP9002-††
2 (ED38)	1 (120V)	3	Three		1	EMP9011-††
1 (ED35)	2 (120V)	3	Three		1	EMP9030-††
2 (ED38)	1 (120V)	3	Three		1	EMP9101-††

Push Buttons with Selector Switches

No. and Type of Push Buttons ♦	No. of Selector Switches	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	1 (ED38)	3	Two		1	EMP516†
2 (ED38)	1 (ED38)	3	Three		1	EMP9116†

Selector Switch Marking

Two-Position

RUN, JOG
HAND, AUTOMATIC
FORWARD, REVERSE
ON, OFF

FAST, SLOW
OPEN, CLOSE
UP, DOWN

IN-OUT
RAISE-LOWER
START-STOP

Three-Position

RUN, OFF, JOG
HAND, OFF, AUTOMATIC
FORWARD, OFF, REVERSE
FAST, OFF, SLOW

1, OFF, 2
OPEN, OFF, CLOSE
UP, OFF, DOWN

† Add color symbol for each pilot light from table below.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

†† Specify indicating plate marking for each push button and selector switch. Standard markings available as follows:

Push Button Station Marking

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

♦ See page 400 for listing of ED35 & ED38 replacement contact blocks.

* LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED after last color symbol. See Options on page 409.

As indicated in the listings, certain of the barrel assemblies are the same as those used in complete EMP units and may be utilized as replacements.

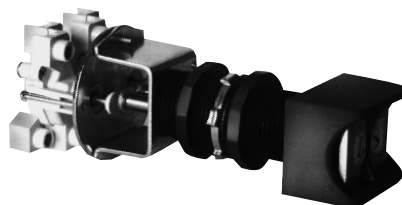
The remainder are primarily for use with hazardous area boxes to assemble special control stations. For additional information, refer to page 415 describing custom-built control panels.

Ordering Information:

Select the Cat. No. from the listings. For pilot lights and illuminated pushbuttons specify color of jewel using symbols from the table on page 411. For pushbuttons and selector switches specify markings from the tables on page 411.

Group 1:

Standard assemblies are for replacement in complete EMP units or for custom-built control panels. Short assemblies are for custom-built control panels only. Both assemblies may be used with System 4 Control Stations.



Double pushbutton, double operator

Diagram	Short Assembly Cat. #	Standard Assembly Cat. #
	EMPS039	EMP039



Two-position selector switch

Diagram		Short Assembly Cat. #	Standard Assembly Cat. #
Position 1	Position 2		
A1 A2	A1 A2	EMPS049	EMP049
A1 B1 A2 B2	A1 B1 A2 B2	EMPS059	EMP059

Three-position selector switch

Diagram			Short Assembly Cat. #	Standard Assembly Cat. #
Position 1	Position 2	Position 3		
A1 A2	A1 A2	A1 A2	EMPS069	EMP069
A1 B1 A2 B2	A1 B1 A2 B2	A1 B1 A2 B2	EMPS079	EMP079
A1 B1 A2 B2	A1 B1 A2 B2	A1 B1 A2 B2	EMPS089	EMP089



Pilot light**

Diagram	Standard Assembly Cat. #
---------	--------------------------------

(120V)* EMP009†



Single pushbutton Double pushbutton, single operator

Diagram	Short Cat. #	Standard Cat. #
	EMPS019	EMP019
	EMPS029	EMP029

* Other voltages available. See transformer suffix table on page 410. For 24 VDC operation, add suffix S300.

† Colors available: red, green, amber, clear, blue. See table on page 411.

** LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after last color symbol. See Options page 409.

EMP and EMPS Barrel Assemblies

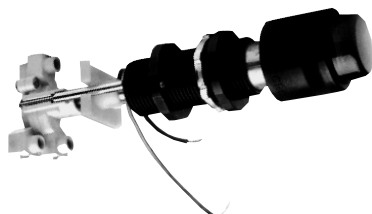
Dimensions Pg. 414

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

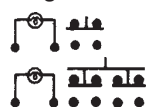
4C

Group 2: For custom-built control panels and System 4 Control Stations.



Illuminated pushbutton**

Diagram



120V pilot light

Long
Assembly
Cat. #

EMP0090†

120V pilot light

EMP0098†



Two-position selector switch, key operated

Diagram

Position 1

Position 2

Key
Removal

Short
Assembly
Cat. #

Standard
Assembly
Cat. #



Both positions
Left only
Right only

EMPS0491
EMPS0492
EMPS0493

EMP0491
EMP0492
EMP0493



Both positions
Left only
Right only

EMPS0591
EMPS0592
EMPS0593

EMP0591
EMP0592
EMP0593

Three-position selector switch, key operated

Diagram

Position 1

Position 2

Position 3

Key
Removal

Short
Assembly
Cat. #

Standard
Assembly
Cat. #



All
Center only
Left only
Right only

EMPS0691
EMPS0692
EMPS0693
EMPS0694

EMP0691
EMP0692
EMP0693
EMP0694



All
Center only
Left only
Right only

EMPS0791
EMPS0792
EMPS0793
EMPS0794

EMP0791
EMP0792
EMP0793
EMP0794



All
Center only
Left only
Right only

EMPS0891
EMPS0892
EMPS0893
EMPS0894

EMP0891
EMP0892
EMP0893
EMP0894

† Colors available: red, green, amber, clear, blue. See table on page 411.

* * LED pilot light can be furnished in place of standard incandescent pilot lamp. Add suffix LED after color symbol.

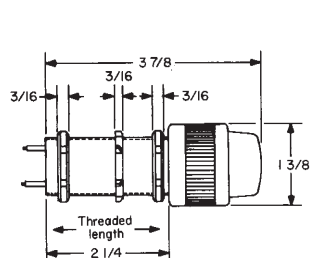
EMP and EMPS Barrel Assemblies

Dimensions (inches)*

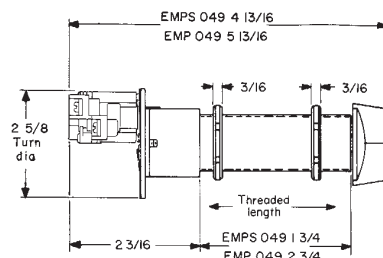
Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 2, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7BCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

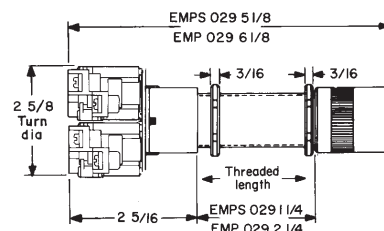
NOTE: All barrel assemblies are 3/4"-14 NPSM thread size.



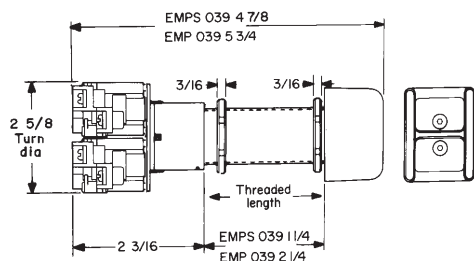
EMP009



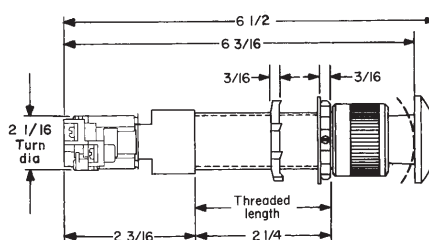
EMP-EMPS049, 059, 069, 079, 089



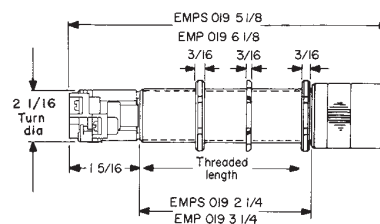
EMP-EMPS029



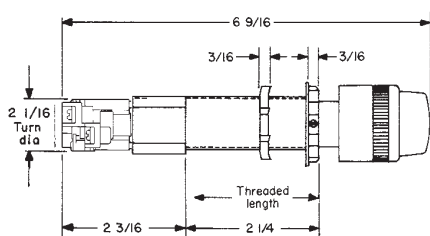
EMP-EMPS039



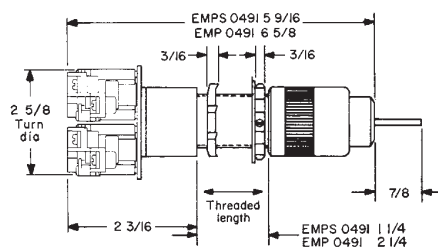
EMP098



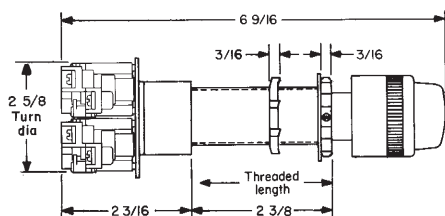
EMP-EMPS019



EMP0090



EMP-EMPS0491, 0591, 0691, 0791, 0891 Series



EMP0098

* Dimensions are approximate, not for construction purposes.

EJB Custom-Built Control Panels

Using EMP and EMPS Barrel Assemblies

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG
EEx d IIB+H₂ T6, IP66†

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C



4C Control Stations

Application:

EJB custom-built control panels are used with EMP and EMPS barrel assemblies:

- as a means of grouping control stations for centralized process control in hazardous areas in minimum space
- to provide the necessary pushbuttons, pilot lights, selector switches, tumbler switches and glass windows

Features:

- To reduce installation costs, panels can be supplied with control components factory wired to terminal blocks mounted in the box. Relays and other control devices can also be mounted in the boxes for special control functions
- Surface mounted control panels have the components assembled in the hinged cover, readily accessible for circuit checking and trouble shooting
- Panel mounted control assemblies have components installed in the back wall of the junction box. The protruding barrels are passed through holes drilled in the finished panel and locked to the panel in the same manner as individual EMP assemblies. Blank hinged covers are used, and are accessible from the rear of the panel to facilitate maintenance.
- Custom-built control panels to meet your exact requirements are a Cooper Crouse-Hinds specialty. Complete quotations will be supplied for any job, large or small.

Certifications and Compliances:

EJB panels –

- NEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA/EEMAC: 3, 7CD, 9EFG
- UL Standard: 698
- CSA Standard: C22.2 No. 30
- CEC:
Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G

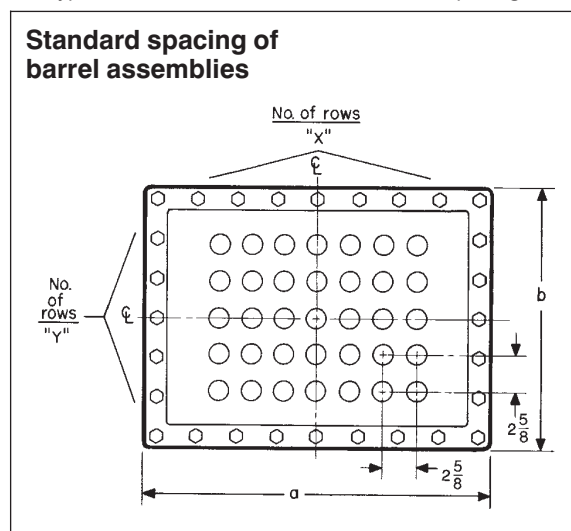


EJB surface mounted control panel – cover closed

Request Brochure # 3331 from your Cooper Crouse-Hinds sales representative or customer service to design your own custom control panel

Dimensions (in inches)*

Listed below are EJB boxes with standard spacing for most barrel assemblies. Depending on the number and type of barrel assemblies installed, closer spacing can be used and more devices assembled.



Cat. #	a	b	x	y
EJB100806✓	15 1/32	13 1/32	3	3
EJB121204✓	17 1/16	17 1/16	4	4
EJB121206✓	17 1/16	17 1/16	4	4
EJB121208✓	17 1/16	17 1/16	4	4
EJB161606✓	21 3/16	21 3/16	6	6
EJB161608✓	21 3/16	21 3/16	6	6
EJB181206✓	23 5/16	23 5/16	6	4
EJB181208✓	23 5/16	17 5/16	6	4
EJB241208✓	29 9/16	17 5/16	9	4
EJB241210✓	29 9/16	17 5/16	9	4
EJB241808✓	29 5/8	23 5/16	9	6
EJB241810✓	29 5/8	23 5/16	9	6
EJB242408✓	29 9/16	29 9/16	9	9
EJB242410✓	29 9/16	29 9/16	9	9
EJB361208✓	40 5/16	16 5/16	13	4
EJB361808✓	41 15/16	23 5/16	13	6
EJB361810✓	41 15/16	23 5/16	13	6
EJB362408✓	42 3/16	30 3/16	13	9

Additional dimensional data for EJB is given on page 132.

✓ - Available with Lightning Service™. See Section G for complete details.

* Dimensions are approximate, not for construction purposes.

† Order with suffix ATEX.

NOTE: For conduit liner ordering information, see page 140.

Application:

AFU and AFUX conveyor control switches are used:

- as emergency or normal "STOP" switch for conveyor lines, cranes, unloaders, bulk handling systems and similar equipment
- in steel mills, mining and ore and coal handling operations, automotive and other assembly lines, warehouses, loading docks and various process industry facilities
- in the control circuit of magnetic motor starters to shut down motor-driven conveyors or other machinery when switch is actuated.

AFU series complies with requirements for use in Class II areas having combustible dusts that may or may not be electrically conductive.

AFU series are also gasketed for use in hosedown areas even when combustible dusts are present.

AFUX series complies with requirements for use in NEC Class I areas which are hazardous due to the presence of flammable vapors or gases. AFUX series also complies with requirements for use in NEC Class I areas which are hazardous due to the presence of flammable vapors or gases. AFUX series also complies with NEC requirements for use in Class II hazardous areas, or for use in NEC hazardous areas classified simultaneously as Class I and Class II.

Features:

- Furnished with one or two end units, each containing 2-NO and 2-NC contact arrangements.
- Precision switches provide maintained contact (switches have a snap action mechanism).
- Enclosure has three 1" conduit hubs – two for horizontal through feed and one at the bottom. Cast mounting lugs on 1½" centers permit attachment to the web of a standard 3" angle iron.
- In installation, the actuating line or cable is connected from a fixed point to the loop on the end unit. A pull on the line of the required operating force and with a total movement of ½" actuates the plunger, opens the switch and trips the red painted indicating arm forward, which locks the plunger in the actuated (switch open) position. Returning the indicating arm to its normal position resets the mechanism. A typical installation would include single end switch units at each end of the conveyor with double end switch units between.
- Depending on the size and length of line, supports at properly spaced intervals may be necessary to ensure that the line or cable weight alone will not actuate switch.

Standard Materials:

- Enclosure – *Feraloy*® iron alloy
- Plunger – stainless steel
- Loop – bronze
- Indicating arm – steel

Electrical Rating

- Control circuit switch – 15 AMP, 600 VAC max.

Options:

- Finish: *Corro-free*™ epoxy powder coat – add suffix S752 to the standard catalog number for coating outside only.

**Certifications and
Compliances:****AFU SERIES**

- NEC/CEC:
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- Encl. 3,5
- NEMA: 3, 4, 9EFG
- IP66
- UL Standard: 698
- CSA Standard: 22.2 No. 30

AFUX SERIES

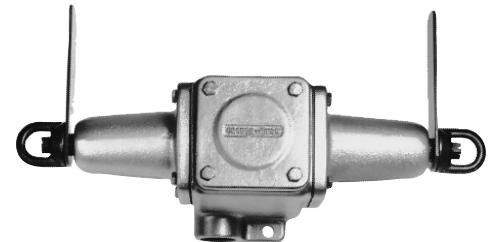
- NEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA: 3, 7CD, 9EFG
- IP65
- UL Standard: 698
- cUL

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized with chromate finish (red acrylic paint on indicating arm)
- Bronze – natural



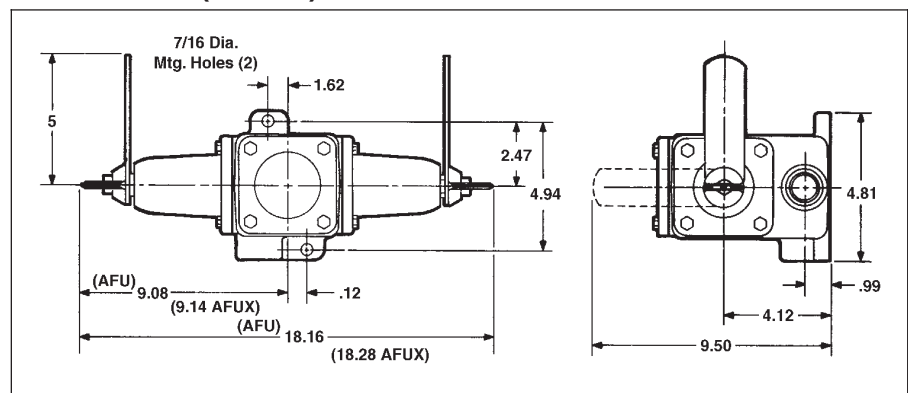
AFU0333-50 Single end left



AFU0333-66 Double end

Description	Maximum Weight of Unsupported Line or Cable Without Actuating Switch† (lbs.)	Total Operating Force Required (lbs.)	Contact Arrangements	
			With 2-NO, 2-NC in Each End Unit	
			Cat. #	Cat. #
Single end left	15	25	AFU0333-50	AFUX0333-50
Single end left	25	50	AFU0333-60	AFUX0333-60
Single end right	15	25	AFU0333-05	AFUX0333-05
Single end right	25	50	AFU0333-06	AFUX0333-06
Double end	15	25	AFU0333-55	AFUX0333-55
Double end	25	50	AFU0333-66	AFUX0333-66

† A galvanized steel aircraft cable, supported every 10' is recommended.

Dimensions (inches)*

* Dimensions are approximate, not for construction purposes.

AFA and AFAX Conveyor Belt Alignment Switch

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C

4C Control Stations

Application:

AFA, AFAX conveyor belt alignment switches are used:

- as emergency or normal "STOP" switch for conveyor belts whenever they become misaligned or run off their tracks due to excessive speed, uneven load, leveling, breakage and/or other problems.
- in steel mills, mining and ore and coal handling operations, automotive and other assembly lines, warehouses, loading docks, grain loading and handling facilities, and various other bulk handling operations.
- in the control circuit of magnetic motor starters to shut down motor-driven conveyors in case of abnormal belt misalignment or run-off.

AFA series complies with requirements for use in Class II areas having combustible dusts that may or may not be electrically conductive.

AFA series are also gasketed for use in hosedown areas even when combustible dusts are present.

AFAX series complies with requirements for use in NEC Class I areas which are hazardous due to the presence of flammable vapors or gases. AFAX series also complies with NEC requirements for use in Class II hazardous areas, or for use in NEC hazardous areas classified simultaneously as Class I and Class II.

Features:

- Furnished with precision switches that provide normally open and normally closed contacts (switches have a snap action mechanism).
- Housing consists of a center section which can be mounted either vertically or horizontally, and a switch housing with an attached switch operating arm.
- Enclosure has three 1" conduit hubs. Cast mounting lugs on 1½" center permit attachment to the web of a standard 3" angle iron.
- Operating arm has 3½" long stainless steel protective roller. Approximately ¾" lateral movement of operating arm actuates switch.
- Spring loaded operating arm will automatically return switch to normal position when belt interference is removed.
- A severe conveyor belt run-off can rotate the operating arm counter-clockwise up to 85 degrees without damage to the switch mechanism.
- Installation of AFA or AFAX unit on either side of a conveyor belt allows approximately 1" or a predetermined allowable belt misalignment before switch is actuated. A typical installation would include a pair of AFA or AFAX units at each end of the conveyor belt where belt returns.

Options:

- Finish: *Corro-free*™ epoxy powder coat – add suffix S752 to the standard catalog number for coating outside only.

Electrical Rating:

- Control circuit switches – 15 AMP, 600 VAC max.

Certifications and Compliances:

AFA SERIES

- NEC/CEC: Class II, Division 1, Groups E,F,G, Class II, Division 2, Groups F,G, Class III

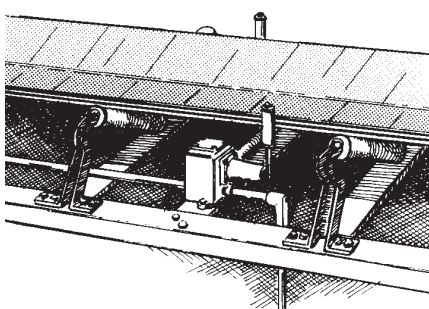
- NEMA: 3, 4, 9EFG
- IP66
- UL Standard: 698
- CSA C22.2 No. 25

AFAX SERIES

- NEC: Class I, Division 1 & 2, Groups C,D, Class II, Division 1, Groups E,F,G, Class II, Division 2, Groups F,G, Class III

- NEMA: 3, 7CD, 9EFG
- IP65
- UL Standard: 698

Typical AFA Switch Application



Horizontal mounting

Contact

Arrangement	Diagram	Cat. #
2 normally open	1 → N.O. ↓ 2	AFA20
2 normally closed	3 → N.C. ↑ 4	AFAX20
	1 → N.O. ↓ 2	
	3 → N.C. ↑ 4	

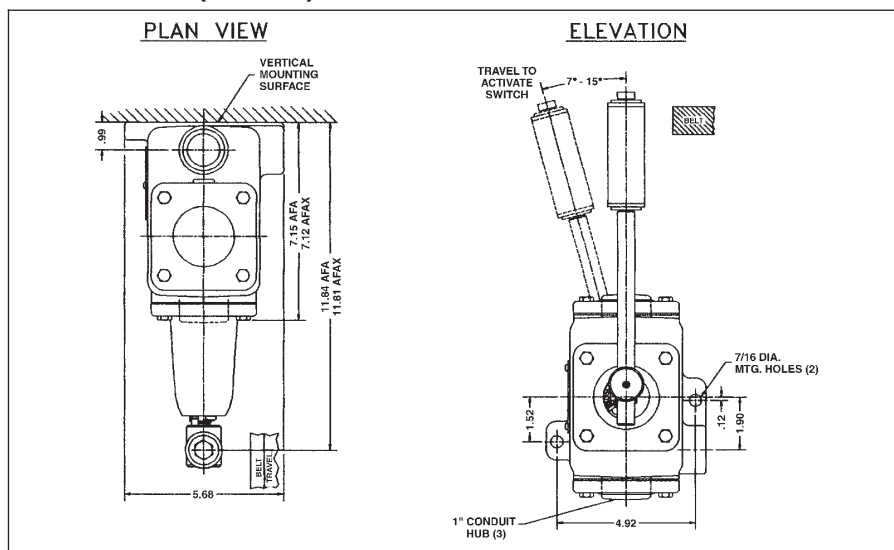
Standard Materials:

- Enclosure – *Feraloy*® iron alloy
- Bearing and operating arm – stainless steel with plastic end caps

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Stainless steel – natural

Dimensions (inches)*



* Dimensions are approximate, not for construction purposes.

Application:

AFU mine signal switches are used:

- for signalling circuits or remote control of magnetic motor starters
- in non-hazardous areas of mines or process industry facilities where a rugged enclosure is needed for protection from falling ore and other material or dripping water
- mounted on walls or in shaft ways and actuated by pulling line or cable attached to the loop at the bottom

Features:

- Sturdy raintight enclosure with heavy mounting lugs
- Wires enter enclosure through clearance holes in the underside
- Switches are actuated by a spring-loaded plunger which returns to the normal position when the operating force is removed
- Units are furnished with heavy duty motor control push buttons. Several of these may be interconnected electrically for remote control of a magnetic motor starter from more than one location

Standard Materials:

- Enclosure – *Feraloy*® iron alloy
- Plunger – steel
- Loop – bronze

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized
- Bronze – natural

Certifications and Compliances:

- NEMA: 3

AFU Mine signal switch with push button switch (cover removed)



Maximum Wt. of Line or Cable Without Actuating Switch (lbs.)

25

Total Operating Force Required (lbs.)

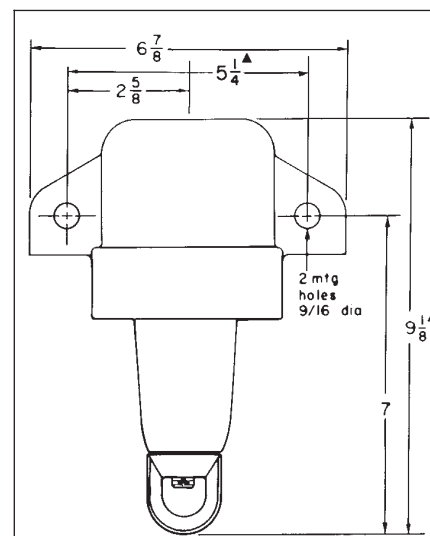
50



With Push Button Heavy Duty 600 VAC Max.

Cat. # AFU254

Dimensions (inches)*



* Dimensions are approximate, not for construction purposes.

EGL Static Grounding Indicator with Automatic Pump Control

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C

Applications:

EGL Static Grounding Indicators are connected to tank vehicles, drums or other portable containers before beginning transfer of combustible materials to:

- safely ground static electricity preventing build up of a static charge during pumping
- indicate the presence of safe static grounding before and during loading or unloading operations
- actuate remote devices (lights, horns) to verify completion or interruption of the static ground
- shut down pumps automatically if the EGL static grounding circuit is broken

Features:

- 1" conduit hub with 3/4" reducer on bottom right hand side of enclosure
- one or two pilot lights (LED)
- Standard LED pilot lights are available in either red (J1) or green (J3)
- Heavy duty clamp for static ground connection
- Breather and drain standard
- Intrinsically safe ground detecting circuit
- Control relay with two sets of contacts to control operation of electrically operated pumps, valves, or for energizing remote indicators
- Static ground verification system to ensure a continuous closed ground loop
- Neoprene gasket for cover opening to make enclosure watertight
- 25 ft. cord with clamp assembly
- External flange design — wide unobstructed cover opening provides a completely accessible interior for wiring and maintenance.
- Triple-lead, captive, stainless steel cover bolts provide quick access and superior corrosion protection. Provides clear indication that cover bolts are fully retracted from the body.
- Detachable mounting feet provide flexibility. No need to replace enclosure if mounting foot is broken.
- Copper-free aluminum hinges provide convenient and easy access for inspection, maintenance, and system changes.

- Watguard™ desiccant packet provided to absorb and remove water/moisture and protect the enclosed equipment from damage.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

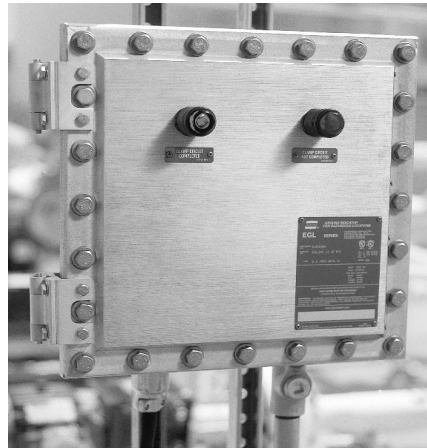
- Natural

Electrical Rating Ranges:

- 120 volt AC supply
- Control relay interlocking contact: 15A at 277 VAC; 10A at 600 VAC

Certifications and Compliances:

- Class I, Division 1 & 2, Groups B,C,D
- Class II, Div. 1, Groups E,F,G
- Class II, Div. 2, Groups F,G
- Class III



Catalog Numbers:

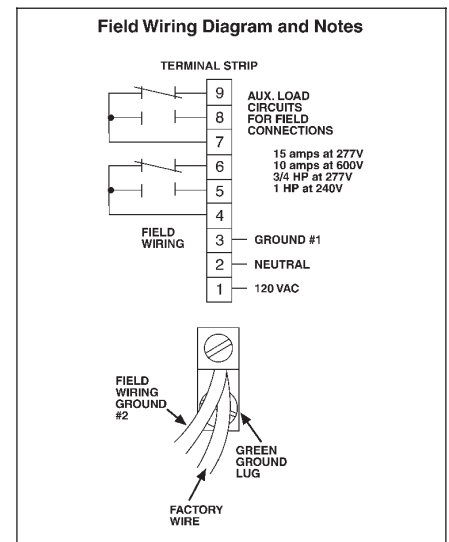
EGL Indicators:

Description	Cat. #
Indicator less pilot lights.....	EGL210
Indicator with one pilot light.....	EGL210-J†
Indicator with two pilot lights*..	EGL210-J1-J3

Options:

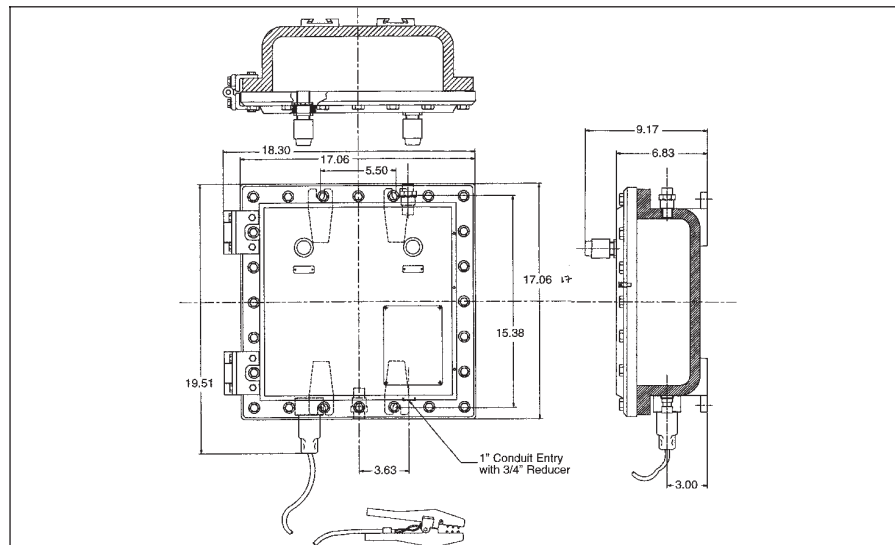
- Corro-free™ epoxy finish for use in severely corrosive environments. add suffix S752
- Epoxy finish, internal and external add suffix S753
- Internal space heaters. add suffix R11
- 50 VA power transformer for 240 VAC input. FT502
- 50 VA power transformer for 480 VAC input. FT504

Field Wiring Diagram and Notes



CAUTION:
To ensure proper operation of the EGL210, two separate ground leads from the electrical supply panel must be provided: one to terminal #3 on the terminal strip and the other to the green ground lug in the enclosure.

Dimensions: (inches)



Replacement Parts:

Description	Cat. #
Ground clamp.....	EGL-K1
Ground clamp assembly includes 25' cord, connector and clamp . EGL:20109-B	
EGL210 interior only	EGL210-R1 M4
Pilot Lights (Red)	EMP009-J1-LED
(Green)	EMP009-J3-LED
Relay	EGL-K4
Switch Amplifier	GHG122-3121-D-1003
Adaptor Plate (allows Model M4 to be mounted where Model M2 and M3 were located)	0208122
Mounting Feet (Model M4).....	EJB-MF1

† Specify color: J1=red, J3=green.

* Includes one red and one green pilot light.

4C Cable-Gard Static Discharge Reels

Application:

Static discharge reels are used for grounding portable machines and equipment in hazardous areas, such as fuel-transfer trucks, grain elevators, dockside-loading facilities, and barges. When properly clamped to ground the static discharge reel safely dissipates static electrical buildup and reduces the chance of sparking and the potential for explosion. For hazardous locations, the EGL Static Grounding Indicator (on page 419) can be used as an electrical interlock to control pumping operations.

Features:

- Compact enclosed design, positive ratchet lock, steel cable installed
- 100 amp universal jaw-type grounding clamp
- Mounts to a clean, unpainted conductive surface to assure electrical continuity through the reel frame

Standard Materials:

- Housing – steel construction

Standard Finishes:

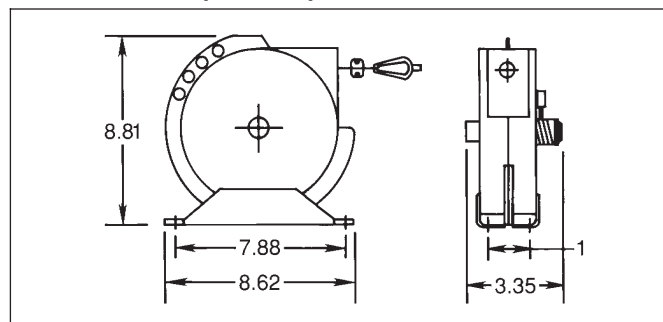
- Housing – Orange polyester; baked on finish



Cable Length (Ft.)	Description	Cat. #
50	Single 7 x 30 steel*	SDR-50
50	35' plus 2 x 15' for Y (steel*)	SDR-50Y
50	Nylon covered cable*	SDR-50N

* Static discharge reels are supplied complete with 3/32" steel aircraft cable. DC resistance is approximately one ohm per 50 ft. of steel cable.

Dimensions (inches)



EGF Series Ground Fault Control Station

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3, 7CD, 9EFG, 12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4C

4C
Control Stations

Application:

EGF Series of control stations are used:
• for the additional safety of personnel, and
• for equipment protection in remote areas.

Features:

- Copper-free aluminum construction offers lightweight, corrosion resistance and a long, maintenance-free service life.
- 1¼" throughfeed conduit hubs with 1¼"-1" reducers for ease of installation.
- Compact, internally flanged enclosure requires minimum installation area.
- Steel mounting feet with electroplate finish for fast, secure, and corrosion-resistant mounting.
- Accepts #14-#10 copper wire sizes for application flexibility.
- Push-to-test button and pilot light (with 10,000 hour incandescent lamp) for easy and constant operational monitoring of unit.
- Cast aluminum circuit breaker operating handle for durability during use.
- EPD breakers for protection of heat tracing circuits.

Standard Materials:

- Bodies, covers, threaded barrels, guards, collars, and toggle operator – copper-free aluminum
- Pushbuttons – type 6/6 nylon
- Operating shafts – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Sheet steel – zinc electroplate with chromate finish
- Stainless steel – natural

Electrical Rating:

- GFI, EPD breakers – 120 VAC (single pole), 120/240 VAC for two pole (10,000 AIC)

Certifications and Compliances:

- NEC: Class I, Div. 1 & 2, Groups C,D
Class II, Div. 1, Groups E,F,G
Class II, Div. 2, Groups F,G
Class III
- NEMA 3, 7CD, 9EFG, 12

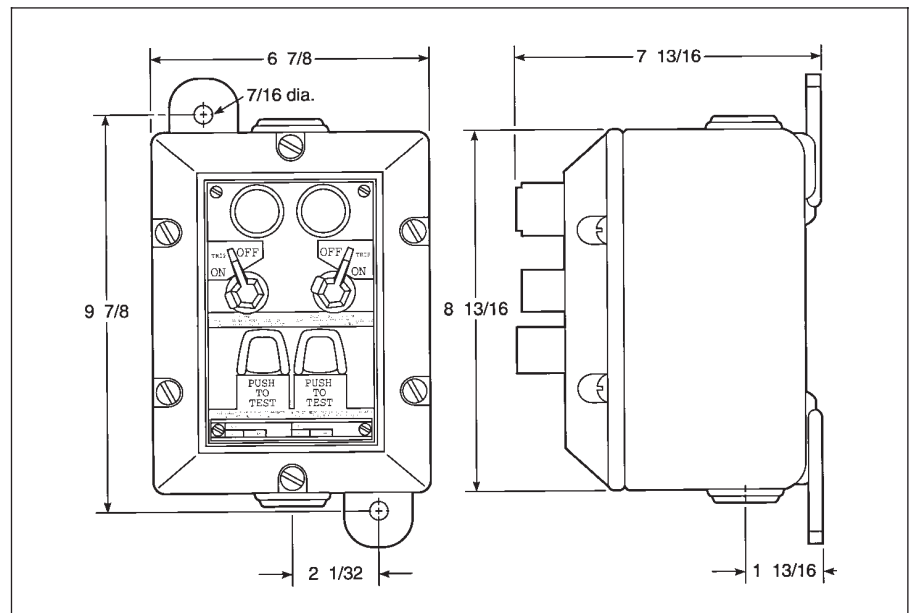


Ordering Information

Number of Breakers	Number of Poles	Milliamp Trip	Catalog Number
1	1	5	EGF11*
1	2	5	EGF12*
2	1	5	EGF21*
1	1	30	EGF11EPD*
1	2	30	EGF12EPD*
2	1	30	EGF21EPD*

* Add 15, 20, 25, or 30 amp breaker rating

Dimensions:



Application:

FLEXITITE attachable pendant pushbutton stations are used:

- for safe, multi-function motor circuit control of: Hoists
Cranes
Machine Tools
Electromagnets
- non-hazardous control environments requiring from 2 to 8 functions.
- where washdowns are necessary – in damp, wet, dirty, or corrosive locations.

Features:

- Safety insulated to meet OSHA requirements for enclosing live parts. The entire unit except the strain relief is insulated with neoprene.
- Safety cushioned – neoprene encapsulation protects internal switches and connectors from impact damage and provides extra protection for personnel.
- Stress relief for your cable is built-in. A separate cable grip is not needed unless the optional pilot light kit is used.
- Positive action long life momentary contact switches.
- Maintained Off-On toggle switch is optionally available on 4, 6, and 8 button units.
- Jam resistant operator buttons are raised flexible diaphragms – an integral part of the molded one-piece cover.
- Compact – 3" x 3" enclosure easily fits your hand.
- Indicator plates meet OSHA requirements for clear identification of functions. A full set of plates is provided with each station.

Standard Materials:

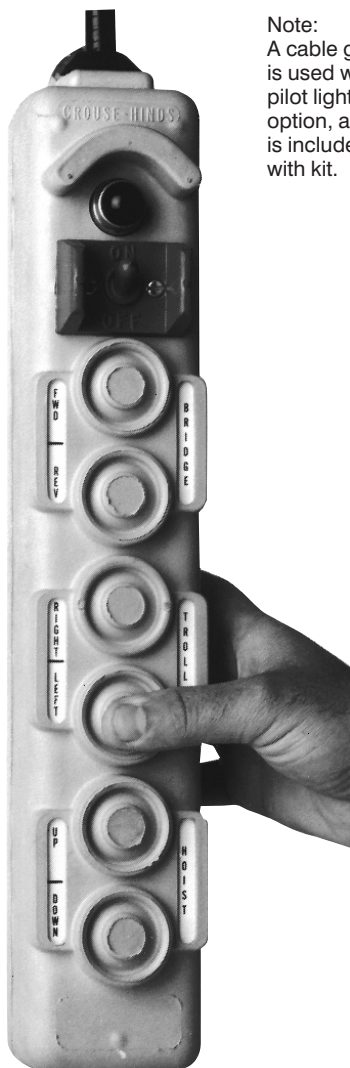
- Body and cover – steel reinforced neoprene
- Strain relief and reinforcement plates – stainless steel
- Exterior hardware – stainless steel

Standard Finishes:

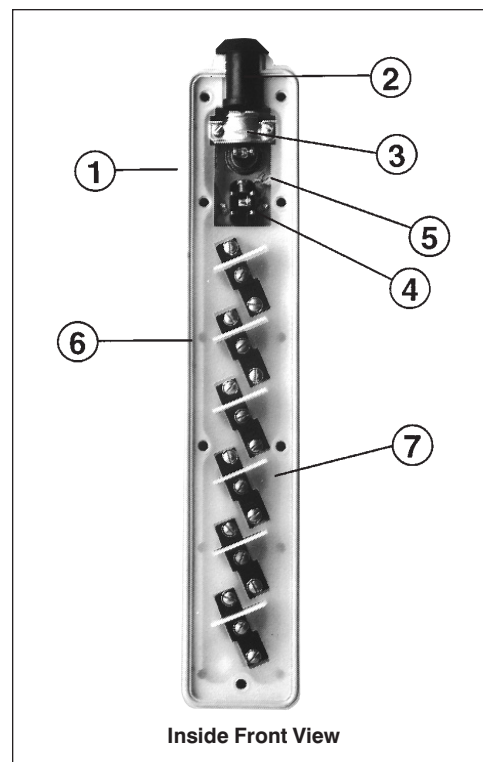
- Neoprene – safety yellow
- Steel – stainless steel

Certifications and Compliances:

- NEMA: 3, 4X, 5, 6, 12
- UL Standard: 508
- CSA Approved



Note:
A cable grip is used with pilot light option, and is included with kit.



1. BODY SEAL – Compresses against mating half to form a positive seal.
 2. REDUCING GROMMETS – Permit use of five different cable sizes while sealing cable entrance.
 3. CABLE CLAMP – Secures conductors inside switch. Transfers strain to inner steel core of switch. (Not used with pilot light.)
 4. TOGGLE SWITCH (OPTIONAL) – Maintained off-on switch to control power to pendant stations.
 5. GREEN GROUNDING SCREW – Makes positive contact between inner steel core and ground wire.
 6. INSULATION BARRIERS – On 4- and 6-button models. Position switches and separate N.O. and N.C. switch contacts for added safety.
 7. SEPARATOR – For 4- and 6-button models. Tough polypropylene sheet retains switches and forms an insulated wiring channel.
- STRAIN RELIEF – Integral part of the inner steel core – provides tie-off point for strain chain to relieve tension from electrical cable.
- ELECTRICAL INTERLOCK – Schematic furnished to wire switches against opposed operations.
- LOW COST, EASILY INSTALLED – Despite their many advantages, Cooper Crouse-Hinds pendant stations generally cost less than similar metal units.
- RAISED BUMPER – protects lens against damage caused by impact.

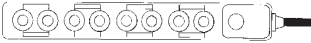
FLEXITITE™ Attachable Pendant Pushbutton Stations

NEMA: 3,4X,5,6,12

Raintight
Watertight
Dust-Tight
Wet Locations

4C

One and Two Speed 2, 4, 6 and 8 Buttons

Style	Toggle Switch*	1 Speed	2 Speed	DC	Cable Diameter	Shipping Weight (lbs.)	Dimensions		
		20A 460V 2 hp. 230V	10A 230V ½ hp. 230V	10A 125V ⅓ hp. 125V			Length	Width	Depth
2-Button									
	None	X8635-21	X8635-22	X8635-20	.555 thru .665	2½	8¾"	2¼"	3"
4-Button									
	3316317	X8635-41B	X8635-42B	X8635-40B	.505 thru .730	3	13½"	3"	3⅝"
6-Button									
	3316317	X8635-61B	X8635-62B	X8635-60B	.590 thru .840	6½	17"	3"	3⅝"
8-Button									
	3316317	X8635-81	X8635-82**	X8635-80	.698 thru .968	9	21½"	3"	3⅞"

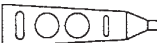
* Should be ordered separately.

Pilot Light Kit for 4, 6 and 8-Button Only

Lamp Voltage	4 and 6 Button			8 Button
	Cable Diameter			
	.50 thru .62	.63 thru .74	.75 thru .87	.69 thru .97
110-125V AC	3316533	3316533-1	3316533-2	3316624
210-250V AC	3316534	3316534-1	3316534-2	3316625

Pilot light kit includes: lamp assembly with lens and bulb, cable support grip, and "S" hook. Support grip and "S" hook not required on 8-button. NEMA 3,4,5,12 only.

FLEXITITE™ 2-Button Attachable Pendant Switch

Part Number	Contact Style	Voltage	Amps Make	Amps Break
X8995-1 yellow	 Momentary Switch	240 AC	7.5	0.75
		120 AC	15.0	1.5
		24 AC	15.0	2.5
		250 VDC	0.27	0.27
		125 VDC	.055	0.55

** 2 speed includes: 6, 2-speed switches and 2, single speed switches.

Indicator Plates (Replacement only - units come with plates standard)

2-Button				4, 6 and 8-Button			
Part Number	Description	Part Number	Description	Part Number	Description	Part Number	Description
315116-1	Down/West	315116-7	Rev/Left	314850-1	Bridge	314850-6	Fwd/Rev.
315116-2	Start/North	315116-8	Up/East	314850-2	Trolley		North/South
315116-3	Stop/South	315116-9	Raise/Lower	314850-3	Hoist	314850-9	On/Off
315116-4	Off/In	315116-10	Up/Down	314850-4	In/Out		Start/Stop
315116-5	On/Out	315116-11	Right/Left		Up/Down	314850-12	Raise/Lower
315116-6	Fwd/Right			314850-5	Right/Left	314850-13	Inbd/Outbd
					East/West	314850-14	Off/On

Shoulder Bolts for Fastening Front to Back Cover – 2-Button (P/N 1316311-2); 4- & 6-Button (P/N 1316311-1); 8 button (P/N 1316311-3). NOTE: Refer to price list for identification of stock items.

Replacement Parts

Style	Part Numbers		Switch Element Part Numbers							Parts Kitt††	Pilot Light Kit
	Front Cover	Back Cover	Toggle Switch Kitt†	1 Speed 20a. 460V 2hp, 230V	2 speed 10a. 230V ½ hp. 230V	DC 10a. 125V ⅓ hp. 125V	Toggle Off/On Element	Barrier	Separator		
2-Button	A335578	A335577-1	Not Avail.	3316480	314896	314903				RX8635-21	
4-Button	3335848-1	3335829-1	3316317	3316480	314896	314903	1316313	314849-1 (4 Req'd)	335616 (1 Req'd)	RX8635-41	See Above Chart
6-Button	3335845-1	3335830-1	3316317	3316480	314896	314903	1316313	314849-1 (6 Req'd)	335571 (1 Req'd)	RX8635-61	
8-Button	3344153	3344154	3316317	3316480	314896	314903	1316313	Not Req'd	Not Req'd	RX8635-80	

† Toggle switch kit – includes: toggle switch, guard, assembly and screws.

†† Parts kit – includes cable grommets, legend plates and assembly screws.

D2X Series FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-tight
Wet Locations

Application:

FLEXITITE attachable pendant pushbutton stations are used:

- for safe multi-function motor circuit control of:

Hoists
Cranes
Machine Tools
Electromagnets

- in hazardous areas such as Class I, Division 2, Groups B, C and D (classified) areas or Class II, Division 2, Groups F and G, as defined by the National Electrical Code
- where wash downs are necessary – in damp, wet, dirty or corrosive locations
- for control applications requiring 2 to 8 functions

Features:

- Safety cushioned – neoprene encapsulations protects internal switches and connectors from impact damage and provides extra protection for personnel.
- Stress relief for your cable is built-in. A separate cable grip is not needed.
- Uses Cooper Crouse-Hinds ESWP factory sealed contacts suitable for use in Class I, Division 2, Groups B, C and D
- Switches are rated for 10 amps 600 VAC (NEMA A600).
- Indicator plates meet OSHA requirements for clear identification of functions. A full set of plates is included with each station.
- Jam resistant operator buttons are raised flexible diaphragms – an integral part of the molded one-piece cover.
- Compact design
- Safety yellow finish.

Standard Materials:

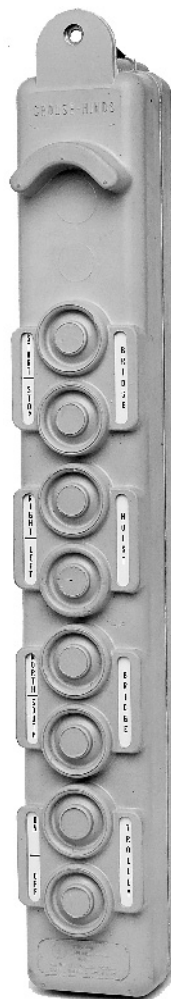
- Body and Cover – steel reinforced neoprene
- Strain relief and reinforcement plates – stainless steel
- Exterior hardware – stainless steel

Standard Finishes:

- Neoprene – safety yellow
- Stainless steel – natural

Certifications and Compliances:

- NEMA: 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
- UL Standard: 508
- CSA Standard C22.2 No. 14



8-Button Control Station

D2X FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-tight
Wet Locations

4C

Ordering Information

Control Stations

Description	Cable Dia.	Catalog #
2-Button	.31 – .75	D2X8635-210
4-Button	.50 – .75	D2X8635-410
6-Button	.59 – .81	D2X8635-610
8-Button	.59 – .92	D2X8635-810

Replacement Indicator Plates (A full set is included with each control station)

2-Button

Part No.	Description	Part No.	Description
315116-1	Down/West	315116-7	Rev/Left
315116-2	Start/North	315116-8	Up/East
315116-3	Stop/South		
315116-4	Off/In		
315116-5	On/Out		
315116-6	Fwd/Right		

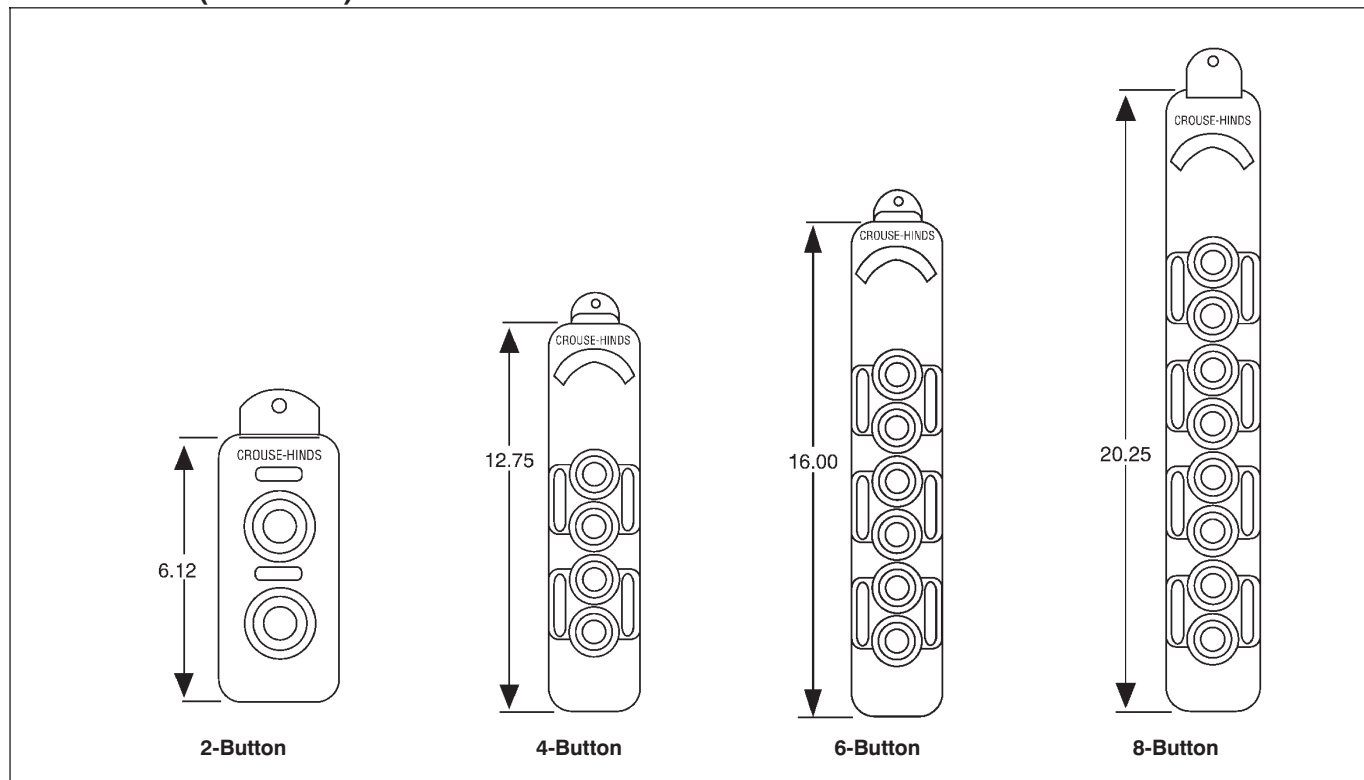
4, 6 and 8-Button

Part No.	Description	Part No.	Description
314850-1	Bridge	314850-6	Fwd/Rev
314850-2	Trolley		North/South
314850-3	Hoist	314850-9	On/Off
	In/Out		Start/Stop
314850-4	Up/Down		
	Right/Left		
314850-5	East/West		

Replacement Switch

Part No.
ESWP126

Dimensions (in inches)



4C Control Stations

Notes Page

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Description	Page No.
Application/Selection	428, 429
Dimensions	430
Manual Motor Starting Switches & Enclosures EDS Series	440, 441
Pilot Lights EFS Series	435
Pilot Light/Pushbutton Station Combinations EDS Series	436
Pushbutton Stations	
Front Operated	
EDS Series	431, 432
EFS Series	433
D2X Series	442, 443
Side Operated Rocker Handle	
EDS Series	434
Selector Switches	
Maintained Contact	
EDS Series	437
EFS Series	438
General Use Snap Switches EDS Series	439

EFS and EDS Factory Sealed Control Devices and Manual Motor Starting Switches

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

Application:

Factory sealed enclosures are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:

- to prevent arcing of enclosed device from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required
- in conjunction with magnetic starters or contactors for remote control of motors

Manual motor starting switch enclosures are used:

- for manual starting of small ac or dc motors
- to provide manual starting and stopping and, in the case of units with heaters, motor running protection

Features:

Factory sealed devices have many distinct advantages:

- reduce installation problems
- eliminate external seals
- lower installation costs
- improve safety
- are used with general purpose snap and pushbutton type switches
- standard neoprene covers for front operated pushbuttons. Prevents accumulation of dirt and entrance of water around operating shafts
- mounting lugs and taper tapped hubs with integral bushings
- large machine screws for fastening covers to bodies
- lockout provisions on front operated push button (marked "STOP" and "OFF") and selector switch covers
- lockout hole for padlock having 1/4" hasp is provided when used with covers for front lever and side rocker type operation
- close tolerances in machining of wide, mating flanges and journalled shafts and bearings for front button operation, produces flamtightness of enclosure joints
- on enclosures with front lever and side rocker type operating handles, threaded type shafts and bushings are used to ensure flamtightness
- dead end (EFS or EDS) or through feed (EFSC or EDSC) hubs – 1/2" to 1" sizes

Standard Materials:

- Bodies – *Feraloy*® iron alloy; copper-free aluminum.
- Front operated pushbutton and pilot light covers – *Feraloy* iron alloy
- Side operated type pushbutton covers – copper-free aluminum

- Shafts – stainless steel
- Shaft bushings – stainless steel
- Rocker handle and pushbutton guards – type 6/6 nylon
- Sealing enclosures – copper-free aluminum

Standard Finishes:

- Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Type 6/6 nylon – black
- Stainless steel – natural

Options:

The following special options are available from the factory by adding suffix to Cat. No.

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B*,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- NEMA/IEE MAC: 3,7B*CD,9EFG
- UL Standard: 894, 698
- CSA Standard: C22.2 No. 30

Description

	Suffix to be Added to Cat. #
Emergency "Stop" button (momentary) – front operated red mushroom button	S111
Lockout provision on front operated pushbutton cover (standard on buttons marked "OFF" and "STOP")	S153
For 24 VDC operation on pilot lights	S300
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation	S635
Bodies and covers (single and two gang units) – copper-free aluminum.	SA

Where indicated in the catalog listings, EDS units suitable for Class I, Division 1, Group B usage can be supplied, add suffix - GB, EFS units are suitable for Class I, Division 1, Group B as standard. GB

Maintained contact mushroom head with lockout and guard. Maximum one per cover and cannot be used with a pilot light with a transformer or another standard pushbutton. . . S769

EDS bodies and factory sealed cover and device sub-assemblies are available for field assembly (see pages 394 to 396).



Suffix S769

* See Options: suffix GB

EFS and EDS Factory Sealed Control Devices and Manual Motor Starting Switches

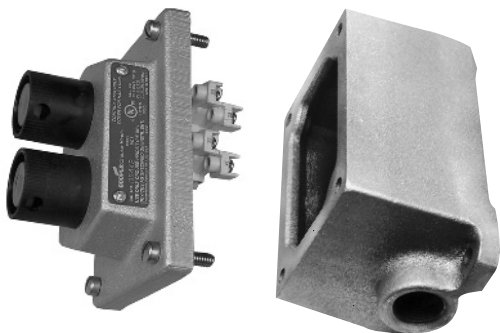
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7B*CD,9EFG

5C

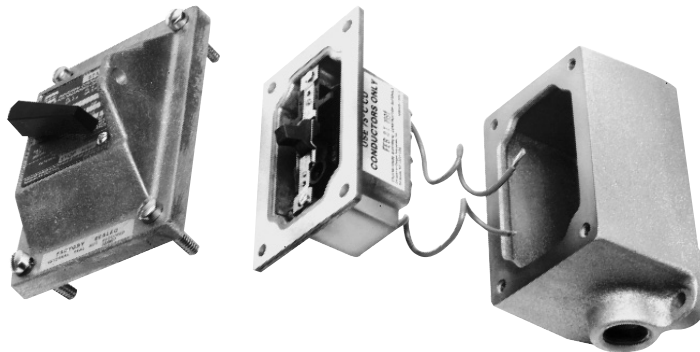
Methods of Factory Sealing

EFS/EDS Series



Factory sealed EDS and EFS pilot light, pushbutton and selector switch control stations do not need external sealing. Device contacts are factory sealed in explosionproof ESWP contact blocks. Small compact enclosures have accurately ground wide flanges on both the body and cover for a flame-tight joint.

EDS Series



EDS factory sealed snap switches or manual motor starting switches do not need external sealing. The switches are enclosed in a unique sealing well with double flanges which mate with the cover and the body. Small compact enclosures have accurately ground wide flanges on body, cover and sealing well for flame-tight joints. Wiring pigtails are factory sealed from under the sealing well. Reliable pouring of seals at the factory ensures safe sealing.

5C Factory Sealed Control Devices

* Check listings for Group B suitability
See Options page 428.

EFS and EDS Factory Sealed Control Devices and Manual Motor Starting Switches

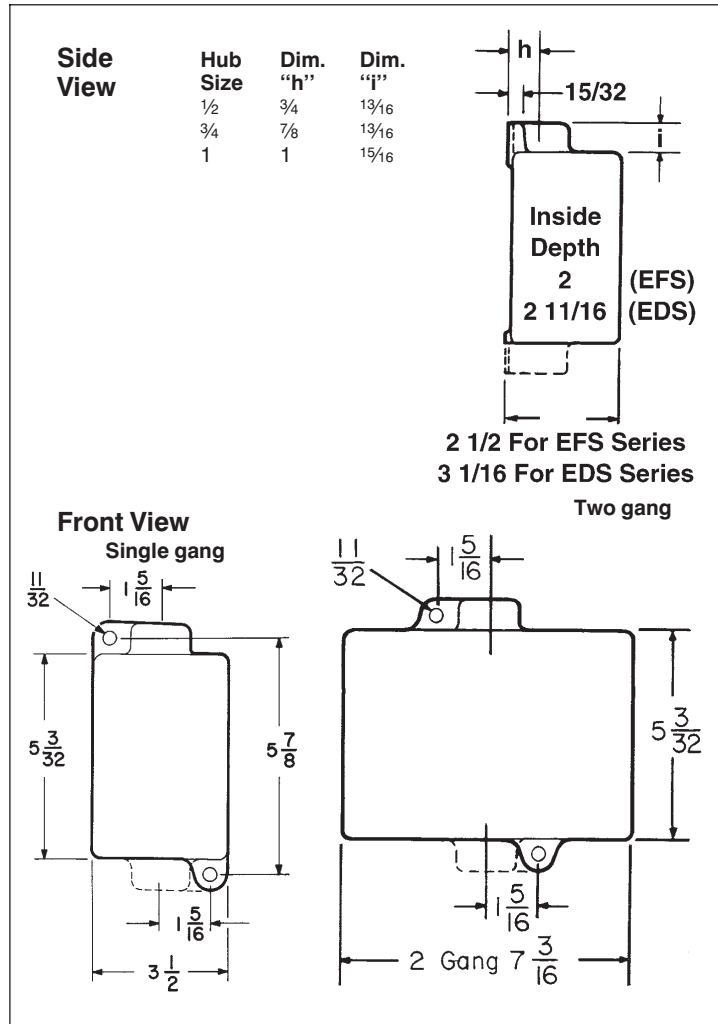
Dimensions

Cl. I, Div. 1 & 2, Groups B*,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7B*CD,9EFG

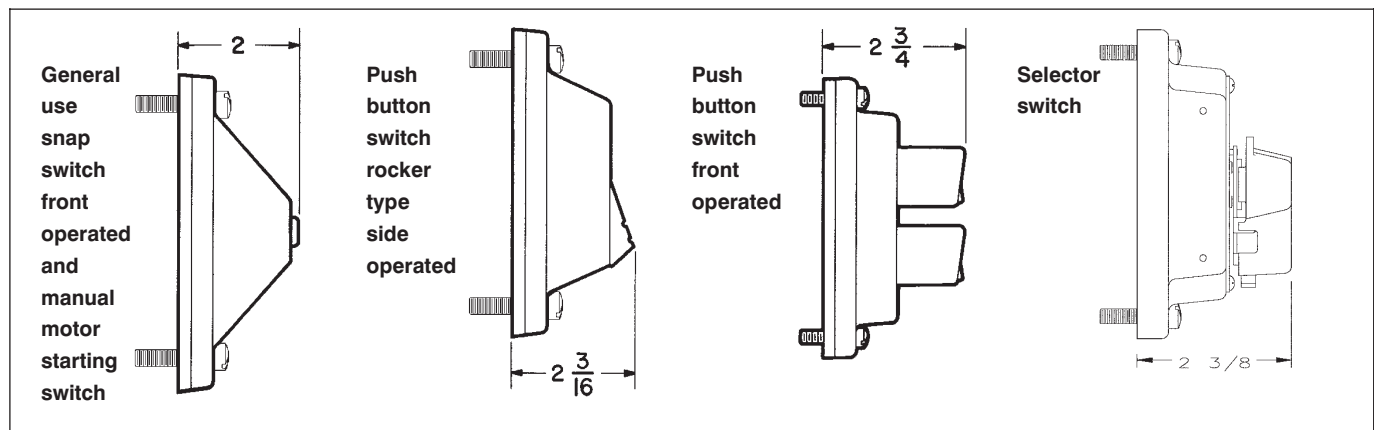
Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Dimensions (inches)**

Bodies



Covers†



** Dimensions are approximate, not for construction purposes.

* See listings.

† Surface covers have same length and width as bodies.

EDS Factory Sealed Pushbutton Stations

Front Operated, 600VAC Heavy Duty,
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

5C



EDS2184



EDS2190

Single Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified

Diagram			
Replacement Pushbuttons‡	ED11	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	Dead End Cat. #	Cat. #	Cat. #
1/2	EDS1184		EDS115
3/4	EDS2184	EDS2190	EDS215
1	EDS3184	EDS3190	EDS315
Hub Size	Through Feed Cat. #	Cat. #	Cat. #
1/2	EDSC1184	EDSC1190	EDSC115
3/4	EDSC2184	EDSC2190	EDSC215
1	EDSC3184	EDSC3190	EDSC315

Normal Pos.	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify

Diagram		
Replacement Pushbuttons‡	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	Dead End Cat. #§	Cat. #§
1/2		EDS1155
3/4	EDS2192	EDS2155
1	EDS3192	EDS3155
Hub Size	Through Feed Cat. #§	Cat. #§
1/2	EDSC1192	EDSC1155
3/4	EDSC2192	EDSC2155
1	EDSC3192	EDSC3155

* **Class I, Group B:** Consider using EFS series pushbuttons, see page 433. All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1 1/2" of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals. In Canada, for Group B applications consult factory.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

§ Single external button operates both inner buttons simultaneously.

† Standard markings available are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

EDS Factory Sealed Pushbutton Stations

Front Operated, 600VAC Heavy Duty,
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



Factory Sealed
Control Devices
5C

EDSC225

Two Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified

Diagram			
---------	---	---	---

Replacement Pushbuttons‡	ED11	ED12	ED12**
-----------------------------	------	------	--------

Enclosure with Pushbuttons

Hub Size	Dead End Cat. #	Cat. #	Cat. #
3/4	EDS2284	EDS2290	EDS225
1	EDS3284	EDS3290	EDS325
Through Feed			
1/2	EDSC1284	EDSC1290	EDSC125
3/4	EDSC2284	EDSC2290	EDSC225
1	EDSC3284	EDSC3290	EDSC325

* **Class I, Group B:** Consider using EFS series pushbuttons, see page 433. All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1½" of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals. In Canada, for Group B applications consult factory.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

§ Single external button operates both inner buttons simultaneously.

† Standard markings available are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

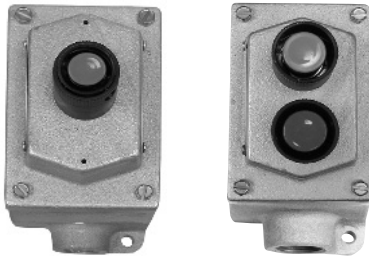
EFS Factory Sealed Pushbutton Stations

Front Operated, 600VAC Heavy Duty,
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

5C



EFS2184

EFSC2190

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified
Diagram			
Replacement Pushbuttons‡	ED11	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	Dead End Cat. #	Cat. #	Cat. #
1/2	EFS1184		EFS115
3/4	EFS2184	EFS2190	EFS215
1	EFS3184	EFS3190	EFS315
	Through Feed		
1/2	EFSC1184	EFSC1190	EFSC115
3/4	EFSC2184	EFSC2190	EFSC215
1	EFSC3184	EFSC3190	EFSC315

Normal Pos.	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify
Diagram		
Replacement Pushbuttons‡	ED12	ED12**

Enclosure with Pushbuttons

Hub Size	Dead End Cat. #§	Cat. #§
1/2		EFS1155
3/4	EFS2192	EFS2155
1	EFS3192	EFS3155
	Through Feed	
1/2	EFSC1192	EFSC1155
3/4	EFSC2192	EFSC2155
1	EFSC3192	EFSC3155

* **Class I, Group B:** All enclosures listed above are suitable for Class I, Group B, Div. 1 usage. Seals only have to be installed on 1 inch conduit within 5 ft. in Division 1.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

§ Single external button operates both inner buttons simultaneously.

† Standard markings available are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

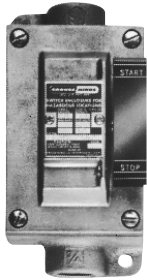
5C Factory Sealed
Control Devices

EDS Factory Sealed Push Button Stations

Side Rocker Handle, 600VAC
Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDSC2162

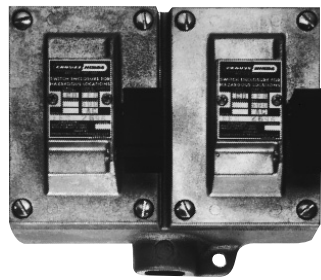
Single Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits**
Marking†	Specify	Specify	START-STOP unless otherwise specified

Diagram			
Replacement Push Buttons‡	ED11	ED12	ED12**

Enclosure with Push Buttons

Hub Size	Dead End Cat. #	Cat. #	Cat. #
1/2	EDS1596		EDS1162
3/4	EDS2596	EDS2194	EDS2162
1	EDS3596	EDS3194	EDS3162
Through Feed			
1/2	EDSC1596	EDSC1194	EDSC1162
3/4	EDSC2596	EDSC2194	EDSC2162
1	EDSC3596	EDSC3194	EDSC3162



EDS2696

Two Gang

Normal Pos.	1 Circuit Universal	2 Circuits Universal	2 Circuits
Marking†	Specify	Specify	START-STOP unless otherwise specified

Diagram			
Replacement Push Buttons‡	ED11	ED12	ED12**

Enclosure with Push Buttons

Hub Size	Dead End Cat. #	Cat. #	Cat. #
3/4	EDS2696	EDS2294	EDS2262
1	EDS3696	EDS3294	EDS3262
Through Feed			
1/2	EDSC1696	EDSC1294	EDSC1262
3/4	EDSC2696	EDSC2294	EDSC2262
1	EDSC3696	EDSC3294	EDSC3262

* **Class I, Group B:** All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1 1/2" of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals.

** Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

† Standard markings available, heat stamped in nylon rocker handle, are as follows:

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

‡ For replacement contact blocks, see page 400.

EFS Factory Sealed Pilot Lights

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7BCD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

5C

Pilot lights listed below are factory sealed and do not require external seals. Lamps ♦ are 6 watt, type S6, candelabra base for use on 110-125 volt circuits.

Enclosures with single pilot covers **only** can be equipped with a transformer for the lamp for higher voltages as shown.

Pilot light covers with 2 pilot lights cannot be provided with transformer, as the transformer occupies the space of one pilot light.

Transformer Voltages Above 125

Nominal Volts 50-60 hertz Transformer	Primary Voltage Range	Cat. No. Suffix
220/110	220-240	T2
440/110	440-480	T4
550/110	550-600	T5

Class I, Group B:

All enclosures listed above are suitable for Class I, Group B, Div. 1 usage. Seals only have to be installed on 1 inch conduit within 5 ft. in Division 1.

These products are suitable for Group B, Div. 2 as listed, without external seals.



5C
Factory Sealed
Control Devices

EFS Single Gang

Enclosure with Single Pilot Light ♦

Hub Size	Dead End Cat. #	Through Feed Cat. #
1/2	EFS11524-†	EFSC11524-†
3/4	EFS21524-†	EFSC21524-†
1	EFS31524-†	EFSC31524-†

Enclosure with Two Pilot Lights ♦

1/2	EFS11561-†	EFSC11561-†
3/4	EFS21561-†	EFSC21561-†
1	EFS31561-†	EFSC31561-†

† Add color symbol for each pilot light from table below.
Example: EFS1561 with red and green lights is EFS1561-J1-J3.

Color	Symbol	Color	Symbol	Color	Symbol
Red	J1	Amber	J6	Blue	J11
Green	J3	Clear	J10		

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after color symbol.
For 24 VDC operation, add suffix S300.

EDS Factory Sealed Combination Pushbutton and Pilot Light Stations

600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations
 NEMA 3,7B*CD,9EFG

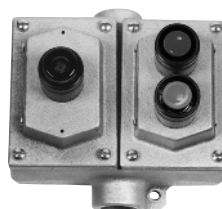
Pushbutton contacts and pilot light receptacles are sealed in separate chambers. External seals are not required. Lamps ♦ are 6 watt, type S6, candelabra base for use on 110-125 volt circuits.

Two gang units with single pilot light covers can be furnished with transformers. See page 435 for details and suffixes. Specify markings for each button. See table below listings.



Single Gang

No. Pushbuttons	1	1
No. Pilot Lights ♦	1	1
Diagram		
Hub Size		
1/2	Dead End Cat. # EDS11473-‡	Through Feed Cat. # EDSC11473-‡
3/4	EDS21473-‡	EDSC21473-‡
1	EDS31473-‡	EDSC31473-‡



Two Gang

No. Push-buttons	2	2	2	2
No. Pilot Lights ♦	1	1	2	2
Diagram				
Hub Size				
1/2	Dead End Cat. # EDS12471-‡	Through Feed Cat. # EDSC12471-‡	Dead End Cat. # EDS22868-‡	Through Feed Cat. # EDSC22868-‡
3/4	EDS22471-‡	EDSC22471-‡	EDS22868-‡	EDSC22868-‡
1	EDS32471-‡	EDSC32471-‡	EDS32868-‡	EDSC32868-‡

‡ Add color symbol for each pilot light from table on page 435. Example: EDS21473 with a red light is EDS21473-J1.

♦ LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after color symbol.

For 24 VDC operation on pilot lights add suffix S300.

Standard markings available are as follows:

START	LIGHT ON	DOWN	RUN	FORWARD	ON	AUTOMATIC	OUT
OFF	EMERGENCY	RAISE	TRIP	CLOSE IN	JOG	REVERSE	
RESET	OPEN	STOP	HAND	LOWER	TEST	UP	

* All enclosures listed above can be modified for Class I, Group B, Division 1 usage. Add suffix GB to the Cat. No. Example: EDS11473-J1-GB. Conduit seal(s) must be installed within 1 1/2" of each conduit opening. These products are suitable for Group B, Div. 2 as listed, without external conduit seals.

EDS Factory Sealed Selector Switches

Maintained Contact, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

5C

Furnished with pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below. Specify indicating plate markings. See table below listings.



EDS11271



EDS11273

Single Gang

Style	Position 1	Position 2	Position 3	Replacement contact blocks†	Enclosure With Switch		
					Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1			ED11	1/2	EDS11271	EDSC11271
	A2				3/4	EDS21271	EDSC21271
					1	EDS31271	EDSC31271
Two-Position, Four-Circuit	A1			ED12	1/2	EDS11272	EDSC11272
	A2				3/4	EDS21272	EDSC21272
	B1				1	EDS31272	EDSC31272
	B2						
Three-Position, Two-Circuit	A1			ED11	1/2	EDS11273	EDSC11273
	A2				3/4	EDS21273	EDSC21273
					1	EDS31273	EDSC31273
Three-Position, Four-Circuit	A1			ED12	1/2	EDS11274	EDSC11274
	A2				3/4	EDS21274	EDSC21274
	B1				1	EDS31274	EDSC31274
	B2						
	A1			ED12	1/2	EDS11275	EDSC11275
	A2				3/4	EDS21275	EDSC21275
	B1				1	EDS31275	EDSC31275
	B2						

Standard indicating plate markings available are as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN, OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE, LOWER
FORWARD, REVERSE	UP, DOWN	START, STOP
	ON, OFF	

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

* For Class I, Group B: Consider using EFS series selector switches, see page 420. All enclosures listed above can be modified for Class I, Group B, Div. 1 usage. Add suffix GB to the Cat. No. Seals must be installed within 1 1/2" of each conduit opening in Division 1. These products are suitable for Group B, Div. 2 as listed, without external seals. In Canada, for Group B applications consult factory.

† For replacement contact blocks, see page 400.

EFS Factory Sealed Selector Switches

Maintained Contact, 600VAC Heavy Duty, Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Furnished with pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below. Specify indicating plate markings. See table below listings.



EFS11271



EFS11273

Factory Sealed
Control Devices
5C

Single Gang

Style	Position 1	Position 2	Position 3	Replacement Contact Blocks†	Enclosure With Switch		
					Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1			ED11	1/2	EFS11271	EFSC11271
	A2				3/4	EFS21271	EFSC21271
					1	EFS31271	EFSC31271
Two-Position, Four-Circuit	A1			ED12	1/2	EFS11272	EFSC11272
	A2				3/4	EFS21272	EFSC21272
	B1				1	EFS31272	EFSC31272
	B2						
Three-Position, Two-Circuit	A1			ED11	1/2	EFS11273	EFSC11273
	A2				3/4	EFS21273	EFSC21273
					1	EFS31273	EFSC31273
Three-Position, Four-Circuit	A1			ED12	1/2	EFS11274	EFSC11274
	A2				3/4	EFS21274	EFSC21274
					1	EFS31274	EFSC31274
	B1			ED12	1/2	EFS11275	EFSC11275
	B2				3/4	EFS21275	EFSC21275
					1	EFS31275	EFSC31275
	A1				1/2	EFS11275	EFSC11275
	A2				3/4	EFS21275	EFSC21275
	B1				1	EFS31275	EFSC31275

Standard indicating plate markings available are as follows:

Two-Position

RUN, JOG	FAST, SLOW	IN, OUT
HAND, AUTOMATIC	OPEN, CLOSE	RAISE, LOWER
FORWARD, REVERSE	UP, DOWN	START, STOP
	ON, OFF	

Three-Position

RUN, OFF, JOG	1, OFF, 2
HAND, OFF, AUTOMATIC	OPEN, OFF, CLOSE
FORWARD, OFF, REVERSE	UP, OFF, DOWN
FAST, OFF, SLOW	

* **Class I, Group B:** All enclosures listed above are suitable for Class I, Group B, Div. 1 usage. Seals only have to be installed on 1 inch conduit within 5 ft. in Division 1.

† For replacement contact blocks see page 400.

EDS Factory Sealed General Use Snap Switches

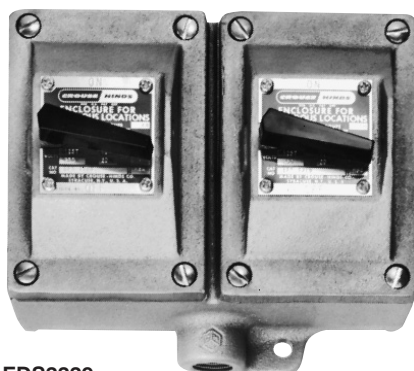
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations
 NEMA 3,7B*CD,9EFG

5C



EDS2129



EDS2229

General Use Snap Switch – Front Operated

Hub Size	Style†	Amperes		Single Gang		Two Gang‡	
		120VAC§	277VAC§	Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
3/4	1-pole	20	20	EDS2129	EDSC2129†	EDS2229	EDSC2229†
3/4	2-pole	20	20	EDS218	EDSC218†		EDSC228†
3/4	3-way	20	20	EDS2130	EDSC2130	EDS2230	EDSC2230
3/4	4-way	20	20	EDS2140	EDSC2140		EDSC2240
1	1-pole	20	20	EDS3129	EDSC3129†	EDS3229	EDSC3229†
1	2-pole	20	20	EDS318	EDSC318†	EDS328	EDSC328†
1	3-way	20	20	EDS3130	EDSC3130	EDS3230	EDSC3230
1	4-way	20	20	EDS3140	EDSC3140	EDS3240	EDSC3240

† ON-OFF standard marking for 1-pole and 2-pole units.

‡ Combinations of switches can be furnished.

§ AC rated switches are tested for resistive, inductive and tungsten filament loads up to the full current rating and for motor loads up to 80% of the ampere rating.

* **Class I, Group B:** All units on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No. Seals must be installed within 1½" of each conduit opening in Division 1. In Canada, for Group B applications consult factory.

5C Factory Sealed Control Devices

EDS Factory Sealed Manual Motor Starting Switches and Enclosures

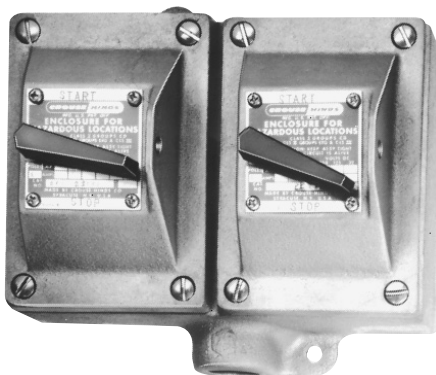
Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations



EDS2199



EDS2299

Factory Sealed
Control Devices
5C

With Allen-Bradley Bulletin 600 Switches §

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC	Allen-Bradley Switch Cat. #
1	1 hp		A-B BUL 600 T0X4
2	1 hp	¾ hp	A-B BUL 600 T0X5

Single Gang

Poles	Hub Size	Dead End Cat. #	Through Feed Cat. #
1	¾	EDS2199†	EDSC2199†
	1	EDS3199†	EDSC3199†
2	¾	EDS21100†	EDSC21100†
	1	EDS31100†	EDSC31100†

Two Gang

1	¾	EDS2299†	EDSC2299†
	1	EDS3299†	EDSC3299†
2	¾	EDS22100†	EDSC22100†
	1	EDS32100†	EDSC32100†

Heater Table (Allen Bradley)

Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse-Hinds Symbol Number
0.17	P1	2.40	P20
0.21	P2	2.58	P21
0.25	P3	2.92	P22
0.32	P4	3.09	P23
0.39	P5	3.32	P24
0.46	P6	3.77	P25
0.57	P7	4.16	P26
0.71	P8	4.51	P27
0.79	P9	4.93	P28
0.87	P10	5.43	P29
0.98	P11	6.03	P30
1.08	P12	6.83	P31
1.19	P13	7.72	P32
1.30	P14	8.24	P33
1.43	P15	8.90	P34
1.58	P16	9.60	P35
1.75	P17	10.80	P36
1.88	P18	12.00	P37
2.13	P19	13.50	P38
		15.20	P39

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

* **Class I, Group B:** All units on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No. Seals must be installed within 1½" of each conduit opening in Division 1. In Canada, for Group B applications consult factory.

§ See page 441 for enclosures with General Electric and Cutler-Hammer switches.

† Includes one interchangeable heater. Select from the heater table and use symbol number as second section of the Cat. No. Example: EDS2199-P5. Insert symbol 0 (zero) to omit heater.

EDS Factory Sealed Manual Motor Starting Switches and Enclosures

Dimensions Pg. 430

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7B*CD,9EFG

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

5C

5C
Factory Sealed
Control Devices

With General Electric Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115 Volts DC	230 Volts DC	G.E. Switch Cat. #
1	1 hp	1 hp	¼ hp	CR101-Y
2	1 hp	1 hp	1 hp	CR101-H

Single Gang

Poles	Hub Size	Dead End Cat. #	Through Feed Cat. #
1	¾	EDS21093†	EDSC21093†
	1	EDS31093†	EDSC31093†
2	¾	EDS21094†	EDSC21094†
	1	EDS31094†	EDSC31094†

Two Gang

1	¾	EDS22093†	EDSC22093†
	1	EDS32093†	EDSC32093†
2	¾	EDS22094†	EDSC22094†
	1	EDS32094†	EDSC32094†

With Cutler-Hammer Switches

Maximum HP Ratings

Poles	120-240 Volts AC	32 Volts DC	120 Volts DC	240 Volts DC	Cutler- Hammer Switch Cat. #
1	1 hp	¼ hp		¼ hp	MST01
2	1 hp	¼ hp	1 hp	1 hp	MST02

Single Gang

Poles	Hub Size	Dead End Cat. #	Through Feed Cat. #
1	¾	EDS21101†	EDSC21101†
	1	EDS31101†	EDSC31101†
2	¾	EDS21102†	EDSC21102†
	1	EDS31102†	EDSC31102†

Two Gang

1	¾	EDS22101†	EDSC22101†
	1	EDS32101†	EDSC32101†
2	¾	EDS22102†	EDSC22102†
	1	EDS32102†	EDSC32102†

These heaters are for motors rated 40°C continuously. For motors rated 50°C or 55°C, multiply full load motor current by 0.9 and use this value to select heaters. Symbol 0 (zero) must be used to indicate heater omitted.

Heater Table (General Electric)

Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number
		3.01	G22
.48	G2	3.27	G23
.53	G3	3.56	G24
.58	G4	3.88	G25
.65	G5	4.22	G26
.71	G6	4.60	G27
.78	G7	5.00	G28
.86	G8	5.43	G29
.95	G9	5.90	G30
1.04	G10	6.41	G31
1.14	G11	6.98	G32
1.25	G12	7.60	G33
1.37	G13	8.25	G34
1.49	G14	8.95	G35
1.63	G15	9.75	G36
1.78	G16	10.60	G37
1.95	G17	11.40	G38
2.13	G18	12.50	G39
2.32	G19	13.60	G40
2.53	G20	14.80	G41
2.76	G21	16.00	G42

Heater Table (Cutler-Hammer)

Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number
.43	W1	2.95	W21
.48	W2	3.27	W22
.53	W3	3.59	W23
.58	W4	3.99	W24
.64	W5	4.39	W25
.71	W6	4.79	W26
.78	W7	5.26	W27
.87	W8	5.83	W28
.95	W9	6.39	W29
1.03	W10	7.03	W30
1.15	W11	7.74	W31
1.27	W12	8.46	W32
1.35	W13	9.35	W33
1.51	W14	10.30	W34
1.67	W15	11.35	W35
1.83	W16	12.47	W36
1.99	W17	13.67	W37
2.23	W18	15.12	W38
2.47	W19	16.00	W39
2.71	W20		

† Includes one interchangeable heater. Select heater from the table below individual listings and use symbol number as second section of the Cat. No. Example: EDS21101-W5. Insert symbol 0 (zero) to omit heater.

* **Class I, Group B:** All units on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No. Seals must be installed within 1½" of each conduit opening in Division 1. In Canada, for Group B applications consult factory.

D2X Series FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-tight
Wet Locations

Application:

FLEXITITE attachable pendant pushbutton stations are used:

- for safe multi-function motor circuit control of:

Hoists
Cranes
Machine Tools
Electromagnets

- in hazardous areas such as Class I, Division 2, Groups B, C and D (classified) areas or Class II, Division 2, Groups F and G, as defined by the National Electrical Code
- where wash downs are necessary – in damp, wet, dirty or corrosive locations
- for control applications requiring 2 to 8 functions

Features:

- Safety cushioned – neoprene encapsulations protects internal switches and connectors from impact damage and provides extra protection for personnel.
- Stress relief for your cable is built-in. A separate cable grip is not needed.
- Uses Cooper Crouse-Hinds ESWP factory sealed contacts suitable for use in Class I, Division 2, Groups B, C and D
- Switches are rated for 10 amps 600 VAC (NEMA A600).
- Indicator plates meet OSHA requirements for clear identification of functions. A full set of plates is included with each station.
- Jam resistant operator buttons are raised flexible diaphragms – an integral part of the molded one-piece cover.
- Compact design
- Safety yellow finish.

Standard Materials:

- Body and Cover – steel reinforced neoprene
- Strain relief and reinforcement plates – stainless steel
- Exterior hardware – stainless steel

Standard Finishes:

- Neoprene – safety yellow
- Stainless steel – natural

Certifications and Compliances:

- NEMA: 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
- UL Standard: 508
- CSA Standard C22.2 No.14



8-Button Control Station

D2X FLEXITITE™ Attachable Pendant Pushbutton Stations for Class I, Div. 2 Areas

Factory Sealed

NEMA 3,4X,5,6,7BCD(Div. 2),9FG(Div. 2),12
Watertight
Raintight
Dust-Tight
Wet Locations

5C

5C
Factory Sealed
Control Devices

Ordering Information

Control Stations

Description	Cable Dia.	Catalog #
2-Button	.31 – .75	D2X8635-210
4-Button	.50 – .75	D2X8635-410
6-Button	.59 – .81	D2X8635-610
8-Button	.59 – .92	D2X8635-810

Replacement Indicator Plates (A full set is included with each control station)

2-Button

Part No.	Description	Part No.	Description
315116-1	Down/West	315116-7	Rev/Left
315116-2	Start/North	315116-8	Up/East
315116-3	Stop/South		
315116-4	Off/In		
315116-5	On/Out		
315116-6	Fwd/Right		

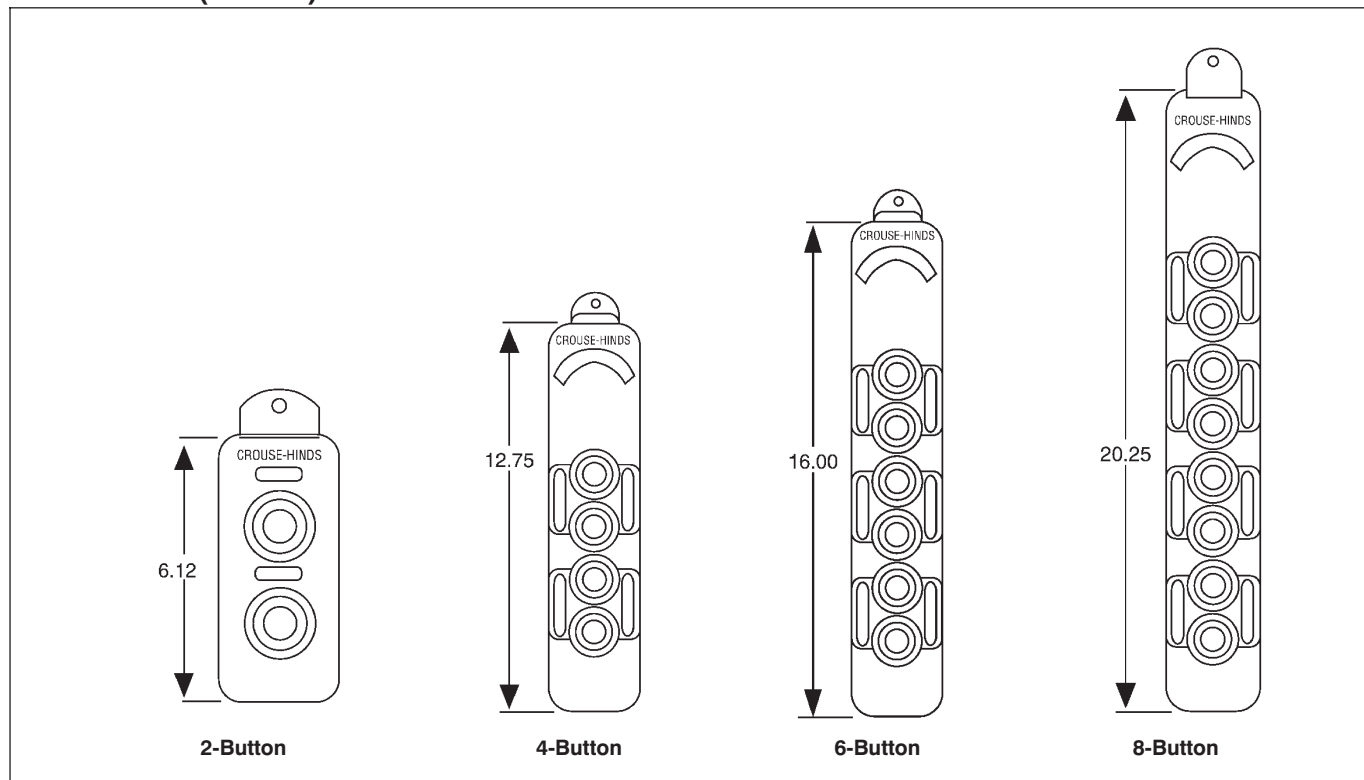
4, 6 and 8-Button

Part No.	Description	Part No.	Description
314850-1	Bridge	314850-6	Fwd/Rev
314850-2	Trolley		North/South
314850-3	Hoist	314850-9	On/Off
	In/Out		Start/Stop
314850-4	Up/Down		
	Right/Left		
314850-5	East/West		

Replacement Switch

Part No.
ESWP126

Dimensions (inches)



[illegible]

Description	Page No.
Circuit Breakers	
Motor Circuit Protectors	
Application	460
Catalog Listings	460
Pressure Connectors (Solderless)	452
Thermal/Magnetic Trip	
Application/Selection	450, 451
Catalog Listings	
100A Frame	453
100/150A Frame	454, 455
225/250A Frame	456, 457
400/600A Frame	458
800/1000A Frame	459
Disconnect Switches	461
Motor Line Starters	
General Information	446
Magnetic	
Reversing and Two-Speed	
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Control Circuit Diagrams	464, 465
Single-Speed, Non-Reversing	
Catalog Listings	447
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Manual	449

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3	449	11	457
4	451	12	458
5	451	12A	458
6	452	13	459
7	453	14	460
8	454	15	461

**Selection of Size
(Horsepower Ratings)**

Horsepower Ratings: Listings of EBM, EPC, and similar enclosures complete with motor starters indicate the maximum horsepower rating of the starter. In the case of EBM, EPC combination motor starter and circuit breaker enclosures, the maximum horsepower shown is also dependent on the ampere rating of the circuit breaker.

Selection of Heaters: All magnetic motor starter enclosures ordered complete with starter are furnished with heaters.

All manual motor starter enclosures ordered complete with starter are furnished with heaters. One heater is furnished with two-pole starters and three heaters with three-pole starters.

Based on motor nameplate data, (required with each order), Cooper Crouse-Hinds will select heaters or relay coils satisfactory for average conditions of 55°C motors with ambient temperature at 75°F. If complete motor data is not available at the time the starter is ordered, heaters will be supplied for any ampere rating specified, or, upon request, complete heater tables will be supplied for any manufacturers' starter listed for use in a Cooper Crouse-Hinds enclosure.

Unusual Conditions: For frequent starting, for high inertia (slow starting loads), for extremely high or low ambient temperature, or for prevailing ambient temperature at the motor differing greatly from that at the starter, the heater size required will differ from the standard. Consult Cooper Crouse-Hinds or the starter manufacturer for recommendations, giving full particulars.

**Special Features Available –
Magnetic Starters Only**

All magnetic starters can be provided with separate ac control circuit and additional electrical interlocks, N.O. or N.C. The number of interlocks is limited by the design of the starter and information will be furnished on request. Most starters can be supplied with automatic reset overload relays.

Standard magnetic starters are equipped with three overload relays. Starters can be provided with control circuit transformers and time delay low voltage release. Availability of these features depends on the enclosure design, and details will be found in the listing pages.

Wiring Diagrams: Typical control circuit wiring diagrams for single-speed, reversing and two-speed magnetic starters are shown on pages 462 to 465.

**Thermal Overload Relays For
Motor Running Overload
Protection****Application:**

Excessive motor running currents, caused by overloading of the motor, will damage the motor if allowed to continue beyond the point where the maximum permissible motor operating temperature is reached. Thermal overload relays (supplied as part of the magnetic motor starter) will detect such excessive current, and act automatically to disconnect the motor from its supply lines when the danger point is reached. When properly chosen, the sensing device of the relay (heater element) will closely match the thermal characteristics of the motor, and will allow the maximum motor starting current to flow during the normal starting period and still afford protection against motor overheating. A series of heater elements, rated in Full Load Motor Current, are interchangeable on the overload relays, and selection is based on motor operating data as given on the motor nameplate.

Selection of Heater Elements

Overload relay heater elements are selected on the basis of (A) motor type, and (B) difference in ambient (surrounding air) temperature, if any, between motor and starter locations.

A. Motor Type

Motors may be divided into two basic types according to the allowable internal (winding) temperature rise under full load; 40°C rise motors, which are usually of open frame construction, and 50°C or 55°C motors of enclosed frame construction such as splash-proof, drip-proof, and totally enclosed (including explosion-proof). The temperature rise classification will be found on the motor nameplate, and is specified in the motor manufacturer's catalog data.

40°C rise motors are designed to permit their use continuously at an overload of 15 percent more than rated load. 50°C rise or 55°C rise motors do not have this extra capacity. Therefore, a heater selected for a 40°C rise motor should not be applied to 50°C or 55°C motors. Heaters should be selected from heater tables for 50°C or 55°C motors as supplied by Cooper Crouse-Hinds or as recommended by starter manufacturer.

B. Ambient Temperature Effect

The overload relay is basically a temperature-operated device, and a properly selected heater will provide the relay with a temperature rise curve the same as that of the motor so that the relay closely approaches its tripping point as the motor reaches its maximum allowable operating temperature. Any overload current which will overheat the motor will also cause the relay to reach its tripping point and disconnect the motor from the line. The temperature rise curves of both the overload relay and the motor are based on a standard ambient temperature of 40°C (104°F).

An increase or decrease in ambient temperature will affect both the overload relay and the motor equally, if both are in the same location, since the final temperature of each is the sum of the operating temperature rise and the ambient temperature. Under this condition, no compensation for ambient is necessary, since the tripping point of the relay will fall or rise as the thermal capacity of the motor falls or rises.

Any difference in ambient between the overload relay location and the motor location will cause a difference between the tripping point of the overload relay and the maximum permissible motor operating temperature. This can result in premature tripping of the relay if the relay ambient is higher than that of the motor, or overheating of the motor under overload if the relay ambient is lower than that of the motor so that the relay does not trip when required.

To compensate for any such difference, and when specific recommendations of the starter manufacturers cannot be obtained, the following rule may be used when making heater selections:

Ambient Temperature at Overload Relay Higher –

For each 14°C difference, use one size larger heater.

Ambient Temperature at Overload Relay Lower –

For each 14°C difference, use one size smaller heater.

Single-Speed, Non-Reversing 3-Phase 60 hertz

Table 1

Starters require three heaters, which should be selected in accordance with the manufacturer's recommendations. Most explosion-proof motors are rated at 55°C rise, and heaters should be selected accordingly. See page 446 for starter and heater selection data.

Allen-Bradley

Bulletin 509

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	509-AOD	509-AOA	509-AOB	509-AOC
1	509-BOD	509-BOA	509-BOB	509-BOC
2	509-COD	509-COA	509-COB	509-COC
3	509-DOD	509-DOA	509-DOB	509-DOC
4	509-EOD	509-EOA	509-EOB	509-EOC
5	509-FOD	509-FOA	509-FOB	509-FOC

Cutler-Hammer

Series A10

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	A10BNOA	A10BNOB	A10BNOC	A10BNOD
1	A10CNOA	A10CNOB	A10CNOC	A10CNOD
2	A10DNOAB	A10DNOBB	A10DNOCB	A10DNODB
3	A10ENOAB	A10ENOB	A10ENOCB	A10ENODB
4	A10FNOAB	A10FNOBB	A10FNOCB	A10FNODB
5	A10GNOA	A10GNOB	A10GNOC	A10GNOD

Specify voltage in addition to horsepower, phase, frequency and full load current of motor.

General Electric

CR306

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	CR306B002AAA	CR306B003AAA	CR306B004AAA	CR306B005AAA
1	CR306C002AAA	CR306C003AAA	CR306C004AAA	CR306C005AAA
2	CR306D002AAA	CR306D003AAA	CR306D004AAA	CR306D005AAA
3	CR306E002AAA	CR306E003AAA	CR306E004AAA	CR306E005AAA
4	CR306F002AAA	CR306F003AAA	CR306F004AAA	CR306F005AAA
5	CR306G002AAA	CR306G003AAA	CR306G004AAA	CR306G005AAA

Square D

Specify class and type of starter. Give horsepower, voltage, phase, frequency and full load current of motor.

(EPC, Enclosures)

Class 8536

Size	With Melting Alloy Type Overload Relays Cat. #	With Bi-Metallic Type Overload Relays† Cat. #
0	8536-SBO-2	8536-SBO-2 Form†
1	8536-SCO-3	8536-SCO-3 Form†
2	8536-SDO-1	8536-SDO-1 Form†
3	8536-SEO-1	8536-SEO-1 Form B5
4	8536-SFO-1	8536-SFO-1 Form B5
5	8536-SGO-1	8536-SGO-1 Form B5

Cutler-Hammer

Class A200 – Sizes 0-5

Size	120V‡ Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	A200M0CAC	A200M0CW	A200M0CX	A200M0CE
1	A200M1CAC	A200M1CW	A200M1CX	A200M1CE
2	A200M2CAC	A200M2CW	A200M2CX	A200M2CE
3	A200M3CAC	A200M3CW	A200M3CX	A200M3CE
4	A200M4CAC	A200M4CW	A200M4CX	A200M4CE
5	A200M5CAC	A200M5CW	A200M5CX	A200M5CE

Cutler-Hammer Products – Advantage® Series

Class W200 – Sizes 1-5

Size	120V, 240V, 480V, 600V Cat. #
1	W200M1CFC
2	W200M2CFC
3	W200M3CFC
4	W200M4CFC
5	W200M5CFC

(coil voltage 120V)

† A Class 9065 Type TUP overload relay will be supplied as standard on all Type S starters (sizes 0-2) specifying bimetallic overload protection. The Type TUP contains three built-in bimetals. **No additional thermal units are required.** To order, select appropriate Form letter (Forms B20-B42) based on motor full load current.

‡ Sizes 0-5 inclusive 120V Cutler-Hammer starters are wired with a separate control circuit. Starters with control circuit wired to line terminals available.

Table 2

Reversing starters require three heaters; two-speed starters require six heaters. These should be selected in accordance with the manufacturer's recommendations. Most explosion-proof motors are rated at 55°C rise and heaters should be selected accordingly. See page 446 for starter and heater selection data.

Reversing Starters

Specify class and type or bulletin number, and size of starter. Give horsepower, voltage, phase, frequency and full load current of motor.

Allen-Bradley

Bulletin 505V

With Melting Alloy Type Overload Relays

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	505V-AOD	505V-AOA	505V-AOB	505V-AOC
1	505V-BOD	505V-BOA	505V-BOB	505V-BOC
2	505V-COD	505V-COA	505V-COB	505V-COC
3	505V-DOD	505V-DOA	505V-DOB	505V-DOC

Square D

Class 8736

With Melting Alloy Type Overload Relays

Size	Cat. #
0	8736-SBO-10
1	8736-SCO-7
2	8736-SDO-1
3	8736-SEO-1

With Bi-Metallic Type Overload Relays†

Size	Cat. #
0	8736-SBO-10 Form†
1	8736-SCO-7 Form†
2	8736-SDO-1 Form†
3	8736-SEO-1 Form B5

Cutler-Hammer

A250 Series

Size	120V Cat. # ♦	240V Cat. #	480V Cat. #	600V Cat. #
0	A250M0CAC	A250M0CW	A250M0CX	A250M0CE
1	A250M1CAC	A250M1CW	A250M1CX	A250M1CE
2	A250M2CAC	A250M2CW	A250M2CX	A250M2CE
3	A250M3CAC	A250M3CW	A250M3CX	A250M3CE
4	A250M4CAC	A250M4CW	A250M4CX	A250M4CE

♦ 120 volt starters are wired with separate control circuit.

♦ ♦ Starters for constant horsepower applications or open delta connections can be supplied. Information will be furnished on request accompanied by complete details.

† A Class 9065 Type TUP overload relay will be supplied as standard on all Type S starters (sizes 0-2) specifying bimetallic overload protection. The Type TUP contains three built-in bimetallics. **No additional thermal units are required.** To order, select appropriate Form letter (Forms B20-B42) based on motor full-load current.

Two-Speed Starters

Specify class and type or bulletin number, and size of starter. Give horsepower, voltage, phase, frequency and full load current of motor at each motor speed.

The following are only for Two-Winding, Constant or Variable Torque, Star Connected Motors ♦ ♦

Allen-Bradley

Bulletin 520V

With Melting Alloy Type Overload Relays

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	520VE-AOD	520VE-AOA	520VE-AOB	520VE-AOC
1	520VE-BOD	520VE-BOA	520VE-BOB	520VE-BOC
2	520VE-COD	520VE-COA	520VE-COB	520VE-COC
3	520VE-DOD	520VE-DOA	520VE-DOB	520VE-DOC

Square D

Class 8810

With Melting Alloy Type Overload Relays

Size	Cat. #
1	8810-SCO-14
2	8810-SDO-14
3	8810-SEO-14

With Bi-Metallic Type Overload Relays†

Size	Cat. #
1	8810-SCO-14 Form†
2	8810-SDO-14 Form†
3	8810-SEO-14 Form B5

The following are only for Single Winding, Consequent Pole, Constant or Variable Torque Motors ♦ ♦

Allen-Bradley

Bulletin 520V

With Melting Alloy Type Overload Relays

Size	120V Cat. #	240V Cat. #	480V Cat. #	600V Cat. #
0	520VF-AOD	520VF-AOA	520VF-AOB	520VF-AOC
1	520VF-BOD	520VF-BOA	520VF-BOB	520VF-BOC
2	520VF-COD	520VF-COA	520VF-COB	520VF-COC
3	520VF-DOD	520VF-DOA	520VF-DOB	520VF-DOC

Square D

Class 8810

With Melting Alloy Type Overload Relays

Size	Cat. #
1	8810-SCO-12
2	8810-SDO-12
3	8810-SEO-12

With Bi-Metallic Type Overload Relays†

Size	Cat. #
1	8810-SCO-12 Form†
2	8810-SDO-12 Form†
3	8810-SEO-12 Form B5

2-Pole, 1-Phase 3-Pole, 3-Phase

Table 3

Two-pole starters require one heater; three-pole starters require three heaters. These should be selected in accordance with the manufacturer's recommendations. Most explosion-proof motors are rated at 55°C, and heaters should be selected accordingly. See page 446 for starter and heater selection data.

Allen-Bradley

Bulletin 609 (Toggle Lever)

Size	Poles	Cat. #
M-0	2 (1 Ph)	609T-AOX
	3 (3 Ph)	609T-AOW
M-1	2 (1 Ph)	609T-BOX
	3 (3 Ph)	609T-BOW
M-1P	2 (1 Ph)	609T-XOX

Allen-Bradley

Bulletin 609U (Toggle Lever)

With Undervoltage Protection

Size	Poles	Coil Volts @ 60 Hertz†	Cat. #
M-0	2 (1 Ph)	120	609TU-AOXD
	2 (1 Ph)	240	609TU-AOXA
	3 (3 Ph)	240	609TU-AOA
	3 (3 Ph)	480	609TU-AOB
	3 (3 Ph)	600	609TU-AOC
M-1	2 (1 Ph)	120	609TU-BOXD
	2 (1 Ph)	240	609TU-BOXA
	3 (3 Ph)	240	609TU-BOA
	3 (3 Ph)	480	609TU-BOB
	3 (3 Ph)	600	609TU-BOC
M-1P	2 (1 Ph)	120	609TU-XOXD
	2 (1 Ph)	240	609TU-XOXA

Cutler-Hammer

A300 (3 Ph) (Pushbutton)

B300 (1 Ph)

Size	Poles	Cat. #
M-0	2 (1 Ph)	9115-H166
	3 (3 Ph)	9115-H167
M-1	2 (1 Ph)	9115-H173
	3 (3 Ph)	9115-H174
M-1P	2 (1 Ph)	9115-H180

General Electric

CR1062 (Toggle Lever)

Size	Poles	Cat. #	With Undervoltage Protection	
			Coil Volts @ 60 Hertz†	Cat. #
M-0	2 (1 Ph)	CR1062-R13A	115	CR1062-RL13A02
	2 (1 Ph)		230	CR1062-RL13A03
	3 (3 Ph)	CR1062-R9B	200/208	CR1062-RL9B23
	3 (3 Ph)		230	CR1062-RL9B03
	3 (3 Ph)		460	CR1062-RL9B04
M-1	3 (3 Ph)		575	CR1062-RL9B05
	2 (1 Ph)	CR1062-S13A	115	CR1062-SL13A02
	2 (1 Ph)		230	CR1062-SL13A03
	3 (3 Ph)	CR1062-S9B	200/208	CR1062-SL9B23
	3 (3 Ph)		230	CR1062-SL9B03
M-1P	3 (3 Ph)		460	CR1062-SL9B04
	3 (3 Ph)		575	CR1062-SL9B05
	2 (1 Ph)	CR1062-S22A	115	CR1062-SL22A02
	2 (1 Ph)		230	CR1062-SL22A03

Square D

Class 2510 (Toggle Lever)

Size	Poles	Cat. #*	With Undervoltage Protection
			Cat. #*
M-0	2 (1 Ph)	TBO-1	TBO-21
	3 (3 Ph)	TBO-2	TBO-22
M-1	2 (1 Ph)	TCO-1	TCO-21
	3 (3 Ph)	TCO-3	TCO-23
M-1P	2 (1 Ph)	TCO-2	TCO-22

Cutler-Hammer

B100 Series (Toggle Lever)

Size	Poles	Cat. #
M-0	2 (1 Ph)	B100M0BX
	3 (3 Ph)	B100M0CX
M-1	2 (1 Ph)	B100M1BX
	3 (3 Ph)	B100M1CX
M-1P	2 (1 Ph)	B100MDBX

* Specify class and type, motor line voltage, coil voltage, and frequency.

† Coil is not dual rated for 50 Hertz. For 50 Hertz, consult Cooper Crouse-Hinds.

**Selection of
Circuit Breakers****Lighting, Heating, Appliance and Similar**

Circuits: Circuit breakers should have ampere ratings not exceeding ampere capacities of conductors protected. See National Electrical Code®, Section 240-3.

Individual Motor: An individual motor branch circuit having a starter including overcurrent features is considered protected if the circuit breaker does not exceed the values shown in table 430-152 of the NEC. If these values are insufficient to permit starting, the ampere ratings of the circuit breakers may be increased up to a maximum of 400 percent of the full load amperes of the motors. See NEC Section 430-52.

Motor Feeder: A motor feeder is a circuit supplying a group of motors. Its conductors should be protected by a circuit breaker of ampere setting not greater than the setting of the largest breaker for any motor in the group, plus the sum of the full load currents of the other motors in the group. See NEC, Section 430-62.

Application Data: Page 451 contains information which will be helpful in selecting proper circuit breakers for usual applications.

Ambient Temperature: High or low ambient temperatures affect ratings of circuit breakers. For further information see note for Breaker Selection Table 4 on page 451.

Load Conditions: Ampere ratings of circuit breakers for motors shown in Table 4, page 451 are for average conditions. High inertia (slow starting) loads of frequent starting may require larger ampere rated breakers. For further information see note for Breaker Selection Table 4 on page 451.

Special Features Available:

Many circuit breakers can be provided with special features such as shunt trip, undervoltage release, auxiliary switches, bell-alarm switches, fungus-proofing, or ambient compensation. These features are not available on all sizes and makes of breakers, however. Complete information will be furnished on request.

**Application of Molded Case Thermal Magnetic
Circuit Breakers as Motor Branch Circuit Protection****Use:**

When used in conjunction with motor starters (Cooper Crouse-Hinds EBMC and EPC combination motor controllers) as motor branch circuit protection, the circuit breaker is primarily intended for the protection of conductors, motor control components, and motors against short circuits and ground fault conditions.

On motor overloads, the motor starter overload relays will open the circuit before the circuit breaker will trip, provided that the breaker has been properly selected. Currents higher than motor locked rotor value will be interrupted by the breaker before the overload relays can act, and protect the circuit from these heavy fault currents. The breaker must not trip on normal starting.

Circuit breakers provided in combination motor controllers listed complete with starter and circuit breaker have been selected to meet these requirements for the maximum horsepower ratings shown.

Application

Circuit breakers are supplied in a variety of frame sizes (types), each of which has specific voltage and short circuit interrupting capacity limitations. Each frame size is available in a number of current carrying capacity ratings, generally known as "trip ratings".

Proper selection of the circuit breaker for any combination motor controller requires the following factors to be considered:

1. Circuit Voltage and Frequency: Rated breaker voltage must not be lower than the circuit voltage. Higher voltage rated breakers may be satisfactorily used.

For frequency ratings from dc up to 120 Hertz ac standard breaker ratings are applied. Above 120 Hertz ac derating factors must be applied. Consult Cooper Crouse-Hinds for recommendations.

2. Interrupting Capacity: Rated breaker interrupting capacity must not be less than the available short circuit current (including motor contributions) at the breaker location. Standard procedures for determining the available short circuit current should be used.

If calculated short circuit current exceeds the interrupting capacity of the breakers listed in cataloged motor control combinations, consult Cooper Crouse-Hinds, giving full data.

3. Trip Rating: The trip rating of the breaker must be at least 115 percent of the motor full load current, but not more than the maximum rating permitted (as a percentage

of full load current) by National Electrical Code Table 430-152. Within these limits, the lowest rating should be selected which will permit motor acceleration through the normal starting period. Unusual ambient temperature at the circuit breaker location may require that the breaker trip rating be derated.

Breaker trip rating selection Tables 4 and 5, page 451, have been established on the basis of the above rating requirements under assumed conditions of:

- (a) Full load motor currents (FLMC) for given horsepower
- (b) 600 percent motor inrush (locked rotor current as a percentage of FLMC)
- (c) Accelerating time not more than ten seconds
- (d) Frequency of starts not more than three per hour

These tables will cover the selection requirements of the majority of installations using Cooper Crouse-Hinds motor control equipment. For conditions varying widely from the above, consult Cooper Crouse-Hinds for recommendations.

**Use of Breaker
Selector Tables (Page 6C-5)**

A. Determine frame size breaker required by referring necessary voltage rating and interrupting capacity to breaker listings (pages 453 through 459)

B. Determine breaker trip rating required as follows:

1. If FLMC is not known:

(a) Refer to Table 5, Terminal Amperes of Motors at Full Load, (page 451), and opposite known horsepower rating find average FLMC under appropriate voltage and motor type columns

(b) Refer this FLMC to Table 4, Selection of Circuit Breakers for Motor Circuits (page 451), and find breaker rating under appropriate motor type column

2. If FLMC is known:

(a) Refer known FLMC to Table 4, Selection of Circuit Breakers for Motor Circuits (page 451), and find breaker rating under appropriate motor type column.

C. Refer breaker rating to breaker listings determined in "A" above, and obtain breaker Cat. No.

It should be noted that EBMC and EPC combination motor controllers are listed for use with particular frame size breakers as shown in columns headed "Circuit Breakers." Reference should be made to combination listings to insure the breaker selected can be accommodated in conjunction with the desired motor starter size. The combinations shown will cover all normal motor control branch circuit requirements.

Table 4/Selection of Circuit Breakers for Motor Circuits

Values Given Based on One Motor per Circuit and Wire Size in Accordance with Code‡

Important – Consult footnotes before making breaker selection.

Full Load Rating of Motor in Amperes (See Table 5)	Squirrel Cage† or Synchronous (Full Voltage, Reactor or Resistor Starting), Single-Phase of All Types	Squirrel Cage† or Synchronous (Auto Trans-former Starting), High Reactance	AC Wound Rotor & DC
1 – 7	15	15	15
7.1 – 9	20	20	15
9.1 – 10	30	20	20
10.1 – 12	30	30	20
12.1 – 15	30	30	30
15.1 – 16	40	40	30
16.1 – 20	40	40	30
20.1 – 24	50	50	40
24.1 – 30	50	50	40
30.1 – 32	70	50	50
32.1 – 46	70	70	70
46.1 – 60	90	90	90
60.1 – 66	100	100	100
66.1 – 82	125	125	125
82.1 – 100	150	150	150
100.1 – 115	175	175	175
115.1 – 135	200	200	200
140 – 158	300	300	300
160 – 175	350	350	350
180 – 200	400	400	400
210 – 250	500	500	500

† High reactance squirrel cage motors are those designed to limit the starting current by means of deep-slotted secondaries or double-wound secondaries, and are generally started on full voltage.

‡ These values are for motors running at usual speeds with normal torques. Motors built for slow speeds, or where high inertia (slow starting) loads exist, may require more current; therefore, use larger ampere-rated circuit breakers. If the rating of the circuit breaker shown is insufficient to permit starting, it can be increased up to a maximum of 400 percent of full load current. See Section 430-52, NEC.

◆ High Ambient Temperatures: High ambients (surrounding temperatures) affect ratings of circuit breakers. For ambients above 75°F, derate breaker 1 percent for each 5°F. If rating obtained by this method is below requirement as shown, select next higher rated breaker. This rule applies over a range of 40°F.

It should be borne in mind that temperatures within metal housings, if exposed to direct rays from the sun, may rise considerably above the ambient temperature. Enclosures with thermal circuit breakers and/or starters, if so exposed, should not be painted with a dark colored heat-absorbing paint.

◆ ◆ For running protection of motors of 1 hp or less, see Sec. 430-32, NEC.

☆ For full load currents of 208 and 200 volt motors:

Three-phase – increase corresponding 220 volt FLC by 10 and 15 percent respectively.

Single-phase – increase corresponding 230 volt FLC by 10 and 15 percent respectively.

☆☆ For 90 and 80 percent power factor, the above figures should be multiplied by 1.1 and 1.25 respectively.

Table 5/Terminal Amperes of Motors at Full Load

(From National Electrical Code, Article 430)

To Obtain Breaker Select Current Ratings Below and see Table 4

Single-Phase AC Motors			Direct Current Motors		
Amperes HP	115V	230V☆	Amperes HP	120V	240V
1/6 ◆ ◆	4.4	2.2	1/4 ◆ ◆	3.1	1.6
1/4 ◆ ◆	5.8	2.9	1/2 ◆ ◆	5.4	2.7
1/2 ◆ ◆	9.8	4.9	3/4 ◆ ◆	7.6	3.8
3/4 ◆ ◆	13.8	6.9	1 ◆ ◆	9.5	4.7
1 ◆ ◆	16	8	1 1/2	13.2	6.6
1 1/2	20	10	2	17	8.5
2	24	12	3	25	12.2
3	34	17	5	40	20
5	56	28	7 1/2	58	29
7 1/2	80	40	10	76	38
10	100	50	15		55
			20		72
			25		89

Three-Phase AC Motors					Synchronous Type		
Induction Type Squirrel Cage and Wound Rotor Amperes					Unity Power Factor Amperes☆☆		
HP	115V	230V☆	460V	575V	230V☆	460V	575V
1/2 ◆ ◆	4	2	1	.8			
3/4 ◆ ◆	5.6	2.8	1.4	1.1			
1 ◆ ◆	7.2	3.6	1.8	1.4			
1 1/2	10.4	5.2	2.6	2.1			
2	13.6	6.8	3.4	2.7			
3		9.6	4.8	3.9			
5		15.2	7.6	6.1			
7 1/2		22	11	9			
10		28	14	11			
15		42	21	17			
20		54	27	22			
25		68	34	27	53	26	21
30		80	40	32	63	32	26
40		104	52	41	83	41	33
50		130	65	52	104	52	42
60		154	77	62	123	61	49
75		192	96	77	155	78	62
100		248	124	99	202	101	81
125		312	156	125	253	126	101
150		360	180	144	302	151	121
200		480	240	192	400	201	161

Pressure Connectors (Solderless)

For Front Connected Circuit Breakers

All front connected circuit breakers are furnished with suitable pressure connectors. The table below lists the wire sizes accommodated by each make and frame size of circuit breaker. EPC enclosures for, or assembled with, 800 ampere frame size

circuit breakers are furnished with special double pressure connectors and bolts for attaching them to the breakers. Each half of the special connector takes conductors from 4/0 to 500 MCM, allowing the use of single or parallel conductors in these sizes.

**Table 6/Wire Sizes Accommodated by Pressure Connectors
Front Connected Circuit Breakers**

Cutler-Hammer			Square D			General Electric		
Frame	Max. Amps	Wire† Sizes	Frame	Max. Amps	Wire† Sizes	Frame	Max. Amps	Wire† Sizes
100 Amp EB 240VAC	20 100	#14 – #10 #14 – #1/0	100 Amp FAL 240VAC	30 100	#14 – #4* #14 – #1/0**	100 Amp TEB 240VAC	60 100	#14 – #3 #6 – #2/0
100 Amp EHD 480VAC	20 100	#14 – #10 #14 – #1/0	100 Amp FAL 480VAC	30 100	#14 – #4* #14 – #1/0**	150 Amp TED 480VAC	60 110 150	#14 – #3 #6 – #2/0 #2 – #3/0
150 Amp FDB/FD 600VAC	100 150	#14 – #1/0 #4 – #4/0	100 Amp FAL 600VAC	30 100	#14 – #4 #14 – #1/0	150 Amp TED 600VAC	60 110 150	#14 – #3 #6 – #2/0 #2 – #3/0
250 Amp JDB	250	#4 – 350 MCM	250 Amp KAL	250	#4 – 350 MCM	225 Amp TFJ	225	#4 – 300 MCM
250 Amp JD	250	#4 – 350 MCM				225 Amp TFK	225	#4 – 300 MCM
400 Amp KDB	225 350 400	#6 – 350 MCM§ 250 – 500 MCM #3/0 – 250 MCM†	400 Amp LAL	400	One #1 – 600 MCM or Two #1 – 250 MCM	400 Amp TJK/TJJ	400	One #6 – 600 MCM or Two #2/0 – 250 MCM
600 Amp KD	600	250 – 500 MCM†				600 Amp TJK	400 600	One #6 – 600 MCM or Two #6 – 250 MCM Two 250 – 350 MCM
800 Amp ND	600 800	Two #1 – 500 MCM Three #3/0 – 400 MCM	1000 Amp MAL	400 800	One #1 – 600 MCM or Two #1 – 250 MCM Three #3/0 – 500 MCM	800 Amp TKMA	400 600 800	Two #1/0 – 250 MCM or One #4 – 600 MCM #2/0 – 500 MCM† Three #3/0 – 500 MCM

† Double connectors for parallel conductors.

‡ All wire sizes shown are for copper wire type. For aluminum wire type information, consult Cooper Crouse-Hinds.

§ KDB range is #3 – 350 MCM.

* 2 and 3-pole #14 – #10.

** 2 and 3-pole #14 – #3.

Table 7 – Front connection terminals for all enclosures; 10,000 ampere interrupting rating, * ♦ 120/240 VAC-NEMA; non-interchangeable trip units

General Electric Type TEB

Amps	1-Pole Cat. #	2-Pole Cat. #	3-Pole Cat. #
15	TEB111015WL	TEB122015WL	TEB132015WL
20	TEB111020WL	TEB122020WL	TEB132020WL
25	TEB111025WL	TEB122025WL	TEB132025WL
30	TEB111030WL	TEB122030WL	TEB132030WL
35	TEB111035WL	TEB122035WL	TEB132035WL
40	TEB111040WL	TEB122040WL	TEB132040WL
45	TEB111045WL	TEB122045WL	TEB132045WL
50	TEB111050WL	TEB122050WL	TEB132050WL
60	TEB111060WL	TEB122060WL	TEB132060WL
70	TEB111070WL	TEB122070WL	TEB132070WL
80	TEB111080WL	TEB122080WL	TEB132080WL
90	TEB111090WL	TEB122090WL	TEB132090WL
100	TEB111100WL	TEB122100WL	TEB132100WL
100 MCS	TEB111Y100	TEB122Y100	TEB132Y100

Square D FAL Frame

Amps	1-Pole Cat. #	2-Pole Cat. #	3-Pole Cat. #
15	FAL12015	FAL22015	FAL32015
20	FAL12020	FAL22020	FAL32020
25	FAL12025	FAL22025	FAL32025
30	FAL12030	FAL22030	FAL32030
35	FAL12035	FAL22035	FAL32035
40	FAL12040	FAL22040	FAL32040
45	FAL12045	FAL22045	FAL32045
50	FAL12050	FAL22050	FAL32050
60	FAL12060	FAL22060	FAL32060
70	FAL12070	FAL22070	FAL32070
80	FAL12080	FAL22080	FAL32080
90	FAL12090	FAL22090	FAL32090
100	FAL12100	FAL22100	FAL32100

See pages 450 and 451 for explanation of breakers and their use.

* Ratings do not apply to molded case switches.

♦ For additional information on interrupting ratings, refer to specific circuit breaker manufacturers' data.

** GE has AC & DC rating; Square D is AC only.

Table 8 – Front connection terminals for all enclosures; non-interchangeable trip units; see chart at right.

Circuit Breaker Frame Type	Interrupting Ratings – * ♦ RMS Symmetrical Amperes	
	240 VAC	480 VAC
TED	18,000	14,000
FAL	25,000	18,000
EHD	18,000	14,000

General Electric TED Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	TED124015WL	TED134015WL
20	TED124020WL	TED134020WL
25	TED124025WL	TED134025WL
30	TED124030WL	TED134030WL
35	TED124035WL	TED134035WL
40	TED124040WL	TED134040WL
45	TED124045WL	TED134045WL
50	TED124050WL	TED134050WL
60	TED124060WL	TED134060WL
70	TED124070WL	TED134070WL
80	TED124080WL	TED134080WL
90	TED124090WL	TED134090WL
100	TED124100WL	TED134100WL
110		TED134110WL
125		TED134125WL
150		TED134150WL
100 MCS	TED124Y100WL	TED134YT100
150 MCS	TED124Y150WL	TED134YT150

Cutler-Hammer EHD Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	EHD2015L	EHD3015L
20	EHD2020L	EHD3020L
25	EHD2025L	EHD3025L
30	EHD2030L	EHD3030L
35	EHD2035L	EHD3035L
40	EHD2040L	EHD3040L
45	EHD2045L	EHD3045L
50	EHD2050L	EHD3050L
60	EHD2060L	EHD3060L
70	EHD2070L	EHD3070L
80	EHD2080L	EHD3080L
90	EHD2090L	EHD3090L
100	EHD2100L	EHD3100L
100 MCS	EHD2100KL	EHD3100KL

Square D FAL Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FAL24015	FAL34015
20	FAL24020	FAL34020
25	FAL24025	FAL34025
30	FAL24030	FAL34030
35	FAL24035	FAL34035
40	FAL24040	FAL34040
45	FAL24045	FAL34045
50	FAL24050	FAL34050
60	FAL24060	FAL34060
70	FAL24070	FAL34070
80	FAL24080	FAL34080
90	FAL24090	FAL34090
100	FAL24100	FAL34100

See pages 450 and 451 for explanation of breakers and their use.

† Square D: 480 VAC/250 VDC.

♦ Ratings do not apply to molded case switches.

* For additional information on interrupting ratings, refer to specific circuit breaker manufacturers' data.

Table 9 – Front connection terminals for all enclosures; non-interchangeable trip units; see chart at right.

Circuit Breaker Frame Type	Interrupting Rating RMS Symmetrical Amperes* ♦		
	240 VAC	480 VAC	600 VAC
TED	18,000	14,000	14,000
FAL	25,000	18,000	14,000
FDB	18,000	14,000	14,000
FD	65,000	25,000	18,000

General Electric TED Frame

Amps	3-Pole Cat. #
15	TED136015WL
20	TED136020WL
25	TED136025WL
30	TED136030WL
35	TED136035WL
40	TED136040WL
45	TED136045WL
50	TED136050WL
60	TED136060WL
70	TED136070WL
80	TED136080WL
90	TED136090WL
100	TED136100WL
100 MCS	TED136YT100
110	TED136110WL
125	TED136125WL
150	TED136150WL
150 MCS	TED136YT150

Cutler-Hammer FD Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FD2015L	FD3015L
20	FD2020L	FD3020L
25	FD2025L	FD3025L
30	FD2030L	FD3030L
35	FD2035L	FD3035L
40	FD2040L	FD3040L
45	FD2045L	FD3045L
50	FD2050L	FD3050L
60	FD2060L	FD3060L
70	FD2070L	FD3070L
80	FD2080L	FD3080L
90	FD2090L	FD3090L
100	FD2100L	FD3100L
100 MCS	FD2100KL	FD3100KL
110	FD2110L	FD3110L
125	FD2125L	FD3125L
150	FD2150L	FD3150L
150 MCS	FD2150KL	FD3150KL

Square D Type FAL

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FAL26015	FAL36015
20	FAL26020	FAL36020
25	FAL26025	FAL36025
30	FAL26030	FAL36030
35	FAL26035	FAL36035
40	FAL26040	FAL36040
45	FAL26045	FAL36045
50	FAL26050	FAL36050
60	FAL26060	FAL36060
70	FAL26070	FAL36070
80	FAL26080	FAL36080
90	FAL26090	FAL36090
100	FAL26100	FAL36100
100 MCS	FHL26000M	FHL36000M

Cutler-Hammer FDB Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
15	FDB2015L	FDB3015L
20	FDB2020L	FDB3020L
25	FDB2025L	FDB3025L
30	FDB2030L	FDB3030L
35	FDB2035L	FDB3035L
40	FDB2040L	FDB3040L
45	FDB2045L	FDB3045L
50	FDB2050L	FDB3050L
60	FDB2060L	FDB3060L
70	FDB2070L	FDB3070L
80	FDB2080L	FDB3080L
90	FDB2090L	FDB3090L
100	FDB2100L	FDB3100L
110	FDB2110L	FDB3110L
125	FDB2125L	FDB3125L
150	FDB2150L	FDB3150L

See pages 450 and 451 for explanation of breakers and their use.

† Square D: 600 VAC/250 VDC

♦ Ratings do not apply to molded case switches.

* For additional information on interrupting ratings, refer to specific circuit breaker manufacturers' data.

Table 10 – Front connection terminals for all enclosures; non-interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Rating RMS Symmetrical Amperes* ♦		
	240 VAC	480 VAC	600 VAC
TFJ	25,000	22,000	18,000
KAL	42,000	25,000	22,000
JB	25,000	22,000	18,000
JDB	65,000	25,000	18,000

General Electric Type TFJ

Amps	2-Pole Cat. #	3-Pole Cat. #
70	TFJ224070WL	TFJ236070WL
80	TFJ224080WL	TFJ236080WL
90	TFJ224090WL	TFJ236090WL
100	TFJ224100WL	TFJ236100WL
110	TFJ224110WL	TFJ236110WL
125	TFJ224125WL	TFJ236125WL
150	TFJ224150WL	TFJ236150WL
175	TFJ224175WL	TFJ236175WL
200	TFJ224200WL	TFJ236200WL
225	TFJ224225WL	TFJ236225WL
225 MCS	TFJ226Y225	TFJ236Y225
250		TFJ236250WL

Cutler-Hammer JDB Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
70	JDB2070	JDB3070
90	JDB2090	JDB3090
100	JDB2100	JDB3100
125	JDB2125	JDB3125
150	JDB2150	JDB3150
175	JDB2175	JDB3175
200	JDB2200	JDB3200
225	JDB2225	JDB3225
250	JDB2250	JDB3250

Square D Type KAL

Amps	2-Pole Cat. #	3-Pole Cat. #
70	KAL26070	KAL36070
80	KAL26080	KAL36080
90	KAL26090	KAL36090
100	KAL26100	KAL36100
110	KAL26110	KAL36110
125	KAL26125	KAL36125
150	KAL26150	KAL36150
175	KAL26175	KAL36175
200	KAL26200	KAL36200
225	KAL26225	KAL36225
250	KAL26250	KAL36250
250 MCS	KHL26000M	KHL36000M

See pages 450 and 451 for explanation of breakers and their use.

† Square D: 600 VAC/250 VDC

Cutler-Hammer: 600 VAC/250 VDC

* Ratings do not apply to molded case switches.

♦ For additional information on interrupting ratings, refer to specific circuit breaker manufacturers data.

** GE: 480 VAC 2 Pole TFJ

Table 11 – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes**		
	240 VAC	480 VAC	600 VAC
TFK	25,000	22,000	18,000
KB	25,000	22,000	14,000
JD	65,000	25,000	18,000

General Electric Type TFK

Amps	2-Pole Cat. #	3-Pole Cat. #
70	TFK224070WL	TFK236070WL
80	TFK224080WL	TFK236080WL
90	TFK224090WL	TFK236090WL
100	TFK224100WL	TFK236100WL
110	TFK224110WL	TFK236110WL
125	TFK224125WL	TFK236125WL
150	TFK224150WL	TFK236150WL
175	TFK224175WL	TFK236175WL
200	TFK224200WL	TFK236200WL
225	TFK224225WL	TFK236225WL
225 MCS	TAC226Y225	TFK236Y225

Cutler-Hammer JD Frame

Amps	2-Pole Cat. #	3-Pole Cat. #
70	JD2070	JD3070
90	JD2090	JD3090
100	JD2100	JD3100
125	JD2125	JD3125
150	JD2150	JD3150
175	JD2175	JD3175
200	JD2200	JD3200
225	JD2225	JD3225
250	JD2250	JD3250
250 MCS	JD2250K	JD3250K

See pages 450 and 451 for explanation of breakers and their use.

* GE: 480 VAC/250 VDC

** Ratings do not apply to molded case switches.

400 and 600 A Frame, Thermal
Magnetic

400 A

Table 12 – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes† ♦		
	240 VAC	480 VAC	600 VAC
TJJ/TJK	42,000	30,000	22,000
LAL	42,000	30,000	22,000
LB	42,000	30,000	22,000
KD/KDB	65,000	35,000	25,000

General Electric Type TJK

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	TJK426225WL	TJK436225WL
250	TJK426250WL	TJK436250WL
300	TJK426300WL	TJK436300WL
350	TJK426350WL	TJK436350WL
400	TJK426400WL	TJK436400WL
400 MCS	TJK426Y400	TJK436Y400

Cutler-Hammer KD Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	KD2225	KD3225
250	KD2250	KD3250
300	KD2300	KD3300
350	KD2350	KD3350
400	KD2400	KD3400
400 MCS	KD2400K	KD3400K

Non-Interchangeable Trip Units

Cutler-Hammer KDB Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	KDB2225	KDB3225
250	KDB2250	KDB3250
300	KDB2300	KDB3300
350	KDB2350	KDB3350
400	KDB2400	KDB3400

Square D Type LAL

Amps*	2-Pole Cat. #	3-Pole Cat. #
250	LAL26250	LAL36250
300	LAL26300	LAL36300
350	LAL26350	LAL36350
400	LAL26400	LAL36400
400 MCS	LHL26000M	LHL36000M

Cutler-Hammer LD Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	LD2225	LD3225
250	LD2250	LD3250
300	LD2300	LD3300
350	LD2350	LD3350
400	LD2400	LD3400
400 MCS	LD2400N	LD3400N

General Electric Type TJJ

Amps*	2-Pole Cat. #	3-Pole Cat. #
225	TJJ426225WL	TJJ436225WL
250	TJJ426250WL	TJJ436250WL
300	TJJ426300WL	TJJ436300WL
350	TJJ426350WL	TJJ436350WL
400	TJJ426400WL	TJJ436400WL
400 MCS	TJJ426Y400	TJJ436Y400

600 A

Table 12A – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes† ♦		
	240 VAC	480 VAC	600 VAC
TJK	42,000	30,000	22,000
LD	65,000	35,000	25,000

General Electric Type TJK

Amps*	2-Pole Cat. #	3-Pole Cat. #
450	TJK626450WL	TJK636450WL
500	TJK626500WL	TJK636500WL
600	TJK626600WL	TJK636600WL
600 MCS	TJK626Y600	TJK636Y600

Cutler-Hammer LD Frame

Amps*	2-Pole Cat. #	3-Pole Cat. #
500	LD2500	LD3500
600	LD2600	LD3600
600 MCS	LD2600N	LD3600N

See pages 450 and 451 for explanation of breakers and their use.

♦ For additional information on interrupting ratings, refer to circuit breaker manufacturer's data.

* Lower ampere ratings available, consult Cooper Crouse-Hinds.

† Ratings do not apply to molded case switches.

‡ Cutler-Hammer LD frames: 600 VAC; G.E. TJJ: 600 VAC.

Circuit Breakers

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800/1000 A Frame, Thermal Magnetic
600 VAC/250 VDC 2-Pole, 3-Pole†

Table 13 – Front connection terminals for all enclosures; interchangeable trip units. See chart at right.

Circuit Breaker Frame Type	Interrupting Ratings RMS Symmetrical Amperes† ♦		
	240 VAC	480 VAC	600 VAC
TKMA	42,000	30,000	22,000
MAL	42,000	30,000	22,000
ND	42,000	30,000	22,000

General Electric Type TKMA

Amps	2-Pole Cat. #	3-Pole Cat. #
300	TKMA826300WL	TKMA836300WL
350	TKMA826350WL	TKMA836350WL
400	TKMA826400WL	TKMA836400WL
500	TKMA826500WL	TKMA836500WL
600	TKMA826600WL	TKMA836600WL
700	TKMA826700WL	TKMA836700WL
800	TKMA826800WL	TKMA836800WL
800 MCS	TKMA826Y800	TKMA836Y800

Square D Type MAL (1,000 Amp Frame)

Amps*	2-Pole Cat. #	3-Pole Cat. #
450	MAL26450	MAL36450
500	MAL26500	MAL36500
600	MAL26600	MAL36600
600 MCS	MAL260006M	MAL360006M
700	MAL26700	MAL36700
800	MAL26800	MAL36800
800 MCS	MAL26008M	MAL36008M

Cutler-Hammer ND Frame, Rating Plugs and Terminals

Amps	Frame 2-Pole #	3-Pole #	Fixed Rating Plug Cat. #	Terminals ♦ ♦ Cat. #
400	ND2800FM	ND3800FM	8MC400	TA700MA1
500	ND2800FM	ND3800FM	8MC500	TA700MA1
600	ND2800FM	ND3800FM	8MC600	TA700MA1
700	ND2800FM	ND3800FM	8MC700	TA800MA2
800	ND2800FM	ND3800FM	8MC800	TA800MA2

See pages 450 and 451 for explanation of breakers and their use.

† Ratings do not apply to molded case switches.

♦ For additional information on interrupting ratings, refer to circuit breaker manufacturer's data.

* Lower ampere ratings available. Consult Cooper Crouse-Hinds.

♦ ♦ Two required per pole.

‡ Cutler-Hammer: 600 VAC MC frame.

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Technical Data

Circuit Breakers Motor Circuit Protectors

3 to 250 Amp
600 VAC Max., 3 Pole

Application:

The MCP (motor circuit protector) is designed for application to individual motor circuits in combination with a magnetic motor starter. MCP's operate on an instantaneous magnetic trip principle. A current sensing coil reacts immediately to any overcurrent above a pre-selected level. The magnetic trip setting may be adjusted to the level required by a particular motor's operating characteristic. MCP's offer custom tailored protection for a particular motor.

As such, MCP's provide the fastest tripping possible in low-level faults while offering circuit breaker short circuit protection.

The three magnetic trip assemblies are closely calibrated sensing relays. Any excess current on any one of the three poles acts to trip the unit immediately. When the unit trips, all three poles immediately open, preventing single phasing.

The magnetic trip setting is adjusted by a single knob on the front of the device. This knob has position settings for different trip levels and is designed to comply with the National Electric Code® by providing a locking pin to limit the maximum trip setting to 1300% of the motor full load current. Refer to manufacturer's motor circuit protector data for proper MCP trip setting for intended application.

Table 14 – Motor Circuit Protectors

Cutler-Hammer F Frame

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #	Current Limiter Suffix†
3	9-30	0	HMCP003A0	ELC3003R
7	21-70	0	HMCP007C0	ELC3007R
15	45-150	0	HMCP015E0	ELC3015R
30	90-300	1	HMCP030H1	ELC3030R
50	150-500	2	HMCP050K2	ELC3050R
70	210-700	2	HMCP070M2	ELC3100R
100	300-1000	3	HMCP100R3	ELC3100R
150	450-1500	4	HMCP150T4	ELC3150R
150	750-2500	4	HMCP150U4	ELC3150R

Interrupting Ratings – MCP only

240VAC – 100,000 Amps RMS Symmetrical
480VAC – 65,000 Amps RMS Symmetrical
600VAC – 25,000 Amps RMS Symmetrical

MCP with Current Limiter

Up to 600VAC – 200,000 Amps RMS Symmetrical

Square D FAL/KAL

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #
3	8-28	0	FAL3600311M
7	18-70	0	FAL3600712M
15	50-180	0	FAL3601513M
30	50-180	1	FAL3603013M
30	100-350	1	FAL3603015M
50	75-260	2	FAL3605014M
50	150-580	2	FAL3605016M
100	150-580	3	FAL3610016M
100	300-1100	3	FAL3610018M
150	750-1500	4	FAL3615026M
250	400-800	4	KAL3625021M
250	500-1000	4	KAL3625022M
250	625-1250	4	KAL3625025M
250	750-1500	4	KAL3625026M
250	875-1750	5	KAL3625029M
250	1000-2000	5	KAL3625030M
250	1125-2250	5	KAL3625031M
250	1250-2500	5	KAL3625032M

Interrupting Ratings – MCP only

Type FAL – 240VAC – 25,000 Amps RMS Symmetrical
480VAC – 18,000 Amps RMS Symmetrical
600VAC – 14,000 Amps RMS Symmetrical

Type KAL – 240VAC – 42,000 Amps RMS Symmetrical
480VAC – 25,000 Amps RMS Symmetrical
600VAC – 22,000 Amps RMS Symmetrical

* G.E. Type TBC with Current Limiter

Cutler-Hammer J Frame

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #
250	350-700	5	HMCP250A5
250	450-900	5	HMCP250C5
250	500-1000	5	HMCP250D5
250	625-1250	5	HMCP250F5
250	750-1500	5	HMCP250G5
250	875-1750	5	HMCP250J5
250	1000-2000	5	HMCP250K5
250	1125-2250	5	HMCP250L5
250	1250-2500	5	HMCP250W5

Interrupting Ratings – MCP only

240VAC – 100,000 Amps RMS Symmetrical
480VAC – 65,000 Amps RMS Symmetrical
600VAC – 25,000 Amps RMS Symmetrical

General Electric Type TFC/TBC

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #*
225	600-1400	4	TFC36225
225	1000-2250	4	TFC36225A
225	550-1670	4	TBC43225F14F

Interrupting Ratings – MCP only

Type TFC – 240VAC – 25,000 Amps RMS Symmetrical
480VAC – 22,000 Amps RMS Symmetrical
600VAC – 18,000 Amps RMS Symmetrical

Type TBC – Up to 600VAC – 100,000 Amps RMS Symmetrical (with Current Limiter)

General Electric Type TEC

Continuous Amp Rating	Trip Range Amps	Use With Starter Size	MCP Cat. #§	Current Limiter Suffix†
3	8-38	0	TEC36003	TECL36003
7	18-90	0	TEC36007	TECL36007
15	42-198	0	TEC36015	TECL36015
30	90-390	1	TEC36030	TECL36030
50	180-660	2	TEC36050	TECL36050
100	300-1300	3	TEC36100	TECL36100
150	600-2700	4	TEC36150	TECL36150

Interrupting Ratings – MCP only:

Up to 600 VAC – 10,000 Amps RMS Symmetrical

MCP with current limiter:

Up to 600 VAC – 100,000 Amps RMS Symmetrical

§ Type TEC magnetic break only.

† Add the suffix to the basic MCP Cat. No. when the additional current limiter is desired.

Table 15

Cutler-Hammer File C361

				Non-Fusible	Fusible				Fuse Kit
Switch Rating Amps	Fusible			Cat. #	Switch Rating Amps	Clip Rating Amps	Basic Switch Cat. #	NEC Fuse Kit Cat. #	Cat. #
	Clip Rating	Volts	Cat. #			Volts			
30	30	250	C361-SC21	C361-NC	30	30	THMC31	THMC3121	THMC3100
	30	600	C361-SC61			60	THMC31	THMC3161	
	60					60	THMC31	THMC3222	
60	30	600	C361-SD22	C361-ND	60	60	THMC31	THMC3262	THMC3200
	60	250	C361-SD22			60	THMC32	THMC3222	
	60	600	C361-SD62			60	THMC32	THMC3262	
100	100	250/600	C361-SE263	C361-NE	100	100	THMC32	THMC3363	THMC3300
						100	THMC32	THMC3363	
						100	THMC33	THMC3363	
Square D Class 9422				Non-Fusible	200	100	THMC33	THMC3363	THMC3400
						200	THMC33	THMC3364	
						200	THMC33	THMC3364	
						200	THMC34	THMC3464	
Switch Rating Amps	Fusible			Cat. # (Type)	Cat. # (Type)	200	THMC34	THMC3464	THMC3400
	Clip Rating Amps	Volts	Cat. #			600			
30	30	250	TCF30	TCN30	30	30			
	30	600	TCF33			60			
	60	250	TCF33			60			
60	30	600	TDF60	TDN60	60	60			
	60	250	TDF60			60			
	60	600	TDF63			60			
100	100	250/600	TEF10	TEN10	100	100			

Square D Class 9422

Switch Rating Amps	Fusible			Non-Fusible
	Clip Rating Amps	Volts	Cat. # (Type)	Cat. # (Type)
30	30	250	TCF30	TCN30
	30	600	TCF33	
	60	250	TCF33	
60	30	600	TDF60	TDN60
	60	250	TDF60	
	60	600	TDF63	
100	100	250/600	TEF10	TEN10

NOTE: Specify Class 9422 and Type when ordering.

Cutler-Hammer Type DS

Switch Rating Amps	Fusible*				Non-Fusible	
	Clip Rating Amps	Volts	Cat. #*	Style #	Cat. #*	Style #
30	30	250	DS121R	1230C28G04	DS16U	1230C28G01
	30	600	DS161R	1230C28G06		
	60	250	DS122	1230C28G05		
	60	600	DS162	1230C28G07		
60	60	250	DS222R	1230C28G08	DS26U	1230C28G02
	60	600	DS262R	1230C28G09		
100	100	250/600	DS263	1230C28G10	DS36U	1230C28G03
	100	250/600	DS363R	1230C28G11		
	200	250/600	DS364	1230C28G12		
200	200	250/600	DS464R		DS46U	

NOTE: Specify Cat. No. and Style No. when ordering.

† Order basic switch plus fuse kit for fusible or basic switch plus no-fuse kit for non-fusible

‡ Accommodates Class J fuses only

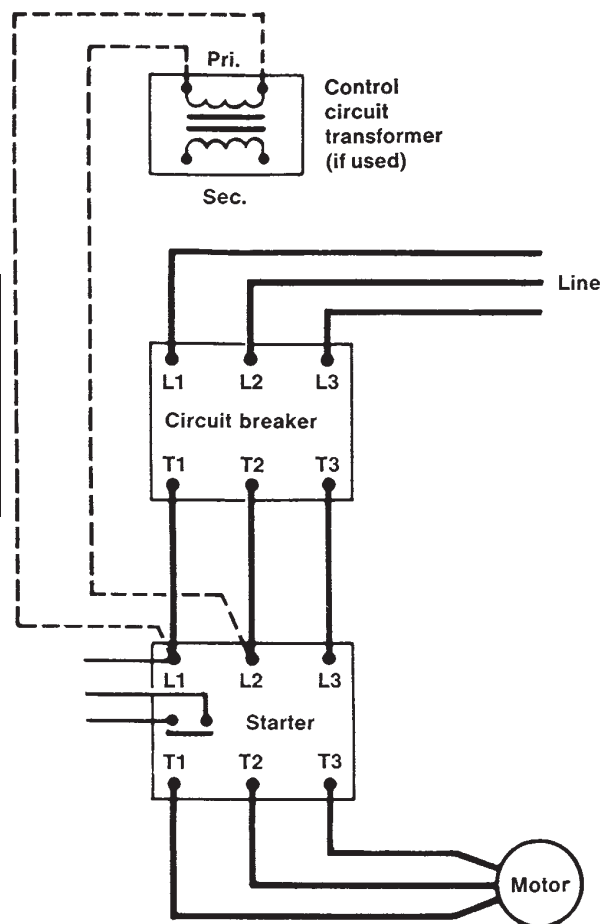
* Base mounting hardware to be ordered with switch:

30, 60, 100 Amp. fusible or non-fusible – Style #624B375G17

200 Amp. fusible – Style #624B375G08

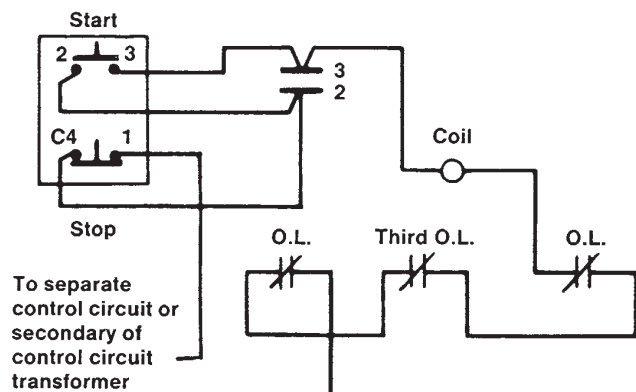
200 Amp. non-fusible – Style #624B375G07

Power wiring*



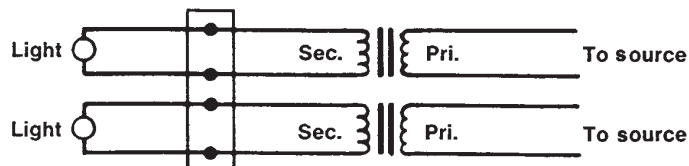
NOTE: For starter only, omit wiring from circuit breaker to starter and wire line direct to L1, L2, and L3 of starter

Connections for separate control circuit or control circuit transformer*



NOTE: If starter is wired with a jumper between L2 and overload relay contact, this jumper must be removed

Pilot lights with transformers



Terminal block

NOTE: Extra interlocks on starters for control of pilot lights are optional. Information on request

* Overcurrent protection of internal primary and secondary control circuit conductors and transformers must be provided in accordance with National Electrical Code® (ANSI/NFPA70-1993) and any other applicable standards.

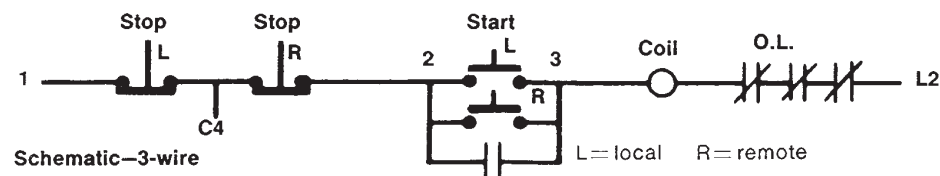
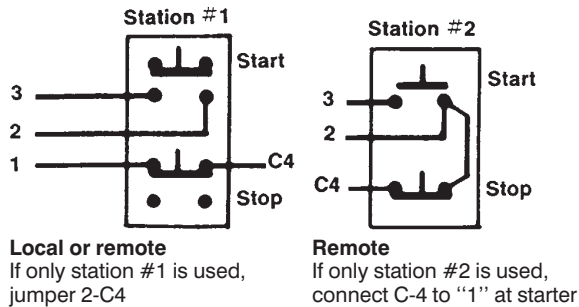
Control Circuit Diagrams

Single-Speed Non-Reversing Starters

6C

6C Technical Data

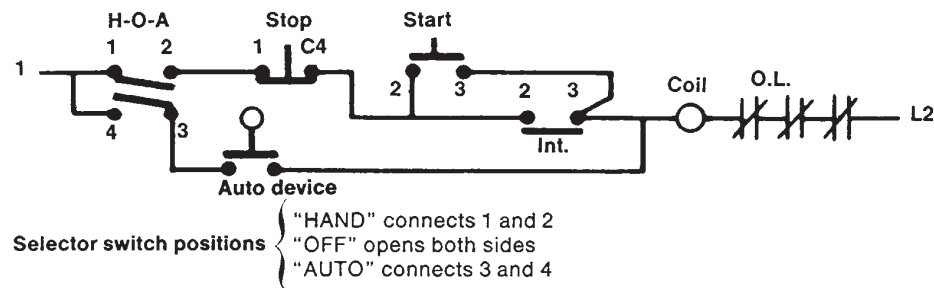
Control station connections



2-wire control – maintained contact



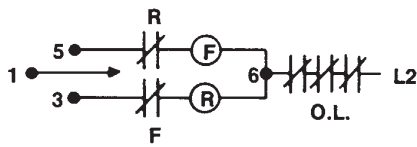
HAND-OFF-AUTO selector switch with START-STOP station



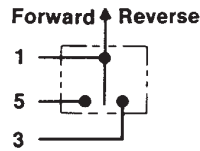
6C Control Circuit Diagrams

Reversing Starters

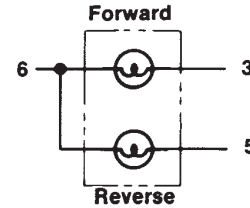
Schematic 2-wire



Connections for 2-wire control

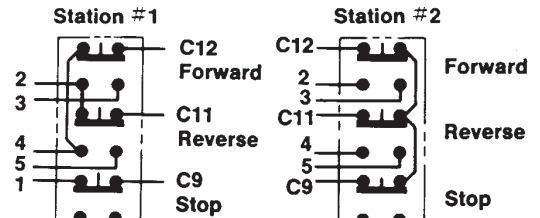
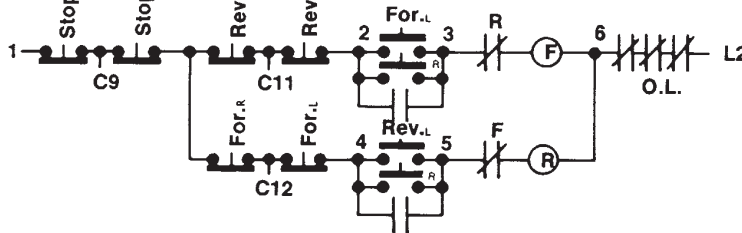


Pilot lamp connections



Schematic 3-wire/Case 1

Using two 3-button control stations, one local built-in & one remote or two remote. May change direction without using stop button.

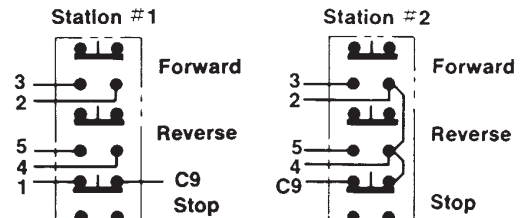
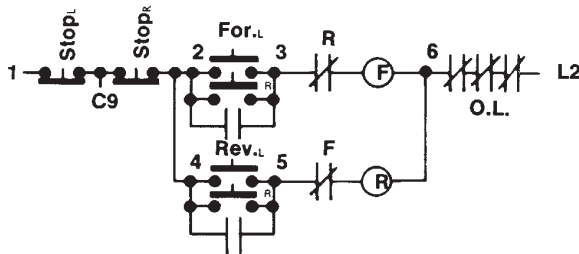


Local or remote
If only station #1 is used jumper C9-C11-C12

Remote
If only station #2 is used jumper C11-2, C12-4 & conn. C9-“1” at starter

Schematic 3-wire/Case 2

Using two 3-button control stations, one local built-in & one remote or two remote. Must use stop button to change direction.

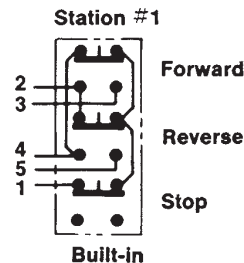
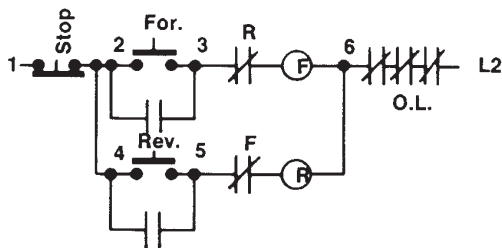


Local or remote
If only station #1 is used jumper C9-2-4

Remote
If only station #2 is used conn. C9-“1” at starter

Schematic 3-wire/Case 3

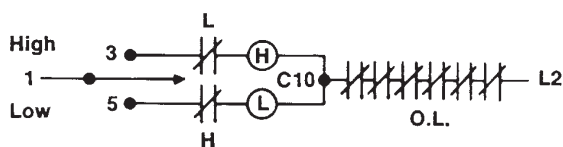
Using one built-in 3-button control station. May change direction without using stop button.



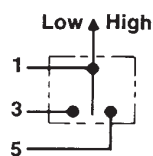
NOTE: Sub-letters on schematics indicate — “L” for local & “R” for remote stations

Two-Speed Starters

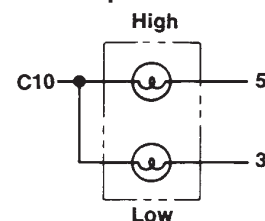
Schematic 2-wire



Connections for 2-wire control

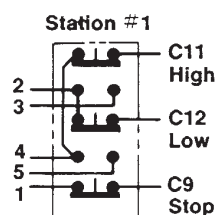
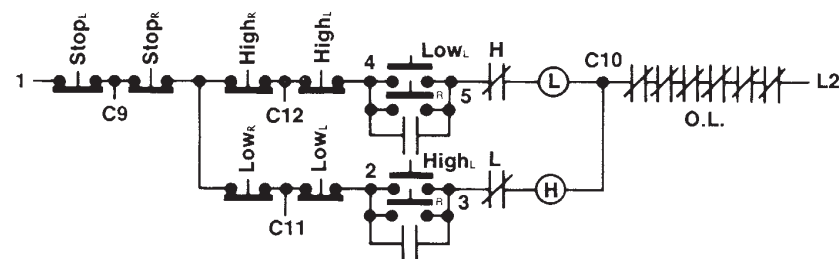


Pilot lamp connections

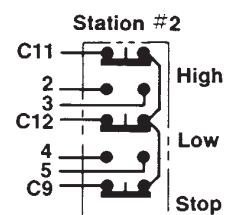


Schematic 3-wire/Case 1

Using two 3-button control stations, one local built-in & one remote or two remote. May change speeds without using stop button.



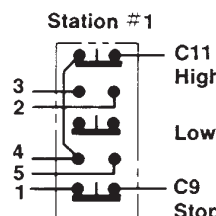
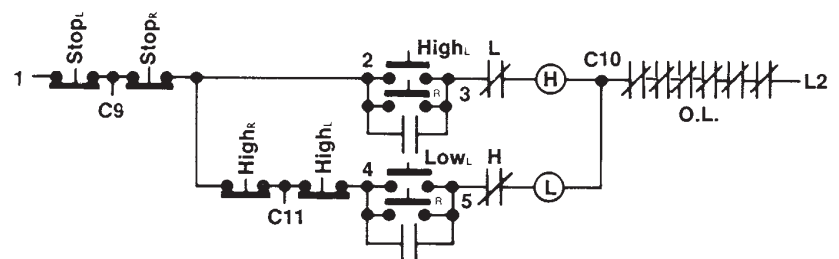
Local or remote
If only station #1 is used jumper C9-C11-C12



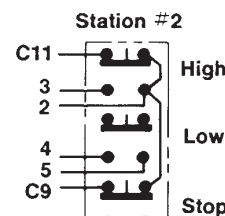
Remote
If only station #2 is used jumper C11-4, C12-2 & conn. C9-“1” at starter

Schematic 3-wire/Case 2

Using two 3-button control stations, one local built-in & one remote or two remote. Must use stop button to change from high to low speed.



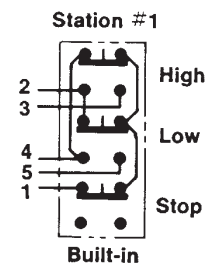
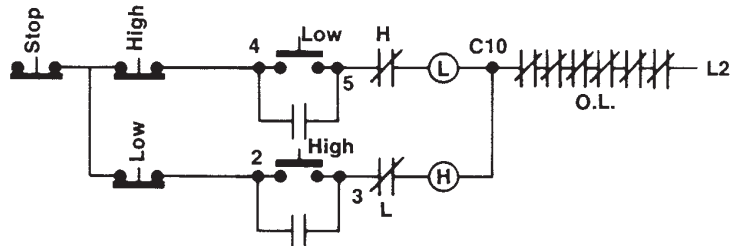
Local or remote
If only station #1 is used jumper C9-C11-2



Remote
If only station #2 is used jumper C11-4 & conn. C9-“1” at starter

Schematic 3-wire/Case 3

Using one built-in 3-button control station. May change speeds without using stop button.



NOTE: Sub-letters on schematics indicate — “L” for local & “R” for remote stations

Notes Page

[illegible]

Description	Page No.
Switch Racks	
General Information	468-471
Bus Duct Assemblies	472, 473
Selection Guide	474-476

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3, 4X, 7BCD, 9EFG, 12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Application:

Free-standing switch rack assemblies are used:

- to provide a complete motor control center in one integrated package
- outdoors and indoors
- in damp, wet or corrosive locations such as sewage treatment plants, lumber mills, marine installations, and food preparation areas
- in areas made hazardous due to the presence of flammable vapors or gases, such as petroleum refineries, chemical and petrochemical plants, gas gathering plants, pipeline compressor stations, and drilling rigs, both onshore and offshore
- in areas where hazardous dusts are present, such as coal handling facilities, grain processing and handling plants, and certain food process industries.

Features:

- Complete factory assembled and wired switch racks
- Pre-drilled bus boxes allow for quick and easy changing or adding of components
- Complete assembly covered under one order, eliminates engineering costs, additional costs of placing separate orders with several vendors for various components, and assembly and scheduling problems at job site
- Wiring is simple. After switch rack is in place, feeders are connected to the main bus and connections made from starters to motors. No other field wiring is necessary
- Maintenance time and costs are reduced by having controls grouped. Work is performed in one location instead of moving from one control to another in various locations
- Major components are standard EBM, EPC, NMC, NMG, NCB, FLB, D2PB, EXD, D2D, EPL, and D2L enclosures featuring ready access to starters and breakers for inspection and maintenance.
- Custom built racks to meet your exact requirements are a Cooper Crouse-Hinds specialty. Complete quotations will be supplied for any job, large or small (38' length max)



Standard Materials:

- Rack frames – structural steel or aluminum channel members, bolted and welded
- Components – see sections A, C & N for material

Standard Finishes:

- Rack frame – hot dip galvanized steel or natural aluminum
- Components – see sections A, C & N for finishes

Options:

- Rack frame finish – corrosion resistant primer with air dry epoxy
- Options listed for individual components can be incorporated in complete switch racks

Certifications and Complies:

- NEC:
 Class I, Divisions 1 & 2, Groups C,D
 (Group B optional)
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- NEMA: 3, 4X (optional), 7B (optional) CD, 9EFG, 12

Construction:

General:

- All construction to be in accordance with current *National Electrical Code*® (NEC), National Electrical Manufacturers' Association (NEMA), state and local standards as designated by the purchaser.
- All hazardous area enclosures for motor starters, combination motor starters, circuit breakers, motor circuit protectors, instrument enclosures, panelboards, main bus, fittings, receptacles, and lighting fixtures shall be made and supplied by the manufacturer.
- All explosion-proof threaded enclosures for combination starters, circuit breakers, motor circuit protectors, and starters shall be UL classified.
- All other standard hazardous area enclosures shall be UL listed or UL classified.
- Motor control racks shall be constructed by an approved union shop.
- Manufacturer shall retain permanent records of all motor control racks and shall have the capability of duplicating, or replacing, any fully-assembled rack or rack component.
- Manufacturer to assume responsibility for construction, purchase/manufacturer of components, complete circuit continuity testing, and testing of mechanical functions of components.

Rack Frame Design:

Structure:

- Switch rack, either single or double face as required, shall be rigid, free-standing structures. Racks shall be factory-welded, assembled and fabricated from standard rolled structural steel or aluminum shapes.
- Vertical risers will be 6" I-beam and horizontal members shall be 6-inch channel.
- Mounting feet shall be 6-inch channel. Width of such feet for single-sided racks shall be 41 inches.
- End mounting feet will be braced (welded) to the upright with 6" T member.
- Mounting feet shall be anchored at the job site with 1-inch diameter bolts. Anchor bolts and mounting pads will be the responsibility of the user.
- Maximum horizontal spacing between mounting legs shall not exceed 6 feet. (Specific dimensions to be determined by the manufacturer.)
- Racks longer than 20 feet will be supplied as bolt-together sections. (Specific section dimensions to be determined by the manufacturer.)

Grounding:

- A pressure-type grounding lug with appropriate wire capacity will be provided at each end of frame.

Finish:

- Rack frame shall be hot-dip galvanized after fabrication or natural aluminum.

Main Bus Equipment:

Class I, Division 1:

- Main bus material shall be copper only and capable of withstanding up to 65K amps fault current. Cable bus will be wired to terminal blocks enclosed in cast, copper-free aluminum, explosion-proof junction boxes, Cooper Crouse-Hinds type EJB. Such junction boxes for incoming power and distribution wiring shall be provided at either the top or bottom of the rack. Enclosures shall be connected by rigid conduit with conduit seals installed in accordance with the NEC. Load conduit or cable will leave rack either below or above. Manufacturer shall provide conduit layouts.

Class I, Division 2:

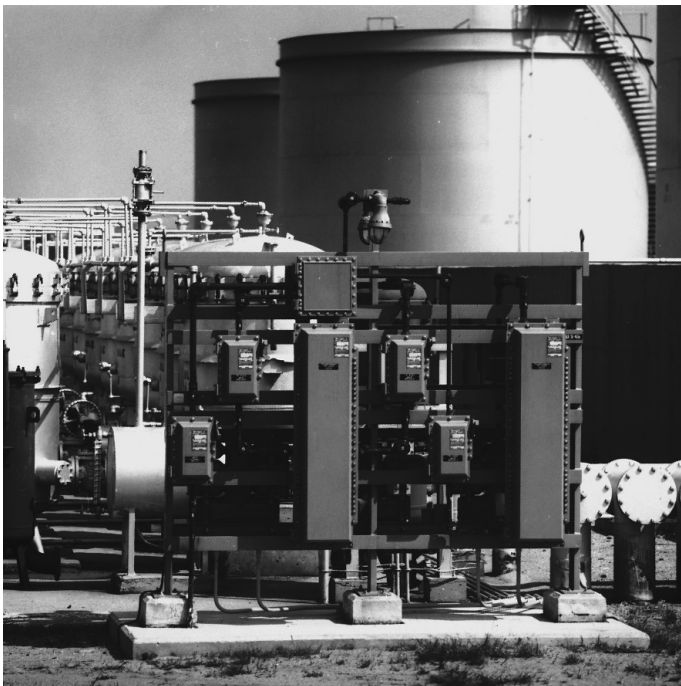
- Main bus material shall be copper only and capable of withstanding up to 65K amps fault current. Cable bus will be wired to terminal blocks enclosed in cast, copper-free aluminum weathertight junction boxes, Cooper Crouse-Hinds type WJB. Such junction boxes for incoming power and distribution wiring shall be provided at either the top or bottom of the rack. Enclosures shall be connected by rigid conduit with conduit seals installed as required by the NEC. Load conduit or cable will leave rack either below or above. Manufacturer shall provide conduit layouts.

Bus Duct in Lieu of Junction Boxes (Optional):

- Cable bus will be wired to a weathertight bus duct provided at the top or bottom of the rack.

Canopy (Optional):

- Single- or double-pitched canopy shall have minimum 15-degree pitch with a minimum 7'6" ground clearance, and 2-foot overhang. Roofing material shall be corrugated aluminum. Canopy roof trusses, cross channels, roof material, and mounting hardware shall be shipped unassembled for quick assembly at the job site. All holes in structure shall be provided except for roof mounting holes which will be drilled in the field. Manufacturer will supply drawings and material for complete field assembly of canopy.



Cooper Crouse-Hinds switch rack installed in a fuel storage area.

Motor Control Components:

Explosion Proof Quick Opening Enclosures:

● All circuit breakers, motor circuit protectors and combination or across-the-line motor starters shall be enclosed in quick-opening enclosures (Cooper Crouse-Hinds types EBM or EPC).

Types:

- Ground joint bolted cover enclosure shall be Cooper Crouse-Hinds type EBM, Underwriters Laboratories inc. classified for use in class I, Groups C, D, Divisions 1 and 2, Class II, Groups E, F, G, Divisions 1 and 2 and Class III hazardous locations and shall also be suitable for type 3, 3R and/or type 4 (NEMA 3, 3R and 4) areas.
- All enclosures shall be cast of a corrosion-resistant copper-free aluminum alloy (less than 0.4% copper) and shall be of a semi clampshell design with external flange to promote ease of apparatus installation, adjustment and maintenance. Most importantly, enclosure inside dimensions shall conform to the wire bending space requirements of the National Electrical code NFPA70 paragraph 373-6. Enclosures with flat covers, internal flanges or those not conforming to NFPA70 paragraph 373-6 are not permitted.
- Covers shall be hinged on the left side and, when closed, shall be affixed to the body by multiple lead thread bolts to promote quick opening and closing of the enclosure.
- Cover bolts shall be hex head stainless steel without screwdriver slots, to promote the use of a socket or wrench for proper tightening. They shall be captive to the cover and stainless steel spring loaded to indicate the fully unthreaded position. Spring loading shall give visual indication that the bolts are free of the body when the cover is being opened. The cover flange ground joint shall have an integral gasket to prevent the entry of windblown dust, rain or sleet.
- All enclosures shall be fitted, as standard, with adjustable, extended, corrosion-resistant, copper-free aluminum hinges that shall allow the cover to swing away from the body when opened and shall permit unobstructed working space for maintenance, adjustment or replacement of the internal apparatus. Additionally these hinges shall allow minimum enclosure-to-enclosure spacing with little interference between an open cover and an adjacent enclosure. Enclosures with hinges fabricated from steel or aluminum stampings shall not be permitted.

- All enclosures shall be provided with drilled, tapped and plugged conduit entrances suitably sized for the electrical application. Power conduit entrances shall be located 1 (or 2) each on (or equally spaced from) the enclosure vertical centerline at top and bottom. A single, plugged 1" entrance for a control conduit shall be provided at the bottom of the enclosure. (Some enclosures can also be provided with a plugged 1" entrance for control conduit at the top.)
- All conduit entrances shall be furnished with removable copper-free aluminum reducers, each with integral wire pulling bushing. All conduit entrances shall be located the same distance from the enclosure mounting surface to facilitate conduit run layout and/or stub up construction.
- All enclosures shall have rugged, cast copper-free aluminum circuit breaker and motor starter overload reset operating handles located on the right side of the enclosure. These handles shall operate the internal mechanisms via stainless steel, gasketed shafts and bearings through the side wall of the body. Correct circuit breaker and overload reset operation shall be visually confirmed with the cover open.
- Circuit breaker handles shall be padlockable in either the "OFF" or "ON" position, and shall be trip-free of the circuit breaker itself. An attached indicating plate shall give clear, visual confirmation of the circuit breaker status.
- Adjustable circuit breaker handle stops shall be provided to ensure full operation of the circuit breaker and to prevent handle overthrow that could damage the circuit breaker toggle.
- Motor starter overload reset operating mechanisms shall be field adjustable.
- Threaded construction enclosures shall be Cooper Crouse-Hinds type EPC, Underwriters Laboratories, Inc. classified for use in Class I, Groups C,D, Divisions 1 and 2, Class II, Groups E,F,G Divisions 1 and 2 and Class III hazardous locations and shall also be suitable for Type 3, 3R and/or Type 4 (NEMA 3, 3R and 4) areas.
- All enclosures shall be cast of a corrosion-resistant copper-free aluminum alloy (less than 0.4% copper) and shall be of a three section design. Multiple-start straight buttress threads between the covers and the body shall ensure quick access to the interior in less than two full turns of the covers. A system of stops shall prevent overtightening and thread seizing. A system of locks shall prevent covers from loosening due to external vibration.

- Female threads on the top cover with male threads on the bottom cover shall ensure inherent water and rain shedding.
- All exposed screws, bolts and hardware shall be stainless steel.
- The external circuit breaker operating handle affixed to a stainless steel shaft, shall be padlockable in either the "ON" or "OFF" position with up to three padlocks. Circuit breaker mechanisms shall be trip-free of the circuit breaker itself to allow the circuit breaker to open under overload conditions even if it is locked in the "ON" position.
- The mounting bracket shall provide a three-point suspension system for quick installation and adjustment.
- Conduit entrances shall have integral wire pulling bushings and conduit stops. These openings shall be arranged two at the top and two at the bottom and shall be sized for power and control requirements.

General

- All enclosures shall be bolted to the horizontal frame members on either the front or back or both front and back. Enclosures shall be connected to the main bus via conduit seals. (To be field poured). All hardware used to mount the enclosures shall be stainless steel.

Lighting Panelboards:

Class I, Division 1:

- Panelboards shall be Cooper Crouse-Hinds type, factory-sealed EXD or EPL as specified and shall meet the following electrical ratings:
EPL – 1, 2 or 3 pole, 240 volt maximum, 100 amp maximum branch trip rating, 10,000 AIC.
EXD – 1, 2 or 3 pole, 600 volt maximum, 100 amp maximum branch trip rating.

Class I, Division 2:

Lighting panelboard shall be Cooper Crouse-Hinds type D2L factory-sealed, 120/240 volt panelboards and be provided with single-pole, two-pole, or three-pole branch circuit breakers with up to 100 amp trip rating; main breaker ranging to 225 amp. Similarly, lighting panelboard shall be type D2PB factory-sealed, 120/240 volt panelboards and be provided with single-pole or two-pole factory sealed circuit breakers with 15, 20 or 30 amp trip ratings and maximum 10,000 AIC. Power panelboards type D2D factory-sealed, up to 600 volt are provided with single-pole, two-pole, or three-pole branch circuit breakers with up to 100 amp trip ratings; main breaker rating to 225 amp.

NEMA 4X Option:

- All bus boxes, control enclosures and lighting panelboards will be made of *KRYDON*® material to meet NEMA 4X requirements.

Fittings:

All fittings shall be made and provided by the manufacturer. Seals and unions will be provided for each incoming and outgoing conduit as required. All interconnections between components shall be done by the manufacturer with galvanized rigid conduit, and conduit fittings as required to meet the hazardous classification. Interconnecting conduits to be provided with conduit seals as required. All incoming and outgoing rack conduit entrances shall include conduit seals as required by the hazardous location specified. Such seals will be provided by the manufacturer and will not be filled where field wiring is to be introduced.

Conduit Boxes, Outlet Boxes, Device Boxes:

- Conduit boxes, outlet boxes, and device boxes shall be Cooper Crouse-Hinds *Condulet*® fittings.

Seals:

- Seals will be standard Cooper Crouse-Hinds type *Condulet* EYS. (Cooper Crouse-Hinds *Condulet* EYD drains to be specified as required.)

Unions:

- Unions will be Cooper Crouse-Hinds UNY.

Breathers and Drains:

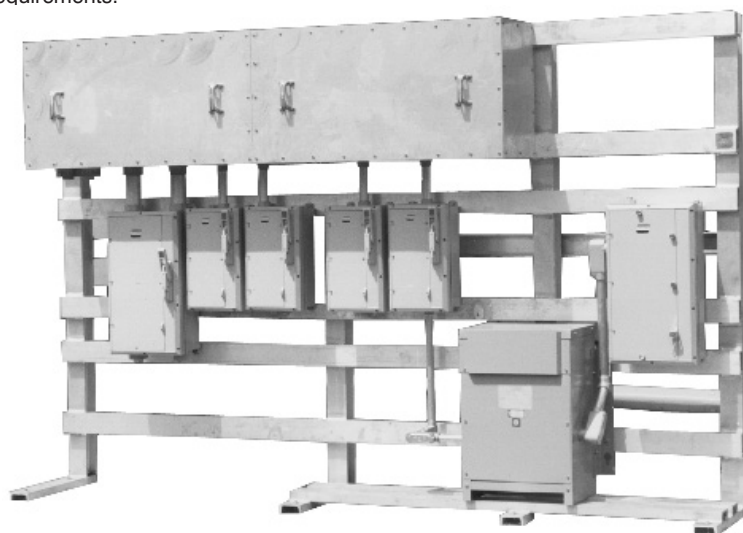
- Breathers and drains shall be Cooper Crouse-Hinds ECD.

Wiring:

- Standard wire shall be copper only, 600 volt, 75°C minimum rating, UL listed.
- No power wire less than 12AWG shall be used.
- Control wire shall be 14AWG minimum, 7 strands, THW minimum.
- Wiring shall be sized in accordance with the NEC requirements.

Drawings:

- Standard drawings supplied for customer approval shall include complete rack wiring diagram, component data, nominal weight of the rack, and overall rack dimensions.



Application:

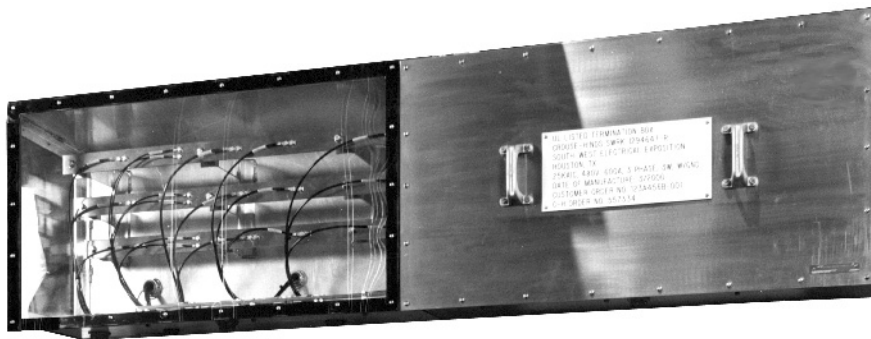
Cooper Crouse-Hinds is now offering NEMA 3R, UL Listed Bus Duct (Termination Box) Assemblies as standard product. Up to 600V, three-phase, 3 or 4 wire, 400Amp or 600Amp service with short circuit ratings of 25K or 50K.

Bus ducts or termination boxes provide a means of tapping feeder circuits for power distribution on outdoor switchrack assemblies or indoor wall-mounted applications.

Typical application is primarily for bus replacements on existing switchrack installations. New applications may include on-site construction of switchracks or indoor feeder distribution points due to space confinements making local installation more practical.

Features:

- U.L. Listed.
- NEMA 3R.
- Maximum Voltage rating 600V.
- 400Amp or 600Amp @ 25KAIC or 50KAIC.
- External flange on bus duct enclosure and lip on covers prevents water leakage and allows covers to hang freely for ease of installation and maintenance.
- 3 degree pitch at top, for water run-off, on all flush mounted bottom entry designs.
- Chorosulfonated polyethylene (Hypalon®) gasket material at all bus box section joints, covers and end plates.
- Standoff (Glastic) insulators moulded of (UL) recognized flame-resistant fiberglass-reinforced thermoset polyester moulding compound.
- Bus bar sizing and bracing complies to UL857 requirements.
- All welded construction - sheet aluminum, sheet steel (galvanized), or stainless steel
- Stainless-steel hardware throughout.
- Two hole compression lugs at all power phase connectors attached with stainless steel hardware.
- One (1) drain is standard per bus duct section (typical 4 foot sections).
- Solid copper bus bars (tin, silver plated and/or insulated - optional per customer request).
- Solid copper ground bar - standard.
- Incoming main lugs - supplied size and location specified with customer.
- Space heaters - optional per customer request.
- Pre-drilled copper bars (when specified by customer).
- Conduit entries for Myers hubs - optional per customer request.



Bus Duct (Termination Box) Catalog Numbering System

7C

7C Switch Rack
Assemblies

	B	S	T	16	A	6	K5	DR
BUS DUCT _____								
NEMA Type 3R								
DOOR TYPE _____								
S=Single-sided (door on one side)								
D=Double-sided (doors on both sides)								
MOUNTING LOCATION _____								
T=Top mounting (bottom entries)								
B=Bottom mounting (top entries)								
LENGTH-FEET _____								
02 = 2 feet								
04 = 4 feet								
06 = 6 feet								
08 = 8 feet								
12 = 12 feet								
16 = 16 feet								
20 = 20 feet								
24 = 24 feet								
28 = 28 feet								
32 = 32 feet								
36 = 36 feet								
ENCLOSURE MATERIAL - SHEET METAL _____								
A = Aluminum								
G = Galvanized								
S = Stainless steel (316)								
AMP RATING OF COPPER BARS _____								
4 = 400A								
6 = 600A								
KAIC SHORT CIRCUIT RATING _____								
K2 = 25KAIC								
K5 = 50KAIC								
OPTIONS COVERED BY DR# _____								
Space heaters								
Insulated bars								
Silver plated bars								
Pre-drilled copper bars								
Conduit entries with Myers hubs								

One (1) drain is standard per bus duct (termination box) section.

*For pricing and lead times, contact Cooper Crouse-Hinds at 315 477-5241 or fax to 315 477-5118.

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,4X,7BCD,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Customer: _____ Engineering Firm: _____
 Project: _____ Location: _____
 Prepared By: _____ Date: _____
 Quotation For: ☐ Estimate/Budget ☐ Bid ☐ Immediate Buy
 Quotation Required By (Date) _____ Material Required By (Date) _____

Interested in a highly reliable, comprehensive communications that will improve the operating efficiency of your facility? See additional information at the end of this guide.

Is a current copy of plant STDS/SPECS available to Cooper Crouse-Hinds? _____

Area Classification:

HAZARDOUS - Circle All that apply:

- ☐ Class I
 Div. 1 or 2, Grps B,C & D
☐ Class II
 Div. 1 or 2, Grps E,F & G
☐ Class III

NON-HAZARDOUS

- ☐ Ordinary Locations
☐ NEMA 3R, 4, 4X (Circle One)

Structural Frame:

MATERIAL

- ☐ Steel
☐ Aluminum
☐ Single Face
 (Components on ONE side only)
☐ Double Face
 (Components on BOTH sides)
☐ Other _____
☐ Percent Spare Space _____ %

FINISH

- ☐ Hot Dip Galvanized
☐ Painted

Roof Canopy:

- ☐ Yes ☐ No
☐ Corrugated Aluminum
☐ Corrugated Fiberglass

Enclosure Type:

- ☐ Bolted ☐ Threaded
☐ Krydon ☐ Epoxy Coated

Dimension Restrictions:

- ☐ Length _____ ☐ Height _____

Service System: (i.e. 480V, 3PH, 3W, 60HZ)

_____ VOLT _____ PH _____ W _____ HZ

Incoming Feeder Requirements:

- _____ # Conductors/Phase
 _____ # AWG/MCM
 _____ # Inch Conduit (Size)
☐ Top Entry ☐ Bottom Entry

Main Bus Enclosure:

MATERIALS

- ☐ Steel
☐ Aluminum
☐ Other (Specify) _____
☐ Bus Location - Top of Rack
☐ Bus Location Bottom of Rack
☐ Bus Bracing _____ (25 KAIC Standard)
☐ Bus Amps _____
☐ Other - Customer to Specify

FINISH

- ☐ Hot Dip Galv.
☐ Painted

MAIN BUS CHARACTERISTICS

- Copper Bars
☐ Bare (Standard) ☐ Power Distr. Block
☐ Insulated ☐ Ground Bus in Enclosure
☐ Silver Plated
☐ Tin Plated

Switch Rack Assemblies

Selection Guide

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4X,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations
Watertight

7C

Main Breaker/Disconnect: (3C,N)

☐ None ☐ Molded Case Breaker
AIC Rating _____
Amp Trip (AT)/ _____ Amp Frame (AF) _____
☐ Disconnect Switch
_____ Amps
☐ Fused ☐ Non-Fused

Equipment Requirements:

COMBINATION MOTOR STARTERS (1C, N)

FVNR, Reversing, 2-speed (circle one)
Qty. _____

_____ NEMA Size 0 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 1 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 2 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 3 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 4 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 5 with _____ AT/ _____ AF, _____ MCP
_____ NEMA Size 6 with _____ AT/ _____ AF, _____ MCP

Refer to Cooper Crouse-Hinds catalog for suggested breaker or motor circuit protector sizing if not specified above, Cooper Crouse-Hinds will size accordingly.

OPTIONS REQUIRED

*Unless specified differently *options furnished standard

	Yes	No
*Fused Control Transformer Suffix FTPS	_____	_____
Space Heaters Suffix R11, R22, R44	_____	_____
Start/Stop Pushbuttons Suffix PB23	_____	_____
Hand-Off Auto Selection Switch Suffix RR3	_____	_____
Red Indicating Light Suffix J1	_____	_____
Green Indicating Light Suffix J3	_____	_____
*Auxiliary Contacts: (2 N.O./2NC) Suffix S782	_____	_____
Control Relay Suffix S787	_____	_____
*Breather/Drain Suffix S198V/S756V	_____	_____
*12 Point Terminal Block Other - Specify Suffix S786	_____	_____

Feeder Circuit Breaker: (3C, N)

AIC Rating _____
Qty _____ (AT) _____ (Specify) _____
_____ /100/150 AF
_____ /100/150 AF
_____ /225/250 AF
_____ /400 AF
_____ /800 AF
_____ Other

Component Preference:

☐ Cutler-Hammer ☐ SQD ☐ A-B ☐ GE
(Cutler-Hammer will be used if no preference is indicated.)

Distribution Transformers:

_____ KVA _____ PH _____ Volt-Pri _____ / _____ Volt-Sec
_____ KVA _____ PH _____ Volt-Pri _____ / _____ Volt-Sec
☐ Copper Windings ☐ Stainless Steel Enclosure

Panelboards: (1A, N)

Power (480V) (D2D EXD)
☐ Single Phase ☐ Three Phase
Main Breaker _____ Pole _____ AT
Branch Circuits
Qty _____ AT _____ No. Poles (i.e. '2P'=2 Pole) _____
_____ _____
_____ _____

LIGHTING/HEAT TRACING

(240/120V) (D2L, EPL, D2PB)
☐ Single Phase ☐ Three Phase
Main Breaker _____ Pole _____ AT
Branch Circuits
Qty _____ (AT) _____ No. Poles (i.e. '2P'=2 Pole) _____
_____ _____
_____ _____
‡ GFI (5mA) _____ AMP
(No. Req'd) _____ Rating _____
‡ EPD (30mA) _____ AMP
(No. Req'd) _____ Rating _____

‡ Not available with D2PB panelboards

7C Switch Rack Assemblies

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,4X,7BCD,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Lighting Contactor:

☐ Yes ☐ No
 No. Poles _____ Amp Rating _____
☐ Control Power Transformer
 Suffix FTPS
☐ Hand-Off-Auto Selector Switch
 Suffix RR3

Conduit Fittings, Seals, Unions:

Plant Standard _____ (i.e. "Form 7")
☐ Iron ☐ Aluminum
 Type Seals
 (Note seals not poured at factory)
☐ EYD ☐ EYS ☐ EZD
☐ Other (specify) _____

Photocell:

☐ Yes ☐ No

Lighting Fixtures: (1L, 2L, 3L)

Quantity _____ Type _____
 Wattage _____ Voltage _____

Receptacles:

☐ Convenience Receptacle
 Amps _____ Poles _____ Volts _____
☐ Welding Receptacle
 Amps _____ Poles _____ Volts _____
 Integral Circuit Breaker ☐ Yes ☐ No

Conduit:

☐ Rigid Galv. Steel ☐ Aluminum
☐ PVC Coated

Wiring:

☐ RHW/RHH ☐ THWN/THHN (C-H Std)
☐ THW ☐ XHHW
☐ Other Insulation - Specify _____

Shop Inspection & Tests:

☐ Mfr. Standard Tests
☐ Customer In Plant Final Inspection
☐ Yes ☐ No

*Utilizing Standard Cooper Crouse-Hinds NEMA 7 Enclosures with specified internal components (mounted on your switchrack) this state-of-the-art technology is available today. IMPACC (Integrated Monitoring Protection and Control Communications), by Cutter-Hammer/Westinghouse is a unique high frequency-based communications system specially designed for electrical distribution and control applications. Providing real time information, with an "open" protocol, allows you to manage and operate your entire electrical system including remote hazardous areas without leaving your office or motor control centre. For more information, contact us.

Special Requirements: _____

www.isbarriers.com

Description	Page No.
Safety Barriers	464-472
Din Rail Isolated Barriers	473-488

8C Intrinsically Safe Barriers Product Overview

www.isbarriers.com

We have simplified intrinsic safety!

Cooper Crouse-Hinds CEAG has simplified the application of intrinsic safety. Only a maximum of 3 grounded Safety Barriers are required for over 90% of the applications. In addition, each application requires only one isolated barrier making your application simple and flexible. Of course, Cooper Crouse-Hinds CEAG has a full range of products for specialized applications and OEMs.

8C Intrinsically Safe

Device In Hazardous Area	Also Referred to As	Grounded Safety Barrier	DIN Rail Isolated Barriers
Switch or contact closure	Digital Input D/I	GHG 111 0000 W 2427	GHG 122 3121 D 1003 (120VAC) GHG 122 3121 C 1009 (24VDC)
2 wire transmitters	Analog Input A/I	GHG 111 0000 W 2427	GHG 124 3111 M 1109
Solenoid valves LEDs	Digital Output D/O	GHG 111 0000 W 0779	GHG 138 3311 E X 0009
I/P Transducer	Analog Output A/O	GHG 111 0000 W 0779	GHG 126 3321 D 1008
Thermocouple RTD	Temperature Measurements	GHG 111 0000 W 0201	GHG 131 3100 M 0006 (TC) GHG 131 3100 L 0006 (RTD)
		3 Types	one isolator for each

www.isbarriers.com

- Solutions to all technical questions & applications.
- Downloadable wiring diagrams, drawings, instructions, approval certificates & configuration software.
- Technical white papers on hazardous locations.
- On-line ordering.

www.isbarriers.com

Which product is best for your application?

We have provided you with the features and benefits of the grounded and isolated barriers. Which system is best for you? Reference the *Users Guide to Intrinsically Safe Barriers* to help guide your decision.

Users Guide to Intrinsically Safe Barriers

8C Intrinsically Safe

	<i>Grounded</i>	<i>Isolated</i>
Selection Process	easy 1 of 3 products for 90% of applications	easy one product per application
Versatility Of Products	most versatile, can be used for other products, i.e., load cells & encoders	usually products are application specific, all applications covered
Signal Response	very precise	good signal response
RFI immunity	yes, CE mark	yes, CE mark
Cabinet Size Required	smallest 1/2" wide	larger barrier 1" wide
Cost Per Product	lowest initial cost	slightly higher
Installation Cost	higher because of wiring & ground connection	lower ground connections required
Total Cost - small sytems 1-10 points	lowest	higher
Total Cost - small system > 100 points	low	low
Notes	ideal for very small systems and for OEMs who use a small number of barriers	isolated barriers are perfect for switching applications and where a ground is not convenient or available
Overall Rating	<i>Great</i>	<i>Better</i>

Safety Barriers

Safety barriers, also referred to as zener barriers, are passive devices which contain zener diodes, resistors and fuses to limit excess voltage and current. These are the basic building blocks which are contained in all other intrinsically safe barriers. There is a voltage drop across zener barriers because of the resistors so some selection is required as well as a ground connection.

This selection has been greatly simplified as demonstrated in the application section. (pages 485 to 489). Safety barriers are also very versatile and can be applied in many other applications. They are the smallest devices, have the lowest initial product cost, but require field wiring and ground connections.

Advantages

- lowest initial cost per unit
- very small < 1/2" wide
- very precise signal response
- small power requirements
- ideal for "other" circuits

Other Considerations

- requires ground
- barrier resistance can influence circuit function

DIN Rail Isolated Barriers

DIN rail isolated barriers, also referred to as transformer isolated or galvanically isolated barriers, are safety barriers with additional electronics to isolate and condition the signals. The isolation has the main advantage of not requiring IS ground connections.

The signal conditioning of isolated barriers simplifies the selection process as each isolated barrier is manufactured for specific functions such as switching, temperature measurements of 4-20 mA readings.

Advantages

- does not require IS ground
- loop layout & barrier selection is easy
- integrated signal conditioning

Other Considerations

- may have higher cost than grounded barriers
- larger width -1" wide
- larger power requirements

www.isbarriers.com

- Solutions to all technical questions & applications.
- Downloadable wiring diagrams, drawings, instructions, approval certificates & configuration software.
- Technical white papers on hazardous locations.
- On-line ordering.



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Safety Barriers limit the energy from a possible fault on an intrinsically safe circuit so that neither sparks nor thermal effects (hot surfaces) can ignite volatile gases or dusts in hazardous locations.

Cooper Crouse-Hinds CEAG Safety Barriers are designed for simple and easy applications. A maximum of only 3 different barriers are used for the most commonly used instrument applications:

- Digital inputs
- Digital outputs
- Analog inputs
- Analog outputs
- Temperature sensors

Cooper Crouse-Hinds CEAG has designed the new Safety Barriers to insure total, trouble-free operation. Each Safety Barrier can be ordered with replaceable fuses to protect against nuisance tripping. In addition, each barrier has LEDs on the supply to monitor and show the status of the circuits.



Wiring Tool: For fast easy connections, see accessories page 482.

8C
Intrinsically
Safe

Features	Benefit to You
Barriers less than 10mm wide	Space saving design
Barriers plug into prewired backplane	Allow for prewiring and fast, easy connections
Backplane snaps onto standard 35mm DIN rail	No extra hardware required
LEDs on the supply	Display barrier status and monitoring
Replaceable fuses	Avoid nuisance tripping
Cage clamp connections	No screws required
Large tagging area	Easy circuit identification
Customized backplanes	Backplanes can be supplied in any length for custom applications & OEMs
UL, cUL, & worldwide approvals	Global applications

Product Features

- CENELEC UL and CUL approvals
- LEDs on supply
- Replaceable fuses
- Screwless cage clamp connections
- Large tagging areas
- DIN rail mounting
- Backplane mounting saves wiring
- Built-in ground connections on backplane
- CE certified



Intrinsically
Safe
8C

Terminology

Operating data

V_N	Rated maximum voltage
R_{max}	End-to-end resistance
S_i	Internal fuse

Safety parameters (in intrinsically safe circuits)

V_{oc}	Maximum open circuit voltage
I_{sc}	Maximum short circuit current
C_a	Maximum permissible external capacitance
L_a	Maximum permissible external inductance

Technical data:

Leakage current at V_N	< 2 μ A
Temperature drift	< -250 x 10 ⁻⁶ /K
Operating temperature	-40°C ... +60°C
Storage temperature range	-40°C ... +80°C
Relative humidity	< 75% (annual average)
No condensation	< 95% (30 d/a)
Width	see dimensions (pg 467)
Weight	~ 70 g

Ordering Information

Description	Order No.
Standard backplane for 1 unit	GHG 110 0000 W 9101
Standard backplane for 10 units	GHG 110 0000 W 9100

Accessories

Safety Barrier Safeguard Fuse

Safeguard Fuse Value	Type No.	Catalog Number
0	SB 9210	GHG 110 0000 W9210
32	SB 9211	GHG 110 0000 W9211
50	SB 9212	GHG 110 0000 W9212
63	SB 9213	GHG 110 0000 W9213
80	SB 9214	GHG 110 0000 W9214
100	SB 9215	GHG 110 0000 W9215
125	SB 9216	GHG 110 0000 W9216
Safety Barrier ground bar		GHG 110 0000 W9220
Safety Barrier operating tool		SWAG-279-732

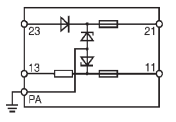
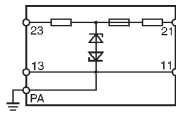
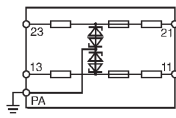
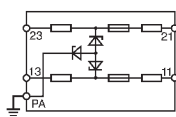
Safety Barriers

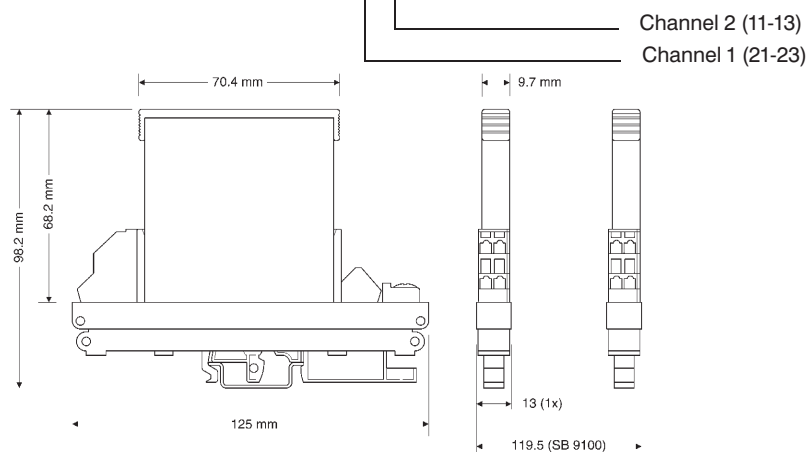
	Type No.	V _n (V)	R _{max} (ohms)	Fuse (mA)	Replaceable Fuse	V _{oc} (V)	I _{sc} (mA)	Cat.# Number
DC Single								
	SB 0728	24	326	50	SB 9211	28	93	GHG111 0000 W0728
	SB 1728	-24	326	50	SB 9211	28	93	GHG111 0000 W1728
	SB 3729	24	187	50	SB 9211	28	171	GHG111 0000 W3729
	SB 2420	24	147	63	SB 9212	27.3	208	GHG111 0000 W2420
	SB 0722	18	187	50	SB 9211	22	150	GHG111 0000 W0722
	SB 0715	12	151	100	SB 9214	15	150	GHG111 0000 W0715
	SB 3715	12	61	100	SB 9212	15	291	GHG111 0000 W3715
	SB 3710	6	42	160	SB 9213	10	300	GHG111 0000 W3710
DC Double								
	SB 0779	24/24	340/340	50/50	SB 9211	28/28	93/93	GHG111 0000 W0779
	SB 4420	24/24	146/146	63/63	SB 9213	28/28	213/213	GHG111 0000 W4420
	SB 4410	24/24	202/202	63/63	SB 9213	28/28	150/150	GHG111 0000 W4410
	SB 0796	23/27	339/435	50/50	SB 9211	26/20	87/51	GHG111 0000 W0796
	SB 0768	19/19	187/187	50/50	SB 9211	22/22	147/147	GHG111 0000 W0768
	SB 0767	12/12	157/157	100/100	SB 9214	15/15	150/150	GHG111 0000 W0767
	SB 3250	12/12	48/48	100/100	SB 9214	15/15	387/387	GHG111 0000 W3250
	SB 1350	10/10	81/488	150/150	SB 9216	11.7/11.7	174/25	GHG111 0000 W1350
	SB 1351	10/10	488/488	150/150	SB 9216	11.7/11.7	25/25	GHG111 0000 W1351
	SB 0764	10/10	1026	50/50	SB 9211	12/12	12/12	GHG111 0000 W0764
DC Floating								
	SB 1301	+6/-6	63	100/100	SB 9214	17.2	414	GHG111 0000 W1301
	SB 1302	+9/-9	1167	100/100	SB 9214	25.2	25	GHG111 0000 W1302
	SB 1303	+12/-12	160	100/100	SB 9214	29.4	248	GHG111 0000 W1303
Signal + Return								
	SB 2427	24/24	278/31 + 1.2 V	50/50	SB 9211	26.3	102/0	GHG111 0000 W2427
	SB 2787	24/24	254/31 + 1.2 V	50/50	SB 9211	28	120/0	GHG111 0000 W2787
	SB 1787	24/24	326/31 + 1.2 V	50/50	SB 9211	28	93/0	GHG111 0000 W1787

Channel 2 (11-13)
Channel 1 (21-23)

Note: Barriers will be supplied without sockets.
Please order backplane separately (see page 482).

Safety Barriers

	Type No.	V _N (V)	R _{max} (ohms)	Fuse (mA)	Replaceable Fuse	V _{oc} (V)	I _{sc} (mA)	Catalog Number
DC Double Return								
	SB 0786	24/24	31+1.2V/ 31+1.2V	50/50	SB 9211	28/28	0/0	GHG111 0000 W0786
AC Standard								
	SB 1602	12	54	100	SB 9214	16.8	390	GHG111 0000 W1602
	SB 2710	6	85	50	SB 9211	10	200	GHG111 0000 W2710
AC Double								
	SB 0766	10/10	183/183	50/50	SB 9211	12/12	80/80	GHG111 0000 W0766
	SB 2764	10/10	1077/1077	50/50	SB 9211	12/12	12/12	GHG111 0000 W2764
	SB 1766	9.8/9.8	90/90	50/50	SB 9211	12/12	160/160	GHG111 0000 W1766
	SB 1761	7/7	385/385	50/50	SB 9211	9/9	25/25	GHG111 0000 W1761
	SB 0761	6/6	142/142	100/100	SB 9214	9/9	100/100	GHG111 0000 W0761
	SB 0201	2/2	35/35	160/160	SB 9216	5.3/5.3	178/178	GHG111 0000 W0201
	SB 0751	0.35/0.35	10.8/10.8	160/160	SB 9216	1.2/1.2	238/238	GHG111 0000 W0751
Universal								
	SB 0778	24/24	656/656	50/50	SB 9211	28/28	47/47	GHG111 0000 W0778
	SB 0722	18/18	340/340	50/50	SB 9211	22/22	73/73	GHG111 0000 W0722
	SB 0765	12/12	135/135	50/50	SB 9211	15/15	150/150	GHG111 0000 W0765
	SB 0760	6/6	85/85	50/50	SB 9211	10/10	200/200	GHG111 0000 W0760



Dimensions



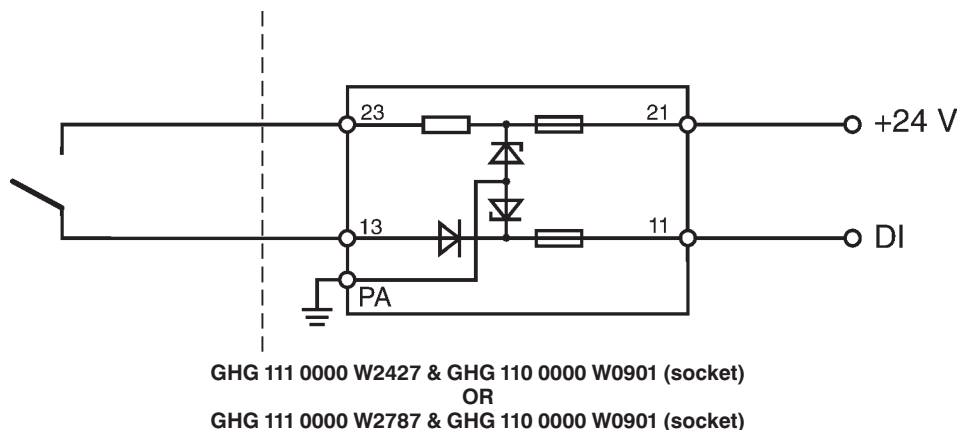
Terminal Connections

www.isbarriers.com

Digital Input

Floating Circuit - 1 channel

- Power supply voltage: 24VDC
- End-to-end resistance $285\ \Omega + 1.2V$
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



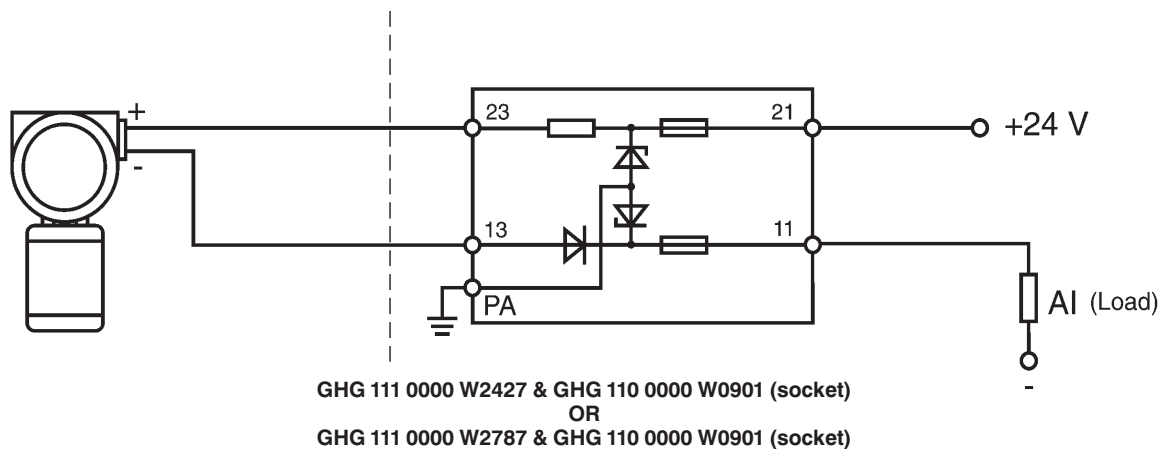
Grounded Circuit - 2 channel

- Lowest cost solution

Analog Input (4-20 mA Transmitters)

Floating Circuit - Safety barrier circuit

- Lowest possible barrier voltage drop:
6.6V maximum (@ 20 mA)
- Power supply voltage: 24VDC
- No restrictions for programming SMART transmitters
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



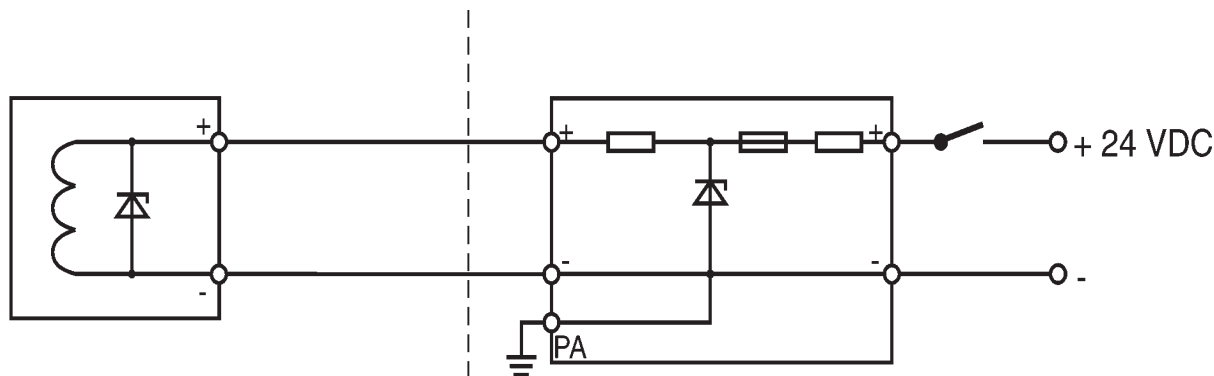
Digital Output (Solenoid valves, LEDs or Audible Alarms)

Grounded Circuit - 1 channel

- Power supply voltage: to 24VDC
- End-to-end resistance: 326 Ω
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G

Grounded Circuit - 1 channel - Groups C-G

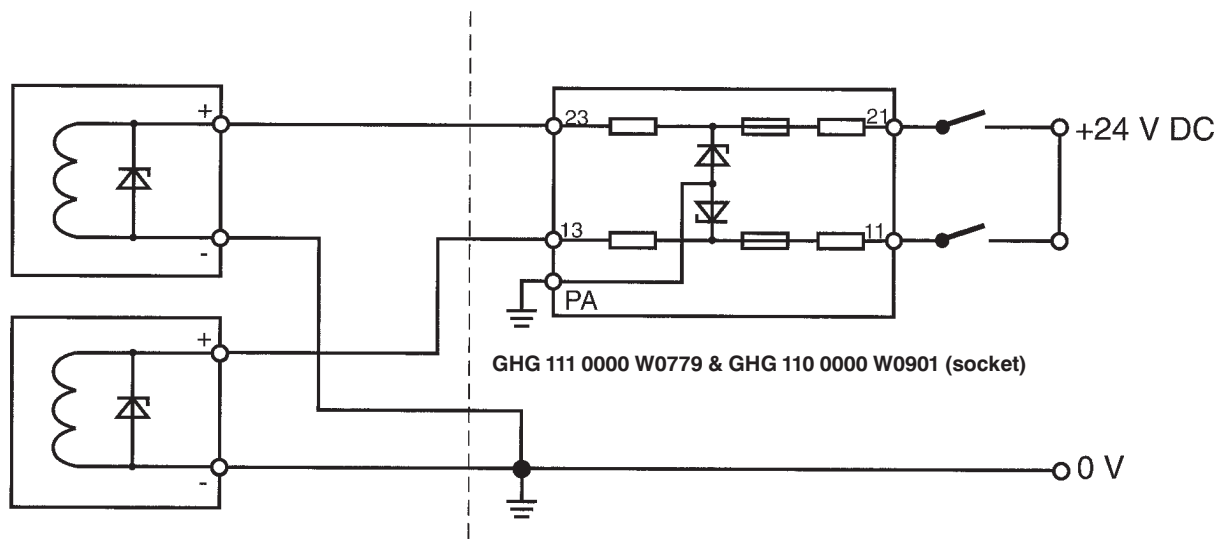
- Low resistance barrier
- Power supply voltage: to 24VDC
- End-to-end resistance: 187 Ω
- Smallest IS barrier available
- IS connection for: Zone 1, Group IIB
Class I, II, III, Div. 1, Gr. C-G



GHG 111 0000 W0728 & GHG 110 0000 W0901 (socket)
OR
GHG 111 0000 W3729 & GHG 110 0000 W0901 (socket)

Grounded Circuit - 2 channel

- Power supply voltage: to 24VDC
- End-to-end resistance: 326 Ω /channel
- Short circuit proof
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



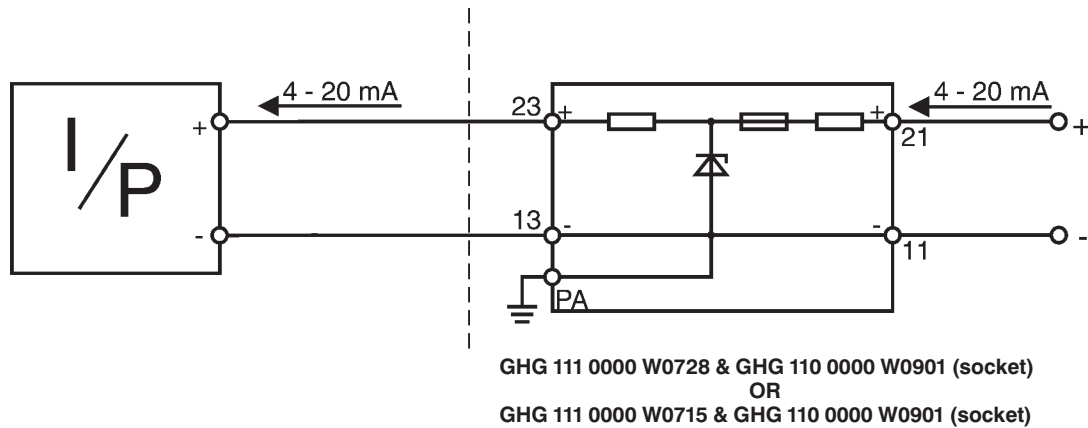
GHG 111 0000 W0779 & GHG 110 0000 W0901 (socket)

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Analog Output (4-20 mA Transducers)

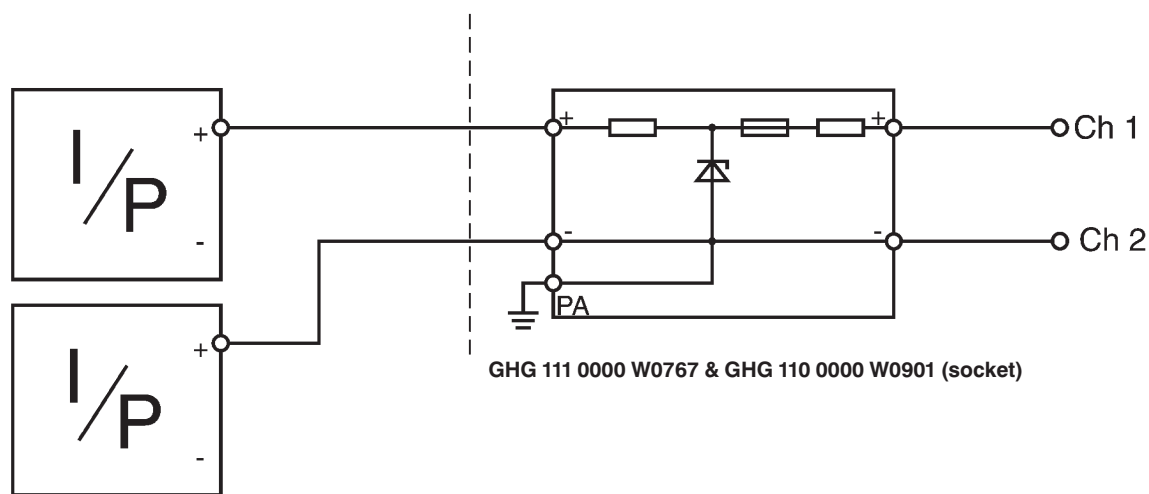
Grounded Circuit - 1 channel

- Smallest IS barrier available
- Short circuit proof
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



Grounded Circuit - 2 channels

- Smallest IS barrier available
- Short circuit proof
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution

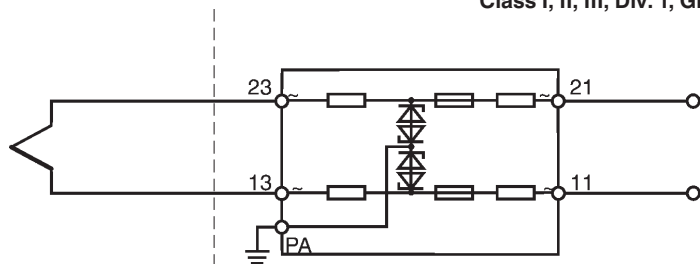


Temperature Sensors (Thermocouples, RTDs)

One safety barrier for all applications

Thermocouple

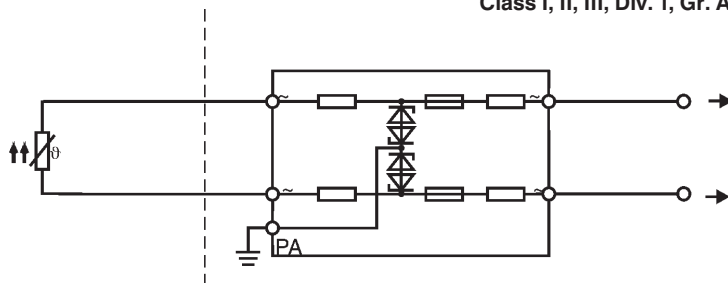
- Low resistance solution (70 Ω)
- Short circuit proof
- Lowest cost solution for thermocouple available
- Smallest thermocouple IS barrier available
- Suited for all thermocouples
- IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

2-Wire RTD

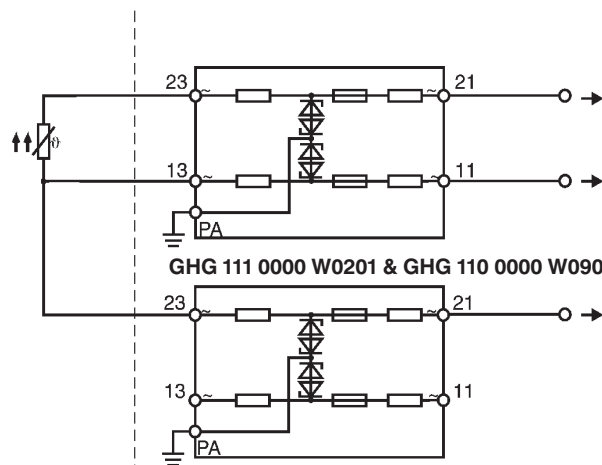
- Lowest resistance solution (70 Ω)
- Short circuit proof
- Smallest RTD IS barrier available
- IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

3+4 Wire RTD

- Lowest resistance solution (70 Ω)
- Short circuit proof
- Lowest temperature coefficient
- Smallest RTD IS barrier available
- IS connections for: Zone 1, Group IIC Class I, II, III, Div. 1, Gr. A-G



GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

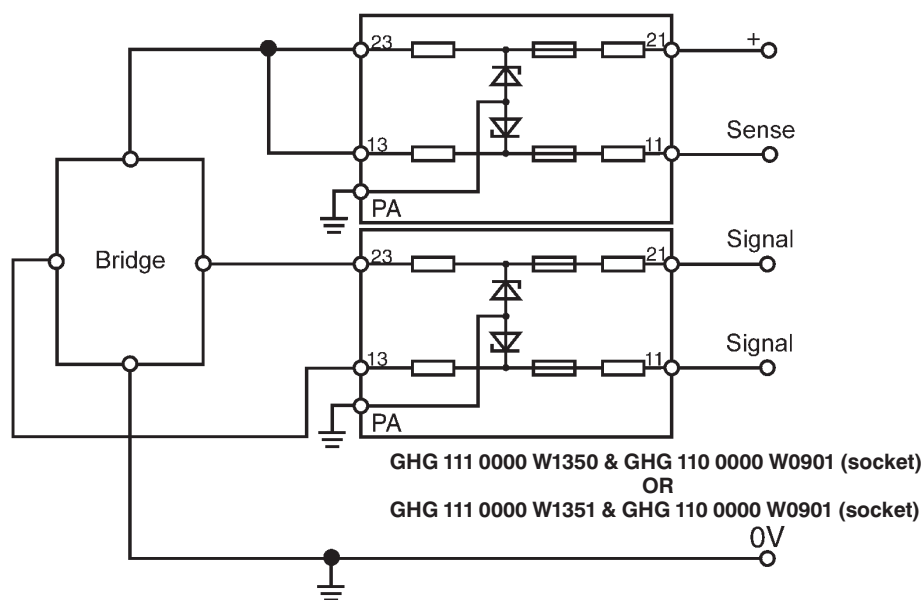
GHG 111 0000 W0201 & GHG 110 0000 W0901 (socket)

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Load Cells

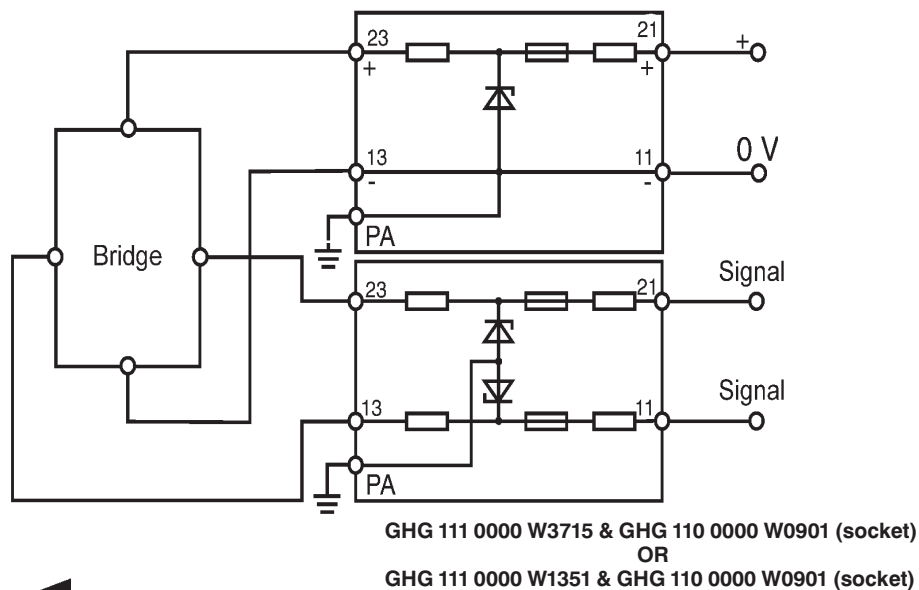
10VDC Supply - Sense

- Lowest resistance solution (80 Ω maximum)
- 8.1V excitation at 350 Ω bridge
- Only two barriers required for complete system
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G
- Lowest cost solution



12VDC Supply - Without Sense

- Lowest resistance solution (53 Ω maximum)
- 10.4V excitation at 350 Ω bridge
- Only two barriers required for complete system
- Smallest IS barrier available
- IS connections for: Zone 1, Group IIC
Class I, II, III, Div. 1, Gr. A-G



8C Isolators DIN Rail Devices Overview

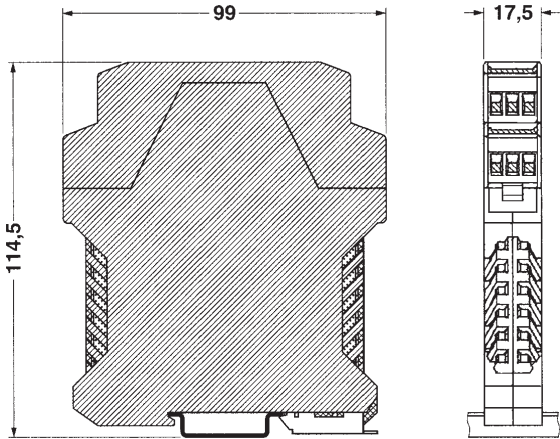
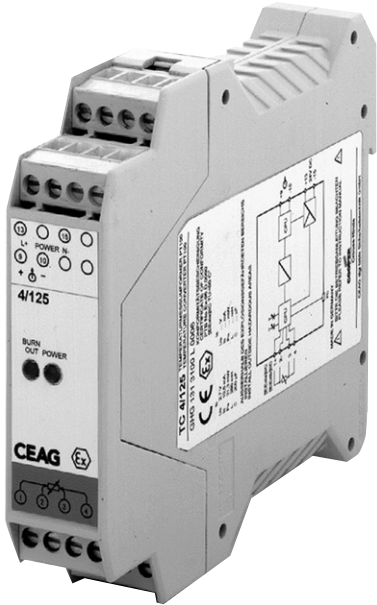
www.isbarriers.com

Isolators, also referred to as transformer isolated barriers, are intrinsically safe devices which do not require a ground. Isolators contain additional electronics to isolate and condition the signals between the hazardous area and control room.

Each Cooper Crouse-Hinds CEAG isolator is designed for specific applications making them easy to select. Each isolator has plug-in terminals so they can be prewired or quickly replaced. In addition, each isolator has LEDs to monitor and show the status of each circuit.

Intrinsically
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8C

Features	Benefit to You
Plug-in terminals	Allows for prewiring and fast, easy connections
Snap onto standard 35mm DIN rail	No extra hardware required
LEDs on each isolator	Monitor and display circuit status
No grounding required	No extra connection
Small enclosures, 22.5mm wide	Space savings in cabinet
Built application-specific	Easy selection on page 491
Single or double channels	Flexibility with maximum circuit density
Low energy consumption	Smaller power supplies required
UL, cUL & worldwide approvals	Global applications



Isolators DIN Rail Devices Applications & Product Selection

8C

www.isbarriers.com

	Selection chart	Product	Catalog Number	Page
 Switches  Proximity Switches  Electronic Switches	D/I	Relay output	2/942	GHG 122 3121 D 1003** 492 GHG 122 3121 D 1009 (24 VDC) 492
		Transistor output PLC or hi speed applications	2/941	GHG 122 3121 C 1009** (24 VDC) 493
 4-20 mA (SMART) Transmitter  4-20 mA current source	A/I	SMART/ Fully isolated	6/420	GHG 124 3111 K 1206 495
		SMART/ Field device isolated	8/420	GHG 124 3111 M 1109** 494
		NON SMART/ Fully isolated	7/420	GHG 124 3111 L 1006 496
 Solenoid  LED	D/O	Fully insulated	7/915	GHG 138 3311 F X009 498
		Loop powered	6/915	GHG 138 3311 E X008** 497
 i/p 4-20 mA (SMART) i/p converter  4-20 mA Display	A/O	SMART/ Standard	6/304	GHG 125 3310 K 0306 500
		NON SMART/ Standard	5/304	GHG 125 3310 H 0306 501
		NON SMART/ Loop powered	5/303	GHG 126 3321 D 1008** 499
 RTD	RTD	Standard	4/125	GHG 131 3100 L 0006** 503
 Thermo-couple	TC	Standard	4/127	GHG 131 3100 M 0006** 504

**** Normally Stocked**

8C Intrinsically Safe

Product Features:

- NAMUR inputs, mechanical contacts
- DIN rail mounted
- 1 or 2 channels
- Line monitoring
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL and CUL approvals

Technical Data:

Input	NAMUR specification
Output relay	1 change over
Voltage rating	250VAC/100VDC
Current rating	5AAC/2ADC
Power rating	100VA/50W
Mech. life time	10 ⁶ operations (20 Hz max.)
Phase reversal	via front switch
Power consumption at	230V/2.2W per channel 24V/0.55W per channel
Ambient temperature	-20°C ... +60°C
Relative humidity	<75% (average) <95% keep dry



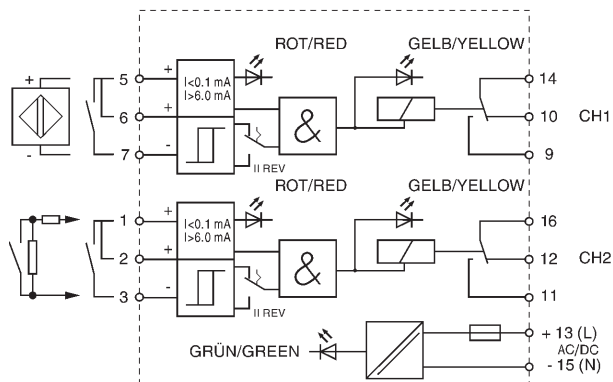
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 11V$, $I_{sc} \leq 26 mA$

Ordering Information:

Type No.	Channels	Power supply	Ex-protection	Catalog No.
2/942	1 channel	230VAC	ia/ib	GHG 122 3111 D 1002
2/942	1 channel	120VAC	ia/ib	GHG 122 3111 D 1003
2/942	1 channel	24VDC	ia/ib	GHG 122 3111 D 1009
2/942	2 channels	230VAC	ia/ib	GHG 122 3121 D 1002
2/942	2 channels	120VAC	ia/ib	GHG 122 3121 D 1003*
2/942	2 channels	24VDC	ia/ib	GHG 122 3121 D 1009

* Normally Stocked



Digital Input Switch Amplifier Transistor Output Model 2/941

8C

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Product Features:

- NAMUR inputs, mechanical contacts, or optocouplers
- DIN rail mounted
- 1 or 2 channels
- Line monitoring
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input	NAMUR specifications
Transistor output	(npn open emitter) 1 or 2 outputs/channel
Switches per channel	passive external +24V (30V max.) active internal +24V
Current rating	100 mA max. (short circuit protected)
Phase reversal	via front switch
Power supply	20 - 30VDC
Power consumption	0.5W per channel
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



8C Intrinsically
Safe

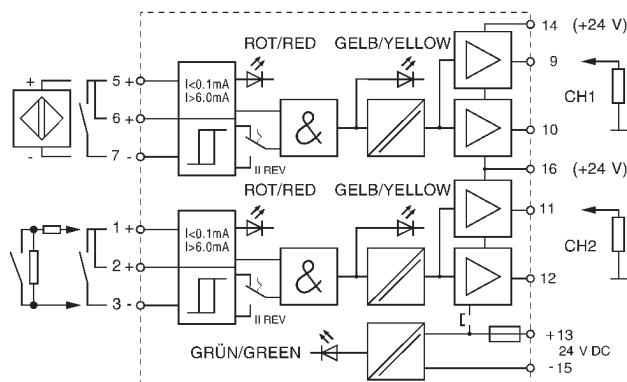
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 11 \text{ V}$, $I_{sc} \leq 26 \text{ mA}$

Ordering Information:

Type No.	Output	Ex-prot.	Catalog No.
2/941	2 channels 700 Hz, 1 passive output each	ia/ib	GHG 122 3121 C 1009*
2/941	2 channels 700 Hz, 2 passive outputs each	ia/ib	GHG 122 3121 C 2009
2/941	2 channels 700 Hz, 1 active output	ia/ib	GHG 122 3121 C 3009
2/941	1 channel 1200 Hz, 1 passive output	ia/ib	GHG 122 3151 C 1009
2/941	1 channel 1200 Hz, 2 passive outputs	ia/ib	GHG 122 3151 C 2009

* Normally Stocked

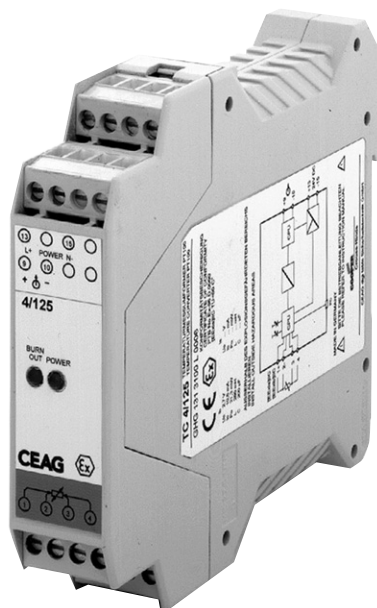


Product Features:

- Power supply for 2- and 3-wire 4-20 mA transmitters
- SMART communication for all major transmitter brands
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CE certified
- CENELEC, UL, CUL

Technical Data:

Field device power supply	17V at 20mA
Load	800 Ω (24V)
SMART communication	across load or via front socket
Response time	2.2 ms (10 - 90%)
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Band width	0 - 12KHz
Power supply	20 - 30VDC
Power consumption	2.1W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



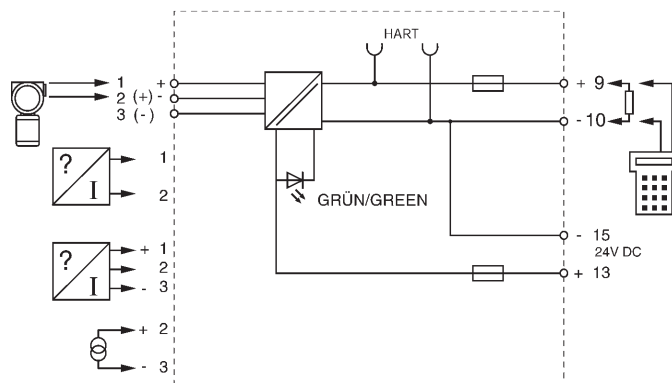
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 28V$, $I_{sc} \leq 98mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
8/420	ia/ib	GHG 124 3111 M 1109*

* Normally Stocked



Analog Input SMART-Transmitter Power Supply Model 6/420

8C

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Product Features:

- Power supply for 2- and 3-wire and 4-20 mA transmitters
- SMART communication for all major brands
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL

Technical Data:

Field device power supply	17V at 20 mA ($V_z = 28$ V), 15V at 20 mA ($V_z = 24$ V)
Load	800 Ω
SMART communication	across load or via front socket
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Response time	2.2 ms (10 - 90%)
Band width	0 - 12 KHz
Power supply	20 - 26VAC 20 - 30VDC
Power consumption	3.1VA/2.2W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



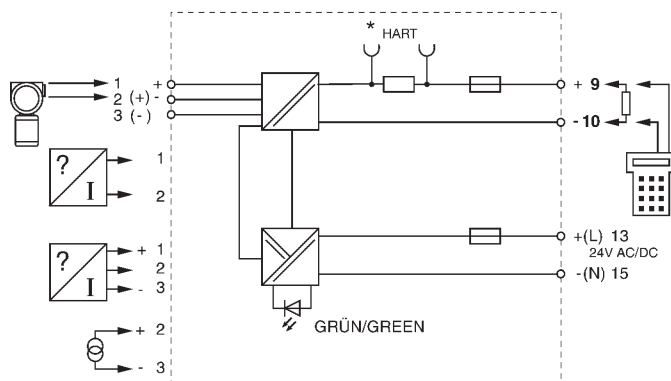
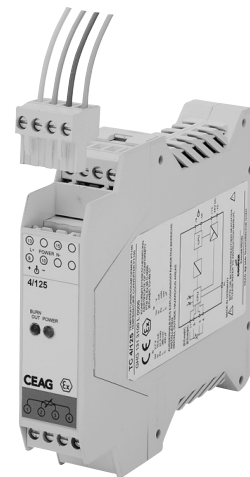
8C Intrinsically
Safe

Explosion Protection:

Category [EEx ia] IIC
Approval Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Ex-protection	Catalog No.
6/420-1	ia/ib, $V_{oc} \leq 28$ V, $I_{sc} \leq 98$ mA	GHG 124 3111 K 1206
6/420-4	ia/ib, $V_{oc} \leq 24$ V, $I_{sc} \leq 76$ mA	GHG 124 3411 K 1206



8C Analog Input Transmitter Power Supply Model 7/420

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Product Features:

- Power supply for 2- and 3-wire 4-20 mA transmitters
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL

Technical Data:

Field device power supply	17V at 20mA ($V_z = 28V$), 15V at 20mA ($V_z = 24V$)
Load	1000 Ω
Response time	2.2 ms (10-90%)
Linearity	< 0.1%
Temperature drift	< 0.1%/10 K
Power supply	20 - 26VAC 18 - 30VDC
Power consumption	3.1VA/2.2W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

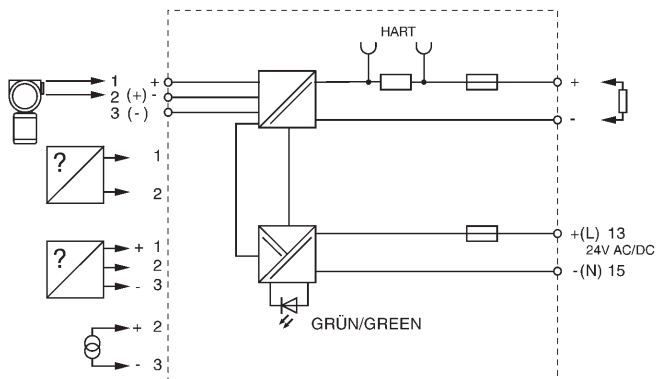


Explosion Protection:

Category [EEx ia] IIC
Approval Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Ex-protection	Catalog No.
7/420	ia/ib, $V_{oc} \leq 28V$, $I_{sc} \leq 98mA$	GHG 124 3111 L 1006
7/420	ia/ib, $V_{oc} \leq 24V$, $I_{sc} \leq 76mA$	GHG 124 3411 L 1006



Digital Output Loop Powered Model 6/915

8C

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Product Features:

- Drives solenoid valves, acoustic alarms, LED's
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Galvanic isolation
- CE certified
- CENELEC, UL, CUL

Technical Data:

Valve current	$I = V_o / (R_a + R_{valve})$
Power supply	18 - 30VDC loop powered
Input current	1.2 ... 2x output current
Response time	20 ms
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

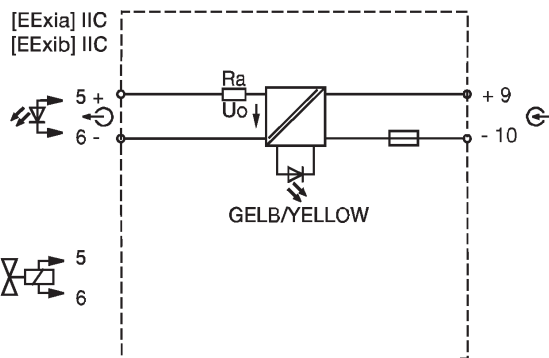
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

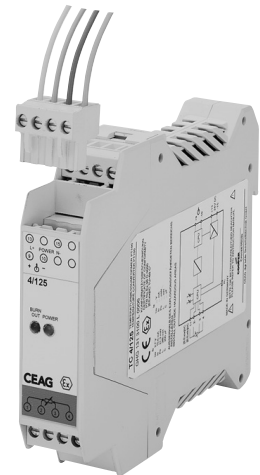
Ordering Information:

Type No.	Safety Values		Drive Capability		Catalog No.
	V _{oc} [V]	I _{sc} [mA]	V _o [V]	R _a [Ω]	
6/915-0	4.9	200	4	31	GHG 138 3311 E 0008
6/915-1	7.9	148	6.5	64	GHG 138 3311 E 1008
6/915-2	12.6	150	12	115	GHG 138 3311 E 2008
6/915-3	15.8	175	14	122	GHG 138 3311 E 3008
6/915-4	18.7	144	17	175	GHG 138 3311 E 4008
6/915-5	18.7	282	17	115	GHG 138 3311 E 5008
6/915-6	23.1	85	21	340	GHG 138 3311 E 6008
6/915-7	27.3	96	24	370	GHG 138 3311 E 7008*
6/915-8	23.1	69	20.6	404	GHG 138 3311 E 8008
6/915-9	18.7	329	16.6	103	GHG 138 3311 E 9008

* Normally Stocked



8C
Intrinsically
Safe



8C Digital Output Model 7/915

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Product Features:

- Fully isolated
- Drives solenoid valves, acoustic alarms, LED's
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CENELEC, UL, CUL Approvals

Technical Data:

Input drive	on: 10 - 30V off: 0 - 1.5V
Input resistance	4 kΩ
Valve current	$I = V_o / (R_a + R_{valve})$
Power supply	20 - 30VDC
Power consumption	approx. 1W
Response time	20 ms
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

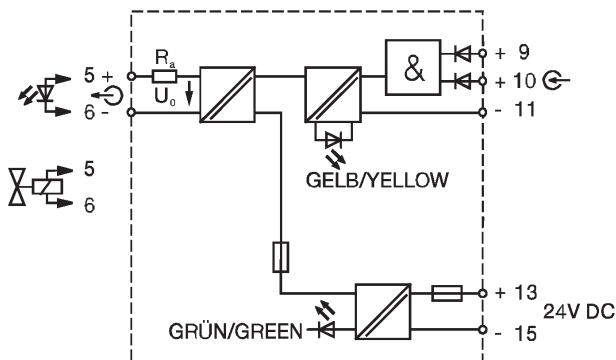
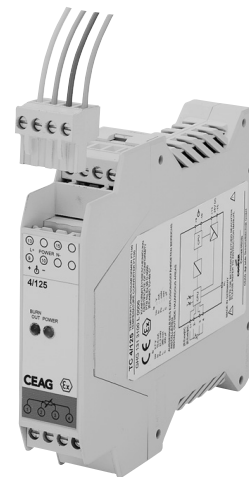


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G

Ordering Information:

Type No.	Safety Values		Drive Capability		Catalog No.
	V _{oc} [V]	I _{sc} [mA]	V _o [V]	R _a [Ω]	
7/915-0	4.9	200	4	31	GHG 138 3311 F 0009
7/915-1	7.9	148	6.5	64	GHG 138 3311 F 1009
7/915-2	12.6	150	12	115	GHG 138 3311 F 2009
7/915-3	15.8	175	14	122	GHG 138 3311 F 3009
7/915-4	18.7	144	17	175	GHG 138 3311 F 4009
7/915-5	18.7	282	17	115	GHG 138 3311 F 5009
7/915-6	23.1	85	21	340	GHG 138 3311 F 6009
7/915-7	27.3	96	24	370	GHG 138 3311 F 7009
7/915-8	23.1	69	20.6	404	GHG 138 3311 F 8009
7/915-9	18.7	329	16.6	103	GHG 138 3311 F 9009



Analog Output Loop Powered Model 5/303

8C

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Product Features:

- 1 or 2 channels
- Galvanic isolation
- Analog output for 4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input voltage	$8.4V + 0.02 \times \text{load} \times (V/\Omega)$
Linearity	< 0.1%
Temperature drift	< 0.1% / 10 K
Power supply	8.4 - 30VDC loop powered
Dimensions	see drawing
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



8C Intrinsically Safe

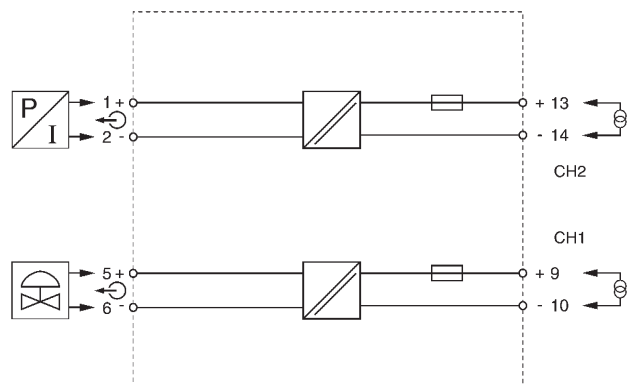
Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 12.6V$ $I_{sc} \leq 95 \text{ mA}$

Ordering Information:

Type No.	Channels	Ex-protection	Catalog No.
5/303	1 channel	ia	GHG 126 3311 D 1008
5/303	2 channels	ia	GHG 126 3321 D 1008*

* Normally Stocked



8C Analog Output SMART Output Isolator Model 6/304

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Product Features:

- Fully isolated
- Output isolator for 0/4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- SMART Communication
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input resistance	50Ω/250Ω (Smart)
Max. load	22.5V Power supply 600 Ω
	20V Power supply 420 Ω
Linearity	< 0.1
Temperature drift	< 0.1%/10 K
Response time	100 ms (10 - 90%)
Power supply	20 - 26VAC
	20 - 30VDC
Power consumption	2.3 VA/1.4 W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average)
	< 95% keep dry

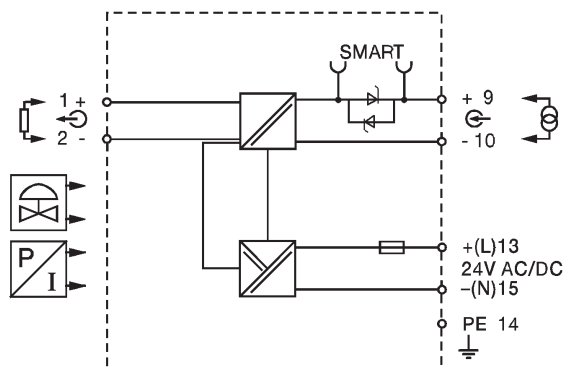


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 28V$
	$I_{sc} \leq 93 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
6/304	ia/ib	GHG 125 3310 K 0306



Analog Output Isolator Model 5/304

8C

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Product Features:

- Output isolator for 0/4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Fully isolated
- CE certified
- CENELEC, UL, CUL

Technical Data:

Input resistance	25 Ω
Max. load at 22.5V Power supply	500 Ω
20V Power supply	320 Ω
Linearity	< 0.1
Temperature drift	< 0.1 % / 10 K
Response time	100 ms (10 - 90%)
Power supply	18 - 26.4VAC 18 - 30VDC
Power consumption	2.3VA / 1.4W
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



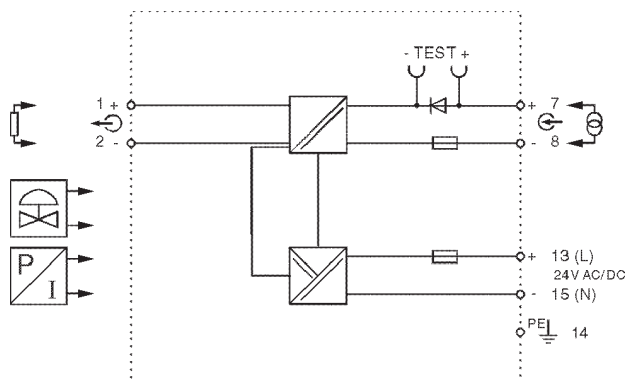
8C Intrinsically Safe

Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 12.6V$ $I_{sc} \leq 76 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
5/304	ia/ib	GHG 125 3310 H 0306



8C Analog Output with Level Shift Option Model 7/304

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Product Features:

- Fully isolated
- Output isolator for 4-20 mA signals (I/P converter, displays, positioners)
- DIN rail mounted
- Short circuit protected outputs
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- Level Shift Option
- Current/voltage converter

Technical Data:

Input resistance	25 Ω
Max. load at 22.5V Power supply	500 Ω
20V Power supply	320 Ω
Linearity	< 0.1
Temperature drift	< 0.1%/10 K
Response time	100 ms (10 - 90%)
Power supply	18 - 26.4VAC (2.3VA) 18 - 30VDC (1.4W)
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry

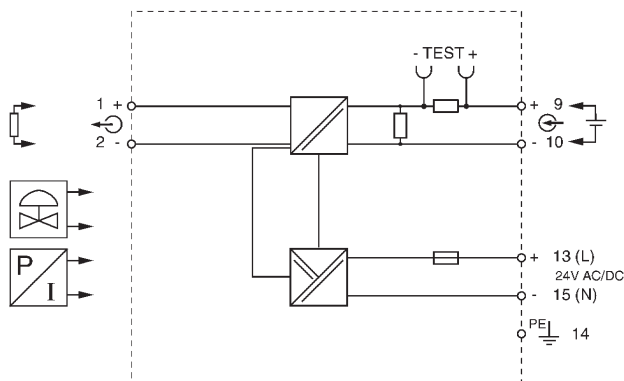


Explosion Protection:

Category	[EEx ia] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 12.6V$, $I_o \leq 94 mA$ $V_{sc} \leq 28V$, $I_o \leq 93 mA$

Ordering Information:

Type No.	Input	Output	Ex-protection	Catalog No.
7/304	0/4-20 mA	0/4-20 mA	ia/ib	GHG 125 3310 L 0306
7/304	0-20 mA	4-20 mA	ia/ib	GHG 125 3310 L 0106
7/304	1-5V	4-20 mA	ia/ib	GHG 125 3313 L 0306
7/304	1-10V	4-20 mA	ia/ib	GHG 125 3315 L 0306



RTD Temperature Converter Model 4/125

8C

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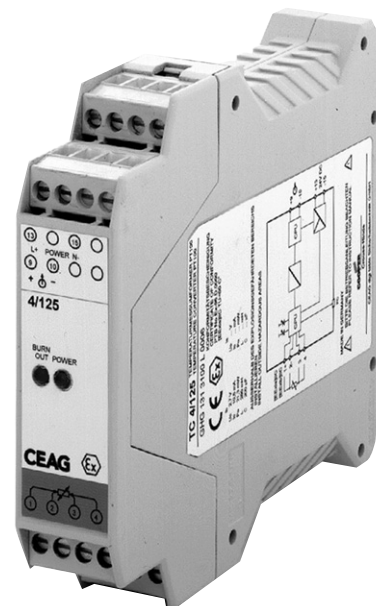
Product Features

- Galvanic isolation
- 2, 3 or 4-wire-RTD converter
- DIN rail mounted
- Short circuit protected output
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- OFF - LINE programmable
- CE certified
- CENELEC, UL, CUL

Technical Data:

Range -200°C +850°C, smallest span 20 Ω

Output	0/4-20 mA
Burn-out feature	Output selectable 0, > 100%, frozen
Load	< 750 Ω
Line resistance	< 50 Ω
Linearity	< 0.1%
Temperature drift	< 0.1% / 10K
Response time	< 150 ... 350 ms mode dependent
Power supply	20.4 - 30VDC (< 1.5 W)
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



8C Intrinsically Safe

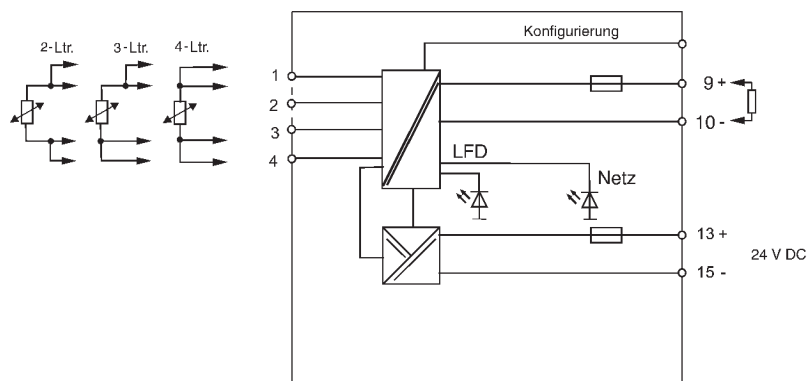
Explosion Protection:

Category [EEx ia/ib] IIC
Approval Class I, II, III, Div. 1, Gr. A-G
Safety values $V_{oc} \leq 2.7V$, $I_{sc} \leq 10.6 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
4/125 Programming Cable	ia/ib	GHG 131 3100 L 0006* GHG 139 0028 C 0000

* Normally Stocked



8C Thermocoupler Converter Model 4/127

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Product Features:

- Galvanic isolation
- Converter for all thermocouples
- mV Input
- DIN rail mounted
- Short circuit protected output
- EMC to IEC 1000 and EN 50081-50082
- EEx ia/ib approved
- OFF - LINE programmable
- CE certification
- CENELEC, UL, CUL

Technical Data:

Range (mV)	-75mV ... + 75mV (smallest range 5mV for 0.1%)
Thermocouple	B, E, J, K, R, S, T
DIN/IEC 43710	L, U, and Platinum
Compensation	Internal or External
Output	0/4-20 mA
Load	< 750 Ω
Burn-out feature	Output selectable 0, > 100%, frozen
Line fault detection (LFD)	> 1 k Ω
Linearity	< 0.1%
Temperature drift	< 0.1%/10K
Response time	< 150...600 ms mode dependent
Power supply	20.4 - 30VDC (< 1.5W)
Weight	160 g
Ambient temperature	-20°C ... +60°C
Relative humidity	< 75% (average) < 95% keep dry



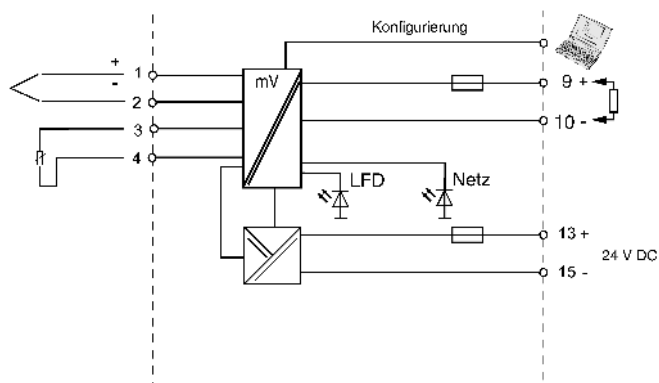
Explosion Protection:

Category	[EEx ia/ib] IIC
Approval	Class I, II, III, Div. 1, Gr. A-G
Safety values	$V_{oc} \leq 1.8V$, $I_{sc} \leq 21.6 mA$

Ordering Information:

Type No.	Ex-protection	Catalog No.
4/127 Programming Cable	ia/ib	GHG 131 3100 M 0006* GHG 139 0028 C 0000

* Normally Stocked



Trip Amplifier with 1-2 Trip Points Model 3/209

8C

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Product Features:

- Programmable external set points, gradients, ratios, min./max.-selection
- Digital display in engineering units
- Self monitoring
- EMC to IEC 1000 and EN 50081-50082
- Galvanic separation between input, power supply and contacts
- Line monitor
- CE certified
- CENELEC, UL, CUL

Technical Data:

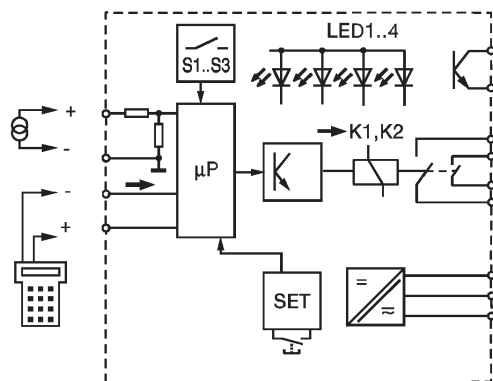
Input	0/4-20 mA, 0/1-5V
Input impedance	25 Ω (mA) 10 k Ω (V)
Output Relay	
Voltage rating	250VAC/150VDC
Current rating	2 AAC/DC
Power rating	60VA/30W
Mechanical life	10 ⁶ operations
Electrical life	0.5 10 ⁶ operations
Response time	> 20 ms (variable)
Transistor	24V max. 30VDC/100 mA
Voltage drop	2V
Response time	> 10 ms (variable)
Temperature drift	< 0.1%/10 K
Power supply	20 - 26.4VAC 20 - 30VDC
Power consumption	2VA/1.5W
Weight	300g
Ambient temperature	-10°C... +60°C
Relative humidity	< 75% (Average)



8C Intrinsically Safe

Ordering Information:

Input	Output	Trip relays	Catalog No.
0/4-20 mA	2 relays	1 min./1 max.	GHG 137 2011 E 1016
0/4-20 mA	1 relay, 1 transistor	1 min./1 max.	GHG 137 2011 E 9016



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Apparatus

Section A



A Apparatus

Table of Contents

Section A of the Cooper Crouse-Hinds catalog contains the following product groupings:

Section 1A

Panelboards

(for use in hazardous and non-hazardous areas)

For central control and protection of a large number of feeder or branch circuits and for housing of circuit breakers.

D2L	
D2PB	EXD
D2D	GUSC
EPL	D2Z
LP	Unibody

Section 2A

Switches

(for use in hazardous and non-hazardous areas)

Switches and enclosures for disconnecting motor, lighting and other circuits.

EDS, EDSC	FSPC	EBM
EFD, EFDC	GUSC	NRS
FLS	WST	6810 Series
	GHG	7810 Series
		N2RS

Section 3A

Signals and Alarms

(for use in hazardous and non-hazardous areas)

Visible and audible signals and alarms and telephones for inclusion in system to alert personnel to abnormal conditions, signaling and communication.

ESR	Bells
ETW	Telephones
D2TW	Telephones
ETR	Ringers
ETC	Phone relay
ETH	Flexitone™ Audible Signaling Devices
ETH	Horns
EX	Strobe Lights, Steady-On Beacons, Rotating Beacons (See Section 11L)
WH	Horns
W2H	Audible Signaling Devices
VDAS	Strobe Light (See Section 11L)

Section 4A

Instrument Housings

(for use in hazardous areas)

Housings for a variety of types and makes of meters and instruments, thermostats, heaters and clocks.

EMH	HRC
GUB	TCH
EIH	EXH
EIHT	XC

Description	Page No.
Application/Selection	510, 511
General Information	510
Power Panels: EHB/EHD Frame (480VAC)	
D2D	524-526
EXD	524-526
Unibody (EDB-480VAC & QOB-240VAC)	522, 523
Lighting Panels: Quicklag®† (120/240VAC)	
Exactra LP	514-517
D2PB	536, 537
D2L	518-521
EPL	518-521
GUSC	540, 541
D2Z	527-535
Wiring Diagrams	512, 513
Panelboards with Transformers	
D2PB	538, 539
Panelboards located elsewhere (Nonmetallic)	
N2PB Series	628, 629
NLP Series	630, 631

† Quicklag is a registered trademark of Cutler-Hammer Inc.

Application:

Circuit breaker panelboards are used in hazardous and non-hazardous areas (as shown in the individual listings):

- to provide, in one compact unit, a centrally controlled switching system for a large number of feeder or branch circuits
- for controlling lighting, heating, appliance, heat tracing, motor and similar circuits
- in locations where rough usage, moisture, dust, dirt and corrosion are a problem
- to house thermal-magnetic circuit breakers that provide disconnect means, short circuit protection and thermal time delay overload protection

Features:

Panelboards:

- All main and branch circuit wire lugs are solderless and readily accessible for fast, easy installation
- Are factory wired from main terminal blocks or main bus to line side of branch circuit breakers
- With circuit breakers in factory sealed housings (LP1, EXD & EPL), are also factory wired from the load side of branch circuit breakers to readily accessible terminal blocks
- With circuit breakers grouped in one enclosure (LP2, D2D, D2L, D2Z and D2PB factory sealed), branch circuit wires are attached directly to circuit breaker load terminals

Circuit breakers (thermal magnetic):

- Are trip-free of the handles and cannot be held closed under short circuit or overload conditions
- Four breaker types are used in panelboards manufactured by Cooper Crouse-Hinds. They are as follows:

- **Quicklag®** – used in LP, D2PB, EPL and D2L panelboards; 10,000 ampere asymmetrical interrupting capacity

Ratings

Single and two-pole, 120/240 vac
Two and three-pole, 240 vac

Fed. Spec.

W-C-375a, Class 1a
W-C-375a, Class 1b

- **EHD/FDB frame** – used in EXD & D2D panelboards; 14,000 ampere asymmetrical interrupting capacity - 480 vac

Ratings

Single-pole, 277 vac or 125 vdc
Two and three-pole 480 vac or 250 vdc

Fed. Spec.

W-C-375a, Class 2a
N/A

Wiring Systems:

- The wiring diagrams shown on page 512 and 513 are the standard systems used for single and three-phase panelboards having single, two and three-pole circuit breakers
- Standard panelboards are listed with all circuit breakers having the same number of poles and wired for one of these systems
- To meet the requirements of a specific installation, panelboards can be assembled with a combination of single, two and three-pole breakers. To accomplish this, the three individual wiring systems must have the same main service as, for example, 3-phase, 4-wire, solid neutral.

Panelboard Type

D2PB

Applicable Wiring Systems

3,4,5,8,11,12

- Diagrams shown on page 512 show only four, six or eight circuits; are intended to show only the phase connections of each circuit breaker and do not necessarily show their physical location in a panelboard.

Panelboards are available with the number of circuits indicated in the listings.

Standard Materials, Finishes, Options and Compliances:

- See individual listing pages

Quicklag is a registered trademark of Cutler-Hammer Inc.

Quick Selector Chart

Quick Selector Chart

Panel-board	NEC & NEMA Certifications and Compliances	Factory Sealed	Number Circuits Max.	Breaker Frame Size	Applicable Wiring Systems	Multi-Pole Voltage Max.	Trip Rating Amps Max.	Circuit Interrupting Amps Max.	Step Down Transformer Available
LP1	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III NEMA: 3, 4X, 7BCD, 9EFG, 12	Yes	36	Quicklag®	All	240VAC	100	10,000	No
LP2	Cl. I, Div. 2, Groups B, C, D; Cl. II, Div. 2, Groups F, G; Cl. III NEMA: 3, 4X, 7BCD, 9EFG, 12	Yes	36	Quicklag®	All	240VAC	100	10,000	Yes
D2PB	Cl. I, Div. 2, Groups C, D; NEMA: 3, 7CD (Div. 2), 12	Yes	24	Quicklag®	1, 3, 4, 5, 7, 8, 11, 12, 13, 15, 24, 25, 28, 29	240VAC	30	10,000	Yes
Unibody	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G Cl. III; NEMA: 3, 4, 7BCD, 9EFG, 12	Yes	24-Lighting 18-Power	EDB/QOB	All	480VAC	100	10,000	No
EXD	Cl. I, Div. 1 & 2, Groups B, C, D Cl. II, Div. 1, Groups E, F, G Cl. II, Div. 2, Groups F, G Cl. III NEMA: 3, 4, 7BCD, 9EFG, 12	Yes	30	EHD/FDB	All	600VAC 250VDC	100	10,000	No
D2D	Cl. I, Div. 2, Groups B, C, D NEMA: 3, 4, 7BCD, 12	Yes	30	EHD/FDB	All	600VAC 250VDC	100	10,000	Yes
EPL	Cl. I, Div. 1 & 2, Groups B, C, D Cl. II, Div. 1, Groups E, F, G Cl. II, Div. 2, Groups F, G Cl. III NEMA: 3, 4, 7BCD, 9EFG, 12	Yes	42	Quicklag®	All	240VAC 125VDC	100	10,000	No
D2L	Cl. I, Div. 2, Groups B, C, D NEMA: 3, 4, 7BCD, 12	Yes	42	Quicklag®	All	240VAC 125VDC	100	10,000	Yes
GUSC	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G Cl. III; NEMA: 3, 7CD, 9EFG, 12	No	2	Quicklag®	Not applicable	240VAC	30	10,000	No
N2PB	Cl. I, Div. 2, Groups C, D; Cl. II, Div. 2, Groups F, G; NEMA: 3, 7CD, (Div. 2), 12 Corrosion Resistant, Non-Metallic	Yes	24	Quicklag®	3, 4, 5, 8, 24, 25	240VAC	30	10,000	No
D2Z	Cl. I, Zone 1, Div. 2, Groups A, B, C, D; NEMA: 3, 4X, 7ABCD (Div. 2), 12 Corrosion Resistant, Non-Metallic	Yes	54	CEAG®	All	480VAC	180	10,000	No

Quicklag is a registered trademark of Cutler-Hammer Inc.

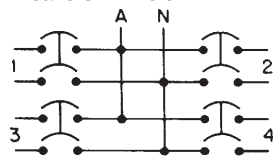
1A Circuit Breaker Panelboards

Wiring Diagrams

Wiring Diagrams for D2PB Panelboards

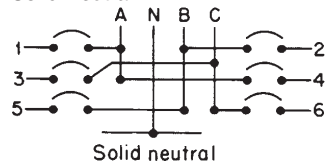
System 1

Mains—2-Wire
Branches—2-Wire
Breakers—2-Pole



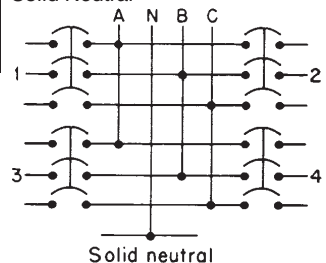
System 5

Mains—4-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—Single-Pole
Solid Neutral



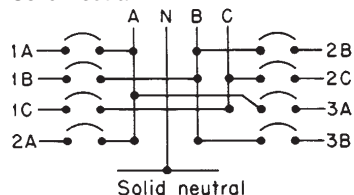
System 11

Mains—4-Wire, 3-Phase
Branches—4-Wire, 3-Phase
Breakers—3-Pole
Solid Neutral



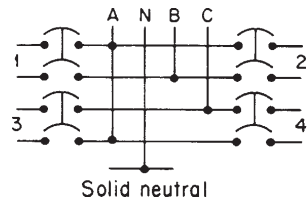
System 15

Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—Single-Pole
Solid Neutral



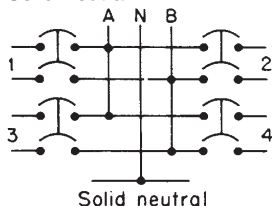
System 28

Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



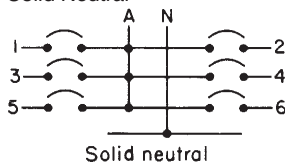
System 3

Mains—3-Wire
Branches—3-Wire
Breakers—2-Pole
Solid Neutral



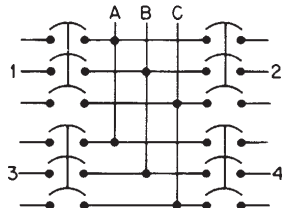
System 7

Mains—2-Wire
Branches—2-Wire
Breakers—Single Pole
Solid Neutral



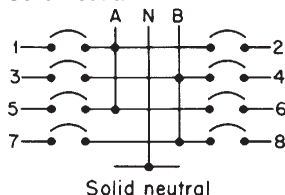
System 12

Mains—3-Wire, 3-Phase
Branches—3-Wire, 3-Phase
Breakers—3-Pole



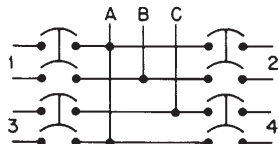
System 24

Mains—3-Wire
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



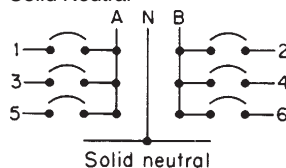
System 29

Mains—3-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—2-Pole



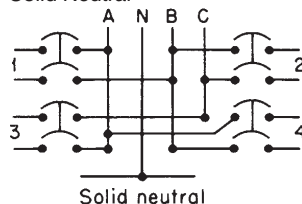
System 4

Mains—3-Wire
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



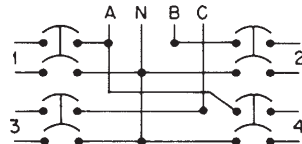
System 8

Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



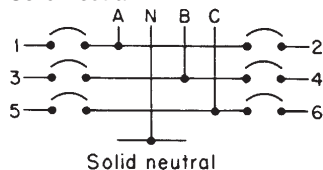
System 13

Mains—4-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—2-Pole

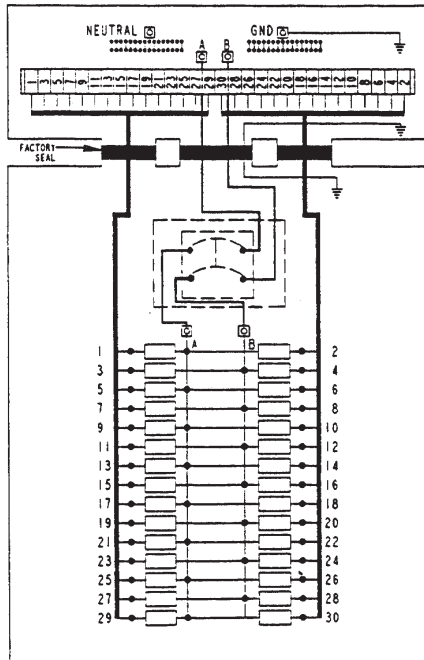


System 25

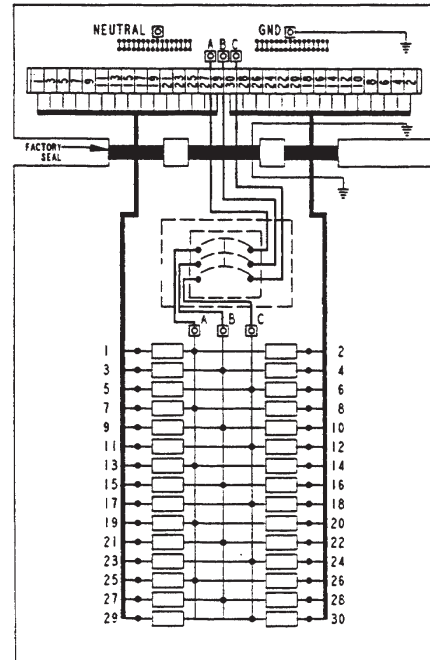
Mains—4-Wire, 3-Phase
Branches—2-Wire, 1-Phase
Breakers—Single-Pole
Solid Neutral



Wiring Diagram for PowerPlus™ Power Panelboards

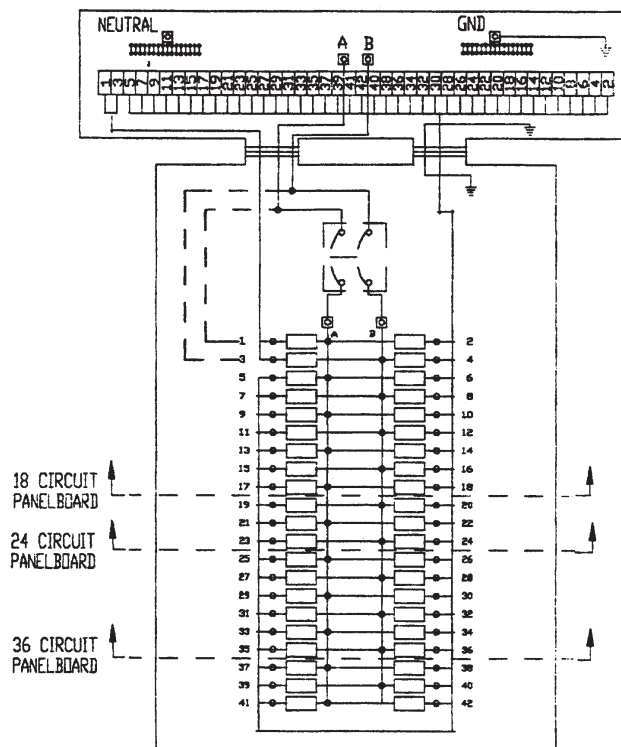


Single Phase Circuit

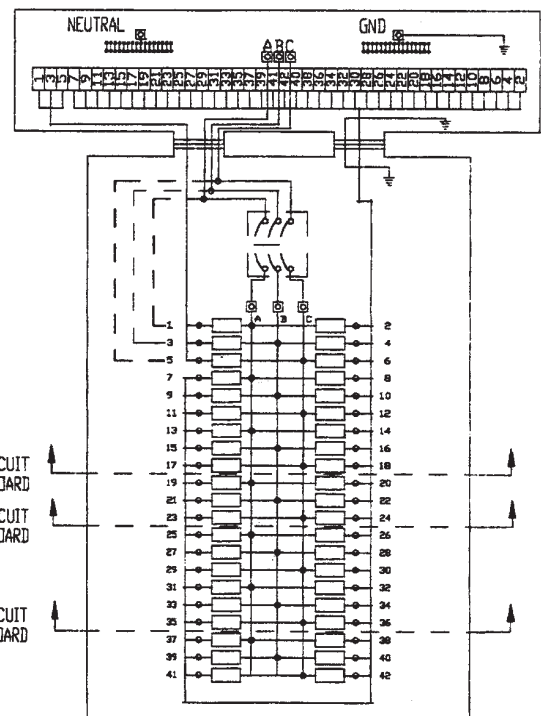


Three Phase Circuit

Wiring Diagram for PowerPlus™ Lighting Panelboards



Single Phase Circuit



Three Phase Circuit



Cl. I, Div. 1 & 2, Groups B†, C, D
 Cl. II, Div. 1, Groups E†, F, G
 Cl. II, Div. 2, Groups F, G
 Cl. III
 NEMA 3, 4*, 4X**, 7B†CD, 9EFG, 12

CSA Enc. 3, 4, 5
 Explosionproof
 Dust-Ignitionproof
 Factory Sealed†
 Wet Locations
 Watertight

Exactra™ Factory-Sealed Lighting Panelboards provide flexibility and labor savings when installed, and for future changes in the field. Panels are prewired to maximum circuit capacity and ratings.

Applications:

Exactra™ Factory-Sealed Lighting Panelboards are ideal:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts
- in areas subject to weather, dampness, and corrosion
- for branch power distribution and circuit protection for motors, valves, pumps, lighting, heat tracing, receptacles, etc
- for indoor and outdoor applications in petroleum refineries, chemical and petrol chemical plants, and other process industry facilities where similar hazards exist
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions
- to accommodate up to 35 amp branch loads

Features and Benefits:

- Factory sealed, no external seals required for branch circuits. External seals are required for Class I, Div. 1 applications
- Fully wired for circuit breaker housing to pre-numbered terminals in wiring compartment
- External flange design allows wide unobstructed cover opening for easy wiring access
- External circuit breaker handles can be padlocked "ON" or "OFF"
- Furnished with two 3" and ten 1 1/2" conduit openings
- Breather and drains available for each enclosure
- Available with or without main circuit breaker up to 100 amps
- Isolated neutral and ground bar provided
- Available with up to 6 GFI and/or EPD branch breakers per pannel. GFI and EPD branch breakers available within the same panel
- Available with ambient compensated breakers throughout panelboard
- Stainless steel hinges allow the cover to swing wide open or be removed
- Stainless steel hex head bolts captive design prevents lost bolts
- Cast copper-free (less than 0.4%) aluminum construction for excellent corrosion resistance
- Actuators automatically align to breaker handles as door is closed
- Neoprene cover gasket meets NEMA Type 4 / CSA Enc. 4 / IP65 requirements, provides watertight seal for superior water and corrosion protection
- Copper bus bar system.

Standard Materials:

- Body and cover - cast copper-free aluminum
- Gasket - neoprene
- Operating handles - extruded aluminum (copper-free)
- Operating shafts, cover bolts, washers, GFI/EPD plungers and hinges - stainless steel
- Circuit breaker operators - die cast aluminum (copper-free)
- Lifting bracket - cold rolled steel
- Bus bar - copper

Standard Finishes:

- Aluminum - natural
- Stainless steel - natural
- Cold rolled steel - electrogalvanized

Certifications and Compliances:

LP1 panelboards

- Class I, Groups B, C, D
- Class I, Zone 1 & 2, Ex de IIB + H₂
- Class II, Groups E, F, G
- Class III
- NEMA Type 3, 3R, 4*, 4X**, 7B†CD; 9E†FG, 12
- CSA Enc. 3, 4*, 5
- IP65* Enclosure
- UL Listed (Standard: 67, 877, 2279)
- cUL Listed (Certified by UL to CSA C22.2 Nos. 29 & 30)

LP2 Panelboards

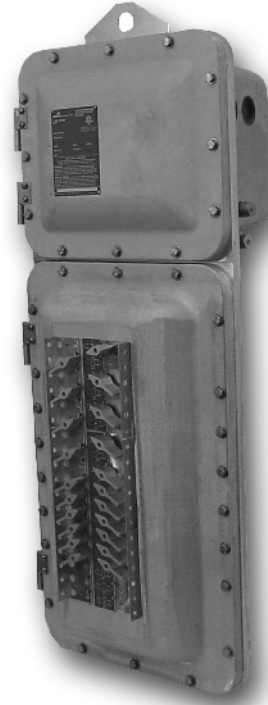
- Class I, Division 2, Groups B†, C, D
- Class I, Zone 1 & 2, Ex de IIB + H₂
- Class II, Division 2, Groups F, G
- Class III
- NEMA Type 3, 3R, 4*, 4X**, 7BCD (Div 2), 9EFG, 12
- CSA Enc. 3, 4*, 5
- IP65* Enclosure
- UL Listed (Standard: 67, 877 (DIV. 2))
- cUL Listed (Certified by UL to CSA C22.2 Nos. 29 & 30)

*NEMA Type 4/CSA Enc. 4/IP65 hoesitight with breather and drain openings plugged.

**NEMA Type 4X when ordered with suffix S752 with breather and drain openings plugged.

†External seals required for Class I, Div. 1.

† With suffix -GB.



LP1 Lighting Panelboard

Exactra™ Panelboards

Lighting and Heat Tracing

LP1 Series

LP2 Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C, D
Cl. II, Div. 1, Groups E†, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4*, 4X** 7B†CD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed‡
Wet Locations
Watertight

1A



Electrical Ratings:

Branch Breaker (120/240 VAC Quicklag® Bolt On) Trip Ratings

- 1, 2, 3 pole
- 10, 15, 20, 25, 30, 35 amp
- GFI type 1, 2-pole (5 mA sensitivity)
- 15, 20, 25, 30 amp
- EPD type 1, 2-pole (30 mA sensitivity)
- 15, 20, 25, 30 amp

Main Breaker Trip Ratings:

- size B & C
- 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100 amp
- 2, 3-pole

Main Lugs

- size B & C
- 100 amp

Quicklag® is a registered trademark of Cutler-Hammer Inc.

Options:

- Alternate feed: incoming power into terminal enclosure from bottom
- Group B and E suitability (10A not avail.)
- Lamicoid nameplate with customer-specified panel identification
- Stainless steel nameplate with customer-specified panel identification
- 125W@120 VAC, 250W@240 VAC internal space heater in circuit breaker enclosure
- External epoxy powder coat finish
- Internal & External epoxy powder coat finish
- One breather and two drains per enclosure
- All conduit entries plugged with PLG recessed head plugs
- All conduit entries plugged with square headed plugs

Suffix

- A
- GB†
- LID
- SID
- R22
- S752
- S753
- S756V
- S822
- S872

Breaker Options:

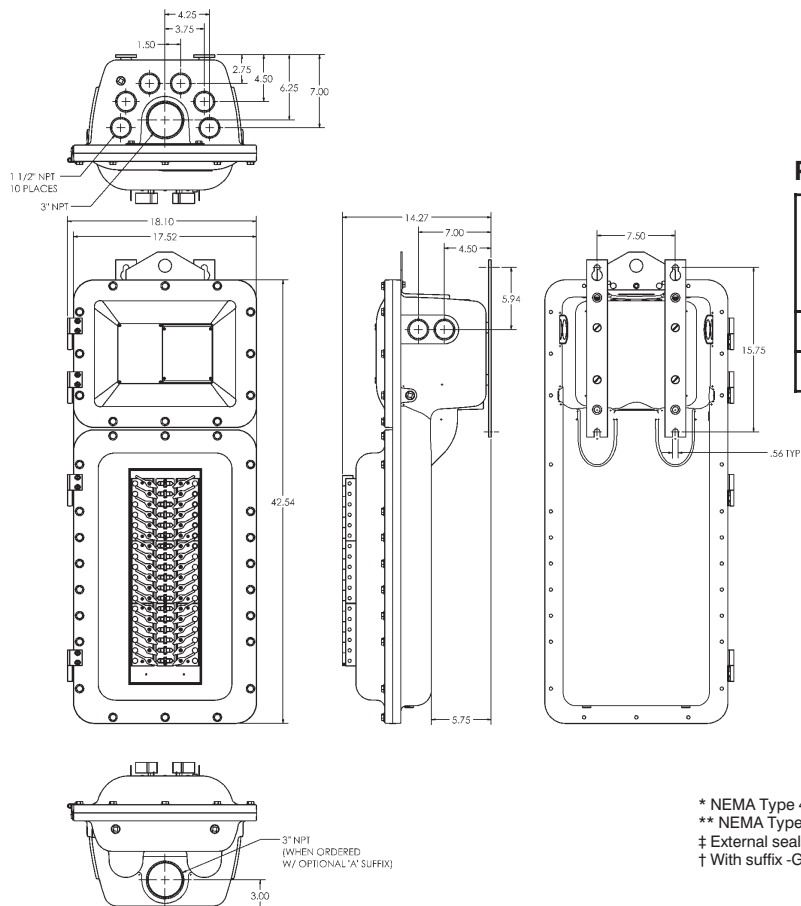
Suffix to add to base Cat. #

- EPD branch breaker (up to 6 EPD and/or GFI per panel) E
- GFI branch breaker (up to 6 EPD and/or GFI per panel) G
- Ambient compensated (50°C) breakers throughout panelboard V
- HID branch breaker for lighting loads H

Lighting Panelboard Accessories:

- Extra circuit breaker operator assemblies 1-pole (qty. 3) LP K1
- Replacement cover plugs for unused circuit breaker positions (qty. 6) LP K2
- Extra circuit breaker operator assemblies for 1 pole GFI/EPD breakers (qty. 3) LP K3
- GFI/EPD "push to test" plungers (qty. 6) LP K4
- GFI/EPD entry plugs (qty. 6) LP K5
- Replacement mounting feet (qty. 2) LP K6
- Extra circuit breaker operator assemblies for 2 pole standard and GFI/EPD breakers LP K7
- Extra circuit breaker operator assemblies for 3 pole breakers LP K8

Dimensions (Inches):



Panel Capacity:

Panel Size	Max. No. of Branch Spaces			Main Breaker Max. Amp	Available w/GFI, EPD Branch Protection
	With Main Lug Only	With Main Breaker			
B	24	22	21	100	YES
C	36	34	33	100	YES

* NEMA Type 4/CSA Enc. 4/IP65 hoesetight with breather and drain openings plugged.
** NEMA Type 4X when ordered with suffix S752 with breather and drain openings plugged.
‡ External seals required for Class I, Div. 1.
† With suffix -GB.



Exactra™ Panelboards

Lighting and Heat Tracing

LP1 Series

LP2 Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4*, 4X** 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed†
Wet Locations
Watertight

Ordering Information:

LP1 & LP2 Factory Sealed 120/240 Volt Lighting Panelboards

Branch Spaces Needed	Division 1		Division 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
6	LP1B106✓	LP1B306✓	LP2B106✓	LP2B306✓
8	LP1B108✓	LP1B308✓	LP2B108✓	LP2B308✓
10	LP1B110✓	LP1B310✓	LP2B110✓	LP2B310✓
12	LP1B112✓	LP1B312✓	LP2B112✓	LP2B312✓
14	LP1B114✓	LP1B314✓	LP2B114✓	LP2B314✓
16	LP1B116✓	LP1B316✓	LP2B116✓	LP2B316✓
18	LP1B118✓	LP1B318✓	LP2B118✓	LP2B318✓
20	LP1B120✓	LP1B320✓	LP2B120✓	LP2B320✓
20	LP1C120✓	LP1C320✓	LP2C120✓	LP2C320✓
22	LP1B122✓	LP1B322✓	LP2B122✓	LP2B322✓
22	LP1C122✓	LP1C322✓	LP2C122✓	LP2C322✓
24†	LP1B124†✓	LP1B324†✓	LP2B124†✓	LP2B324†✓
24	LP1C124✓	LP1C324✓	LP2C124✓	LP2C324✓
26	LP1C126✓	LP1C326✓	LP2C126✓	LP2C326✓
28	LP1C128✓	LP1C328✓	LP2C128✓	LP2C328✓
30	LP1C130✓	LP1C330✓	LP2C130✓	LP2C330✓
32	LP1C132✓	LP1C332✓	LP2C132✓	LP2C332✓
34	LP1C134✓	LP1C334✓	LP2C134✓	LP2C334✓
36†	LP1C136†✓	LP1C336†✓	LP2C136†✓	LP2C336†✓
Breaker Ready†† (Empty)	LP1B100✓ LP1C100✓	LP1B300✓ LP1C300✓	LP2B100✓ LP2C100✓	LP2B300✓ LP2C300✓

† Items are not available with main circuit breaker.

†† Provided for main lug only; main breaker must be specified with amperage.

Catalog Number Example:

Lighting Panelboards can be furnished with an assortment of breaker ratings and pole configurations. Assortments may be ordered by adding the number of poles and amp rating designations to the catalog number.

Example:

A three-phase, Class I, Div. 2, Groups C, D lighting panelboard with:

- 5 three-pole breakers - with 15 amp rating
- 6 single-pole breakers - with 20 amp GFI personnel protection
- three-pole main breaker - with 100 amp rating
- alternate feed option
- breather and drain option

1. Select basic panelboard catalog number from listing:

- Determine phase (available with single-phase or three-phase wiring).
- Determine a total even number of breaker spaces needed to complete your desired lighting panelboard.

NOTE:

- Three-pole breaker = 3 breaker spaces
- Two-pole breaker = 2 breaker spaces
- Two-pole GFI (or EPD) breaker = 2 breaker spaces
- Single-pole breaker = 1 breaker space
- Single-pole GFI (or EPD) breaker = 1 breaker space

- Review Panel Capacity table on page 515
- If GFI or EPD breakers are to be included insert "G", "E" or "EG" after base catalog number (e.g., LP2B316G).
- Maximum number of GFI and/or EPD breaker spaces is 6 per panel. (e.g. 6 single-pole or 3 two-pole). For more, consult factory.
- If ambient compensated breakers are required, insert "V" (e.g. LP2B318GV).

2. Using three-pole branch breakers first, select circuit breakers for lighting panel board application:

- Place an asterisk (*) before each quantity of circuit breakers
- First insert the quantity of breakers needed.
- Second insert the quantity of poles (start with three-pole breakers). Note: Single-phase panelboards can have single- or two-pole breakers. Three-phase panelboards can have single, two- or three-pole breakers.
- Third insert the ampere rating needed (start with highest ampere rating).
- Insert "G" for GFI or "E" for EPD type breakers, if desired.

3. For additional circuit breakers repeat step 2. If there are more three-poles with different amp ratings, then continue with three-pole designations. Otherwise continue with two-pole circuit breakers, and then single-pole breakers.

4. To add a main breaker, insert a space, the number of poles (2 or 3), an "M" to indicate main breaker, then indicate the amp rating (See "ratings" for trip ratings available). If no main breaker is specified, the panelboard will have main lugs. No suffix needed in catalog number for main lug only.

For future spaces, to provide for operating mechanism without breaker write 00 (e.g. one three-pole mechanism without breaker: 01300).

Unused breaker positions without designations will be blanked and plugged. Complete panel will be provided for future breaker installations.

Example would be ordered as: LP2C 3 22 G * 05 3 15 *06120G 3M100 A S756V

1. Select Div. 2 Lighting Panelboard - **LP2**

a. **C** size enclosure to handle 21 breaker spaces with main circuit breaker and GFI/EPD protection

b. **3** phase

c. 5 three pole = 15 breaker spaces
6 single pole (GFI) = 6 breaker spaces
21 breaker spaces

If odd # round up to even #: 22 breaker spaces

d. **GFI** breakers included ("G" for GFI, "E" for EPD or "EG" for both) ("V" for ambient compensated breakers) Maximum number of GFI and/or EPD breakers is 6

2. Choose branch circuit breakers (three-pole first) 6 three-pole with 15 ampere rating:

a. Insert asterisk (*)

b. Quantity is 5: **05** (if less than 10 insert 0 before quantity)

c. Three-pole: **3**

d. Ampere rating is 15: **15**

3. Additional breakers (three-pole first) 5 single-pole with 20 amp rating (GFI): ***06120G**

4. Main breaker **3M100** (3-pole, Main breaker, 100 amp)

5. Alternate feed **A** Breathers and drains **S756V**

✓ Available with Lightning Service™ delivery. See Section G for complete details.

* NEMA Type 4/CSA Enc. 4/IP65 hoesight without suffix S756V.

** NEMA Type 4X when ordered with suffix S752 without suffix S756V.

† External seals required for Class I, Div. 1.

Exactra™ Panelboards

Lighting and Heat Tracing

LP1 Series

LP2 Series (Div. 2)

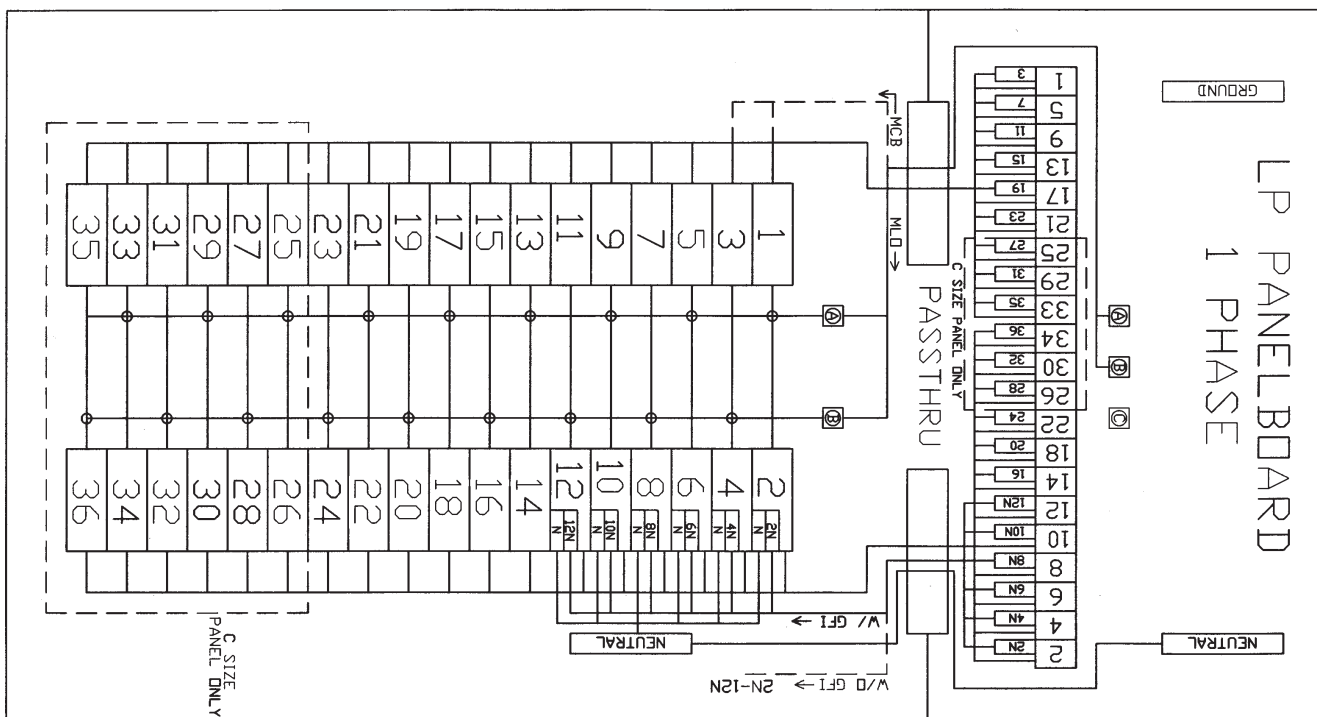
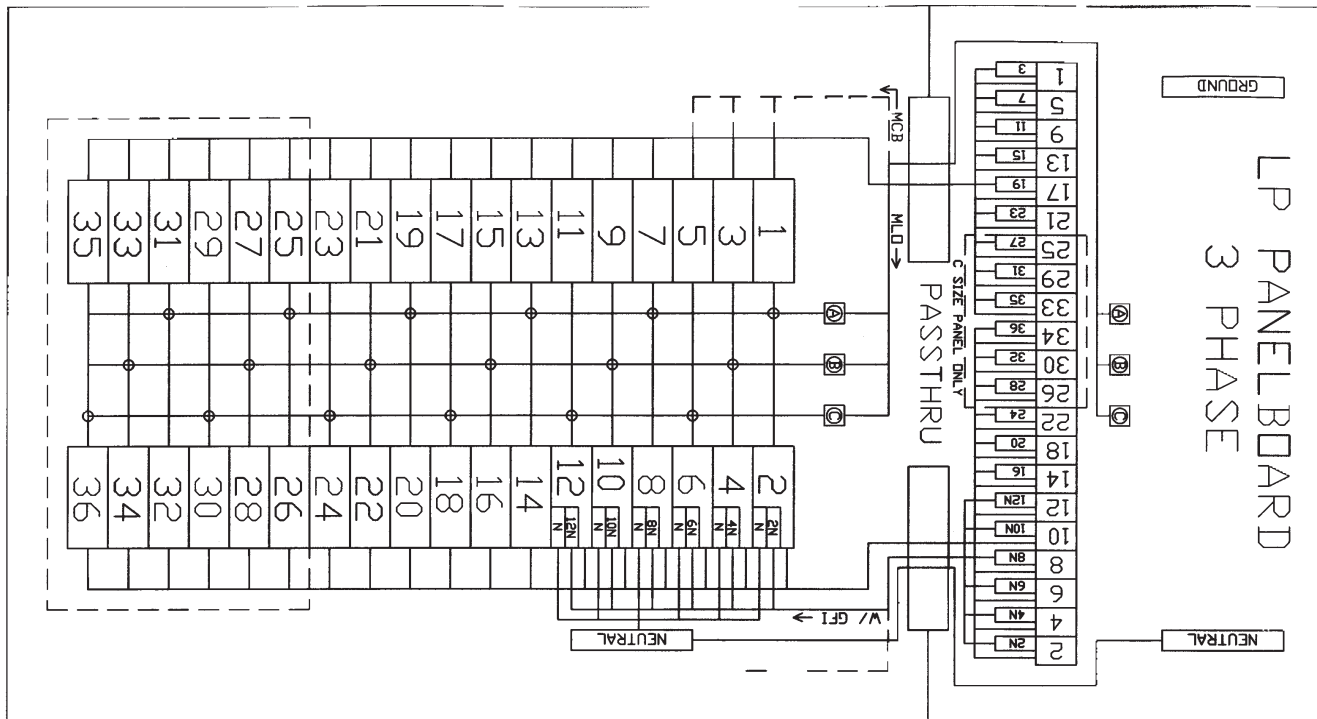
Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4*, 4X** 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed†
Wet Locations
Watertight

1A

01A Panelboards

Wiring Diagrams:



Lighting and Heat Tracing**EPL Series****D2L Series (Div. 2)**

Cl. I, Div. 1 & 2, Groups B†, C,D

Cl. II, Div. 1, Groups E†, F,G

Cl. II, Div. 2, Groups F,G

Cl. III

NEMA 3,4‡, 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed*
Wet Locations
Watertight

PowerPlus factory sealed Panelboards provide flexibility and labor savings when installed, and for future changes in the field. Panels are prewired to maximum circuit capacity and ratings with field replaceable factory sealed components.

Applications:

EPL and D2L PowerPLUS panelboards are used:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- in areas subject to weather, dampness and corrosion.
- for branch power distribution and circuit protection to motors, valves, pumps, lighting, heat tracing, receptacles, etc.
- for indoor and outdoor applications in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- to accommodate up to 100 amp branch loads (only 3 circuits). Balance is 50 amp.

Standard Materials:

- Body and cover—cast copper-free aluminum
- Gasket – neoprene
- Operating handles – extruded aluminum (copper-free)
- Operating shafts and bushings, cover bolts, washers, and retractile springs – stainless steel
- Circuit breaker operators – die cast aluminum (copper-free)
- Lifting bracket – cold rolled steel
- Hinges – Stainless Steel

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Cold rolled steel – electrogalvanized

Certifications and Complies:**EPL Series:**

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B†, C,D
 - Class II, Division 1, Groups E†,F,G,
 - Class II, Division 2, Groups F,G
 - Class III
- NEMA/EEMAC: 3, 4‡, 7B†CD, 9E†FG, 12
- CSA Enc. 3, 4, 5
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)
- IP65

D2L Series (Division 2):

- NEC/CEC:
 - Class I, Division 2, Groups B†, C,D
- NEMA/EEMAC: 3, 4‡, 7B†CD, 12
- CSA ENC. 3, 4, 5
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)
- IP65

* External seals required for Class I, Group B, Div. 1.

† Group B and E suitability with suffix GB; see options listings.

‡ NEMA 4 hoesetight with breather and drain openings plugged.

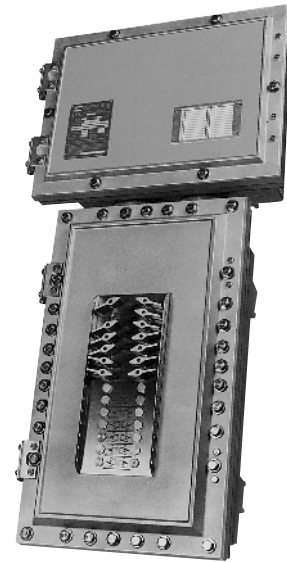
Features:

- Factory-sealed, no external seals required for most branch circuits.*
- Fully wired from circuit breaker housing to pre-numbered terminals in wiring compartment.
- Stainless Steel hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive hex-head bolts with spring loaded action provide a clear indication that cover bolts are fully retracted from body.
- Cast copper-free aluminum construction (less than 0.4 of 1%) provides excellent resistance to corrosion.
- External flange design—wide unobstructed cover opening provides a completely accessible interior for wiring.
- Neoprene cover gasket provides a watertight seal to meet NEMA 4/CSA ENC. 4/IP65 requirements, and provides superior protection for enclosed equipment against water and corrosion.
- External operating handles for circuit breakers can be padlocked in either "ON" or "OFF" positions.
- Furnished with (1) 3 1/2" and (12) 1 1/2" conduit openings, all with Cooper Crouse-Hinds LNR conduit liner bushings.
- Available with or without main circuit breaker.
- Breather and drain provided for each enclosure.
- Isolated neutral and ground bar provided.
- Aluminum bus is standard

Electrical Ratings:

Branch Breaker (120/240VAC
Quicklag® Bolt-ON) Trip Ratings:

- 1, 2, 3-pole
- 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100 amp
- GFI type, 1, 2-pole (5mA sensitivity) 15, 20, 25, 30, (40 amp - available 2 pole only)
- EPD type, 1 2-pole(30mA sensitivity) 15, 20, 25, 30, (40 amp - available 2 pole only)



D2LB Lighting Panelboard

Options:

To add the following special features to the panelboard, just add a dash and then the suffix to the Cat. No. When multiple suffixes are needed add them to the Cat. No. in alpha-numeric order.

Epoxy finish, external **S752**
Epoxy finish, internal and external **S753**
Square head plugs on all openings **S872**
Stainless steel terminal housing **S871**
Plexiglass breaker operator cover **S877**
For EPL less terminal housing **S836**
Groups B and E suitability **GB**

• **A standard panelboard (field wiring enclosure on top) has conduit openings for power and branch circuits on top.**

• **To order a panelboard with main power feed from the bottom, and branch circuits on top. (Alternate) add -A**

• **To order an inverted panelboard (field wiring enclosure on bottom) with conduit openings for power and branch circuits on the bottom, (Inverted) add. -I**

• **To order an inverted panelboard with main power feed on top, branch circuits on the bottom, (Alternate inverted) combine the above options -A-I**

• **Ambient compensated breakers, add suffix V after base catalog number (i.e. **D2LC324V**)**

PowerPlus™ Panelboards

Lighting and Heat Tracing

EPL Series

D2L Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C, D
Cl. II, Div. 1, Groups E†, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4‡, 7B†CD, 9E†FG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations
Factory Sealed

1A



Main Breaker Trip Ratings:

Size A/B up to 100 amp

- 2, 3-pole
Size C: 100, 125, 150, 175, 200, 225 amp
- Less than 100A - consult factory

Main Lugs

B, C size: 225 amp

Lighting Panelboard

Accessories:

Extra circuit breaker operator assemblies
(qty. 3) 1-Pole, GFI, EPD EPL K1
2-Pole, 3-Pole EPL K3
Replacement cover plugs for unused circuit
breaker positions
(qty. 5) EPL K2

Ordering Information:

1. Select basic panelboard catalog number from listing.
- Determine phase (available with single-phase or three-phase wiring).
- Determine a total even number of breaker spaces needed to complete your desired lighting panelboard.

NOTE:

Three-pole breaker } = 3 breaker spaces
Two-pole breaker }
Two-pole GFI (or EPD) breaker } = 2 breaker spaces
Single-pole breaker }
Single-pole GFI (or EPD) breaker } = 1 breaker space

- Review Table A
- If GFI or EPD breakers are to be included insert "G" or "E" after base catalog number and review Table B. (eg. D2LB318G)

NOTE: GFI breakers cannot be mixed with EPD breakers in the same panel.

2. Using three-pole breakers first, select circuit breakers for lighting panelboard application:

- Place an asterisk (*) before each quantity of circuit breakers.

- First # is number of breakers needed (less than 10 insert 0 before quantity. e.g., 09).
- Second # is number of poles (start with three-pole breakers).

NOTE: Single phase panelboards can have single or two-pole breakers. Three phase panelboards can have single, two or three-pole breakers.

- Third # is the ampere rating needed (start with highest ampere rating).
- Insert "G" for GFI or "E" for EPD type breakers, if desired.

3. For additional circuit breakers repeat step 2. If there are more three-poles with different amp ratings, then continue with three-pole designations. Otherwise continue with two-pole circuit breakers, and then single-pole breakers.

† ‡ - See page 518.

✓ - available with Lightning Service™ delivery. See Section G for complete details.

4. To add a main breaker, insert a dash (-), the number of poles (2 or 3), an "M" to indicate main breaker, then indicate the amp rating. (See "electrical ratings" for trip ratings available.) Three phase panelboards can only have a three-pole main breaker. If no main breaker is specified, the panelboard will have main lugs. No suffix needed in Cat. No. for main lug only.

Lighting panelboards are available with three 100 amp branch spaces maximum with balance up to 50 amps. For future spaces, to provide for operating mechanism without breaker write 00. (Example: One 3-pole mechanism without breaker: 01300.)

Unused breaker positions without designations will be blank and plugged, complete panel will be prewired for future breaker installations.

EPL and D2L Factory Sealed 120/240 Lighting Panelboards

Breaker Spaces Needed	DIVISION 1		DIVISION 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
14	EPLB114✓	EPLB314✓	D2LB114✓	D2LB314✓
16	EPLB116✓	EPLB316*✓	D2LB116✓	D2LB316*✓
18	EPLB118✓	EPLB318✓	D2LB118✓	D2LB318✓
20	EPLB120✓	EPLB320✓	D2LB120✓	D2LB320✓
20	EPLC120✓	EPLC320✓	D2LC120✓	D2LC320✓
22	EPLB122✓	EPLB322*✓	D2LB122✓	D2LB322✓
22	EPLC122✓	EPLC322✓	D2LC122✓	D2LC322✓
24*	EPLB124*✓	EPLB324*✓	D2LB124*✓	D2LB324*✓
24	EPLC124✓	EPLC324✓	D2LC124✓	D2LC324✓
26	EPLC126✓	EPLC326✓	D2LC126✓	D2LC326✓
28	EPLC128✓	EPLC328✓	D2LC128✓	D2LC328✓
30	EPLC130✓	EPLC330✓	D2LC130✓	D2LC330✓
32	EPLC132✓	EPLC332✓	D2LC132✓	D2LC332✓
34	EPLC134✓	EPLC334✓	D2LC134✓	D2LC334✓
36	EPLC136✓	EPLC336✓	D2LC136✓	D2LC336✓
38*	EPLC138*✓	EPLC338*✓	D2LC138*✓	D2LC338*✓
40*	EPLC140*✓	EPLC340*✓	D2LC140*✓	D2LC340*✓
42*	EPLC142*✓	EPLC342*✓	D2LC142*✓	D2LC342*✓
Breaker Ready (Empty) ♦ ▲	EPL(B OR C)100✓	EPL(B OR C)300	D2L(B OR C)100	D2L(B OR C)300

★ Items are not available with a Main Circuit Breaker, see Table A.

♦ Provided for Main Lug Only; Main breaker must be specified with amperage. Panels to accommodate GFI or EPD breakers must be ordered with at least one such breaker installed.

▲ Not available for GFI or EPD installations.

Table A - Panel Capacity

Maximum Number of Breaker Spaces:

Panel Size	Max. No. of Branch Spaces			Main Breaker Max. Amp.	Available w/GFI, EPD Branch Protection
	w/Main Lug Only	w/Main Breaker			
		2-pole	3-pole		
B	24	22	21	100	Yes
C	42	36	36	225	Yes

1A Panelboards

1A PowerPlus™ Panelboards

Lighting and Heat Tracing

EPL Series

D2L Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C, D
 Cl. II, Div. 1, Groups E†, F, G
 Cl. II, Div. 2, Groups F, G
 Cl. III
 NEMA 3, 4†, 7B†CD, 9E†FG, 12

CSA Enc. 3, 4, 5
 Explosionproof
 Dust-Ignitionproof
 Watertight
 Wet Locations
 Factory Sealed

Table B – To size panels with GFI or EPD branch breakers

Panel Size with Main Lug or Main Breaker	Maximum number of GFI or EPD breakers				Load Wires Required
	Single-Pole	Two-Pole			
B	21	12 (10 with 3 pole MCB, 11 with 2P MCB)	Single-pole breaker	=	1
C	21	14	Single-pole GFI (or EPD) breaker	=	2
			Two-pole breaker	=	2
			Two-pole GFI (or EPD) breaker	=	3
			Three-pole breaker	=	3
					Maximum total: 42 load wires
Each panel is equipped with 42 load wires to cover these accommodations and any combination with standard branch breakers. To determine the total number of load wires required to complete your panel:					

Lighting Panelboard Catalog Number Example

Lighting panelboards can be furnished with an assortment of breaker ratings and pole configurations. Assortments may be ordered by adding the number of poles and amp rating designations to the catalog number.

Example:

A three phase, Class I, Div. 2, Groups B, C, D lighting panelboard with:

- (1) three-pole breaker with 100 amp rating.
- (2) two-pole breakers—both with 30 amp GFI personnel protection.
- (10) one-pole breakers—with 20 amp rating.
- Three-pole main breaker—with 100 amp rating.

Example would be ordered as:

1. Select Div. 2 Lighting panelboard – **D2L**

a. B size enclosure to handle 17 circuits with main circuit breaker and GFI/EPD protection

b. 3 phase

 (1) three-pole = 3 breaker spaces

 + (2) two-pole (GFI) = 4 breaker spaces

 + (10) single-pole = 10 breaker spaces

 17 breaker spaces

If odd # round up to even #: **18** breaker spaces

d. GFI breakers included (Use "E" for EPD)

 Verify load wires required w/panel size (Table B)

 (1) three pole = 3 load wires

 (2) two-pole = 6 load wires

 (10) single-pole = 10 load wires

 19 load wires

 (42 load wires available)

2. Choose branch circuit breakers (3-pole first)

• (1) three-pole with ampere rating

 a. Insert Asterisk *

 b. Quantity is 1: **01**

 (if less than 10 insert 0 before quantity)

 c. Three-pole: **3**

 d. Ampere Rating is 100: **100**

D2L B 3 18 G * 01 3 100 *02230G *10120 -3M100 -GB

3. Additional breakers (three-pole first)

• (2) two-pole w/30 ampere rating (GFI) ***02230G**

• (10) single-pole w/20 ampere rating ***10120**

(For operating mechanisms with no breaker supplied, add "00" for amperage)

4. Main Breaker **-3M100**

 • (3-pole, Main breaker, 100 Amp)

 • No main supplied **-3M00**

5. Group B construction **-GB**

† ‡ – See page 518.

PowerPlus™ Panelboards

Lighting and Heat Tracing

EPL Series

D2L Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†, C, D

Cl. II, Div. 1, Groups E†, F, G

Cl. II, Div. 2, Groups F, G

Cl. III

NEMA 3, 4†, 7B†CD, 9E†FG, 12

CSA Enc. 3, 4, 5

Explosionproof

Dust-Ignitionproof

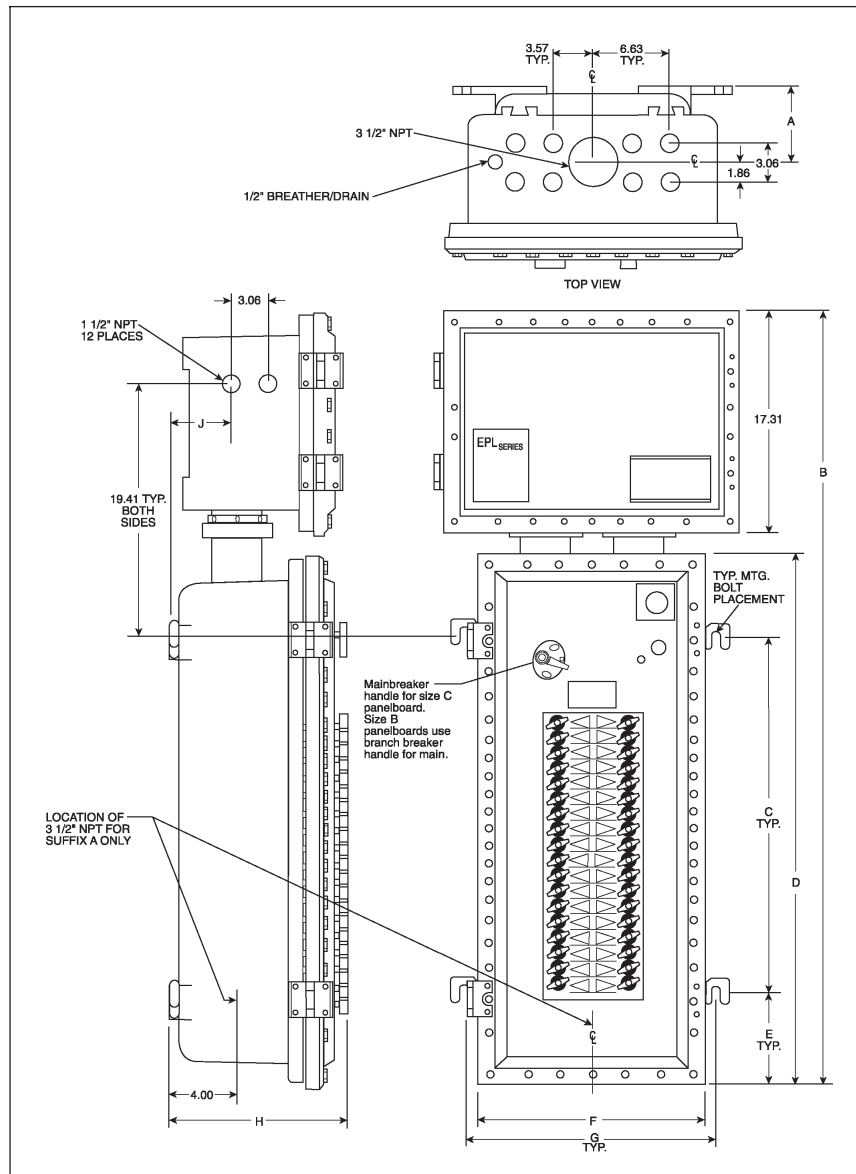
Watertight

Wet Locations

Factory Sealed

1A

Dimensions



Lighting Panelboard Panel Size

Dimension (inches)	EPLB D2LB	EPLC D2LC
A	4.92	4.92
B	47.87	60.25
C	17.50	29.50
D	29.56	41.90
E	6.03	7.00
F	17.56	17.90
G	15.62	15.12
H	12.00	12.00
J	3.75	3.75

*Dimensions are approximate; not for construction purposes.

† - See page 518.

Unibody™ Panelboards

Lighting and Heat Tracing Power

EPLU Series

D2LU Series (Div. 2)

EXDU Series

D2DU Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B, C, D

Cl. II, Div. 1, Groups E, F, G

Cl. II, Div. 2, Groups F, G

Cl. III

NEMA 3, 4 $\pm$, 7BCD, 9EFG, 12

CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed*
Wet Locations
Watertight

Unibody factory sealed Panelboards provide flexibility and labor savings when installed, and for future changes in the field. Panels are prewired to maximum circuit capacity and ratings with field replaceable factory sealed components in a single cast body with 2 covers.

Applications:

Unibody panelboards are used:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- in areas subject to weather, dampness and corrosion.
- for branch power distribution and circuit protection to motors, valves, pumps, lighting, heat tracing, receptacles, etc.
- for indoor and outdoor applications in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- to accommodate up to 100 amp branch loads.

Standard Materials:

- Body and cover—cast copper-free aluminum
- Gasket—neoprene
- Operating handles—extruded aluminum (copper-free)
- Operating shafts and bushings, cover bolts, washers, and retractile springs—stainless steel
- Circuit breaker operators—die cast aluminum (copper-free)
- Lifting bracket—cold rolled steel
- Hinges—stainless steel

Standard Finishes:

- Aluminum—natural
- Stainless steel—natural
- Cold rolled steel—electrogalvanized

Accessories:

Extra circuit breaker operator assemblies for EXDU and D2DU (qty. 3) **EXDU K1**

Replacement cover plugs for unused circuit breaker positions for EXDU and D2DU (qty. 5) **EXDU K2**

Extra circuit breaker operator assemblies (qty. 3) for EPLU and D2LU **EPLU K1**

Replacement cover plugs for unused circuit breaker positions for EPLU and D2LU (qty. 5) **EPLU K2**

* External seals required for Class I, Group B, Div. 1.

$\pm$ NEMA 4 hoesight with breather and drain openings plugged.

Features:

- Factory-sealed, no external seals required for most branch circuits.*
- Fully wired from circuit breaker housing to pre-numbered terminals in wiring compartment.
- Stainless steel hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive hex-head bolts with spring loaded action provide a clear indication that cover bolts are fully retracted from body.
- Cast copper-free aluminum construction (less than 0.4 of 1%) provides excellent resistance to corrosion.
- External flange design—wide unobstructed cover opening provides a completely accessible interior for wiring.
- Neoprene cover gasket provides a watertight seal to meet NEMA 4/CSA ENC. 4/IP65 requirements, and provides superior protection for enclosed equipment against water and corrosion.
- External operating handles for circuit breakers can be padlocked in either "ON" or "OFF" positions.
- Furnished with (1) 3 1/2" and (12) 1 1/2" conduit openings, all with Cooper Crouse-Hinds LNR conduit liner bushings.
- Available with or without main circuit breaker.
- Breather and drain provided for each enclosure.
- Isolated neutral and ground bar provided.

Options:

To add the following special features to the panelboard, just add a dash and then the suffix to the Cat. No. When multiple suffixes are needed add them to the Cat. No. in alpha-numeric order.

Epoxy finish, external **S752**

Epoxy finish, internal and external **S753**

All conduit entries plugged with PLG recessed head plugs **S822**

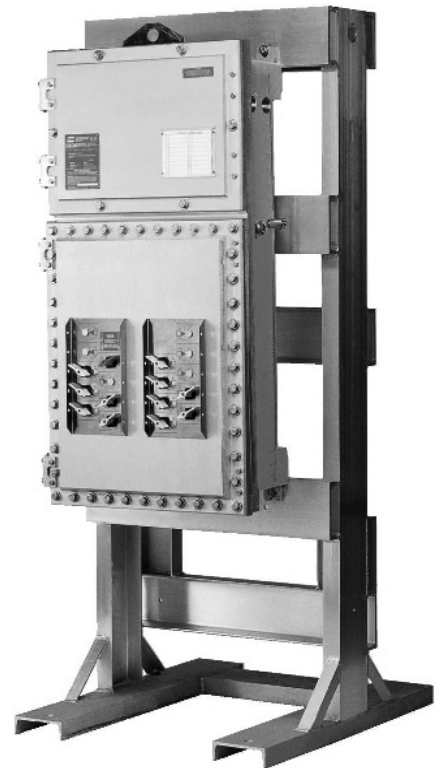
All conduit entries plugged with square head plugs **S872**

A standard panelboard (field wiring enclosure on top) has conduit openings for power and branch circuits on top.

To order a panelboard with main power feed from the bottom, and branch circuits on top. (Alternate) add **-A**

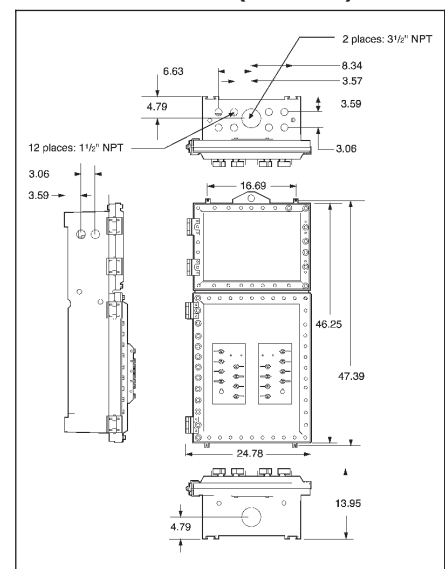
To order an inverted panelboard (field wiring enclosure on bottom) with conduit openings for power and branch circuits on the bottom, (Inverted) add **-I**

To order an inverted panelboard with main power feed on top, branch circuits on the bottom, (Alternate inverted) combine the above options **-A-I**



D2LU Lighting Panelboard

Dimensions** (inches)



** Dimensions are approximate, not for construction purposes.

Unibody™ Panelboards

Lighting and Heat Tracing
EPLU Series
D2LU Series (Div. 2)

Power
EXDU Series
D2DU Series
(Div. 2)

Cl. I, Div. 1 & 2, Groups B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
NEMA 3, 4 $\frac{1}{2}$, 7BCD, 9EFG, 12
CSA Enc. 3, 4, 5
Explosionproof
Dust-Ignitionproof
Factory Sealed*
Wet Locations
Watertight

1A



Lighting and Heat Tracing

Electrical Ratings:

Branch Breaker (120/240 VAC

Bolt-On QO® type) Trip Ratings:

- 1, 2, 3-pole: 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp
- GFI type (5 mA sensitivity)
 - 1 pole: 15, 20, 25, 30 amp
 - 2 pole: 15, 20, 25, 30, 40, 50 amp
- EPD type (30 mA sensitivity)
 - 1 & 2-pole: 15, 20, 25, 30 amp

(EPD = equipment protection device)

Main Breaker Trip Ratings:

- 2 or 3-pole: 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp

Main Lugs: 100 amp maximum

Ordering Information

See ordering information of the PowerPlus Lighting Panelboards. The Unibody catalog numbers follow the same system except the fourth character is a "U". Use the following tables to determine the maximum number of branch circuits and their catalog numbers.

Note:

Three-pole breaker = 3 circuits
Two-pole breaker = 2 circuits
Single-pole breaker = 1 circuit

Two-pole breaker GFI or EPD = 3 circuits
Single-pole breaker GFI or EPD = 2 circuits
QO is a registered trademark of Square D Company

Maximum Number of Branch Circuits

Type of Circuits	Main Lug Only (MLO) Circuits	With Main Circuit Breaker Circuits	
		Single Phase	Three Phase
Total number	24	22	21
Branches up to 100 Amp	3	3	3
Branches up to 50 Amp	21	19	18
Single-pole GFI/EPD	21	21	21
Two-pole GFI/EPD	12	11	10

Note: For applications up to 42 circuits, use the PowerPlus™ EPLC or D2LC series.

EPLU and D2LU Factory-Sealed 120/240 Volt Lighting Panelboards

Branch Circuits Needed	DIVISION 1		DIVISION 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
0	EPLU100✓	EPLU300✓	D2LU100✓	D2LU300✓
6	EPLU106✓	EPLU306✓	D2LU106✓	D2LU306✓
8	EPLU108✓	EPLU308✓	D2LU108✓	D2LU308✓
10	EPLU110✓	EPLU310✓	D2LU110✓	D2LU310✓
12	EPLU112✓	EPLU312✓	D2LU112✓	D2LU312✓
14	EPLU114✓	EPLU314✓	D2LU114✓	D2LU314✓
16	EPLU116✓	EPLU316✓	D2LU116✓	D2LU316✓
18	EPLU118✓	EPLU318✓	D2LU118✓	D2LU318✓
20	EPLU120✓	EPLU320✓	D2LU120✓	D2LU320✓
22	EPLU122✓	EPLU322✓	D2LU122✓	D2LU322✓
24	EPLU124✓	EPLU324✓	D2LU124✓	D2LU324✓

1A Panelboards

Power Distribution

Electrical Ratings:

Branch Breaker Trip Ratings:

- 1-pole: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70 amp
- 2 & 3-pole: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp

Main Breaker Trip Ratings:

2 or 3-pole: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 amp

Main Lug Only Rating:

150 amp maximum

Circuit Capacity

Maximum number of breaker spaces:

Single-pole 18
Two-pole 8
Three-pole 6

Ordering Information

See ordering information of the PowerPlus Power Panelboards. The Unibody catalog numbers follow the same system except the fourth character is a "U". Use the following tables to determine the maximum number of branch circuits and their catalog numbers.

Note: The number of circuits is equal to the number of poles for a given power panelboard circuit breaker.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

Maximum Number of Branch Circuits

Type of Circuit	Main Lug Only (MLO) Circuits	With Main Circuit Breaker Circuits	
		Single Phase	Three Phase
Total number	18	16	15
Branches up to 100 Amp	3	3	3
Branches up to 70 Amp	15	13	12

Note: For applications up to 30 circuits, use the PowerPlus™ EXDC or D2DC series.

EXDU and D2DU Factory-Sealed 480 Volt Power Panelboards

Branch Circuits Needed	DIVISION 1		DIVISION 2	
	1 Phase 3 Wire	3 Phase 4 Wire	1 Phase 3 Wire	3 Phase 4 Wire
0	EXDU100✓	EXDU300✓	D2DU100✓	D2DU300✓
6	EXDU106✓	EXDU306✓	D2DU106✓	D2DU306✓
8	EXDU108✓	EXDU308✓	D2DU108✓	D2DU308✓
10	EXDU110✓	EXDU310✓	D2DU110✓	D2DU310✓
12	EXDU112✓	EXDU312✓	D2DU112✓	D2DU312✓
14	EXDU114✓	EXDU314✓	D2DU114✓	D2DU314✓
16	EXDU116✓	EXDU316✓	D2DU116✓	D2DU316✓
18	EXDU118✓	EXDU318✓	D2DU118✓	D2DU318✓

* External seals required for Class I, Group B, Div. 1.

‡ See page 522.

Power
EXD Series
D2D Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†,C,D
 Cl. II, Div. 1, Groups E†,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3, 4‡, 7B†CD, 9E†FG, 12

Explosionproof
 Dust-Ignitionproof
 Wet Locations
 Watertight
 Factory Sealed*

Applications:

EXD and D2D PowerPlus panelboards are used:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- in areas subject to weather, dampness and corrosion.
- for indoor and outdoor applications in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- to accommodate up to 100 amp branch loads.

Standard Materials:

- Body and cover – cast copper-free aluminum
- Gasket – neoprene
- Hinges – Stainless steel
- Operating handles – extruded aluminum (copper-free)
- Operating shafts and bushings, cover bolts, washers, and retractile springs – stainless steel
- Circuit breaker operators – die cast aluminum (copper-free)
- Lifting bracket – cold rolled steel

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Cold rolled steel – electrogalvanized

Certifications and Compliances:

EXD Series:

- NEC/CEC: Class I, Division 1 & 2, Groups B†,C,D
 Class II, Division 1, Groups E†,F,G, Class II, Division 2, Groups F,G,
 Class III
- NEMA/EEMAC: 3, 4‡, 7BCD, 9EFG, 12
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)

- **D2D Series: (Div. 2)**
- NEC/CEC: Class I, Division 2, Groups B†,C,D
- NEMA/EEMAC: 3, 4‡, 7BCD, 12
- UL Standard: 67, 877
- cUL (to CSA Standard C22.2 Nos. 29 & 30)

- **Features:**
- Factory-sealed, no external seals required for branch circuits.*
- Fully wired from circuit breaker housing to pre-numbered terminals in wiring compartment.
- Stainless steel hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive hex-head bolts with spring loaded action provide a clear indication that cover bolts are fully retracted from body.
- Cast copper-free aluminum construction (less than 0.4 of 1%) provides excellent resistance to corrosion.
- Copper bus is standard

Features: (continued)

- External flange design – wide unobstructed cover opening provides a completely accessible interior for wiring.
- Neoprene cover gasket provides a watertight seal to meet NEMA 4 requirements, and provides superior protection for enclosed equipment against water and corrosion.
- External operating handles for circuit breakers can be padlocked in either “ON” or “OFF” positions.
- Furnished with (1) 3½” and (12) 1½” conduit openings, all with Cooper Crouse-Hinds LNR conduit liner bushings.
- Available with or without main circuit breaker.
- Breathers and drains provided as standard for each enclosure

Options:

To add the following special features to the panelboard, just add a dash and then the suffix to the Cat. No. When multiple suffixes are needed add them to the Cat. No. in alpha-numeric order.

- Epoxy finish, external **S752**
- Epoxy finish, internal and external **S753**
- Stainless steel terminal housing **S871**
- Square head plugs in all openings **S872**
- EXD less terminal housing **S836**
- Groups B and E suitability **GB**
- Supplied with 600 VAC FDB frame breakers **FB600**
- Supplied with 600 VAC FD Frame breakers **FD600**
- Supplied with 600 VAC HFD Frame breakers **HFD600**

A standard EXD and D2D (field wiring enclosure on top) has conduit openings for power and branch circuits on top.

To order a panelboard with main power feed from the bottom, and branch circuits on top, (Alternate) add **-A**

To order an inverted EXD or D2D (field wiring enclosure on bottom) with conduit openings for power and branch circuits on the bottom, (Inverted) add **-I**

To order an inverted panelboard with main power feed on top, branch circuits on the bottom (Inverted Alternate) combine suffixes, eg. **-A-I**

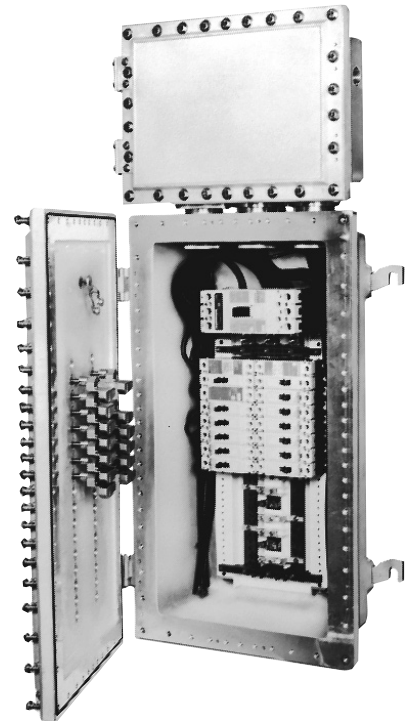
Accessories:

- Extra circuit breaker operator assemblies (qty. 3) **EXD K1**
- Replacement cover plugs for unused circuit breaker positions (qty. 5) **EXD K2**

Circuit Capacity:

Maximum Number of Breaker Spaces:

Single-pole	30
Two-pole	14
Three-pole	10



EXD Panelboard
Weight – 490lbs.

Circuit Breaker Ratings:

(Cutler-Hammer, Series C)

Circuit Breaker Trip Ratings:

15, 20, 30, 40, 50, 60, 70, 80, 90, 100 amp

- EHD frame circuit breakers

Single-Pole – 277 VAC or 125 VDC
 Two and Three-Pole – 480 VAC or 250 VDC

- FDB frame (600 VAC) available, see options

Main Breaker Trip Ratings:

70, 100, 150, 200, 225 amp
 • JDB frame circuit breakers
 Two and Three-Pole – 600 VAC or 250 VDC
 Main Lugs: 225 amp

† Group B and E suitability with suffix GB; see options.

‡ NEMA 4 hoesitight with breather and drain openings plugged

* External seals required for Class I, Group B, Div. 1.

Ordering Information:

1. Select basic panelboard catalog number from listing:

- Determine phase (power panelboards are available with single-phase or three-phase wiring).
- Determine a total even number of circuits needed to complete your desired power panelboard.

NOTE:

- Three-pole breaker = 3 circuits
- Two-pole breaker = 2 circuits
- Single-pole breaker = 1 circuit

2. Select circuit breaker for power panelboard application:

- Place an asterisk (*) before each quantity of circuit breakers.
- First # is number of breakers needed (less than (10) insert 0 before quantity).
- Second # is number of poles (start with three-pole breakers).
- Third # is the ampere rating needed (start with highest ampere rating).

NOTE: Single phase panelboards can have single or two-pole breakers. Three phase panelboards can have single, two, or three-pole breakers.

3. For additional circuit breakers repeat step 2. If there are more three-poles with different amp ratings, then continue with three-pole designations. Otherwise continue with two-pole circuit breakers, and then single-pole breakers.

4. To add a main breaker, insert a dash (-), the number of poles (2 or 3), an "M" to indicate main breaker, then indicate the amp rating (Main breakers are available with 70, 100, 150, 200, or 225 amp ratings). Single phase panelboards can have a two-pole or three-pole main breaker. If no main breaker is specified, the panelboard will have main lugs. No suffix needed in Cat. No. for main lug only.

Power panelboards are available with three 80-100 amp branch circuits maximum, with balance up to 70A. For future spaces, to provide for operating mechanism without breaker, write 00. (Ex. One 3 pole mechanism without breaker: 01300).

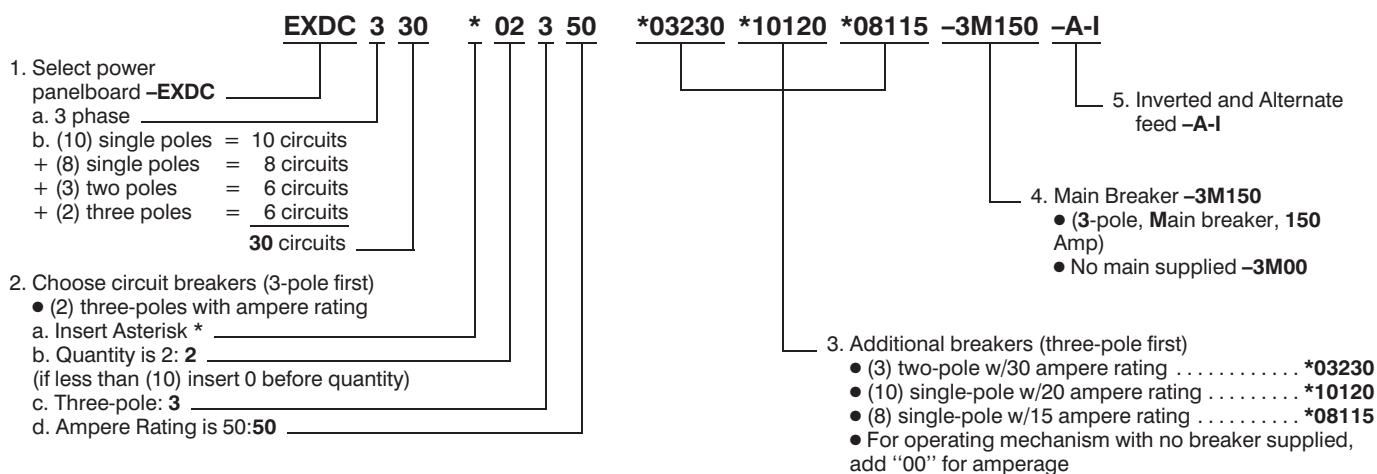
Unused breaker positions without designations will be plugged; complete panel will be prewired for future breaker installations.

Catalog Number Example:

A three phase, Class I, Div. 1 power panelboard with:

- (2) three-pole breakers – both with 50 amp rating
- (3) two-pole breakers – each with 30 amp rating
- (10) single-pole breakers – each with 20 amp rating
- (8) single-pole breakers – each with 15 amp rating
- Three-pole main breaker – with 150 amp rating
- Inverted with alternate feed

Ordered as:



† See page 524.

* See page 524.

‡ See page 524.



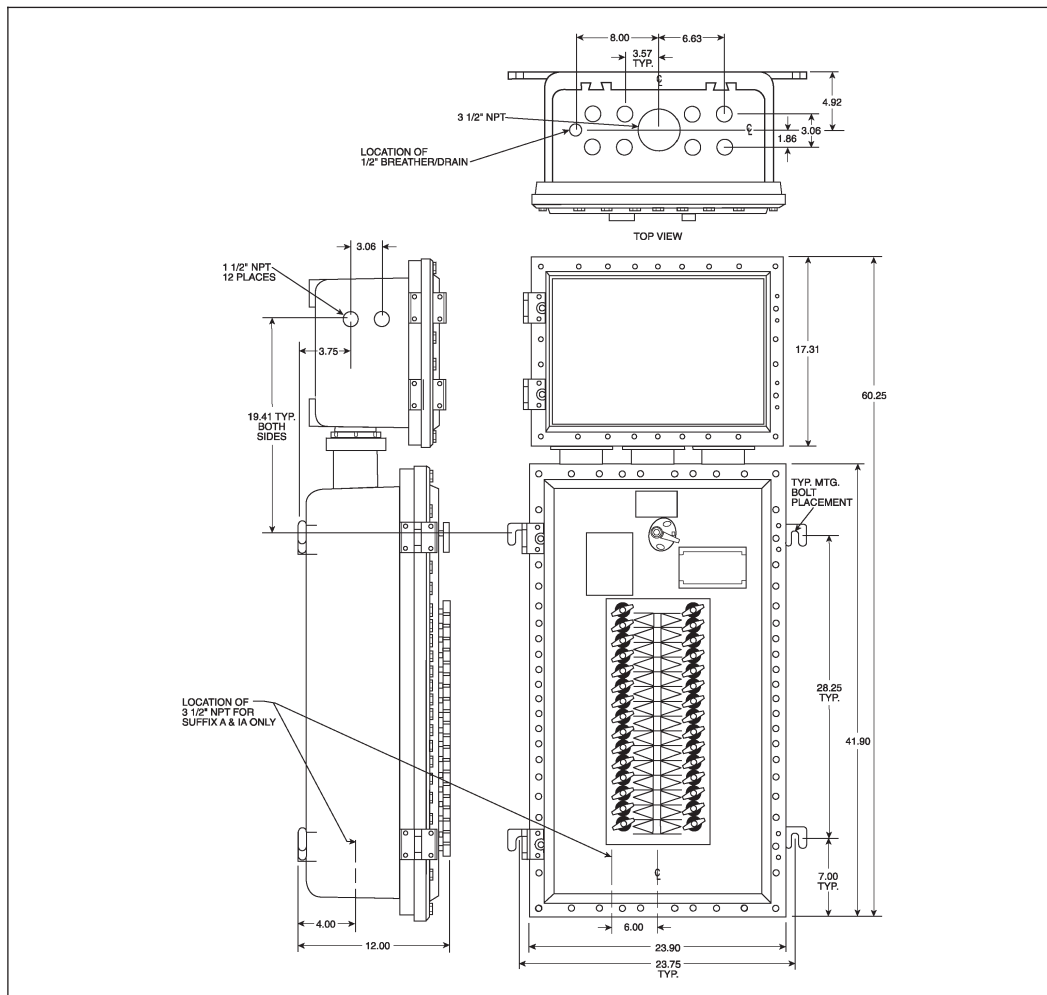
Power
EXD Series
D2D Series (Div. 2)

Cl. I, Div. 1 & 2, Groups B†,C,D
 Cl. II, Div. 1, Groups E†,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3, 4†, 7B†CD, 9E†FG, 12

EXD and D2D Factory-Sealed 480 Volt Power Panelboards

Circuits	DIVISION 1		DIVISION 2	
	1 Phase, 3 Wire	3 Phase, 4 Wire	1 Phase, 3 Wire	3 Phase, 4 Wire
6	EXDC106✓	EXDC306✓	D2DC106✓	D2DC306✓
8	EXDC108✓	EXDC308✓	D2DC108✓	D2DC308✓
10	EXDC110✓	EXDC310✓	D2DC110✓	D2DC310✓
12	EXDC112✓	EXDC312✓	D2DC112✓	D2DC312✓
14	EXDC114✓	EXDC314✓	D2DC114✓	D2DC314✓
16	EXDC116✓	EXDC316✓	D2DC116✓	D2DC316✓
18	EXDC118✓	EXDC318✓	D2DC118✓	D2DC318✓
20	EXDC120✓	EXDC320✓	D2DC120✓	D2DC320✓
22	EXDC122✓	EXDC322✓	D2DC122✓	D2DC322✓
24	EXDC124✓	EXDC324✓	D2DC124✓	D2DC324✓
26	EXDC126✓	EXDC326✓	D2DC126✓	D2DC326✓
28	EXDC128✓	EXDC328✓	D2DC128✓	D2DC328✓
30	EXDC130✓	EXDC330✓	D2DC130✓	D2DC330✓
Breaker ready (empty)	EXDC100✓	EXDC300✓	D2DC100✓	D2DC300✓

Dimensions (inches):



†† See page 524.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed
1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A, B, C, D
CL. I, Zone 1, Groups A, B, C, D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

1A

Applications:

D2Z panelboards are designed specifically for use in:

- Class 1, Zone 1, Division 2, Groups A, B, C, D hazardous areas where flammable vapors or gases may be present due to accident or abnormal locations.
- in damp, wet or corrosive locations.
- indoors or outdoors in Zone 1, Division 2 areas of petroleum refineries, chemical and petrochemical plants, and other process industry facilities.

Features:

- UL, cUL, PTB certified for Class 1, Zone 1, Division 2 hazardous areas.
- Fiberglass-reinforced polyester enclosures:
 - Nonmetallic, corrosion-free.
 - Increased safety Ex-e protection.
 - Impact resistant.
 - NEMA 4X, IP 66 protection.
 - Enclosure meets UL 94-VO.
 - UV rated.
- Unique design allows for panels with more than 42 circuits.
- Main disconnect switches 40, 80, 125, 180A
- Optional flameproof Ex-d fusing of main disconnect.
- Flameproof Ex-d encapsulated branch breakers:
 - Thermal-magnetic protection up to 40A.
 - Auxiliary contacts (mechanical or electrical).
 - Lockout on components.
 - Prewired to Increase Safety Ex-e terminal blocks.
 - GFI branch breakers (EPDs).
- Clear, NEMA 4X window, hinged for actuation or breakers.
- Double lockout on windows and breakers.
- Brass plates for hub or cable gland entries.
- Enclosures can be mounted on switchrack frames or walls.
- Completely wired ready for connection to terminal blocks.

Certificates and Compliances

Certifications	PTB – No. Ex-94C. 1037, UL, cUL
Degree of Protection	NEMA 4X IP 66 to IEC 529
UV Resistance	ISO 4892/EN 50 014
Enclosure Material	Glass-reinforced polyester.
Temperature Ratings	–55°C to 55°C
Rated Voltage	480 VAC
Rated Current	Max. 180A

- NEC: Class I, Division 2, Groups A, B, C, D
Class I, Zone 1, Groups A, B, C, D
- CEC: Class I, Division 2, Groups A, B, C, D
Class I, Zone 1, Groups A, B, C, D
Class II, Division 1, Groups E, F, G
- UL Standards: 67, 877
- CSA Standards: C22.2 Nos. 29 & 30

Note:

D2Z Series panelboards are now available with 316L stainless steel enclosures. This material is ideal for wash down and corrosive areas requiring product endurance in adverse locations. To order, simply add suffix “S860” to catalog number.



1A
Panelboards

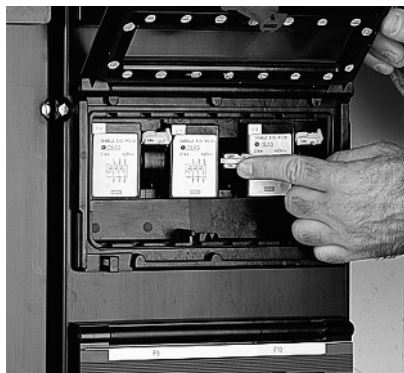
D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed
1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Technical Data



- **Large windows** permit easy viewing and quick access to breakers without opening the enclosures.
- **Lockouts** standard for both windows and breakers
- **Up to 6 single-pole breakers** can be installed under one window.
- **NEMA 4X, IP 66 protection.**
- **Window locks** with 5/16" (8mm) Allen Key.

01A Panelboards



Main Switch

- 40A main switch, 4-pole, optional fusing in enclosure with window(s).
- 80, 125 and 180A main switch, 4-pole, optional fusing in enclosure.

Branch Circuit Breakers 1-pole, 2-pole, 3-pole, 4-pole; with EPD protection 1-pole + Neutral, 2-pole; 2, 6, 10, 16, 20, 25, 32 and 40 Amps

Explosion Protection	EEx de IIC T6 AEx de IIC T6 Class I, Zone 1, Div. 2 Groups A, B, C, D Class II, Div. 1 Groups E, F, G, cUL
Certifications	UL, cUL PTB - No. Ex-94.C. 1035 U PTB 98 ATEX 1087 U
Rated Operating Voltage	Up to max. 480 VAC
Rated Current	Up to 40A, See page 1A-28
Rated Switching Capacity	10k AIC
Tripping Characteristics	"B" or "K"
Tripping Current for EPDs	30mA (up to 300mA on request)
Enclosure Materials	Fiberglass-reinforced polyester

Optional Auxiliary/Signal Contacts**

Rated Voltage	250 VAC
Rated Current	5A
* "B" Branch breakers are used for all general applications such as lighting and heat-tracing.	
Type "K" breakers are used for MOVs and portable power. Contact factory for other application.	
** Aux contacts indicate mechanical or electrical tripping	
Signal contacts indicate only electrical tripping and are used primarily on heat-tracing circuits.	
Branch breakers with signal contacts require next larger breaker enclosure.	

Main Disconnect Switch 40, 80, 125, 180A, 4-pole

Explosion Protection	EEx de IIC T6 AEx de IIC T6 Class I, Zone 1, Div. 2 Groups A, B, C, D Class II, Div. 1 Groups E, F, G, cUL
Certifications	40-180A UL, cUL PTB 98 ATEX 1031 U 40A PTB - No. Ex-93C. 1028U 80A PTB - No. Ex-85B. 1055U 125/180A PTB - No. Ex-86B. 1048U
Rated Operating Voltage	Up to 690 VAC
Motor Switching Capacity AC3***	Type 230V 400V 500V 690V 40A 40A 40A 40A 80A 80A 80A 80A 125A 125A 125A 125A 180A 180A 150A 150A

*** See IEC 947-4-1: 1990.

D2Z Zone 1 Division 2 Panelboards Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

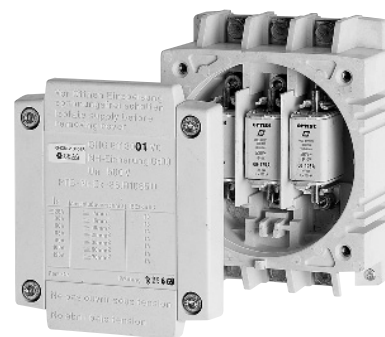
AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

1A

Main Fuse, 3-pole

Explosion Protection	EEx de IIC T4, T6 AEx de IIC T4, T6 Class 1, Zone 1, Div. 2 Groups A, B, C, D	
Certifications	UL, cUL PTB – No. Ex-86.B.1065U	
Rated Operating Voltage	Up to max. 500 VAC	
Rated Current	Current	Temperature Class
	25A	T6
	35A	T5
	50A	T4
	63A	T4
	80A	T4
	100A	T4
	125A	T4

Recommended manufacturer: Cooper Bussman type NH00G fuses for general use or N00M for motor applications.
Specify Amperage (Fuses not provided)



• Main Fuse, type NH

Standard Entries

	Brass gland plate with Zone 1 Myers adapter hubs: (STM series)	Metric Entries (remove hubs)
Main supply	(1) 2" + (3) 1"	(1) M63 + (3) M32
Branches	(9) ¾"	(9) M25



- **Universal Wiring** – Zone 1 Myers® adapter hubs for conduit or Terminator™ cable glands.
- **Stainless Steel Hubs** – available upon request.

1A
Panelboards

D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed
1, 2, 3, 4 pole breakers

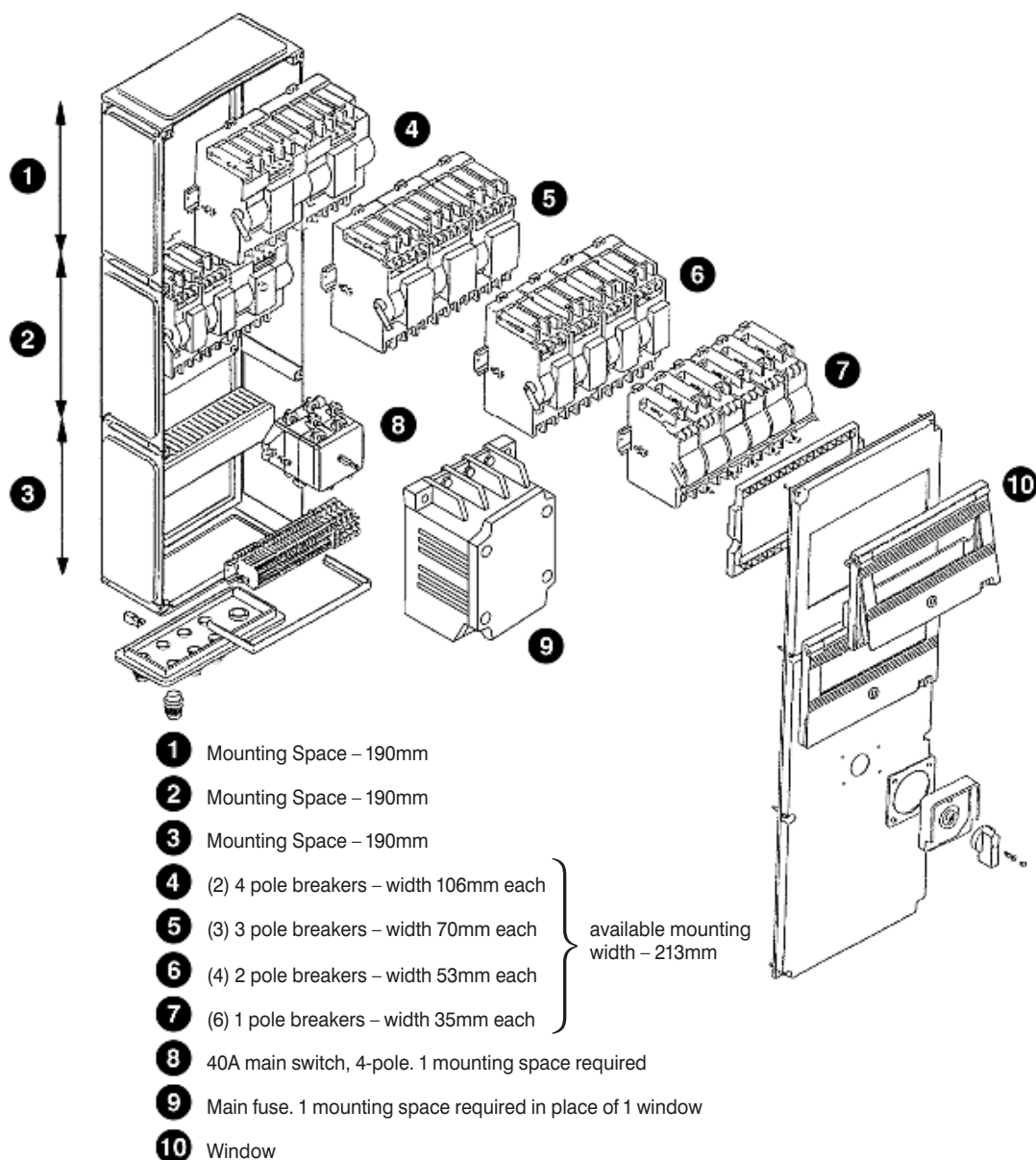
CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

How to Build D2Z Distribution Panels

Example of D2Z distribution panel with built-in components under the window.
(available mounting width = 213mm)

D2Z panel with 3 mounting spaces



D2Z Zone 1 Division 2 Panelboards Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

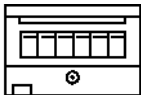
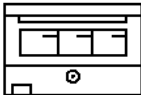
AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

1A

Ordering Procedure

Step 1: Window

Determine the number of windows required from the following chart based on the number of branch breakers. Multiply **breaker space** by **number of breakers**. Round the sum total to the next highest whole number to determine required windows. *i.e. For (8) 1-pole and (2) 2-pole breakers: $(8 \times 0.16) + (2 \times 0.25) = 1.78 \rightarrow 2$ windows required.*

	Max. No. Per Window	Branch Circuit Breakers (max 40A)	Space Required For Each Breaker
	6	1-pole	.16
	4	2-pole 1-pole with EPD 1-pole with signal contact	.25
	3	3-pole 1-pole + Neutral with signal contact 2-pole with signal contact	.33
	2	4-pole 2-pole with EPD 3-pole with signal contact	.50

1A
Panelboards

Step 2: Disconnect Switch

If a disconnect switch is required, select suffix from table.

Main Switch Disconnect			
40	-3S* 40	-2S* 40	
80	-3S* 80	-2S* 80	
125	-3S* 125	-2S* 1250	
180	-3S 180	—	

*Add F if fuses required. Fuses supplied by others. See page 529

D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed
1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

Step 3: Panel Size

Determine Panel Size Based on Windows Required

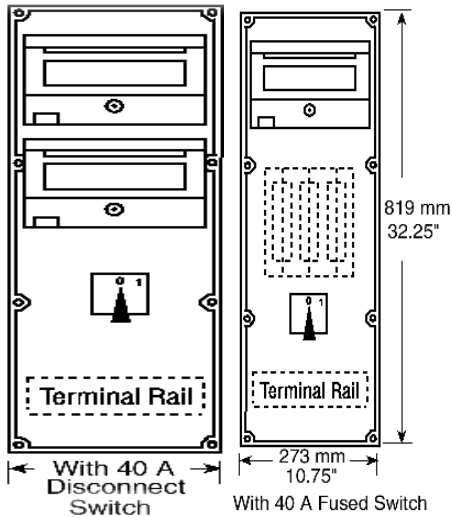
Number of Windows
Required
1, 2
3
4 – 6
7 – 9

Type Required
A mini panel
B panel
C panel
D panel

Disconnect
40A disconnect – Integral
Optional – Adjacent
Optional – Adjacent
Optional – Adjacent

Mini Panels Type

A



Ordering Information for Type A Mini Panels with Main Switch

40A 3-Phase	40A Fused 3-Phase	Quantity of Single Circuits
D2Z A306 * – 3S40	D2Z A306 * – 3SF40	6
D2Z A308 * – 3S40		8
D2Z A310 * – 3S40		10
D2Z A312 * – 3S40		12

Single Phase	Single Phase	Quantity of Single Circuits
D2Z A106 * – 2S40	D2Z A106 * – 2SF40	6
D2Z A108 * – 2S40		8
D2Z A110 * – 2S40		10
D2Z A112 * – 2S40		12

* See page 534 to complete catalog number

Panels Type

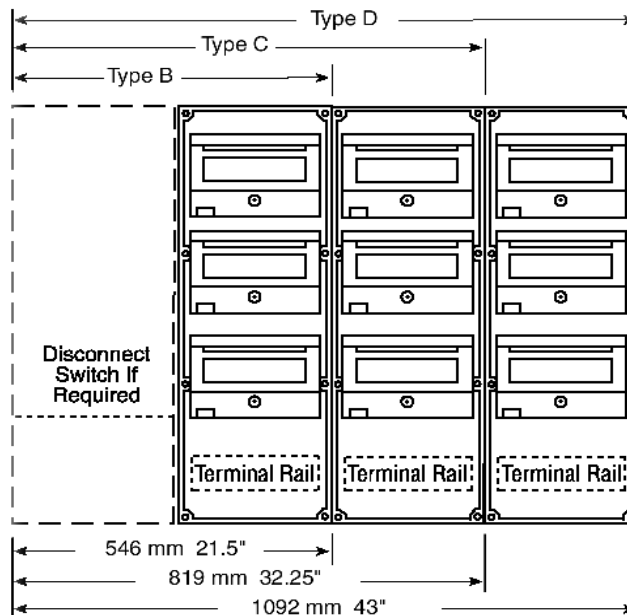
B

Type

C

Type

D



D2Z Zone 1 Division 2 Panelboards Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

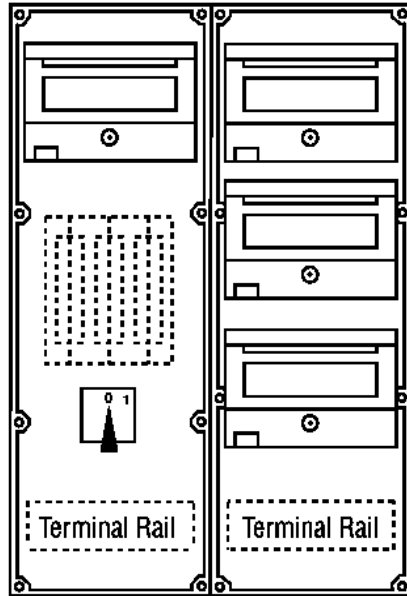
AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

1A

Step 4: Conduit/Cable Entries

Determine if additional entries are required on sides B and C. All panels are supplied with bottom entries (Side A), 1 main supply and remainder as branches.

Example: Size D panels with disconnect switch, have 1 main supply and 3 branch plates as standard.



Main Entries		
Type	Entries	Location
Main Supply	(1) 2" + (3) 1"	A (Standard)
Branches	(9) 3/4" (B panel)	A (Standard)
	(18) 3/4" (C panel)	A (Standard)
	(27) 3/4" (D panel)	A (Standard)
Branches	(9) 3/4"	B (Optional) left side
	(9) 3/4"	C (Optional) left side

Terminal Wiring

Supply Circuits			Branch Circuits		
Amperage	mm ²	AWG	Amperage	mm ²	AWG
40	16	6-18	10	4	12-22
80	35	2-6	15	4	12-22
125	70	8-2/0	20	10	6-14
180	95	6-3/0	40	16	6-18

D2Z Zone 1 Division 2 Panelboards

Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

How to Build a Catalog Number ‡

	Panel Family	Quality Branch Panels	Phase	Circuits	Quantity poles/amps*	Main		Branch Entries
	D2Z	C	3	40EAX	*06340	-3SF125	-S848	-BC
Class I, Div. 2, Groups A, B, C, D; Zone 1, AEx & Ex de IIC panelboards								
Panel Type – see step 3 (No. of enclosures) (A, B, C, or D)								
1 – single-phase 3 – 3-phase								
Circuit Breaker Total: (see page 531) (12) single-pole = 12 circuits + (6) three-pole = 18 circuits + (2) single-pole EPD = 4 circuits + (5) single-pole = 5 circuits w/ Aux contacts 39 circuits → 40 circuits If an odd number, round up to an even number. Add suffix if included: E for EPD, AX for auxiliary contacts, SC for signal contacts, K for MOVs and portable power								
Choose Circuit Breakers (2, 6, 10, 16, 20, 25, 32 or 40 Amp) (3-pole first – Options, then 2-pole then single-pole) a. Insert Asterisk* b. Quantity is 6: 06 (if less than 10, insert 0 before quantity) c. Three-pole: 3 d. Ampere Rating (max 40): 40 (if less than 10, insert 0 before amperage) Options “ E ” for EPD “ AX ” for auxiliary contacts “ SC ” for signal contacts “ K ” for MOVs and portable power, 480 VAC only								
Select disconnect switch (see step 2, page 531) if required (3-phase, 4-pole Main Switch, Fused, 125 A)								
480 VAC, 10 kAIC Breakers – S848								
Branch Entries (Side A [bottom] standard) B – Side B left side C – Side C right side								

Example Order Number: D2Z C 3 40EAX * 06340 * 12120 * 02120E * 05110AX-3SF125-BC

(6) 3-pole/40A = *06340
 (12) single-pole/20A = *12120
 (2) single-pole/20A EPD = *02120E
 (5) single-pole/10A = *05110AX
 w/Aux contacts

For other panels or options, consult factory

‡ For a D2Z panelboard with 316 stainless steel enclosure, add suffix “S860” to catalog number

D2Z Zone 1 Division 2 Panelboards Non metallic Factory Sealed 1, 2, 3, 4 pole breakers

CL. I, Div. 2, Groups A-D
CL. I, Zone 1, Groups A-D
CL. II, Div. 1, Groups E, F, G

AEx de II C T4, T6
Ex de IIC T4, T6
EEx de IIC T4, T6
NEMA 4X, IP 66

1A

Spare Component Information

Lighting Circuits Order Code 10k AIC, max. 480 VAC

1-pole
6/window
SIA 001



2-pole
4/window
SIA 002



3-pole
3/window
SIA 003



4-pole
2/window
SIA 004



Please state rated current on order:
2, 6, 10, 16, 20, 25, 32 or 40A.

Optional:

Auxiliary contact – SAH 001
Signal contact – SAS 001 (in the case of
branch breakers with signal
contacts, the next largest
component size is used)

Example:

SIA 001-20 – SAH001
Single Pole, 20A with auxiliary contacts

Please state rated current on order:
6, 10, 16, 20, 25, 32 or 40A.

Optional:

With auxiliary contact – FSH 001
With signal contact in Size 4 component –
FSS001

Example:

FSS 004 - 30 – FSS001
EPD, 30A, 30mA with signal contact

Heat-Tracing Order Code

EPD with 10k AIC, 30mA leakage, max. 480 VAC

1-pole + N
4/window
FSS 002

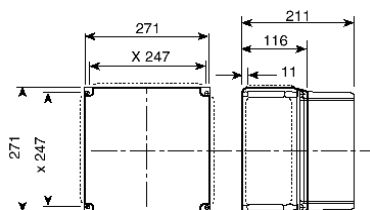


2-pole
2/window
FSS 004

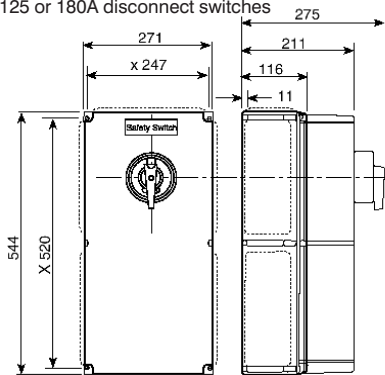


Dimensions

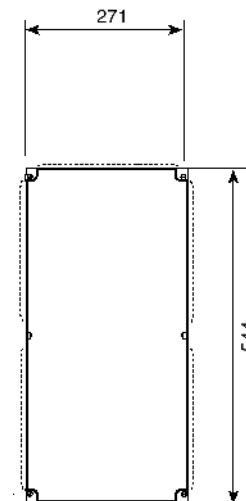
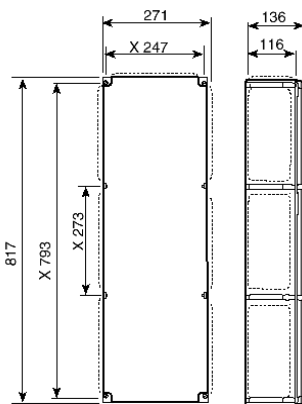
Dimensions in mm X = mounting dimensions



Note: Used only for fuses on 80,
125 or 180A disconnect switches



Note: Used only for fuses on 80, 125 or 180A
disconnect switches without fuses.



Note: Used for

- 40A switch with fuses and
1 window or
- 40A switch and 2 windows, or
- 3 windows of branch breakers.

Application:

D2PB panelboards are designed specifically for use:

- in Class 1, Division 2, Groups C, D hazardous areas where flammable vapors or gases may be present due to accident or abnormal locations
- in damp, wet or corrosive locations
- indoors or outdoors in Division 2 areas of petroleum refineries, chemical and petrochemical plants, and other process industry facilities

For general application, circuit breaker and wiring system information, refer to pages 510 to 513.

Features:

- Enclosures are of external flange design, which makes the interior completely accessible when the cover is removed
- Provided with concealed mounting, which is made possible by having four clearance holes for lag screws or mounting bolts in the back of the enclosure, one in each corner.
- The interior sub-assembly, consisting of a mounting plate, main terminal blocks, and circuit breakers, is removable as a complete unit
- Ample gutter space is provided for ease of field wiring
- Circuit breakers are contained in compact, individual factory sealed enclosures suitable for Class 1, Division 2, Groups C, D hazardous areas. The individual enclosures are easily removed and replaced, therefore changing or adding individual circuit breakers will not present a problem
- The main cover, which is gasketed to exclude dirt and moisture, is attached to the body with hex head bolts and is removed only when installing the panelboard or making wiring changes. In the center of the main cover is a gasketed hinged door, which provides access only to the circuit breaker operating handles, and is held closed by two quick-release catches. The door can be locked by as many as 3 padlocks to prevent unauthorized operation
- Tapped conduit openings are provided for main conduit and branch circuits, as shown in the dimensional information. Standard openings can be reduced or plugged to meet most installation requirements
- Circuit breakers are arranged in two vertical rows and have the circuit numbers marked on the handles. The left row is numbered 1, 3, 5, 7, etc. and the right row 2, 4, 6, 8, etc. Identifying information may be typed on the circuit directory card attached to the inside of the hinged door

Standard Materials:

- Bodies, covers and hinged doors – copper-free aluminum
- Breaker operating handles – type 6/6 nylon
- Interior parts – sheet steel

Standard Finishes:

- Copper-free aluminum – natural
- Type 6/6 nylon – natural (black)
- Sheet steel – electrogalvanized with chromate finish

Size Ranges:

Panel Size	Max. No. of Breakers	
	Single-Pole	Two-Pole
1	12	6
2	24	12

Electrical Rating Ranges:

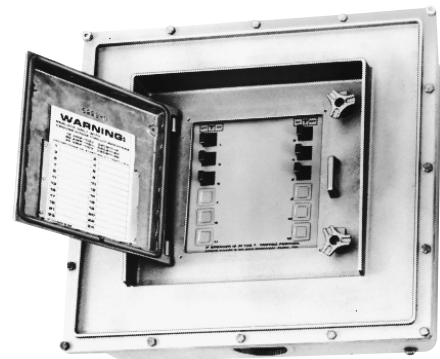
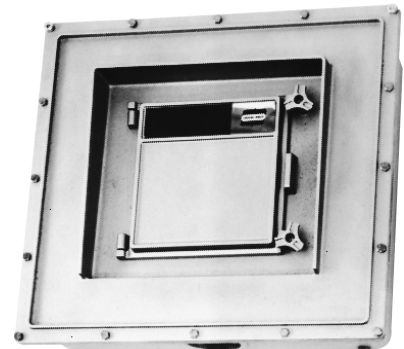
- Circuit breakers
- Single-pole – 120/240vac max
- Two-pole – 120/240vac max
- Trip ratings – 15, 20 and 30 amp

Certifications and Compliances:

- NEC: Class I, Division 2, Groups C, D
- NEMA: 3, 7CD (Division 2), 12
- UL Standard: 67, 877

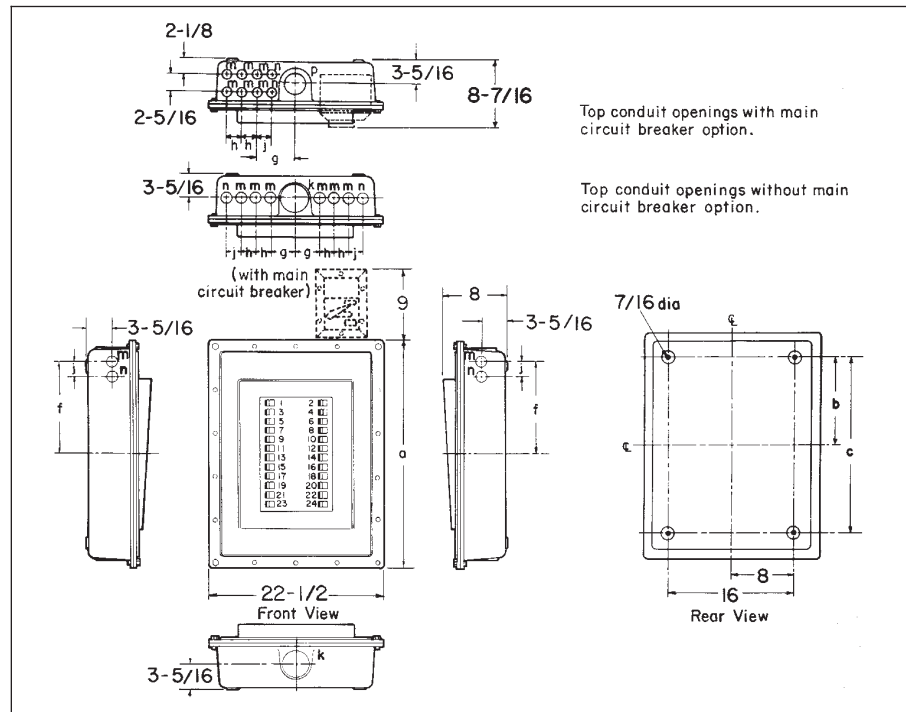
Options:

- Panelboard provided with operating handle lockouts for lockout in ON or OFF positions. Stainless steel lockout frame integral to panel faceplate.
- D2PB Size**
- Use Suffix:**
- 1 –L12
- 2 –L24
- Circuit breaker operating handle lockout – order D2PB02.
- Branch conduit entries furnished with Cooper Crouse-Hinds type PLG plugs S822.
- Square head plugs in all openings S872
- Assortment of single-pole and two-pole circuit breakers and trip ratings – see listings.
- Main breaker – see ordering information
- Branch circuit conduit openings located at bottom instead of at top – use suffix INV
- Drilled and tapped conduit openings other than standard – available on special order – specify
- Wiring system other than those listed – See pages 512 – specify
- Breather and drain – use suffix DV



Dimensions (in inches)

Dimensions are approximate, not for construction purposes.



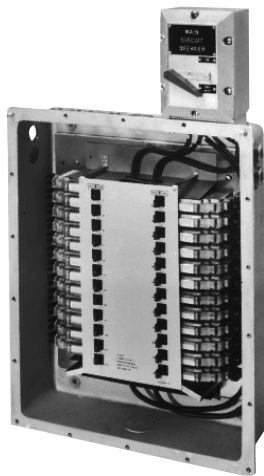
D2PB Division 2 Circuit Breaker Panelboards

Factory Sealed, Single & Two-Pole Breakers

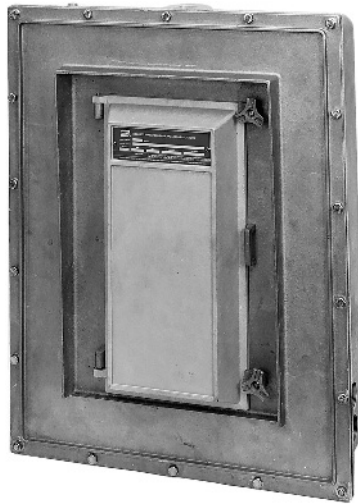
Cl. I, Div. 2, Groups C,D
NEMA 3,7CD (Div. 2),12
Dusttight
Raintight

Wet Locations

1A



D2PB with Main Breaker Option



D2CB12-20

Replacement Circuit Breaker Assemblies

Where D2PB (and N2PB) panelboards have been ordered with less than the maximum number of circuit breakers, breakers can easily be added in the field. Circuit breaker assemblies for field addition or replacement are listed below; they consist of the breaker itself in its factory sealed Class I, Division 2, Groups C, D enclosure, and necessary mounting hardware. These assemblies are not suitable for use as individually mounted units.

Circuit Breaker Assemblies

Ampere Rating	Single-Pole Cat. #	Two-Pole Cat. #
15	D2CB11-15	D2CB12-15
20	D2CB11-20	D2CB12-20
30	D2CB11-30	D2CB12-30

† Add ampere rating. See ordering information.

‡ 1/0 lug, rated 125 amps. takes wire sizes #6 to 1/0; 4/0 lug, rated 225 amps. takes wire sizes 1/0 to 4/0.

◆ For description of these standard wiring systems, see page 512.

1A Panelboards

Ordering Information:

Panelboards are available with single-pole and two-pole, 15, 20, or 30 ampere circuit breakers. To order a panelboard with all breakers of the same rating, add the desired rating as a suffix to the Cat. No. For example, the 12 circuit D2PB1512 panelboard with all the circuit breakers rated at 20 amperes would be ordered as D2PB1512-20.

Panelboards shown below can also be furnished with an assortment of single-pole and two-pole breakers and breaker ampere ratings. To order, the quantities of breakers and ampere ratings are added as a suffix to the Cat. No. The total number of poles will determine the panel size (24 poles maximum), and the wiring systems must be compatible when combining single- and two-pole circuit breakers. For example, a typical D2PB panelboard with a combination of 3 single-pole 15 ampere, 3 single-pole 20 ampere, 2 single-pole 30 ampere, 4 two-pole 20 ampere, and 4 two-pole 30 ampere circuit breakers would be ordered as D2PB2508-315-320-230-808-420-430. The total number of poles is 24 and wiring systems 5 and 8 are compatible 4 wire, 3 phase.

The D2PB with a main breaker is available up to 100 amps. To order D2PB with main breaker, add the appropriate suffix. Example: D2PB1512-15 with three-pole, 100 amp main circuit breaker would be ordered as D2PB1512-15-3M100. If two-pole main is required, change the number 3 to 2. If a lower trip rating than 100 is required, the suffix will change accordingly.

				Single-Pole Circuit Breakers		Two-Pole Circuit Breakers	
Max. No. of Breakers		Panel Size	Main Lug Size‡	Wiring System 4 ◆ Mains: 3-Wire Branches: 2-Wire Solid Neutral Cat. #	Wiring System 5 ◆ Mains: 4-Wire, 3-Phase Branches: 2-Wire Solid Neutral Cat. #	Wiring System 3 ◆ Mains: 3-Wire Branches: 3-Wire Solid Neutral Cat. #	Wiring System 8 ◆ Mains: 4-Wire, 3-Phase Branches: 3-Wire, 1-Phase Solid Neutral Cat. #
Single-Pole	Two-Pole						
6		1	1/0	D2PB1406-†	D2PB1506-†	D2PB1304-†	D2PB1804-†
8	4			D2PB1408-†	D2PB1508-†	D2PB1305-†	D2PB1805-†
10	5			D2PB1410-†	D2PB1510-†	D2PB1306-†	D2PB1806-†
12	6			D2PB1412-†	D2PB1512-†		
12	6	2	4/0	D2PB2412-†	D2PB2512-†	D2PB2306-†	D2PB2806-†
14	7			D2PB2414-†	D2PB2514-†	D2PB2307-†	D2PB2807-†
16	8			D2PB2416-†	D2PB2516-†	D2PB2308-†	D2PB2808-†
18	9			D2PB2418-†	D2PB2518-†	D2PB2309-†	D2PB2809-†
20	10			D2PB2420-†	D2PB2520-†	D2PB2310-†	D2PB2810-†
22	11			D2PB2422-†	D2PB2522-†	D2PB2311-†	D2PB2811-†
24	12			D2PB2424-†	D2PB2524-†	D2PB2312-†	D2PB2812-†

Dimensions

Panel Size Without Main C.B.	Overall and Mounting Dimensions (In.)			Conduit Openings				Size (In.)				Quantity	
	a	b	c	Spacing (In.)								Main	Branches
1	20¾	8	16	f	g	h	jt	k	m	n*	p	2	8
2	28¾	11¾	23½	7¾	3½	2		3	1¼			2	8
				11⅞	3⅛	1⅝	1⅝	3	1¼	1¼		2	12
Panel Size With Main C.B.													
1	20¾	8	16	7¾	5	1⅝			1¼		2½	2	8
2	28¾	11¾	23½	11⅞	5	1⅝	1⅝		1¼	1¼	2½	2	12

* Conduit opening "n" not supplied on panel size 1.

D2PB, D2L, D2D Circuit Breaker Panelboard Assemblies

with Transformer

Cl. I, Div. 2, Groups B†,C,D
NEMA 3,4‡,7B†CD (Div. 2),12
Wet Locations
Watertight‡

Application:

D2PB, D2L, D2D circuit breaker panelboard assemblies with transformers are for use:

- in Class I, Division 2, Group C,D hazardous areas where, due to accident or abnormal operations, flammable vapors or gases may be present, and which are subject to weather, dampness and corrosion
- indoors or outdoors in Division 2 areas such as petroleum refineries, chemical and petrochemical plants, and other process industry facilities
- where high voltage supply must be stepped down to the lower voltage necessary to serve lighting, heating, appliance, heat tracing, motor and similar circuits

For general information on panelboard applications, circuit breakers and wiring systems, refer to pages 510 to 513.

Features:

- The factory assembled panelboard and transformer are on one compact frame, suitable for either wall or pole mounting. Wiring between the transformer secondary and main lugs of the panelboard is accomplished at the factory.
- Easy to install and wire. The main feed is connected to the transformer primary and the branch circuits are wired to the panelboard terminal blocks.
- The assembly can be installed in the load area to reduce the length of runs of low voltage branch circuits.
- Panelboards used are standard D2PB, D2L, or D2D units with circuit breakers listed in this section.
- Transformers are compound filled or epoxy filled to completely seal out moisture and dirt.

Standard Materials:

- Frames – structural aluminum
- Mounting hardware – stainless steel
- Transformer enclosure – sheet steel, welded
- For panelboard materials, see individual listing pages

Standard Finishes:

- Aluminum – natural
- Stainless steel – natural
- Sheet steel – primed and painted
- For panelboard finishes, see individual listing pages

Options:

- Material – structural steel frames
- Finish – primed and painted or hot dip galvanized
- For options available on the panelboards themselves, see individual listings pages

Size Ranges:

Transformers

- single or three-phase – 5kVA to 30kVA

Panelboards

	Max. No. of Breakers		
	Single-pole	Two-pole	Three-pole
D2PB	24	12	
D2L	42	20	14
D2D	30	14	10

Electrical Rating Ranges:

- Transformers – 480 volt primary
- Transformers – 120/240 volt secondary
- Panelboards – see individual listings

Certifications and Compliances:

- NEC/CEC: Class I, Division 2, Group B†,C,D
- NEMA/EEMAC: 3, 4‡, 7B†CD (Division 2), 12
- UL Standard: 67, 1604
- CSA Standard: C22.2 No. 213

† D2L, D2D with GB suffix and breather and drain holes plugged.

‡ NEMA 4 hoesight with breather and drain openings plugged.

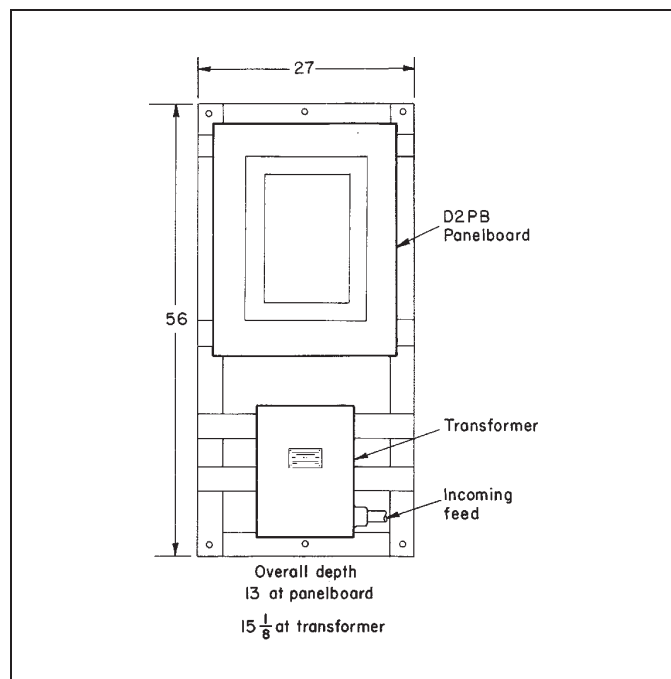
D2PB, D2L, D2D Circuit Breaker Panelboard Assemblies

with Transformer

Cl. I, Div. 2, Groups B†,C,D
NEMA 3,4‡,7B†CD, (Div. 2),12
Wet Locations
Watertight‡

1A

Typical Assembly*



24 Circuit D2PB panelboard with single-phase transformer

Ordering Check List

1. Select the D2PB, D2L, D2D panelboard required, together with any applicable options or special features. See individual listing pages.

Cat. No. _____

2. Provide the following information, necessary for selection of the correct transformer:

Primary voltage _____

Secondary voltage: _____

kVA rating _____

Taps – number and percent _____

Frequency (60 cycle unless otherwise specified) _____

Single or three-phase _____

Other requirements _____

* Dimensions are approximate, not for construction purposes.

† D2L, D2D with GB suffix and breather and drain holes plugged.

‡ NEMA 4 hoesetight with breather and drain openings plugged.

1A
Panelboards

GUSC Circuit Breaker Load Centers

with Quicklag®* Circuit Breakers

Cl. I, Div. 1 & 2, Groups B**,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

Application:

GUSC circuit breaker load centers are used in:

- areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts, and which are subject to weather, dampness and corrosion
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist

For general application and circuit breaker information, refer to pages 510 and 511.

Features:

- Compact rectangular enclosures with round threaded covers.
- External operating handles can be padlocked in either "ON" or "OFF" positions.
- Not furnished with internal wiring as field wiring connections are made directly to circuit breaker line and load terminals. To meet varying grounding requirements, an insulated neutral terminal block is provided and is equipped with a removable grounding jumper.
- Bodies have 1" vertical throughfeed hubs.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish

Size Ranges:

Max. No. of Breakers

Single-pole	Two-pole
2	1

Electrical Rating Ranges:

- Quicklag circuit breakers: single-pole, 240vac max.; two-pole, 240vac max.
- Trip ratings: 10, 15, 20, 30 and 40 amp.

Certifications and Compliances:

- NEC: Class I, Div. 1 & 2, Groups B**,C,D
Class II, Div. 1, Groups E,F,G
Class II, Div. 2, Groups F,G
Class III
- NEMA: 3,7BCD,9EFG,12
- UL Standard: 877



Single gang

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description

Breather and drain (Class I and Class II)	S198V
Breather and drain (Class I and Class II, Groups F,G)	S454V
Assortment of single and two-pole circuit breakers and trip ratings	Specify

* Quicklag is a registered trademark of Cutler-Hammer Inc.

** See listings for catalog numbers which are suitable for use in Group B hazardous locations. Seals must be installed within 1½" of all conduit openings.

Suffix to be
Added to Encl.
Cat. #

GUSC Circuit Breaker Load Centers

with Quicklag®* Circuit Breakers

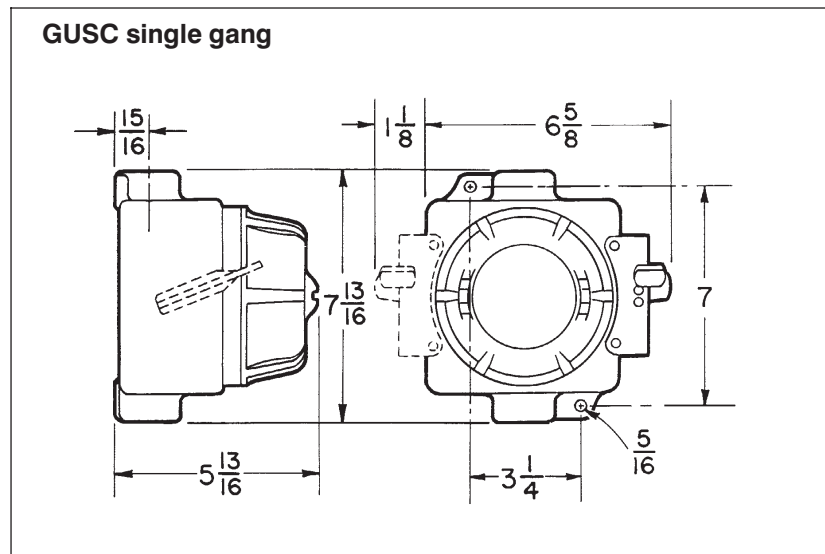
Cl. I, Div. 1 & 2, Groups B**,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

1A

Circuit Breaker Information			Load Center With Circuit Breaker		
No. of Breakers	Poles	Ampere Rating	Hub Size	Standard Units Cat. #	Group B Units Cat. #
1	1	10	1	GUSC3110-10	GUSC3110-10-GB
1	1	15	1	GUSC3110-15	GUSC3110-15-GB
1	1	20	1	GUSC3110-20	GUSC3110-20-GB
1	1	30	1	GUSC3110-30	GUSC3110-30-GB
1	1	40	1	GUSC3110-40	GUSC3110-40-GB
2	1	10	1	GUSC3210-10	GUSC3210-10-GB
2	1	15	1	GUSC3210-15	GUSC3210-15-GB
2	1	20	1	GUSC3210-20	GUSC3210-20-GB
2	1	30	1	GUSC3210-30	GUSC3210-30-GB
2	1	40	1	GUSC3210-40	GUSC3210-40-GB
1	2	10	1	GUSC3120-10	GUSC3120-10-GB
1	2	15	1	GUSC3120-15	GUSC3120-15-GB
1	2	20	1	GUSC3120-20	GUSC3120-20-GB
1	2	30	1	GUSC3120-30	GUSC3120-30-GB
1	2	40	1	GUSC3120-40	GUSC3120-40-GB

Dimensions (in inches)



Dimensions are approximate, not for construction purposes.

** Group B units must have seals installed within 1½" of all conduit openings.

*Quicklag is a registered trademark of Cutler-Hammer, Inc.

Notes Page

[illegible]

Description	Page No.
Application/Selection	544
Enclosed Switches	
Heavy Duty	
FLS	547
WST/W2ST	558, 559
General Use Snap Switches	
EFD, EFDC, EDS, EDSC	556, 557
FSPC	554
GUSC	553
6810U/7810U	562
Disconnect Switches	
EBM	545, 546
NRS	560, 561
N2RS	552
GHG	548-551
Light Switch	
GHG273	555

Application and Selection Quick Selector Chart

Application:

Switches and enclosures are used in hazardous and non-hazardous areas to disconnect motor, lighting and other circuits and prevent arcing of the enclosed switch from igniting hazardous atmospheres.

Considerations for Selection:

Enclosure Location:

- NEC/CEC: and NEMA/EEMAC compliances for hazardous areas and/or wet and dirty locations

Electrical:

- Consistency with the functions to be performed

Application:

- Selection of appropriate switch and operating mechanism

Options:

- Optional material and finishes available for highly corrosive atmospheres
- Various hub sizes are available to suit particular applications

Quick Selector Chart

Switch Enclosure	NEC/CEC & NEMA/EEMAC Compliances	Electrical Rating			Switch Type	Fused or Unfused
		Max. Amps	Max. Volts	Max. HP		
WST	NEMA/EEMAC: 3R, 4, 12	100	600VAC 250VDC	75	Visible blade Heavy Duty	Fused & unfused
EDS, EDSC, EFD, EFDC	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 7BCD, 9EFG, 12	30	277VAC	2	General use snap	Unfused
FSPC	Cl. I, Div. 1 & 2, Groups A, B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 7ABCD, 9EFG, 12	20	277VAC	2	General use snap	Unfused
GUSC	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 7CD, 9EFG, 12	30	600VAC	2	General use snap	Unfused
FLS	Cl. I, Div. 1 & 2, Groups C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC: 3, 4, 7CD, 9EFG, 12	100	600VAC	50	Visible blade Disconnect	Unfused
EBM	Cl. I, Div. 1 & 2, Groups B, C, D; Cl. II, Div. 1, Groups E, F, G; Cl. II, Div. 2, Groups F, G; Cl. III; NEMA/EEMAC 3, 4, 7BCD, 9EFG, 12	200	600VAC	75	Visible blade Disconnect	Fused & unfused
NRS	NEMA/EEMAC 3, 4X, 12	100	600VAC	75	Rotary-Disconnect	Fused & unfused
N2RS	Cl. I, Div. 2, Groups B, C, D NEMA 3, 4X, 12	100	600VAC	60	Rotary-Disconnect	Unfused
6810/7810	NEMA/EEMAC 3R	30	600VAC	15	Contacts, snap	Unfused
GHG	Cl. I, Div 2, Groups A, B, C, D Cl. II, Div 1, Groups E, F, G Cl. I, Zones 1 & 2, Ex de IIB+H ^S , EEx de IIC	180	600VAC	150	Rotary	Unfused

EBM Disconnect Switches and Enclosures

600 VAC Heavy Duty

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4,4 $\frac{1}{2}$,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations

2A

Application:

EBM series hinged cover disconnect switches are used:

- to disconnect motor, lighting and other circuits.
- in locations made hazardous by the presence of flammable gases or vapors or ignitable dusts.
- indoors or outdoors in damp, wet and dirty locations, or in areas where frequent washdowns, heavy rain or water spray is prevalent.
- to provide disconnect means and short circuit protection, (fusible version).
- on switchracks or other assemblies where it is desired that motor control be centrally located.

Features:

- Rugged corrosion resistant cast copper-free aluminum construction (less than 0.4 of 1%).
- Switch operating handle is located through the right side wall of the body, permits visual confirmation of correct alignment and operation.
- Total compliance to the wiring end room requirements of the National Electrical Code.
- Semi-clamshell enclosure design, with an external flanged ground joint between body and cover makes interior components more accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel quick release captive hex-head cover bolts. Stainless steel springs provide clear indication that cover bolts are fully retracted from the body.
- Switch operating handle can be padlocked in either the "ON" or "OFF" position.
- Neoprene cover gasket permanently attached to the cover, seals out moisture.
- Bodies have top and bottom drilled and tapped conduit entrances for power and conduits. Removable reducers are supplied as standard, to accommodate smaller size conduits. All conduit entrances are plugged.
- Tap on mounting feet.

Standard Materials:

- Body and cover – copper-free aluminum
- Operating handle – copper-free aluminum
- Operating shaft and bushing – stainless steel
- Interior parts – sheet steel, electrogalvanized
- Cover bolts, washers and retractile springs – stainless steel

Certifications and Compliances:

- NEC/CEC: Class I, Division 1 & 2, Groups B,C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standards: UL1203 – Hazardous (classified) locations
- UL subject 2062 – High A.I.C. Rating (Interrupting Capacity)

Volt	RMS Symm. Amperes
240	65,000
480	50,000
600	25,000
- CSA Standard: C22.2 No. 30
- NEMA: 3, 3R, 4 $\frac{1}{2}$, 7BCD, 9EFG, 12

Electrical Rating Ranges:

- 600 VAC
- 30, 60, 100 and 200 Amp.



2A Switches

Ordering Information:

To order an enclosure complete with the disconnect switch, select the catalog number (based on the necessary rating of the switch), from the listing below.

Enclosures only, without the disconnect switch, can be ordered. Select the catalog number for the required enclosure from the listing below.

Amp Rating	Max. HP Rating				Enclosure	
	AC Polyphase			DC using 2 poles only	With Switch	Without Switch
	200/240V	440/480V	550/600V	250V Max.	600VAC Cat. #	Cat. #
Non-Fusible						
30	10	20	25	7½	EBMBB FD W30360	EBMBB FD
60	20	40	60	15	EBMBB FD W60360	EBMBB FD
100	30	75	75	25	EBMBD FD W10360	EBMBD FD
200					EBMBG WD 20036 DR0294928	N/A
Fusible						
30	—	5	7½	5	EBMBB FD W30361	EBMBB FD
60	—	15	15	10	EBMBB FD W60361	EBMBB FD
100	15	25	30	20	EBMBD FD W10361	EBMBD FD
200					EBMBH W20361DR0295687	N/A

Options:

- For available options, see listing on page 367.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.



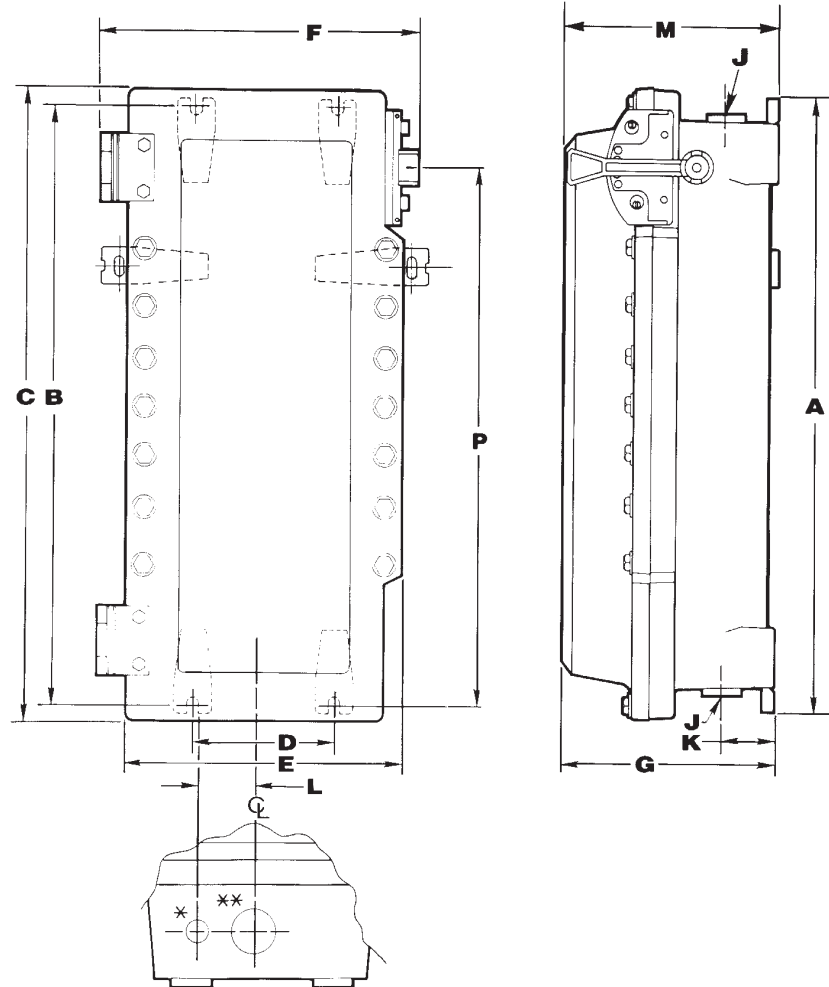
EBM Disconnect Switches and Enclosures

Dimensions (Inches)

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,3R,4‡,7BCD,9EFG,12

Explosionproof
Dust-Ignitionproof
Watertight
Wet Locations

Dimensions are approximate, not for construction purposes.



* 1" D & T conduit entry for control conductors supplied with PLG plug top and bottom.

** Conduit entrance(s) for power conductors (top and bottom). (All conduit entrance(s) supplied with RE reducer and PLG plug.)

	Enclo- sure Only Cat. No.	Enclo- sure Size Symbol	Dimensions							** J Conduit Entry Trade Size		Dimensions			
			A	B	C	D	E	F	G	D & T ♦ w/RE	K	L	M	P	
30 and 60 Amp Frame	EBMBB✓	B	25.75	24.75	26.90	6.00	13.03	14.46	10.25	2"	1.5"	3.25	3.13	10.25	22.00
100 Amp Frame	EBMBD	D	28.25	27.25	29.40	6.00	13.03	14.46	10.25	3"	2.5"	3.25	3.13	10.25	24.50

✓ – available with Lightning Service™ delivery. ♦ Drilled & Tapped.

See Section G for complete details.

‡ Enclosure not suitable for NEMA 4 with cover mounted operators. Breather and drain entries must be plugged for NEMA 4 rating.

FLS Enclosed Switches

Heavy Duty

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,4,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

2A

Application:

- FLS heavy duty enclosed switches are used:
- in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled
 - as disconnect switches for main feed or individual motor control
 - to prevent arcing of the enclosed switch from causing ignition of a specific hazardous atmosphere, or atmospheres, external to the enclosure
 - in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas and metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
 - in non-hazardous area where sturdy, durable enclosures are required

Features:

- Enclosed devices are unfused, visible blade motor circuit switches.
- Rugged cast metal enclosures with mounting lugs and taper tapped hubs with integral bushings, in through feed arrangement.
- Interior of the enclosures is readily accessible through threaded cover openings at each end, set at an angle to facilitate wiring.
- Threaded covers and a threaded type operating shaft and bushing provide quick assembly and easy maintenance.
- A padlock can be used to lock the operating handle in an "ON" or "OFF" position.
- Body and cover threads treated with lubricant at factory to provide raintightness.

Standard Materials:

- Body – copper-free aluminum
- Cover – copper-free aluminum
- Shaft – stainless steel
- Shaft bushings – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural

Options:

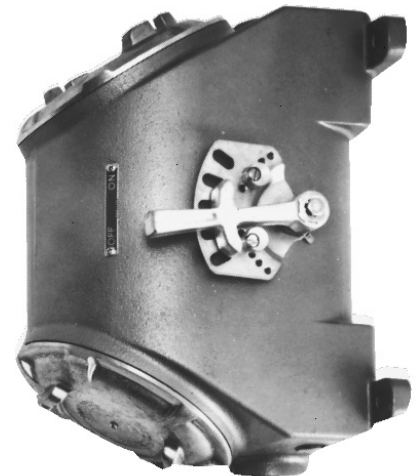
- Ground/neutral wire stud provided. . . . S168
- Breather and Drain S198V
- Auxiliary switch: 1A, 1B. S784
- Auxiliary switch: 2A, 2B S785

Size Ranges:

- Hub size – 1½" through feed with top entry having a PLG5 plug.

Certifications and Compliances:

- NEC: Class I, Divisions 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA: 3,4,7CD,9EFG,12
- UL Standard: 894



Furnished with Non-Fusible, Visible Blade Motor Circuit Switch

Switch Ratings

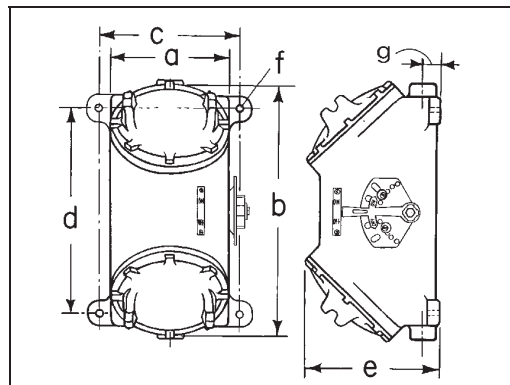
Amperes	Maximum HP – 3 Phase				
	125	240	480	600	250 VDC
30	5	10	20	25	7.5
60	10	20	40	60	15
100	15	30	75	75	25

Through
Feed
Hub
Size
1½
1½
1½

Enclosure
With
3-Pole
Switch
Cat. #

FLS30364-1-33
FLS60364-1-44
FLS10364-1-55

Dimensions*



a 7½ b 13⅝ c 8½

d 9¾ e 9⅞ f 7/16 g 1¾

* Dimensions are approximate, not for construction purposes.

2A
Switches

Explosion Protected Disconnect Switches

10, 20, 40, 80, 125 and 180 Amp
600VAC Non-Metallic Enclosure

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB+H₂, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB Certified
EEx de IIC, T6, Zones 1 and 2, IP66

Application:

Explosion Protected disconnect switches are used in a metallic conduit or cable system for surface mounting to control motor, lighting, and other circuits and:

- for individual motor control
- are used to prevent arcing internal to the enclosed switch from causing ignition of a specific hazardous atmosphere or atmospheres.
- are designed for industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, and finishing areas where sturdy, durable enclosures are required.

Features:

- Explosion protected factory sealed motor circuit switches.
- Innovative break-line in cover allows full wiring access, making installation quick and easy.
- High-impact enclosure is designed for excellent corrosion resistance and will not warp from hot or cold water.
- Tongue-in-groove seal guarantees IP66 rating and eliminates possibility of accidental opening or leakage.
- Lockable handle meets OSHA lockout/tagout requirements.
- Molded-in-place mounting feet provide a water channel between wall and enclosure.
- Large rotary handle provides easy gripping with gloved hands.
- Captive cover screws prevent water exposure and possible corrosion.



Standard Materials:

- Enclosure
 - 10A: Impact-resistance thermoplastic
 - 20A - 180A: Fiberglass-reinforced polyester
 - Nonmetallic, corrosion resistance
 - Increased safety Ex-e protection
 - Impact Resistance
 - NEMA 4X, IP66 Protection
 - Enclosure meets UL 94-V0
 - UV Rated
- Enclosure Gasket - Silicon
- Handle - Impact-resistant thermoplastic
- Cover Screws - Stainless steel
- Conduit Entries: Zinc Myers® Hubs

Certification & Compliances:

- UL/cUL Listed
- Class I, Division 2, Groups A, B, C, D
- Class I, Zones 1 and 2, AEx de IIB+H₂, T6
- Class II, Division 1, Groups E, F, G (cUL)
- CENELEC - PTB Certified
- EEx de IIC, T6, Zones 1 and 2A, IP66
- CSA Standard: C22.2 No.14
- NEMA 4X
- IP66

Electrical Rating Ranges:

Switches:		Horsepower Ratings:		
		400V	480V	600V
GHG 261	10A	8.4	8.4	—
GHG 262	20A	14.3	14.3	12.2
GHG 263	40A	30.6	37.0	42.6
GHG 264	80A	64.0	76.0	73.5
GHG 265	125A	114.2	126.5	133.3
GHG 266	180A	147.0	147.0	150.0

Explosion Protected Disconnect Switches

10, 20, 40, 80, 125, and 180 Amp
600VAC Non-Metallic Enclosure

UL/cUL Listed
Class I, Division 2, Groups A, B, C, D
Class I, Zones 1 and 2, AEx de IIB + H₂, T6
Class II, Division 1, Groups E, F, G (cUL)
CENELEC - PTB Certified
EEx de IIC, T6, Zones 1 and 2, IP66

2A

Ordering Information

	10 AMP	20 AMP	40 AMP
Pole	3 Pole	3 Pole	6 Pole
Rated Voltage	500 V	690 V	690 V
Auxiliary Contact	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading	1 NC
Auxiliary Connection	14 AWG 2 x 2.5 mm ²	12 AWG 2 x 4 mm ²	12 AWG 2 x 16 mm ²
Connection Terminals	14 AWG	12 AWG	12 AWG
Conduit Entries	3/4"	2 x 3/4"	2 x 3/4"
Catalog Number	GHG 261 0005 L0002	GHG 262 2301 L0003	GHG 262 2601 L0002
Weight	0.55 kg 1.2 lbs.	1.5 kg 3.3 lbs.	2.3 kg 5.1 lbs.
Dimensions	See Figure 1	See Figure 2	See Figure 3
Wall Mounting Plate	GHG 610 1953 R0101	GHG 610 1953 R0104	GHG 610 1953 R0118

	80 AMP	125 AMP	180 AMP
Pole	3 Pole	6 Pole	3 Pole
Rated Voltage	690 V	690 V	690 V
Auxiliary Contact	1 NO, making – lagging breaking – leading	1 NC	1 NO, making – lagging breaking – leading
Auxiliary Connection	12 AWG 2 x 50 mm ²	12 AWG 2 x 50 mm ²	12 AWG 1 x 70 mm ²
Connection Terminals	2 AWG	2 AWG	2/0 AWG
Conduit Entries	1 1/2"	2 x 1 1/2"	2 x 2"
Catalog Number	GHG 264 0020 L0002	GHG 264 0021 L0002	GHG 265 0010 L0003
Weight	6.5 kg 14.3 lbs.	9.0 kg 19.8 lbs.	16.0 kg 35.2 lbs.
Dimensions	See Figure 6	See Figure 7	See Figure 8
Wall Mounting Plate	not required	not required	not required

2A Switches

ORDERING INFORMATION For Variable Speed, Three Phase Drives

	20 AMP	40 AMP	80 AMP
Pole	3 Pole	3 Pole	3 Pole
Rated Voltage	690 V	690 V	690 V
Auxiliary contact	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading	1 NO, making – lagging breaking – leading
Auxiliary Connection	12 AWG 2 x 4 mm ²	6 AWG 2 x 16 mm ²	2 AWG 2 x 35 mm ²
Connection Terminals	12 AWG	6 AWG	2 AWG
Conduit Entries	2 x 3/4"	1 x 1" + 1 x 1/2"	1 x 1 1/2" + 1 x 1/2"
Catalog Number	GHG 262 0014 L0001	GHG 263 0053 L0001	GHG 264 0024 L0001
Weight	1.6 kg 3.5 lbs.	2.3 kg 5.1 lbs.	3.5 kg 7.7 lbs.
Dimensions	See Figure 10	See Figure 11	See Figure 12
Wall Mounting Plate	GHG 610 1953 R0118	GHG 610 1953 R0118	GHG 610 1953 R0110

Switches can be mounted directly onto a wall. The optional wall mounting plate offers a more convenient method of mounting.

Explosion Protected Disconnect Switches

Dimensions (Inches)

10, 20, 40, 80, 125 and 180 Amp
600 VAC Non-Metallic Enclosure

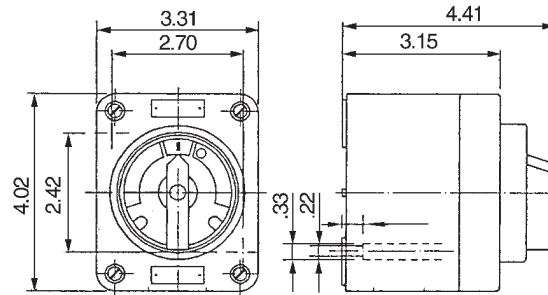


Figure 1 - 10 Amp, 3 Pole

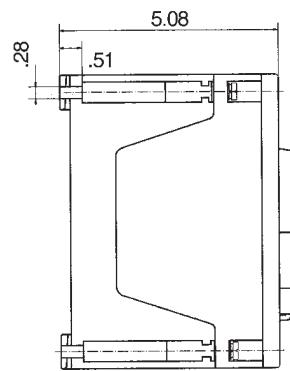
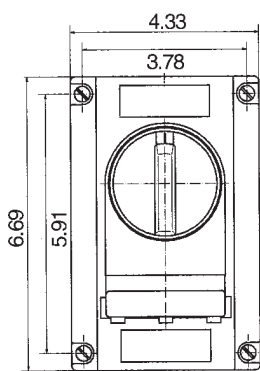


Figure 2 - 20 Amp, 3 Pole

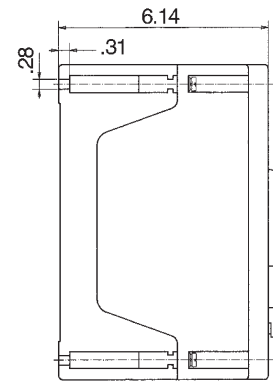
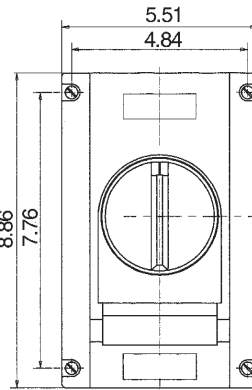


Figure 3 - 20 Amp, 6 Pole

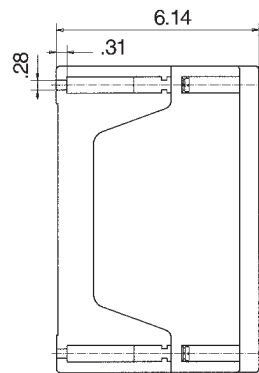
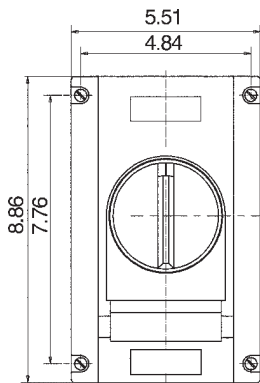


Figure 4 - 40 Amp, 3 Pole

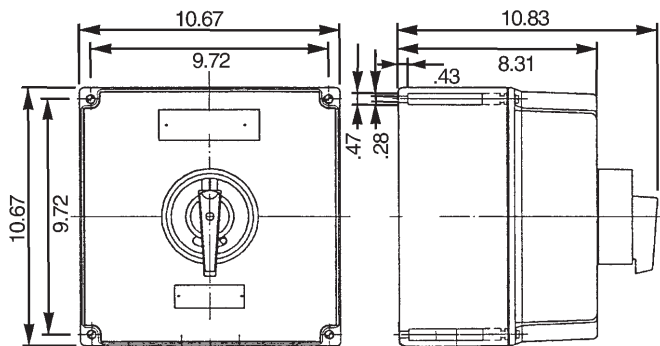


Figure 5 - 40 Amp, 6 Pole

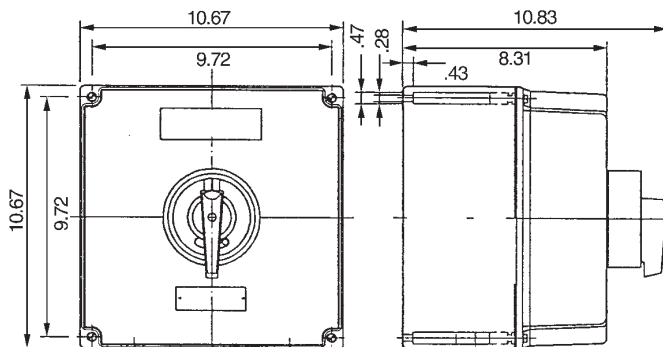


Figure 6 - 80 Amp, 3 Pole

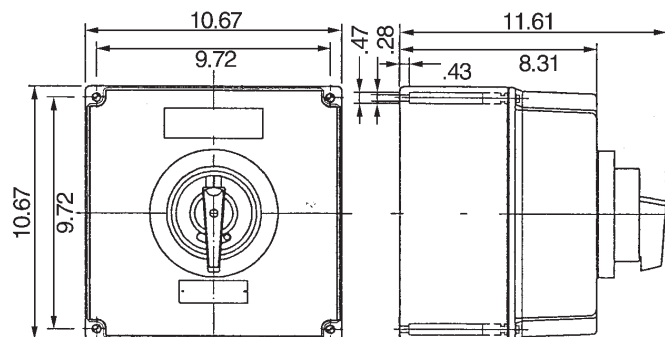


Figure 7 - 80 Amp, 6 Pole

Explosion Protected Disconnect Switches

Dimensions (Inches)

2A

10, 20, 40, 80, 125 and 180 Amp
600 VAC Non-Metallic Enclosure

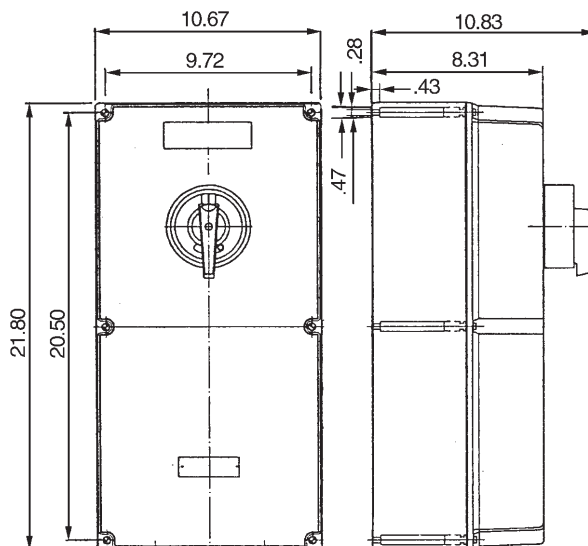


Figure 8 - 125 Amp, 3 Pole
180 Amp, 3 Pole

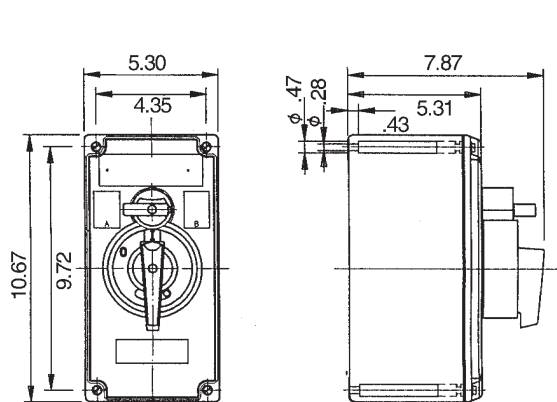


Figure 9 - 20 Amp, 3 Phase Variable Speed

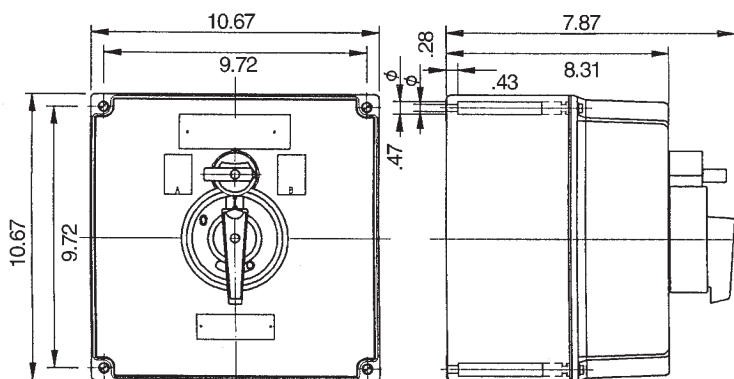


Figure 10 - 40 Amp, 6 Phase Variable Speed

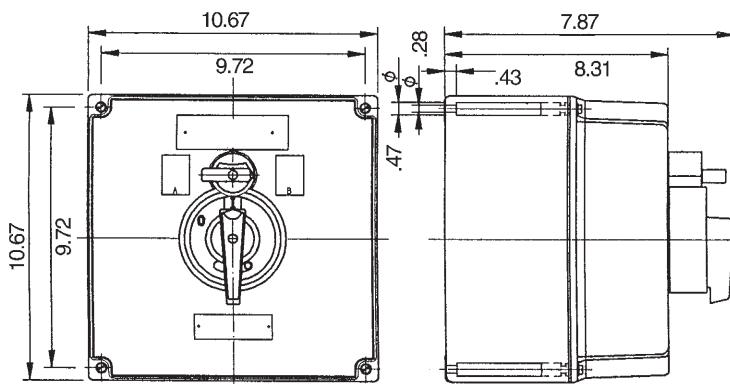


Figure 11 - 80 Amp, 3 Phase Variable Speed

2A
Switches

2A N2RS Enclosed Switches

Heavy-Duty

Cl. I, Div. 2, Groups B, C, D
NEMA 3, 4X, 7 (B, C, D Div. 2), 12
Watertight
Dusttight
Factory Sealed

Application:

N2RS heavy-duty enclosed switches are used:

- in a rigid metallic conduit or cable system for surface mounting adjacent to or remote from equipment being controlled.
- for individual motor control.
- to prevent arcing internal to the enclosed switch from causing ignition of a specific hazardous atmosphere, or atmospheres.
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, and finishing areas where atmospheres may contain hazardous gases.
- in non-hazardous areas where sturdy, durable enclosures are required.
- when controlling motor, lighting and other circuits.

Features:

- Enclosed devices are unfused, factory sealed motor circuit switches.
- Exceeds NEC® wiring end room requirements for ease of installation.
- RSWP factory sealed industrial control switch, no external seals are required.
- Enclosure is made of Krydon® high-impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Krydon material hubs with integral bushings, for dead-end or through-feed arrangements are supplied.
- Krydon material mounting feet supplied.
- Suitable for wash down and corrosive areas (Type 4X).
- A padlock can be used to lock the operating handle in the "OFF" position.
- Rotary actuator with snap action.
- Unitized, strong and durable construction provides longer service life for equipment.
- Factory sealed 10A, 600 VAC auxiliary contact switch provided.

Standard Materials:

- Enclosure - Krydon material
- External Hardware - Stainless Steel
- Operating Handle - Nylon

Size Ranges:

- Hub size - (2) 1½" (30, 60 amps)
- (2) 2½" (100 amps)

Krydon material hubs included (not mounted)

Certifications and Compliances:

- NEC: Class I, Div. 2, Groups B, C, D
- NEMA: 3, 4X, 7 (B, C, D Div. 2), 12
- UL Standard: 508, 1604
- cUL to CSA Standard C22.2 No.14
- IP65



Furnished with Non-Fusible, Factory Sealed Motor Circuit Switch

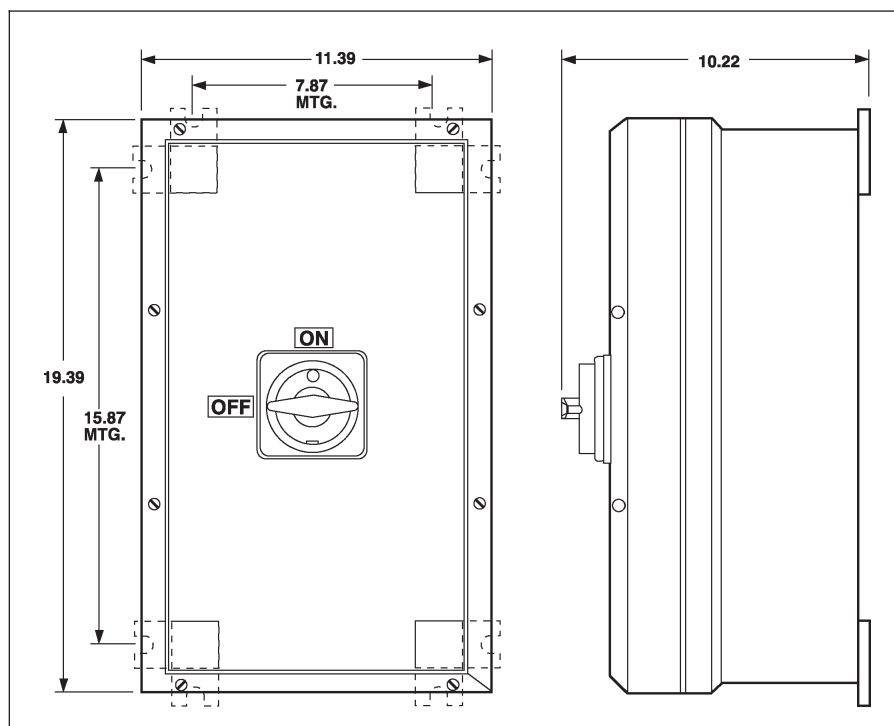
Switch Ratings

Amperes	Maximum HP - 3 Phase Volts AC		
	240	480	600
30	10	20	25
60	15	30	40
100	20	40	60

Ordering Information

Enclosure With 3-Pole Switch	
Hub Size	Cat. #
1½"	N2RS603
1½"	N2RS603
2½"	N2RS1003

Dimensions:



GUSC Enclosures

with General Use Snap Switches

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 3,7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

2A

Application:

GUSC snap switches are used:

- in a rigid metallic conduit system for surface mounting adjacent to or remote from the equipment being controlled
- to prevent arcing of the enclosed switches from causing ignition of a specific hazardous atmosphere, or atmospheres, external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where the atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required



Features:

- Enclosures are of rugged metal construction with mounting lugs and taper tapped hubs with integral bushings, in a through feed or bottom feed arrangement, for connection to the rigid metallic conduit.
- Cover is threaded, which provides for fast and proper assembly.
- Provided with a threaded operating shaft and bushing.
- Provision is made to use a packlock with 1/4" hasp, to lock the operating lever in an "ON" or "OFF" position.
- Body and cover threads treated with lubricant at factory to provide raintightness.

Standard Materials:

- Body – Feraloy® iron alloy
- Cover – copper-free aluminum
- Shaft – stainless steel
- Shaft bushing – stainless steel

Standard Finishes:

- Feraloy iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Size Ranges:

- Hub size – 3/4" (through or bottom feed arrangements)

Electrical Rating Ranges:

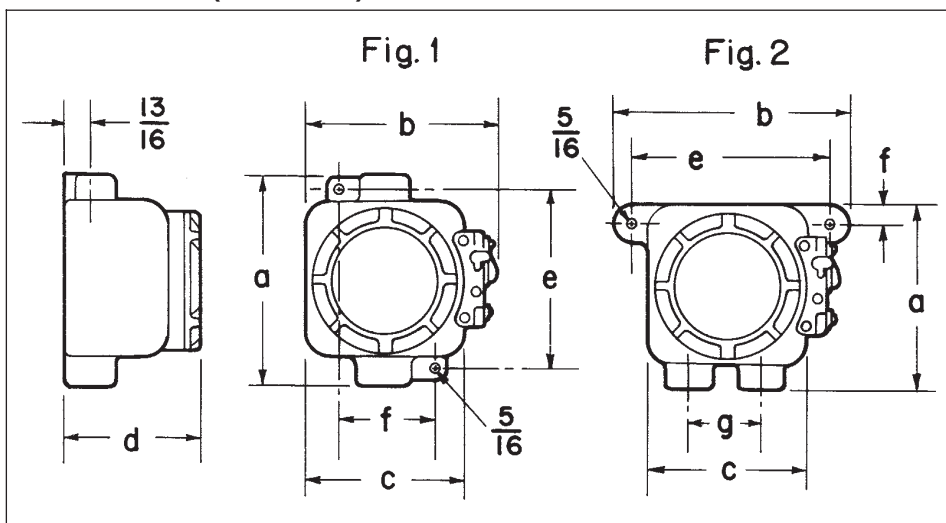
- 2 and 3-pole – 30 amps, 250vac;
20 amps, 600vac
- 2-pole – 2 hp, 115-480vac
- 3-pole – 2 hp, 115-575vac

Certifications and Complies:

- NEC/CEC: Class I, Div. 1 & 2, Groups C,D
Class II, Div. 1, Groups E,F,G
Class II, Div. 2, Groups F,G
Class III
- NEMA/EEMAC: 3,7CD,9EFG,12
- UL Standard: 894
- CSA Standard: C22.2

Style	Rating	Hub Size	Through Feed Hubs Cat. #	Two Hubs at Bottom Cat. #
2-Pole	30 Ampere, 250 VAC; 20 Ampere, 600 VAC; 2 HP, 115-480 VAC	3/4	GUSC2052-AH	GUSC2152-AH
3-Pole	30 Ampere, 250 VAC; 20 Ampere, 600 VAC; 2 HP, 115-575 VAC	3/4	GUSC2013-AH	GUSC2113-AH

Dimensions* (in inches)



Type	Size	a	b	c	d	e	f	g
Through Feed Hubs – Fig. 1	2, 3-Pole	6 3/16	6 1/16	4 7/8	4 1/8	5 3/8	3	
Two Hubs at Bottom – Fig. 2	2, 3-Pole	5 7/16	6 3/8	4 7/8	4 1/8	5 3/8	3 1/8	2 1/4

* Dimensions are approximate, not for construction purposes.

Cl. I, Div. 1 & 2, Groups A[†],B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7A[‡]BCD,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

FSPC snap switches are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:

- to prevent arcing of enclosed switch from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required

Features:

- Rugged cast metal enclosure with mounting lugs and taper tapped hubs with integral bushings, in a through feed arrangement.
- Threaded cover to provide fast, proper assembly and easier maintenance.
- Journalled type operating shaft – close tolerance fit for flametightness.
- Body and cover threads treated with lubricant at factory to provide raintightness.

Standard Materials:

- Body – *Feraloy*[®] iron alloy
- Cover – copper-free aluminum
- Shaft – stainless steel
- Bushing – stainless steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Stainless steel – natural

Certifications and Complies:

- NEC: FSPC 21 series –
 Class I, Div. 1 & 2, Groups C,D
 Class II, Div. 1, Groups E,F,G
 Class II, Div. 2, Groups F,G
 Class III
- NEMA: 3,7CD,9EFG,12
- NEC: FSPC 216 series –
 Class I, Div. 1 & 2, Groups A,B,C,D
 Class II, Div. 1, Groups E,F,G
 Class II, Div. 2, Groups F,G
 Class III
- NEMA: 3,7ABCD,9EFG,12
- UL Standard: 894
- CEC: FSPC 216 series –
 Class I, Div. 1 & 2, Groups C,D
 Class II, Div. 1, Groups E,F,G
 Class II, Div. 2, Groups F,G
 Class III
- ENCL. 3,5
- CSA Standard C22.2



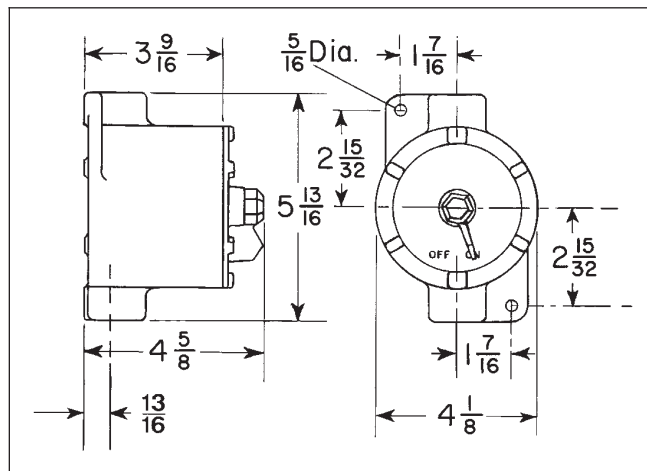
Switch Information

Hub Size	Style	Amperes	
		120VAC [§]	277VAC [§]
3/4	1-pole	20	20
3/4	2-pole	20	20
3/4	3-pole	†	†
3/4	3-way	20	20

Enclosure with Switch

Cat. #	Cat. #†
FSPC21	FSPC216
FSPC22	FSPC226
FSPC230	FSPC2306
FSPC23	FSPC236

Dimensions*



[§] See table on page 556 for AC-rated switch information.

[‡] 30A, 250 VAC; 20A, 600 VAC

[†] Suitable for Groups A & B usage.

* Dimensions are approximate, not for construction purposes.

Application:

GHG273 series of switches are used:

- to prevent arcing of enclosed switch from causing ignition of a specific hazardous atmosphere external to the enclosure
- in Division 2, Zone 1 and Zone 2 industrial areas such as: chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators and processing industries, coal processing or handling areas, or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required for both indoor and outdoor installations of light switches

Features:

- Small and compact in design.
- Large grounding plate.
- Captive cover screws.
- Protective collar for inadvertent operation.
- Large actuator surface allows for operation while wearing work gloves.
- Labyrinth seal to guarantee the degree of protection IP66.
- The toggle has a luminescent label to locate switch in dark areas.
- Cable entry from the top is made possible by turning the base.

Standard Materials:

Body and cover – low temperature, impact-resistant thermoplastic
Shaft and screws – stainless steel
Grounding plate – brass

Standard Finishes:

Thermoplastic – natural
Stainless steel – natural
Brass – nickel plate



Certifications and Compliances:

Cl. I, Div. 2, Groups A, B, C, D
IP66
PTB Certificate of Conformity Ex-91.C.1017

Cl. I, Zone 1&2, EEx de IIC T6
Cl. I, Zone 1&2, AEx de IIC T6
Cl. I, Zone 1&2, Ex de IIC T6

Electrical Ratings:

Voltage 250 VAC 50/60 Hz
Current 16 Amps

Ordering Information:

Catalog Number
GHG273 2000 L0005
GHG273 2000 L0006

Contact Arrangement



GHG273 6000 L0001
GHG273 6000 L0002



Description

2 pole
2 pole

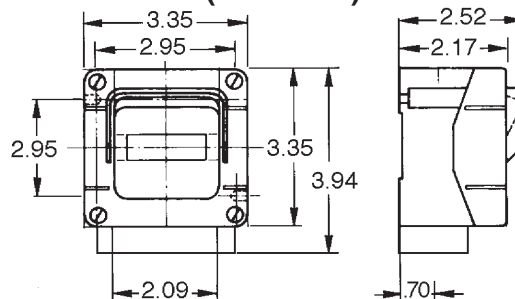
Entry Size

1/2" NPT
3/4" NPT

3-way
3-way

1/2" NPT
3/4" NPT

Dimensions* (in inches)



*Dimensions are approximate, not for construction purposes.

2A EDS and EFD Enclosures

with General Use Snap Switches

Front Operated

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations
 NEMA 3,7B*CD,9EFG,12

Application:

EDS and EFD enclosures are installed in a rigid metallic conduit system for surface mounting adjacent to or remote from equipment being controlled and are used:

- to prevent arcing of enclosed switch from causing ignition of a specific hazardous atmosphere or atmospheres external to the enclosure
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas where atmosphere may contain hazardous gases and/or dust
- in non-hazardous areas where sturdy, durable enclosures are required

Features:

- Small and compact in design.
- Used with snap switches.
- Mounting lugs and taper tapped hubs with integral bushings.
- Large machine screws for fastening covers to bodies.
- Lockout hole for padlock having 1/4" hasp is provided.
- Threaded type shafts and bushings are used to insure flametightness.

Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Shafts – stainless steel
- Shaft bushings – stainless steel

Standard Finishes:

- Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Stainless steel – natural

Certifications and Compliances:

- NEC/CEC: Class I, Div. 1 & 2, Groups B*,C,D
 Class II, Div. 1, Groups E,F,G
 Class II, Div. 2, Groups F,G
 Class III
- NEMA/EEMAC: 3,7B*CD,9EFG,12
- UL Standard: 894
- CSA Standard: C22.2 No. 30

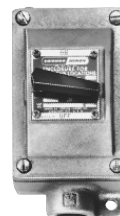
Options:

Description

- Two or three gang bodies can be supplied with combinations of devices listed for one gang enclosures . . . Refer to modular listing, section 4C
- Class I Group B, NEMA 7B – see listing pages GB
- Flush wall mounting cover with 1/2" overhang – single gang only – dull black instrument finish S173

Complies with U.L. snap switch test requirements as follows:

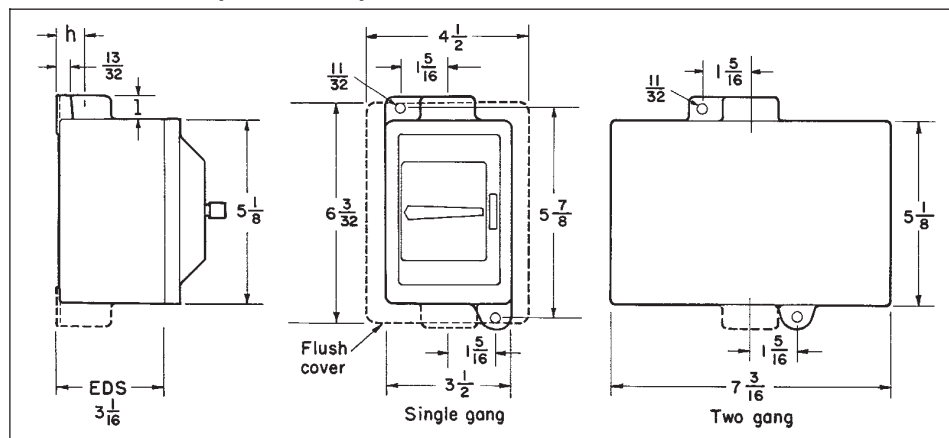
Type of Test	AC-Rated (only) Switch
Overload	Rated Amp. +380% Power Factor .40-.50 100 cycles, 6-10 cycles per minute
Non-Inductive Endurance	10,000 cycles, 18-24 cycles per minute at rated current – .98 min. P.F.
Inductive Endurance	10,000 cycles, 18-24 cycles per minute – .75-.80 P.F.
Tungsten Filament Lamp Endurance	10,000 cycles, 6-10 cycles per minute at rated current and 120 volts
Temperature Rise	Not to exceed 30°C
Dielectric Withstand	1500 volts



EDS Enclosed Snap Switch

Suffix to be Added to Encl. Cat. #

Dimensions† (in inches)



Hub Size	Dim. "h"	Dim. "l"
3/4	7/8	13/16
1	1	15/16

† Dimensions are approximate, not for construction purposes.

* See suffix GB.

EDS and EFD Enclosures

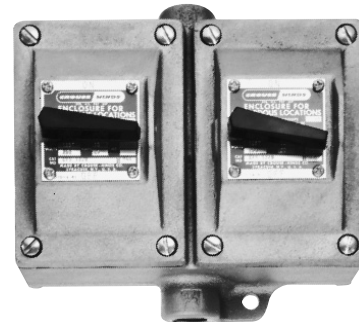
with General Use Snap Switches Front Operated Single Gang and Two Gang

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations
 NEMA 3,7B*CD,9EFG,12

2A



Dead end



Through feed

Single Gang

Hub Size	Style	Amperes§		Dead End Cat. #	Through Feed Cat. #
		120VAC	277VAC		
¾	1-pole	20	20	EDS2129	EDSC2129†
¾	2-pole	20	20	EDS218	EDSC218†
¾	3-pole	‡	‡	EDS2123	EDSC2123
¾	3-way	20	20	EDS2130	EDSC2130
¾	4-way	20	20	EDS2140	EDSC2140
1	1-pole	20	20	EDS3129	EDSC3129†
1	2-pole	20	20	EDS318	EDSC318†
1	3-pole	‡	‡	EDS3123	EDSC3123
1	3-way	20	20	EDS3130	EDSC3130
1	4-way	20	20	EDS3140	EDSC3140
1	1-pole	30	30	EFD3591	EFDC3591†
1	2-pole	30	30	EFD3593	EFDC3593†
1	3-way	30	30	EFD3594	EFDC3594

Two Gang ♦

Dead End Cat. #	Through Feed Cat. #
EDS2229	EDSC2229†
	EDSC228†
	EDSC2223
EDS2230	EDSC2230
	EDSC2240
EDS3229	EDSC3229†
EDS328	EDSC328†
	EDSC3223
EDS3230	EDSC3230
EDS3240	EDSC3240
EFD3691	EFDC3691†
	EFDC3693†
EFD3694	EFDC3694

*Class I, Group B:

All units listed on this page can be modified for Class I, Group B usage. Add suffix GB to the Cat. No.. Example: EDS2129-GB. Seals must be installed within 1½" of each conduit opening for Group B usage.

§ See table on page 556 for AC-rated switch information.

† ON-OFF standard marking for 1-pole and 2-pole units

‡ 15A, 125 VAC; 10A, 250 VAC

♦ Combinations of switches can be furnished.

Heavy Duty
240 VAC/250 VDC
600 VAC/250 VDC

NEMA 3R,4,12
 Wet Locations
 Watertight

Application:

WST heavy duty enclosed switches are used in conduit systems:

- as a means of disconnecting motors, lighting and power circuits. A fusible type switch, when used, also provides for short circuit protection
- indoors or outdoors in industrial areas, subways, railroad facilities or any other area that is subjected to dust, dirt, chemical vapors or moisture (rain or hosing)
- either pole-mounted or on flat surfaces

Features:

- Enclosure, handle and other exterior parts are light weight and corrosion resistant.
- Insulated – groundable type terminal block for grounded or ungrounded neutral supplied.
- Mounting lugs may be rotated 90 degrees or moved to the vertical centerline position for pole-mounting.
- Side hinged cover is retained in a closed position by compression spring draw-pull catches, which permits the opening or closing of the cover without having to use any tools. Lower cover latch is equipped for padlocking.
- The cover is interlocked with the body and operating mechanism to prevent the opening of the enclosure, except when the switch is in the "OFF" position.
- The operating handle may be padlocked in the "ON" or "OFF" position, thereby preventing unauthorized operation of the switch and/or opening of the enclosure. Up to three padlocks may be used.
- Switches are NEMA type HD heavy duty with visible blades, a quick make-and-break mechanism with reinforced, positive pressure-type blade and jaw construction. Fusible types have fuse clips with steel reinforcing springs of positive pressure type. Pressure connectors are used for wire connection.

Standard Materials:

- Enclosure – copper-free aluminum
- Operating handle – copper-free aluminum
- Other exterior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural

Size Ranges:

- Conduit openings for 1" – 1½" inclusive are arranged for through feed. Removal of the threaded bushings permits use of the next larger conduit size.
- Other sizes and arrangements are available. Detailed information on request.

Electrical Rating Ranges:

- 2 and 3-pole; fusible or non-fusible; 240vac, 600vac and 250vdc
- 30, 60 and 100 amperes
- 3 to 75 hp

Certifications and Compliances:

- NEMA: 3R, 4, 12
- UL Standard: 98
- CSA Standard: C22.2 Nos. 4 & 14

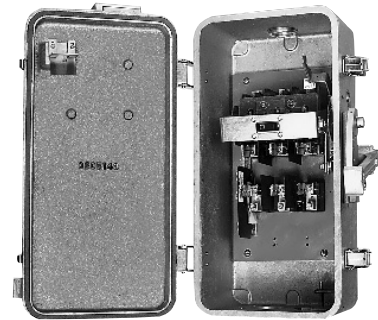
Options

- The following special options are available by adding suffix Cat. No.

**Suffix to be
 Added to
 Cat. #**

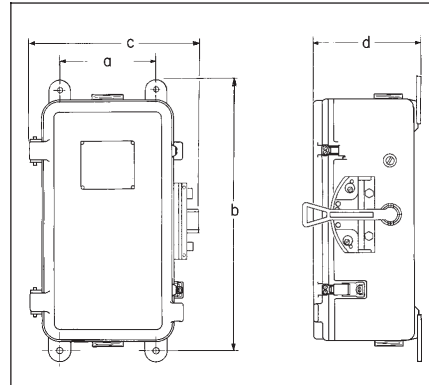
Description

Auxiliary switch, 600vac-dc heavy duty pushbutton station rating, can be supplied, and its contacts will close after switch contacts close and open before switch opens S483



WST shown open

Dimensions* (in inches)



Approximate Dimensions

Amps	a	b	c	d
30	6 ⁹ / ₁₆	20 ¹ / ₁₆	11 ³ / ₄	7 ¹ / ₄
60	6 ⁹ / ₁₆	20 ¹ / ₁₆	12 ³ / ₄	7 ¹ / ₄
100	9 ⁹ / ₁₆	26 ⁵ / ₁₆	14 ⁷ / ₈	8 ¹ / ₄

* Dimensions are approximate, not for construction purposes.

	Amps	Conduit Opening	Standard HP Rating			240 VAC 600VAC/250VDC Cat. #
			240VAC	250VDC	600VAC	
2-Pole No Fuse	30	1	3	5	10	WST30254
	60	1 ¹ / ₄	10	10	25	WST60254
	100	1 ¹ / ₂	15	20	40	WST10254
3-Pole No Fuse	30	1	7 ¹ / ₂	5	20	WST30354
	60	1 ¹ / ₄	15	10	50	WST60354
	100	1 ¹ / ₂	30	20	75	WST10354
2-Pole Fusible†	30	1	3	5	10	WST3025**
	60	1 ¹ / ₄	10	10	25	WST6025**
	100	1 ¹ / ₂	15	20	40	WST10025**
3-Pole Fusible†	30	1	7 ¹ / ₂	5	20	WST3035**
	60	1 ¹ / ₄	15	10	50	WST6035**
	100	1 ¹ / ₂	30	20	75	WST10035**

** Arranged for NEC Class H fuses. May be field converted to NEC Class J fuses.

† Cartridge fuses are not included.

W2ST Enclosed Switches

Heavy Duty
30, 60, 100 Amp

CL. I, Div.2, Groups B, C, D
NEMA 3, 12
Raintight

2A

W2ST Factory Sealed Industrial Control Switch

Applications

W2ST Factory Sealed Industrial Control Switches are used:

- in hazardous areas rated Class I, Division 2, Groups B, C and D
- in a rigid metallic conduit or cable system
- for surface or flush mounting adjacent to or remote from equipment being controlled
- in industrial applications such as chemical plants, wastewater treatment plants, oil and gas refineries, steel mills or any other areas where atmospheres may contain hazardous gases
- when controlling motors, pumps, valves, lighting and other circuits

Features

- Enclosed devices are unfused, factory sealed motor circuit switches
- Exceeds NEC® wiring end room requirements for ease of wiring
- RSWP factory sealed industrial control switch, no external seals are required
- The cover is interlocked with the body and operating mechanism to prevent the opening of the enclosure, except when the switch is in the "OFF" position
- Mounting lugs may be rotated 90° or moved to the vertical centerline portion for pole mounting
- Side hinged covers are retained in a closed position by compression spring draw-pull catches, which permit the opening or closing of the cover without tools
- The switch operating handle may be padlocked in the "ON" or "OFF" position with up to three padlocks

Standard Materials

- Enclosure and operating handle - copper-free aluminum
- Exterior hardware - stainless steel

Electrical Rating Ranges

- 3 Pole Switch, No Fuse
- 30, 60 and 100 amperes
- 3 to 60 HP
- 600 VAC

Certifications and Compliances

- NEC/CEC: Class I, Division 2, Groups B, C and D
- Type: 3 and 12
- UL Standard 698
- cUL to CSA Standard C22.2 No. 14.

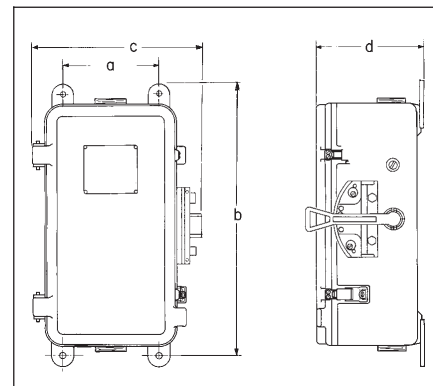
Options

- Auxiliary switch, factory sealed 10A, 600 VAC add suffix S483

Ordering Information:

Amp	Switch	Catalog Number
30	3 pole, No Fuse	W2ST30354
60	3 pole, No Fuse	W2ST60354
100	3 pole, No Fuse	W2ST10354

Dimensions* (in inches)



W2ST Approximate Dimensions (inches):

Amps	a	b	c	d
30/60/100	6 9/16	20 1/16	11 3/4	7 1/4

Horsepower Ratings

Single Phase					3 Phase			
W2ST	120V	240V	480V	600V	120V	240V	480V	600V
30A	3	7.5	20	25	7.5	15	30	40
60A	3	7.5	20	25	7.5	15	30	40
100A	5	10	25	30	10	20	40	60

2A
Switches

Application:

- Used in manual "ON" and "OFF" control of single-phase or three-phase AC motors where overload protection is not required or is provided separately.
- Meet NEC Article 430 requirements for a separate disconnect means within sight of all motor loads.
- Offers the ability to lock directly wired motor loads in the "OFF" position to comply with OSHA Lockout/Tagout requirements.
- Meets stringent hosedown requirements.

Features:

- Enclosures are constructed from high-impact thermoplastic, providing superior durability and corrosion resistance.
- Enclosure designed with tapered edges to keep liquids away from cover opening.
- Large pistol-grip handle provides easy gripping even with gloved hands.
- Lockable handle meets OSHA lockout/tagout requirements. Handles can be locked in the "OFF" position.
- Hidden hinge cover opens to 145°, making installation and maintenance quick and easy.
- Formed-in-place continuous gasket ensures NEMA 4X full perimeter sealing.
- Captive cover mounting screws.
- Brass enclosure assembly cover screw inserts allow for higher torque and prevent stripping.

Certifications and Compliances:

All units

- cUL
- NEMA Type 3, 4X, 12

Non-fused Units

- UL 508 – 40 & 60 amp
- UL 98 – 100 amp

Fused Units

- UL 98 – Enclosed Switch

Standard Materials:

- Enclosure – VALOX® thermoplastic
- Enclosure Gasket – Neoprene
- Handle – Impact-resistant Thermoplastic
- Cover Screws – Stainless Steel
- Screw Assembly Inserts – Brass
- Conduit Entries – See Table 1†

Options:

- Auxiliary contacts for use with pilot light of PLC. 10A 600VAC 1 NO. & 1 N.C.

VALOX® is a registered trademark of General Electric Co.

† Hubs must be ordered separately. See catalog section N for ordering information.

**Ordering Information:**

Cat. #	Description
NRS30	40A, 600V, no auxiliary contacts
NRS30AX	40A, 600V, with auxiliary contacts
NRS30-FS	30A, 600V, with fusible switch for short circuit protection
NRS30AX-FS	30A, 600V, with auxiliary contacts and fusible switch for short circuit protection
NRS60	60A, 600V, no auxiliary contacts
NRS60AX	60A, 600V, with auxiliary contacts
NRS60-FS	60A, 600V, with fusible switch for short circuit protection
NRS60AX-FS	60A, 600V, with auxiliary contacts and fusible switch for short circuit protection.
NRS100	100A, 600V, no auxiliary contacts
NRS100AX	100A, 600V, with auxiliary contacts
NRS100-FS	100A, 600V, with fusible switch for short circuit protection
NRS100AX-FS	100A, 600V, with auxiliary contacts and fusible switch for short circuit protection
NRSK1	40A - 100A nonfused auxiliary contact kit
NRSK2	60A - 100A fused auxiliary contact kit
NRSK3	30A fused auxiliary contact kit

Hub Ordering Information (order hubs separately)

Trade Size Catalog Number

Krydon

1/2"	NHUB1
3/4"	NHUB2
1"	NHUB3
1 1/4"	NHUB4
1 1/2"	NHUB5

Stainless Steel

1/2"	SSTG-1
3/4"	SSTG-2
1"	SSTG-3
1 1/4"	SSTG-4
1 1/2"	SSTG-5

Industrial Disconnect Switches

30, 40, 60, and 100 Amp
600VAC Non-Metallic Enclosure

NEMA Type 3, 4X, 12
Corrosion Resistant
Watertight

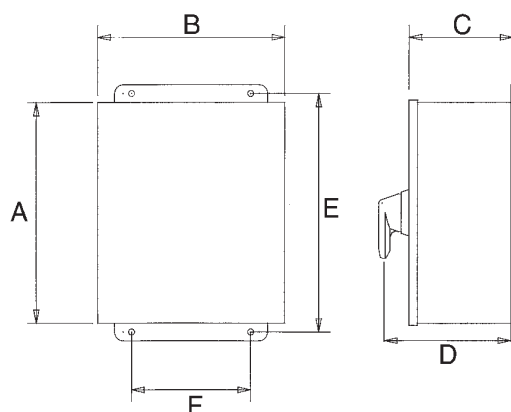
2A

Electrical Rating Ranges:

Switches	Horsepower Ratings:					
	Single Phase		Three Phase			
	120V	240V	208V	240V	480V	600V
40A Nonfused	1	5	10	10	20	25
60A Nonfused	2	7.5	15	15	30	30
100A Nonfused	5	15	25	30	50	50
30A Fused	2	3	7.5	7.5	15	20
60A Fused	—	—	15	15	30	50
100A Fused	—	—	25	30	60	75



Dimensions (Inches):



Enclosure Type	A	B	C	D	E	F
40 Amp Nonfused	6.0	6.0	5.9	8.1	6.75	4.0
60 Amp Nonfused	8.0	6.0	5.9	8.1	8.75	4.0
100 Amp Nonfused	10.0	8.0	7.9	10.1	10.75	6.0
30 Amp Fused	10.0	8.0	7.9	10.1	10.75	6.0
60 Amp Fused	14.0	12.0	7.9	10.1	14.75	8.0
100 Amp Fused	14.0	12.0	7.9	10.1	14.75	8.0

2A
Switches

TABLE 1

Conduit Entries - Ordering Information:

KRYDON®		MYERS® ZINC		MYERS® STAINLESS STEEL	
Cat. No.	Size	Cat. No.	Size	Cat. No.	Size
NHUB1	1/2"	STG-1	1/2"	SSTG-1	1/2"
NHUB2	3/4"	STG-2	3/4"	SSTG-2	3/4"
NHUB3	1"	STG-3	1"	SSTG-3	1"
NHUB4	1 1/4"	STG-4	1 1/4"	SSTG-4	1 1/4"
NHUB5	1 1/2"	STG-5	1 1/2"	SSTG-5	1 1/2"

AC Only, Full Voltage
30A/40A/60A 600VAC
Without Overload Protection

Application:

Manual Contactors are used:

- for manual starting of motors up to 30 HP
- in damp or wet locations

Features:

Compact enclosure meets NEMA 3R requirements

- Can be padlocked to help conform to OSHA lockout requirements
- Grounding terminal provides ground for box and cover
- Enclosed switch body does not expose contacts
- Double break butt-type silver alloy contacts provide long life
- Two 1/2", 3/4", 1" knockouts on bottom

Standard Materials:

- .060" thick steel enclosure

Standard Finishes:

6810/7810 Series:

- Gray baked enamel finish

MC Series:

- Polyester urethane

Electrical Rating Ranges:

- 30A/40A/60A 600VAC, two pole, single phase
- 30A/40A/60A 600VAC, three pole, poly-phase

Certifications and Compliances:

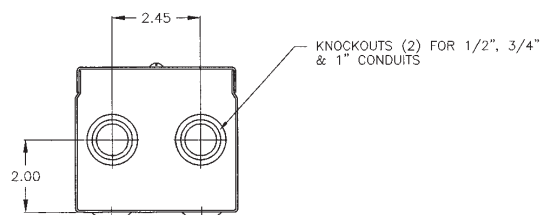
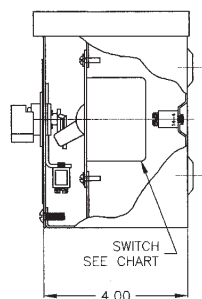
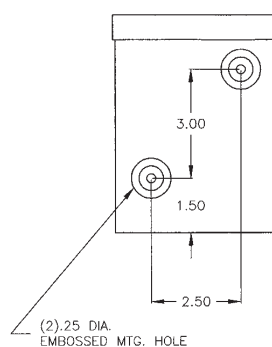
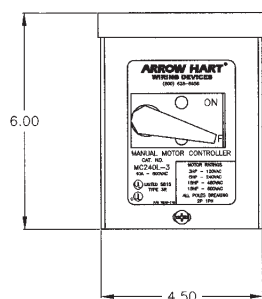
- UL 508
- CSA Standard: C22.2 No. 14
- NEMA 3R

Dimensions:



Amps	Horsepower			Cat. #	Switch & Enclosure
	120V	240V	480/600V		
600V				Switch	Enclosure
30	2	5	7.5	6810U	6810W
30	3	7.5	15	7810UD	7810WD
40	3	5	15	MC240C	MC240C-3
40	3	5	15	MC240L	MC240L-3
60	3	5	15	MC260L	MC260L-3
40	3	7.5	15/20	MC340C	MC340C-3
40	3	7.5	15/20	MC340L	MC340L-3
60	3	7.5	25/30	MC360L	MC360L-3

- 2 pole with screw terminals
- 3 pole with screw terminals
- 2 pole with screw & clamp terminals
- 2 pole with box lug terminals
- 2 pole with box lug terminals
- 3 pole with screw & clamp terminals
- 3 pole with box lug terminals
- 3 pole with box lug terminals



Description	Page No.
Application/Selection	564, 565
Signals	
Bells	
ESR	573, 574
Fire Alarm Stations	
N2FA/N2FAC	616
EFS/EFSC	402
Horns	
ETH	566, 567
WH	575
Solid State Audible Devices	
ETH <i>Flexitone</i> ™	568–571
W2H	572
Strobe Lights, Steady-On Beacons, Rotating Beacons	
EX series	See Section 11L
VDAS	See Section 11L
Telephones	
ETW	576
D2TW	577
Accessories	578

Application:

Material listed in this section provides the essential components for an integrated alarm and signaling system in areas made hazardous by flammable vapors, gases or dusts.

For audible signals in non-hazardous locations, WH horns (page 575) and W2H flexible signaling devices (page 572) are used. For signals in hazardous locations, ESR bells (page 573 and 574), W2H, and ETH horns, and flexible signaling devices (pages 566 through 572) are used. For visual signals in hazardous locations, such as when ambient noise levels make audible signals impractical, EV or VDAS series strobe lights are used. Corrective action may then be taken in the control area and personnel in other areas informed, using the D2TW or ETW hazardous locations telephones (pages 576 through 578).

Considerations for Selection:

Environmental:

- Compliance with NEC/CEC material and construction to withstand rough usage and atmospheric conditions, noise levels and other conditions requiring visual as well as audible signals or alarms.

Electrical:

- Compatibility with electrical system (new installation or existing system).

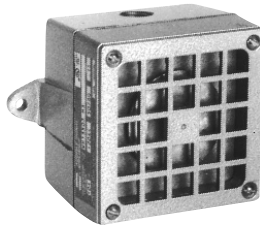
Audible and Visible Signaling Devices

3A

General Information

When selecting from the listings on the following pages, a signal for use in hazardous or non-hazardous atmospheres, several factors should be taken into consideration:

- The character of the noise found in the area where the signal will be used is of first importance. A signal producing a sound with the greatest contrast to the room noise should always be selected. For example, a horn signal would not be suitable in surroundings where a constant hum or whine is present, whereas a bell signal could readily be heard. Conversely, a bell signal would be inadequate in surroundings where noise is produced by hammering on metal, whereas a horn signal would give good contrast.
- Careful consideration should also be given to the number of signals used to cover an area. Past experience has shown that sound output should be handled in the same manner as light distribution. In other words, much better coverage is obtained by even distribution of several low output units than by one or two high output units. For example, two high powered horn signals, one mounted at each end of a large room, could produce excessively high volume at each end with low volume at the center. However, three standard volume horn signals spaced evenly throughout the area would provide proper volume at all points.
- The listings indicate the sound output of the various signals in decibels. An ETH horn signal rated at 106 decibels produces nearly 20% more sound output than a horn signal rated at 104 decibels.
- The tables on pages 566 and 574 lists the current in amperes at the rated voltages for bell, horn, and siren signals. This makes it possible to calculate the wire size for one or more signals.



WH Horn



ESR Bell



W2H Solid State Audible Signaling Device



ETH Grill Type Horn Signal



ETH Flex•Tone™ Signaling Devices

3A ETH Horn Signals

Factory Sealed

Cl. I, Div. 1 & 2, Groups B†,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 7B*CD,9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

ETH horn signals are used:

- for call signals, alarms, and various other signalling applications
- in specific hazardous atmospheres as found in chemical plants, oil and gas refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing industries and grain elevators, as well as in certain metal, coal, combustible fiber processing or handling areas
- in conduit systems and mounted on a flat surface with the projectors aimed in the desired direction

Features:

- No external conduit seal is required.
- The ac signals do not have arcing contacts.
- The dc horns have factory sealed wire leads in the interconnecting nipple and hub.
- The body cover joint of ac horn signals is of serrated construction, machined to close tolerance to ensure flametightness and secured by a clamping ring. The DC unit has a ground joint design.

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Size Ranges:

- Hub – 1/2" or 3/4" size

Sound Levels:

- See page 557 for individual ratings

Electrical Rating Ranges:

- Nominal voltage –
 24, 115, 230 VAC
 24 VDC

See Table 1 for more complete ratings

Table 1/Operating Current in Amperes at the Nominal Voltage for Horn and Siren Signals

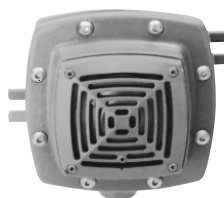
Horn Signal

Nom. Volts	Amperes		
	Single Projector	Grill Type	
		50 to 60 hertz AC	
	50 to 60 hertz AC ETH2702, ETH2703	ETH2313, ETH2316, ETH2312	DC ETH2416
24	—	0.625	0.16
115	.45	0.13	
230	.2	0.065	

†Grill type horns are certified for Group B.

Certifications and Compliances:

- NEC: Class I, Division 1 & 2, Groups B† C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- UL Standard: 464, 1203
- CSA Standard: C22.2 No. 30



ETH grill type horn signal

Ordering Information

Single Projector Horn Signal

Supply	Nom. Volts ♦	Nom. Watts	Minimum audibility rating (dB) at 10':	Hub Size	Cat. #
50 to 60 hertz AC	115	33	105 dB	1/2	ETH2703
	230	33	105 dB	1/2	ETH2702

Grill Type Horn Signals

Supply	Nom. Volts ♦	Nom. Watts	Minimum audibility rating (dB) at 10':	Hub Size	Cat. #
50 to 60 hertz AC	24	49	100 dB	3/4	ETH2316
	115		100 dB	3/4	ETH2313
	230		100 dB	3/4	ETH2312
DC	24	30	100 dB	3/4	ETH2416

♦ See Table 1, page 566, for more complete ratings.

ETH Horn Signals

Factory Sealed

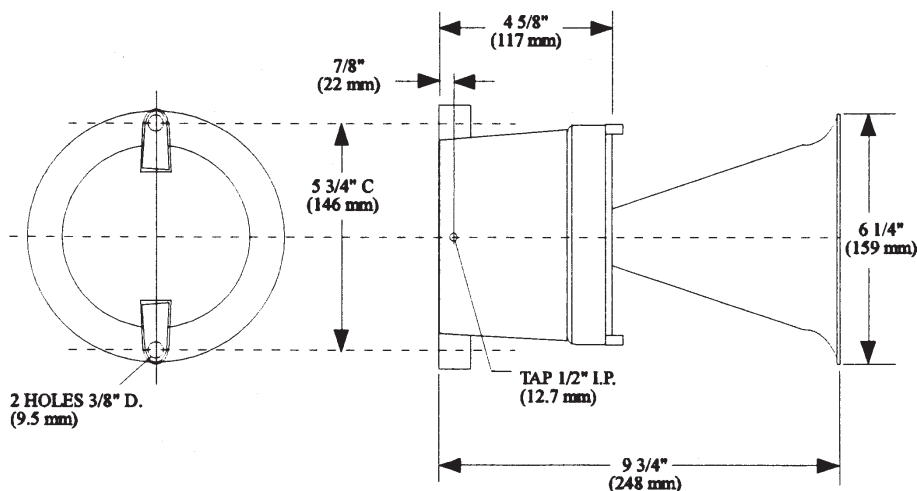
Cl. I, Div. 1 & 2, Groups B,†C,D Explosionproof
Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
Cl. II, Div. 2, Groups F,G Raintight
Cl. III Wet Locations

3A

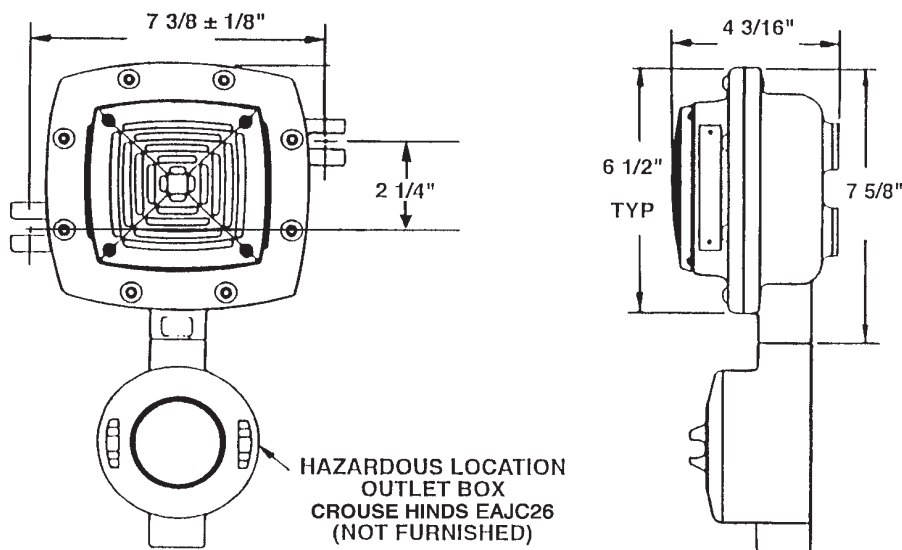
Dimensions* (inches)

* Dimensions are approximate, not for construction purposes.

Single Projector



Grill Type



† Grill type horns are certified for Group B.

3A Signals & Alarms



**EXPLOSIONPROOF
ELECTRONIC SIGNAL
STAND - ALONE UNIT**

Cooper Crouse-Hinds **Flex-Tone Series Electronic Signals** are explosionproof, heavy-duty, tone-selectable signaling devices capable of producing volume-controlled, high-decibel tones. Certified for use in Class I, Division 1, Group B, C & D applications, the Flex-Tone Series is ideal for signaling warning or emergency conditions.

The **Flex-Tone ETH855** accepts up to two contact closures and delivers two audible output signals selected from 55 available tones. The two tones are selected by setting miniature switches within the unit. One of the tones can be assigned a priority status to override the other tone.

The **Flex-Tone ETHD855** is diode polarized for applications requiring electrical supervision of signaling circuit field wiring. The signal delivers one audible output signal selected from the 55 tones available.

PRIMARY APPLICATIONS:

- For use where a high-decibel sound is required for alert or evacuation in hazardous locations.

KEY FEATURES AND BENEFITS:

- Heavy duty zinc cast construction.
- 55 tone capacity — No additional tone modules needed.
- Internal volume control with internal potentiometer.
- Corrosion-resistant heat-flowed epoxy finish.
- Supplied with factory sealed ½-inch threaded fitting for quick installation.
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
- Mounts onto any surface using only three bolts.
- 30-inch numbered wire leads

CERTIFICATIONS AND COMPLIANCES:

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

MATERIALS & FINISHES:

- Body — Heavy-duty zinc cast construction
- External hardware — Stainless steel

RATINGS:

- 24VDC, 36VDC, 125VDC, 250VDC, 24VAC, 120VAC & 240VAC (ETH)
- 20–31VDC (ETHD)

OUTPUT SOUND PRESSURE:

- 109 decibel (dBA) output

ORDERING INFORMATION:

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
EXPLOSIONPROOF, TWO OUTPUT			
ETH855/24	24VDC	0.061	0.250
ETH855/36	36VDC	0.077	0.380
ETH655/24	24VAC, 50/60Hz	0.250	0.950
ETH655/120	120VAC	0.088	0.260
ETH655/240	240VAC	0.091	0.190
ETH855/125	125VDC	0.031	0.130
ETH855/250	250VDC	0.019	0.070
DIODE POLARIZED, EXPLOSIONPROOF, SINGLE OUTPUT FOR FIRE ALARM APPLICATIONS			
Meets min. 75 dBA for fire alarm indication			
ETHD855/24	20–31VDC	0.061	0.950

ETH Flex • Tone™ Series Signaling Devices

Factory Sealed

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1 & 2, Groups E,F,G
Cl. III
UL and cUL 464 and 1203 listed

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

3A



**EXPLOSIONPROOF
REMOTE SPEAKER/AMPLIFIER**

Cooper Crouse-Hinds **Flex-Tone Series Explosionproof Remote Speaker/Amplifier** is designed for remote mounting in Division 1 areas where simultaneous high-decibel signaling is required.

Used in connection with the Panel Control Signal Generator, the **Flex-Tone ETH845** operates directly from local power sources, allowing remote speaker/amplifiers of different voltages to be connected within the same system. Available in both AC and DC voltages, the Flex-Tone 3 can be mixed and matched throughout an application using the available line power.

ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on page 570.

PRIMARY APPLICATIONS:

- For use where simultaneous signaling of a high-decibel sound is required for alert or evacuation in hazardous locations.

KEY FEATURES AND BENEFITS:

- Heavy duty zinc cast construction.
- Individual volume control.
- Corrosion-resistant heat-flowed epoxy finish.
- Supplied with factory sealed ½-inch threaded fitting for quick installation.
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
- Mounts onto any surface using only three bolts.
- 30-inch numbered wire leads.

CERTIFICATIONS AND COMPLIANCES:

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

MATERIALS & FINISHES:

- Body — Heavy-duty zinc cast construction
- External hardware — Stainless steel

RATINGS:

- 120VAC, 240VAC, 125VDC and 250VDC

OUTPUT SOUND PRESSURE:

- 109 decibel (dBA) output

ORDERING INFORMATION:

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
EXPLOSIONPROOF REMOTE SPEAKER/AMP			
ETH845/24	24VDC	0.061	0.250
ETH645/24	24VAC, 50/60Hz	0.250	0.950
ETH645/120	120VAC	0.088	0.260
ETH645/240	240VAC	0.091	0.190
ETH845/125	125VDC	0.031	0.130
ETH845/250	250VDC	0.091	0.070

* ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on page 570.

ETH845 Series Remote Speaker/Amplifiers **accept a 10VAC audio signal** from Flex-Tone Panel Control Signal Generator.



Cl. I, Div. 2, Groups A,B,C,D

Cl. II, Div. 2, Groups F,G

Cl. III

UL 464 and 1604 listed

NEMA 3R, IP 44



Cooper Crouse-Hinds **Flex-Tone Series Panel Control Signal Generator** controls and initiates a synchronous signaling sound from all Flex-Tone 3 remote Speaker/Amps installed in a system. The Panel Control Signal Generator is mounted in a Division 2 area, while controlling the Flex-Tone 3 Speaker/Amps that are remotely mounted in Division 1 areas.

The Panel Control Signal Generator produces 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24VDC or 120VAC external voltage source such as an output from a PLC.

PRIMARY APPLICATIONS:

- Hazardous area applications calling for high-decibel output with simultaneous signal delivery over all speakers installed in a system
- Emergency warning systems, plant evacuation alarms, security intrusion alarms, process monitoring, shift start and dismissal horns, and paging signals

KEY FEATURES AND BENEFITS:

- 27 tone capability — No additional tone modules needed.
- Centralized programmable tone selection.
- PLC compatible.
- System-wide priority tone.
- 24 VDC battery backup terminals.
- Short circuit protected.

CERTIFICATIONS AND COMPLIANCES:

- Class I, Division 2, Groups A, B, C & D
- Class II, Division 2, Groups F & G
- Class III
- UL 464 and 1604 Listed
- cUL C22.2 No. 205
- CE Marked — Cenelec LV & EMC Directives
- NEMA 3R, IP 44

MATERIALS & FINISHES:

- Zinc-cast construction with an epoxy powder coat finish

RATINGS:

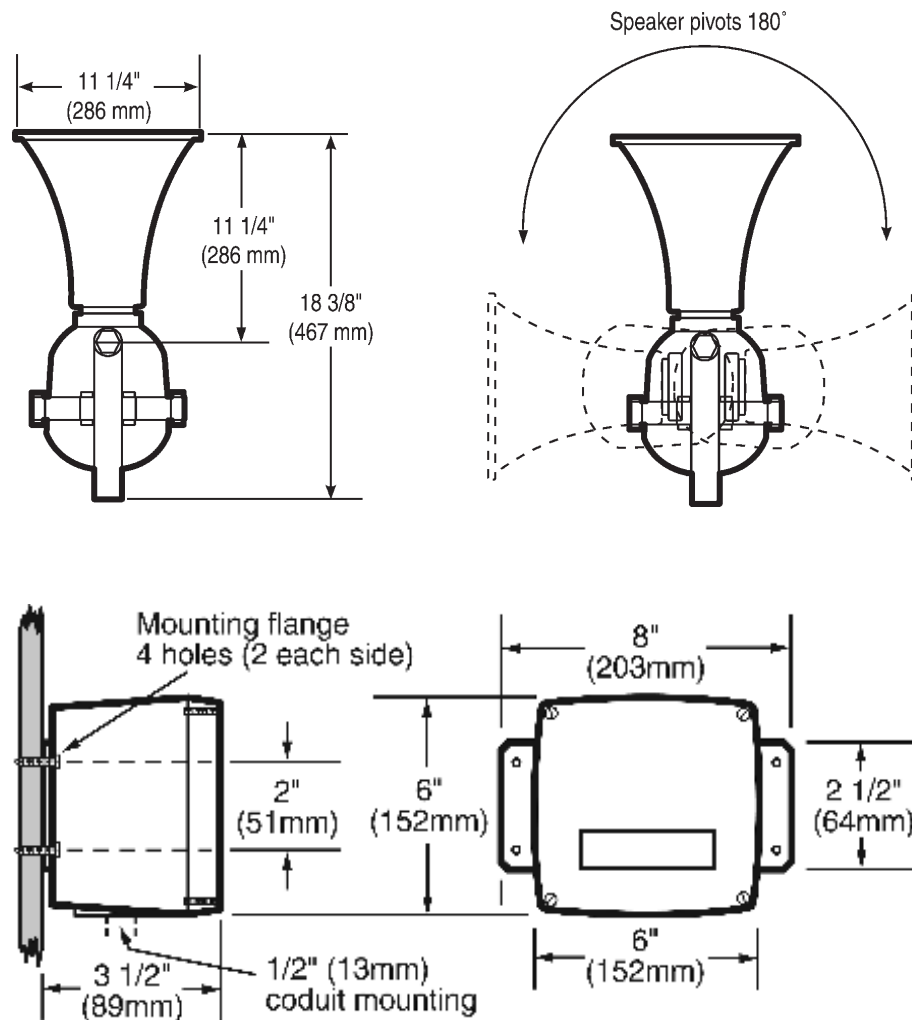
- See table below

ORDERING INFORMATION*:

Catalog Number	Voltage	Input Card Activation Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
PANEL CONTROL SIGNAL GENERATOR				
ETH840/24E74	24VDC	24VDC	0.10	0.74
ETH640/24E13	24VAC, 50/60Hz	24VDC	0.10	1.30
ETH640/120E36	120VAC, 50/60Hz	24VDC	0.10	0.36
ETH640/120M38	120VAC, 50/60Hz	120VAC	0.10	0.38
ETH640/120E32	120VAC, 50/60Hz	24VDC	0.10	0.32
ETH640/240E20	240VAC, 50/60Hz	24VDC	0.10	0.20
ETH840/125E21	125VDC	24VDC	0.10	0.21
ETH840/250E10	250VDC	24VDC	0.02	0.10
ETH640/120M31	120VAC, 50/60Hz	120VAC	0.10	0.31
ETH640/240M20	240VAC, 50/60Hz	120VAC	0.10	0.20
ETH840/125M20	125VDC	120VAC	0.10	0.20
ETH840/250M10	250VDC	120VAC	0.02	0.10
ETH640/120R31	120VAC, 50/60Hz	RS485	0.10	0.31
ETH640/240R20	240VAC, 50/60Hz	RS485	0.10	0.20
ETH840/125R20	125VDC	RS485	0.10	0.20
ETH840/250R10	250VDC	RS485	0.02	0.10

* Flex-Tone Panel Control Signal Generator must be used with Cooper Crouse-Hinds ETH845 Remote Speaker/Amps on page 569.

Dimensions



Cl. I, Div. 2, Groups A,B,C,D Wet Locations
 Cl. II, Div. 2, Group G
 NEMA 3,7ABCD (Div. 2),9G (Div. 2)
 Raintight
 Dust-tight

Application:

W2H series signaling devices are used:

- as independent audible signal or warning devices
- in Class I, Division 2, Groups A,B,C,D hazardous areas where flammable vapors or gases may be present due to accidental or abnormal operation
- in Class II, Division 2, Group G hazardous areas where combustible dusts may be present due to accidental or abnormal operation

Features:

- The W2H is solid-state, compact, rugged but lightweight. The system is programmable, which allows the convenience of tone selection, without the need for separate tone modules. Each unit can be programmed for any one of four different tones (whoop, wail, hi-lo and horn), by wiring to the corresponding terminal on the unit's terminal strip. Separate sound modules not required.
- Unit may be field wired for multiple signal selection by manual or automatic control.
- 180° speaker rotation allows flexibility in direction of sound
- Corrosion-resistant conformal coating protects the printed circuit and other interior components.

Standard Materials:

- Body – die-cast aluminum
- Projector – spun aluminum
- Hardware – stainless steel

Standard Finishes:

- Body and projector – gray hammertone enamel
- Stainless steel – natural

Sound Levels:

- Minimum audibility rating (dB) at 10': W2H Series – 93dB

Electrical Rating Ranges:

- Nominal voltage – 24, 120, 240 ac; 60 Hz
24 dc

Certifications and Compliances:

- UL: Standard 886
- NEC: Class I, Division 2, Groups A,B,C,D, Class II, Division 2, Group G
- NEMA 3,7ABCD Division 2
9G Division 2



W2H programmable signal

Signal Selection:

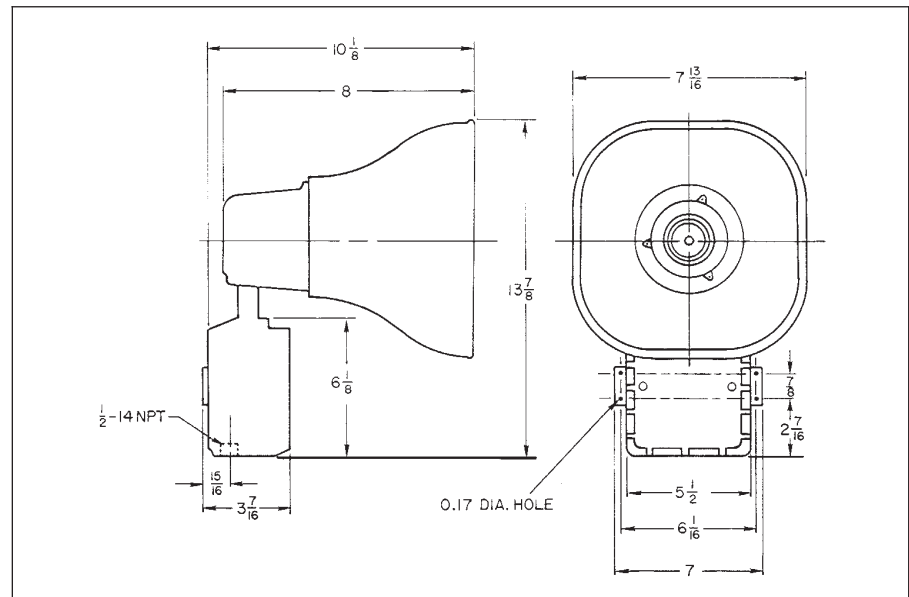
Signal Terminal	Sound Description	Audible Frequency	Repetition Rate
#4 Whoop	Ascending low to high, repeated	Low tone – 400 Hz High tone – 850 Hz	48 cy/min.
#5 Wail	Conventional Siren	400 – 1100 Hz	24 cy/min.
#6 Hi-Lo	Alternating Hi-Lo	Low tone – 650 Hz; High tone – 850 Hz	24 cy/min.
#7 Horn	Steady	630 Hz	Continuous

Normal Power

Nominal Voltage	Operating Current	Standby Current	Cat. #
24VDC	0.55A	0.06A	W2H840
24VAC	1.25A	0.13A	W2H640
120VAC	0.27A	0.03A	W2H620
240VAC	0.15A	0.02A	W2H660

Dimensions (inches)

Dimensions are approximate, not for construction purposes.



ESR Bell Signals

Factory Sealed

Cl. I, Div. 1 & 2, Groups B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

3A

Application:

ESR bell signals are used:

- for call signals, alarms, or in various other signalling applications
- in specific hazardous atmospheres such as in chemical plants, oil and gas refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing industries and grain elevators, as well as in certain metal, coal, combustible fiber processing or handling areas
- in conduit systems, and mounted on a vertical flat surface with the striker at the bottom

Features:

- The conduit hub contains an integral bushing.
- The body cover assembly permits the location of a hub at the top, bottom or either side (the striker must be located at the bottom for proper operation).
- There are no external seals required except when used in Group B hazardous areas.
- The ac signal does not have arcing contacts.
- Binding screw terminals are provided in ac signals for supply conductors.
- A vibrating or single stroke striker mechanism is furnished with 6 or 10 inch diameter gongs.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum
- Junction box – body – *Feraloy* iron alloy
– cover – copper-free aluminum
- Gong – steel

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Aluminum – natural
- Steel – gray matte

Size Ranges:

- Hub – one 3/4" size

Sound Levels:

- See page 574 for individual ratings

Electrical Rating Ranges:

- Nominal voltage – 12, 24, 48, 115, 230 ac
- See Table 1 (page 574) for complete ratings.

Certifications and Compliances:

- Standard Units:
 - NEC/CEC:
 - Class I, Division 1 & 2, Groups C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
 - NEMA/EEMAC: 7CD,9EFG
 - UL Standard: 464, 1203
 - CSA Standard: C22.2 No. 30
- Group B Units:
 - NEC/CEC:
 - Class I, Division 1 & 2, Groups B,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
 - NEMA/EEMAC: 7BCD,9EFG
 - UL Standard: 464, 1203
 - CSA Standard: C22.2 No. 30

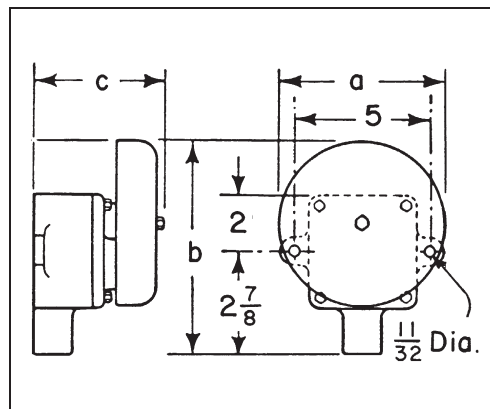


ESR bell
signal
for AC

3A
Signals &
Alarms

Dimensions (in inches)

Dimensions are approximate, not for construction purposes.



Dia. Gong	a	b	c
6	6	6 ³ / ₄	5 ¹ / ₄
10	10	10 ³ / ₄	6

3A ESR Bell Signals

Factory Sealed

Cl. I, Div. 1 & 2, Groups B,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations
 NEMA 7BCD,9EFG

**Table 1/Operating Current in Amperes
 at the Nominal Voltage For Bell Signals**

Nom. Volts	Amperes	
	All Vibrating 25 to 60 hertz AC	All Single Stroke 50 to 60 hertz AC
12	1.67	1.75
24	.53	.62
48	.44	.41
115	.189	.189
230	.092	.086

Bell Signals

Hub Size	Supply	Nom. Volts	Voltage Range	Dia. Bell	Vibrating Hammer (25 to 60 hertz)		Minimum audibility rating (dB) at 10':	Single Stroke Hammer (50 to 60 hertz) Cat. #	Minimum audibility rating (dB) at 10':
					Standard Units Cat. #	Group B Units‡ Cat. #			
3/4	AC	12	9.6 to 13.2	6	ESR2675	ESR2675-GB	67	ESR2665	64
		24	19.2 to 26.4		ESR2674	ESR2674-GB	82	ESR2664	64
		48	38.4 to 52.8		ESR2673	ESR2673-GB	88	ESR2663	67
		115	92 to 126.5		ESR2672	ESR2672-GB	88	ESR2662	67
		230	184 to 253		ESR2671	ESR2671-GB	85	ESR2661	67
		12	9.6 to 13.2	10	ESR2615	ESR2615-GB	82	ESR2625	64
		24	19.2 to 26.4		ESR2614	ESR2614-GB	85	ESR2624	64
		48	38.4 to 52.8		ESR2613	ESR2613-GB	85	ESR2623	67
		115	92 to 126.5		ESR2612	ESR2612-GB	91	ESR2622	67
		230	184 to 253		ESR2611	ESR2611-GB	85	ESR2621	67

‡ Install seal within 1½" of conduit opening.

Application:

WH vibrating horn signals are used:

- for code or call signals, or as a general alarm in a signal system that might involve hours of continuous operation
- in non-hazardous atmospheres of industrial areas such as warehouses, yards, exteriors of buildings, and in-plant areas
- mounted on walls or other flat surfaces with projectors aimed in a desired direction

Features:

- The joint between the body and horn assembly is gasketed for raintightness.

Standard Materials:

- Copper-free aluminum and die cast zinc

Standard Finishes:

- Gray hammertone enamel

Capacity Ranges:

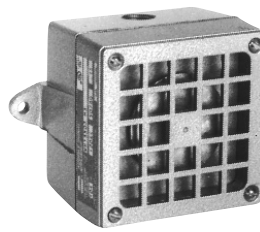
- Minimum audibility rating (dB) at 10':
 - ac – 87 decibels
 - dc – 96 decibels

Electrical Rating Ranges:

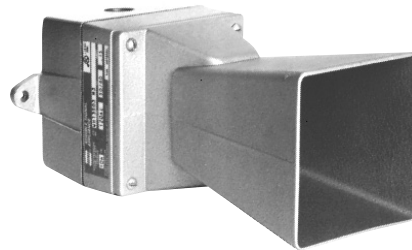
- Nominal voltage – 120 ac, 50/60 hertz
– 24 dc
- Operating characteristics
 - voltage range +10%, -20%
 - nominal watts – 4.8 on 24 VDC
18 VA on 120 VAC

Certifications and Compliances:

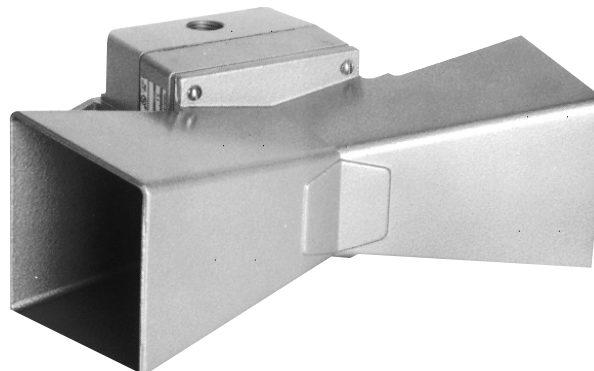
- UL Standard: 464



WH with grill



WH with single projector



WH with double projector

Nom.
Amps

.20
.15

Nom.
Volts

24 DC
120 AC
50 to 60
hertz

Grill
Cat. #

WH14506
WH13503

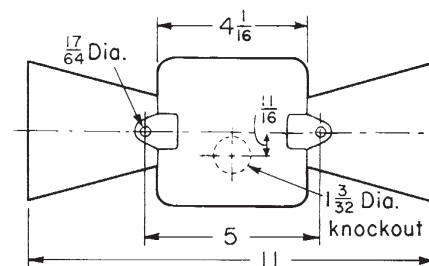
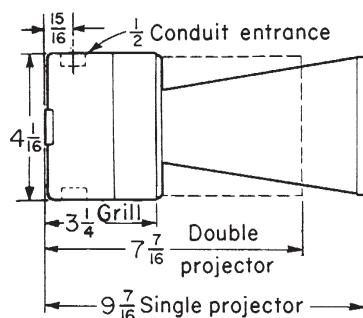
Single
Projector
Cat. #

WH14516
WH13513

Double
Projector
Cat. #

WH14526
WH13523

Dimensions: (in inches)



Dimensions are approximate, not for construction purposes.

Cl. I, Div. 1 & 2, Groups B,C,D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Application:

ETW series telephones are used:

- For communication in areas which may be hazardous due to the presence of flammable gases or vapors, and/or combustible dusts.
- In chemical plants, oil refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing and similar industries.

Features:

- Modern styled, pushbutton wall-mount unit is very rugged in design, suitable for the harshest industrial applications.
- Large, easy to read keyboard allows gloves-on operation.
- Cast copper-free aluminum housing, with baked on powder coat finish, is highly resistant to corrosive atmospheres.
- Units are tone or pulse compatible and offer superior audio clarity.
- Handset cord features a pin-type connector for easy field replacement. Handset circuit is intrinsically safe.
- Up to ten units can be connected on one line.

Standard Materials:

- Enclosure – copper-free aluminum
- Handset – high impact plastic

Standard Finishes:

- Enclosure – baked powder paint (safety blue)

Ordering Information:

Phone w/handset ETW401
 Replacement handset (10' cord) ETW: 301SC
 Replacement handset (20' cord) ETW: 301SC20
 Phone w/headset ETW401 HS
 Phone push-to-talk handset ETW401 PB
 Replacement headset. ETW: P7200
 Explosionproof ringer ETR1

Certifications and Compliances:

- NEC/CEC:
 Class I, Divisions 1 & 2, Groups B,C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
- UL Standard: 1203, 698
- CSA Standard: C22.2 No. 30
- FCC Approved

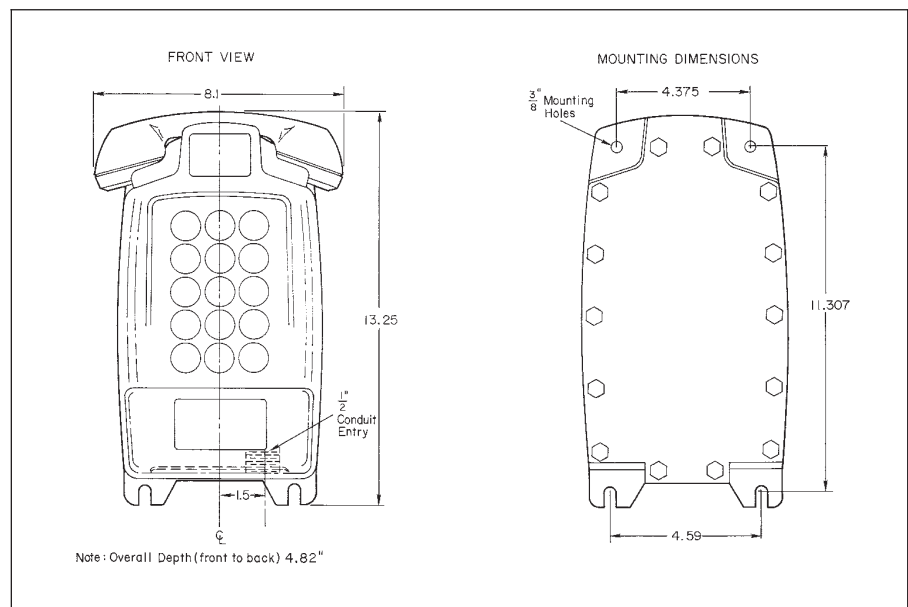
Accessories:

- A standard volume explosionproof ringer (ETR1) is available, see page 578 for listing.
- For locations with a high level of ambient noise, a louder ringer can be installed. An ESR bell or ETH horn may be used by installing an ETC relay between the telephone line switch and the bell or horn. The relay coil is energized by the ringing current and the relay contacts control a separate power source to the signal.



ETW401

Dimensions (in inches)



Dimensions are approximate, not for construction purposes.

D2TW600

Telephone for Hazardous Areas

Cl. I, Div. 2, Groups A,B,C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
NEMA 3,4X*,7 Div. 2 ABCD, 9 EFG, 12

Dust-Ignitionproof
Watertight
Wet Locations

3A

Application:

These single-line, fully functional electronic telephones are used:

- for communication in locations which may be hazardous due to the presence of flammable gases or vapors (Division 2), and/or combustible dusts or fibers.
- as a single line telephone in chemical plants, oil refineries, bulk loading stations, paint and varnish manufacturing plants, grain processing and similar industries.

Features:

- Water-, dust- and corrosion-resistant enclosure for durability and long-life.
- Corrosion-resistant electronics with conformal coating for dependable performance in the harshest of environments.
- Spring loaded door with auto-latch to prevent unit from being exposed to elements.
- Factory set tone dialing (DTMF).
- Units are also pulse compatible and offer superior audio clarity.
- Magnetic reed hook-switch operation for ease of use.
- Highly visible Safety-Yellow color.
- Access plate for field wiring.
- Integral backplate mount for ease of installation.
- Conduit hub ½" NPT.
- Operating environment from -30° to +50°C.
- Ringer output: 80dB
- Internal, adjustable bell ringer.
- Lightning arrester for added unit protection.

Standard Materials:

- Enclosure – General Electric's Valox® 357 resin
- Faceplate – anodized aluminum
- Dial pad overlay – silicone rubber
- Handset cradle – ABS polyurethane

Ordering Information

Catalog number D2TW600

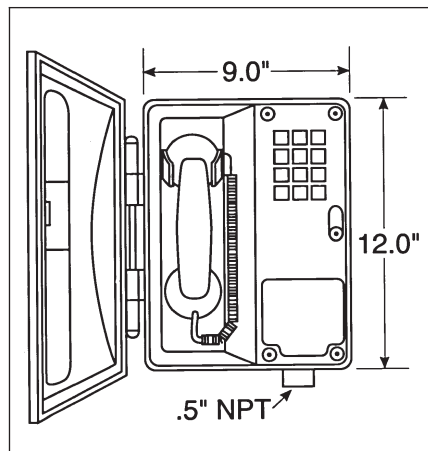
Option:

- Pulse Dial D2TW600 PULSE

Certifications and Complies:

- UL Standard: 1604
- CSA Standard: C22.2 No. 213, No. 25
- UL: Class I, Division 2, Groups A, B, C, D
- CSA: Class I, Division 2, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class II, Division 2, Groups F, G
- FCC: Parts 15 and 68 hearing aid compatible
- DOC: 2
- Line level: normal telephony voice quality per IEEE standard RS-470

Dimensions



Weight:

- 4.85 lbs.



3A Signals & Alarms

* Watertight with spring door closed.

3A Telephone Accessories

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
 Cl. II, Div. 1, Groups E,F,G Dust-Ignitionproof
 Cl. II, Div. 2, Groups F,G Raintight
 Cl. III Wet Locations

Features:

- ETC232 power relays are used with ESR bells and ETH, W2H or WH horns. The relay coil is energized by the telephone ringing circuit, and the relay contacts control the separate 115vac, 60 hertz power source.
- ETR1 external ringer for ETW401 telephone. For low ambient noise areas, ring tone level is similar to a general use telephone. Includes a ring detect relay which is powered by the telephone line voltage, (maximum 90VAC).

Standard Materials:

- Bodies – copper-free aluminum
- Covers – copper-free aluminum

Standard Finishes:

- Aluminum – baked epoxy powder paint

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B*,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- UL Standard: 886, 1203
- CSA Standard: C22.2 No. 30



Power Relay

Description	Rating	Hub Size	Cat. #
Relay for Horn Signal	10A 115VAC 60 hertz	3/4	ETC232



Ringer

Description	Hub Size	Cat. #
Normal volume external ringer for ETW401 telephone	3/4	ETR1

* For use in Group B hazardous areas, seals must be installed within 1½" of each conduit entrance.

Description	Page No.
Application/Selection	580
Instrument Housings	
Clocks	
TCH	593
Meters	
EMH	585
GUB	583, 584
EIH	581
EIHT	582
Thermostats	
HRC	591-592
Heaters	
EXH	586-588
XC	589, 590

Application:

Four series of instrument housings for use in areas made hazardous by flammable vapors, gases or dusts are listed on pages 581 through 585 as follows:

- Page 583 lists GUB instrument housings for typical 3½", 4", 4½" and 6" G.E., Westinghouse and Weston meters shown in the tables. Other makes of meters of the same physical size can be accommodated in these housings.
- Page 585 – lists EMH housings for typical 2½" and 3½" G.E., Simpson, Westinghouse and Weston meters shown in the tables. Other makes of meters of the same physical size can be accommodated in the housings.
- Page 581 and 582 – lists EIH and EIHT housings for instrumentation and control devices such as two wire transmitters, temperature controls and pressure switches. Limiting dimensions are shown.

Considerations for Selection:

Environmental:

- Compliance with NEC/CEC, NEMA/EEMAC material and construction to withstand adverse atmospheric conditions

Mechanical:

- Physical size required to accept instruments

Application:

EIH instrument enclosures are used:

- to enclose instrumentation and control devices such as two-wire transmitters, flow measurement devices, temperature controls, level detectors, pressure switches, etc.
- as an outlet box for pulling and splicing conductors
- in hazardous, abusive and wet locations
- to provide access to conductors for maintenance and future system changes

Features:

- 3/4" offset through feed hubs offer maximum interior space and greater working area
- 2" and 4" deep covers, solid or with glass lens
- Internal mounting pads for instrument mounting
- Internal ground screw for safe, continuous grounding
- Neoprene gasket provides a watertight seal for NEMA/EEMAC 4 and UL/CSA Type 4 applications.
- Wrenching lugs permit easy cover removal and tightening.
- Internal cover threads provide additional space inside body.
- External boss is suitable for drilling and tapping an additional conduit entry.

Standard Materials:

- Body and cover – copper-free aluminum
- Glass lens – heat tempered glass
- Gasket – neoprene

Standard Finishes:

- Corro-free™ epoxy powder coat (gray)



EIH21



EIH22

Hub Size*	Description	Cat. #
3/4	Body with 2" standard cover	EIH20
3/4	Body with 2" glass lens cover	EIH21
3/4	Body with 4" dome cover	EIH22
3/4	Body with 4" glass lens dome cover	EIH23

Options:

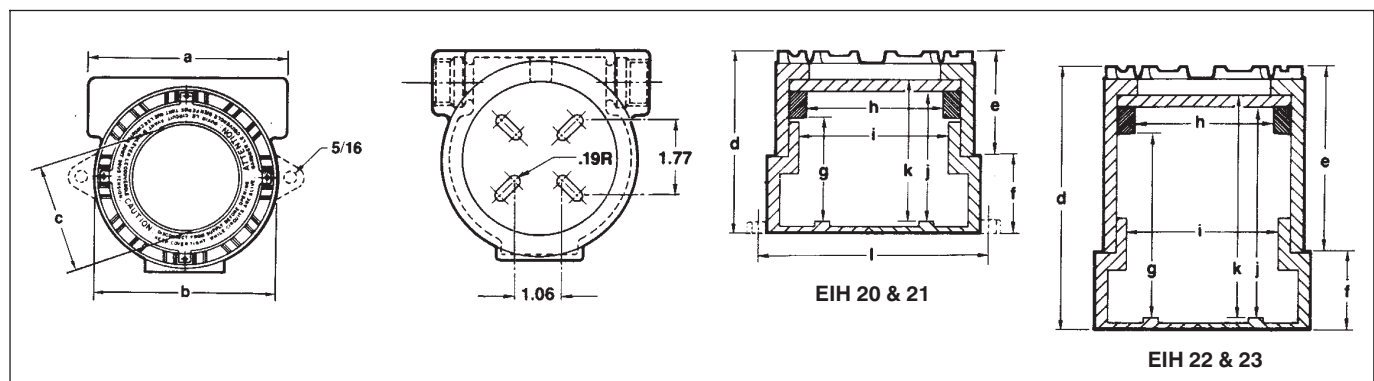
Suffix to be Added to Cat. #

Cast mounting feet	MF
Natural finish	Consult Cooper Crouse-Hinds
Additional drilled and tapped opening in external boss:	
1/2"	-1
3/4"	-2

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B†,C,D
 - Class II, Division 1, Groups E,F,G
 - Class II, Division 2, Groups F,G
 - Class III
- NEMA/EEMAC: 3,4,7BCD,9EFG
- UL Standard: 1203
- CSA Standard: C22.2 No. 30
- FM Classification No.: 3615
- ATEX Certificate EX-95.D, 3327 U

Dimensions



	a	b	c	d	e	f	g	h	i	j	k	l
EIH20	5.00	4.25	—	4.54	2.60	1.94	—	—	3.62	—	3.34	5.25
EIH21	5.00	4.25	2.60	4.54	2.60	1.94	2.75	2.73	3.62	3.10	—	5.25
EIH22	5.00	4.25	—	6.54	4.60	1.94	—	—	3.62	—	5.34	5.25
EIH23	5.00	4.25	2.60	6.54	4.60	1.94	4.68	2.73	3.62	5.03	—	5.25

* For 1/2" hub size, use RE21-SA.

Dimensions are approximate, not for construction purposes.

† For Group B applications, seal within 1 1/2" of enclosure in accordance with Sections 501-5 of the National Electrical Code* as well as any other applicable codes.

Cl. I, Div. 1 & 2, Groups B, C, D
 Cl. II, Div. 1, Groups E, F, G
 Cl. II, Div. 2, Groups F, G
 Cl. III
 NEMA 3, 4, 7BCD, 9EFG

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations
 Watertight

Application:

EIHT instrument enclosures are used:

- to enclose instrumentation and control devices such as two-wire transmitters, flow measurement devices, temperature controls, level detectors, pressure switches, etc.
- as an outlet box for pulling and splicing conductors
- in hazardous, abusive and wet locations
- to provide access to conductors for maintenance and future system changes

Features:

- 3/4" offset through feed hubs offer maximum interior space and greater working area
- 2" and 4" deep covers, solid or with glass lens
- Internal mounting pads for instrument mounting
- Internal ground screw for safe, continuous grounding
- Neoprene gasket provides a watertight seal for NEMA/EEMAC 4 and UL/CSA Type 4 applications.
- Wrenching lugs permit easy cover removal and tightening.
- Internal cover threads provide additional space inside body.
- External boss is suitable for drilling and tapping an additional conduit entry.
- Two separate chambers for isolation of power supply and instrument
- 3/4" hub on instrument side
- Third party certified for drilling enclosure wall between instrument and power side.



Hub Size*	Description	Cat. #
3/4	2" Blank Cover - Power side	
	2" Blank Cover - Instrument side	EIHT200
3/4	2" Blank Cover - Power side	
	2" Glass lens Cover - Instrument side	EIHT210
3/4	2" Blank Cover - Power side	
	4" Blank Cover - Instrument side	EIHT220
3/4	2" Blank Cover - Power side	
	4" Glass lens Cover - Instrument side	EIHT230

Options:

Description	Suffix
Additional drilled and tapped opening in external boss:	
1/2"	-1
3/4"	-2
With CENELEC Certification	ATEX
Natural finish	Consult Cooper Crouse-Hinds

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 1 & 2, Groups B, C, D
 - Class II, Division 1, Groups E, F, G
 - Class II, Division 2, Groups F, G
 - Class III
- NEMA/EEMAC: 3, 4, 7BCD, 9EFG
- UL Standard: 1203
- CSA Standard: C22.2 No. 30
- FM Classification No.: 3615

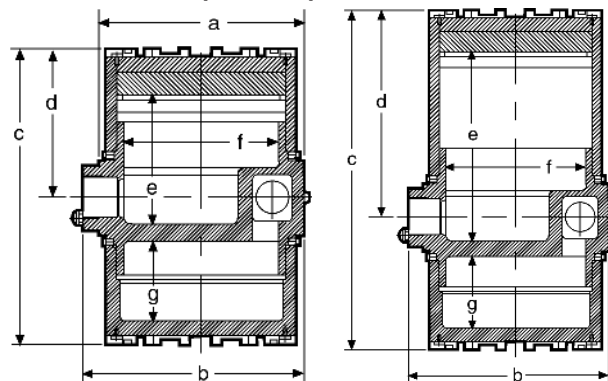
Standard Materials:

- Body and cover – copper-free aluminum
- Glass lens – heat tempered glass
- Gasket – neoprene

Standard Finishes:

- Corro-free™ epoxy powder coat (gray)

Dimensions (Inches):



	a	b	c	d	e	f	g
EIHT200	4.75	5.19	6.95	3.48	3.15	3.56	1.87
EIHT210	4.75	5.19	6.95	3.48	3.15	3.56	1.87
EIHT220	-	5.19	8.95	5.48	5.15	3.56	1.87
EIHT230	-	5.19	8.95	5.48	5.15	3.56	1.87

Application:

GUB instrument housings are used:

- to enclose ammeters, voltmeters, wattmeters, varimeters, power-factor meters, tachometer indicators, pressure controls, temperature control etc., in a threaded rigid metallic conduit system
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, certain hazardous metal finishing areas, coal processing locations, granaries and grain processing plants

Features:

- Threaded covers have glass windows for viewing scale, dial or setting of enclosed instrument.
- Mounting plates, brackets or pillars for mounting a wide variety of instruments not shown on pages 583 and 584 are available on special order. Instrument to be used must be specified by make, complete identification data and dimensions.

Standard Materials:

- Body – *Feraloy*® iron alloy
- Cover – copper-free aluminum
- Window – heat strengthened plate glass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

- Other conduit opening sizes and arrangements can be furnished
- Add suffix “-22” to catalog number for 3/4” hub top and bottom

Certifications and Compliances:

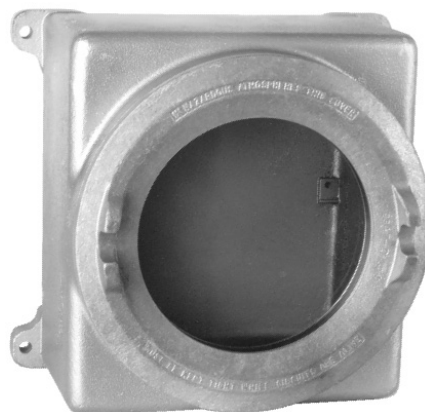
- NEC/CEC:
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA/EEMAC: 3,7D,9EFG,12
- UL Standard: 886
- CSA Standard: C22.2 No. 30



GUB01 shown with GUB0110 glass cover



GUB04 shown with GUB0109 glass cover

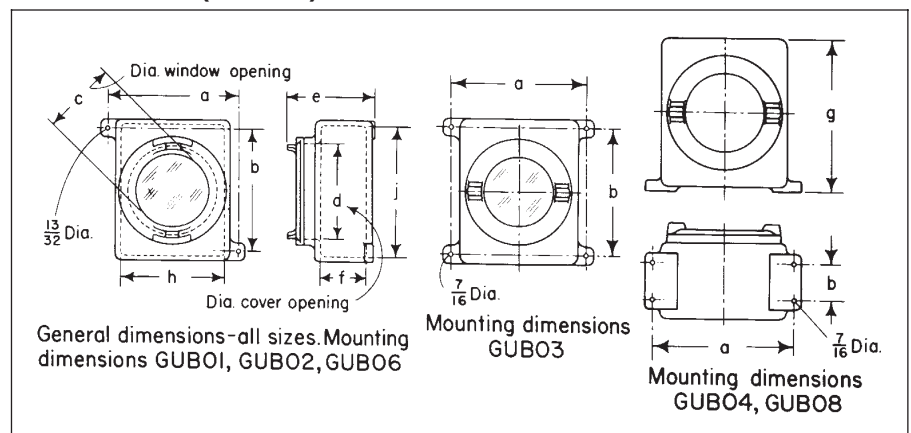


GUB03 shown with GUB0109 glass cover

Instrument Housings

Basic Housing	Conduit Opening Size	Conduit Opening Position	Cat. #
GUB01	3/4	Top	GUB110-1-20
	3/4	Bottom	GUB110-1-02
GUB02	3/4	Top	GUB218-1-20
	3/4	Bottom	GUB218-1-02
GUB06	3/4	Top	GUB619-1-20
	3/4	Bottom	GUB619-1-02
GUB03	3/4	Top	GUB319-1-20
	3/4	Bottom	GUB319-1-02
GUB08	3/4	Top	GUB819-1-20
	3/4	Back	GUB819-5-02
GUB04	3/4	Top	GUB419-1-20
	3/4	Back	GUB419-5-02

Dimensions (inches)



Dimensions are approximate, not for construction purposes.

GUB	a	b	c	d	e	f	g	h	j
01	7-1/2	5-3/4	3-5/8	5-1/2	5-3/4	3		5-7/8	6-1/2
02	9	8-3/4	4-3/4	7	6	3		7-1/8	9-1/8
03	12-1/8	10-3/4	6-13/16	9-5/8	8-5/16	5		9-3/4	10-3/4
04	12-1/8	3-1/2	6-13/16	9-5/8	8-13/16	5	12-1/4	9-3/4	10-3/4
06	9-1/2	8-3/4	4-3/4	7	7	4		7-5/8	9-1/8
08	9-5/8	2-1/2	4-3/4	7	6-15/16	4	10-1/4	7-5/8	9-1/8

Cl. I, Div. 1 & 2, Group D
 Cl. II, Div. 1, Groups E,F,G
 Cl. II, Div. 2, Groups F,G
 Cl. III
 NEMA 3,7D,9EFG,12

Explosionproof
 Dust-Ignitionproof
 Raintight
 Wet Locations

Instrument Housings

Inst. Size	Basic Housing	Cat. #
3½	GUB01	GUB1103-1-20†
3½		GUB11031-1-20
4	GUB06	GUB6191-1-20
4		GUB6192-1-20
4		GUB6193-1-20
4½	GUB02	GUB2184-1-20†
6	GUB03	GUB3190-1-20†
6		GUB3191-1-20

NOTE: These standard instrument housings are furnished with one top feed ¾" drilled and tapped opening.

NOTE: Meters are not included

Standard Meters

Housed in GUB Enclosures†

Manufacturer	Model	Inst. Size	Type Flange	Cat. #	
G.E.	Type 250	3½	Rect. Flush	GUB1103-1-20	
Westinghouse	R-351 Series	3½	Rect. Flush		
	N-351 Series	3½	Round Flush		
Weston	301 Series	3½	Rect. Flush		
	301 Series	3½	Round Flush		
	723	3½	Rect. Flush		
G.E.	KT-11	3½	Round Flush	GUB11031-1-20	
	Elapsed Time Meter		or Rect. Flush		
	Without Reset				
	236	3½	Round Flush		
	Elapsed Time Meter		or Rect. Flush		
	Without Reset				
Westinghouse	BH351	3½	Rect. Flush		
	Elapsed Time Meter				
	Without Reset				
G.E.	Type 250	4½	Rect. Flush	GUB2184-1-20	
Westinghouse	R-371 Series	4½	Rect. Flush		
	N-371 Series	4½	Round Flush		
Weston	1900 Series	4½	Rect. Flush		
Westinghouse	KX-251	6	Rect.	GUB3190-1-20	
	KA-251	6	Rect.		
	KY-25	6	Rect.		
Weston	271	7	Fan	GUB3191-1-20	
	273	9	Fan		
G.E.	AB-14 Series	4	Rect. Flush		
	DB-14 Series	4	Rect. Flush		
	AB-18 Series	4	Rect. Flush		
	DB-18 Series	4	Rect. Flush		
	AB-30 Series	4	Rect. Flush	GUB6191-1-20	4⅞
	DB-30 Series	4	Rect. Flush	GUB6192-1-20	6⅞
	AB-40 Series	4	Rect. Flush	GUB6193-1-20	7⅞
	DB-40 Series	4	Rect. Flush		
Westinghouse	K-241 Series	4½	Rect. Flush		

Max.
Inst.
Depth§

† These boxes available for use in Class I, Division 1 and 2, Group B and C hazardous areas. Add suffix GB to Cat. No. Seals must be installed within 1½" of each conduit opening for Group B & C usages.

‡ Standard meters are to be purchased separately from manufacturers listed.

§ Select housing based on depth of instrument to be enclosed.

Application:

EMH instrument housings are used:

- to enclose 2½" or 3½" diameter round, flush rim-mounting meters, whose scale or dial would be visible in the 2½" diameter glass window. Typical types of instruments or meters are ammeters, voltmeters, etc.
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, certain hazardous metal finishing areas, coal processing locations, granaries and grain processing plants

Features:

- Sight-glass in cover permits viewing of instrument dial or setting.
- Enclosures are non-magnetic, available in surface mounting and flush panel mounting. The cylindrical extension of the cover opening on the flush bodies will project through a hole in panel. Thickness of panel must not exceed ¼" to insure flamtight assembly of cover threads with body threads.
- Mounting plates and posts in bodies support the instrument close to the heavy glass window in cover. Maximum depth of instrument extending from outboard end of posts towards the back wall of enclosure body is 3". There is ample wiring space in back of instruments.
- Bodies have bosses on all four sides and back for drilling and tapping of conduit entrances.
- Dead end and through feed arrangements for ¾" rigid conduit are standard listings.

Standard Materials:

- Bodies – copper-free aluminum
- Covers – copper-free aluminum
- Windows – heat strengthened plate glass

Standard Finishes:

- Natural

Options:

- Other conduit hub sizes and arrangements can be furnished.

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Group D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA/EEMAC: 3,7D,9EFG,12
- UL Standard: 886
- CSA Standard: C22.2 No. 30

* Dimensions are approximate, not for construction purposes.

Instrument Housings

Style	Conduit Openings	Size	Cat. #
Surface	One in Side (Dead End)	¾"	EMH521-20000
	Two in Sides (Through Feed)	¾"	EMH533-20000
	Two in Sides (Through Feed)	¾"	EMH521-20200
Flush	One in Side (Dead End)	¾"	EMH511-20000
	Two in Sides (Through Feed)	¾"	EMH534-20000
	Two in Sides (Through Feed)	¾"	EMH511-20200

Standard Meters

Housed in EMH511, EMH521†

Manufacturer	Model	Size
Weston	201 Series	2½"
	301 Series	3½"
Westinghouse	N-351 Series	3½"
Simpson	125 Series	2½"
	135 Series	2½"
	145 Series	2½"
	155 Series	2½"
	25 Series	3½"
	35 Series	3½"
	45 Series	3½"
	55 Series	3½"
	75 Series	3½"
	3222 Series	2½"
	3282 Series	2½"
	3223 Series	3½"
	3283 Series	3½"

Standard Meters

Housed in EMH533, EMH534

Manufacturer	Model	Size	Type
G.E.	AW-91 Series	2½"	Rect. Flush
	DW-91 Series	2½"	Rect. Flush
Weston	201 Series	2½"	Square Flush
	1721 Series	2½"	Rect. Flush



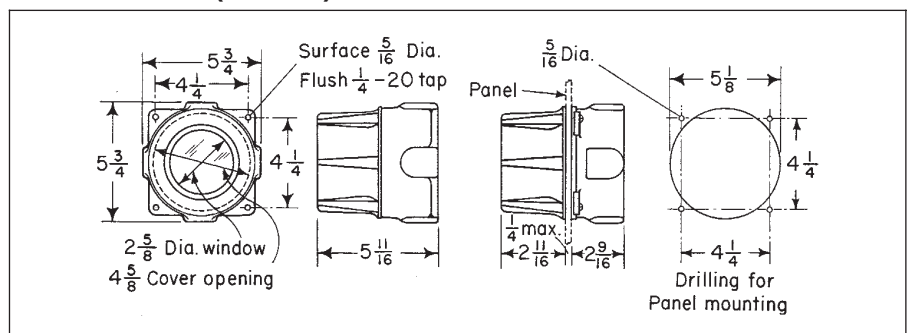
Flush



Surface

† Type-Round Flush

Dimensions* (inches)



Application:

EXH explosionproof electric heaters are used:

- in areas made hazardous by the presence of flammable gases and vapors, and combustible dusts.
- for rugged locations including: oil refineries, petrochemical plants, rigs, pumping stations, turbine compressors, pulp and paper mills, coal mines, grain elevators, etc.
- in areas where flammable vapors or gases or highly combustible dusts may be present due to accidental or abnormal conditions.
- for standby heat to prevent process heat loss, or for personnel comfort during maintenance/repair operations.

Features:

- Split fan guard for easy access to fan.
- Compact design makes handling during installation easy.
- Evacuated cores heat up quickly with even heat distribution.
- Larger models offer greater kilowatt range providing more economical means to heat large areas.
- Permanently sealed cores improve reliability and make field servicing easier.
- Control box provides easy access for installation and maintenance.

Standard Materials and Finishes:

Fan – Aluminum blade. Steel spider and hub with $\frac{5}{8}$ in. (15.875 mm.) bore.

Core – Steel with integral aluminum fins, vacuum charged and hermetically sealed.

Heating Elements – Three long life, low watt-density, high grade metal sheathed elements.

Heat Transfer Fluid – Long life formulated ethylene glycol and water, freeze protected to -49°F (-45°C).

Cabinet Material – 14 gauge (0.075 in.) (1.90 mm) steel. Epoxy coated with 5 stage pre-treatment including iron phosphate.

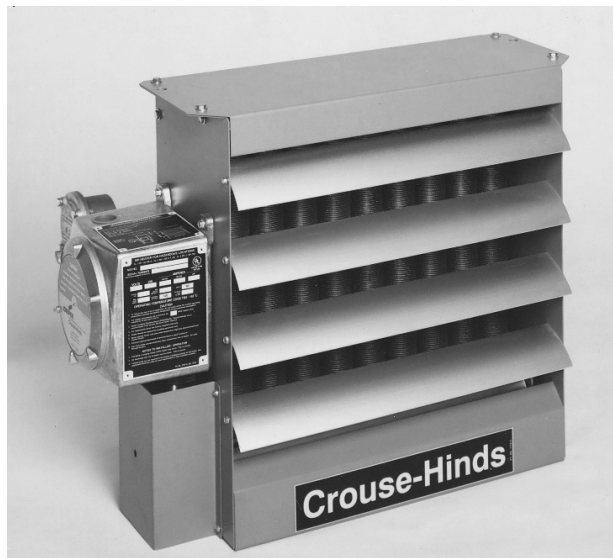
Conduit Material – Heavy walled, 0.122 in (3.1 mm.) steel cadmium plated.

Certifications and Compliances:

- Class I, Division 1 & 2, Groups C, D
- Class II, Division 1, Groups E,F,G
- Class II, Division 2, Groups F,G
- NEMA: 7CD, 9EFG
- UL Standard: 823
- CSA Standard: C22.2 Nos. 25, 30, 46

Accessories & Options:

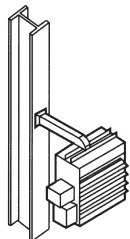
- Basic mounting kit – suitable for applications where the support arm can be bolted or welded directly to structural steel or concrete. (Cat. No. BMK-EXH__ (insert fan size: 12, 16 or 20))
- Wall mounting kit – suitable for mounting on Z sections. (Cat. No. WMK-EXH__ (insert fan size: 12, 16 or 20))



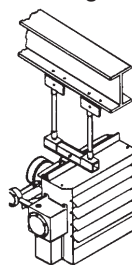
Heater shown has optional built-in thermostat.

- Hanging mounting kit – simple and economical if adequate overhead structure exists. Requires $\frac{1}{2}$ " pipe, cut and threaded — not supplied. (Cat. No. HMK-EXH4)
- Swivel hanging mount kit — swivels 360° . Requires $\frac{1}{2}$ " pipe, cut and threaded — not supplied. (Cat. No. SHMK-EXH__ insert for size 12, 16 or 20)
- Pipe mounting kit – useful in buildings with insufficient strength to use other types of mounts. requires 3" pipe. (Cat. No. PMK-EXH__ (insert fan size: 12, 16 or 20))
- HRC1 explosionproof thermostat – using bi-metal control for 36° - 82°F heating range. Order separately or add suffix "HRC" for factory installation on heater. See page 592.

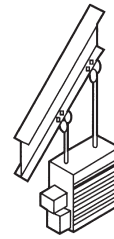
BMK Basic Mounting Kit



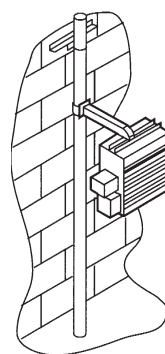
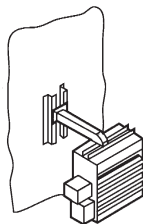
SHMK Swivel Hanging Mounting Kit



HMK Hanging Mounting Kit



WMK Wall Mounting Kit



PMK Pipe Mounting Kit

EXH Series Explosionproof Electric Air Heaters

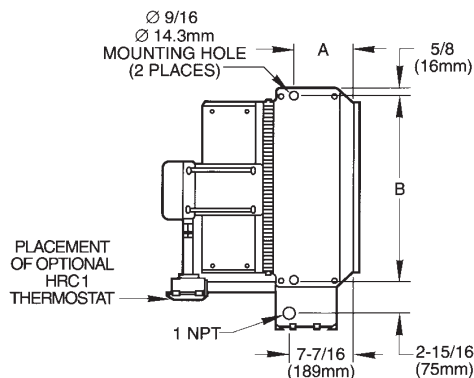
Cl. I, Div. 1 & 2, Group C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
NEMA 7CD, 9EFG

Explosionproof
Dust-Ignitionproof

4A

Dimensions

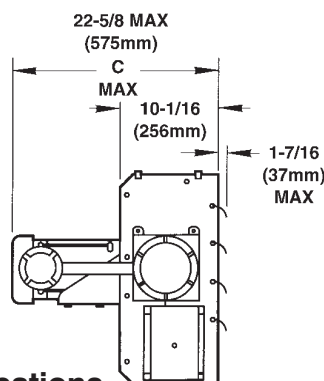
Top View



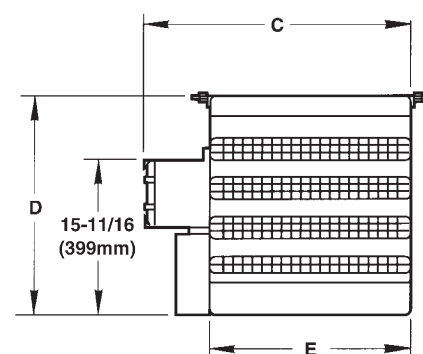
DIM		EXH412	EXH416	EXH420
A	in. mm	8 ¹ / ₁₆ 204	6 ¹ / ₁₆ 170	7 ¹ / ₁₆ 179
B	in. mm	18 ³ / ₁₆ 462	22 ³ / ₁₆ 564	26 ³ / ₁₆ 665
C	in. mm	24 ¹ / ₂ 622	28 ¹ / ₂ 724	32 ¹ / ₂ 825
D	in. mm	18 ¹ / ₂ 470	22 ¹ / ₂ 572	26 ¹ / ₂ 674
E	in. mm	16 ⁵ / ₁₆ 414	20 ⁵ / ₁₆ 516	24 ⁵ / ₁₆ 617

DIMENSIONAL TOLERANCES
± 1/8" (3.2MM)

Side View



Front View



Specifications

		EXH412				EXH416		EXH420		
Nominal kW		3	5	7.5	10	15	20	25	30	35
Maximum Altitude	(ft.)	12,000	8,000	10,000	7,000	10,000	7,000	10,000	7,000	6,000
	(m.)	3,658	2,438	3,048	2,134	3,048	2,134	3,048	2,134	1,829
Air Delivery @ 70°F	(CFM)	500	500	850	850	1750	1750	3600	3600	3,950
	@ 21°C (m³/hr)	850	850	1444	1444	2973	2973	6116	6116	6,711
Horizontal Throw	(ft.)	15	15	30	30	40	40	70	70	70
	(m.)	4.6	4.6	9.1	9.1	12.2	12.2	21.3	21.3	21.3
Max. Mounting Height	(ft.)	7	7	10	10	10	10	20	20	20
	(m.)	2.1	2.1	3.0	3.0	3.0	3.0	6.1	6.1	6.1
Motor Power	(HP)	1/4	1/4	1/4	1/4	1/4	1/4	1/2	1/2	1/2
	(kW)	0.187	0.187	0.187	0.187	0.187	0.187	0.373	0.373	0.373
Fan Diameter	(in.)	12	12	12	12	16	16	20	20	20
	(mm.)	305	305	305	305	406	406	508	508	508
Net Weight	(lbs.)	111	111	111	111	133	133	154	154	154
	(kg.)	50	50	50	50	61	61	70	70	70
Shipping Weight	(lbs.)	151	151	151	151	173	173	204	204	204
	(kg.)	69	69	69	69	79	79	93	93	93

Motor Type	Explosionproof. Thermally protected. Permanently lubricated ball bearings. 1725 RPM.
Fan Guard	Split design with close wiring spacing. 1/4 in. (6.3mm.) probe will not enter.
Heating Elements	Three long-life, low watt-density, high grade metal-sheathed elements.
Temperature High-Limit	Automatic reset type, snap-action bimetal, open on temperature rise. Rated 100,000 cycles at 10 amps, handles 0.128 amps.
Control Circuit	120 Volts, 0.128 ams, 15 VA.
Control Transformer	Multi-tap primary, 120V secondary, 25 VA.
Contactors	40 or 75 amp. rated 500,000 cycles at maximum capacity, operating at not more than 84% full load. 120V, 15 VA fuse protected coil.
Overpressure Protection	Fusible alloy plug 170 psi (1.17 MPa).
Temperature Code Rating	T3B 165°C (329°F) Class I & II.
Temperature Limitations	Operational; -49°F to 176°F (-45°C to 80°C), short term to 248°F (120°C).

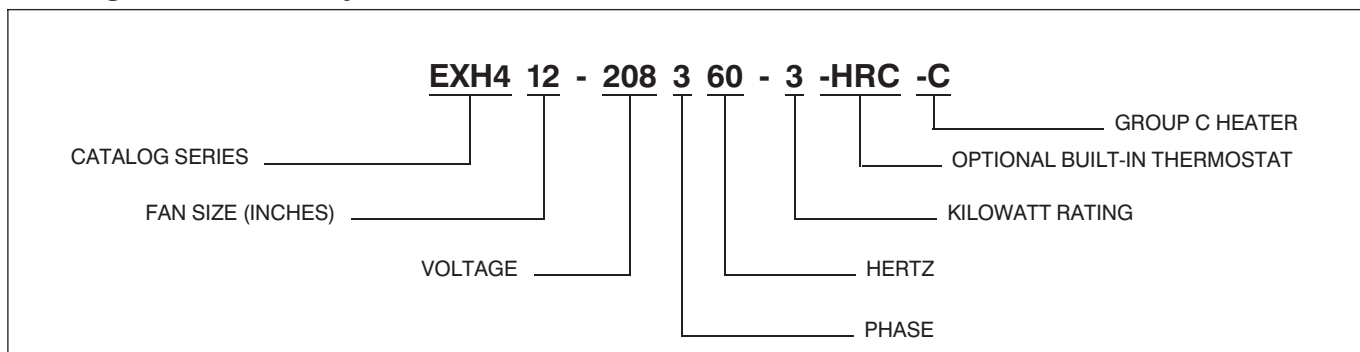
EXH Series Explosionproof Electric Air Heaters

Cl. I, Div. 1 & 2, Group C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
NEMA 7CD, 9EFG

Explosionproof
Dust-Ignitionproof

Nominal Wattage (kW)	Voltage	Phase	Catalog Number	Maximum Total Current (Amperes)	Temperature Rise °F	Temperature Rise °C	Heat Output BTU/Hr.
3	208	1	EXH412-208160-3	15.7	19.0	10.5	10,250
3	240	1	EXH412-240160-3	13.9	19.0	10.5	10,250
3	208	3	EXH412-208360-3	8.9	19.0	10.5	10,250
3	240	3	EXH412-240360-3	7.9	19.0	10.5	10,250
3	480	1	EXH412-480160-3*	6.3	19.0	10.5	10,250
3	480	3	EXH412-480360-3	3.9	19.0	10.5	10,250
3	600	3	EXH412-600360-3	2.9	19.0	10.5	10,250
5	208	1	EXH412-208160-5	25.3	31.6	17.6	17,100
5	240	1	EXH412-240160-5	22.3	31.6	17.6	17,100
5	208	3	EXH412-208360-5	14.4	31.6	17.6	17,100
5	240	3	EXH412-240360-5	12.7	31.6	17.6	17,100
5	480	1	EXH412-480160-5*	10.4	31.6	17.6	17,100
5	480	3	EXH412-480360-5	6.4	31.6	17.6	17,100
5	600	3	EXH412-600160-5	4.8	31.6	17.6	17,100
7.5	208	1	EXH412-208160-7.5	37.3	27.9	15.5	25,600
7.5	240	1	EXH412-240160-7.5	32.7	27.9	15.5	25,600
7.5	208	3	EXH412-208360-7.5	21.4	27.9	15.5	25,600
7.5	240	3	EXH412-240360-7.5	18.7	27.9	15.5	25,600
7.5	480	1	EXH412-480160-7.5*	15.6	27.9	15.5	25,600
7.5	480	3	EXH412-480360-7.5	9.4	27.9	15.5	25,600
7.5	600	3	EXH412-600360-7.5	7.2	27.9	15.5	25,600
10	240	1	EXH412-240160-10	43.1	37.2	20.7	34,150
10	208	3	EXH412-208360-10	28.3	37.2	20.7	34,150
10	240	3	EXH412-240360-10	24.7	37.2	20.7	34,150
10	480	1	EXH412-480160-10*	20.8	37.2	20.7	34,150
10	480	3	EXH412-480360-10	12.4	37.2	20.7	34,150
10	600	3	EXH412-600360-10	9.6	37.2	20.7	34,150
15	208	3	EXH416-208360-15	41.6	27.1	15.1	51,200
15	240	3	EXH416-240360-15	36.1	27.1	15.1	51,200
15	480	1	EXH416-480160-15*	31.3	27.1	15.1	51,200
15	480	3	EXH416-480360-15	18.0	27.1	15.1	51,200
15	600	3	EXH416-600360-15	14.4	27.1	15.1	51,200
20	480	1	EXH416-480160-20*	41.7	36.1	20.1	68,300
20	480	3	EXH416-480360-20	24.1	36.1	20.1	68,300
20	600	3	EXH416-600360-20	19.2	36.1	20.1	68,300
25	480	3	EXH420-480360-25	30.1	22.0	12.2	85,400
25	600	3	EXH420-600360-25	24.1	22.0	12.2	85,400
30	480	3	EXH420-480360-30	36.1	26.3	10.6	102,360
30	600	3	EXH420-600360-30	28.9	26.3	10.6	102,360
35	480	3	EXH420-480360-35	42.1	28.0	15.6	119,450
35	600	3	EXH420-600360-35	33.7	28.0	15.6	119,450

Catalog Number Example



* Not available with Group C rating (suffix C)

Application:

Single phase XC explosionproof electric heaters are used:

- in areas where flammable liquids, gases or vapors are present
- for rugged locations including:
 - petroleum refineries, gasoline storage and dispensing areas
 - wastewater treatment plants
 - areas that use flammable liquids for cleaning parts in dip tanks
 - petrochemical plants
 - paint spraying areas
 - aircraft hangars and fuel servicing areas
 - hydrogen fuel cell and battery storage facilities
 - natural gas plants
- in areas where flammable vapors or gases may be present due to accidental or abnormal conditions
- for standby heat to prevent process heat loss or for personnel comfort during maintenance/repair operations

Standard Features:

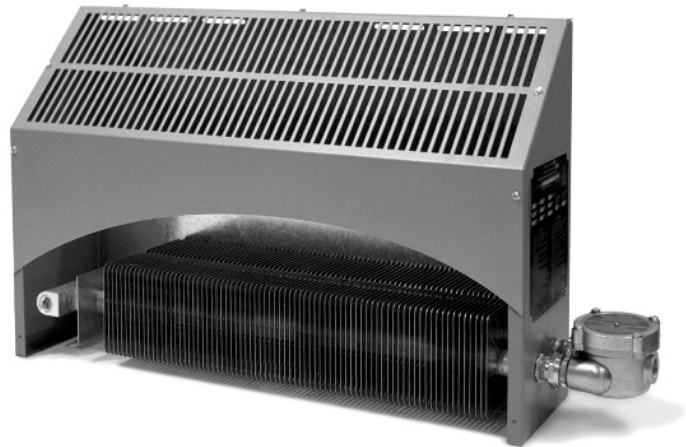
- Sloped-top cabinet prevents objects that restrict airflow from being set on top
- Corrosion-resistant design with no exposed copper or brass – suitable for H₂S environments
- High-velocity airflow heats up area faster with better heat distribution
- 14-gauge steel cabinet for rugged reliability
- Short cabinet lengths take up less wall and floor space
- Optional built-in thermostat (Class I, Division 1, Groups C & D, and Zone 1, Group IIB models) reduces field installation costs
- Incoloy® 840 heating elements have longer life expectancy
- Radial-embossed aluminum plate fins warp less for better heat transfer
- Galvanized steel mounting brackets for quick installation

Standard Materials & Finishes

- Heating elements – resistance wire embedded in a magnesium oxide refractory and sheathed in an Incoloy® 840 tube
- Finned tube assembly – aluminum tube with radial-embossed aluminum plate fins
- Cabinet – 14-gauge (0.075"/1.90 mm) steel, green-gray epoxy powder-coated front and side panels, galvanized steel back panel

Accessories & Options

- Built-in thermostat for 120-, 208-, 240-, 277- or 480-volt applications (see Ordering Information on page 590)
- Remotely mounted HRC85 explosionproof thermostat using Honeywell® control for 45°F–85°F heating range (order separately)



Certifications and Compliances:

NEC: Class I, Divisions 1 & 2, Groups B*, C & D
IEC: Class I, Zones 1 & 2, Group IIB + H₂*
NEMA: 7B*CD
UL Standard: 823
CSA Standard: C22.2 Nos. 25, 30, 46
Temperature Code: T2A – 280°C (536°F)

* Hydrogen applications only apply to heaters without built-in thermostats.

Specifications:

Nominal kW	1.2	1.8	3.6	4.8	7.6
Shipping Weight (lbs.)	61.3	61.3	61.3	88.4	104.3
(kg)	27.8	27.8	27.8	40.1	47.3
Enclosures	NEMA Type 7. For dry indoor use only. Do not immerse in water. Do not store or use in areas exposed to rain or snow.				
Mounting Brackets	Two 14-gauge galvanized steel brackets.				
Heating Elements	Two Incoloy® 840-sheathed elements.				
Optional Built-In Thermostat	Explosionproof room thermostat with 10 settings.				
Cabinet Material	14-gauge (0.075"/1.90 mm) steel. Rear panel is galvanized. Front and side panels are baked green-gray epoxy powder-coated with five-stage pretreatment, including iron phosphate. T2A – 280°C (536°F)				
Temperature Code Rating					
Temperature Limitations					
Operational	–45°C to 40°C (–49°F to 104°F)				
Storage	–45°C to 80°C (–49°F to 176°F)				

Ordering Information:

Without built-in room thermostat – Class I, Div. 1 & 2, Groups B, C & D;
 Zones 1 & 2, Group IIB + H₂

Cat. No.	Unit Wattage (kW)	Unit Output (BTU/Hr)	Unit Voltage (Volts)	Unit Current (Amps)	Maximum Circuit Fuse (Amps)*
XC-A1-N0	1.2	4097	120	10.0	15
XC-A2-N0	1.2	4097	208	5.8	15
XC-A3-N0	1.2	4097	240	5.0	15
XC-A4-N0	1.2	4097	480	2.5	15
XC-A5-N0	1.2	4097	600	2.0	15
XC-A6-N0	1.2	4097	277	4.3	15
XC-B1-N0	1.8	6146	120	15.0	20
XC-B2-N0	1.8	6146	208	8.7	15
XC-B3-N0	1.8	6146	240	7.5	15
XC-B4-N0	1.8	6146	480	3.8	15
XC-B5-N0	1.8	6146	600	3.0	15
XC-B6-N0	1.8	6146	277	6.5	15
XC-C2-N0	3.6	12292	208	17.3	20
XC-C3-N0	3.6	12292	240	15.0	20
XC-C4-N0	3.6	12292	480	7.5	15
XC-C5-N0	3.6	12292	600	6.0	15
XC-C6-N0	3.6	12292	277	13.0	15
XC-D2-N0	4.8	16389	208	23.1	25
XC-D3-N0	4.8	16389	240	20.0	25
XC-D4-N0	4.8	16389	480	10.0	15
XC-D5-N0	4.8	16389	600	8.0	15
XC-D6-N0	4.8	16389	277	17.3	20
XC-E2-N0	7.6	25950	208	36.5	40
XC-E3-N0	7.6	25950	240	31.7	35
XC-E4-N0	7.6	25950	480	15.8	20
XC-E5-N0	7.6	25950	600	12.7	15
XC-E6-N0	7.6	25950	277	27.4	30

With built-in room thermostat – Class I, Div. 1 & 2, Groups C & D;
 Zones 1 & 2, Group IIB

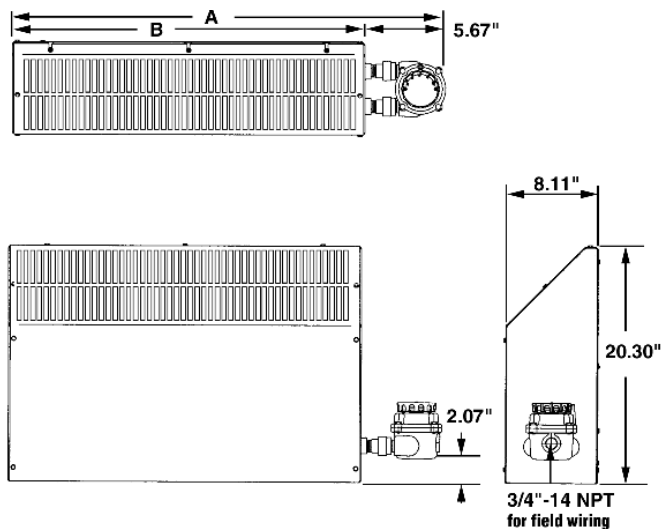
Cat. No.	Unit Wattage (kW)	Unit Output (BTU/Hr)	Unit Voltage (Volts)	Unit Current (Amps)	Maximum Circuit Fuse (Amps)*
XC-A1-B1	1.2	4097	120	10.0	15
XC-A2-B2	1.2	4097	208	5.8	15
XC-A3-B3	1.2	4097	240	5.0	15
XC-A4-B4	1.2	4097	480	2.5	15
XC-A6-B6	1.2	4097	277	4.3	15
XC-B1-B1	1.8	6146	120	15.0	20
XC-B2-B2	1.8	6146	208	8.7	15
XC-B3-B3	1.8	6146	240	7.5	15
XC-B4-B4	1.8	6146	480	3.8	15
XC-B6-B6	1.8	6146	277	6.5	15
XC-C2-B2	3.6	12292	208	17.3	20
XC-C3-B3	3.6	12292	240	15.0	20
XC-C4-B4	3.6	12292	480	7.5	15
XC-C6-B6	3.6	12292	277	13.0	15
XC-D3-B3	4.8	16389	240	20.0	25
XC-D4-B4	4.8	16389	480	10.0	15
XC-D6-B6	4.8	16389	277	17.3	20
XC-E4-B4	7.6	25950	480	15.8	20

*Or equivalent breaker as per National Electrical Code and Canadian Electrical Code

Notes:

1. Remote-mounted explosionproof room thermostats are not suitable for Group B & IIC applications. Remote contactors are also required on all 600-volt heaters and heaters with a current draw greater than 22 amps (supplied and installed by others).
2. Remote mounted explosionproof room thermostats suitable for Group B, IIB + H₂ applications are a special-order item.
3. Operation at lower than rated voltages will result in reduced kW output and amp draw.
 Actual Output (kW) = [(Supply Voltage)² ÷ (Rated Voltage)²] × Rated Unit Wattage (kW)

Dimensions (inches):



Heater kW Rating	A Dimensions	B Dimensions
1.2 - 3.6	37.0" (940mm)	31.34" (796mm)
4.8	55.125" (1400mm)	49.45" (1256mm)
7.6	65.125" (1654mm)	59.49" (1511mm)

HRC Thermostats with Honeywell Control

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III
NEMA 7CD,9EFG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4A

4A Instruments

Application:

HRC thermostats with Honeywell control are used:

- for heavy duty line voltage thermostats to control fan coils, fans, motor starters, valves, contactors, and circulator motors in heating and/or cooling systems. If larger motors than listed are to be controlled, relays or magnetic motor starters must be interconnected between motors and thermostats
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, certain hazardous metal finishing areas, coal processing locations, granaries and grain processing plants

Features:

- A heavy duty snap switch is mounted in the enclosure. The temperature sensitive element is mounted on the external surface of the cover and actuates the switch through a shaft and bearing mechanism.
- An external knob permits temperature setting within calibrated range. The knob is removable to prevent unauthorized adjustment. Room ambient is indicated on thermometer at front.

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Hubs – 3/4" through feed

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- NEMA/EEMAC: 7CD,9EFG,12
- UL Standard: 886
- CSA Standard: C22.2 No. 30



Temperature Range
45-85° F

Non-Adjustable Operating Differential (approx.)
1° F

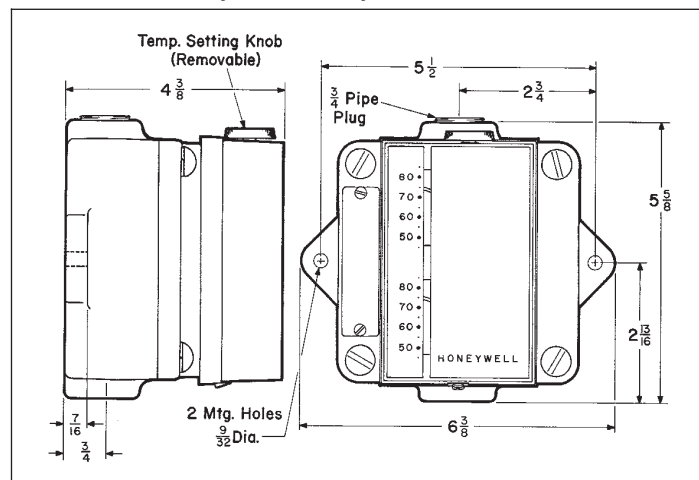
Cat. #†
HRC85

Electrical Rating Ranges:

- 120/240 VAC
 - 50/60 hertz
 - Full load current in amperes:
- | | 120 VAC | 240 VAC |
|---------|---------|---------|
| Heating | 10.2 | 6.5 |
| Cooling | 7.4 | 4.0 |

† Furnished with thermostat and thermometer.

Dimensions* (in inches)



* Dimensions are approximate, not for construction purposes.

Applications:

HRC Bimetal thermostats are used:

- to control heating only, cooling only or ventilation systems in demanding industrial environments
- in specific hazardous atmospheres such as encountered in oil refineries, chemical plants, paint and varnish manufacturing plants, coal processing locations, waste storage facilities, pulp and paper mills, granaries and grain processing plants or any other location where specific explosive gases or dusts are present.

Features:

- Bimetal sensing element that is fast acting, reliable and unaffected by altitude
- Compact, light weight design makes it easy to install
- No exposed copper or brass parts for excellent resistance to corrosion
- Feed-thru design for easy installation
- Durable all aluminum exterior
- Available for heating only or heating or cooling/ventilation applications



Ordering Information:

Hub Size

3/4"
 3/4"

Description

Single Pole, Single Throw (heating only)
 Single Pole, Double Throw (heating or cooling/
 ventilation applications)

Catalog Number

HRC1
 HRC2

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Size Ranges:

Conduit opening – 3/4" hub

Certifications and Complies:

- NEC/CEC:
 Class I, Division 1 & 2, Groups C,D
 Class II, Division 1, Groups E,F,G
 Class II, Division 2, Groups F,G
 Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30

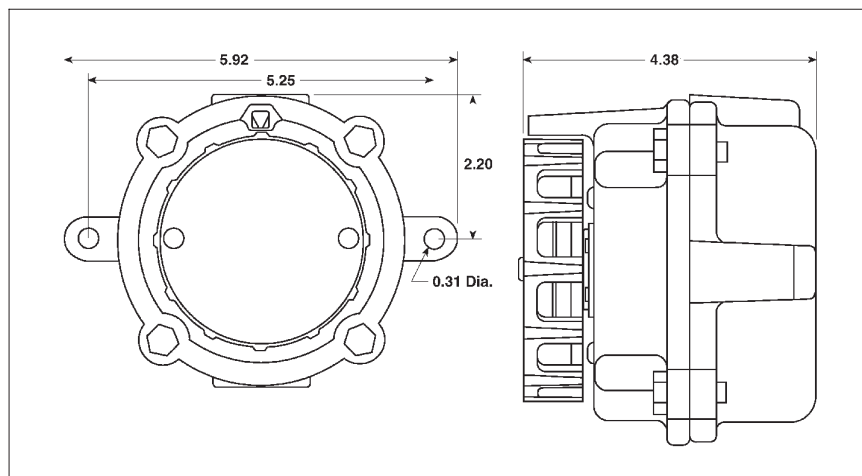
Electrical Ratings:

- 480 VAC max
- 1/2 HP @ 120 VAC
- 1 HP @ 250 VAC
- 22 amps Res.

Temperature Range:

- 36°F to 82°F (2°C to 28°C)
- Temperature differential: 2.5°F (1.5°C)

Dimensions:



TCH Electric Clocks

Factory Sealed

Cl. I, Div. 1 & 2, Groups C,D
Cl. II, Div. 1, Groups E,F,G
Cl. II, Div. 2, Groups F,G
Cl. III

Explosionproof
Dust-Ignitionproof

4A

Application:

Type TCH electric clocks are used:

- in oil refinery control rooms, hospital operating rooms, chemical plants, grain handling and processing plants and other similar locations where specific hazardous atmospheres may exist

Features:

- Sheet steel case may be used where environmental conditions are not severe. Electric motor and connections are contained in corrosion-resistant enclosure. Dials are 13" in diameter. Reset knob protrudes from bottom of case.
- Disassembly for installation and maintenance is easily performed. The motor housing is factory sealed, with no external seals required.

Standard Materials:

- Clock body and cover – sheet steel
- Motor housing – copper-free aluminum

Standard Finishes:

- Aluminum – aluminum acrylic paint
- Sheet steel – baked aluminum enamel

Options:

- The following special options are available:
Description
Sheet metal band notched for conduit, can be supplied for enclosing gap between wall surface and back of case. See listings

Size Ranges:

- Hubs – 1" through feed

Electrical Rating Ranges:

- 110vac, 60 hertz
- Self-starting synchronous motor – 3 watts

Certifications and Compliances:

- NEC: Class I, Division 1 & 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- UL Standard: 886



Sheet Steel Case

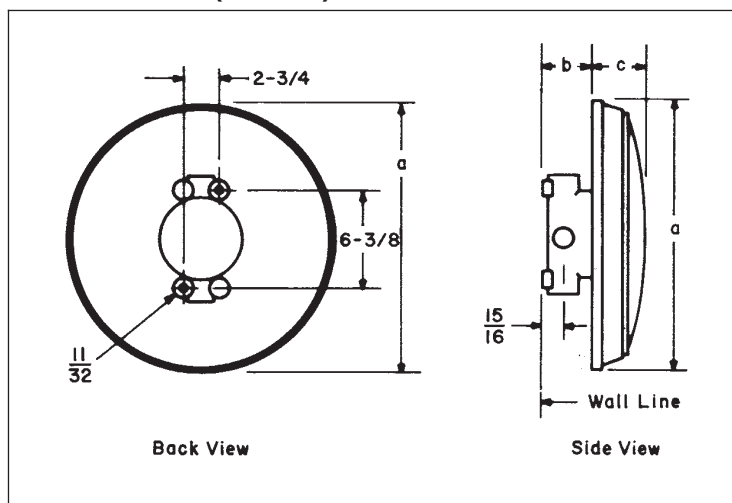
Enclosure with Clock

Motor	Hub Size	Style	Cat. #
110 VAC 60 hertz Self-Starting Synchronous (3 Watts)	1	With Sheet Steel Case Surface Mount	TCH2220

Enclosing Sheet Metal Band

Cat. #
TCH202

Dimensions* (inches)



Cat. #	a	b	c
TCH2220	17	2 7/8	3 7/16

* Dimensions are approximate, not for construction purposes.

4A Instruments

Notes Page

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Corrosion Resistant Products

Section N



Notes Page

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General Features

All enclosures are made of *Krydon*® high impact strength fiberglass-reinforced polyester material with excellent corrosion resistance and stability to high heat.

Unitized construction for strength, durability and more usable space

Solid, one-piece construction makes enclosures made of *Krydon* material tougher and stronger. The back is an integral part of the enclosure. It's not a separate part glued onto the enclosure. The unitized construction makes enclosures made of *Krydon* material strong and durable and provides greater impact resistance. There are no seams or joints to come apart if the enclosure is dropped or bumped.

Crisp design – smooth surface

Krydon material's remarkable smooth surface is easy to clean and keep looking clean. Enclosures made of *Krydon* material are good looking too, gray in color, with crisply designed lines.

Long, trouble-free life

Exposed to the equivalent of five full years of outdoor use in accelerated weatherometer tests, enclosures made of *Krydon* material proved to be unaffected by wind, rain, temperature changes or the ultraviolet rays of sunlight. Most enclosures are raintight, watertight, dusttight and weatherproof (NEMA ratings 3, 4X and 12).

Easily machinable

Enclosures made of *Krydon* material are easily machinable. Conduit holes can be drilled on all sides of enclosures with an ordinary hole saw.

Easy to wire

The covers are removable – hinged covers are optionally offered – to provide full interior access for ease of wiring. And, since *Krydon* material is non-conductive, the enclosures are shock resistant.

Safety doors

A hinged access door in cover is standard on the combination line-starter, circuit breaker, disconnect switch and panelboard enclosures. It is provided with a molded lockout for padlocking of both doors. Watertightness is achieved by separately gasketed door frame (heat and corrosion resistant gasket) and access door (Hypalon gasket). Screws (316 stainless steel) for the door frame are hidden behind the access door. Therefore, the door frame cannot be removed without first removing the access door. Self-cleaning hinge construction on access door prevents accumulation of foreign material around hinges.

More usable space – durable construction

Enclosure covers on large units are fastened by stainless steel screws terminated on a modest "outside" flange allowing more usable inside space. Their wall sections are backed up against gasket joints to ensure a strong and durable construction.

Large enclosures have slotted, replaceable mounting feet.

Strong, yet flexible

Krydon material has superior physical properties:

- Tensile strength – 10,000 psi.
- Flexural strength – 24,000 psi.
- Compression strength – 25,000 psi.
- Impact resistance – 16.0 ft.-lbs./in.
- Flammability rating – UL94V-5
- UL Mechanical Thermal Index rating – 190° C

Buttoned up against the elements

Even the pushbuttons are molded of a corrosion resistant polymer material. There is no external boot to wear or corrode, rendering the button inoperative. Result: longer service life, reduced maintenance and downtime.

A unique internal neoprene diaphragm encloses shaft, spring and other parts behind the button. Moving parts are isolated from the outside atmosphere, and are less likely to corrode or become jammed with foreign material.

Get a handle on it with *Krydon* material

The operating handle is also made of *Krydon* material for maximum corrosion resistance. The handle is reinforced for long life and heavy duty service.

Contents

	Page		Page
Control Stations – N2S Series	612–615	Additional products made of <i>Krydon</i> material listed elsewhere:	
N2SU/N2SCU	598–600		
GHG 43 Control Stations	601–611		
Fire Alarm Stations – N2FA Series	616	Industrial Lighting	
Manual Motor Starting Switches – NSS Series	621	Incandescent Fixtures – NDA Series	1L
Fractional HP Starters – NFSC Series	621, 622	Dome and Angle Reflectors	1L thru 4L
Manual Line Starters – NMN Series	623	Fluorescent Fixtures – NFW Series	6L
Magnetic Line Starters – NMG Series	624, 625	Emergency Lighting – N2LPS Series	10L
Combination Line Starters – NMC Series	617	Interlocked Receptacles	
With Circuit Breakers	618	With Enclosed Disconnect Switches – NSR Series	3P
With Motor Circuit Protectors	619	With Enclosed Circuit Breakers – NBR Series	3P
With Disconnect Switches	619, 620		
Disconnect Switches – NST Series	632	Heavy Duty Plugs and Receptacles	
N2RS Switch	633	NR Receptacle Assemblies	1P
Circuit Breakers – NCB Series	626, 627	NPJ Plugs, NPQ Motor Plugs and	
Panelboards – N2PB Series	628, 629	NPR Cord Connectors	1P
NLP Series	630, 631		
Junction Boxes – NJB/NCE/NCS Series	634, 636		
NJBW Series	635		
Corrosion Inhibitor Devices – CID Series	659		
Kestrel Series	637–646		
TBF/TBP Non-Metallic Enclosures	647–653		
Dimensions & Accessories	654–658		

N2SU/N2SCU Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B, C, D
Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,7BCD (Div. 2), 12

Cl. II, Div. 2,
Groups F, G
Cl. I, Zones 1 and 2,
Ex de IIB + H₂
IP66

Application:

N2SU and N2SCU pushbutton stations, selector switches and pilot lights are suitable for use:

- in Class I, Groups B, C, D; Division 2 and Class I, Zones 1 and 2 hazardous areas where flammable vapors or gases may be present due to accidental or abnormal operation
- in damp, wet, or corrosive locations
- indoors or outdoors in Division 2 and Class I, Zones 1 and 2 areas of petroleum refineries, chemical plants and other process industry facilities where similar hazards exist

- N2SU and N2SCU pushbutton stations and selector switches are used:
- in conjunction with magnetic starters or contactors for remote control of motors

N2SU and N2SCU pilot lights are used:

- to visually indicate at a remote location that the desired function is being performed

Optional maintained stop pushbutton(s) are used: As emergency or normal stop button(s) in motor control circuits for positive shutdown.

Features:

- Compact, strong, durable enclosures are made of *Vestamid™* – a black molded high impact strength, polyester material having excellent corrosion resistance and stability to heat.
- Exterior parts of pushbuttons, pilot lights, and selector switches are made of *Krydon* material.
- Pushbutton design uses a unique internal neoprene boot which completely encloses all internal parts. A wiping gasket around the pushbutton cleans the wall of the pushbutton guard of any foreign material accumulation as the button is operated.
- Formed-in-place gasket, and stainless steel screws for added corrosion resistance.
- Pushbutton and pilot light guards are fluted for no-slip installation.
- Factory installed dead end (N2SU) or through feed (N2SCU) hubs – 1/2" and 3/4" sizes.
- Legend plates are available with 40 standard markings.
- Lockout is standard on selector switch devices.
- LED lamps are standard to provide longer life.

Pushbutton Stations – Momentary Contact

No. Units	Contact Symbol	Marking Unless Otherwise Specified \$	Enclosure with Pushbuttons		
			Hub Size	Dead End Cat. #	Through Feed Cat. #
1		START (or Specify \$)	1/2	N2S1110U	N2SC1110U
			3/4	N2S2110U	N2SC2110U
2		START-STOP (or Specify \$)	1/2	N2S1210U	N2SC1210U
			3/4	N2S2210U	N2SC2210U
3		Specify \$	1/2	N2S1310U	N2SC1310U
			3/4	N2S2310U	N2SC2310U
4		Specify \$	1/2	N2S1410U	N2SC1410U
			3/4	N2S2410U	N2SC2410U

Size Ranges:

- 1, 2, 3 and 4-device units

Electrical Rating Ranges:

- Pushbutton stations and selector switches – heavy duty 600VAC maximum
- Pilot lights – 120 to 600 VAC

Certifications and Compliances:

- NEMA: 3, 4X, 7BCD and 12
- UL Standard: 508
- CSA C22.2 No. 14 & 30

Options:

Suffix to be Added to Cat. #

Description

Padlock attachments for all pushbuttons. For "START-STOP" stations, only "STOP" button provided with lockout S708

Three-position selector switches with modified operation:

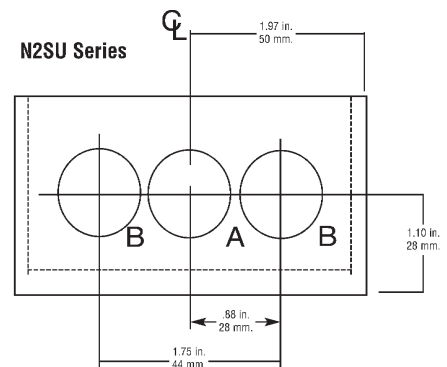
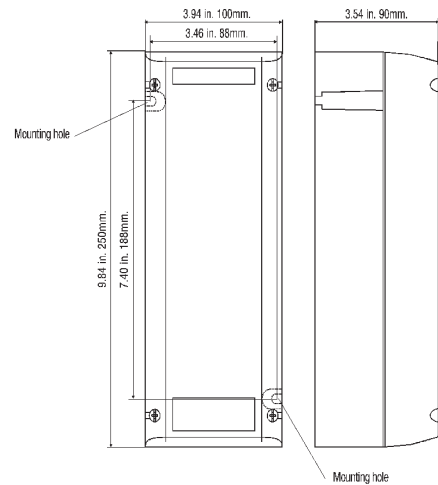
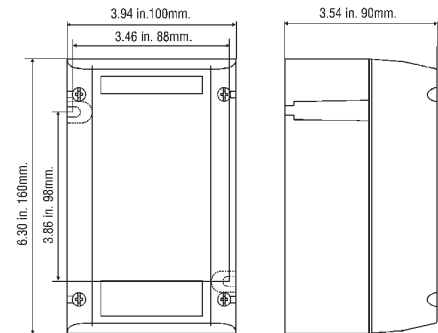
Momentary contact clockwise operation, spring return to center, maintained contact counterclockwise operation S634
Momentary contact counterclockwise operation, spring return to center, maintained contact clockwise operation S635

Note:

In addition to hub arrangements shown, the following can be obtained by inserting these codes for the 4th and 5th character in the catalog number:

D = Double 1/2" hubs at bottom
CD = Single hub at top, double 1/2" hubs at bottom
DD = Double 1/2" hubs at each end

Dimensions:



Entry	Note
A	.87 in. 22 mm. diameter for 1/2" single entry 1.09 in. 28 mm. diameter for 3/4" single entry
B	.87 in. 22 mm. diameter for 1/2" double entry

N2SU/N2SCU Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B, C, D
Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3, 4X, 7BCD (Div. 2), 12

Cl. II, Div. 2,
Groups F, G
Cl. I, Zones 1 and 2
Ex de IIB + H₂
IP 66

N

Selector Switches*

Style	Position 1	Position 2	Position 3	Marking Unless Otherwise Specified§	Enclosure with One Selector Switch		
					Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1			START-STOP (or Specify§)	1/2	N2S1121U	N2SC1121U
	A2				3/4	N2S2121U	N2SC2121U
Two-Position, Four-Circuit	A1			START-STOP (or Specify§)	1/2	N2S1122U	N2SC1122U
	A2				3/4	N2S2122U	N2SC2122U
	B1						
Three-Position, Two-Circuit	A1			Specify§	1/2	N2S1123U	N2SC1123U
	A2				3/4	N2S2123U	N2SC2123U
Three-Position, Four-Circuit	A1			Specify§	1/2	N2S1124U	N2SC1124U
	A2				3/4	N2S2124U	N2SC2124U
	B1						
	B2						
Three-Position, Four-Circuit	A1			Specify§	1/2	N2S1125U	N2SC1125U
	A2				3/4	N2S2125U	N2SC2125U
	B1						
	B2						



Maintained pushbutton with pilot light control station.

Pilot Lights† – Transformer Type

No. Units	Diagram	Volts	Enclosure with Pilot Lights†			
			1/2" Hubs		3/4" Hubs	
			Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
1		120	N2S1131U-†	N2SC1131U-†	N2S2131U-†	N2SC2131U-†
		240	N2S1132U-†	N2SC1132U-†	N2S2132U-†	N2SC2132U-†
2		120	N2S1231U-†	N2SC1231U-†	N2S2231U-†	N2SC2231U-†
		240	N2S1232U-†	N2SC1232U-†	N2S2232U-†	N2SC2232U-†
3		120	N2S1331U-†	N2SC1331U-†	N2S2331U-†	N2SC2331U-†
		240	N2S1332U-†	N2SC1332U-†	N2S2332U-†	N2SC2332U-†
4		120	N2S1431U-†	N2SC1431U-†	N2S2431U-†	N2SC2431U-†
		240	N2S1432U-†	N2SC1432U-†	N2S2432U-†	N2SC2432U-†

* Replacement switch for selector switches is Cat. No. ESWP126.

† Pilot lights are transformer type except those rated 120 volts.

‡ Specify lens color for each pilot light. As an example, N2S1231U with one red and one green would be ordered as N2S1231U-J1-LED-J3-LED

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

§ Standard markings available on indicating plates:

Marking		
<i>Push Buttons:</i>	REVERSE	OPEN-CLOSE
START	OPEN	UP-DOWN
STOP	CLOSE	ON-OFF
ON	UP	IN-OUT
OFF	DOWN	RAISE-LOWER
RUN	IN	START-STOP
JOG	OUT	<i>Selector Switches –</i>
TRIP	RAISE	<i>Three-Position</i>
RESET	LOWER	RUN-OFF-JOG
TEST	<i>Selector Switches –</i>	<i>Two-Position:</i>
LIGHT ON	RUN-JOG	HAND-OFF-AUTO
HAND	HAND-AUTO	FOR-OFF-REV
AUTOMATIC	FOR-REV	FAST-OFF-SLOW
EMERGENCY	FAST-SLOW	1-OFF-2
FORWARD		OPEN-OFF-CLOSE
		UP-OFF-DOWN

N
Corrosion
Resistant
Products

N

N2SU/N2SCU Control Stations
600VAC Heavy Duty

Cl, I, Div. 2, Groups B,C,D
Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,7BCD (Div. 2),12

Cl, II, Div. 2,
Groups F,G
Cl, I, Zones 1
and 2, Ex
de II B & H₂
IP66

Control Stations

GHG 43 Series

UL/cUL listed
Cl. I, Div. 2, Groups A, B, C, D
Cl. I, Zones 1 and 2,
(A)Ex de IIB + H₂ T6
Cl. II, Div. 1, Groups E, F, G (cUL)

PTB ATEX CERTIFIED 3117
CENELEC EEx de IIC, T6,
Zones 1 and 2
Eex de IIC, T6 Zones 21 and 22
IP 66, NEMA 4X

N

GHG 43 Series

Applications

Control stations are used as a remote means of:

- Motor control
- Visual indication of equipment performance
- On-off control of circuits
- Circuit selection
- In areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- For installation at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist

Features:

- NEMA 4X, IP 66 enclosure with formed-in-place gasket.
- Available with all operators: indicator lights, potentiometers, control switches, terminal blocks and meters.
- Base-mounted contact blocks
- Easy change-out components snap in place on DIN rail
- Enclosure meets UL 94-VO. Also available in anti-static Ex e materials
- Inserts for mounting DIN rails
- 2 top and bottom entries for conduit or cable glands
- Suitable for universal mounting plates on pipes, conduit, wall or channels
- Mounting dimensions data molded on back
- Captive, corrosion-resistant cover screws
- Built-in mounting slots for wall installation
- Available in stainless steel

Certifications and Compliances:

UL/cUL Listed
Class I, Div. 2, Groups A,B,C,D
Class I, Zones 1 and 2, Ex de IIB + H₂, T6
AEx de IIB + H₂, T6
Type 3, 4, 4X; IP66

CENELEC-PTB Certified to ATEX 3117
EEx de IIC, T6, Zones 1 and 2, IP66

Note: Cooper Crouse-Hinds GHG43 Series control stations are now available with 316L stainless steel enclosures, making them ideal for corrosive and adverse locations - especially offshore platform applications. To order, simply add suffix "S680" to catalog



N
Corrosion
Resistant Products

Size 4 Enclosure

Size 2 Enclosure

Type

Size

1. Mounting Area

2. Mounting Area

GHG 43



Code A B C D E F

Code A B C D E F

Size 2/GHG 43

Push-Button DRT

Code A

B

C

D

DRT

Codes see page 604

Double Push-Button

Code A

B

C

D

E

DDT

Codes see page 604

Key Operated Push-Button

Code A

B

C

SLT

Codes see page 604

Mushroom-Head Push-Button

Code A

B

C

D

E

F

SGT

Codes see page 605

Signal Lamp

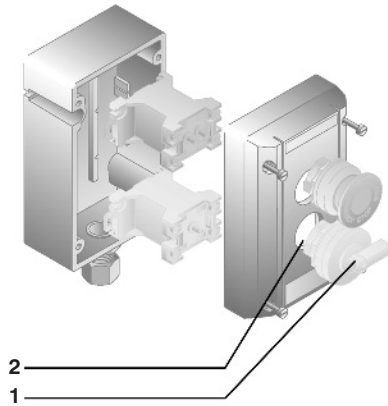
Code A

B

C

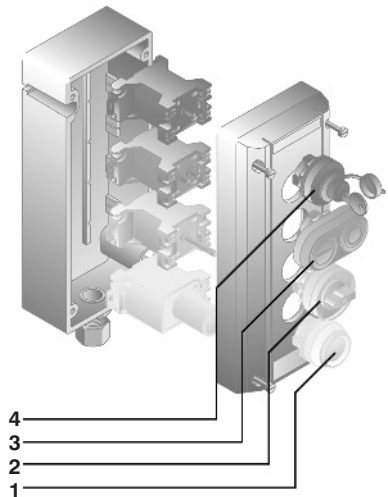
SIL

Codes see page 605



Mounting Area *

Size 4/GHG 43



Mounting Area *

* Unoccupied spaces must be filled in with KLM for correct positioning of devices.

‡ For a GHG43 control station with 316L stainless steel enclosure, add suffix "S680" to catalog number

Control Stations

How to build a GHG 43 Series Catalog Number‡

3. Mounting Area

Code	A	B	C	D	E	F

Potentiometer



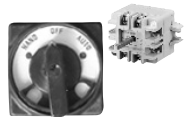
Measuring Instrument



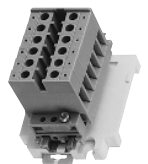
Switch



Control Switch Ex 23 10A



Terminals and cover blanking plug



Code A

Code B

P	O	T	
---	---	---	--

Codes see page 606

Code A

Code B

Code C

M	7	2		
---	---	---	--	--

Codes see page 607
Requires 2 spaces

Code A

Code B

Code C

Code D

S	C	T			
---	---	---	--	--	--

Codes see page 608

Code A

Code B

Code C

Code D

Code E

Code F

E	X	2	3			
---	---	---	---	--	--	--

Codes see pages 608, 609
Requires 2 spaces

Code A

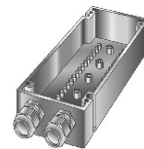
Code B

K	L	M	
---	---	---	--

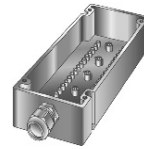
Codes see page 606

4. Mounting Area

Code	A	B	C	D	E	F



Two entries



One entry

Cable Entries

NPT

0	0
---	---

No entries

1	2
---	---

2 × ½" Myers Hub,
STM 1 Zinc Gland plate

1	3
---	---

2 × ¾" Myers Hub,
STM 2 Zinc Gland plate

2	2
---	---

2 × ½" Myers Hub,
SSTM 1 Stainless steel
Gland plate

2	3
---	---

2 × ¾" Myers Hub,
SSTM 2 Stainless steel
Gland plate

2	6
---	---

1 × ¾" Myers Hub,
STM2, Zone 1
Gland plate

3	0
---	---

1 × ½" Myers Hub,
STM1, Zone 1
Gland plate

3	1
---	---

1 × ½" Myers Hub,
SSTM1 Stainless st.
Gland plate

3	2
---	---

1 × ¾" Myers Hub,
SSTM2 Stainless st.
Gland plate

Cable Entries

Top	Bottom

Metric

0	0
---	---

No entries

0	1
---	---

2 × M25 Plastic
Cable gland M25
Blanking plug

0	2
---	---

2 × M20
Threaded entries
Gland plate

0	3
---	---

2 × M25
Threaded entries
Gland plate

0	4
---	---

1 × M32 Plastic
Cable gland M32

2	7
---	---

1 × M25
Threaded Entry,
Blanking plug and
Gland plate

2	9
---	---

2 × M25
Threaded Entry,
1 blanking plug and
Gland plate

3	3
---	---

1 × M20
Threaded entry
Blanking plug and
Gland plate

‡ For a GHG43 series control station with 316L stainless steel enclosure, add suffix S680 to catalog number

N Push Buttons Technical Data

Contact Blocks

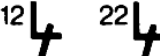
- Used for logic controls in hazardous areas
- Single or double units
- Used with all operators
- Base mounting

Contact Block	
Type of Protection	Ex de IIC T6
Certificate of Conformity	PTB No. Ex-87.B.1007U
Approvals	PTB, UL, cUL
Rated Voltage	Up to 400V
Rated Current	NEC/CEC 10A IEC 16 A
Terminal Wiring	2 × 2.5mm ² / 14AWG
Mechanical and Electrical Life	> 10 ⁵ Operations

★Note: See page 609 for explanation of contact symbols.

Push-Button DRT

D R T O

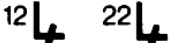
Code	A				B		C		D	
Contact System										
Code B	13				14		15			
Inscription	0	I	II	STOP	START	SPECIAL-TEXT ON ORDER				
Code C	02	03	04	06	07	99				

Lockout page 611

Code D (leave blank if no lockout required)

Double Push-Button DDTO

D D T O

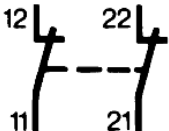
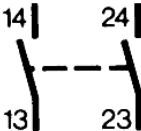
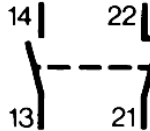
Code	A			B		C		D		E	
Contact System											
Code B	43			44		45					
Inscription	0	I	II	STOP	START	SPECIAL-TEXT ON ORDER					
Code C, D											
Left/Right	02	03	04	06	07	99					

Lockout page 611

Code E (leave blank if no lockout required)

Key-Operated Push-Button SLT

S L T O

Code	A	B	C							
Contact System										
Code B		23	24	25						
Push-Button	Key									
Not Depressed	Lockable	Yes	Yes	Yes	No	No	Yes			
	Key Removable	Yes	Yes	No	No	Yes	Yes			
Depressed	Lockable	Yes	No	Yes	Yes	Auto	Yes			
	Key Removable	No	No	Yes	Yes	Yes	Yes			
Code C		1	2	3	4	5	6			



N Corrosion
Resistant Products



Mushroom-Head Push-Button SGT

	S G T					
Code	A	B	C	D	E	F
Contact System	12 22 11 21	14 24 13 23	14 24 13 23	14 24 13 23	14 22 13 21	14 22 13 21
Code B		53		54		55
Color of Push-Button	Red		Yellow		Black Actuator	
Code C	1		2		3	
Function	Spring Return		Maintained		Key Release	
Code D	1		2		3	
Inscription	STOP		START		EMERGENCY STOP	
Code E	06		07		11	

Lockout page 611

Code F (leave blank if no lockout required)

Signal Lamp

Signal Lamp

- Used for positive feedback indication
- High intensity with special reflector and optical lens
- Accommodates most input voltages
- Base Mounting



	Lamp
Type of Protection	Ex de IIC T6
Certificate of Conformity	PTB No. Ex-88.B.2106U
Approvals	PTB, UL, cUL
Lamp Life	> 100,000 Hours (11.5 Years)
Rated Voltages	Up to 240VAC, 50 / 60 Hz Up to 110VDC
Rated Current	Max. 15 mA
Power Consumption	< 1.2W
Terminal Wiring	2 × 2.5mm² / 14AWG
Colors	Red, Green, Yellow, Clear & Blue

Signal Lamp SIL

	S I L		
Code	A	B	C
Colored Lens Cover	White	Yellow	Red
Code B	1	2	3
Voltage	20-250VAC/DC	10-33VAC/DC	
Code C	01	31	

1 pkg white,
yellow, red,
green

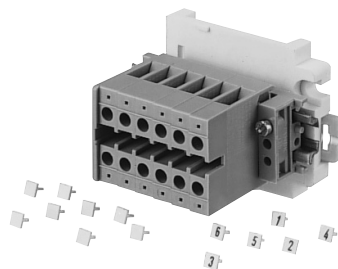
Terminal Blocks and Potentiometers

Technical Data

Terminal Blocks

Terminals

- Terminal block for easy field connections
- Base mounting



Type of Protection	Ex e II
Certificate of Conformity	PTB No. Ex-88.B.3112U
Rated Voltages	Up to 400V
Rated Current	23A
Conductor Size	4mm ² / 12AWG

Terminals and Cover Plugs KLM



Code	A	B	
	6 Terminals 2 × 4 mm ²		Undrilled Cover (No Terminals)
Code B	61		00

Potentiometers

Potentiometers

- Used to adjust resistance to vary motor speed or light levels
- Scale 0 to 100%
- Base Mounting

Type of Protection	Ex de IIC T6
Certificate of Conformity	PTB No. Ex-87.B.1007U
Approvals	PTB, UL, cUL
Rated Voltages	>250V
Power Consumption	1.0W
Resistance	100-10,000Ω
Angle of Rotation	270°
Scale	0-100%
Connection Terminals	2 × 2.5mm ² / 14AWG

Potentiometer POT



Code	A	B		
Power Consumption	1W			
Resistance Ω	1,000	2,200	4,700	10,000
Code B	4	7	5	6



Ammeters

Technical Data

Ammeters

- Used to measure motor current draw for efficiencies and maintenance
- Slide in scales to accommodate any amperage range
- Red indicator for quick visual indication to compare set points and actual values



Type of Protection	Ex e II T6
Certificate of Conformity	PTB No. Ex-87.B.2016U
Approvals	PTB, UL, cUL
Movement	Moving iron (core)
Accuracy	2.5% of range (class 2.5)
Measuring Range	0-16A direct, C.T. n/1 A
Operating Position	Vertical
Scale	Interchangeable for C.T. n/1 A
Zero Adjustment	At instrument
Terminal Wiring	2 × 2.5 mm ² / 14 AWG
Rated Current Marking	Red indicator

Measuring Instrument

AM 72*

M 7 2

B

C

Code

A

B

C

Movement	Direct	n/1 A	0 - 2- mA	4-20 mA
Code B	1	2	5	6

Movements 0-20 mA and 4-20 mA are only available with 0 - 100/120% scale

Direct Measurement		Interchangeable Scale for C.T. n/1A			
Code C	Scale	Code C	Scale	Code C	Scale
02	0 - 1/1.5 A	02	0 - 1/1.5 A	09	0 - 30/45 A
03	0 - 2.5/3.75 A	03	0 - 2.5/3.75 A	10	0 - 40/60 A
04	0 - 5/7.5 A	04	0 - 5/7.5 A	11	0 - 50/75 A
05	0 - 10/15 A	05	0 - 10/15 A	12	0 - 60/90 A
07	0 - 16/24 A	06	0 - 15/22.5 A	13	0 - 75/112.5 A
		08	0 - 20/30 A	14	0 - 100/150 A
				15	0 - 150/225 A
				16	0 - 200/300 A
				17	0 - 250/375 A
				18	0 - 300/450 A
				19	0 - 400/600 A
				20	0 - 500/750 A
				21	0 - 600/900 A
				22	0 - 100/150 A

*Requires 2 spaces.

N Rotary Switches Technical Data

Control Switches

- Used for selectable operations (i.e. Hand-Off-Auto)
- 2 Independent contacts
- Available in any contact configuration
- Spring return or maintained position
- Available with lockout positions



	SCT	Ex 23
Type of Protection	Ex de IIC T6	Ex de IIC T6
Certificate of Conformity	Ex.87.B.1007U	PTB no. Ex-88.B.1047U
Approvals	PTB, UL, cUL	PTB, UL, cUL
Rated Voltage	400 V	Up to 500 V
Rated Current	NEC 10 A	NEC 10 A
	IEC 16 A	IEC 16 A
Terminal Wiring	2 × 2.5mm ² / 14 AWG	2 × 2.5mm ² / 14 AWG
Mechanical Life	>10 ⁵ Operations	>10 ⁵ Operations
Electrical Life	>10 ⁵ Operations	>10 ⁵ Operations
Switching Capacity	AC II: 20V/6A	AC I: 500G/10A
	400V/4A	AC II: 230V/6A
	DC II: 24V/6A	500V/6A
	60V/0.8A	DC II: 24V/6A
	110V/.5A	48V/4A
	220V/.2A	60V/0.8A
		110V/0.5A
		220V/0.4A

Switch SCT



Code

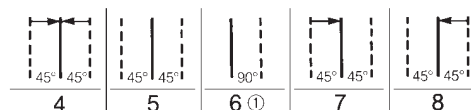
A

B

C

D

Switch Mechanism



Code B Code C	Inscription	Code C	Inscription
01	0	07	I 0 II
03	STOP START	13	LOCAL REMOTE AUTO
04	HAND AUTO	14	STOP 0 START
06	REMOTE LOCAL	15	HAND 0 AUTO
29	OFF ON	99	Special – text to be given on order

Contact System



Code D

1

2

3

4

5

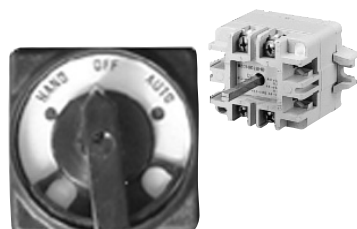
6

Control Switch Ex 23★ (Requires 2 spaces in cover)



Code Code B	A Inscription	B	C	D	E	F
01	0	I				
03	STOP START					
04	HAND AUTO					
06	remote local					
07	I 0 II					
13	LOCAL REMOTE			AUTO		
14	STOP 0 START					
23	OFF 0 ON					
24	HAND OFF AUTO					
27	START STOP					
29	OFF ON					
32	ON OFF					
99	Special – text to be given on order					

Same as SCT above except up to 4 independent contacts

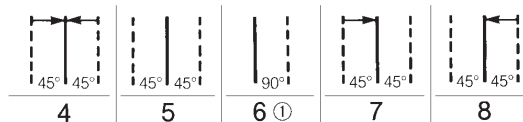


★ Requires 2 spaces.

Code C	Contact System
00	
01	
02	
03	
05	
07	

Code C	Contact System
09	
10	
12	
13	
14	
15	

Switched
Mechanism
Code D

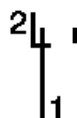


Padlocking Facility
Code E



CONTACT CONFIGURATIONS

Normally Closed



Normally Open

Normally Closed Extended Over 2 Positions



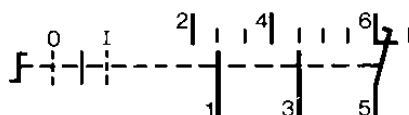
Normally Open Early Make/Late Break

Change-Over Break Before Make



Change-Over Make Before Break

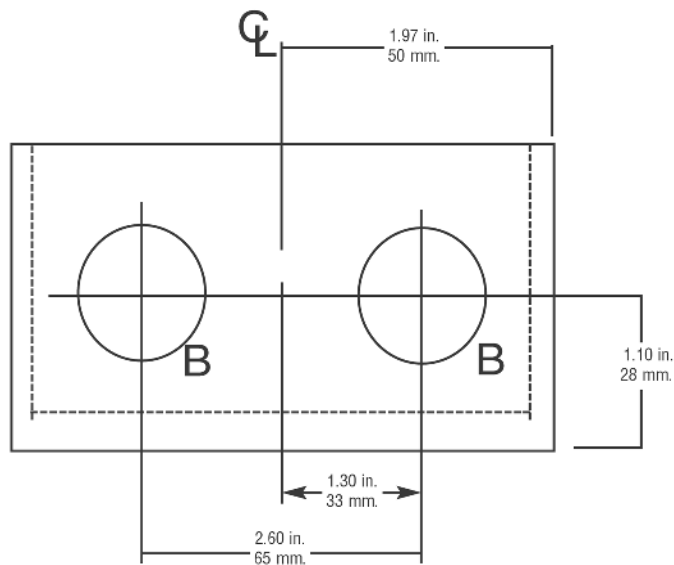
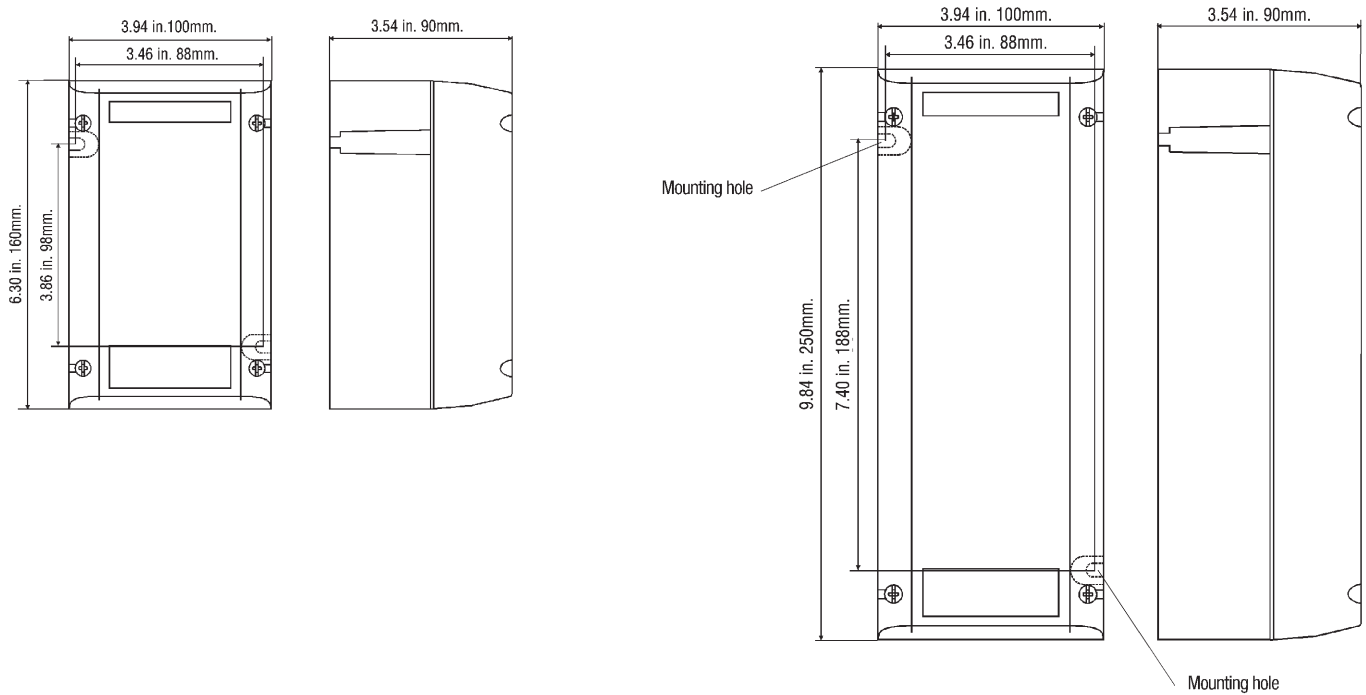
Example of Switch Type 10



This example is the switch type 10 *Stop-Run-Stop*. The switch has 3 positions – the normal position is center and can be switched left or right. An arrow (→←) indicates spring return. (See codes for switch mechanism). Contacts 1-2 only close in the *Stop* position. Contacts 3-4 close only in the *Start* position. Contacts 5-6 are normally closed and remain closed when switched to the *Start* position and open when switched to the *Stop* position.

N Dimensions

Dimensions:



End View of Back Box

Lockouts for Control Stations

PUSH-BUTTON – DRTO



X-Shroud Cover For Push-Button Y-Lockout



Z-Padlocking Fire Alarm Cover For Push-Button

DOUBLE PUSH-BUTTON – DDTO



X-Padlocking Cover For Double Push-Button Without Hole



Z-Padlocking Cover For Double Push-Button With Hole

EMERGENCY STOPS – SGT



X-Padlocking Cover For Emergency Stop Push-Button



Z-Padlocking Cover For Emergency Stop Push-Button With Bolt & Chain

Marking Guide For Push-Buttons

Special Text

Marking Required	Standard Abbreviation	Actual Marking on Disc
Acknowledge	AK	ACK
Alarm	AM	ALARM
Automatic	AU	AUTO
Close	CL	CLOSE
Down	DN	DOWN
Fast	FS	FAST
Forward	FW	FWD
Hand	HN	HAND
High	HI	HIGH
In	IN	IN
Jog	JG	JOG
Local	LC	LOCAL
Lower	LO	LOWER
Maintain	MT	MAINT
Manual	MN	MANUAL
Normal	NR	NORMAL
Off	OF	OFF
On	ON	ON
Open	OP	OPEN
Out	OT	OUT
Raise	RA	RAISE
Remote	RM	REMOTE
Reset	RS	RESET
Reverse	RV	REV
Run	RN	RUN
Slow	SL	SLOW
Test	TT	TEST
Trip	TP	TRIP
Up	UP	UP

N2S and N2SC Factory Sealed Corrosion-Resistant Control Stations 600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

Application:

N2S and N2SC pushbutton stations, selector switches and pilot lights are suitable for use:

- in Class I, Groups B, C, D; Division 2 hazardous areas where flammable vapors or gases may be present due to accidental or abnormal operation
- in damp, wet, or corrosive locations
- indoors or outdoors in Division 2 areas of petroleum refineries, chemical plants and other process industry facilities where similar hazards exist

N2S and N2SC pushbutton stations and selector switches are used:

- in conjunction with magnetic starters or contactors for remote control of motors

N2S and N2SC pilot lights are used:

- to visually indicate at a remote location that the desired function is being performed

Optional maintained stop pushbutton(s) are used: As emergency or normal stop button(s) in motor control circuits for positive shutdown.

Features:

- Pushbutton stations, pilot lights, and selector switch devices are factory sealed. External seals are not required.
- Enclosures are made of *Krydon*® fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat and sunlight.
- Optional maintained stop feature operates by depressing the mushroom head pushbutton. Pushbutton must be manually pulled before start button can be actuated.
- Lockout is standard on selector switch devices.
- Factory installed dead end (N2S) or through feed (N2SC) hubs – ½", ¾", and 1" sizes.
- Indicating plates are available with a choice of 40 standard markings.
- Grounding plate included with each hub.

Electrical Rating Ranges:

- Pushbutton stations and selector switches – heavy duty 600 VAC maximum
- Pilot lights – 120 to 600 VAC

Certifications and Compliances:

- NEC: Class I, Division 2, Groups B, C & D
- NEMA: 3, 4X, 7BCD (Division 2) and 12
- UL Standard: 698 (Division 2)
- CSA Standard: C22.2 Nos. 14 & 30



Options:

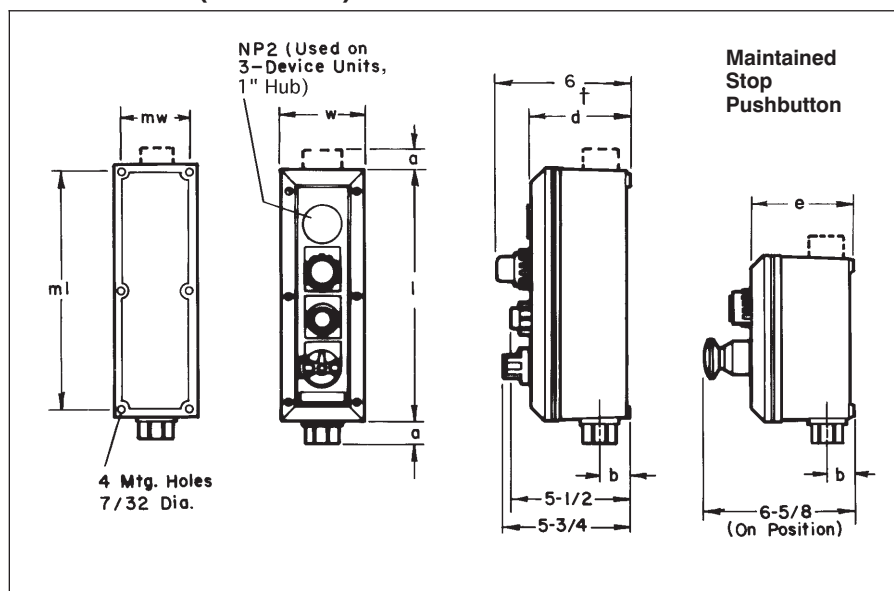
The following special options are available from factory by adding suffix to Cat. No.

Description

Padlock attachments for all pushbuttons. For "START-STOP" stations, only "STOP" button provided with lockout S708
Three position selector switches with modified operation:
Momentary contact clockwise operation, spring return to center, maintained contact counterclockwise operation S634
Momentary contact counterclockwise operation, spring return to center, maintained contact clockwise operation S635
Control station with maintained stop pushbutton (requires NCD type enclosure):
One maintained stop pushbutton MSR1
Two maintained stop pushbuttons MSR2
Maintained stop pushbuttons are installed at bottom position(s) of control station unless otherwise specified.
LED pilot lights in place of standard incandescent pilot lamps LED

Suffix to be
Added to
Encl. Cat. #

Dimensions (in inches)



Dimensions are approximate, not for construction purposes.

N2S(C) Body Style	Outside Dimensions		(NCS)*	(NCD)*	Mounting Dimensions		½" & ¾" Hubs		1" Hubs	
	l	w			ml	mw	a	b	a	b
1 or 2 devices	7¼	3⅜	4¾	5¾	6¾	2⅝	1⅞	1⅞	1¼	1⅞
3 or 4 devices	11¾	3⅜	4¾	5¾	10¾	2⅝	1⅞	1⅞	1¼	1⅞

† Use dimension "e" for control station with 1" hub or maintained stop pushbutton.

* NCS box is supplied with units using ½" and ¾" hubs. NCD box is supplied with units using 1" hubs or MSR option.

‡ NCD 4 device box used with 1" hubs or MSR option.

N2S and N2SC Factory Sealed Corrosion-Resistant Control Stations 600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

N

Pilot Lights†*

			Enclosure With Pilot Lights					
			1/2" Hubs		3/4" Hubs		1" Hubs	
No. Units	Diagram	Volts	Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
1		120	N2S1131-†	N2SC1131-†	N2S2131-†	N2SC2131-†	N2S3131-†	N2SC3131-†
		240	N2S1132-†	N2SC1132-†	N2S2132-†	N2SC2132-†	N2S3132-†	N2SC3132-†
		480	N2S1134-†	N2SC1134-†	N2S2134-†	N2SC2134-†	N2S3134-†	N2SC3134-†
		600	N2S1135-†	N2SC1135-†	N2S2135-†	N2SC2135-†	N2S3135-†	N2SC3135-†
2		120	N2S1231-†	N2SC1231-†	N2S2231-†	N2SC2231-†	N2S3231-†	N2SC3231-†
		240	N2S1232-†	N2SC1232-†	N2S2232-†	N2SC2232-†	N2S3232-†	N2SC3232-†
		480	N2S1234-†	N2SC1234-†	N2S2234-†	N2SC2234-†	N2S3234-†	N2SC3234-†
		600	N2S1235-†	N2SC1235-†	N2S2235-†	N2SC2235-†	N2S3235-†	N2SC3235-†
3		120	N2S1331-†	N2SC1331-†	N2S2331-†	N2SC2331-†	N2S3331-†	N2SC3331-†
		240	N2S1332-†	N2SC1332-†	N2S2332-†	N2SC2332-†	N2S3332-†	N2SC3332-†
		480	N2S1334-†	N2SC1334-†	N2S2334-†	N2SC2334-†	N2S3334-†	N2SC3334-†
		600	N2S1335-†	N2SC1335-†	N2S2335-†	N2SC2335-†	N2S3335-†	N2SC3335-†
4		120	N2S1431-†	N2SC1431-†	N2S2431-†	N2SC2431-†	N2S3431-†	N2SC3431-†
		240	N2S1432-†	N2SC1432-†	N2S2432-†	N2SC2432-†	N2S3432-†	N2SC3432-†
		480	N2S1434-†	N2SC1434-†	N2S2434-†	N2SC2434-†	N2S3434-†	N2SC3434-†
		600	N2S1435-†	N2SC1435-†	N2S2435-†	N2SC2435-†	N2S3435-†	N2SC3435-†

Selector Switches

Switch Position				Marking§ Unless Otherwise Specified	Enclosure With Selector Switch		
Style	No. 1	No. 2	No. 3		Hub Size	Dead End Cat. #	Through Feed Cat. #
Two-Position, Two-Circuit	A1			START-STOP (or Specify)	1/2	N2S1121	N2SC1121
	A2				3/4	N2S2121	N2SC2121
					1	N2S3121	N2SC3121
Two-Position, Four-Circuit	A1			START-STOP (or Specify§)	1/2	N2S1122	N2SC1122
	A2				3/4	N2S2122	N2SC2122
	B1				1	N2S3122	N2SC3122
Three-Position, Two-Circuit	A1			Specify	1/2	N2S1123	N2SC1123
	A2				3/4	N2S2123	N2SC2123
					1	N2S3123	N2SC3123
Three-Position, Four-Circuit	A1			Specify§	1/2	N2S1124	N2SC1124
	A2				3/4	N2S2124	N2SC2124
	B2				1	N2S3124	N2SC3124
Three-Position, Four-Circuit	A1			Specify§	1/2	N2S1125	N2SC1125
	A2				3/4	N2S2125	N2SC2125
	B1				1	N2S3125	N2SC3125

Pushbutton Stations – Momentary Contact

		Marking§ Unless Otherwise Specified	Enclosure With Pushbuttons		
No. Units	Contact Symbol		Hub Size	Dead End Cat. #	Through Feed Cat. #
1		START (or Specify)	1/2	N2S1110	N2SC1110
			3/4	N2S2110	N2SC2110
			1	N2S3110	N2SC3110
2		START-STOP (or Specify)	1/2	N2S1210	N2SC1210
			3/4	N2S2210	N2SC2210
			1	N2S3210	N2SC3210
3		Specify	1/2	N2S1310	N2SC1310
			3/4	N2S2310	N2SC2310
			1	N2S3310	N2SC3310
4		Specify	1/2	N2S1410	N2SC1410
			3/4	N2S2410	N2SC2410
			1	N2S3410	N2SC3410

* §, † See page 614 for footnotes.

N2S and N2SC Factory Sealed Corrosion-Resistant Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

Combination Control Stations

Pilot Lights*	Push- buttons	Diagram	Markings§	Enclosure With Pushbuttons and Pilot Lights						
				Hub Size	Volts	Dead End Cat. #	Through Feed Cat. #	Volts	Dead End Cat. #	Through Feed Cat. #
1	1		Specify	1/2	120	N2S12411-†	N2SC12411-†	480	N2S12414-†	N2SC12414-†
				3/4		N2S22411-†	N2SC22411-†		N2S22414-†	N2SC22414-†
				1		N2S32411-†	N2SC32411-†		N2S32414-†	N2SC32414-†
				1/2	240	N2S12412-†	N2SC12412-†	600	N2S12415-†	N2SC12415-†
				3/4		N2S22412-†	N2SC22412-†		N2S22415-†	N2SC22415-†
				1		N2S32412-†	N2SC32412-†		N2S32415-†	N2SC32415-†
1	2		Specify	1/2	120	N2S13421-†	N2SC13421-†	480	N2S13424-†	N2SC13424-†
				3/4		N2S23421-†	N2SC23421-†		N2S23424-†	N2SC23424-†
				1		N2S33421-†	N2SC33421-†		N2S33424-†	N2SC33424-†
				1/2	240	N2S13422-†	N2SC13422-†	600	N2S13425-†	N2SC13425-†
				3/4		N2S23422-†	N2SC23422-†		N2S23425-†	N2SC23425-†
				1		N2S33422-†	N2SC33422-†		N2S33425-†	N2SC33425-†
2	1		Specify	1/2	120	N2S13411-†	N2SC13411-†	480	N2S13414-†	N2SC13414-†
				3/4		N2S23411-†	N2SC23411-†		N2S23414-†	N2SC23414-†
				1		N2S33411-†	N2SC33411-†		N2S33414-†	N2SC33414-†
				1/2	240	N2S13412-†	N2SC13412-†	600	N2S13415-†	N2SC13415-†
				3/4		N2S23412-†	N2SC23412-†		N2S23415-†	N2SC23415-†
				1		N2S33412-†	N2SC33412-†		N2S33415-†	N2SC33415-†
2	2		Specify	1/2	120	N2S14421-†	N2SC14421-†	480	N2S14424-†	N2SC14424-†
				3/4		N2S24421-†	N2SC24421-†		N2S24424-†	N2SC24424-†
				1		N2S34421-†	N2SC34421-†		N2S34424-†	N2SC34424-†
				1/2	240	N2S14422-†	N2SC14422-†	600	N2S14425-†	N2SC14425-†
				3/4		N2S24422-†	N2SC24422-†		N2S24425-†	N2SC24425-†
				1		N2S34422-†	N2SC34422-†		N2S34425-†	N2SC34425-†

Pilot Lights*	Push-buttons	Selector Switches Position No.			Markings§	Enclosure With Pilot Light, Pushbuttons and Selector Switch							
		1	2	3		Hub Size	Volts	Dead End Cat. #	Through Feed Cat. #	Volts	Dead End Cat. #	Through Feed Cat. #	
		Two-Position, Two-Circuit A1  A2 			Specify	1/2	120	N2S145211-†	N2SC145211-†	480	N2S145214-†	N2SC145214-†	
						3/4		N2S245211-†	N2SC245211-†		N2S245214-†	N2SC245214-†	
						1		N2S345211-†	N2SC345211-†		N2S345214-†	N2SC345214-†	
						1/2	240	N2S145212-†	N2SC145212-†	600	N2S145215-†	N2SC145215-†	
						3/4		N2S245212-†	N2SC245212-†		N2S245215-†	N2SC245215-†	
						1		N2S345212-†	N2SC345212-†		N2S345215-†	N2SC345215-†	
		Three-Position, Two-Circuit A1  A2 			Specify	1/2	120	N2S145231-†	N2SC145231-†	480	N2S145234-†	N2SC145234-†	
						3/4		N2S245231-†	N2SC245231-†		N2S245234-†	N2SC245234-†	
						1		N2S345231-†	N2SC345231-†		N2S345234-†	N2SC345234-†	
						1/2	240	N2S145232-†	N2SC145232-†	600	N2S145235-†	N2SC145235-†	
						3/4		N2S245232-†	N2SC245232-†		N2S245235-†	N2SC245235-†	
						1		N2S345232-†	N2SC345232-†		N2S345235-†	N2SC345235-†	

† Pilot lights are transformer type except those rated 120 volts. Lamp type is 120MB, 120 volts, 3 watts.

‡ Specify lens color for each pilot light. As an example, N2S1231 with one red and one green would be ordered as N2S1231-J1-J3.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

* LED pilot lights are available, add suffix LED after last color symbol. See Options on Page 612.

§ Standard markings available on indicating plates:

Marking

Pushbuttons:

START
STOP
ON
OFF
RUN
JOG
TRIP
RESET
TEST
LIGHT ON
HAND
AUTOMATIC
EMERGENCY
FORWARD

REVERSE

OPEN
CLOSE
UP
DOWN
IN
OUT
RAISE
LOWER
Selector Switches – Two-Position:
HAND-AUTO
FOR-REV
FAST-SLOW

OPEN-CLOSE

UP-DOWN
ON-OFF
IN-OUT
RAISE-LOWER
START-STOP
Selector Switches – Three-Position:
RUN-OFF-JOG
HAND-OFF-AUTO
FOR-OFF-REV
FAST-OFF-SLOW
1-OFF-2
OPEN-OFF-CLOSE
UP-OFF-DOWN

N2S/N2SC Factory Sealed Corrosion-Resistant Control Stations

600VAC Heavy Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3,4X,7BCD (Div. 2),12
Watertight
Weatherproof
Dusttight

N

Custom-Built Factory Assembled Control Stations

To order your custom-built factory assembled control station, select the enclosure required and add the desired devices from listings below.

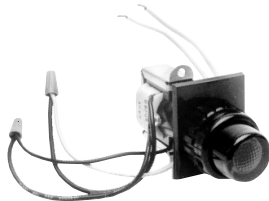
Enclosures (NCD or NCDC enclosures must be used with MSR1 or MSR2)

No. of Devices	Without Hubs Cat. #	With One Hub 1/2" Cat. #	With Two Hubs 1/2" Cat. #	With One Hub 3/4" Cat. #	With Two Hubs 3/4" Cat. #	With One Hub 1" Cat. #	With Two Hubs 1" Cat. #
1	NCD01	NCD11	NCDC11	NCD21	NCDC21	NCD31	NCDC31
2	NCD02	NCD12	NCDC12	NCD22	NCDC22	NCD32	NCDC32
3	NCD03	NCD13	NCDC13	NCD23	NCDC23	NCD33	NCDC33
4	NCD04	NCD14	NCDC14	NCD24	NCDC24	NCD34	NCDC34

No. of Devices	Without Hubs Cat. #	With One Hub (3/4") Cat. #	With Two Hubs (3/4") Cat. #	With One Hub (1/2") Cat. #	With Two Hubs (1/2") Cat. #
1	NCS01	NCS21	NCSC21	NCS11	NCSC11
2	NCS02	NCS22	NCSC22	NCS12	NCSC12
3	NCS03	NCS23	NCSC23	NCS13	NCSC13
4	NCS04	NCS24	NCSC24	NCS14	NCSC14

Pilot Lights†** Transformer Type

Volts	Cat. #
120	N2PL10-‡
240	N2PL20-‡
480	N2PL40-‡
600	N2PL50-‡



Pilot lights to be used in N2SU Series:

Red	N2PLU10-J1-LED
Green	N2PLU10-J3-LED
Amber	N2PLU10-J6-LED
Clear	N2PLU10-J10-LED
Blue	N2PLU10-J11-LED

Custom-built factory assembled control stations may thus be ordered as follows:

Requirement:

3-device control station on Krydon® material enclosure with 3/4" through feed hubs, with 1 pilot light with green jewel, rated at 120V; 1 three position, two circuit selector switch marked HAND-OFF-AUTO; and 1 green single circuit pushbutton marked START.

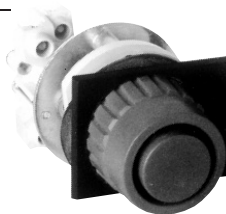
ORDER:

NCDC23FA
N2PL10-J3
N2SW11311-HAND-OFF-AUTO
N2PS1111G-START

Pilot light jewel symbol, pushbutton and selector switch plate markings are selected from footnote tables. Suffix FA indicates factory assembled. Note that order of assembly of control stations should be listed in desired mounting order, reading from top to bottom of enclosure.

Pushbuttons – Momentary Contact

Color of Operator	1 Circuit		2 Circuit	
	Contact Symbol	Universal Cat. #	Contact Symbol	Universal Cat. #
Natural		N2PS1111-\$		N2PS1211-\$
Red		N2PS1111R-\$		N2PS1211R-\$
Green		N2PS1111G-\$		N2PS1211G-\$
Red Mushroom Head		N2PM1111-5111\$		



Closure Plug

Cat. #
NP2



Selector Switches

Style	Position 1	Position 2	Position 3	Cat. #
Two Position Two Circuit	A1 A2			N2SW11211-\$
Two Position Four Circuit	A1 A2 B1 B2			N2SW12221-\$
Three Position Two Circuit	A1 A2			N2SW11311-\$
Three Position Four Circuit	A1 A2 B1 B2			N2SW12321-\$
Three Position Four Circuit	A1 A2 B1 B2			N2SW12322-\$



** LED pilots are available. Add suffix LED after last color symbol. See Options on page 612

§ See page 614 for footnotes.

† Pilot lights are transformer type except those rated 120 volts. Lamp type is 120MB, 120V, 3W.

‡ Specify lens color for each pilot light using symbols below.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

N2FA and N2FAC Fire Alarm Stations

Factory Sealed
Corrosion-Resistant

Cl. I, Div. 2, Groups B,C,D
NEMA 3,7BCD (Div. 2),12
Raintight
Wet Locations

Application:

N2FA and N2FAC fire alarm stations are used:

- as break-glass fire alarm stations
- in conjunction with audible and/or visible signaling devices to alert personnel of a fire hazard
- in Class I, Division 2, Groups B, C, D hazardous areas where flammable vapors or gases may be present due to an accident or abnormal operation
- in damp, wet or corrosive locations
- indoors or outdoors in Division 2 areas of petroleum refineries, chemical plants and other process industry facilities where similar hazards exist

Features:

- Factory sealed. External seals are not required.
- Enclosures are made of *Krydon*® fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat and sunlight.
- Highly visible molded-in red color for quick identification.
- Break-glass rod is attached to station with a chain for ready access during an emergency.
- Factory installed dead end (N2FA) or through feed (N2FAC) hubs – ½", ¾" and 1" sizes.

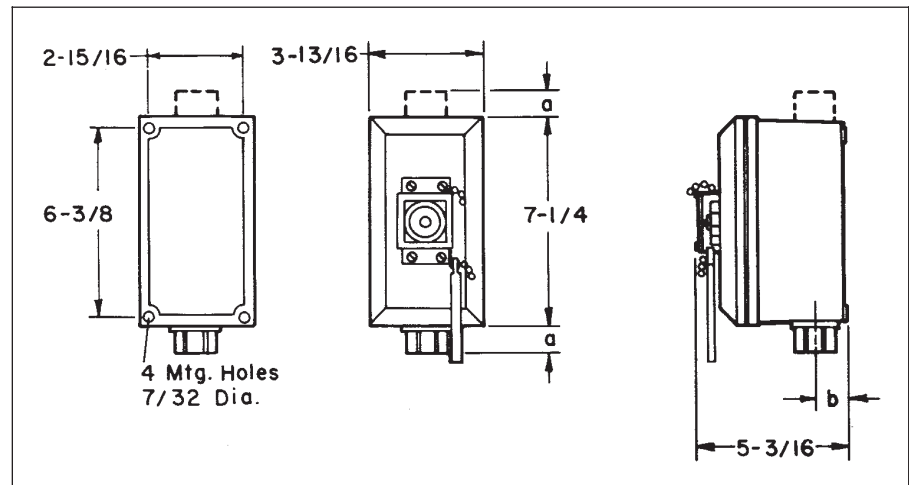
Certifications and Complies:

- NEC: Class I, Division 2, Groups B, C, D
- NEMA 3, 7BCD (Division 2), 12
- UL Standard: 38
- NFPA Standard: 72B
- U.S. Coast Guard Regulation 46CFR, Part 161



Hub Size	Dead End Cat. #	Through Feed Cat. #	Replacement Glass Cat. #
½	N2FA11	N2FAC11	DS-K14
¾	N2FA21	N2FAC21	DS-K14
1	N2FA31	N2FAC31	DS-K14

Dimensions* (in inches)



½" & ¾" Hubs

a	b
1 1/8	1 1/16

1" Hubs

a	b
1 1/4	1 5/16

* Dimensions are approximate, not for construction purposes.

NMC Combination Line Starters and Enclosures

600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

N

Application

NMC combination magnetic line starters are for use in across-the-line motor starting, motor disconnect, motor and line protection and start-stop operations.

Feature:

- Enclosures are made of *Krydon*™ high impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Unitized, strong and durable enclosure construction provides longer service life for equipment.
- Provided with top and bottom mounting feet.
- Enclosure has hinged access door which opens 160° for easy wiring and maintenance. Three screws for door frame are hidden behind access door.
- Access door may be padlocked to prevent unauthorized access.

Electrical Rating Ranges:

- 3-pole, 60 hertz, 600 VAC max.
- Starters – sizes 0, 1, 2, 3, 4
- Breakers – 100, 150, 225 and 250 amp frame
- Switches – 30, 60, 100 amp
- Motor circuit protectors – 15, 30, 50, 100, 150 amp

Certifications and Compliances:

- NEMA/EEMAC: 3, 4X and 12
- UL Standard: 508
- CSA Standard: C22.2 No. 14

Options:

Description	Suffix to be Added to Cat. #
Control circuit transformer 480/240-120 volts, 50 or 60 hertz, (Sizes 0 and 1 – 50VA, Size 2 – 100VA, Size 3 – 150VA, Size 4 – 300VA)	
Fusible – Secondary FT	
Primary and secondary FT	
Auxiliary Contact on Starter or Contactor*	
1 NO/1 NC S781	
2 NO/2 NC S782	
3 NO/3 NC S783	
Auxiliary Switch on Circuit Breaker or Motor Circuit Protector*	
1A/1B (1P2T) S784	
2A/2B (2P2T) S785	
Time delay low voltage release for 3-wire control with 2, 4 or 6-second adjustment. For single-speed, non-reversing starters only.	
Control circuit voltage:	
120 volt, 60 hertz LVR1†	
240 volt, 60 hertz LVR2†	
480 volt, 60 hertz LVR4†	
Pilot lights, 120 V primary – specify other primary voltages as required:	
Red pilot light J1	
Green pilot light J3	
LED pilot lights in place of standard incandescent pilot lamps LED	

* Application limited by Size 5 starter, contactor or circuit breaker design – consult factory.

Pushbutton (heavy duty, uses two device holes):
START-STOP PB13
Selector Switch (heavy duty)
ON-OFF RR17
HAND-OFF-AUTO RR18
JOG-RUN-OFF RR19
Padlock attachment for:
Pushbutton S708
Automatic reset overload relay S1
Less overload relays (contactor) C
Separate ac control circuit Specify
Insulated, groundable type terminal block for grounded or ungrounded neutral can be supplied S618
Hubs (see “NOTE ON HUBS”) see listing on page 658
Grounding plate or bushing see listing on page 658



Combination line starter with optional START-STOP pushbuttons – closed view

Combination line starter with optional START-STOP pushbuttons – open view

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when combination starters are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see “Options”).

Starter Size	Number Included	Hub Size
0	3	3/4
1	1	3/4
	2	1
2	1	3/4
	2	1 1/2
3	1	3/4
	2	2
4	1	3/4
	2	2 1/2

† Option not available on NMC1024B.

N
Corrosion
Resistant
Products

NMC Combination Line Starters and Enclosures

Single-Speed, Non-Reversing
600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

With Circuit Breakers

Ordering Information:

To order an enclosure complete with starter and breaker, insert the manufacturer's symbols in the designated positions of the catalog number. Symbols are shown in the footnotes. Select the complete Cat. No. below and specify hp, voltage, frequency, rpm, type and full

load ampere rating of motor – or specify ampere rating of heaters. Starters are furnished with three heaters.

Enclosures only can be ordered. Select from listings below. For starters that can be accommodated, see Table 1 in Section 6C. Circuit breakers are

also listed in Section 6C. Specific reference table is shown in the listings below. Instantaneous magnetic trip circuit breakers (magnetic circuit interrupters) can be supplied. See listings in Section 6C.

Combination starters with motor circuit protectors for single speed, non-reversing motors are listed on page 619. Listings of circuit protectors are shown in Table 14 in Section 6C.

Motor Starter			Circuit Breaker			Enclosure	
Max. HP Polyphase	Volts (A-C)	NEMA Size	Trip Setting Amps	Frame	Sect. 6C Table	With Starter & Circuit Breaker Cat. #	Without Starter & Circuit Breaker Cat. #
2	120	0	30	EB	7	NMC1024B-†30EB-*6130	NMC1024B
2	240	0	15	EB	7	NMC1024B-†15EB-*6230	NMC1024B
3	240	0	20	EB	7	NMC1024B-†20EB-*6230	NMC1024B
5	240	1	30	EB	7	NMC1024B-†30EB-*6231	NMC1024B
5	480	0	15	EHD	8	NMC1024B-†15EHB-*6430	NMC1024B
5	600	0	15	FDB	9	NMC1024B-†15FB-*6530	NMC1024B
7½	240	1	50	EB	7	NMC1024B-†50EB-*6231	NMC1024B
7½	480	1	20	EHD	8	NMC1024B-†20EHB-*6431	NMC1024B
7½	600	1	20	FDB	9	NMC1024B-†20FB-*6531	NMC1024B
10	240	2	60	EB	7	NMC1024B2-†60EB-*6232	NMC1024B2
10	480	1	30	EHD	8	NMC1024B-†30EHB-*6431	NMC1024B
10	600	1	30	FDB	9	NMC1024B-†30FB-*6531	NMC1024B
15	240	2	80	EB	7	NMC1024B2-†80EB-*6232	NMC1024B2
15	480	2	40	EHD	8	NMC1024B2-†40EHB-*6432	NMC1024B2
15	600	1	40	FDB	9	NMC1024B-†40FB-*6531	NMC1024B
20	240	3	80	EB	7	NMC1426B-†80EB-*6233	NMC1426B
20	480	2	60	EHD	8	NMC1024B2-†60EHB-*6432	NMC1024B2
20	600	2	50	FDB	9	NMC1024B2-†50FB-*6532	NMC1024B2
25	240	3	80	EB	7	NMC1426B-†80EB-*6233	NMC1426B
25	480	2	70	EHD	8	NMC1024B2-†70EHB-*6432	NMC1024B2
25	600	2	60	FDB	9	NMC1024B2-†60FB-*6532	NMC1024B2
30	240	4	125	JDB‡	10	NMC2426B-†125JB-*6234	NMC2426B
30	480	3	80	EHD	8	NMC1426B-†80EHB-*6433	NMC1426B
30	600	3	60	FDB	9	NMC1426B-†60FB-*6533	NMC1426B
40	240	4	150	JDB‡	10	NMC2426B-†150JB-*6234	NMC2426B
40	480	3	80	EHD	8	NMC1426B-†80EHB-*6433	NMC1426B
40	600	3	80	FDB	9	NMC1426B-†80FB-*6533	NMC1426B
50	240	4	200	JDB‡	10	NMC2426B-†200JB-*6234	NMC2426B
50	480	3	100	EHD	8	NMC1426B-†100EHB-*6433	NMC1426B
50	600	3	100	FDB	9	NMC1426B-†100FB-*6533	NMC1426B
60	480	4	125	JDB‡	10	NMC2426B-†125JB-*6434	NMC2426B
60	600	4	100	JDB‡	10	NMC2426B-†100JB-*6534	NMC2426B
75	480	4	150	JDB‡	10	NMC2426B-†150JB-*6434	NMC2426B
75	600	4	125	JDB‡	10	NMC2426B-†125JB-*6534	NMC2426B
100	480	4	175	JDB‡	10	NMC2426B-†175JB-*6434	NMC2426B
100	600	4	150	JDB‡	10	NMC2426B-†150JB-*6534	NMC2426B

† Circuit Breakers:

Manufacturer	Symbol	Frames		
		240V	100/150A	225/250A
General Electric	TT	TEB	480V TED**	600V TED**
Square D	DT	FAL**	FAL**	FAL**
Cutler-Hammer	WT	EB	EHB, EHD	FB, FDB
				JB, JDB

** Specify voltage.

‡ Formerly "JB"

* Motor Starters:

Manufacturer	Symbol
Allen-Bradley	AB
General Electric	G
Square D	D
Cutler-Hammer	W

(Information on other starter manufacturers on request.)

NOTE ON HUBS: See page 617.

NMC Combination Line Starters and Enclosures

Single-Speed, Non-Reversing
600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

N

With Motor Circuit Protector

Motor Starter			Enclosure		
Max. HP Polyphase	Volts AC	NEMA Size	MCP Trip Setting Amps	With Starter & MCP Cat. # §	Without Starter & MCP Cat. #
3	240	0	15	NMC1024B-†15MCP-*6230	NMC1024B
5	480	0	15	NMC1024B-†15MCP-*6430	NMC1024B
5	600	0	15	NMC1024B-†15MCP-*6530	NMC1024B
7½	240	1	30	NMC1024B-†30MCP-*6231	NMC1024B
10	480	1	30	NMC1024B-†30MCP-*6431	NMC1024B
10	600	1	30	NMC1024B-†30MCP-*6531	NMC1024B
15	240	2	50	NMC1024B2-†50MCP-*6232	NMC1024B2
25	480	2	50	NMC1024B2-†50MCP-*6432	NMC1024B2
25	600	2	50	NMC1024B2-†50MCP-*6532	NMC1024B2
30	240	3	100	NMC1426B-†100MCP-*6233	NMC1426B
50	480	3	100	NMC1426B-†100MCP-*6433	NMC1426B
50	600	3	100	NMC1426B-†100MCP-*6533	NMC1426B
50	240	4	150	NMC2426P-†150MCP-*6234	NMC2426P
100	480	4	150	NMC2426P-†150MCP-*6434	NMC2426P
100	600	4	150	NMC2426P-†150MCP-*6534	NMC2426P

With Disconnect Switch Ordering Information:

To order an enclosure complete with disconnect switch, insert the manufacturer's symbol in the designated positions of the

catalog number. Symbols are shown in the footnotes.

Enclosures only can be ordered. Select from listings below.

For switches that can be accommodated, see Table 15 in Section 6C.

Motor Starter			Non-Fusible Disconnect Switch	Enclosure	
Max. HP Polyphase	Volts AC	NEMA Size	Switch Size- Amps	With Starter & Disconnect Switch Cat. #	Without Starter & Disconnect Switch Cat. #
3	240	0	30	NMC1024D-†30-*6230	NMC1024D-†
5	480	0	30	NMC1024D-†30-*6430	NMC1024D-†
5	600	0	30	NMC1024D-†30-*6530	NMC1024D-†
7½	240	1	30	NMC1024D-†30-*6231	NMC1024D-†
10	480	1	30	NMC1024D-†30-*6431	NMC1024D-†
10	600	1	30	NMC1024D-†30-*6531	NMC1024D-†
15	240	2	60	NMC1426D-†60-*6232	NMC1426D-†
25	480	2	60	NMC1426D-†60-*6432	NMC1426D-†
25	600	2	60	NMC1426D-†60-*6532	NMC1426D-†
30	240	3	100	NMC2426D-†100-*6233	NMC2426D-†
50	480	3	100	NMC2426D-†100-*6433	NMC2426D-†
50	600	3	100	NMC2426D-†100-*6533	NMC2426D-†

*, †, ‡, § – see page 620.

N
Corrosion
Resistant Products

NMC Combination Line Starters and Enclosures

Single-Speed, Non-Reversing
600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

Motor Starter			Fusible Disconnect Switch	Enclosure		
Max. HP Polyphase	Volts AC	NEMA Size	Switch Size- Amps	Fuse Clip Rating- Amps	With Starter & Disconnect Switch Cat. # ♦	Without Starter & Disconnect Switch Cat. #
3	240	0	30	30	NMC1024D-†3030-*6230	NMC1024D-†
5	480	0	30	30	NMC1024D-†3030-*6430	NMC1024D-†
5	600	0	30	30	NMC1024D-†3030-*6530	NMC1024D-†
7½	240	1	30	30	NMC1024D-†3030-*6231	NMC1024D-†
7½	240	1	30	60	NMC1024D-†3060-*6231	NMC1024D-†
10	480	1	30	30	NMC1024D-†3030-*6431	NMC1024D-†
10	480	1	30	60	NMC1024D-†3060-*6431	NMC1024D-†
10	600	1	30	30	NMC1024D-†3030-*6531	NMC1024D-†
10	600	1	30	60	NMC1024D-†3060-*6531	NMC1024D-†
15	240	2	60	60	NMC1426D-†6060-*6232	NMC1426D-†
15	240	2	60	100	NMC1426D-†6010-*6232	NMC1426D-†
25	480	2	60	60	NMC1426D-†6060-*6432	NMC1426D-†
25	480	2	60	100	NMC1426D-†6010-*6432	NMC1426D-†
25	600	2	60	60	NMC1426D-†6060-*6532	NMC1426D-†
25	600	2	60	100	NMC1426D-†6010-*6532	NMC1426D-†
30	240	3	100	100	NMC2426D-†1010-*6233	NMC2426D-†
50	480	3	100	100	NMC2426D-†1010-*6433	NMC2426D-†
50	480	3	100	200	NMC2426D-†1020-*6433**	NMC2426D-†**
50	600	3	100	100	NMC2426D-†1010-*6533	NMC2426D-†

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when combination starters are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see "Options").

Starter Size	Number Included	Hub Size
0	3	¾
1	1	¾
	2	1
2	1	¾
	2	1½
3	1	¾
	2	2
4	1	¾
	2	2½

† Disconnect Switches:

Manufacturer	Symbol	Switch Type
General Electric	G	Type QMW
Square D	D	Class 9422
Cutler-Hammer	W	Type DS

‡ Motor Circuit Protectors:

Manufacturer	Symbol
General Electric	G
Cutler-Hammer	W

§ With motor circuit protector only. For motor circuit protector with current limiter – information on request.

* Motor Starters:

Manufacturer	Symbol	Manufacturer	Symbol
Allen-Bradley	AB	Square D	D
General Electric	G	Cutler-Hammer	W

(Information on other starter manufacturers on request.)

♦ Fuse clips are arranged for Class H fuses and field modifiable for Class J fuses. For Class R fuses, consult headquarters.

● † Accommodates Class J fuses only.

NSSC Manual Motor Starting Switches and NFS Fractional HP Starters and Enclosures

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

N

Application:

- NSSC Motor Starting Switches are used in manual "ON" and "OFF" control of DC and single-phase or three-phase AC motors where overload protection is not required or is provided separately
- NFSC Fractional Horsepower Starters are used in manual "ON" and "OFF" control and overload protection of small single phase motors
- Both are suitable for use in wet and/or corrosive environments

Features:

- Enclosures are made of Cooper Crouse-Hinds high-impact strength *Krydon*[®] fiberglass-reinforced polyester material which has excellent corrosion resistance and stability to heat
- Provided with a toggle lever with a molded-in stainless steel shaft
- Factory installed through feed (NSSC, NFSC) hubs, 1/2" or 3/4" size
- Indicating plate is made of stainless steel

Options:

- Grounding plate or bushing – see listing on page 658

Certifications and Compliances:

- NEMA 3, 4X, and 12
- UL Standard 508



NSSC Series Manual Motor Starting Switch Without Overload Protection

With Square D Switches

Poles	Max. HP Rating			Max. Amp. Ratings	
	115 VAC	200-230 VAC	460-575 VAC	250 VDC	600 VDC
2	1	2	3	30	20
3	2	7 1/2	10	30	20

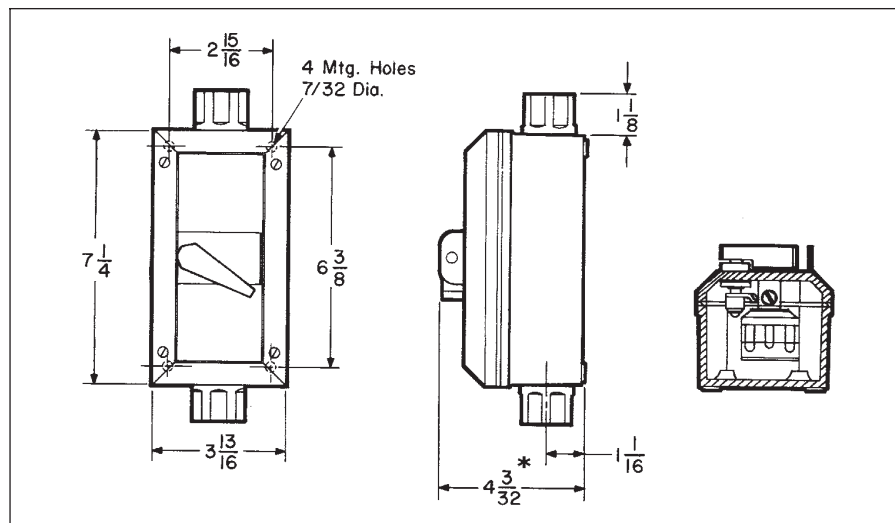
Enclosure With Switch

Poles	Hub Size	Through Feed Cat. #
2	1/2	NSSC-D12
	3/4	NSSC-D22
3	1/2	NSSC-D13
	3/4	NSSC-D23

Enclosures Only

Enclosure Type	Hub Size	Through Feed Cat. #
Manual Motor Starting Switch	1/2	NSSC1
	3/4	NSSC2
Fractional HP Starter	1/2	NFSC1
	3/4	NFSC2

Dimensions*



* Dimensions are approximate. Not to be used for construction purposes unless approved.

NFSC Series Fractional HP Starters With Overload Protection

With Allen-Bradley Bulletin 600 Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC
1	1 hp	
2	1 hp	¾ hp

Enclosure With Starter

Poles	Hub Size	Through Feed Cat. #
1	½ ¾	NFSC-AB11† NFSC-AB21†
2	½ ¾	NFSC-AB12† NFSC-AB22†

Heater Table (see page 356)

With Cutler-Hammer Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC
1	1 hp	
2	1 hp	1 hp

Enclosure With Starter

Poles	Hub Size	Through Feed Cat. #
1	½ ¾	NFSC-C11† NFSC-C21†
2	½ ¾	NFSC-C12† NFSC-C22†

Heater Table (Cutler-Hammer)

Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number	Max. Motor Full-Load Amps	Crouse- Hinds Symbol Number
.43	W 1	2.95	W21
.48	W 2	3.27	W22
.53	W 3	3.59	W23
.58	W 4	3.99	W24
.64	W 5	4.39	W25
.71	W 6	4.79	W26
.78	W 7	5.26	W27
.87	W 8	5.83	W28
.95	W 9	6.39	W29
1.03	W10	7.03	W30
1.15	W11	7.74	W31
1.27	W12	8.46	W32
1.35	W13	9.35	W33
1.51	W14	10.30	W34
1.67	W15	11.35	W35
1.83	W16	12.47	W36
1.99	W17	13.67	W37
2.23	W18	15.12	W38
2.47	W19	16.00	W39
2.71	W20		

With General Electric Switches

Maximum HP Ratings

Poles	115-230 VAC	32 VDC	115 VDC	230 VDC
1	1 hp	¼ hp	1 hp	¼ hp
2	1 hp	¼ hp	1 hp	1 hp

Enclosure With Starter

Poles	Hub Size	Through Feed Cat. #
1	½ ¾	NFSC-G11† NFSC-G21†
2	½ ¾	NFSC-G12† NFSC-G22†

Heater Table (see page 356)

With Square D Switches

Maximum HP Ratings

Poles	115-230 Volts AC	115-230 Volts DC
1	1 hp	
2	1 hp	¾ hp

Enclosure With Starter

Poles	Hub Size	Through Feed Cat. #
1	½ ¾	NFSC-D11† NFSC-D21†
2	½ ¾	NFSC-D12† NFSC-D22†

Heater Table (Square D)

Full- Load Motor Current	Cooper Crouse- Hinds Symbol Number	Full- Load Motor Current	Cooper Crouse- Hinds Symbol Number
0.41-0.44	A.49	2.85-3.06	A3.95
0.45-0.49	A.54	3.07-3.45	A4.32
0.50-0.53	A.59	3.46-3.70	A4.79
0.54-0.58	A.65	3.71-4.07	A5.30
0.59-0.65	A.71	4.08-4.32	A5.78
0.66-0.71	A.78	4.33-4.90	A6.20
0.72-0.78	A.86	4.91-5.35	A6.99
0.79-0.85	A.95	5.36-5.85	A7.65
0.86-0.96	A1.02	5.86-6.41	A8.38
0.97-1.04	A1.16	6.42-6.79	A9.25
1.05-1.16	A1.25	6.80-7.57	A9.85
1.17-1.29	A1.39	7.58-8.15	A11.0
1.30-1.37	A1.54	8.16-8.98	A11.9
1.38-1.47	A1.63	8.99-9.67	A13.2
1.48-1.56	A1.75	9.68-9.95	A14.1
1.57-1.65	A1.86	9.96-10.8	A14.8
1.66-1.79	A1.99	10.9-12.1	A16.2
1.80-1.95	A2.15	12.2-13.1	A17.9
1.96-2.15	A2.31	13.2-13.9	A19.8
2.16-2.38	A2.57	14.0-15.0	A21.3
2.39-2.75	A2.81	15.1-16.0	A25.2
2.76-2.84	A3.61		

† Includes one interchangeable heater. Select heater suffix from table and add to catalog number. Example:
NFSC-D11A.49

NMN Manual Line Starters and Enclosures

600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 656

N

Application:

NMN manual line starters are for use in across-the-line starting of motors, motor protection and manual starting and stopping.

Features:

- Enclosures are made of Cooper Crouse-Hinds high-impact strength *Krydon*® fiberglass-reinforced polyester material which has excellent corrosion resistance and stability to heat.
- Provided with toggle-operator or START-STOP pushbuttons made of *Krydon* material§.
- Factory installed dead end (NMN) or through feed (NMNC) hubs, ¾" and 1" sizes.

Electrical Rating Ranges:

- Starter sizes 0, 1, 1P

Certifications and Compliances:

- NEMA/EEMAC 3, 4X and 12
- UL Standard: 508
- CSA: C22.2 No. 14

Options:

- Undervoltage protection – add suffix "U" to Cat. No. Available with toggle operator only.
- Grounding plate – see listing on page 658.
- Insulated, groundable type terminal block for grounded or ungrounded neutral can be supplied S618



Toggle-operated manual starter with knockout



Pushbutton manual starter for Cutler-Hammer starters only.

Starter					Enclosure with Starter**			
					¾" Hubs		1" Hubs	
NEMA Size	Poles	Max. HP			Dead End Cat. #	Through Feed Cat. #	Dead End Cat. #	Through Feed Cat. #
M-0	2 (1 PH)	1	2	460/575V	NMN-†220	NMNC-†220	NMN-†320	NMNC-†320
M-1	2 (1 PH)	2	3		NMN-†221	NMNC-†221	NMN-†321	NMNC-†321
M-1P	2 (1 PH)	3	5		NMN-†221P	NMNC-†221P	NMN-†321P	NMNC-†321P
M-0	3 (3 PH)	2	3	5	NMN-†230	NMNC-†230	NMN-†330	NMNC-†330
M-1	3 (1 PH)	2	3		NMN-†231	NMNC-†231	NMN-†331	NMNC-†331
	3 (3 PH)	3	7½	10				
					Enclosure Only*			
					NMN-†200	NMNC-†200	NMN-†300	NMNC-†300

† Motor Starters: Insert appropriate symbol in Cat. No.

Manufacturer	Symbol
Allen-Bradley	AB
Cutler-Hammer§	C
General Electric	G
Square D	D

§ Pushbutton operator available with Cutler-Hammer starter only, all others with toggle-operator.

* Furnished with mounting plate and operator installed.

** Detailed information on heater selection is given in section 6C.

Application:

NMG magnetic line starters are used:

- for magnetic across-the-line starting of motors and remote starting and stopping
- for across-the-line starting of polyphase ac induction motors
- to provide motor running protection, undervoltage protection and remote starting and stopping

Features:

- Enclosures are made of Cooper Crouse-Hinds high-impact strength *Krydon*[®] fiberglass-reinforced polyester material which has excellent corrosion resistance and stability to heat.
- Unitized, strong and durable enclosure construction provides longer service life for equipment.
- Exterior parts of RESET button made of *Krydon* material.

Electrical Rating Ranges:

- Starter sizes 0, 1, 2, 3, 4

Certifications and Compliances:

- NEMA/EEMAC: 3, 4X and 12
- UL Standard: 508
- CSA Standard: C22.2 No. 14

Options:

Suffix to be
Added to
Enclosure Cat. #

Description	Enclosure Cat. #
Hinged cover	NH
Pilot lights, 120 V primary – specify other primary voltages as required:	
Red pilot light	J1*
Green pilot light	J3*
LED pilot lights in place of standard incandescent pilot lamps	LED
Pushbutton (heavy duty, uses two device holes):	
START-STOP	PB13*
Selector switches (heavy duty):	
ON-OFF	RR17*
HAND-OFF-AUTO	RR18*
JOG-RUN-OFF	RR19*
Padlock attachment for:	
Pushbutton	S708
Control circuit transformer 480/240-120 volts, 50 or 60 hertz, (sizes 0 and 1-50VA, size 2-100VA, size 3-150VA, size 4-300VA):	
Fusible – Secondary	FT
Primary and Secondary	FTPS
Automatic reset overload relay	S1
Less overload relays (contactor)	C
Auxiliary Contact on Starter or Contactor:	
1NO/1NC	S781
2NO/2NC	S782
3NO/3NC	S783

* For optional devices or control circuit transformer, use next larger enclosure size. For NMG0714, two device holes maximum.

** Application limited by starter or contactor design – consult factory.

† Type GP grounding plate only in NMG0710 enclosure.

Time delay low voltage release for 3-wire control with 2, 4 or 6-second adjustment. For single-speed, non-reversing starters only.

Control circuit voltage*:

120 volt, 60 hertz LVR1
240 volt, 60 hertz LVR2
480 volt, 60 hertz LVR4

Hubs (see "Note on

Hubs") see listing on page 658
Grounding plate or bushing† see listing on page 658

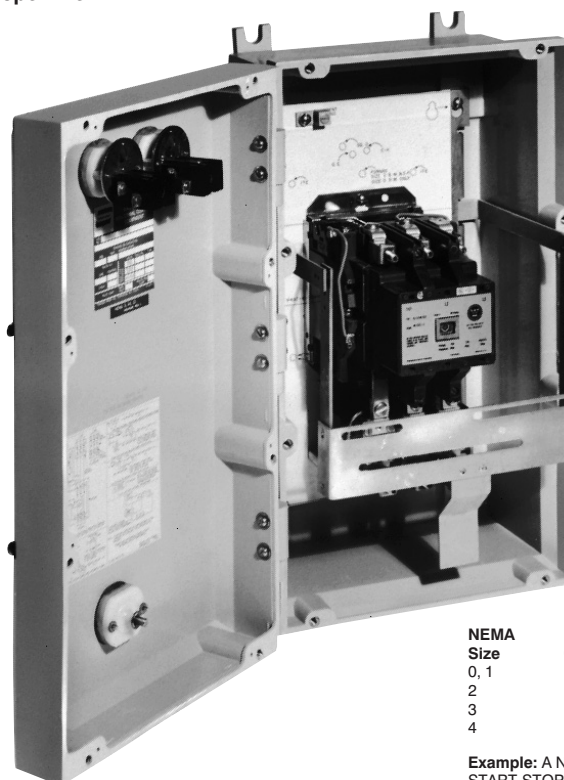
Insulated, groundable type terminal block for a grounded or ungrounded neutral can be supplied S618

Information on other options or combination of options for a specific enclosure size is available on request.

Magnetic line starter with optional hinged cover with START-STOP pushbuttons.



Magnetic line starter with optional hinged cover with START-STOP pushbuttons – open view



NEMA Size	Enclosure Cat. #	Enclosure w/Options
0, 1	NMG0710	NMG0714
2	NMG0714	NMG1018
3	NMG1018	NMG1024
4	NMG1024	NMG1426

Example: A NEMA size 4, 480 V Westinghouse starter with START-STOP pushbuttons would be Cat. No. NMG1426-W6434-PB13.

NMG Magnetic Line Starters and Enclosures

600VAC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 656

N

Ordering Information:

To order an enclosure complete with starter, insert the manufacturer's symbol in the designated position of the catalog number. Symbols are shown in the footnote at the bottom of this page. Specify hp, voltage, frequency, rpm, type and full load ampere rating of motor – or specify ampere rating of heaters.

Starters are furnished with three heaters.

Enclosures only can be ordered. Select from listings. For starters that can be accommodated, see Table 1 in Section 6C.

Detailed information on starter and heater selection is given in Section 6C.



Magnetic line starter with built-in RESET button

Single-Speed, Non-Reversing Motor Starter

Max HP Polyphase	Volts (AC)	NEMA Size	Enclosure With Starter Cat. #	Without Starter Cat. #
2	120	0	NMG0710-#6130	NMG0710
3	120	1	NMG0710-#6131	NMG0710
3	240	0	NMG0710-#6230	NMG0710
5	480	0	NMG0710-#6430	NMG0710
5	600	0	NMG0710-#6530	NMG0710
7½	120	2	NMG0714-#6132	NMG0714
7½	240	1	NMG0710-#6231	NMG0710
10	480	1	NMG0710-#6431	NMG0710
10	600	1	NMG0710-#6531	NMG0710
15	120	3	NMG1018-#6133	NMG1018
15	240	2	NMG0714-#6232	NMG0714
25	480	2	NMG0714-#6432	NMG0714
25	600	2	NMG0714-#6532	NMG0714
30	240	3	NMG1018-#6233	NMG1018
50	240	4	NMG1024-#6234*	NMG1024*
50	480	3	NMG1018-#6433	NMG1018
50	600	3	NMG1018-#6533	NMG1018
100	480	4	NMG1024-#6434*	NMG1024*
100	600	4	NMG1024-#6534*	NMG1024*

* NEMA Size 4 Allen-Bradley starter must be in NMG1426 enclosure.

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when magnetic starters are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see "Options").

Starter Size	Number Included	Hub Size
0	3	¾
1	1	¾
	2	1
2	1	¾
	2	1½
3	1	¾
	2	2
4	1	¾
	2	2½

‡ Motor Starters:

Manufacturer	Symbol	Manufacturer	Symbol
Allen-Bradley	AB	Square D	D
Cutler-Hammer	C	Westinghouse	W
General Electric	G		

(Information on other starter manufacturers on request.)

N
Corrosion
Resistant
Products

NCB Circuit Breakers and Enclosures

600VAC/250VDC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3, 4X, 12

Dimensions Pg. 655

Application:

NCB circuit breakers are for use in conjunction with a variety of heating, lighting and power circuits to provide disconnect means and short circuit protection.

Features:

- Enclosures are made of *Krydon*®, Cooper Crouse-Hinds high impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat
- Unitized, strong and durable enclosure construction provides longer service life for equipment
- Enclosure has hinged access door which opens 160° for easy wiring and maintenance. Three screws for door frame are hidden behind access door.
- Access door may be padlocked to prevent unauthorized access

Electrical Rating Ranges:

- 100, 150, 225, 250 and 400 amp frames

Ordering Information:

To order an enclosure complete with circuit breaker, insert the manufacturer's symbol in the designated position of the catalog number.

Enclosures only can be ordered. Select

Certifications and Compliances:

- NEMA: 3, 4X and 12
- CSA Standard C22.2 No. 94
- UL Standard: 489

Options:

Description

Insulated, groundable type terminal block for grounded or ungrounded neutral can be supplied S618
Hubs (see "Note on Hubs") see listing on page 658
Grounding plate or bushing see listing on page 658

**Suffix
to be Added
to Cat. #**



**Circuit breaker enclosure with built-in
Krydon material handle**

Circuit Breaker				Enclosure	
Poles	Voltage Rating	Amps	Section 6C Table	With Circuit Breaker Cat. #	Without Circuit Breaker Cat. #
100A Frame (Non-Interchangeable Trip)					
2	240 VAC/ 250 VDC	15	7	NCB1018F-†15EB-22	NCB1018F
		20		NCB1018F-†20EB-22	
		25		NCB1018F-†25EB-22	
		30		NCB1018F-†30EB-22	
		35		NCB1018F-†35EB-22	
		40		NCB1018F-†40EB-22	
		50		NCB1018F-†50EB-22	
		60		NCB1018F-†60EB-22	
		70		NCB1018F-†70EB-22	
		80		NCB1018F-†80EB-22	
		90		NCB1018F-†90EB-22	
		100		NCB1018F-†100EB-22	
2	480 VAC/ 250 VDC	15	8	NCB1018F-†15EHB-24	NCB1018F
		20		NCB1018F-†20EHB-24	
		25		NCB1018F-†25EHB-24	
		30		NCB1018F-†30EHB-24	
		35		NCB1018F-†35EHB-24	
		40		NCB1018F-†40EHB-24	
		50		NCB1018F-†50EHB-24	
		60		NCB1018F-†60EHB-24	
		70		NCB1018F-†70EHB-24	
		80		NCB1018F-†80EHB-24	
		90		NCB1018F-†90EHB-24	
		100		NCB1018F-†100EHB-24	

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when circuit breakers are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see "Options")

Circuit Breaker Frame	Ampere Rating	Number Included	Hub Size
EB, EHD*, FDB†	15-50	2	1¼
EB, EHD*, FDB†	60-100	2	2
JDB♦	110-225	2	2½
KDB§	250-400	2	3

* Formerly EHB.

† Formerly FB.

♦ Formerly JB.

§ Formerly LB.

NCB Circuit Breakers and Enclosures

600VAC/250VDC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,4X,12

Dimensions Pg. 655

N

Circuit Breaker			Enclosure		
Poles	Voltage Rating	Amps	Section 6C Tab.	With Circuit Breaker Cat. #	Without Circuit Breaker Cat. #
100/150A Frame (Non-Interchangeable Trip) – continued					
2†	600 VAC/ 250 VDC	15	9	NCB1018F-†15FB-26	NCB1018F
		20		NCB1018F-†20FB-26	
		25		NCB1018F-†25FB-26	
		30		NCB1018F-†30FB-26	
		35		NCB1018F-†35FB-26	
		40		NCB1018F-†40FB-26	
		50		NCB1018F-†50FB-26	
		70		NCB1018F-†70FB-26	
		80		NCB1018F-†80FB-26	
		90		NCB1018F-†90FB-26	
	100	NCB1018F-†100FB-26			
3	240 VAC	15	7	NCB1018F-†15EB-32	NCB1018F
		20		NCB1018F-†20EB-32	
		25		NCB1018F-†25EB-32	
		30		NCB1018F-†30EB-32	
		35		NCB1018F-†35EB-32	
		40		NCB1018F-†40EB-32	
		50		NCB1018F-†50EB-32	
		70		NCB1018F-†70EB-32	
		80		NCB1018F-†80EB-32	
		90		NCB1018F-†90EB-32	
	100	NCB1018F-†100EB-32			
3	480 VAC	15	8	NCB1018F-†15EHB-34	NCB1018F
		20		NCB1018F-†20EHB-34	
		25		NCB1018F-†25EHB-34	
		30		NCB1018F-†30EHB-34	
		35		NCB1018F-†35EHB-34	
		40		NCB1018F-†40EHB-34	
		50		NCB1018F-†50EHB-34	
		70		NCB1018F-†70EHB-34	
		80		NCB1018F-†80EHB-34	
		90		NCB1018F-†90EHB-34	
	100	NCB1018F-†100EHB-34			
3	600 VAC	15	9	NCB1018F-†15FB-36	NCB1018F
		20		NCB1018F-†20FB-36	
		25		NCB1018F-†25FB-36	
		30		NCB1018F-†30FB-36	
		35		NCB1018F-†35FB-36	
		40		NCB1018F-†40FB-36	
		50		NCB1018F-†50FB-36	
		70		NCB1018F-†70FB-36	
		80		NCB1018F-†80FB-36	
		90		NCB1018F-†90FB-36	
	100	NCB1018F-†100FB-36			

Circuit Breaker			Enclosure		
Poles	Voltage Rating	Amps	Section 6C Tab.	With Circuit Breaker Cat. #	Without Circuit Breaker Cat. #
225/250A Frame (Non-Interchangeable Trip)§					
2	600 VAC/ 250 VDC	110	10	NCB1024F-†110JB-26	NCB1024F
		125		NCB1024F-†125JB-26	
		150		NCB1024F-†150JB-26	
		175		NCB1024F-†175JB-26	
		200		NCB1024F-†200JB-26	
		225		NCB1024F-†225JB-26	
3	600 VAC	110	10	NCB1024F-†110JB-36	NCB1024F
		125		NCB1024F-†125JB-36	
		150		NCB1024F-†150JB-36	
		175		NCB1024F-†175JB-36	
		200		NCB1024F-†200JB-36	
		225		NCB1024F-†225JB-36	
400A Frame (Interchangeable Trip)*					
2	600 VAC/ 250 VDC	250	12	NCB1426F-†250LB-26	NCB1426F
		300		NCB1426F-†300LB-26	
		350		NCB1426F-†350LB-26	
		400		NCB1426F-†400LB-26	
3	600 VAC	250	12	NCB1426F-†250LB-36	NCB1426F
		300		NCB1426F-†300LB-36	
		350		NCB1426F-†350LB-36	
		400		NCB1426F-†400LB-36	

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when circuit breakers are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see "Options").

Circuit Breaker Frame	Ampere Rating	Number Included	Hub Size
EB, EHD ♦ ♦ ♦, FDB ♦ ♦ ♦	15–50	2	1¼
EB, EHD ♦ ♦ ♦, FDB ♦ ♦ ♦	60–100	2	2
JDB ♦	110–225	2	2½

♦ ♦ Formerly EHB
♦ ♦ ♦ Formerly FB
♦ Formerly JB

† 2-pole, 600 VAC/250 VDC for Square D circuit breakers only.

* For Square D circuit breakers only.

§ Also available with interchangeable trip breakers. Specify on order.

† Circuit Breakers:

Manufacturer	Symbol	Frames			225/250A	400A
		100/150A	240V	480V	600V	600V
General Electric	TT	TEB	TED**	TED**	TFJ	
Square D	DT	FAL**	FAL**	FAL**	KAL	LAL
Cutler-Hammer	WT	EB	EHB, EHD	FB, FDB	JB, JDB	

** Specify voltage.

N
Corrosion
Resistant
Products

Application:

N2PB panelboards are for use in central control and protection of a large number of feeder or branch circuits and for housing circuit breakers in Class I, Division 2, Groups C&D, hazardous areas.

Features:

- Enclosures are made of *Krydon*®, Cooper Crouse-Hinds high impact strength fiberglass-reinforced polyester material with excellent corrosion resistance and stability to heat
- Enclosure access door provided with stainless steel thumb screws for easy access. Access door may be padlocked to prevent unauthorized access
- Circuit breakers are contained in compact, individual factory sealed enclosures suitable for Class I, Division 2, Groups C & D, hazardous areas

Size Ranges:

Panel Designation	Max. No. of Breakers	
	Single-Pole	Two-Pole
N2PB1426	12	6
N2PB2426	24	12

Electrical Rating Ranges:

- Circuit breakers
- Single-pole – 120/240 vac max.
- Two-pole – 120/240 vac max.
- Trip ratings – 15, 20 and 30 amp.

Certifications and**Compliances:**

- NEMA 3, 7CD (Div. 2), and 12
- NEC Class I, Division 2, Groups C & D
Class II, Division 2, Groups F,G
- UL Standard: 1604

Options:

- Panelboard provided with (12) operating handle lockouts for lockout in ON or OFF positions (any circuit). Stainless steel lockout frame integral to panel faceplate.

N2PB Size	Use Suffix:
14 x 26	-L12
24 x 26	-L24

- Circuit breaker operating handle lockout – order D2PB02
- Assortment of single-pole and two-pole circuit breakers and trip ratings – see listings
- Grounding plate or bushing – see listing on page 658
- Replacement circuit breaker assemblies – see page 511
- Main breaker – see “Ordering Information,” page 629

† Watertight, weatherproof with door closed.



Circuit breaker panelboard – open view

N2PB Circuit Breaker Panelboards

Factory Sealed Single & Two-Pole Breakers

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,7CD (Div. 2), 9FG (Div. 2), 12

Cl. I, Div. 2, Groups C,D
Cl. II, Div. 2, Groups, F,G
Dimensions Pg. 657

N

Ordering Information:

Panelboards are available with 15, 20 or 30 ampere circuit breakers. To order a panelboard with all breakers of the same rating, add the desired rating as a suffix to the Cat. No. For example, the 12 circuit N2PB2426-2512 panelboard with all the circuit breakers rated 20 amperes would be ordered as N2PB2426-2512-20. Panelboards listed below can also be furnished with an

assortment of single-pole and two-pole breakers and breaker ratings. To order, the quantities of breakers and ampere ratings are added as suffixes to the Cat. No. The total number of poles will determine the panel size (24 poles max.), and the wiring systems must be compatible when combining single- and two-pole circuit breakers. For example, a typical N2PB panelboard with a combination

of 5 single-pole 20 ampere, 3 single-pole 30 ampere, and 4 two-pole 30 ampere breakers would be ordered as N2PB2426-2508-520-330-804-30. The total number of poles is 16 and wiring systems 25 and 8 are compatible 4 wire, 3 phase. The N2PB with a main breaker is available up to 100 amps. To order N2PB with main breaker, add appropriate suffix. Example: N2PB2426-2512-15

with three-pole, 100 amp main circuit breaker would be ordered as N2PB2426-2512-15-3M100. If two-pole main is required, change the number 3 to 2. If a lower trip rating is required, the number will change accordingly. Main breaker housing is positioned on top of panel similar to D2PB main. (See Section 1A.)

Max. No. of Breakers		Panel Size	Enclosure Only Cat. #*	Main Lug Size	Enclosures with Single-Pole Circuit Breakers		Enclosures with Two-Pole Circuit Breakers	
Single-Pole	Two-Pole				Wiring System 24 Mains: 3-Wire Branches: 2-Wire Solid Neutral Cat. #†	Wiring System 25 Mains: 4-Wire, 3-Phase Branches: 2-Wire, 1-Phase Solid Neutral Cat. #†	Wiring System 3 Mains: 3-Wire Branches: 3-Wire Solid Neutral Cat. #†	Wiring System 8 Mains: 4-Wire, 3-Phase Branches: 3-Wire, 1-Phase Solid Neutral Cat. #†
6		14 x 26 x 8½	N2PB1426	1/0	N2PB1426-2406-†	N2PB1426-2506-†		
8	4				N2PB1426-2408-†	N2PB1426-2508-†	N2PB1426-304-†	N2PB1426-804-†
10	5				N2PB1426-2410-†	N2PB1426-2510-†	N2PB1426-305-†	N2PB1426-805-†
12	6				N2PB1426-2412-†	N2PB1426-2512-†	N2PB1426-306-†	N2PB1426-806-†
12	6	24 x 26 x 8½	N2PB2426	4/0	N2PB2426-2412-†	N2PB2426-2512-†	N2PB2426-306-†	N2PB2426-806-†
14	7				N2PB2426-2414-†	N2PB2426-2514-†	N2PB2426-307-†	N2PB2426-807-†
16	8				N2PB2426-2416-†	N2PB2426-2516-†	N2PB2426-308-†	N2PB2426-808-†
18	9				N2PB2426-2418-†	N2PB2426-2518-†	N2PB2426-309-†	N2PB2426-809-†
20	10				N2PB2426-2420-†	N2PB2426-2520-†	N2PB2426-310-†	N2PB2426-810-†
22	11				N2PB2426-2422-†	N2PB2426-2522-†	N2PB2426-311-†	N2PB2426-811-†
24	12				N2PB2426-2424-†	N2PB2426-2524-†	N2PB2426-312-†	N2PB2426-812-†

NOTE ON HUBS: Hubs must be ordered separately. See page 658 for listing.

† See page 658 for wiring diagrams.

* Accommodates D2CB breakers. Includes complete interiors, wiring system must be specified. Example: N2PB2426 with wiring system 25 would be ordered as N2PB2426-25.

† Add ampere rating. See ordering information above.

N
Corrosion
Resistant
Products

Application:

NLP panelboards are for use in central control and protection of a large number of feeder or branch circuits and for housing circuit breakers.

Features:

- Enclosures are made of Krydon® high impact strength fiberglass-reinforced polyester material with excellent corrosion resistance and stability to heat
- Enclosure access door provided with stainless steel thumb screws for easy access
- Access door may be padlocked to prevent unauthorized access
- Standard with plug-on circuit breakers

Size Ranges:

Panel Type	Mains Rating	Max. No. of Branch Circuit Breakers					
		1-Pole		2-Pole		3-Pole	
Main Lug Only		3w	4w	3w	4w	3w	4w
NLP1426	100A	20	24	10	12	–	8
NLPQ1426	200A	24	30	12	14	–	10
Main Breaker							
NLP1426M	100A 2P	12	–	6	–	–	–
NLP1426M	100A 3P	–	12	–	6	–	4

Electrical Rating Ranges:

- QO® circuit breakers, single or two-pole 120/240 vac; three-pole 240 vac
- Trip ratings:
10 to 70 amps, single-pole
10 to 70 amps, two pole
10 to 60 amps, three-pole
- Qwik-Gard® GFI circuit breakers:
Single-pole – 120 vac. 15 to 30 amps;
two-pole – 120/240 vac
15 to 50 amps

Certifications and Compliances:

- NEMA 3 and 12
- UL Standard: 67

Options:

- Assortment of circuit breaker trip ratings – specify
- Assortment of single two and three-pole circuit breakers – specify
- Wiring system other than those listed – specify
- Ground Fault interrupter – circuit breakers with built-in ground fault circuit interrupters can be provided. These interrupters cause the breaker to open when a ground fault occurs. Suffix "GFI" should be added after each circuit breaker rating to be supplied with ground fault interrupters
- Bolt on circuit breakers available on NLP panels only – consult factory

QO and Qwik-Gard are registered trademarks of Square D Company.

† Insert branch circuit breaker rating desired 10, 15, 20, 25, 30, 35, 40, 45, 50, 60 or 70 amp.

‡ See page 658 for wiring diagrams.

* Watertight, weatherproof with door closed.

For example: An NLP panelboard using wiring system 24 with four 15 ampere breakers, two 40 ampere and four 50 ampere breakers and two 15 ampere breakers, one 25 ampere breaker, and one 30 ampere breaker with GFI – Catalog No. NLP1426-2414-415-240-450-215GFI-125GFI-130GFI

Ordering Information:

Panelboards are available with 10, 15, 20, 25, 30, 35, 40, 45, 50, 60 or 70 ampere circuit breakers. To order a panelboard with all breakers of the same rating, add the desired rating as a suffix to the Cat. No. For example, the 12 circuit NLP1426-2512 with all circuit breakers rated 20 amperes would be ordered as NLP1426-2512-20

Panelboards can be furnished with an assortment of breaker ratings. Where all circuit breakers have the same number of poles, assortments may be ordered by adding the quantities and ampere ratings as suffixes to the Cat. No. For example, the 12 circuit NLP1426-2512 with six 15 ampere, four 40 ampere and two 50 ampere single-pole circuit breakers would be ordered as NLP1426-2512-615-440-250.



Circuit breaker panelboard with QO breakers

Main Circuit Breaker

Two Pole Main Circuit Breaker (3 Wire Branches)

No. of Circuits	Enclosure Only	Mains Rating	Enclosure with NQOD Interior, Main and Branch Breakers	
			1-Pole Branch Circuit Breakers Wiring System 24†	2-Pole Branch Circuit Breakers Wiring System 3‡
4	NLP1426M	100A	NLP1426M-2404-†	NLP1426M-0304-†
6	NLP1426M	100A	NLP1426M-2406-†	NLP1426M-0306-†
8	NLP1426M	100A	NLP1426M-2408-†	
10	NLP1426M	100A	NLP1426M-2410-†	
12	NLP1426M	100A	NLP1426M-2412-†	

Three Pole Main Circuit Breaker (4 Wire Branches)

No. of Circuits	Enclosure Only	Mains Rating	Enclosure with NQOD Interior, Main and Branch Breakers		
			1-Pole Branch Circuit Breakers Wiring System 25‡	2-Pole Branch Circuit Breakers Wiring System 28‡	3-Pole Branch Circuit Breakers Wiring System 11‡
4	NLP1426M	100A	NLP1426M-2504-†	NLP1426M-2804-†	NLP1426M-1104-†
6	NLP1426M	100A	NLP1426M-2506-†	NLP1426M-2806-†	–
8	NLP1426M	100A	NLP1426M-2508-†	–	–
10	NLP1426M	100A	NLP1426M-2510-†	–	–
12	NLP1426M	100A	NLP1426M-2512-†	–	–

NLP Circuit Breaker Panelboards With QO Breakers

Corrosion-Resistant
Dusttight
Watertight
Weatherproof
NEMA 3,12

Dimensions Pg. 657

N

Main Lug Only

3 Wire Branches (100A and 200A MLO)

No. of Circuits	Enclo- sure Only	Main Lug* Amps	Enclosures with NQOD Interiors and QO® Branch Circuit Breakers	
			1-Pole Branch Circuit Breakers Wiring System 24†	2-Pole Branch Circuit Breakers Wiring System 3‡
4	NLP1426	100	NLP1426-2404-†	NLP1426-0304-†
6	NLP1426	100	NLP1426-2406-†	NLP1426-0306-†
8	NLP1426	100	NLP1426-2408-†	NLP1426-0308-†
10	NLP1426	100	NLP1426-2410-†	NLP1426-0310-†
12	NLP1426	100	NLP1426-2412-†	—
14	NLP1426	100	NLP1426-2414-†	—
16	NLP1426	100	NLP1426-2416-†	—
18	NLP1426	100	NLP1426-2418-†	—
20	NLP1426	100	NLP1426-2420-†	—

No. of Circuits	Enclo- sure Only	Main Lug** Amps	Enclosures with QON Interiors and QO® Branch Circuit Breakers	
			1-Pole Branch Circuit Breakers Wiring System 24†	2-Pole Branch Circuit Breakers Wiring System 3‡
4	NLPQ1426-1	200	NLPQ1426-2404-†	NLPQ1426-0304-†
6	NLPQ1426-1	200	NLPQ1426-2406-†	NLPQ1426-0306-†
8	NLPQ1426-1	200	NLPQ1426-2408-†	NLPQ1426-0308-†
10	NLPQ1426-1	200	NLPQ1426-2410-†	NLPQ1426-0310-†
12	NLPQ1426-1	200	NLPQ1426-2412-†	NLPQ1426-0312-†
14	NLPQ1426-1	200	NLPQ1426-2414-†	—
16	NLPQ1426-1	200	NLPQ1426-2416-†	—
18	NLPQ1426-1	200	NLPQ1426-2418-†	—
20	NLPQ1426-1	200	NLPQ1426-2420-†	—
22	NLPQ1426-1	200	NLPQ1426-2422-†	—
24	NLPQ1426-1	200	NLPQ1426-2424-†	—

4 Wire Branches (100A and 200A MLO)

No. of Circuits	Enclo- sure Only	Main Lug* Amps	Enclosures with NQOD Interiors and QO® Branch Circuit Breakers		
			1-Pole Branch Circuit Breakers Wiring System 25‡	2-Pole Branch Circuit Breakers Wiring System 28‡	3-Pole Branch Circuit Breakers Wiring System 11‡
4	NLP1426	100	NLP1426-2504-†	NLP1426-2804-†	NLP1426-1104-†
6	NLP1426	100	NLP1426-2506-†	NLP1426-2806-†	NLP1426-1106-†
8	NLP1426	100	NLP1426-2508-†	NLP1426-2808-†	NLP1426-1108-†
10	NLP1426	100	NLP1426-2510-†	NLP1426-2810-†	—
12	NLP1426	100	NLP1426-2512-†	NLP1426-2812-†	—
14	NLP1426	100	NLP1426-2514-†	—	—
16	NLP1426	100	NLP1426-2516-†	—	—
18	NLP1426	100	NLP1426-2518-†	—	—
20	NLP1426	100	NLP1426-2520-†	—	—
22	NLP1426	100	NLP1426-2522-†	—	—
24	NLP1426	100	NLP1426-2524-†	—	—

No. of Circuits	Enclo- sure Only	Main Lug** Amps	Enclosures with QON Interiors and QO® Branch Circuit Breakers		
			1-Pole Branch Circuit Breakers Wiring System 25‡	2-Pole Branch Circuit Breakers Wiring System 28‡	3-Pole Branch Circuit Breakers Wiring System 11‡
4	NLPQ1426-3	200	NLPQ1426-2504-†	NLPQ1426-2804-†	NLPQ1426-1104-†
6	NLPQ1426-3	200	NLPQ1426-2506-†	NLPQ1426-2806-†	NLPQ1426-1106-†
8	NLPQ1426-3	200	NLPQ1426-2508-†	NLPQ1426-2808-†	NLPQ1426-1108-†
10	NLPQ1426-3	200	NLPQ1426-2510-†	NLPQ1426-2810-†	NLPQ1426-1110-†
12	NLPQ1426-3	200	NLPQ1426-2512-†	NLPQ1426-2812-†	—
14	NLPQ1426-3	200	NLPQ1426-2514-†	NLPQ1426-2814-†	—
16	NLPQ1426-3	200	NLPQ1426-2516-†	—	—
18	NLPQ1426-3	200	NLPQ1426-2518-†	—	—
20	NLPQ1426-3	200	NLPQ1426-2520-†	—	—
22	NLPQ1426-3	200	NLPQ1426-2522-†	—	—
24	NLPQ1426-3	200	NLPQ1426-2524-†	—	—
26	NLPQ1426-3	200	NLPQ1426-2526-†	—	—
28	NLPQ1426-3	200	NLPQ1426-2528-†	—	—
30	NLPQ1426-3	200	NLPQ1426-2530-†	—	—

† Insert branch circuit breaker rating desired, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60 or 70 amp.

* 100A NQOD main lugs are #1/0 Cu/Al.

** 200A QON main lugs are #4/0 Cu/Al.

‡ See page 658 for wiring diagrams.

NOTE: Hubs, grounding plates and bushings must be ordered separately. See page 658 for listing.

NOTE: The NLP and NLPQ panelboards accommodate Square D NQOD and QON interiors as follows.

Enclosure	3 Wire Branches	4 Wire Branches
NLP1426	NQOD20L100	NQOD424L100
NLP1426M	NQOD12M100 CU	NQOD412M100 CU
NLPQ1426	QON124L200I	QON330L200

When ordering enclosures only, interiors and circuit breakers are not included and must be ordered separately from Square D.

N
Corrosion
Resistant
Products

NST Disconnect Switches and Enclosures

600VAC/250VDC Heavy Duty

Corrosion-Resistant
Dusttight
Watertight*
Weatherproof
NEMA 3,4X,12

Dimensions Pg.
657

Application:

NST disconnect switches are for use in disconnecting motor, lighting and other circuits.

Features:

- Enclosures are made of *Krydon*®, Cooper Crouse-Hinds high impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Unitized, strong and durable enclosure construction provides longer service life for equipment.
- Enclosure has hinged access door which opens 160° for easy wiring and maintenance. Three screws for door frame are hidden behind access door.
- Access door may be padlocked to prevent unauthorized access.

Electrical Rating Ranges:

- 240 VAC/250 VDC & 600 VAC
- 30, 60, 100 and 200 amp

Certifications and Compliances:

- NEMA: 3, 4X and 12
- UL Standard: 98
- CSA Standard: C22.2 No. 4

Ordering Information:

To order an enclosure complete with disconnect switch, insert the manufacturer's symbol in the designated positions of the catalog number. Symbols are shown in the

Options:

Description

Auxiliary switch, 600 VAC-DC heavy duty pushbutton station rating, can be supplied. Its contacts will close after switch contacts close and open before switch opens. S483*
Hubs (see "Note on Hubs") see listing on page 658
Grounding plate or bushing see listing on page 658

Suffix
to be Added
to Cat. #



Disconnect switch with built-in *Krydon* material handle

footnotes. Enclosures only can be ordered. Select from the listings below. For switches that can be accommodated, see Table 15 in Section 6C.

Amp Rating	Max HP Rating				DC using 2 poles only 250V Max.	Enclosure		
	AC Polyphase			With Switch 240VAC/250VDC Cat. #		With Switch 600VAC Cat. #	Without Switch Cat. #	
	200/240V	440/480V	550/600V					
Non-Fusible								
30	7-1/2	15	20	5	NST1018F-†30320	NST1018F-†30360	NST1018F-†	
60	15	30	40	10	NST1018F-†60320	NST1018F-†60360	NST1018F-†	
100	30	50	50	20	NST1426F-†10320	NST1426F-†10360	NST1426F-†	
200	50	125	100	40	NST1426F2-**20320	NST1426F2-**20360	NST1426F2-**	
Fusible ♦								
30	7-1/2	15	20	5	NST1018F-†30321	NST1018F-†30361	NST1018F-†	
60	15	30	40	10	NST1018F-†60321	NST1018F-†60361	NST1018F-†	
100	30	50	50	20	NST1426F-†10321	NST1426F-†10361	NST1426F-†	
200	50	125	100	40	NST1426F2-**20321	NST1426F2-**20361	NST1426F2-**	

NOTE ON HUBS: The following number and sizes of hubs (not mounted) are included when disconnect switches are ordered complete. If enclosures only are ordered, hubs must be ordered separately (see "Options").

Switch Size	Number Included	Hub Size
30	2	3/4
60	2	1 1/4
100	2	2
200	2	2 1/2

Disconnect Switches:

Manufacturer	Symbol	Switch Type
General Electric	G	Type QMW
Square D	D	Class 9422
Cutler-Hammer	W	Type DS

* For Square D switches only.

** For Cutler-Hammer and General Electric switches only. Accommodates Class J fuses only.

♦ Fuse clips are arranged for Class H fuses and field modifiable for Class J fuses. For Class R fuses, consult headquarters.

N2RS Enclosed Switches

Heavy-Duty

Cl. I, Div. 2, Groups B,C,D
NEMA 3, 4X, 7 (B,C,D Div. 2), 12
Watertight
Dusttight
Factory Sealed

N

Application:

N2RS heavy-duty enclosed switches are used:

- in a rigid metallic conduit or cable system for surface mounting adjacent to or remote from equipment being controlled.
- for individual motor control.
- to prevent arcing internal to the enclosed switch from causing ignition of a specific hazardous atmosphere, or atmospheres.
- in industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, and finishing areas where atmospheres may contain hazardous gases.
- in non-hazardous areas where sturdy, durable enclosures are required.
- when controlling motor, lighting and other circuits.

Features:

- Enclosed devices are unfused, factory sealed motor circuit switches.
- Exceeds NEC® wiring end room requirements for ease of installation.
- RSWP factory sealed industrial control switch, no external seals are required.
- Enclosure is made of Krydon® high-impact strength fiberglass-reinforced polyester material having excellent corrosion resistance and stability to heat.
- Krydon material hubs with integral bushings, for dead-end or through-feed arrangements are supplied.
- Krydon material mounting feet supplied.
- Suitable for wash down and corrosive areas (Type 4X).
- A padlock can be used to lock the operating handle in the "OFF" position.
- Rotary actuator with rattle-free snap action.
- Unitized, strong and durable construction provides longer service life for equipment.
- Factory sealed 10A, 600 VAC auxiliary contact switch provided.

Standard Materials:

- Enclosure - Krydon material
- External Hardware - Stainless Steel
- Operating Handle - Nylon

Size Ranges:

- Hub size - (2) 1½" (30, 60 amps)
- (2) 2½" (100 amps)

Krydon material hubs included (not mounted)

Certifications and Complies:

- NEC: Class I, Div. 2, Groups B, C, D
- NEMA: 3, 4X, 7 (B, C, D Div. 2), 12
- UL Standard: 508, 1604
- cUL to CSA Standard C22.2 No.14
- IP65



Furnished with Non-Fusible, Factory Sealed Motor Circuit Switch

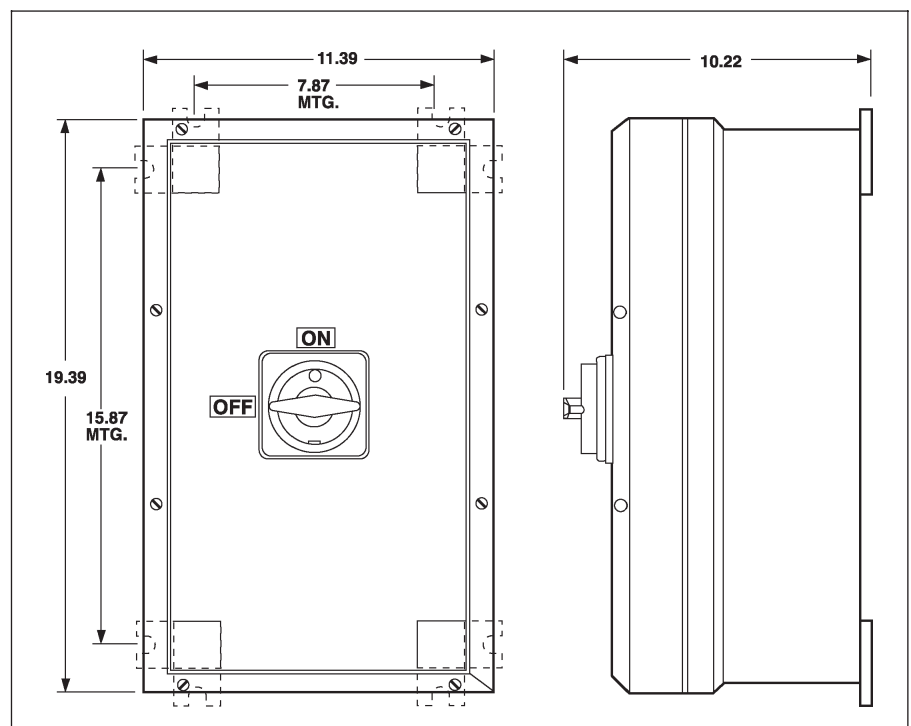
Switch Ratings

Amperes	Maximum HP – 3 Phase Volts AC		
	240	480	600
30	10	20	25
60	15	30	40
100	20	40	60

Ordering Information

Enclosure With 3-Pole Switch	
Hub Size	Cat. #
1½"	N2RS603
1½"	N2RS603
2½"	N2RS1003

Dimensions:



N
Corrosion
Resistant Products

Application:

Where a corrosion-, heat-, and water-resistant enclosure is desired, *Krydor*® type NJB/NCE/NCS/NCD boxes are installed in conduit systems to:

- act as pull box for conductors
- provide openings and space for making splices and taps in conductors
- provide for branch circuit runs
- provide access to conductors for maintenance and future system changes
- enclose and protect electrical devices

Features:

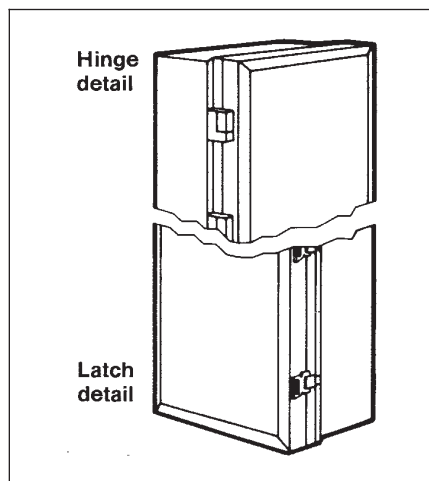
- Adjustable mounting feet permit side or top mounting (1018 and larger)
- Removable enclosure covers with Hypalon gaskets – hinged type optional – to provide full interior access for ease of wiring
- Hinged access door standard on NCE control enclosure covers
- Flat Neoprene access door gaskets

Certifications and Compliances:

- NEMA 3, 4X and 12 (raintight only, when latches are used)
- UL Standard: 50

Options:

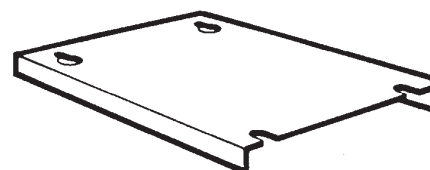
- Hubs for factory or field installation – see listing on page 658
- Grounding plate or bushing – see listing on page 658



- Hinge and latch kits. For field installation, order the required number of kits
Hinge kit – NH1
Latch and lockout kit – NTL01

- Mounting plates, made of steel with electrogalvanized finish, can be custom drilled to your specifications or supplied blank.

(Dimensions on page 654)



Fits Enclosure	Mounting Plate Cat. #	Dimensions	
		Length	Width
3¼ x 6¾	MP0407	4½	2¾
3¼ x 9	MP0409	6¾	2¾
3¼ x 11	MP0411	8¾	2¾
5 x 9	MP0509	6¾	3¾
7 x 10	MP0710	7½	5¾
7 x 14	MP0714	9	5¾
10 x 18	MP1018	14½	8½
10 x 24	MP1024	20	8½
14 x 26	MP1426	22½	12¾
24 x 26	MP2426	22	20

Junction Boxes

Basic Box Cat. #	With Hinges (1 side) Cat. #	With Trunk Latches (all sides) Cat. #	With Hinges (1 side) and Trunk Latches (3 sides) Cat. #	Control Enclosures With Door in Cover Cat. #	Maximum Hub Size	
					Long Sides	Short Sides
NJB040703					¾	¾
NJB040704					1	1
NJB040903					¾	¾
NJB041103					¾	¾
NJB041104					1	1
NJB050905					1½	1½
NJB071006	NJB071006-NH				2	2
NJB071406	NJB071406-NH				2	2
NJB101807	NJB101807-NH	NJB101807-NTL	NJB101807-NHTL	NCE101807	2*	2½
NJB102407	NJB102407-NH	NJB102407-NTL	NJB102407-NHTL	NCE102407	2*	2½
NJB142608	NJB142608-NH	NJB142608-NTL	NJB142608-NHTL	NCE142608	2½*	3
NJB242608	NJB242608-NH	NJB242608-NTL	NJB242608-NHTL	NCE242608	2½*	3

Control Station Enclosures

Without Hubs Cat. #	With One Hub (½") Cat. #	With Two Hubs (½") Cat. #	With One Hub (¾") Cat. #	With Two Hubs (¾") Cat. #	With One Hub (1") Cat. #	With Two Hubs (1") Cat. #
NCD01 NCS01 (1 device)	NCD11 NCS11	NCDC11 NCSC11	NCD21 NCS21	NCDC21 NCSC21	NCD31	NCDC31
NCD02 NCS02 (2 devices)	NCD12 NCS12	NCDC12 NCSC12	NCD22 NCS22	NCDC22 NCSC22	NCD32	NCDC32
NCD03 NCS03 (3 devices)	NCD13 NCS13	NCDC13 NCSC13	NCD23 NCS23	NCDC23 NCSC23	NCD33	NCDC33
NCD04 NCS04 (4 devices)	NCD14 NCS14	NCDC14 NCSC14	NCD24 NCS24	NCDC24 NCSC24	NCD34	NCDC34

* Can be increased one hub size when used without mounting plate.

Application:

NJBW instrument enclosures are used to enclose various instruments which require visual display, including ammeters, voltmeters, watt-hour meters, VAR meters, power factor meters, tachometer indicators, and various pressure and temperature controls.

Features:

- Enclosure bodies are made of Cooper Crouse-Hinds high-impact strength Krydon® fiberglass-reinforced polyester which has excellent corrosion resistance and stability to heat.
- Clear cover is a single piece of $\frac{3}{8}$ " acrylic plastic, gasketed and attached with stainless steel torque limiting screws.

Certifications and Compliances:

- NEMA 3, 4X, 12
- UL Standard 50

Options:

- Hubs – see listing on page 658
- Grounding plate or bushing – see listing on page 658
- Blank mounting plates – add suffix MP to Cat. No.

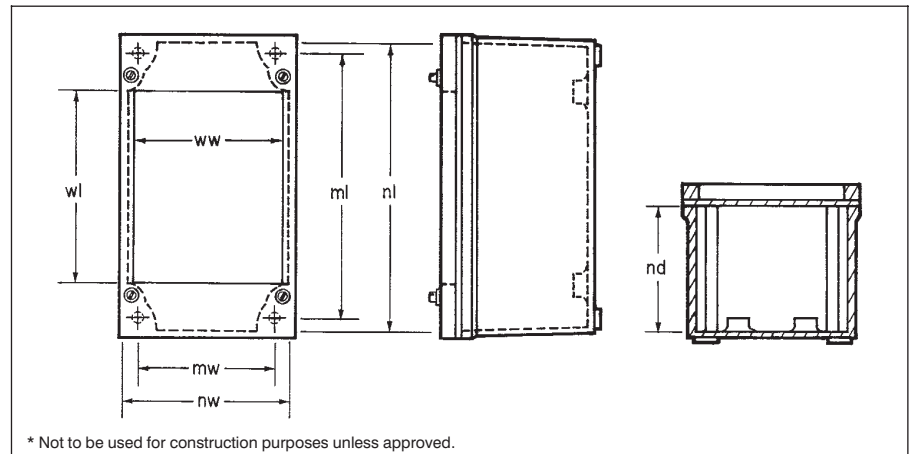


Enclosure Cat.

Window Dimensions

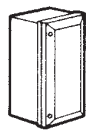
NJBW050905TC	4 $\frac{1}{4}$ x 5 $\frac{3}{4}$
NJBW071006TC	5 $\frac{3}{4}$ x 8 $\frac{1}{8}$
NJBW071406TC	5 $\frac{3}{4}$ x 12 $\frac{1}{8}$

Dimensions*

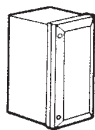


Enclosure Cat. #	Nominal Inside Dimensions			Mounting Dimensions		Window Dimensions	
	nw	nl	nd	mw	ml	ww	wl
NJBW050905TC	5	9	3 $\frac{15}{16}$	4 $\frac{3}{8}$	8 $\frac{3}{8}$	4 $\frac{1}{4}$	5 $\frac{3}{4}$
NJBW071006TC	7	10	4 $\frac{11}{16}$	6 $\frac{3}{8}$	9 $\frac{3}{8}$	5 $\frac{3}{4}$	8 $\frac{1}{8}$
NJBW071406TC	7	14	4 $\frac{11}{16}$	6 $\frac{3}{8}$	13 $\frac{3}{8}$	5 $\frac{3}{4}$	12 $\frac{1}{8}$

NJB Series Junction Boxes



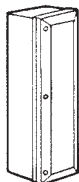
NJB040703
3 1/4 x 6 3/4 x 2 3/4



NJB040704
3 1/4 x 6 3/4 x 3 3/4



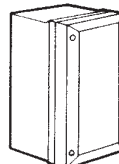
NJB040903
3 1/4 x 9 x 2 3/4



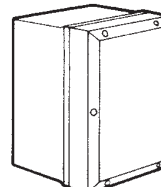
NJB041103
3 1/4 x 11 x 2 3/4



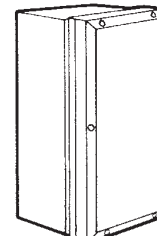
NJB041104
3 1/4 x 11 x 3 3/4



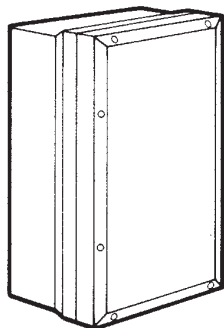
NJB050905
5 x 9 x 5



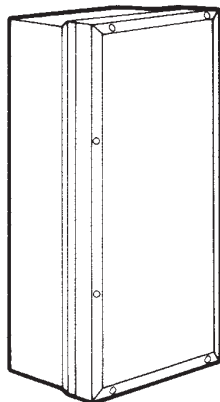
NJB071006
7 x 10 x 6 1/2



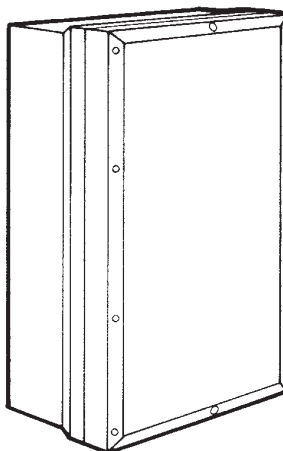
NJB071406
7 x 14 x 6 1/2



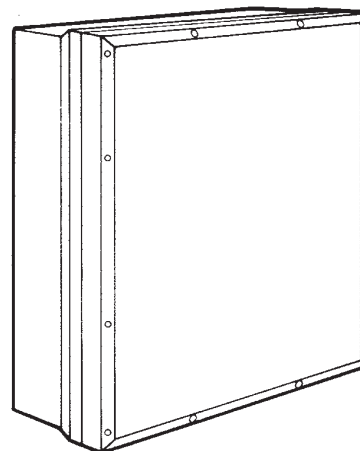
NJB101807
10 x 18 x 7 1/2



NJB102407
10 x 24 x 7 1/2

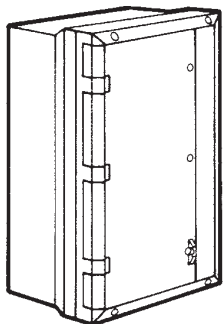


NJB142608
14 x 26 x 8 1/2

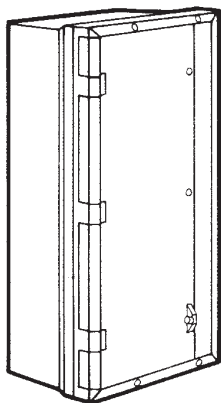


NJB242608
24 x 26 x 8 1/2

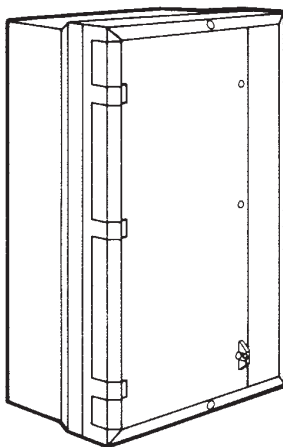
NCE Series Control Enclosures



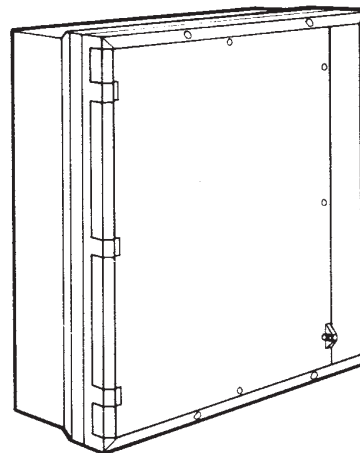
NCE101807
10 x 18 x 7 1/2



NCE102407
10 x 24 x 7 1/2

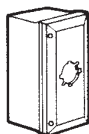


NCE142608
14 x 26 x 8 1/2

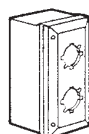


NCE242608
24 x 26 x 8 1/2

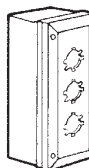
NCD/NCS Series Control Stations



NCD01
3 1/4 x 6 3/4 x 3 3/4
NCS01
3 1/4 x 6 3/4 x 2 3/4
1 Device



NCD02
3 1/4 x 6 3/4 x 3 3/4
NCS02
3 1/4 x 6 3/4 x 2 3/4
2 Devices



NCS03
3 1/4 x 9 x 2 3/4
3 Devices



NCD03 and NCD04
3 1/4 x 11 x 3 3/4
NCS04
3 1/4 x 11 x 2 3/4
4 Devices

KESTREL SERIES POLYESTER ENCLOSURES

N

Features/Applications

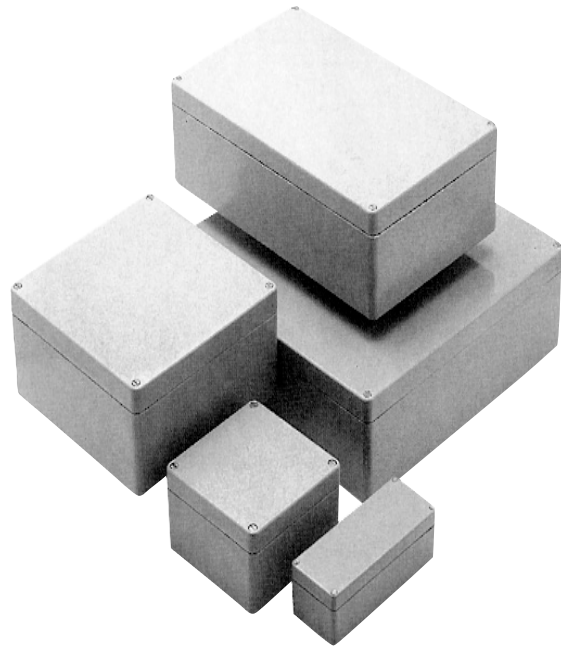
The Kestrel series of glass reinforced polyester enclosures available in seventeen sizes in black, gray and blue, provide a high quality maintenance free solution for intermediate electrical junctions.

Where corrosion resistance, impact strength or ingress protection are key factors the Kestrel series is highly recommended.

Black – Kestrel “PKE” series

Gray – Kestrel “POK” series

Blue – Kestrel “PBE” series (Intrinsic Safety only)



Specifications

Material		Glassfiber reinforced polyester (GRP)
Surface resistance	POK, PBE,	$\geq 1G \text{ Ohm}$
	PKE	$\leq 1G \text{ Ohm}$
Finish	Type PKE	Black, similar to RAL 9001
	Type POK	Grey, similar to RAL 7001
	Type PBE	Blue, similar to RAL 5012 (IS only)
Gasket		Silicone rubber
Cover mounting	Sizes 080806, 081106, 081606, 081906	4 × M4 captive stainless steel screws
	Sizes 082306	6 × M4 captive stainless steel screws
	Sizes 165610, 256013	6 × M6 captive stainless steel screws
	All other sizes	4 × M6 captive stainless steel screws
Box mounting	Sizes 080806, 081106, 081606, 081906, 082306	4 × mounting holes for M4 screws
	All other sizes	4 × mounting holes for M6 screws
Equipment mounting	Sizes 080806 + 081106	Brass mounting studs for M3 screws
	Sizes 081606, 081906, 082306	Brass mounting studs for M4 screws
	All other sizes	Brass mounting studs for M6 screws
Ingress protection	All sizes	IP68 to IEC 529 (EN 60529) (4.92ft/ 1 hour)
Temperature range		–4°F to 131°F (ambient)
Impact resistance		7J(Nm)
Toxicity		Halogens and cadmium free
Deluge test	All sizes	Spec. No. ATS01 (excluding size 165610 and 256013)

N
Corrosion
Resistant Products

Options

Assembly Grounding

Terminals, Myers Hubs and cable glands fitted to specification.
One piece or single brass continuity plate M6/M10 internal/external ground stud.

EMC

The PKE series can be treated to provide shielding against electromagnetic interference.

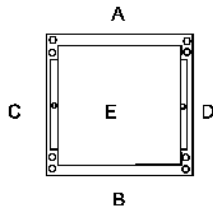
Approvals

REQUIRED



PKE (black) and POK (gray)
sizes: 080806, 081106, 081606, 081906, 121309, 122210, 161610, 162610, 163610, 252613, 254013, 256013, 414013.
Enclosure with terminals
EEx e II T5 or T6 to EN 50019
Certificate of Conformity
PKE: 94C. 102.961
POK: 94C. 102.962X
Empty enclosure EEx e II to EN 50019
Component Certificate
PKE: 93C. 102.959U
POK: 93C. 102.960U
Other enclosures: Industrial applications

A = Top
B = Bottom
C = Left hand side
D = Right hand side
E = Back



Size 080806

Size 081106

Black - Kestrel "PKE" Series
Gray - Kestrel "POK" Series
Blue - Kestrel "PBE" Series

Height 2.95"
Width 3.15"
Depth 2.36"
Weight 12 oz

Height 2.95"
Width 4.33"
Depth 2.36"
Weight 14 oz

Ordering Data

Cat. No.

Cat. No.

Black (GRP)

PKEPE080806

PKEPE081106

Gray (GRP)

POKPE080806

POKPE081106

Blue (GRP)

PBEPE080806

PBEPE081106

Guide to gland entries (Reference only)

Max. gland area dimensions through wall or enclosure.

Sides

Size

A + B 1.97" × 1.46"
C + D 1.14" × 1.26"

Sides

Size

A + B 3.15" × 1.46"
C + D 1.14" × 1.26"

Gland sizes (mm) per side (Reference only)

Brass glands with locknuts

16

Side A + B

Side C + D

1

1

20

1

—

25

—

—

32

—

—

40

—

—

50

—

—

Side A + B

Side C + D

2

1

2

—

—

—

—

—

—

—

—

—

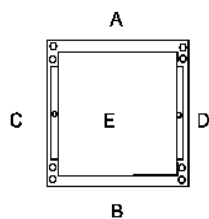
A= Top

B= Bottom

C= Left hand side

D= Right hand side

E= Back



Size 081606

Size 081906

Black - Kestrel "PKE" Series

Gray - Kestrel "POK" Series

Blue - Kestrel "PBE" Series

Height 2.94"
Width 6.30"
Depth 2.36"
Weight 1 lb 1 oz

Height 2.94"
Width 7.48"
Depth 2.36"
Weight 1 lb 2 oz

Ordering Data

Black (GRP)
Gray (GRP)
Blue (GRP)

Cat. No.

PKEPE081606
POKPE081606
PBEPE081606

Cat. No.

PKEPE081906
POKPE081906
PBEPE081906

Guide to gland entries (Reference only)

Max. gland area dimensions through wall of enclosure.

Sides

Size

A + B	5.12" × 1.46"
C + D	1.14" × 1.26"

Sides

Size

A + B	6.38" × 1.38"
C + D	1.14" × 1.14"

Gland sizes (mm) per side (Reference only)

Brass glands with locknuts	
16	
20	
25	
32	
40	
50	

Side A + B

Side C + D

4	1
3	—
—	—
—	—
—	—
—	—
—	—

Side A + B

Side C + D

5	1
4	—
—	—
—	—
—	—
—	—
—	—

N KESTREL SERIES

Size 082306

Height 2.94"
Width 9.05"
Depth 2.63"
Weight 1 lb 4 oz

Cat. No.

PKEPE082306
POKPE082306
PBEPE082306

Sides	Size
A + B	2 × (3.58" × 1.46")
C + D	1.14" × 1.26"

Side A + B	Side C + D
6	1
4	–
–	–
–	–
–	–
–	–

Size 121309

Height 4.72"
Width 4.92"
Depth 3.54"
Weight 1 lb 8 oz

Cat. No.

PKEPE121309
POKPE121309
PBEPE121309

Sides	Size
A + B	3.46" × 2.32"
C + D	2.36" × 2.01"

Side A + B	Side C + D
4	2
2	1
1	1
1	–
–	–
–	–

Size 122210

Height 4.72"
Width 8.66"
Depth 3.74"
Weight 2 lb 5 oz

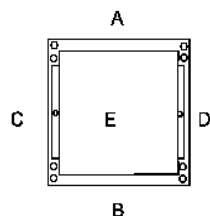
Cat. No.

PKEPE122210
POKPE122210
PBEPE122210

Sides	Size
A + B	7.16" × 2.48"
C + D	2.36" × 2.24"

Side A + B	Side C + D
12	3
5	1
4	1
3	1
–	–
–	–

A = Top
B = Bottom
C = Left hand side
D = Right hand side
E = Back



Size 161610

Size 162610

Black - Kestrel "PKE" Series
Gray - Kestrel "POK" Series
Blue - Kestrel "PBE" Series
All dimensions in inches

Height 6.30"
Width 6.30"
Depth 3.74"
Weight 2 lb 14 oz

Height 6.30"
Width 10.24"
Depth 3.74"
Weight 3 lb 12 oz

Ordering Data

Supplied with	Black (GRP)
	Gray (GRP)
	Blue (GRP)

Cat. No.

PKEPE161610
POKPE161610
PBEPE161610

Cat. No.

PKEPE162610
POKPE162610
PBEPE162610

Guide to gland entries (Reference only)

Max. gland area dimensions through wall of enclosure.

Sides

Size

A + B	4.49" × 2.56"
C + D	3.31" × 2.32"

Sides

Size

A + B	8.42" × 2.56"
C + D	3.31" × 2.32"

Gland sizes (mm) per side (Reference only)

Brass glands with locknuts	16
	20
	25
	32
	40
	50

Side A + B

Side C + D

6	4
3	2
2	1
2	1
1	–
–	–

Side A + B

Side C + D

14	4
6	2
4	1
3	1
3	–
–	–

N KESTREL SERIES

Size 163610

Height 6.30"
Width 14.17"
Depth 3.74"
Weight 4 lb 7 oz

Cat. No.

PKEPE163610
POKPE163610
PBEPE163610

Sides	Size
A + B	12.36" × 2.56"
C + D	3.31" × 2.32"

Side A + B Side C + D

20	4
10	2
7	1
5	1
4	–
–	–

Size 165610

Height 6.30"
Width 22.05"
Depth 3.74"
Weight 8 lb 2 oz

Cat. No.

PKEPE165610
POKPE165610
PBEPE165610

Sides	Size
A + B	2 (9.41" × 2.56")
C + D	3.31" × 2.32"

Side A + B Side C + D

32	4
14	2
10	1
8	1
6	–
–	–

Size 252613

Height 9.84"
Width 10.03"
Depth 4.92"
Weight 5 lb 13oz

Cat. No.

PKEPE252613
POKPE252613
PBEPE252613

Sides	Size
A + B	8.23" × 3.58"
C + D	6.85" × 3.39"

Side A + B Side C + D

21	15
10	8
8	6
4	3
3	2
2	2

N Corrosion
Resistant Products

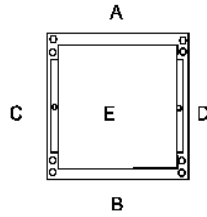
A = Top

B = Bottom

C = Left hand side

D = Right hand side

E = Back



Size 254013

Size 256013

Black - Kestrel "PKE" Series
Gray - Kestrel "POK" Series
Blue - Kestrel "PBE" Series

Height 9.84"
Width 15.75"
Depth 4.92"
Weight 10 lb

Height 9.84"
Width 23.62"
Depth 4.92"
Weight 12 lb 12 oz

Ordering Data

Supplied with	Black (GRP)
	Gray (GRP)
	Blue (GRP)

Cat. No.

PKEPE254013
POKPE254013
PBEPE254013

Cat. No.

PKEPE256013
POKPE256013
PBEPE256013

Guide to gland entries (Reference only)

Max. gland area dimensions through wall of enclosure.



Sides

Size

A + B	13.94" × 3.58"
C + D	6.85" × 3.87"

Sides

Size

A + B	2 (10.31" × 3.58")
C + D	6.77" × 3.38"

Gland sizes (mm) per side (Reference only)

Brass glands with locknuts	16
	20
	25
	32
	40
	50

Side A + B

Side C + D

33	15
18	8
14	6
7	3
5	2
4	2

Side A + B

Side C + D

48	15
24	8
20	6
10	3
8	2
6	2

N KESTREL SERIES

Size 414013

Height 15.95"
Width 15.75"
Depth 4.92"
Weight 12 lb 9 oz

Cat. No.

PKEPE414013
POKPE414013
PBEPE414013

Sides	Size
A + B	13.94" × 3.58"
C + D	12.95" × 3.39"

Side A + B Side C + D

33	30
18	16
14	13
7	6
5	4
4	4

Size 252617

Height 9.84"
Width 10.04"
Depth 6.50"
Weight 8 lb 8 oz

Cat. No.

PKEPE252617
POKPE252617
PBEPE252617

Sides	Size
A + B	8.23" × 3.58"
C + D	6.85" × 3.39"

Side A + B Side C + D

21	15
10	8
8	6
4	3
3	2
2	2

Size 254017

Height 9.84"
Width 15.75"
Depth 6.50"
Weight 11 lb 2oz

Cat. No.

PKEPE254017
POKPE254017
PBEPE254017

Sides	Size
A + B	13.94" × 3.58"
C + D	6.85" × 3.39"

Side A + B Side C + D

33	15
18	8
14	6
7	3
5	2
4	2

N Corrosion
Resistant Products

Mounting plates

Mounting plates for the PKE, POK, PBE series of enclosures manufactured from 2mm zinc coated sheet steel.

Type	Cat. No.	Type	Cat. No.
080806	POKZTMP0808	163610	POKZTMP1636
081106	POKZTMP0811	165610	POKZTMP1656
081606	POKZTMP0816	252613	POKZTMP2526
081906	POKZTMP0819	254013	POKZTMP2540
082306	POKZTMP0823	256013	POKZTMP2560
121309	POKZTMP1213	414013	POKZTMP4140
122210	POKZTMP1222	252617	POKZTMP2526
161610	POKZTMP1616	254017	POKZTMP2540
162610	POKZTMP1626		

Ground continuity plates

Internal continuity plates manufactured from 0.05" brass. May be used for bonding cable glands in any of the four enclosure faces.

Type	Cat. No.	Type	Cat. No.
080806	POKBSECC1	163610	POKBSECC7
081106	POKBSECC2	165610	POKBSECC71
081606	POKBSECC3	252613	POKBSECC8
081906	POKBSECC31	254013	POKBSECC9
082306	POKBSECC32	256013	POKBSECC91
121309	POKBSECC4	414013	POKBSECC10
122210	POKBSECC5	252617	POKBSECC8
161610	POKBSECC51	254017	POKBSECC9
162610	POKBSECC6		

3 mm single brass ground plates

Manufactured from 0.19" brass for fitting along sides of enclosure.

Type (long side)	Cat. No.	Type (short side)	Cat. No.
121309	POKBSECP4L	121309	POKBSECP4S
122210	POKBSECP5L	122210	POKBSECP5S
162610	POKBSECP6L	162610	POKBSECP6S
163610	POKBSECP7L	163610	POKBSECP7S
252613/252617	POKBSECP8L	252613/252617	POKBSECP8S
254013/254017	POKBSECP9L	254013/254017	POKBSECP9S
414013	POKBSECP9L	414013	POKBSECP10S
161610	POKBSECP51L	161610	POKBSECP51S
165610 (4 off per box)	POKBSECP71L	165610	POKBSECP71S
256013 (4 off per box)	POKBSECP91L	256013	POKBSECP91S

Ground bar

12 x 0.08" zinc plated steel bar complete with cable clamps having locking tongue which locates in the bar. Bars are secured to base of enclosure either directly to the brass inserts or pillars fitted to brass inserts.

Type	(Horiz. bar) Cat. No.	No. of Poles	(Vert. bar) Cat. No.	No. of Poles
121309	KBXERHK41	4	KBXERVK41	2
122210	KBXERHK51	6	KBXERVK41	2
161610	KBXERHK52	6	KBXERVK52	4
162610	KBXERHK61	8	KBXERVK52	4
163610	POKERH7	8	KBXERVK52	4
165610	POKERH71	8	KBXERVK52	4
252613	KBXERVK81	8	KBXERVK8	6
254013	KBXERHK81	12	KBXERVK8	6
256013	POKERH91	12	KBXERVK8	6
414013	KBXERHK81	12	KBXERHK71	8
252617	KBXERVK81	8	KBXERVK8	6
254017	KBXERHK81	12	KBXERVK8	6

Stand off pillars

Plated mild steel, supplied in packs of 2. Not suitable for enclosure sizes 080806, 081106, 081606, 081906 or 082306.

Type	Cat. No.	Height
HR 15	ACCSOP15	0.59"
HR 30	ACCSOP30	1.18"

Ground pillar kit

Brass nickel plated grounding kits comprising of 1 ground bar and 2 pillars. Provide additional grounding facilities within enclosure. Suitable for enclosure sizes 080806, 081106, 081906 + 082306 only.

Cat. No.
POKBSEPTKIT

Ground studs

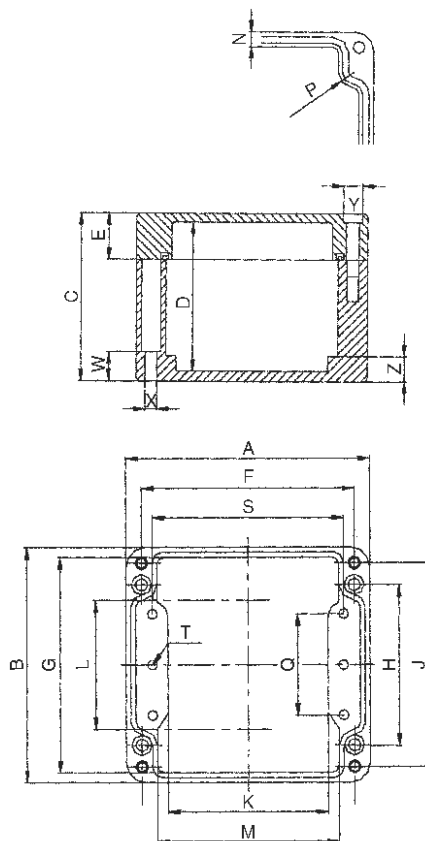
Type	Cat. No.
M6 Brass	ACCSSESM6KIT
M6 Stainless steel	ACCS1ESM6KIT
M10 Brass	ACCSSESM10KIT
M10 Stainless steel	ACCS1ESM10KIT

Mounting feet

Supplied in sets of 4. Complete with mounting screws.

Type	Cat. No.	Size
MF5	POKMFKIT5	Small size 080806, 081106, 081606, 081906, 082306
MF6	POKMFKIT6	Large & all other sizes

Dimensional Details



Kestrel Enclosure Series Dimensions (inches)

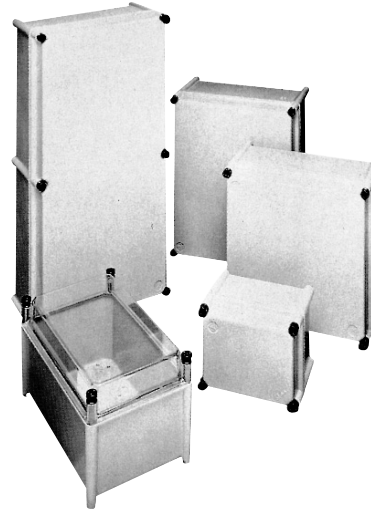
Code	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	X	Y	Z
PKE080806	3.15	2.95	2.40	2.01	0.83	2.68	2.48	1.77	2.56	1.97	1.30	2.21	0.32	0.34	N/A	N/A	2.36	M4	0.32	0.18	0.32	0.35
PKE081106	4.33	2.95	2.40	2.01	0.83	3.86	2.48	1.77	2.56	3.15	1.30	3.39	0.32	0.34	N/A	N/A	3.54	M4	0.32	0.18	0.32	0.35
PKE081606	6.30	2.95	2.40	2.01	0.83	5.83	2.48	1.77	2.56	5.19	1.30	5.35	0.32	0.34	N/A	N/A	5.47	M4	0.32	0.18	0.32	0.35
PKE081906	7.48	2.95	2.40	2.01	0.83	7.01	2.48	1.77	2.56	6.30	1.26	6.54	0.32	0.34	N/A	N/A	6.65	M4	0.32	0.18	0.32	0.35
PKE082306	9.06	2.95	2.40	2.01	0.83	8.58	2.48	1.77	2.56	7.87	1.26	8.11	0.32	0.34	N/A	0.42	8.23	M4	0.32	0.18	0.32	0.35
PKE121309	4.92	4.72	3.54	3.15	0.98	4.29	4.09	3.23	4.33	3.23	2.60	3.66	0.32	0.41	2.05	N/A	3.86	M6	0.61	0.18	0.41	0.43
PKE122210	8.66	4.72	3.74	3.35	1.08	8.03	4.09	3.23	4.33	6.97	2.60	7.40	0.37	0.41	2.05	N/A	7.60	M6	0.61	0.26	0.41	0.43
PKE161610	6.30	1.72	3.74	3.35	0.98	5.51	5.51	4.33	5.79	4.72	3.54	4.72	0.37	0.51	2.99	N/A	5.20	M6	0.79	0.26	0.47	N/A
PKE162610	10.24	6.30	3.74	3.35	0.98	9.45	5.51	4.33	5.79	8.66	3.54	8.66	0.37	0.51	2.99	N/A	9.06	M6	0.79	0.26	0.47	N/A
PKE163610	14.17	6.30	3.74	3.35	0.98	13.39	5.51	4.33	5.79	12.60	3.54	12.60	0.39	0.51	2.99	N/A	13.07	M6	0.79	0.26	0.47	N/A
PKE165610	22.05	6.30	3.74	3.35	0.98	21.26	5.51	4.33	5.79	20.47	3.54	20.47	0.37	0.51	2.99	0.65	20.95	M6	0.79	0.26	0.47	N/A
PKE252613	10.04	6.30	4.92	4.53	1.10	9.25	9.06	7.87	9.33	8.47	7.09	8.47	0.37	0.47	3.94	N/A	8.98	M6	0.79	0.26	0.47	N/A
PKE254013	15.75	9.84	4.92	4.53	2.68	14.96	9.06	7.87	9.33	14.17	7.09	14.17	0.37	0.51	3.94	N/A	14.65	M6	0.79	0.26	0.47	N/A
PKE256013	23.62	9.84	4.92	4.53	1.10	22.84	9.06	7.87	9.33	21.99	7.03	21.99	0.37	0.35	3.94	0.51	22.62	M6	0.79	0.26	0.47	N/A
PKE414013	15.75	15.95	4.92	4.53	1.10	14.96	15.16	13.98	15.43	14.17	13.19	14.17	0.37	0.35	9.76	N/A	14.72	M6	0.79	0.26	0.47	N/A
PKE252617	10.04	9.84	6.50	6.10	2.68	9.26	9.06	7.87	9.33	8.47	7.09	8.47	0.37	0.51	3.94	N/A	8.98	M6	0.79	0.26	0.08	N/A
PKE254012	15.75	9.84	6.50	6.10	2.68	14.96	9.06	7.87	9.33	14.17	7.09	14.17	0.37	0.51	3.94	N/A	14.65	M6	0.79	0.26	0.47	N/A

Dimension R: only appears on enclosures with 6 cover mounting screws, dimension is the radius of the center mounting screws.

TBF/TBP Series Glassfiber Reinforced Polyester Enclosures

Features/Applications

The TBF and TBP series of enclosures are molded from a glassfiber polyester resin molding compound which is highly resistant to corrosion. Available in nine sizes with a minimum wall thickness of 3mm ensures they are suited to a wide range of applications such as control systems, meters, valves or instruments and are ideally suited for environments where weight is a prime consideration.



Specifications

Material	TBF 191514 – 606018	Glassfiber reinforced polyester body and cover.
	TBP 301918 – 603021	Glassfiber reinforced polyester body, polycarbonate cover.
Gasket		Expanded polyurethane foam.
Cover mounting		4 or 6 captive square threaded nylon screws.
Box mounting		Integral 0.217" diameter hole.
		External mounting lugs – optional.
Equipment mounting		4 or 6 × M4 threaded inserts
Ingress protection	TBF 191514 – 606018	IP66/67 to IEC 529.
	TBP 301918 – 603021	IP66 to IEC 529
Temperature range	TBF/TBP	– 4°F to +203°F
Ambient temperature	T5	–4°F to +104°F
	T6	–4°F to +140°F
Impact resistance	TBF 191514 – 606018	4 J (Nm) to EN 50014
	TBP 301918 – 603021	7 J (Nm) to BS 4683: Part 4
Flammability	Glassfiber Reinforced Polyester	UL 94 HB
	Polycarbonate	UL 94 V2
Toxicity		No halogens
Oxygen index		28% (ASTM – D2863 – 77)
Surface resistivity		DIN 53482 – 12

Options (consult factory)

Assembly	Terminals, cable glands, Myers Hubs, locks fitted to specification.
Grounding	Single brass continuity plates, ground studs.

Approvals



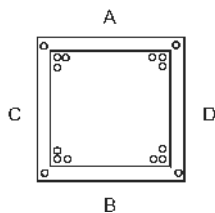
Enclosure with terminals

Empty enclosure

TBF 191514-606018
EEx e II T6 to EN 50019, (BS 5501: part 6)
Certificate of Conformity: Ex 92C 3393X
TBP 301918, 303018, 373018 & 603021
Ex e II T6 to BS 4683 part 4
Certificate of Assurance Ex 79255X
TBF 191514-606018
EEx e II T6 to EN 50019, (BS 5501: part 6)
Component Certificate: 88B.102.698U
TBP 301918, 303018, 373018 & 603021
Ex e II to BS 4683: part 4
Component Approval: 3032U

N TBF/TBP Series

A= Top
B= Bottom
C= Left hand side
D= Right hand side



TBF 191514

Height 7.32"
Width 5.95"
Depth 5.47"
Weight 2.33 lb

TBF301918 TBP301918

Height 11.89"
Width 7.32"
Depth 6.89"
Weight 3.86 lb.(TBF) 3.12 lb (TBP)

All dimensions in inches

Ordering Data

Supplied with	Polyester cover
	Clear polycarbonate cover

Cat. No.

	TBFPE191514

Cat. No.

	TBFPE301918
	TBPPE301918

Guide to gland entries

Max. gland area dimensions

Sides	Size
A + B	3.94" × 2.76"
C + D	5.12" × 2.76"

Sides	Size
A + B	5.12" × 3.94"
C + D	9.84" × 3.94"

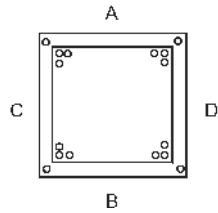
Gland sizes (mm) per side

Brass glands with locknuts	16
	20
	25
	32
	40
	50

Side A + B	Side C + D
4	6
2	4
2	3
–	1
–	1
–	–

Side A + B	Side C + D
10	22
6	13
4	8
3	5
1	3
1	2

A= Top
B= Bottom
C= Left hand side
D= Right hand side



TBF303018 TBP303018

TBF373018 TBP373018

All dimensions in inches

Ordering Data

Supplied with	Polyester cover
	Clear polycarbonate cover

Height	11.89"
Width	11.89"
Depth	6.89"
Weight	5 lb (TBF) 4.34 lb (TBP)

Height	14.65"
Width	11.89"
Depth	6.89"
Weight	6.39 lb. (TBF) 5.22 lb (TBP)

Cat. No.

	TBFPE303018
	TBPPE303018

Cat. No.

	TBFPE373018
	TBPPE373018

Guide to gland entries

Max. gland area dimensions

Sides	Size
A + B	9.84" × 3.94"
C + D	9.84" × 3.94"

Sides	Size
A + B	9.84" × 3.94"
C + D	12.60" × 3.94"

Gland sizes (mm) per side

Brass glands with locknuts	16
	20
	25
	32
	40
	50

Side A + B	Side C + D
22	22
13	13
8	8
5	5
3	3
2	2

Side A + B	Side C + D
22	28
13	17
8	11
5	7
3	4
2	3

N TBF/TBP Series

TBF493018

Height 19.21"
Width 11.89"
Depth 6.89"
Weight 8.29 lb

Cat. No.

TBFPE493018

Sides	Size
A + B	9.84" × 3.94"
C + D	17.17" × 3.94"

Side A + B	Side C + D
22	40
13	24
8	16
5	11
3	7
2	5

TBF563018

Height 21.97"
Width 11.89"
Depth 6.89"
Weight 8.75 lb

Cat. No.

TBFPE563018

Sides	Size
A + B	9.84" × 3.94"
C + D	2 (8.94" × 3.94")

Side A + B	Side C + D
22	38
13	24
8	16
5	10
3	6
2	4

TBF603018 TBP603021

Height 23.74"
Width 11.89"
Depth 6.89" (TBF) 8.29" (TBP)
Weight 9.66 lb (TBF) 8.60 lb (TBP)

Cat. No.

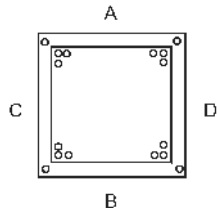
TBFPE603018

TBPPE603021

Sides	Size
A + B	9.84" × 3.94"
C + D	2 (9.84" × 3.94")

Side A + B	Side C + D
22	46
13	26
8	16
5	10
3	6
2	4

A = Top
B = Bottom
C = Left hand side
D = Right hand side



TBF603718

TBF606018

All dimensions in inches

Height 23.74"
Width 14.65"
Depth 6.89"
Weight 11.79 lb

Height 23.74"
Width 23.74"
Depth 6.89"
Weight 16.31 lb

Ordering Data

Supplied with	Polyester cover
	Clear polycarbonate cover

Cat. No.

TBFPE603718

Cat. No.

TBFPE606018

Guide to gland entries

Max. gland area dimensions

Sides	Size
A + B	12.60" × 3.94"
C + D	2 (9.84" × 3.94")

Sides	Size
A + B	2 (9.84" × 3.94")
C + D	2 (9.84" × 3.94")

Gland sizes (mm) per side

Brass glands with locknuts	16
	20
	25
	32
	40
	50

Side A + B	Side C + D
28	44
17	26
11	16
7	10
4	6
3	4

Side A + B	Side C + D
44	44
26	26
16	16
16	16
6	6
4	4

Accessories

Mounting plates

For equipment mounting, manufactured from galvanized steel.

Type	Cat. No.	Type	Cat. No.
TBF/TBP191514	TBFZTMP1915	TBF563018	TBFZTMP5630
TBF/TBP301918	TBFZTMP3019	TBF/TBP603018/21	TBFZTMP6030
TBF/TBP303018	TBFZTMP3030	TBF603718	TBFZTMP6037
TBF/TBP373018	TBFZTMP3730	TBF606018	TBFZTMP6060
TBF493018	TBFZTMP4930		

3mm single brass ground plates

Ground continuity plates manufactured from 0.12" brass. Plates must be connected to the internal ground point of the enclosure.

Type	Side	Cat. No.	Side	Cat. No.
TPF/TBP191514	C+D	TBFBSECP1L	A+B	TBFBSECP1S
TPF/TBP301918	C+D	TBFBSECP2L	A+B	TBFBSECP2S
TPF/TBP303018	C+D	TBFBSECP2L	A+B	TBFBSECP2L
TBF/TBP373018	C+D	TBFBSECP4L	A+B	TBFBSECP2L
TBF493018	C+D	TBFBSECP4AL	A+B	TBFBSECP2L
TBF563018	C+D (2×)	TBFBSECP4BL	A+B	TBFBSECP2L
TBF/TBP603018/21	C+D (2×)	TBFBSECP2L	A+B	TBFBSECP2L
TBF603718	C+D (2×)	TBFBSECP2L	A+B	TBFBSECP4L
TBF606018	C+D (2×)	TBFBSECP2L	A+B (2×)	TBFBSECP2L

Ground studs

Tapped M6 for internal ground connection

Type	Cat. No.
M6 Brass	ACCBSESM6KIT
M6 Stainless steel	ACCS1ESM6KIT
M10 Brass	ACCBSESM10KIT
M10 Stainless steel	ACCS1ESM10KIT

External mounting lugs

For external mounting points, direct mounting through the four corner holes of enclosure.

Type	Cat. No.
Mounting lugs	TBFEMF4SET
Set of 4 pieces, glassfiber reinforced polyamide	

Cover mounting screws

Type	Cat. No.
Slotted screw	TBFLIDSCWST

Padlock set

Stainless steel, maximum diameter of padlock: 0.32"

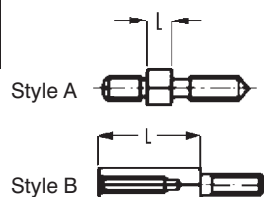
Type	Cat. No.
Padlock set	TBFPADLOCK

Hinge screw

Cover security device. Note: Box must be mounted prior to fitting the hinge screw.

Type	Cat. No.
Hinge screw	TBFHGESRW
Set of 2 pieces	

Stand off pilars

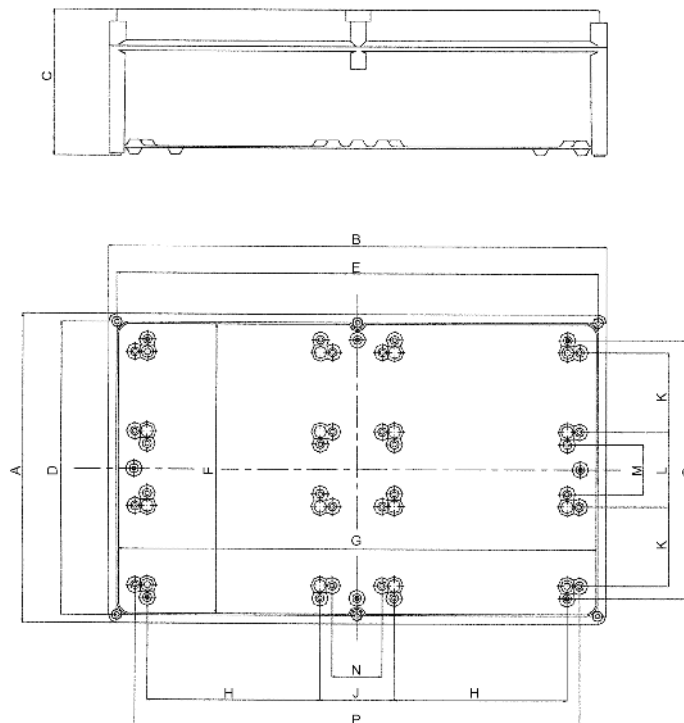


Type	Cat. No.	L (inches)	Thread Size	Style
Spacer M4	TBFSOPM4X6	0.24	M4	A
Spacer M4	TBFSOPM4X10	0.39	M4	B
Spacer M4	TBFSOPM4X15	0.59	M4	B
Spacer M4	TBFSOPM4X20	0.79	M4	B
Spacer M4	TBFSOPM4X25	0.98	M4	B
Spacer M4	TBFSOPM4X30	1.18	M4	B
Spacer M4	TBFSOPM4X60	2.36	M4	B
Spacer M4	TBFSOPM4X97	3.82	M4	B
Spacer M4	TBFSOPM4X102	4.02	M4	B

Plastic rain hoods

Type	Cat. No.
Small	TBFPRHSMML
Large	TBFPRMLGE

Dimensional Details

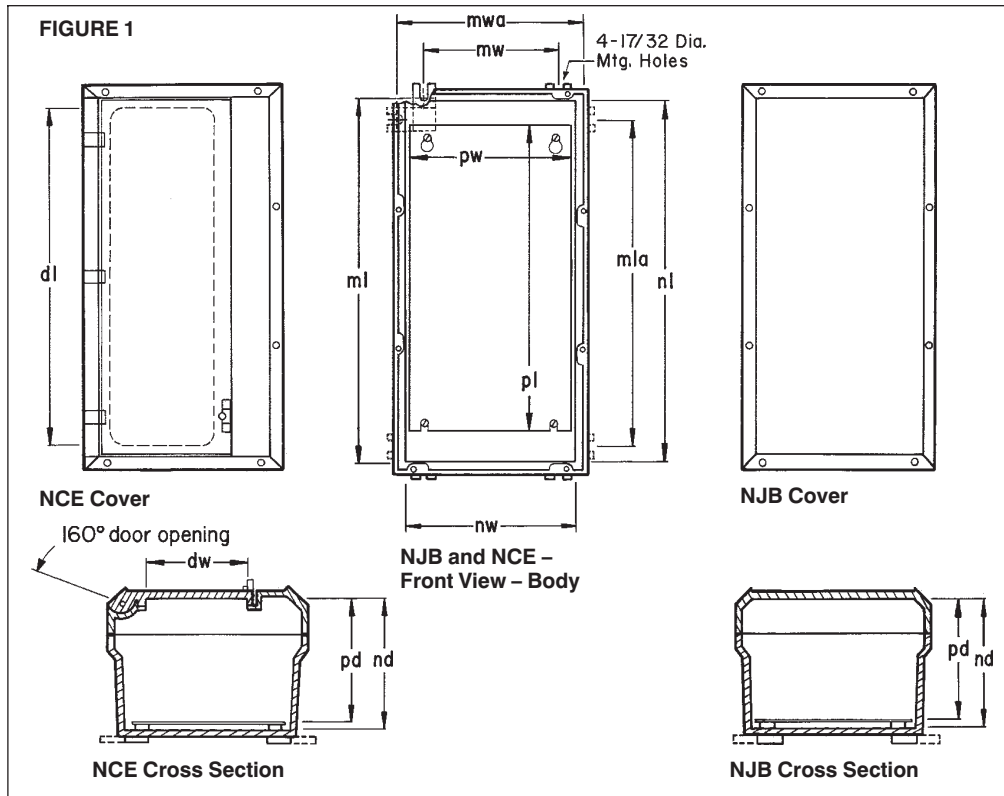


Dimensions (inches)

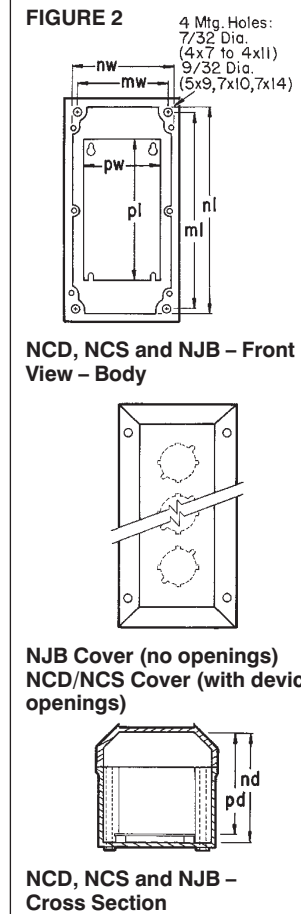
Code	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
TBF/TBP191514	5.95	7.32	5.51	5.16	6.54	5.16	6.54	3.74	N/A	2.36	N/A	N/A	N/A	4.96	3.54
TBF/TBP301918	7.32	11.89	6.85	6.54	11.10	6.54	10.93	2.36	2.36	3.74	N/A	N/A	2.36	9.45	4.92
TBF/TBP303018	11.89	11.89	6.85	11.10	11.10	11.10	10.91	8.27	N/A	8.27	N/A	N/A	N/A	9.45	9.45
TBF/TBP373018	14.65	11.89	6.85	13.86	11.10	13.86	10.91	8.27	N/A	3.74	3.54	2.36	N/A	9.45	12.21
TBF/TBP493018	19.21	11.89	6.87	18.35	11.02	18.39	10.91	8.27	N/A	3.74	N/A	N/A	N/A	9.45	16.77
TBF/TBP563018	21.97	11.89	6.87	21.10	11.02	21.14	10.91	8.27	N/A	3.74	3.54	2.36	N/A	9.45	19.53
TBF/TBP603018	11.89	23.74	6.87	11.02	22.87	11.06	21.91	9.47	2.36	8.27	N/A	N/A	2.36	21.30	9.45
TBF/TBP603718	14.65	23.74	6.93	13.78	22.87	13.82	31.91	9.47	2.36	3.74	3.54	2.36	2.39	21.30	12.21
TBF/TBP606018	23.74	23.74	8.25	22.87	22.87	21.91	21.91	8.27	2.36	8.27	3.54	2.36	3.54	20.10	21.26

NJB/NCE/NCS/NCD Junction Boxes and Enclosures

Dimensions*



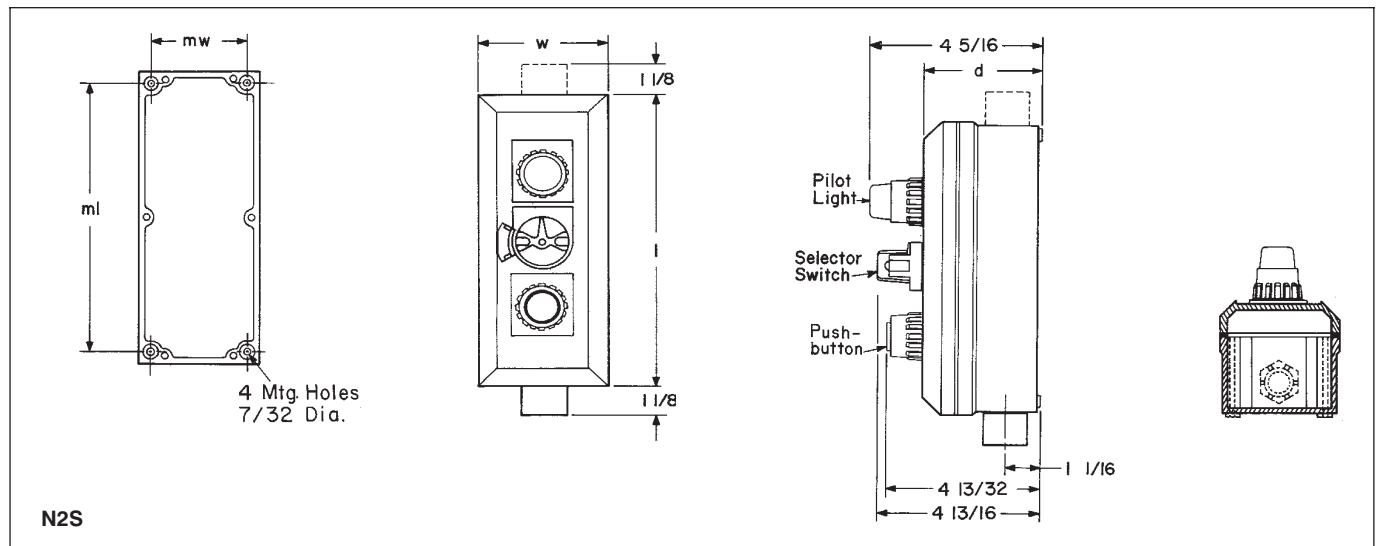
* Not to be used for construction purposes unless approved.



Cat. #	Nominal Inside Dimensions			Plate Dimensions			Door Opening Dimensions		Mounting Dimensions		Alternate Mounting Dimensions	
	nw	nl	nd	pw	pl	pd	dw	dl	mw	ml	mwa	mla
FIGURE NO. 1 (Approx. wall thickness – 1/4")												
NJB101807	10	18	7 1/2	8 1/2	14 1/2	7 1/16	—	—	7 7/8	19 3/8	11 3/8	15 7/8
NCE101807	—	—	—	—	—	—	5 11/16	16 7/8	—	—	—	—
NJB102407	10	24	7 1/2	8 1/2	20	7 1/16	—	—	7 7/8	25 3/8	11 3/8	21 7/8
NCE102407	—	—	—	—	—	—	5 11/16	22 7/8	—	—	—	—
NJB142608	14	26	8 1/2	12 3/4	22 1/2	8 1/16	—	—	11 7/8	27 1/4	15 3/8	23 3/4
NCE142608	—	—	—	—	—	—	9 11/16	23 11/16	—	—	—	—
NJB242608	24	26	8 1/2	20	22 1/2	8 1/16	—	—	21 3/4	27 1/4	25 1/4	25 3/4
NCE242608	—	—	—	—	—	—	19 11/16	23 11/16	—	—	—	—
FIGURE NO. 2 (Approx. wall thickness – 3/16")												
NJB040703	3 1/4	6 3/4	2 3/4	2 3/4	4 1/2	2 3/8	—	—	2 15/16	6 3/8	—	—
NCS01 & 2	—	—	—	—	—	—	—	—	—	—	—	—
NCD01	—	—	—	—	—	—	—	—	—	—	—	—
NJB040704	3 1/4	6 3/4	3 3/4	2 3/4	4 1/2	3 3/8	—	—	2 15/16	6 3/8	—	—
NCD02	—	—	—	—	—	—	—	—	—	—	—	—
NJB040903	3 1/4	9	2 3/4	2 3/4	6 3/4	2 3/8	—	—	2 15/16	8 5/8	—	—
NCS03	—	—	—	—	—	—	—	—	—	—	—	—
NJB041103	3 1/4	11	2 3/4	2 3/4	8 3/4	2 3/8	—	—	2 15/16	10 7/8	—	—
NCS04	—	—	—	—	—	—	—	—	—	—	—	—
NCD03	—	—	—	—	—	—	—	—	—	—	—	—
NJB041104	3 1/4	11	3 3/4	2 3/4	8 3/4	3 3/8	—	—	2 15/16	10 7/8	—	—
NCD04	—	—	—	—	—	—	—	—	—	—	—	—
NJB050905	5	9	5 5/16	3 3/4	6 3/4	4 11/16	—	—	4 3/8	8 3/8	—	—
NJB071006	7	10	6 1/2	5 3/4	7 1/2	6 1/16	—	—	6 3/8	9 3/8	—	—
NJB071406	7	14	6 1/2	5 3/4	9	6 1/16	—	—	6 3/8	13 3/8	—	—

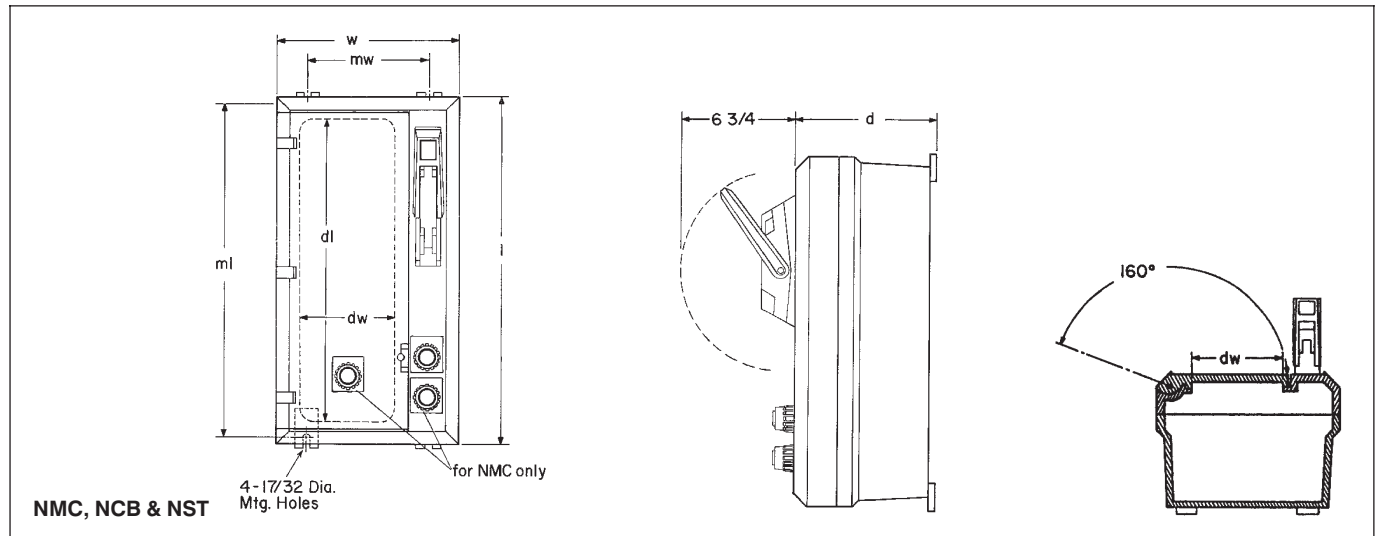
N2S Control Stations, NMC Combination Line Starters, NCB Circuit Breakers, NST Disconnect Switches and Enclosures

Dimensions*



For 1/2" and 3/4" hub sizes (for 1" hub and/or MSR option, consult page 612).

N2S(C) Body Style	Outside Dimensions			Mounting Dimensions	
	l	w	d	ml	mw
1 device	7 1/4	3 13/16	4 3/8	6 3/8	2 15/16
2 devices	7 1/4	3 13/16	4 3/8	6 3/8	2 15/16
3 devices	9 1/2	3 13/16	4 3/8	8 5/8	2 15/16
4 devices	11 3/4	3 13/16	4 3/8	10 7/8	2 15/16

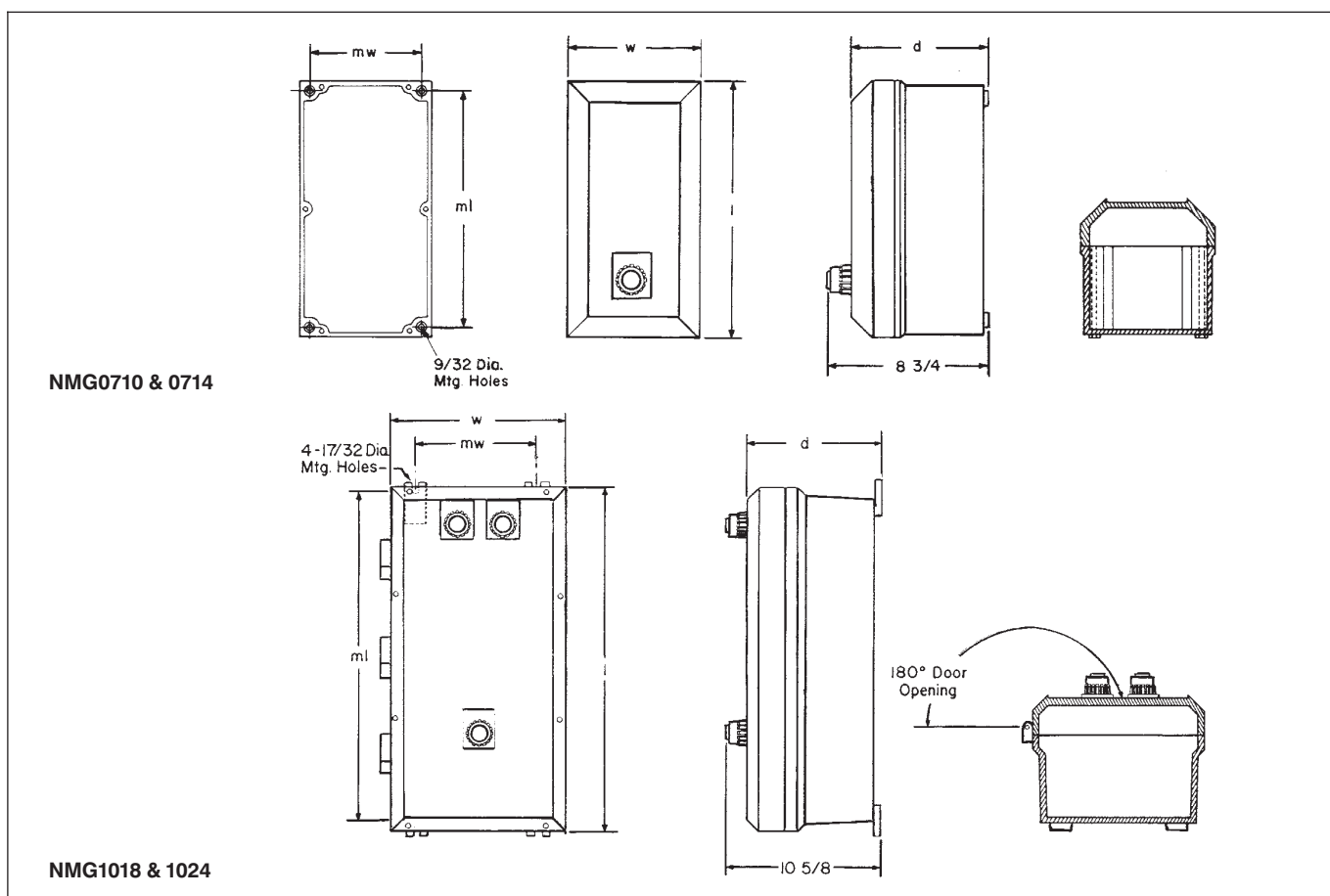
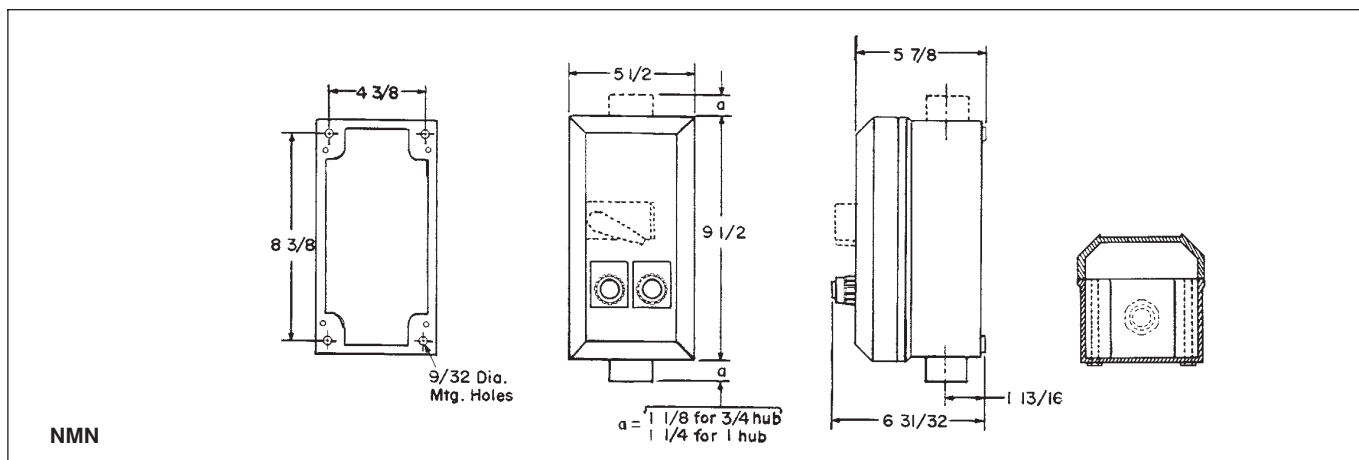


Cat. #	Outside Dimensions			Mounting Dimensions		Door Opening Dimensions	
	l	w	d	mw	ml	dl	dw
NCB1018	19 13/32	11 13/32	8 23/32	7 7/8	19 3/8	16 7/8	5 11/16
NST1018	19 13/32	11 13/32	8 23/32	7 7/8	19 3/8	16 7/8	5 11/16
NMC1024	25 13/32	11 13/32	8 23/32	7 7/8	25 3/8	22 7/8	5 11/16
NCB1024	25 13/32	11 13/32	8 23/32	7 7/8	25 3/8	22 7/8	5 11/16
NMC1426	27 13/32	15 13/32	9 23/32	11 7/8	27 1/4	23 11/16	9 11/16
NCB1426	27 13/32	15 13/32	9 23/32	11 7/8	27 1/4	23 11/16	9 11/16
NST1426	27 13/32	15 13/32	9 23/32	11 7/8	27 1/4	23 11/16	9 11/16
NMC2426	27 13/32	25 13/32	9 23/32	21 3/4	27 1/4	23 11/16	19 11/16

* Dimensions are approximate, not to be used for construction purposes.

NMN Manual Line Starters, NMG Magnetic Line Starters and Enclosures

Dimensions*



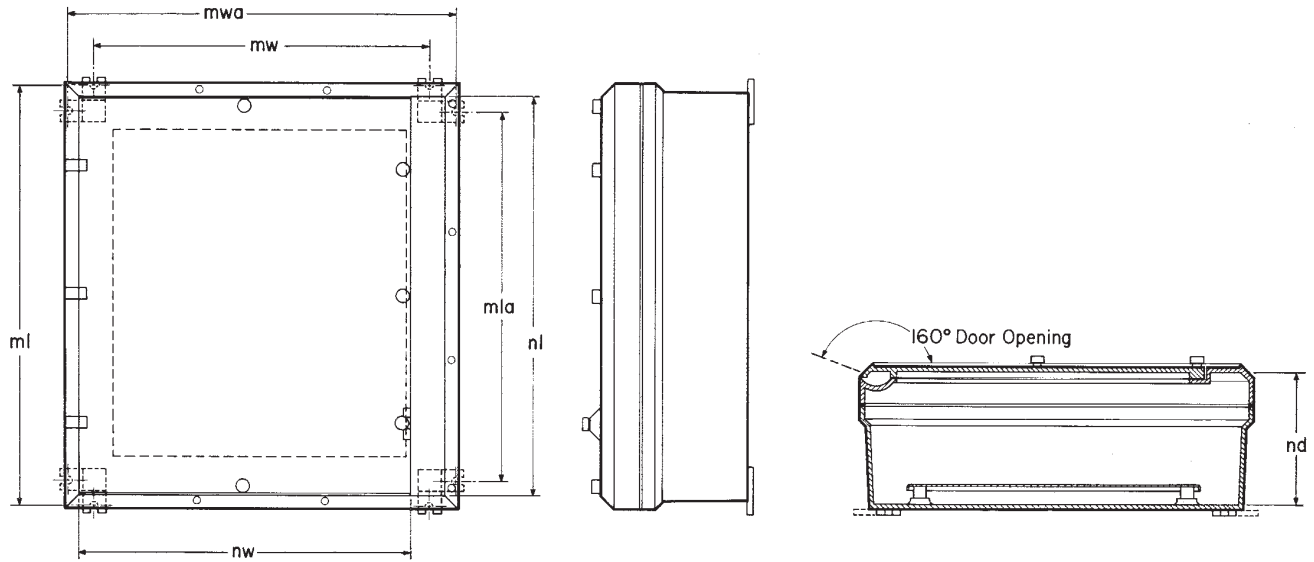
Enclosure	Outside Dimensions			Mounting Dimensions	
	l	w	d	ml	mw
Cat. #					
NMG0710	$10 \frac{1}{2}$	$7 \frac{1}{2}$	7	$9 \frac{3}{8}$	$6 \frac{3}{8}$
NMG0714	$14 \frac{1}{2}$	$7 \frac{1}{2}$	7	$13 \frac{3}{8}$	$6 \frac{3}{8}$
NMG1018	$19 \frac{13}{32}$	$11 \frac{13}{32}$	$8 \frac{23}{32}$	$19 \frac{3}{8}$	$7 \frac{7}{8}$
NMG1024	$25 \frac{13}{32}$	$11 \frac{13}{32}$	$8 \frac{23}{32}$	$25 \frac{3}{8}$	$7 \frac{7}{8}$

* Not to be used for construction purposes unless approved.

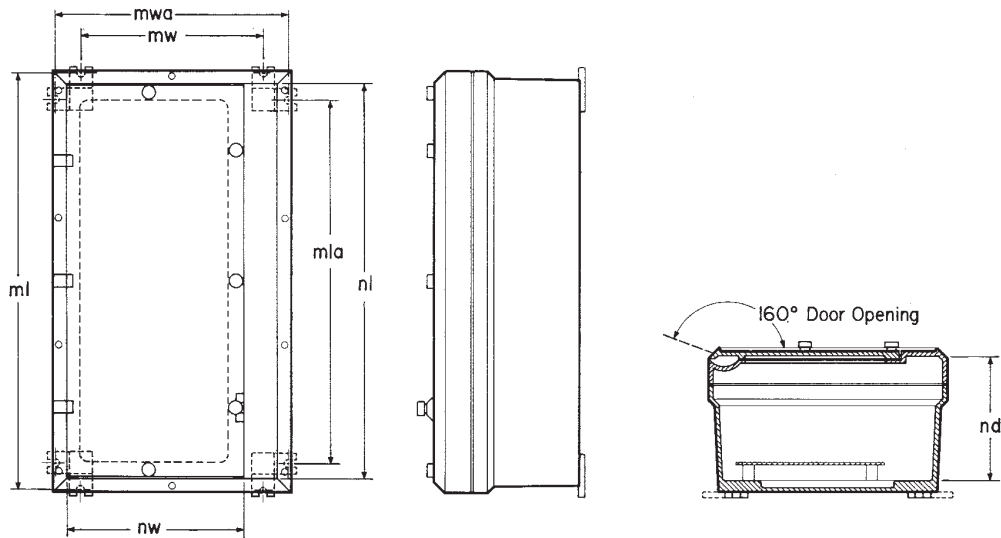
NLP and N2PB Circuit Breaker Panelboards

Dimensions*

N2PB



NLP



Cat. #	Nominal Inside Dimensions			Door Opening Dimensions		Mounting Dimensions		Alternate Mounting Dimensions	
	nw	nl	nd	dw	dl	mw	ml	mwa	mla
N2PB1426 NLP1426	14	26	8½	9⅛	23⅛	11⅞	27¼	15⅞	23¾
NLP1426M NLPQ1426	14	26	8½	9⅛	23⅛	11⅞	27¼	15⅞	23¾
N2PB2426	24	26	8½	19⅛	23⅛	21¾	27¼	25¼	23¾

* Not to be used for construction purposes unless approved.

Hubs

Krydon® material hubs for conduit entrances, in sizes 1/2" through 3" are available for factory or field installation in all enclosures made of *Krydon* material. For factory installation, send drawing showing sizes and locations of hubs. Furnished with locknuts and gaskets to assure weathertightness.

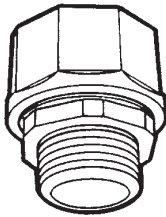
Standard Materials:

- Up to 1 1/2" – *Krydon* material with steel interiors
- 2", 2 1/2" and 3" – *Krydon* material with *Feraloy*® iron alloy interiors

Standard Finishes:

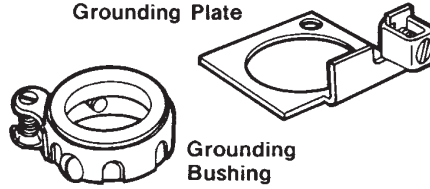
- *Krydon* material – natural
- Steel – electrogalvanized and bleached chromate
- *Feraloy* iron alloy – electrogalvanized

Conduit Size	Hole Size	Hub Cat. #
1/2	7/8	NHUB1
3/4	1 1/8	NHUB2
1	1 3/8	NHUB3
1 1/4	1 3/4	NHUB4
1 1/2	2	NHUB5
2	2 1/2	NHUB6
2 1/2	3	NHUB7
3	3 5/8	NHUB8



Grounding Plates and Grounding Bushings

Grounding Plate



Grounding Bushing

Grounding Plates (1/2" through 1") and insulated bushings (1/2" through 3") permit use of the conduit as the grounding circuit. Both types have set screws and ground-wire terminals.

Standard Materials:

- Grounding plates – steel
- Grounding bushings – steel with thermoplastic insulating throat

Standard Finishes:

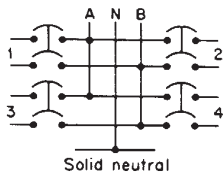
- Steel – electrogalvanized

Conduit Size	Grounding Plate Cat. #	Grounding Bushing Cat. #
1/2	GP1	GLS1
3/4	GP2	GLS2
1	GP3	GLS3
1 1/4		GLS4
1 1/2		GLS5
2		GLS6
2 1/2		GLS7
3		GLS8

Wiring Diagrams for Circuit Breaker Panelboards

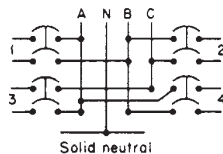
System 3

Mains—3-Wire
Branches—3-Wire
Breakers—2-Pole
Solid Neutral



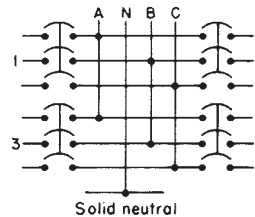
System 8

Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



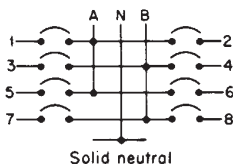
System 11

Mains—4-Wire, 3-Phase
Branches—4-Wire, 3-Phase
Breakers—3-Pole
Solid Neutral



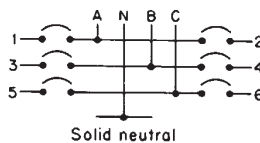
System 24

Mains—3-Wire
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



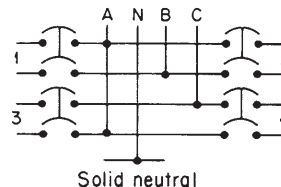
System 25

Mains—4-Wire, 3-Phase
Branches—2-Wire
Breakers—Single-Pole
Solid Neutral



System 28

Mains—4-Wire, 3-Phase
Branches—3-Wire, 1-Phase
Breakers—2-Pole
Solid Neutral



CID 101 Vapor Phase Corrosion Inhibitor Device

Application:

CID 101 vapor phase corrosion inhibitor devices are utilized:

- during use, storage, and shipment of products to provide long-term protection for: interiors of conduit outlet bodies and boxes, junction boxes, panelboards, and enclosures for motor control and circuit breakers, control stations, instrumentation, and switches
- interiors of level sensors, speed responsive switches, and various monitoring/alarm systems
- interiors of pipes, conduits, and wireways
- electrical and electronic controls and components
- within enclosures, indoors, or outdoors at petroleum refineries, chemical and petrochemical plants, food processing plants, and various other process industry facilities where airborne corrosion presents problems
- In onshore and offshore marine environments to protect against salt spray and excessive humidity condensation

Features:

- Provide widespread protection for ferrous and nonferrous metals including steel, copper, aluminum, brass, solder, silver, etc.
- Particularly well-suited for protection of electrical and electronic equipment because the vapors emitted do not change the characteristics of metals they are protecting – not chemically, electrically, or metallurgically. Contact resistance, conductivity, or other properties of sensitive electrical/electronic equipment is unaffected
- Extend life of product and minimize downtime from product failures caused by corrosive attack. Early corrosion symptoms can be avoided before visible signs appear (i.e., electrical shorts, intermittent operation, apparent poor connections, evidences of increased friction, visible dulling of metallic finishes, higher noise levels of moving parts, increased heat generation, etc.)
- Under normal usage, provide continuous protection of one cubic foot of enclosed space against corrosion for up to two years. Actual operating life expectancy may vary depending on the corrosive atmosphere, temperature, or air movement. For severe exposures at high temperatures use double the normal amount of CID 101.
- Quickly and easily installed without need for tools, or requiring special surface preparation, oiling, spraying, or dipping. The device is simply removed from its plastic bag and affixed into position through use of a pressure-sensitive adhesive. A convenient to use label is provided as a reminder to note the date of installation and when its replacement should be scheduled.
- Safe to use. Vapors released are regarded as non-toxic under use conditions; and the polyurethane foam material is flame-retardant



Packaging/Storage:

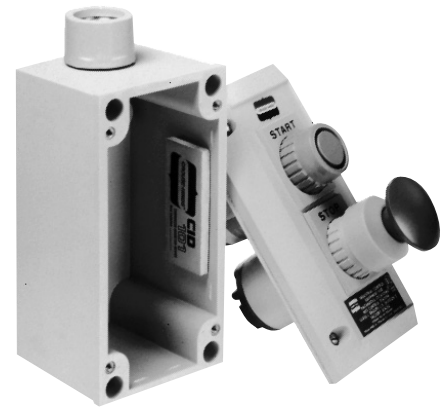
- CID 101 Corrosion Inhibitor Devices are individually packaged in sealed plastic bags to ensure their maximum corrosion protection value at time of installation
- Recommended storage is in the sealed plastic bags as supplied. Ideal ambient storage temperatures should not exceed 30°C (86°F). Shelf life under normal conditions is 1 year. Continuous service temperatures in excess of 150°F (65°C) should be avoided.
- CID 101 Corrosion Inhibitor Devices are shipped in standard cartons of 50 units† each. Carton shipping weight is .7 lbs

Certifications and Compliances:

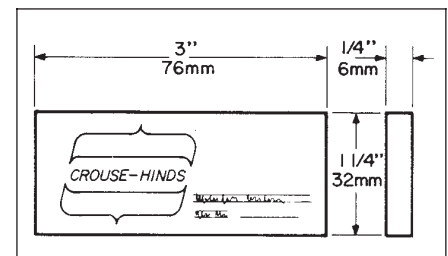
- Food and Drug Administration conformance. CFR Title 21 178.3300

Ordering Information:

Cat. #
CID101†



Dimensions



† Order quantity of one (1) equals one standard carton of 50 units.

Notes Page

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Industrial Lighting

Section L



L Industrial Lighting

Table of Contents

Section L of the Cooper Crouse-Hinds Catalog contains information on industrial lighting.

Product details on individual luminaires are given in eleven separate sections, as noted below. In addition, a complete section (8L) is devoted to luminaire hangers and accessories.

Considerations for Selection

Preceding the eleven product sections is a Selector Guide. Included in this section is information on:

- a selection of the appropriate light source for a given application
- a Quick Selector Guide of the luminaires that are designed and approved to meet the various environmental requirements of the National Electric Code
- determining the proper size (i.e., wattage) and number of units to achieve the desired light levels in a given application
- methods to follow in making a luminaire layout. Cat. Nos. are shown, in many cases, for complete assemblies including mounting, reflector, globe, and guard, as well as individual components. In these cases, ordering can be done by component or by complete assembly. Photometric and other technical data is included in each section for the luminaires it contains.

Information relating to product families in the Lighting Section is shown as follows:

Section 1L Incandescent Lighting— Enclosed and Gasketed (for use in non-hazardous areas; some luminaires have specific hazardous [classified] locations suitability.)

Indoor and outdoor vaportight luminaires and accessories for use in industrial applications where dirt, moisture, and corrosion problems exist.

NDA Corro*Gard® Series V160
V Series
Vaporgard™ Series

Section 2L Incandescent Lighting (for use in hazardous [classified] locations)

Indoor and outdoor luminaires and accessories
EV Series
EVI Series

Section 3L High Intensity Discharge (H.I.D.) Lighting— Enclosed and Gasketed (for use in hazardous [classified] locations, non-hazardous locations, and marine locations)

Indoor and outdoor vaportight luminaires for use in applications where dirt, moisture, and corrosion problems exist. Included are units with integral ballasts.

DMV Champ® Series
LMV Champ® Series
VMV Champ® Series
N2MV Champ® Series

Section 4L High Intensity Discharge (H.I.D.) Lighting (for use in hazardous [classified] locations)

Indoor and outdoor luminaires and accessories. Included are luminaires with integral ballasts.

Hazard*Gard® Series
Lo*Pro Hazard*Gard® Series

Section 5L Luminaires with Induction Lighting System (for use in hazardous [classified] locations, non-hazardous locations, and marine locations)

DMVIG, VMVIG

Section 6L Fluorescent Lighting (for use in hazardous [classified] locations and non-hazardous locations)

Indoor and outdoor fluorescent luminaires and accessories for application in all classes of hazardous and non-hazardous locations.

For hazardous locations	For non-hazardous locations
CPMVF	NFL
EVF, EVFDR	VF Vaporgard Series
EVN, FVS	
EVFT, DMVF	
N2MVF, EVLPF	
VF, ELLK, NLLK	
eLLB20	

Section 7L Floodlights (for use in hazardous [classified] locations and non-hazardous locations)

CPMV Champ-Pak™ Wall Pack
EVMA-S812 HazardGard® Series
FMV Champ® Series
F2MV, FMV1000
FZD
RCDE
SSFMV Voyager nR™

Section 8L Luminaire Hangers and Accessories (for use in hazardous [classified] locations and non-hazardous locations)

A variety of luminaire hangers for use with the luminaires listed. Information on mounting accessories required and typical luminaire weights also included.

For hazardous locations	For non-hazardous locations
EAHC, EFHC	AL
EC	AHG
EFH	ARB
GUA, GUF	FHM
UNR	UNE, UNH, UNHC
CPS	UNJ
	UNJC

Section 9L Portable Lighting

A variety of portable luminaires for hazardous and non-hazardous applications.

VS
EVH
RCDER
EVP

Section 10L Emergency Lighting (for use in hazardous [classified] locations) ♦

Emergency lighting for use in power outage situations. Also, exit signs and strobe warning lights.

N2LPS Light-Pak™ Series	CPMVFB
EXL – exit sign	DMVFB
ELPS Light-Pak™ Series	N2MVFB
	EVLFPB

Section 11L Beacons and Strobes

Indoor and outdoor luminaires for use in applications where visual signaling is a requirement.

For hazardous locations
EX Beacons and Strobes
VF Beacons
VDAS Strobes

Section 12L Specialty Lighting

Luminaires for use in applications where conventional lighting is not acceptable due to size and/or location, such as tank, instrument, and gauge applications.

For hazardous locations	For non-hazardous locations
EV – tank lights	V Observation
EVTL	
ELG – gauge light	

	LIGHT SOURCE			Emergency & Warning	WallPacks & Floodlights	Luminaire Hangers
Application Environment	Incandescent	H.I.D. ● Pulse Start Metal Halide ● Metal Halide ● High Pressure Sodium ● Mercury Vapor	Fluorescent ● Linear ● Long Twin Tube ● Compact	● Exit Signs ● Emergency Lighting ● "Steady On" Beacons ● Strobes	● Pulse Start Metal Halide ● Metal Halide ● High Pressure Sodium ● Mercury Vapor ● Incandescent	
General Industrial	Section 1L Vaporgard™, V Series, NDA Section 12L V160 Tank light	Section 3L LMV, DMV, VMV, N2MV Champ® Section 5L Champ Induction	Section 6L VF Series, NFL, FVN, FVS DMVF, N2MVF	Section 10L N2LPS Light-Pak™, DMVFB, N2MVF Section 11L VF "SO" Beacon VDAS Strobe	Section 7L F2MV, FMV, FMV1000	Section 8L AL, UNJ, FHM, ARB, UNE, UNH, CHS
Wet Locations	Section 1L Vaporgard™, V series, NDA	Section 3L LMV, DMV, VMV, N2MV Champ® Section 5L Champ Induction	Section 6L VF Series, NFL, FVN, FVS, DMVF, N2MVF	Section 10L DMVFB, N2MVF, N2LPS Light-Pak™, Section 11L VF "SO" Beacon VDAS Strobe	Section 7L F2MV, FMV, FMV1000	Section 8L AHG, ARB_21 series
Marine Locations or 4X	Section 1L NDA	Section 3L LMV, DMV, VMV, N2MV Champ® Section 4L EVLV Lo-Pro EVM Hazard-Gard	Section 6L NFL, FVS, DMVF, N2MVF, CPMVF EVFDR, EVFT Illuminator™	Section 10L DMVFB, N2MVF, Section 11L VDAS Strobe	Section 7L CPMV, F2MV, FMV, FMV1000	
Corrosive	Section 1L Vaporgard™, NDA	Section 3L LMV, DMV, VMV, N2MV Champ® Section 5L Champ Induction	Section 6L NFL, N2MVF, FVS, VF Series, DMVF, CPMVF	Section 10L DMVF-EXD exit, N2MV-EXD exit, N2LPS Light-Pak™, N2MVF, DMVFB Section 11L VF "SO" Beacon VDAS Strobe	Section 7L CPMV, F2MV, FMV, FMV1000	Section 8L EFHC-S752 ECHF-S758 ECF-S516
Class I, Div. 1 or Zone 1	Section 2L EV Section 12L EVL, EVA160, EVO, ELG	Section 4L EVLV Lo-Pro EVM Hazard-Gard	Section 6L EVF, EVFDR, EVFT Illuminator®, EVLPF, eLLK	Section 10L EXL exit, EVLPF-EXD exit, ELPS Light-Pak™ EVLVFB Section 11L EV "SO" Beacon EVAS Strobe	Section 7L FZD, EVM-S812, RCDE	Section 8L EAHC, EFHC, ECHF, GUA, GUF, EFHX, CPS, UNR
Class I, Div. 2 and Zone 2	Section 1L Vaporgard™, NDA	Section 3L LMV, DMV, VMV, N2MV Champ® Section 5L Champ Induction	Section 6L VF Series, NFL, nLLK, eLLK, FVN, FVS, CPMVF, DMVF, N2MVF	Section 10L DMVF-EXD exit, N2LPS Light-Pak™, DMVFB, N2MVF Section 11L VF "SO" Beacon VDAS Strobe	Section 7L CPMV, F2MV, FMV, FMV1000 FZD	Section 8L AL, AHG, UNJ, UNJC, ARB, UNE, UNH, COUP
Restricted Breathing ● Class I, Div 2 and Zone 2 ● Certified IEC Zone 2		Section 3L LMV, DMV, VMV, N2MV Champ® Section 5L Champ Induction	Section 6L CPMVF, DMVF, N2MVF	Section 10L DMVFB, N2MVF	Section 7L CPMV, F2MV, FMV	Section 8L AL, AHG, UNH, UNJC, ARB, UNE, UNH, COUP
Class II Class III Simultaneous Presence	Section 2L EV Section 12L EVL, EVO	Section 3L LMV, DMV, VMV, N2NV Champ® Section 4L EVLV Lo-Pro EVM Hazard-Gard Section 5L Champ Induction	Section 6L FVN, nLLK, eLLK, FVS, DMVF, N2MVF EVF, EVFDR, EVFT, EVLP	Section 10L EXL, N2LPS Light-Pak™, DMVFB, N2MVF Section 11L VF "SO" Beacon VDAS Strobe EVAS Strobe	Section 7L CPMV	Section 8L ECHF, GUA, GUF, GUJ. EAHC, EFHC, AHG (Class II, Div 2)
Paint Spray		Section 4L EVP	Section 6L EVF, EVFT			
Portables	Section 9L VS, EVH, RCDER	Section 9L EVP	Section 9L EVH			

New ideas in industrial lighting, translated into modern equipment design, backed technically by a nationwide sales force, available worldwide through knowledgeable electrical distributors – these are some of the reasons you'll be light-years ahead when you look to Cooper Crouse-Hinds for industrial lighting products.

This Lighting Selector Guide will help you solve many of your lighting problems. For additional assistance on complex projects, call your Cooper Crouse-Hinds representative or distributor. They can provide detailed lighting layouts and recommendations using the **most advanced computer and application engineering facilities and techniques.**

Lighting Selector Guide

Below is a simple five-step procedure to help you select the right equipment for a specific job. Typical examples – with illustrations, easy-to-read charts, and layouts – are included to ensure correct results.

The five steps are:

- | | |
|--|--|
| 1.) Determine Area Lighting Needs and Operational Factors
Page 665 | When known, proceed to Step 2 |
| 2.) Select Type of Lamp
Page 666 | When known, proceed to Step 3 |
| 3.) Select Type of Luminaire
Page 668 | When known, proceed to Step 4 |
| 4.) Calculate Number of Luminaires Required
Page 683 | When several light sources or systems seem suitable, determine most economical one |
| 5.) Determine Placement of Luminaires and Make Layout
Page 688 | |



With Luxicon™ you'll be able to make 'light' work of analyzing the performance of Cooper Crouse-Hinds broad line of industrial luminaires.

From exterior/interior layouts to economic performance data, you'll be able to access and evaluate information needed to design and specify the most efficient and effective lighting system possible.

Luxicon™ offers:

- Online tutorial
- Color output, either text or graphics
- Exterior/interior layouts in one program
- Daylight lighting analysis
- Importing/exporting of any IES file
- Importing/exporting of any .DXF CAD file
- Detailed architectural feature calculations
- Entire Cooper Crouse-Hinds and Cooper Lighting line search
- Economic performance/analysis calculations
- Database of customers and their projects
- Professional output including summary reports, luminaire schedules, calculation results and renderings on multiple pages
- Luminaire editing capabilities
- Allowances of varying ambient temperature levels

1

Determine Area Lighting Needs and Operational Factors

The selection of the proper luminaire/lamp combination and the determination of the number of luminaires required is a function of the desired quantity and quality of light required, together with consideration of any special factors arising from the nature of the work operation.

Several aspects of this selection process are discussed below. The conditions will vary from job to job. It is important to consider these conditions if the lighting system is to yield optimum results.

A) Determine Illumination Quantity Required

The Illuminating Engineering Society in the current IES Lighting Handbook gives a comprehensive listing of footcandle levels recommended for all types of Industrial Lighting. A condensed version of this listing is given in Table 1 and is presented according to the types of visual tasks encountered.

B) Determine Illumination Quality Required

Quality of illumination pertains to the distribution of brightness in the visual environment. Care must be taken to avoid discomforting glare within the normal visual field.

Luminaires normally selected for lower mounting should be designed to limit brightness below the 45° zone.

C) National Electric Code Compliance

The National Electric Code delineates some areas as hazardous, depending on materials or atmosphere within an area. The choice of luminaire and lamp is therefore somewhat restricted if the area is classified as hazardous.

In hazardous areas, luminaire design and operating temperature of both luminaire and lamp must meet strict limitations. These limitations are detailed under Step 3 of this selection guide.

If the area is non-hazardous in nature, the selection of the proper luminaire and lamp is less restrictive and should be based on general operational and environmental conditions.

D) Maintenance Considerations

In order to insure optimum performance of the lighting system at a reasonable cost, some of the following related factors must be introduced into the selection process:

- **Atmospheric Conditions:** Luminaires for use in extremely wet locations should be enclosed and gasketed.

- **Luminaires for use in extremely dirty locations** should provide a minimum of light depreciation under the anticipated maintenance schedule (i.e., reflector with open top and bottom should be used where maintenance is infrequent). Luminaires for use in extremely corrosive atmospheres should have protection for the optical system and have finishes to withstand the particular corrosive agent (i.e., epoxy power finish; enclosed Alzak reflector; Krydon™ fiberglass reinforced polyester reflector).

- **Accessibility:** Since it may be necessary to locate luminaires in inaccessible areas, the luminaire and lamp selected should minimize need for maintenance and maximize ease of maintenance when required (i.e., high bay open reflector with mercury lamp).

- **Area Usage:** The selection of the proper lamp/luminaire combination will depend greatly on the required burning hours per year. The anticipated usage should be a major factor in lamp selection.

Table 1 / Recommended Levels of Illuminance

Seeing Task	Typical Type of Work	Illuminance Category	Footcandles†
Difficult	Difficult assembly and inspection, color coding, paper manufacturing (Inspection and Rewinder) finishing operations.	F	100 to 200
Moderate	Moderately difficult assembly and inspection, checking and sorting, service garage repair areas, medium bench work, instrument panel (vertical illumination).	E	50 to 100
Casual	Simple assembly, rough bench work, grinding, simple inspection, wrapping, packing and labeling, control house general lighting.	D	20 to 50
Easy	Rough active storage, washrooms, dry lumber warehouse, compressor houses.	C	10 to 20
Limited	Inactive storage, stairway	B	5 to 10

NOTE: For other industrial footcandle levels such as petrochemical, refer to the Illuminating Engineering Society's Lighting Handbook (Application Volume) for more information.

† Values recommended are average maintained footcandles at 30" above floor (work plane).

2

Select Type of Lamp

After identification of the factors discussed in Step 1, the following guide can be used in selecting the proper lamp:

A) Illumination Level

High (30FC or more): high intensity discharge (H.I.D.) lamps are generally the most economic choice.

- Exception: where luminaires must be placed within an operator's normal visual span, a low brightness light source such as fluorescent should be used.

Low (less than 30FC): all light sources can be considered. Selection of best lamp is usually based on other factors.

- Exception: at medium to high mounting, high intensity discharge is generally best.

B) National Electrical Code®

Hazardous locations – all light sources can be considered.

- Exception: Article 500 of the National Electrical Code classifies the various categories of hazardous locations and provides general rules for the application of luminaires in these areas. (See Step 3 of Selection Guide.)

- Exception: where process must be shut down for relamping, high intensity discharge is best due to long lamp life. Non-hazardous locations – all light sources.

C) Accessibility

High intensity discharge lamps should be used where luminaires are relatively inaccessible because of long life and the need for infrequent relamping.

D) Area Usage (Burning Hours)

At more than 2,000 burning hours per year, high intensity discharge and fluorescent lamps generally yield the lowest system cost.

At less than 2,000 hours per year, incandescent may be the best system depending on the size of the area, mounting height and illumination level required.

E) Other Considerations

- Energy cost: where energy cost is high, high intensity discharge lamps generally prove most economical. H.I.D. lamps produce more lumens per watt of electricity than other lamp types.

- Safety: due to warmup and restart characteristics of high intensity discharge lamps, auxiliary or emergency lighting should be used in critical areas.

2

(continued)

Select Type of Lamp

The following table of lamp characteristics provides guidelines for choosing the best lamp. If the decision is not obvious, contact your Cooper Crouse-Hinds representative for a computer analysis of the option desired.

Table II/Lamp Characteristics

	Lamp	Advantages	Disadvantages
1.	Induction	Exceptionally long life – 100,000 hours. Instant illumination upon start-up or warm restart. Crisp, white light >80 color rendering index. Low operating cost.	Initial cost is higher than HID type luminaires.
2.	High Pressure Sodium	Good beam control. Long lamp life (24,000 hrs). Highest lamp output (lumens per watt). Low operating cost. Shortest restart time of H.I.D. lamps (instant with optional instant restrike).	High initial cost. Requires warmup period.
3.	Metal Halide Pulse Start	Improved lamp life (15,000- 30,000 hrs). Increased lumen output over standard metal halide (25 to 50%). Better lumen maintenance (80%). Superior cold starting -40°C. Improved color stability. Color shift reduced by two-thirds. Improved lamp-to-lamp color consistency. Warm up time 2 minutes. Restrike time 3-4 minutes.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
4.	Metal Halide	Moderately long lamp life (7500 + hrs). High light output (lumens per watt). Makes colors look close to natural. Low operating cost.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
5.	Mercury	Long lamp life (24,000 hrs). High light output per watt. Low operating cost.	High initial cost. Requires warmup period. Does not restart immediately after power outage.
6.	Fluorescent	Long lamp life (7500-24,000 hrs). High light output per watt. Low operating cost. Low brightness. Cool operation.	High initial cost. Poor light control. Output may vary with ambient temperature.
7.	Incandescent	Low initial cost. Good color rendition. Good light control. Instant restart.	Low light output (lumens per watt), short lamp life (500-2000 hrs). High operating cost.

3

Select Type of Luminaire

Choice of Reflector

The following list gives broad guidelines for selection of the proper reflectors.

Mounting Height

Above Floor	Reflector
Up to 19'	Dome
20' or more	High bay

Where low footcandle levels will be provided, reflectors may be used at higher mounting heights than shown; where high footcandle levels will be provided, reflectors may be used at lower mounting heights than shown in the table.

Quick Selector (Environment—Product)

Opposite the industrial environments listed below are the luminaires designed and approved to meet the requirements unique to each environment. Where different types of light sources might be used, a choice is given.

Environment		Type	Description	Cat. Sect.	Pg. #
Corrosive	Non Metallic Enclosed & Gasketed	NDA	General—Incandescent	1L	691
		N2MV	General—H.I.D.	3L	721
		N2MVFB	General—Fluorescent	6L	809
		N2MVFB	Emergency—Fluorescent	10L	923
		NFW	General—Fluorescent	6L	809
		N2LPS	Emergency—Halogen	10L	923
Explosive Vapors (Class I, Div. 1)	Explosion- proof	EV, EVI	General—Incandescent	2L	709
		EVLP, EVM Hazard*Gard®	General—H.I.D.	4L	779
		EVF, EVFDR	General—Fluorescent	6L	809
		EVFT	General—Fluorescent	6L	809
		EVLFPF	General—Fluorescent	6L	809
		RCDE/RCDER	Flood—Incandescent	7L & 9L	865 & 913
		ELPS	Emergency—Halogen	10L	923
		EVLFPFB	Emergency—Fluorescent	10L	923
		EV	Strobe—Incandescent	11L	939
Combustible Dusts (Class II, Div. 1)	Dust- ignition-proof	EV	General—Incandescent	2L	709
		DMV Champ®	General—H.I.D.	3L	721
		N2MV Champ®	General—H.I.D.	3L	721
		DMVIG, VMVIG	General—Induction	5L	801
		DMVF, N2MVFB	General—Fluorescent	6L	809
		EVM Hazard*Gard®	General—H.I.D.	4L	779
		FVN	General—Fluorescent	6L	809
		FVS	General—Fluorescent	6L	809
		DMVFB, N2MVFB	Emergency—Fluorescent	10L	923
Moisture, Non-Combustible Dusts, or Potential for Hazardous Vapors Class I, Div. 2	Enclosed & Gasketed	Vaporgard™	General—Incandescent	1L	691
		CPMV Champ®	General—H.I.D./Fluorescent	3L & 6L	721 & 809
		NDA	General—Incandescent	1L	691
		LMV Champ®	General—H.I.D.	3L	721
		DMV Champ®	General—H.I.D.	3L	721
		VMV Champ®	General—H.I.D.	3L	721
		N2MV Champ®	General—H.I.D.	3L	721
		FVN	General—Fluorescent	6L	809
		DMVF, N2MVFB	General—Fluorescent	6L	809
		VF	General—Fluorescent	6L	809
		FVS	General—Fluorescent	6L	809
		FMV Champ®	Flood—H.I.D.	7L	865
		SSFMV Voyager	Flood—H.I.D.	7L	865
		N2LPS	Emergency—Halogen	10L	923
		DMVFB, N2MVFB	Emergency—Fluorescent	10L	923
Non-Hazardous	Enclosed & Gasketed	NFL	General—Fluorescent	6L	809

Lamps Used With Cooper Crouse-Hinds Luminaires

H.I.D. Medium Base
Series - LMV, EVLP_1

L

LAMP WATTS	ANSI Ballast	MANUFACTURER			
		GE	Osram/ Sylvania	Phillips	Venture

High Pressure Sodium

35	S76	LU35/MED	LU35/MED	C35S76/M	
50	S68	LU50/MED	LU50/MED	C50S68/M	
70	S62	LU70/MED	LU70/MED	C70S62/M	
100	S54	LU100/MED	LU100/MED	C100S54/M	
150	S55	LU150/MED	LU150/MED	C150S55/M	

Metal Halide

70	M98	MXR70/U/MED	MP70/U/MED	MHC70/U/M/3K	MH70W/U
100	M90	MXR100/U/MED	MP100/U/MED	MHC100/U/M/3K	MH100W/U
175	M57	MVR175/U/MED	M175/U/MED	MH175/U/M	

Pulse Start Metal Halide

150	M102	MXR150/U/MED	MP150/U/MED		MH150W/U/PS
175	M137	MXR175/VBU/MED/PA			MS175W/BU/MED/PS

Lamps Used With Cooper Crouse-Hinds Luminaires

H.I.D. Medium Base
Series - LMV, EVLP_1

LAMP WATTS	ANSI Ballast	MANUFACTURER				MANUFACTURER			
		Lumens/Life (hrs)				Bulb			
		GE	O/S	Ph	Venture	GE	O/S	PH	Venture

High Pressure Sodium

35	S76	2250/16K	2250/16K	2250/24K		B17	E17	ED17	
50	S68	4000/24K	4000/24K	4000/24K		B17	E17	ED17	
70	S62	6400/24K	6300/24K	6300/24K		B17	E17	ED17	
100	S54	9500/24K	9500/24K	9500/24K		B17	E17	ED17	
150	S55	16000/24K	15800/24K	16000/24K		B17	E17	ED17	

Metal Halide

70	M98	5500/12K	5200/15K	6200/10K	5600/15K	BD17	E17	ED17	ED17
100	M90	9000/15K	8500/15K	9300/12.5K	9000/15K	BD17	E17	ED17	ED17
175	M57	13600/10K	14400/10K	13500/10K		BD17	ED17	ED17	

Pulse Start Metal Halide

150	M102	12500/15K	13300/15K		14000/15K	BD17	E17		ED17
175	M137	17700/15K			17500/15K	BD17	E17		ED17

Lamps Used With Cooper Crouse-Hinds Luminaires

H.I.D. Mogul Base
Series - DMV, VMV, CPMV,
FMV, F2MV, EVLP_0, FZD

L

LAMP WATTS	ANSI Ballast	MANUFACTURER			
		GE	Osram/ Sylvania	Phillips	Venture

High Pressure Sodium

50	S68	LU50	LU50	C50S68	
70	S62	LU70	LU70	C70S62	
100	S54	LU100	LU100	C100S54	
150	S55	LU150/55	LU150/55	C150S55	
150 (100V)	S56	LU150/100	LU150/100	C150S56	

200	S66	LU200	LU200	C200S66	
250	S50	LU250	LU250	C250S50	
310	S67	LU310	LU310	C310S67	
400	S51	LU400	LU400	C400S51	
1000	S52	LU1000	LU1000	C1000S52	

Metal Halide

70	M98				MH70W/U/ED28
100	M90				MH100W/U/ED28
175	M57	MVR175/U	M175/U	MH175/U	
250	M58	MVR250/U	M250/U	MH250/U	
400	M59	MVR400/U	M400/U	MH400/U	
400	M59	MVR400/U/ED28	M400/U/BT-28	MH400/U/ED28	
1000	M47	MVR1000/U	M1000/U	MH1000/U	
1500	M48	MVR1500/HBD	M1500/BD	MH1500/BD	

Pulse Start Metal Halide

(Base up+ -15%)

(Base up+ -15%)

150	M102	MXR175/VBU/PA		MS175/BU/PS	MH150W/U/ED28/PS
175	M137				MS175W/BU/PS
200	M136				MH200W/U/PS
250	M138	MXR250/VBU/PA		MS250/BU/PS	MH250W/HBU/PS
	M138				MH250W/HBD/PS
320	M132	MXR320/VBU/PA	MS320/PS/BU-ONLY	MS320W/BU/PS	MH320W/U/ED28/PS
350	M131				MH350W/U/PS
	M131				MH350W/U/ED28/PS
400	M135	MXR400/VBU/PA	MS400/PS/BU-ONLY	MS400/BU/PS	MH400W/HBU/PS
	M135				MH400W/HBD/PS
	M135				MH400W/HBU/ED28/PS
	M135				MH400W/HBD/ED28/PS
1000	M141				

Mercury Vapor

100	H38	HR100A38	H38HT-100	H38HT-100	
175	H39	HR175A39	H39KB-175	H39KB-175	
250	H37	HR250A37	H37KB-250	H37KB-250	
400	H33	HR400A33	H33CD-400	H33CD-400	
1000	H36	HR1000A36	H36GV-1000	H36GV-1000	

HID Double Contact Metal Halide for EVP Series

70W		CMH70/TD/830/R7S	HQI-DE 70/WDX	CDM70/TD/830	
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Industrial
Lighting

Lamps Used With Cooper Crouse-Hinds Luminaires

H.I.D. Mogul Base
Series - DMV, VMV, CPMV,
FMV, F2MV, EVM, EVLP_0, FZD

LAMP WATTS	ANSI Ballast	MANUFACTURER				MANUFACTURER			
		Lumens/Life (hrs)				Bulb			
		GE	O/S	Ph	Venture	GE	O/S	PH	Venture

High Pressure Sodium

50	S68	4000/24K	4000/24K	4000/24K		ED231/2	ET231/2	ED231/2	
70	S62	6400/24K	6300/24K	6300/24K		ED231/2	ET231/2	ED231/2	
100	S54	9500/24K	9500/24K	9500/24K		ED231/2	ET231/2	ED231/2	
150	S55	16000/24K	16000/24K	16000/24K		ED231/2	ET231/2	ED231/2	
150 (100V)	S56	15000/24K	15700/24K	16000/24K		ED28	BT28	ED28	

200	S66	22000/24K	22000/24K	22000/24K		ED18	ET18	ED18	
250	S50	28000/24K	29000/24K	285000/24K		ED18	ET18	ED18	
310	S67	37000/24K	37000/24K	37000/24K		ED18	ET18	ED18	
400	S51	51000/24K	50000/24K	50000/24K		ED18	ET18	ED18	
1000	S52	140000/24K	130000/24K	140000/24K		E25	E25	E25	

Metal Halide

70	M98				5600/15K				ED28
100	M90				9000/15K				ED28
175	M57	13600/10K	14400/10K	13500/10K		ED28	BT28	ED28	
250	M58	20800/10K	22000/10K	20500/20K		ED28	BT28	ED28	
400	M59	36000/20K	36000/20K	36000/20K		ED37	BT37	ED37	
400	M59	36000/20K	36000/20K	36000/20K		ED28	BT28	ED28	
1000	M47	105000/12K	110000/15K	110000/12K		BT56	BT56	BT56	
1500	M48	155000/3K	155000/3K	165000/3K		BT56	BT56	BT56	

Pulse Start Metal Halide

150	M102				14000/15K				ED28
175	M137	17200/15K		16000/15K	17500/15K	ED231/2		ED28	ED28
200	M136				21000/15K				ED28
250	M138	23000/15K		23800/15K	25000/15K	ED28		ED28	ED28
	M138				25000/15K				ED28
320	M132	31000/15K	32000/20K		33000/20K	ED28	BT28	ED28	ED28
350	M131				37000/20K				ED37
	M131				37000/20K				ED28
400	M135	44000/20K	41000/20K	44000/20K	44000/20K	ED37	BT37	ED37	ED37
	M135				44000/20K				ED37
	M135								ED28
	M135								ED28
1000	M141				44000/20K				ED28

Mercury Vapor

100	H38	3850/24K	4000/24K	4100/24K		ED231/2	ET231/2	ED231/2	
175	H39	7850/24K	7700/24K	7900/24K		ED28	BT28	ED28	
250	H37	11000/24K	11600/24K	12100/24K		ED28	BT28	ED28	
400	H33	21000/24K	20500/24K	21000/24K		ED37	BT37	ED37	
1000	H36	57000/24K	55200/24K	57500/24K		BT56	BT56	BT56	

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Lamps Used With Cooper Crouse-Hinds Luminaires

Fluorescent Lamps

L

LAMP WATTS	BASE	LUMINAIRE SERIES	MANUFACTURER		
			GE	Osram/ Sylvania	Phillips

Compact

5W-T4	G23	VF	F5BX/SPX41/840	CF5DS/841	PL-S5W/27
7W-T4	G23	VF	F7BX/SPX35/835	CF7DS/835	PL-S7W/35
9W-T4	G23	VF	F9BX/SPX35/835	CF9DS/835	PL-S9W/35
13W-T4	GX23-2	DMVF (Disc)	F13DBX23T4/SPX35	CF13DD/835	PL-C13W/35/USA
26W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPF	F26TBX/SPX35/A/4P	CF26DT/E/IN/835	PL-T26W/35/4P/ALTO
32W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPF	F32TBX/SPX35/A/4P	CF32DT/E/IN/835	PL-T32W/35/4P/ALTO
42W-T4	GX24q-4	DMVF, N2MVF, CPMVF, EVLPF	F42QBX/SPX35/A/4P	CF42DT/E/IN/835	PL-T42W/35/4P/ALTO

Long Twin Tube

70	2G11	EVFT	F39/36/BX/SPX35	FT36DL/835	PL-L36W/35
40	2G11	NFL, FVS	F40/30BX/SPX35	FT40DL/835/RS	PL-L40W/35/RS

Linear

32W-T8	Medium Bipin	NFL, FVN, EVF, EVFDR	F32T8/SP35	F032/735	F32T8/TL735/ALTO
40(34)W-T12	Medium Bipin	NFL, FVN, EVF, EVFDR	F40CW/RS/WM	F40CW/SS	F40CW/RS/EW/ALTO
60W (800ma)-T12 HIGH OUTPUT	Recessed Double Contact	FVN, EVF, EVFDR	F48T12/CW/HO	F48T12/CW/HO	F48T12/CW/HO
110W (1500ma)-T12 VERY HIGH OUTPUT	Recessed Double Contact	EVF, EVFDR	F48T12/CW/1500	F48T12/CW/VHO	F48T12/CW/VHO

Lamps Used With Cooper Crouse-Hinds Luminaires

Fluorescent Lamps

LAMP WATTS	BASE	LUMINAIRE SERIES	MANUFACTURER		
			Lumens/Life (Hrs)		
			GE	Osram/Sylvania	Phillips

Compact

5W-T4	G23	VF	250/10K	230/10K	250/10K
7W-T4	G23	VF	400/10K	400/10K	400/10K
9W-T4	G23	VF	600/10K	580/10K	600/10K
13W-T4	GX23-2	DMVF (Disc)	810/10K	780/10K	860/10K
26W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPPF	1800/10K	1800/10K	1800/10K
32W-T4	GX24q-3	DMVF, N2MVF, CPMVF, EVLPPF	2200/10K	2400/10K	2400/10K
42W-T4	GX24q-4	DMVF, N2MVF, CPMVF, EVLPPF	3200/10K	3200/10K	3200/10K

Long Twin Tube

70	2G11	EVFT	2850/12K	2900/12K	2900/12K
40	2G11	NFL, FVS	3150/20K	3150/20K	3150/20K

Linear

32W-T8	Medium Bipin	NFL, FVN, EVF, EVFDR	2850/20K	2800/20K	2850/20K
40(34)W-T12	Medium Bipin	NFL, FVN, EVF, EVFDR	2650/20K	2700/20K	2650/20K
60W (800ma)-T12 HIGH OUTPUT	Recessed Double Contact	FVN, EVF, EVFDR	4050/12K	4050/12K	4050/12K
110W (1500ma)-T12 VERY HIGH OUTPUT	Recessed Double Contact	EVF, EVFDR	6200/10K	6600/10K	7050/12K

Lamps Used With Cooper Crouse-Hinds Luminaires

Incandescent & Quartz
(Halogen) Lamps

L

MAX WATTS AND BULB TYPE	LUMINAIRE SERIES		MANUFACTURER	
		GE	Osram/ Sylvania	Phillips

25W T10	EXLD	25T10	25T10	25T10
50W PAR20	EVTL	50PAR20/H/SP10 50PAR20/H/FL25	50PAR20/CAP/NSP 50PAR20/CAP/NFL	50PAR20/HAL/NSP9 50PAR20/HAL/NFL30
52W A19 58W A19	ELG ELG	60A52WMP/98	60A52/SS/XL 58A19/62	60A-52A/99/EW
60W T10	EXL	60T10	60T10	60T10
65W BR30	EVO2376	75R30/SP/65WM	65BR30/SP	65BR30/SP20
75W ER30	EVO2376	75ER30	75ER30	75ER30
100W A19	EV 40 Series	100A (IF)	100A (IF)	100A (IF)
100W A21	V160, EV160, EVH, EV 15 Series	100A21 (IF)	100A21 (IF)	100A21 (IF)
100W A23	VS	100A23 120V	100A23	100A23
100W D.C. Bay	Suffix QTZ	Q100CL/DC	100Q/CL/DC	100Q/CL/DC
150W A21	Vaporgard 150W EV 10 Series EV 20 Series	150A (IF)	150A (IF)	150A (IF)
150W A23	V Series		150A23 (IF)	150A23/CL
150W PAR38	RCDE6		150PAR/FL	150PAR38/2FL
200W A23	Vaporgard 200W EV 10 Series		200A23 (IF)	200A (IF)
200W A25	Vaporgard 200W EV 15 Series			200A25/35
200W PS25	EV 15 Series		200PS25/99XL	
200W PS30	EV 20 Series EV 30 Series	200 130V	200PS/CL 130V	200 130V
300W PS25	Vapourgard 300W NDA EV 15 Series	300M		300M
300W PS30	Vaporgard 300W EV 20 Series EV 15 Series	300M/99 (130v)	300M/CL	300M/PS30
300W R40	RCDE6	300R/FL	300R40/FL	300BR/FL
300W PS35	EV 30 Series	300	300/CL	300
500W PS40	EV 30 Series	500PS40		500PS40
500W PAR64	RCDE10	500PAR64/MFL	500PAR64/MFL	500PAR64/MFL

Industrial
Lighting

Lamps Used With Cooper Crouse-Hinds Luminaires

Incandescent & Quartz
(Halogen) Lamps

MAX WATTS AND BULB TYPE	LUMINAIRE SERIES	MANUFACTURER			MANUFACTURER		
		Lumens			Life-Hours		
		GE	O/S	Ph	GE	O/S	PH
25W T10	EXLD	248	232	260	1000	1000	1000
50W PAR20	EVTL	570	530	550	2500	2500	2000
		570	530	550	2500	2500	2000
52W A19	ELG	670	650	564	2500	2500	4250
58W A19	ELG	630	630	630	3000	3000	3000
60W T10	EXL	740	630	745	1000	1000	1000
65W BR30	EVO2376	775	640		2000	2000	2000
75W ER30	EVO2376	850	750		2000	2000	2000
100W A19	EV 40 Series	1710	1750	1650	750	750	750
100W A21	V160, EV160, EVH, EV 15 Series	1710	1690	1680	750	750	750
100W A23	VS	1600		1730	750	750	750
100W D.C. Bay	Suffix QTZ	1600	1600	1600	2000	2000	2000
150W A21	Vaporgard 150W EV 10 Series EV 20 Series	2850	2780	2850	750	750	750
150W A23	V Series		2810	2475		750	1275
150W PAR38	RCDE6	1660	1660	1660	2000	2000	2000
200W A23	Vaporgard 200W EV 10 Series		3930	3800		750	750
200W A25	Vaporgard 200W Ev 15 Series	2720	2720	2720	3500	3500	3500
200W PS25	EV 15 Series	3000	3000	3000	2500	2500	2500
200W PS30	EV 20 Series EV 30 Series	2725	2665	2825	1950	1875	2120
300W PS25	Vapourgard 300W NDA EV 15 Series	6200		6280	750	750	750
300W PS30	Vaporgard 300W EV 20 Series EV292 Series	3935	5870	6100	6800	7500	7500
300W R40	RCDE6	3700	3030	np	2000	2000	2000
300W PS35	EV 30 Series	5820	5700	5700	1000	1000	1000
500W PS40	EV 30 Series	9900	10100	10100	1000	1000	1000
500W PAR64	RCDE10	6500			2000	2000	2000

Ballasts Used With Cooper Crouse-Hinds Luminaires

High Pressure Sodium
Data

L

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
35	S76	120	R-HPF	0.8	0.4	46	CHRBS 035 /120
50	S68	120 120/277 220/240-50 Hz	R-HPF HX-HPF HX-HPF	1.0 0.7/0.3 0.3/0.3	0.6 0.6/0.3 0.6/0.6	62 66 66	CHRBS 050 /120 CHRBS 050 /DT CHRBS 050 /220 50
70	S62	120 120/208/240/277 120/277/347 220 420 220/240-50Hz	R-HPF HX-HPF HX-HPF HX-HPF HX-HPF HX-HPF	0.9 0.8/0.5/0.4/0.4 .8/.4/.3 0.4 0.2 .5/.4	0.8 0.8/0.5/0.4/0.4 0.8/0.4/0.3 0.4 0.2 .5/.4	86 91 93 91 93 94	CHRBS 070 /120 CHRBS 070 /MT CHRBS 070 /TT CHRBS 070 /220 CHRBS 070 /480 CHRBS 070 /220 50
100	S54	120 120/208/240/277 120/277/347 220 480 220/240-50 Hz	R-HPF HX-HPF HX-HPF HX-HPF HX-HPF HX-HPF	1.5 1.3/0.8/0.7/0.6 1.3/0.6/0.5 0.7 0.4 0.5/0.5	1.1 1.2/0.7/0.6/0.5 1.2/0.5/0.4 0.6 0.3 0.7/0.6	115 130 130 130 130 130	CHRBS 100 /120 CHRBS 100 /MT CHRBS 100 /TT CHRBS 100 /220 CHRBS 100 /480 CHRBS 100 /220 50
150 (55v)	S55	120 120/208/240/277 120/277/347 220 480 220/240-50 Hz	R-HPF HX-HPF HX-HPF HX-HPF HX-HPF HX-HPF	2.3 2.0/1.2/1.0/0.9 2.0/0.9/0.5 1.1 0.5 0.9/0.8	1.5 1.7/1.0/0.8/0.7 1.7/0.7/0.6 0.9 0.4 0.9/0.8	170 188 188 188 188 188	CHRBS 150 /120 CHRBS 150 /MT CHRBS 150 /TT CHRBS 150 /220 CHRBS 150 /480 CHRBS 150 /220 50
150 (100v)	S56	120/208/240/277 480 220/240-50 Hz	CWA CWA R-PFC	1.2/0.7/0.6/0.05 0.3 0.9/1.0	1.8/1.0/0.9/0.8 0.4 0.9/0.8	188 188 175	CHRBS 150 /MT CE CHRBS 150 /480 CE CHRBS 150 /220 50 CE
200	S66	12-/208/240/277 480	CWA CWA	1.4/0.8/0.7/0.6 0.4	2.4/1.4/1.2/1.0 0.6	250 250	CHRBS 200 /MT CHRBS /200 /480
250	S50	120 120/208/240/277 120/277/347 220 480 230-50 Hz	CWA CWA CWA CWA CWA CWA	1.7 1.7/1.0/0.8/0.7 1.7/0.7/0.6 0.9 0.4 1.0	2.5 2.5/1.5/1.3/1.1 2.7/1.2/0.9 1.5 0.7 1.4	295 295 295 295 310 300	CHRBS 250 /120 CHRBS 250 /MT CHRBS 250 /TT CHRBS 250 /220 CHRBS 250 /480 CHRBS 250 /220 50
400	S51	120 120/208/240/277 120/277/347 220 480 230-50 Hz	CWA CWA CWA CWA CWA CWA	3.3 3.3/1.8/1.5/1.4 3.3/1.4/1.0 1.6 0.8 1.9	3.8 3.8/2.2/1.9/1.7 3.8/1.7/1.3 2.1 1.0 2.0	457 464 464 457 464 465	CHRBS 400 /120 CHRBS 400 /MT CHRBS 400 /TT CHRBS 400 /220 CHRBS 400 /480 CHRBS 400 /220 50
1000	S52	120/208/240/277 120/277/347 220 480 220/240-50 Hz	CWA CWA CWA CWA CWA	6.4/3.8/3.2/2.8 6.4/2.8/2.2 3.6 1.6 6.0/5.6	9.5/5.5/4.8/4.2 9.5/4.2/3.3 5.0 2.3 5.2/4.8	1100 1100 1100 1100 1100	CHRBS 1000 /MT CHRBS 1000 /TT CHRBS 1000 /220 CHRBS 1000 /480 CHRBS 1000 /220 50

Industrial
Lighting

Ballasts Used With Cooper Crouse-Hinds Luminaires

Pulse Start Metal Halide
Data

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.	
150	M102	120/208/240/277	HX-HPF	1.8/1.3/0.9/0.8	1.6/1.0/0.8/0.7	185	CHRBM 150 /MT	S828
		120/277/347	HX-HPF	1.8/0.8/0.7	1.6/0.7/0.6	185	CHRBM 150 /TT	S828
175	M137	120/208/240/277	Super CWA	1.0/0.6/0.5/0.4	1.8/1.1/0.9/0.8	208	CHRBM 175 /MT	S828
		120/277/347	Super CWA	0.8/0.4/0.3	1.9/0.8/0.7	208	CHRBM 175 /TT	S828
200	M136	120/208/240/277	Super CWA	0.8/0.4/0.4/0.3	2.0/1.2/1.0/0.9	232	CHRBM 200 /MT	S828
		120/277/347	Super CWA	0.7/0.3/0.3	2.1/0.9/0.7	232	CHRBM 200 /TT	S828
		480	Super CWA	0.2	0.5	232	CHRBM 200 /480	S828
250	M138	120/208/240/277	Super CWA	2.3/1.3/1.2/1.0	2.5/1.5/1.3/1.1	288	CHRBM 250 /MT	S828
		120/277/347	Super CWA	2.0/0.9/0.8	2.5/1.1/0.9	290	CHRBM 250 /TT	S828
320	M132	120/208/240/277	Super CWA	1.8/1.1/0.9/0.8	3.3/1.9/1.7/1.4	368	CHRBM 250 /MT	S828
		120/277/347	Super CWA	2.2/1.0/0.7	3.3/1.4/1.1	368	CHRBM 250 /TT	S828
		220	Super CWA	1.4	1.7	365	CHRBM 250 /220	S828
		480	Super CWA	0.5	0.8	368	CHRBM 250 /480	S828
		230/50	Super CWA	1.1	1.6	365	CHRBM 250 /220 50	S828
400	M135	120/208/240/277	Super CWA	2.9/1.7/1.5/1.3	3.8/2.2/1.9/1.7	452	CHRBM 400 /MT	S828
		120/277/347	Super CWA	3.2/1.4/1.1	3.8/1.7/1.4	450	CHRBM 400 /TT	S828
		480	Super CWA	0.8	1.0	452	CHRBM 400 /480	S828
		230/50	Super CWA	2.0	2.1	454	CHRBM 400 /220 50	S828
1000	M141	120/208/240/277	Super CWA	7.8/4.0/3.7/3.2	9.0/5.2/4.5/3.9	1080	CHRBM 1000 /MT	S828
		347	Super CWA	2.3	3.2	1075	CHRBM 1000 /347	S828
		480	Super CWA	1.7	2.4	1075	CHRBM 1000 /480	S828
		220/240-50 Hz	CWA	4.5/4.1	5.0/4.5	1090	CHRBM 1000 /220 50	S828

Ballasts Used With Cooper Crouse-Hinds Luminaires

Metal Halide
Data

L

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
70	M98	120/208/240/277	HX-HPF	0.6/0.3/0.3/0.3	0.8/0.5/0.4/0.4	88	CHRBM 070 /MT
		120/277/347	HX-HPE	0.6/0.2/0.2	0.8/0.4/0.3	88	CHRBM 070 /TT
		220	HX-HPF	0.4	0.5	94	CHRBM 070 /220
		220/240-50 Hz	HX-HPF	0.7/0.6	0.5/0.4	95	CHRBM 070 /220 50
100	M90	120/208/240/277	HX-HPF	1.2/0.8/0.7/0.6	1.2/0.7/0.6/0.5	129	CHRBM 100 /MT
		120/277/347	HX-HPF	1.2/0.5/0.4	1.2/0.5/0.4	129	CHRBM 100 /TT
		220	HX-HPF	0.9	0.6	129	CHRBM 100 /220
		480	HX-HPF	0.3	0.3	132	CHRBM 100 /480
		220/240-50 Hz	HX-HPF	0.7/0.7	0.7/0.6	129	CHRBM 100 /220 50
175	M57	120	CWA	1.3	1.8	210	CHRBM 175 /120
		120/208/240/277	CWA	1.3/0.8/0.7/0.6	1.8/1.1/0.9/0.8	210	CHRBM 175 /MT
		120/277/347	CWA	1.3/0.6/0.5	1.8/0.8/0.7	210	CHRBM 175 /TT
		220	CWA	0.6	1.0	210	CHRBM 175 /220
		480	CWA	0.4	0.5	210	CHRBM 175 /480
		230/50	CWA	0.8	1.1	210	CHRBM 175 /220 50
250	M58	120	CWA	1.0	2.6	294	CHRBM 250 /120
		120/208/240/277	CWA	1.0/0.6/0.5/0.5	2.6/1.5/1.3/1.1	294	CHRBM 250 /MT
		120/277/347	CWA	2.2/1.0/0.8	2.5/1.1/0.9	295	CHRBM 250 /TT
		220	CWA	1.4	1.5	295	CHRBM 250 /220
		480	CWA	0.6	0.6	295	CHRBM 250 /480
		230/50	CWA	1.0	1.3	290	CHRBM 250 /220 50
400	M59	120	CWA	3.0	4.0	456	CHRBM 400 /120
		120/208/240/277	CWA	3.5/2.0/1.8/1.5	4.0/2.2/2.0/1.8	458	CHRBM 400 /MT
		120/277/347	CWA	3.5/1.5/1.2	4.0/1.8/1.4	460	CHRBM 400 /TT
		220	CWA	1.9	2.2	458	CHRBM 400 /220
		480	CWA	0.9	1.0	462	CHRBM 400 /480
		230/50	CWA	1.4	2.1	462	CHRBM 400 /220 50
1000	M47	120/208/240/277	CWA	7.84/0.3/7/3.2	9.0/5.2/4.5/3.9	1080	CHRBM 1000 /MT
		120/277/347	CWA	7.8/3.2/2.5	9.0/3.9/3.2	1080	CHRBM 1000 /TT
		220	CWA	3.9	4.9	1080	CHRBM 1000 /220
		480	CWA	1.9	2.3	1080	CHRBM 1000 /480
		220/240-50 Hz	CWA	4.5/4.1	5.0/4.5	1090	CHRBM 1000 /220 50
1500	M48	120/208/240/277	CWA	13.4/7.7/6.7/5.7	13.5/7.8/6.8/5.9	1605	CHRBM 1500 /MT
		120/277/347	CWA	13.4/5.7/4.6	13.5/5.9/4.8	1615	CHRBM 1500 /TT
		220	CWA	7.3	7.4	1605	CHRBM 1500 /220
		480	CWA	3.3	3.4	1625	CHRBM 1500 /480
		220/240-50 Hz	CWA	6.9/6.3	7.5/6.9	1605	CHRBM 1500 /220 50

Industrial
Lighting

Ballasts Used With Cooper Crouse-Hinds Luminaires

Mercury Vapor
Data

Watts	ANSI Code	Volts	Type R/HX/CWA	Starting Current	Operating Current	Input Watts	Kit Cat No.
100	H38	120	CWA	1.1	1.1	120	CHRBC 100 /120
		120/208/240/277	CWA	1.1/0.6/0.5/0.5	1.1/0.6/0.5/0.5	125	CHRBC 100 /MT
		120/277/347	CWA	1.1/0.5/0.4	1.1/0.5/0.3	125	CHRBC 100 /TT
		480	CWA	0.3	0.3	125	CHRBC 100 /480
		220/240-50 Hz	CWA	0.7/0.6	0.6/0.5	125	CHRBC 100 /220 50
175	H39	120	CWA	1.6	1.9	205	CHRBC 175 /120
		120/208/240/277	CWA	1.6/1.0/0.8/0.7	1.9/1.1/1.0/0.8	205	CHRBC 175 /MT
		120/277/347	CWA	1.3/0.6/0.5	1.8/0.8/0.7	210	CHRBC 175 /TT
		220	CWA	0.6	1.0	210	CHRBC 175 /220
		480	CWA	0.4	0.4	200	CHRBC 175 /480
		230/50	CWA	0.8	1.1	210	CHRBC 175 /220 50
250	H37	120	CWA	2.5	2.5	280	CHRBC 250 /120
		120/208/240/277	CWA	2.5/1.5/1.3/1.1	2.5/1.5/1.3/1.1	285	CHRBC 250 /MT
		120/277/347	CWA	2.2/1.0/0.8	2.5/1.1/0.9	295	CHRBC 250 /TT
		220	CWA	1.4	1.5	295	CHRBC 250 /220
		480	CWA	0.6	0.6	285	CHRBC 250 /480
		230/50	CWA	1.0	1.3	290	CHRBC 250 /220 50
400	H33	120/208/240/277	CWA	3.2/2.0/1.7/1.7	3.9/2.2/2.0/1.7	454	CHRBC 400 /MT
		120/277/347	CWA	3.5/1.5/1.2	4.0/1.8/1.4	460	CHRBC 400 /TT
		220	CWA	1.9	2.1	454	CHRBC 400 /220
		480	CWA	1.0	1.0	454	CHRBC 400 /480
		230/50	CWA	1.4	2.1	462	CHRBC 400 /220 50
1000	H36	120/208/240/277	CWA	8.0/4.6/4.0/3.5	9.8/5.6/4.9/4.3	1080	CHRBC 1000 /MT
		120/277/347	CWA	7.8/3.2/2.5	9.0/3.9/3.2	1080	CHRBC 1000 /TT
		220	CWA	3.9	4.9	1080	CHRBC 1000 /220
		480	CWA	1.9	2.3	1080	CHRBC 1000 /480
		220/240-50 Hz	CWA	4.5/4.1	5.0/4.5	1090	CHRBC 1000 /220 50

Ballasts Used With Cooper Crouse-Hinds Luminaires

Fluorescent Data

L

Luminaire Series	Lamp Type & Watts	Lamp Base	Lamp No. Qty.	Ballast Voltage	Starting Operating Amp	Input Watts	Kit Cat. No.
COMPACT							
VF	9W T4	G23	2	120	0.4	22	CHRB2C18/120
DMVF, N2MVF, EVLPF	26W T4	GX24q-3	2	120	0.5	55	CHRB4C64/UNV
	26W T4	GX24q-3	2	220/240	0.3	55	CHRB4C64/UNV
	26W T4	GX24q-3	2	277	0.2	55	CHRB4C64/UNV
	26W T4	GX24q-3	2	347	0.2	44	CHRB4C64/347
	26W T4	GX24q-3	2	DC 12V	3.6	43	CHRB4C64/12VDC
	26W T4	GX24q-3	2	DC 24V	1.8	43	CHRB4C64/24VDC
DMVF, N2MVF, EVLPF	32W T4	GX24q-3	2	120	0.6	68	CHRB4C64/UNV
	32W T4	GX24q-3	2	220/240	0.3	68	CHRB4C64/UNV
	32W T4	GX24q-3	2	277	0.3	68	CHRB4C64/UNV
	32W T4	GX24q-3	2	347	0.2	62	CHRB4C64/347
	32W T4	GX24q-3	2	DC 12V	4.4	60	CHRB4C64/12VDC
	32W T4	GX24q-3	2	DC 24V	2.2	60	CHRB4C64/24VDC
CPMVF	42W T4	GX24q-4	2	120	0.8	93	CHRB4C84/120
	42W T4	GX24q-4	2	277	0.3	68	CHRB4C84/277
	42W T4	GX24q-4	2	347	0.3	80	CHRB4C84/347
LONG TWIN TUBE							
NFL	40W T5	2G11	1	120	0.4	42	CHRBFT40/120
	40W T5	2G11	1	277	0.2	42	CHRBFT40/277
	40W T5	2G11	1	347	0.1	44	CHRBFT80/347
	40W T5	2G11	1	220/240	0.2	41	CHRBFT80/UNV
FVS	40W T5	2G11	2	120	0.6	76	CHRBFT80/UNV
	40W T5	2G11	2	277	0.3	73	CHRBFT80/UNV
	40W T5	2G11	2	347	0.2	70	CHRBFT80/347
	40W T5	2G11	2	220/240	0.3	74	CHRBFT80/UNV
EVFT	36/39W	2G11	2	120	0.6	74	CHRBFT78/120
	36/39W	2G11	2	277	0.3	74	CHRBFT78/277
	36/39W	2G11	2	220/240	0.3	71	CHRBFT78/220

Note:

For 3 Lamp luminaires, order one 1 lamp ballast and one 2 lamp, lamp ballast. Add current and watts values
For 4 lamp luminaires, order two 2 lamp, lamp ballasts. Double currents and watts values

Industrial
Lighting

Ballasts Used With Cooper Crouse-Hinds Luminaires

Fluorescent
Data

Luminaire Series	Lamp Type & Watts	Lamp Base	Lamp No. Qty.	Ballast Voltage	Starting Operating Amp	Input Watts	Kit Cat. No.
LINEAR							
NFL, FVN, EVF & EVFDR	32W T8	Med Bipin	1	120	0.3	35	CHRBFL64/UNV
	32W T8	Med Bipin	1	277	0.2	35	CHRBFL64/UNV
	32W T8	Med Bipin	1	347	0.1	32	CHRBFL64/347
	32W T8	Med Bipin	1	220/240	0.3	38	CHRBFL64/UNV
	32W T8	Med Bipin	2	120	0.5	58	CHRBFL64/UNV
	32W T8	Med Bipin	2	277	0.2	58	CHRBFL64/UNV
	32W T8	Med Bipin	2	347	0.1	50	CHRBFL64/347
	32W T8	Med Bipin	2	220	0.4	58	CHRBFL64/UNV
NFL, FVN, EVF & EVFDR	40(34W)T12	Med Bipin	1	120	0.4	46	CHRBFL80/120
	40(34W)T12	Med Bipin	1	277	0.2	46	CHRBFL80/277
	40(34W)T12	Med Bipin	1	347	0.2	52	CHRBFL40/347
	40(34W)T12	Med Bipin	1	220 50	0.2	51	CHRBFL40/220 50
	40(34W)T12	Med Bipin	2	120	0.6	73	CHRBFL80/120
	40(34W)T12	Med Bipin	2	277	0.3	80	CHRBFL80/277
	40(34W)T12	Med Bipin	2	347	0.2	62	CHRBFL80/347
	40(34W)T12	Med Bipin	2	220/240	0.2	71	CHRBFL80/220
FVN, EVF & EVFDR	60W (800ma) T12 HO	Recessed Double Contact	1	120	0.9	79	CHFBFL120/120
	60W (800ma) T12 HO	Recessed Double Contact	1	277	0.5	82	CHFBFL120/277
	60W (800ma) T12 HO	Recessed Double Contact	1	220 50	0.7	140	CHFBFL120/220 50
	60W (800ma) T12 HO	Recessed Double Contact	2	120	1.2	133	CHFBFL120/120
	60W (800ma) T12 HO	Recessed Double Contact	2	277	0.5	131	CHFBFL120/277
	60W (800ma) T12 HO	Recessed Double Contact	2	220 50	1.0	224	CHFBFL120/220 50
EVF & EVFDR	110W (1500ma) T12 VHO	Recessed Double Contact	1	120	1.7	130	CHRBFL220/120
	110W (1500ma) T12 VHO	Recessed Double Contact	1	277	0.6	137	CHRBFL220/277
	110W (1500ma) T12 VHO	Recessed Double Contact	2	120	2.2	230	CHRBFL220/120
	110W (1500ma) T12 VHO	Recessed Double Contact	2	277	0.9	241	CHRBFL220/277

Note:

For 3 Lamp Luminaires, order one 1 lamp ballast and one 2 lamp, lamp ballast. Add current and watts values

For 4 lamp luminaires, order two 2 lamp, lamp ballasts. Double currents and watts values

4

Calculate the Number of Luminaires Required

For uniform lighting of a specific area, the **lumen method** is used to calculate the number of luminaires required. This method takes into account not only the direct light from the luminaire, but also that which is reflected from the ceiling, walls and floor. As the calculations will show, the higher the reflectivity of the surfaces, the fewer number of luminaires required. Clean, light-colored surfaces also provide visual comfort.

The Coefficient of Utilization as used in these calculations makes allowances for light absorbed by walls and ceiling, and the light absorbed within the luminaire.

To obtain the Coefficient of Utilization, the reflection factors of the walls, floors, and ceiling must be estimated. These reflectances should be the minimum values expected just before cleaning or repainting of the surfaces. The reference below gives approximate factors for various surfaces.

Color	Reflectance Factor
White	80%
Light tints of blue-green, cream, blue, buff or gray	70%
Medium blue-green, yellow, medium buff, or gray	50%
Dark gray, medium blue	30%
Dark blue, brown, dark green, and many wood finishes, such as dark oak and mahogany	10%

When supplementary lighting (highlighting) or floodlighting is needed, use the **point-by-point** method to determine footcandles at a specific point or points on the work plane. This method can also be used with angle reflectors for lighting of irregular rooms or where ceiling use is restricted. Candlepower distribution curves for individual lighting units are shown on the appropriate catalog pages.

Basic Steps in the Lumen Method (Zonal Cavity Method)

- Step 4a** Determine Cavity Ratios
- Step 4b** Determine Cavity Reflectances
- Step 4c** Determine Coefficient of Utilization
- Step 4d** Determine Light Loss Factor
- Step 4e** Calculate Lamp Lumens Required
- Step 4f** Calculate Number of Luminaires Required

4a

Determine Cavity Ratios

There are three Cavity Ratios that should be determined, as in Figure 1:

Ceiling Cavity Ratio**Room Cavity Ratio****Floor Cavity Ratio**

Each of these ratios can be found through use of Table IV, page 684. Simply find the appropriate Cavity Depth, whether it is Ceiling Cavity Depth (h_{CC}), Room Cavity Depth (h_{RC}), or Floor Cavity Depth (h_{FC}), and match it with the room length and width to obtain the Cavity Ratio.

For example, to determine the Ceiling Cavity Ratio when the Ceiling Cavity Depth (distance from luminaire to ceiling) is 4', the width of the room 20' and the length 60', cross-reference to Cavity Depth 4.0, width 20, length 60, and find Ceiling Cavity Ratio of 1.3.

If the Room Cavity Depth (distance from luminaire to work plane) is 12', then the Room Cavity Ratio would be 4.0.

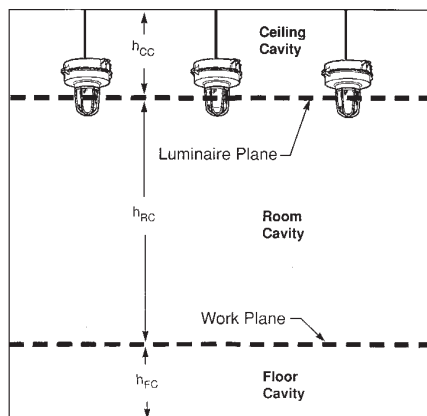


Figure 1/The three cavities used in the Lumen Method

4b

Determine Cavity Reflectances

Effective reflectances of the different room cavities are determined in Table V, page 685, by using the estimated ceiling, wall and floor reflectances together with the corresponding cavity ratios.

Using the example in Step 4a, we estimate the wall reflectance at 70% and the ceiling reflectance at 70%. Using the Ceiling Cavity Ratio of 1.3 (also from Step 4a) in Table V, we find the Effective Ceiling Cavity Reflectance is 61%.

4c

Determine Coefficient of Utilization

The Coefficient of Utilization is determined from the CU table found on the catalog page for the previously selected luminaire/lamp combination.

Using our example again, the three required factors for use with the CU table would be:

Room Cavity Ratio

(from Step 4a) 4.0

Wall Reflectance

(from Step 4b) 70%

Effective Ceiling Cavity Reflectance

(from Step 4b) 61%

In most instances some interpolations will be necessary to obtain the proper Coefficient of Utilization.

You will note that the table gives Coefficients of Utilization for a 20% Effective Floor Cavity Reflectance. Use of this factor for all applications will provide reasonable accuracy; however, if more accuracy is desired, refer to the current Illuminating Engineering Society Handbook for an additional detailed step.

Table IV/Cavity Ratios

Room Dimensions		Ceiling or Room Cavity Depth																			
Width	Length	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8	9	10	11	12	14	16	20	25	30
8	8	1.2	1.9	2.5	3.1	3.7	4.4	5.0	6.2	7.5	8.8	10.0	11.2	12.5	—	—	—	—	—	—	—
	10	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.6	6.7	7.9	9.0	10.1	11.3	12.4	—	—	—	—	—	—
	14	1.0	1.5	2.0	2.5	3.0	3.4	3.9	4.9	5.9	6.9	7.8	8.8	9.7	10.7	11.7	—	—	—	—	—
	20	0.9	1.3	1.7	2.2	2.6	3.1	3.5	4.4	5.2	6.1	7.0	7.9	8.8	9.6	10.5	12.2	—	—	—	—
	30	0.8	1.2	1.6	2.0	2.4	2.8	3.2	4.0	4.7	5.5	6.3	7.1	7.9	8.7	9.5	11.0	—	—	—	—
40	0.7	1.1	1.5	1.9	2.3	2.6	3.0	3.7	4.5	5.3	5.9	6.5	7.1	7.8	8.1	8.8	10.3	11.8	—	—	—
10	10	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	—	—	—	—	—
	14	0.9	1.3	1.7	2.1	2.6	3.0	3.4	4.3	5.1	6.0	6.9	7.8	8.6	9.5	10.4	12.0	—	—	—	—
	20	0.7	1.1	1.5	1.9	2.3	2.6	3.0	3.7	4.5	5.3	6.0	6.8	7.5	8.3	9.0	10.5	12.0	—	—	—
	30	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.3	4.0	4.7	5.3	6.0	6.6	7.3	8.0	9.4	10.6	—	—	—
	40	0.6	0.9	1.2	1.6	1.9	2.2	2.5	3.1	3.7	4.4	5.0	5.6	6.2	6.9	7.5	8.7	10.0	12.5	—	—
60	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.9	3.5	4.1	4.7	5.3	5.9	6.5	7.1	8.2	9.4	11.7	—	—	—
12	12	0.8	1.2	1.7	2.1	2.5	2.9	3.3	4.2	5.0	5.8	6.7	7.5	8.4	9.2	10.0	11.7	—	—	—	—
	16	0.7	1.1	1.5	1.8	2.2	2.5	2.9	3.6	4.4	5.1	5.8	6.5	7.2	8.0	8.7	10.2	11.6	—	—	—
	24	0.6	0.9	1.2	1.6	1.9	2.2	2.5	3.1	3.7	4.4	5.0	5.6	6.2	6.9	7.5	8.7	10.0	12.5	—	—
	36	0.6	0.8	1.1	1.4	1.7	1.9	2.2	2.8	3.3	3.9	4.4	5.0	5.6	6.0	6.7	7.8	8.8	11.0	—	—
	50	0.5	0.8	1.0	1.3	1.5	1.8	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.2	7.2	8.2	10.2	—	—
70	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.8	6.8	7.8	9.7	12.2	—	—
14	14	0.7	1.1	1.4	1.8	2.1	2.5	2.9	3.6	4.3	5.0	5.7	6.4	7.1	7.8	8.5	10.0	11.4	—	—	—
	20	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.9	5.5	6.1	6.7	7.3	8.6	9.8	12.3	—	—
	30	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.6	3.1	3.7	4.2	4.7	5.2	5.8	6.3	7.3	8.4	10.5	—	—
	42	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.4	2.9	3.3	3.8	4.3	4.7	5.2	5.7	6.7	7.6	9.5	11.9	—
	60	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.2	2.6	3.1	3.5	3.9	4.4	4.8	5.2	6.1	7.0	8.8	10.9	—
90	0.4	0.6	0.8	1.0	1.2	1.4	1.6	2.0	2.5	2.9	3.3	3.7	4.1	4.5	5.0	5.8	6.6	8.3	10.3	12.4	—
17	17	0.6	0.9	1.2	1.5	1.8	2.1	2.3	2.9	3.5	4.1	4.7	5.3	5.9	6.5	7.0	8.2	9.4	11.7	—	—
	25	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	10.0	12.5	—
	35	0.4	0.7	0.9	1.1	1.3	1.5	1.7	2.2	2.6	3.1	3.5	3.9	4.4	4.8	5.2	6.1	7.0	8.7	10.9	—
	50	0.4	0.6	0.8	1.0	1.2	1.4	1.6	2.0	2.4	2.8	3.1	3.5	3.9	4.3	4.5	5.4	6.2	7.7	9.7	11.6
	80	0.4	0.5	0.7	0.9	1.1	1.2	1.4	1.8	2.1	2.5	2.9	3.3	3.6	4.0	4.3	5.1	5.8	7.2	9.0	10.9
120	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.7	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.7	5.4	6.7	8.4	10.1	—
20	20	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	10.0	12.5	—
	30	0.4	0.6	0.8	1.0	1.2	1.5	1.7	2.1	2.5	2.9	3.3	3.7	4.1	4.5	4.9	5.8	6.8	8.2	10.3	12.4
	45	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.8	2.2	2.5	2.9	3.3	3.6	4.0	4.3	5.1	5.8	7.2	9.1	10.9
	60	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.7	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.7	5.4	6.7	8.4	10.1
	90	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	4.2	4.8	6.0	7.5	9.0
150	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.4	4.0	4.6	5.7	7.2	8.6	—
24	24	0.4	0.6	0.8	1.0	1.2	1.5	1.7	2.1	2.5	2.9	3.3	3.7	4.1	4.5	5.0	5.8	6.7	8.2	10.3	12.4
	32	0.4	0.5	0.7	0.9	1.1	1.3	1.5	1.8	2.2	2.6	2.9	3.3	3.6	4.0	4.3	5.1	5.8	7.2	9.0	11.0
	50	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.5	1.8	2.2	2.5	2.8	3.1	3.4	3.7	4.4	5.0	6.2	7.8	9.4
	70	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.0	3.3	3.8	4.4	5.5	6.9	8.2
	100	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.9	3.1	3.7	4.2	5.2	6.5	7.9
160	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.4	2.6	2.8	3.3	3.8	4.7	5.9	7.1	—
30	30	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.7	5.4	6.7	8.4	10.0
	45	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	1.9	2.2	2.5	2.7	3.0	3.3	3.8	4.4	5.5	6.9	8.2
	60	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.5	4.0	5.0	6.2	7.4
	90	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.3	1.6	1.8	2.0	2.2	2.5	2.7	3.1	3.6	4.5	5.6	6.7
	150	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.8	3.2	4.0	5.0	5.9
200	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.7	1.9	2.0	2.2	2.6	3.0	3.7	4.7	5.6	—
36	36	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.4	1.7	1.9	2.2	2.5	2.8	3.0	3.3	3.9	4.4	5.5	6.9	8.3
	50	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.5	2.6	2.9	3.3	3.8	4.8	5.9	7.2
	75	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.3	2.5	2.9	3.3	4.1	5.1	6.1
	100	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	3.0	3.8	4.7	5.7
	150	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.4	2.8	3.5	4.3	5.2
200	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.6	1.8	2.0	2.3	2.6	3.3	4.1	4.9	—
42	42	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.9	2.1	2.4	2.6	2.8	3.3	3.8	4.7	5.9	7.1
	60	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.8	3.2	4.0	5.0	6.0
	90	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.4	2.8	3.5	4.4	5.2
	140	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.5	1.7	1.9	2.2	2.5	3.1	3.9	4.6
	200	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.3	1.4	1.6	1.7	2.0	2.3	2.9	3.6	4.3
300	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.1	1.3	1.4	1.5	1.7	1.9	2.2	2.8	3.5	4.2	—
50	50	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.8	3.2	4.0	5.0	6.0
	70	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	2.4	2.7	3.4	4.3	5.1
	100	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.2	1.3	1.5							

Table V/Effective Ceiling Reflectance

% Ceiling or Floor Reflectance		90				80				70			50			30				10		
		90	70	50	30	80	70	50	30	70	50	30	70	50	30	65	50	30	10	50	30	10
Ceiling or Floor Cavity Ratio	0	90	90	90	90	80	80	80	80	70	70	70	50	50	50	30	30	30	30	10	10	10
	0.1	90	89	88	87	79	79	78	78	69	69	68	59	49	48	30	30	29	29	10	10	10
	0.2	89	88	86	85	79	78	77	76	68	67	66	49	48	47	30	29	29	28	10	10	9
	0.3	89	87	85	83	78	77	75	74	68	66	64	49	47	46	30	29	28	27	10	10	9
	0.4	88	86	83	81	78	76	74	72	67	65	63	48	46	45	30	29	27	26	11	10	9
	0.5	88	85	81	78	77	75	73	70	66	64	61	48	46	44	29	28	27	25	11	10	9
	0.6	88	84	80	76	77	75	71	68	65	62	59	47	45	43	29	28	26	25	11	10	9
	0.7	88	83	78	74	76	74	70	66	65	61	58	47	44	42	29	28	26	24	11	10	8
	0.8	87	82	77	73	75	73	69	65	64	60	56	47	43	41	29	27	25	23	11	10	8
	0.9	87	81	76	71	75	72	68	63	63	59	55	46	43	40	29	27	25	22	11	9	8
	1.0	86	80	74	69	74	71	66	61	63	58	53	46	42	39	29	27	24	22	11	9	8
	1.1	86	79	73	67	74	71	65	60	62	57	52	46	41	38	29	26	24	21	11	9	8
	1.2	86	78	72	65	73	70	64	58	61	56	50	45	41	37	29	26	23	20	12	9	7
	1.3	85	78	70	64	73	69	63	57	61	55	49	45	40	36	29	26	23	20	12	9	7
	1.4	85	77	69	62	72	68	62	55	60	54	48	45	40	35	28	26	22	19	12	9	7
	1.5	85	76	68	61	72	68	61	54	59	53	47	44	39	34	28	25	22	18	12	9	7
	1.6	85	75	66	59	71	67	60	53	59	52	45	44	39	33	28	25	21	18	12	9	7
	1.7	84	74	65	58	71	66	59	52	58	51	44	44	38	32	28	25	21	17	12	9	7
	1.8	84	73	64	56	70	65	58	50	57	50	43	43	37	32	28	25	21	17	12	9	6
	1.9	84	73	63	55	70	65	57	49	57	49	42	43	37	31	28	25	20	16	12	9	6
	2.0	83	72	62	53	69	64	56	48	56	48	41	43	37	30	28	24	20	16	12	9	6
	2.1	83	71	61	52	69	63	55	47	56	47	40	43	36	29	28	24	20	16	13	9	6
	2.2	83	70	60	51	68	63	54	45	55	46	39	42	36	29	28	24	19	15	13	9	6
	2.3	83	69	59	50	68	62	53	44	54	46	38	42	35	28	28	24	19	15	13	9	6
	2.4	82	68	58	48	67	61	52	43	54	45	37	42	35	27	28	24	19	14	13	9	6
	2.5	82	68	57	47	67	61	51	42	53	44	36	41	34	27	27	23	18	14	13	9	6
	2.6	82	67	56	46	66	60	50	41	53	43	35	41	34	26	27	23	18	13	13	9	5
	2.7	82	66	55	45	66	60	49	40	52	43	34	41	33	26	27	23	18	13	13	9	5
	2.8	81	66	54	44	66	59	48	39	52	42	33	41	33	25	27	23	18	13	13	9	5
	2.9	81	65	53	43	65	58	48	38	51	41	33	40	33	25	27	23	17	12	13	9	5
	3.0	81	64	52	42	65	58	47	38	51	40	32	40	32	24	27	22	17	12	13	8	5
	3.1	80	64	51	41	64	57	46	37	50	40	31	40	32	24	27	22	17	12	13	8	5
	3.2	80	63	50	40	64	57	45	36	50	39	30	40	31	23	27	22	16	11	13	8	5
	3.3	80	62	49	39	64	56	44	35	49	39	30	39	31	23	27	22	16	11	13	8	5
	3.4	80	62	48	38	63	56	44	34	49	38	29	39	31	22	27	22	16	11	13	8	5
	3.5	79	61	48	37	63	55	43	33	48	38	29	39	30	22	26	22	16	11	13	8	5
	3.6	79	60	47	36	62	54	42	33	48	37	28	39	30	21	26	21	15	10	13	8	5
	3.7	79	60	46	35	62	54	42	32	48	37	27	38	30	21	26	21	15	10	13	8	4
	3.8	79	59	45	35	62	53	41	31	47	36	27	38	29	21	26	21	15	10	13	8	4
	3.9	78	59	45	34	61	53	40	30	47	36	26	38	29	20	26	21	15	10	13	8	4
	4.0	78	58	44	33	61	52	40	30	46	35	26	38	29	20	26	21	15	9	13	8	4
	4.1	78	57	43	32	60	52	39	29	46	35	25	37	28	20	26	21	14	9	13	8	4
	4.2	78	57	43	32	60	51	39	29	46	34	25	37	28	19	26	20	14	9	13	8	4
	4.3	78	56	42	31	60	51	38	28	45	34	25	37	28	19	26	20	14	9	13	8	4
	4.4	77	56	41	30	59	51	38	28	45	34	24	37	27	19	26	20	14	8	13	8	4
	4.5	77	55	41	30	59	50	37	27	45	33	24	37	27	19	25	20	14	8	14	8	4
	4.6	77	55	40	29	59	50	37	26	44	33	24	36	27	18	25	20	14	8	14	8	4
	4.7	77	54	40	29	58	49	36	26	44	33	23	36	26	18	25	20	13	8	14	8	4
	4.8	76	54	39	28	58	49	36	25	44	32	23	36	26	18	25	19	13	8	14	8	4
	4.9	76	53	38	28	58	49	35	25	44	32	23	36	26	18	25	19	13	7	14	8	4
	5.0	76	53	38	27	57	48	35	25	43	32	22	36	26	17	25	19	13	7	14	8	4

4d

Determine Light Loss Factor

The light loss factor takes into account two things: lamp light output dropoff (lamp lumen depreciation) and dirt accumulation on the luminaire, lamp and reflector. The table below lists suggested total light loss factors according to light source and operating conditions. (Other factors that may affect light loss, such as voltage to luminaire, luminaire ambient temperature (fluorescent) and ballast operating characteristics, should also be considered.)

Suggested Total Light Loss Factors Operating Conditions

	CLEAN	AVERAGE	DIRTY
	Clean air, free of fumes and dust, luminaires scheduled to be cleaned frequently, and lamps replaced systematically.	Less favorable atmospheric conditions, luminaires cleaned at fairly frequent intervals, and lamps replaced only after burnout.	Quite dirty locations and work atmospheres, infrequent maintenance of lighting equipment.
Lamp and Luminaire	Clean	Average	Dirty
Incandescent	.74	.69	.64
Quartz	.82	.76	.70
Mercury	.70	.65	.60
Metal Halide	.64	.59	.55
High Pressure Sodium	.77	.71	.66
Fluorescent	.71	.66	.61

4e

Calculate Lamp Lumens Required

Formula: Total Lamp Lumens =

$$\frac{\text{Footcandles}[\dagger] \times \text{Area of Room (sq. ft.)}}{\text{Coefficient of Utilization}[\ddagger] \times \text{Light Loss Factor}[\diamond]}$$

[†] from Table 1, page 665 or IES Handbook

[‡] from catalog page on luminaire selected—and calculated from 4b

[♦] from above

♦ ♦ For lamp data check current lamp manufacturing catalog. Variances exist between manufacturers.

4f

Calculate Number of Luminaires Required

Formula:

$$\text{Luminaires Required} = \frac{\text{Total Lamp Lumens}}{\text{Total Lamp Lumens per Luminaire}}$$

Typical Lamp Lumens
from list below: ♦ ♦

Lamp	Watts	Lumens	Life (hours)
Induction	55	3500	100,000
	85	6000	100,000
	165	12000	100,000
Incandescent (inside frosted)	100	1750	750
	150	2880	750
	200 A-23;	4010	750
	PS-30, PS-25	3710	750
	300 PS-25;	6360	750
	PS-30;	6110	750
	PS-35;	5820	1000
Mercury Vapor (deluxe white)	500	10850	1000
	100	4200	24000
	175	8600	24000
	250	12100	24000
	400	22500	24000
Metal Halide (clear)	1000	63000	24000
	70	5600	10000
	100	7800	10000
	175	14000	10000
	250	20500	10000
High Pressure Sodium (clear)	400	36000	20000
	1000	110000	12000
	35	2250	16000
	50	4000	24000
	70	6400	24000
	100	9500	24000
	150	16000	24000
	200	22000	24000
Linear Fluorescent	250	27500	24000
	400	50000	24000
	1000	140000	24000
	32 (T8)	2900	20000
	40 (Slimline)	3000	9000
	40 (Rapid Start)	3150	20000
Compact Fluorescent	60 (800 ma)	4300	12000
	110 (1500 ma)	6850	10000
	215 (1500 ma)	16000	12000
	5	250	10000
	7	400	10000
Long Twin Tube Fluorescent	9	600	10000
	13	860	10000
	26	1800	10000
	32	2400	10000
	39	2850	12000
	40	3150	20000

In using the formula make sure you divide by the total lamp lumens per luminaire. For example, if an EVF24022, 4 lamp, 32 watt, T8 luminaire is being used, you would multiply the total lamp lumens by 4. (4 × 2900 or 11,600 lumens.)

4f (continued)

EXAMPLE: Lumen Method

Requirement:

Design a system for lighting a room classified Class I, Division 2, Group D

Assumptions:

- a) Room dimensions – 40' wide; 80' long; 15' high
- b) Luminaires to be suspended 3' from ceiling; work plane is 4' above floor
- c) Ceiling is off-white; walls are light gray; floor is concrete
- d) Good maintenance conditions exist
- e) Lighting system will be operated 16 hours daily; 5 days a week
- f) Color rendition is not critical

Using the Coefficient of Utilization worksheet, follow procedure given below. Answers to our example are on the worksheet.

Step #1. Determine required illumination level in FOOTCANDLES (FC) – Table 1, page 665.

Step #2. Select type of lamp – pages 666 and 667. For the room size in example, considering long hours of operation and color rendition not being critical, high pressure sodium lighting is recommended.

Step #3. Select type of luminaire, page 668. VMV series *Champ*® luminaires are recommended. For our example VMVS3A150G pendant luminaire with RD70 dome reflector is selected.

Step #4. Calculation of number of luminaires necessary.

(A) Compute CAVITIES of ceiling, room and floor. H_{CC} ; H_{RC} and H_{FC} (see sketch on worksheet).

(B) Obtain REFLECTANCE FACTORS (using values on page 685) RC; RW and RF (see sketch on worksheet).

(C) Compute CAVITY RATIOS for ceiling, room and floor using Formula or Table IV, page 684.

Formula

$$CCR = \frac{5 \times H_{CC} (L + W)}{L \times W}$$

$$RCR = \frac{5 \times H_{RC} (L + W)}{L \times W}$$

$$FCR = \frac{5 \times H_{FC} (L + W)}{L \times W}$$

(D) Determine Effective Ceiling Reflectance from Table V, page 685. See work sheet for values of RC, RW and CCR.

(E) Determine Coefficient of Utilization – from CU table. For a VMVS3A150G luminaire, applying an Effective Ceiling Cavity Reflectance of 70; a wall reflectance of 50 and a room Cavity Ratio of 1.5 (all figures applicable to our example), the CU (see CU Table, page 733) is at mid-point between .804 and .690, which is .747.

(F) Determine Light Loss Factor (LLF) – page 686.

(G) Compute Total Lamp Lumens required.

Formula

$$\frac{(FC \times Area) 50 \times 80 \times 40}{(CU \times LLF) .747 \times 0.77} = 278,169 \text{ Lumens}$$

Therefore, the number of VMVS3A150G luminaires required

$$= \frac{\text{Total Lamp Lumens } 278,169}{\text{Lamp Lumens per luminaire (page 686) } 16,000} = 17.4$$

= 17 VMVS3A150G luminaires with RD70 dome reflectors (use 18 luminaires, see page 685).

Coefficient of Utilization Worksheet

Job Requirement:

(See typical example at left)

Given Data:

(See typical assumptions at left)

Lamp Characteristics:

Type – High Pressure Sodium

Catalog # – VMVS3A150G with RD70 dome reflector

Lumens – 16,000

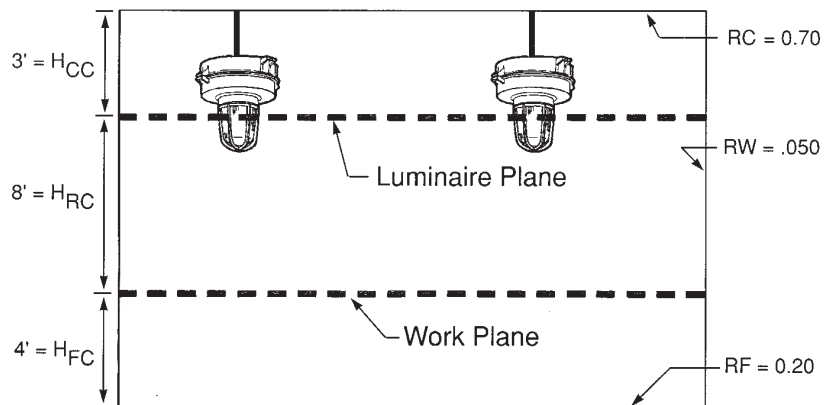
LLF – 0.77

No. of Footcandles Required: 50

Room: Length 80' Width 40' Height 15'

Cavities

Reflectance



Cavity Ratios: CCR 0.56 RCR 1.5 FCR 0.75

Effective Ceiling Cavity Reflectance: 72 (use 70)

Wall Reflectance: 50

CU: .747

Total Lumens Required: 278,170

No. of Luminaires: 18 luminaires (see page 686)

Use 3 x 6 spacing

5

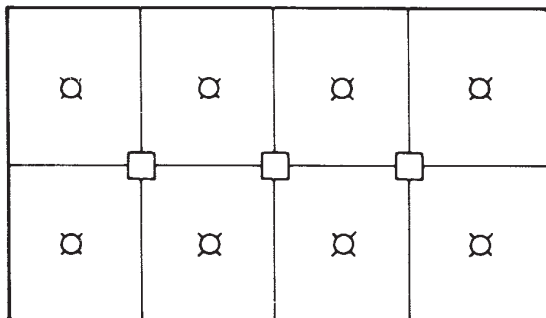
Determine Placement of Luminaires and Make Layout

Using the number of units as determined in Step 4 as a basic quantity to work with, determine the number of lights per row and number of rows required for the lighting system. Logic plays a part; for example: if a room is 4 times as long as it is wide, you should have 4 times as many luminaires in each row as there are number of rows. In any case, the distance between the lighting units should not be greater than the mounting height of the units above the floor. The distance between the wall and first luminaire should not be more than $\frac{1}{2}$ the spacing between the units, and in situations where work is done immediately adjacent to the wall, the distance should be reduced to $\frac{1}{3}$ or $\frac{1}{4}$ the distance between units.

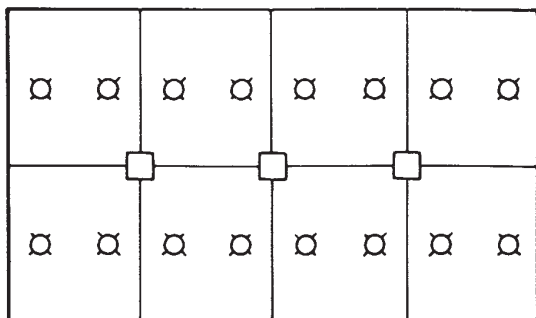
In rooms that are divided by columns or beams, it is desirable to locate the units symmetrically in the bays. The following layouts will serve as a guide in planning such installations.

Important: Remember to observe the permissible spacing to mounting height ratio or spacing criterion. If the number of luminaires is insufficient to fulfill this requirement, recalculate using lower wattage luminaires.

Figure 2 Typical Placement Incandescent/H.I.D., etc.

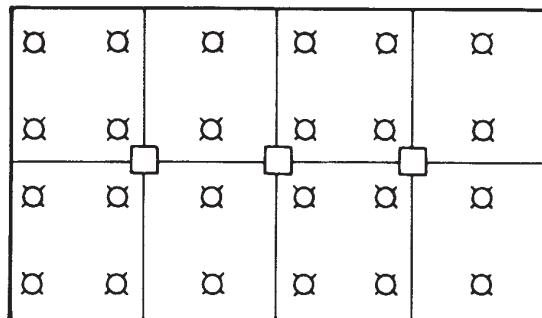


One unit per bay – satisfactory only where the bay size is no greater than the maximum allowable spacing – an unusual condition.

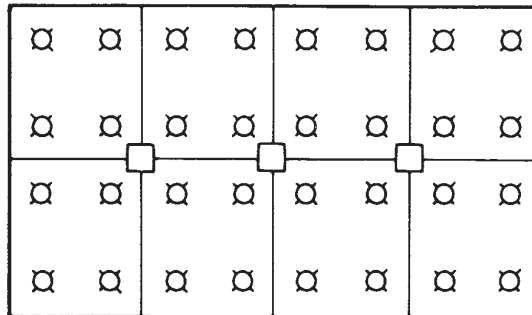


Two units per bay – usually applicable only in narrow bays, where the width is less than $\frac{2}{3}$ the length.

Figure 2 (continued)

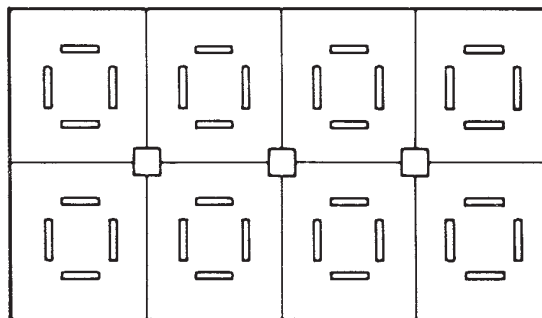


Four-Two system – equivalent to three units per bay or four per bay where spacing allows.

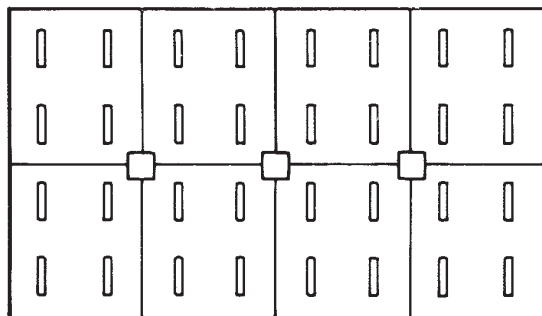


Four units per bay – if necessary could run in continuous rows across room, or turned and run lengthwise with room.

Fluorescent



Grid pattern – usual condition dependent on room size and type of work done there.



Four units per bay – this is the most common system for the square bay of usual dimensions.

Point-by-Point Method

(for use in highlighting – see Step 4, page 683)

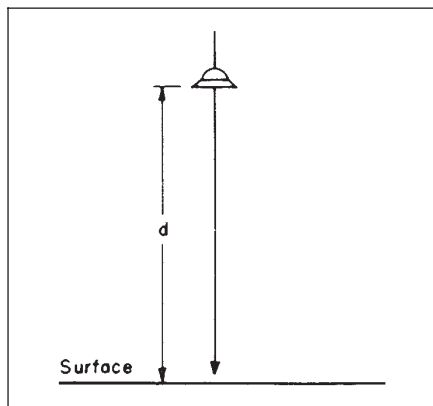
Use this method to determine the footcandle value at a point on a surface that is illuminated by direct light from a luminaire or luminaires.

When the light hits a point on the surface head on (such as directly under a luminaire), use formula “A”, but when the light hits the surface at an angle (such as between luminaires) formula “B” must be used.

Figure 4/Methods of Measurement

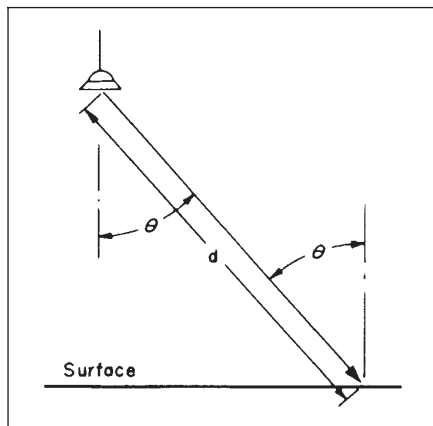
Formula “A”

$$\text{Foot-candles} = \frac{\text{Candlepower}}{d^2 (\text{Distance})} \times \text{Light Loss factor}$$



Formula “B”

$$\text{Foot-candles} = \frac{\text{Candlepower} \times \cosine \text{ of angle } \theta}{d^2 (\text{Distance})} \times \text{Light Loss factor}$$



Candlepower (at the proper angle) is found from the Light Distribution Curve on the luminaire catalog page. Distance “d” and angle are found by measurement of a scaled sketch of the lighting situation or through trigonometric calculations.

EXAMPLE: Point-by-Point Method

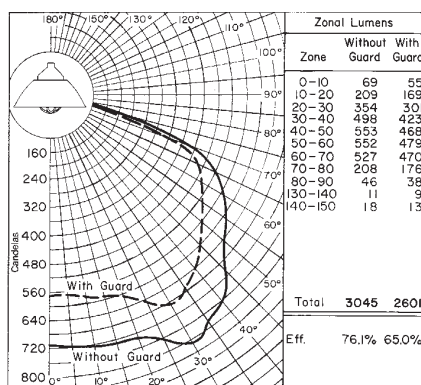
#1 Determine the footcandle value at floor level immediately below a VDA22GRD with 200 Watt lamp and Dome reflector. Mounting height of unit above floor is 12’.

#2 Using same unit as in #1, determine footcandle value at floor level at a point 7 feet away from luminaire.

Fig. 5/Candlepower Distribution Curve

Luminaire With Globe, Dome Reflector and With or Without Guard

200 Watt, A-23 Incandescent



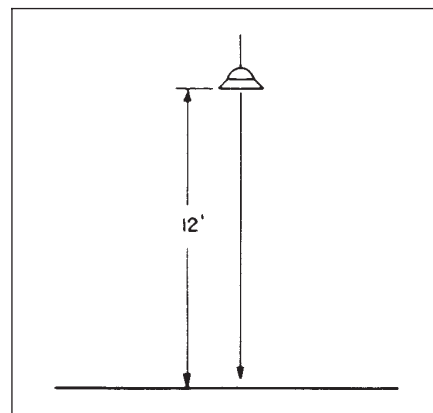
Candelas at 25 Feet

Mid-zone Angle	Without Guard	With Guard
0	715	575
5	722	575
15	736	595
25	764	650
35	793	674
45	715	605
55	615	534
65	531	473
75	197	166
85	42	35
90	14	14
135	13	12
145	28	21

Figure 6

Problem #1 – use Formula “A”

$$fc = \frac{CP}{d^2} \times LLF$$



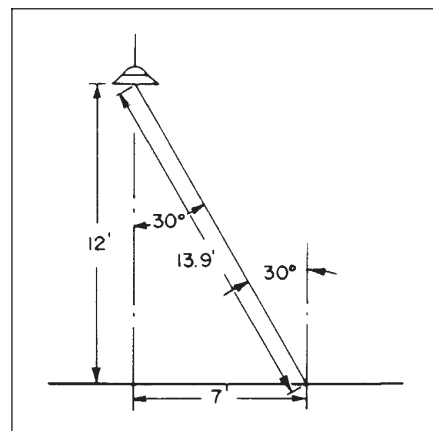
$$fc = \frac{715^{(a)}}{(12')^2} \times 0.69^{(b)} = 3.4 \text{ fc}$$

(a) Candlepower at 0° (from Light Distribution Curve at left)

(b) Light loss factor from page 686

Problem #2 – use Formula “B”

$$fc = \frac{CP \times \cos \theta}{d^2} \times LLF$$



$$fc = \frac{779^{(c)} \times 0.866}{(13.9')^2} \times 0.69 = 2.4 \text{ fc}$$

(c) Candlepower at 30° (from light Distribution Table at left). Interpolate between 25° and 35°

Notes Page

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Description	Page No.
Application	692
Industrial Luminaires	
Vaporgard™ Series	693-701
V Series	702-705
NDA Corro•Gard™ Series	706, 707

1L Incandescent Luminaires

Cl. I, Div. 2, Groups A, B, C, D
Weather Resistant

Enclosed and Gasketed General Information

Application:

Incandescent luminaires are used:

- indoors or outdoors in industrial locations
- in tunnels, building entrances or similar locations, where moisture, dirt, chemicals, vibration or rough usage are a problem
- either mounted directly in the conduit system or attached to cast outlet boxes, by means of pendant, ceiling, wall bracket or stanchion mountings

Features:

- Enclosed and gasketed luminaires that accept incandescent lamps
- Gaskets and glass globes help prevent dirt, water and corrosive atmosphere from entering the conduit system and corroding the interior parts

Standard Materials:

- Luminaires-bodies, boxes and guards – copper-free aluminum or *Feraloy*® iron alloy
- Globes – heat-resistant glass or polycarbonate
- Reflectors – Krydon® fiberglass-reinforced polyester

Standard Finishes:

- *Vaporgard*™ – copper-free aluminum-epoxy powder coat
- V SERIES, – *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- *Krydon* material – luminaires: gray; reflectors: high reflectance white

Size Ranges:

- Include up to 300 watt, PS-30 lamp
- ½" to 1¼" hubs

Certifications and Compliances:

- Weather resistant, NEMA 3, 3R
- NEC/CEC: Class I, Division 2
- UL Standard: 1598
- CSA Standard: C22.2

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Application:

Vaporgard series incandescent luminaires are used:

- indoors or outdoors in industrial locations where enclosed and gasketed fixtures are required
- in tunnels, building entrances and similar locations, where moisture, dirt, chemicals, vibration or rough usage are a problem
- for flush or surface mounting on ceiling or wall; pendant or in conduit systems; with or without a cast outlet box

Features:

- Designed to exclude dirt, moisture and corrosive vapors from the interior of the luminaires and the conduit system
- There are no screws to remove as the shock-absorbing socket strap is keyhole slotted and removes quickly for ease of wiring
- The glass globe-guard assembly is installed and/or removed as a unit, making it necessary to handle only one piece in relamping
- There are no crevices to accumulate a dirt or dust buildup and fixture has an attractive finish with a smooth, dust and dirt shedding design
- Configured glass globe has vertical fluting and stippled bottom which provides for more even light distribution and glare elimination
- For non-hazardous locations, shatterproof plastic polycarbonate globes are available for use with the 200 watt series.
- Reversible offset socket mounting strap permits use of various size lamps while holding light center in same position for maximum light output and efficiency
- Shock absorbing medium base lamp socket

Krydon® fiberglass-reinforced polyester reflectors

- Reflectance is equivalent to the finest porcelain enamel
- Cannot corrode – no enamel to chip and rust
- Ultraviolet inhibitors are incorporated in the material to prevent discoloration and brittleness

Standard Materials:

- Bodies and guards – copper-free aluminum
- Globes
 - heat and impact resistant tempered glass
 - colored glass nontempered (G55, G56, G57, G58)
 - plastic polycarbonate (G63, G65, G67)
- Reflectors – Krydon® fiberglass-reinforced polyester

Standard Finishes:

- Bodies and guards – epoxy powder coat
- Krydon material – high reflectance white

Options:

The following options are available from the factory by adding suffix to fixture Cat. No.:

Description	Suffix to be Added to Cat. No.:
• Teflon coating on globe for increased shatter protection (G24 globe 200 watt series only)	S808
• 250V nameplate for export applications	/250
• Plastic polycarbonate globe	See page 696

Ratings (Electrical/Size):

- Up to 300 watt, PS-30 medium base lamp
- 1/2" to 1-1/4" hubs
- 120V nameplate is standard – for NEC compliance
- 250V nameplate is optional. Supplied when ordered with suffix: /250

Certifications and Compliances:

- Wet locations
- NEC/CEC: Class I, Division 2
- UL Standard: 1598
- CSA Standard: C22.2 No. 9
- UL/CSA Fixture Fitting



Class I, Division 2 Temperature Performance Data: (Based on 40°C ambient)

Lamp Watts	T-Number	Supply Wire °C
150	T2A	150°C
200	T2B	200°C
300	T2B	150°C



VAPORGARD™ Incandescent Luminares

Enclosed and Gasketed

Cl. I, Div. 2, Groups A,B,C,D
Wet Locations
NEMA 3,3R

Pendant Mount - VDA Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard
1/2"	150	150 watt	VDA15GP✓
3/4"	150	A-21	VDA25GP✓
1"	150		VDA35GP✓
1/2"	200	200 watt	VDA12GP✓
3/4"	200	A-23	VDA22GP✓
1"	200		VDA32GP✓
1/2"	300	300 watt	VDA13GP✓
3/4"	300	PS-25 & PS-30	VDA23GP✓
1"	300		VDA33GP✓

Luminaire Components Catalog Nos.

Pendant Body	Globe	Guard
VDA15✓	G54✓	P50✓
VDA25✓	G54✓	P50✓
VDA35✓	G54✓	P50✓
VDA12✓	G24✓	P21✓
VDA22✓	G24✓	P21✓
VDA32✓	G24✓	P21✓
VDA13✓	G34/G251✓	P22✓
VDA23✓	G34/G251✓	P22✓
VDA33✓	G34/G251✓	P22✓

Thru-Feed - VDC Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard
1/2"	150	150 watt	VDC15GP✓
3/4"	150	A-21	VDC25GP✓
1/2"	200	200 watt	VDC12GP✓
3/4"	200	A-23	VDC22GP✓
1/2"	300	300 watt	VDC13GP✓
3/4"	300	PS-25 & PS-30	VDC23GP✓

Thru Feed Body	Globe	Guard
VDC15✓	G54✓	P50✓
VDC25✓	G54✓	P50✓
VDC12✓	G24✓	P21✓
VDC22✓	G24✓	P21✓
VDC13✓	G34/G251✓	P22✓
VDC23✓	G34/G251✓	P22✓

Ceiling Mount for Recessed 4" Round Box - VXH Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard
1/2"	150	150 watt A-21	VXH15GP✓
1/2"	200	200 watt A-23	VXH12GP✓
1/2"	300	300 watt PS-25 & PS-30	VXH13GP✓

Lamp Socket Body	Globe	Guard
VXH15✓	G54✓	P50✓
VXH12✓	G24✓	P21✓
VXH13✓	G34/G251✓	P22✓

Ceiling Mount with Junction Box - VXHF Series



Hub Size	Series	Max Lamp Size	Complete Cat.# with globe/guard
1/2"	150	150 watt	VXHF15GP✓
3/4"	150	A-21	VXHF25GP✓
1/2"	200	200 watt	VXHF12GP✓
3/4"	200	A-23	VXHF22GP✓
1/2"	300	300 watt	VXHF23GP✓
3/4"	300	PS-25 & PS-30	VXHF23GP✓

Lamp Socket Body	Globe	Guard	Junction Box
VXH15✓	G54✓	P50✓	VXF10✓
VXH15✓	G54✓	P50✓	VXF20✓
VXH12✓	G24✓	P21✓	VXF10✓
VXH12✓	G24✓	P21✓	VXF20✓
VXH13✓	G54/G251✓	P22✓	VXF20✓
VXH13✓	G34/G251✓	P22✓	VXF20✓

✓ – available with Lightning Service™
See Section G for complete details

VAPORGARD™ Incandescent Luminaires

Enclosed and Gasketed

Cl. I, Div. 2, Groups A,B,C,D
Wet Locations
NEMA 3,3R

1L



Wall Mount - VXHT Series



Hub Size	Series	Max Lamp Size	Complete Cat. # with globe/guard
1/2"	150	150 watt	VXHT15GP✓
3/4"	150	A-21	VXHT25GP✓
1/2"	200	200 watt	VXHT12GP✓
3/4"	200	A-23	VXHT22GP✓
1/2"	300	300 watt	VXHT13GP✓
3/4"	300	PS-25 & PS-30	VXHT23GP✓

Luminaire Components Catalog Nos.

Wall Bracket Mounting Module	Body	Globe	Guard
VXT10✓	VXH15✓	G54✓	P50✓
VXT20✓	VXH15✓	G54✓	P50✓
VXT10✓	VXH12✓	G24✓	P21✓
VXT20✓	VXH12✓	G24✓	P21✓
VXT10✓	VXH13✓	G34/G251✓	P22✓
VXT20✓	VXH13✓	G34/G251✓	P22✓

Wall Mount - Adapter Kit

Mounts wall mount VXHT Series
to a 4" Round Box.
Cat. No. VXT-K1

Wall Mount with Junction Box VXHBF Series



Hub Size	Series	Max Lamp Size	Complete Cat. # with globe/guard
1/2"	150	150 watt	VXHBF15GP✓
3/4"	150	A-21	VXHBF25GP✓
1/2"	200	200 watt	VXHBF12GP✓
3/4"	200	A-23	VXHBF22GP✓
1/2"	300	300 watt	VXHBF13GP✓
3/4"	300	PS-25 & PS-30	VXHBF23GP✓

Wall Bracket Mounting Module	Body	Globe	Guard	Junction Box
VXT10✓	VXH15✓	G54✓	P50✓	VXF10✓
VXT20✓	VXH15✓	G54✓	P50✓	VXF20✓
VXT10✓	VXH12✓	G24✓	P21✓	VXF10✓
VXT20✓	VXH12✓	G24✓	P21✓	VXF20✓
VXT10✓	VXH13✓	G34/G251✓	P22✓	VXF10✓
VXT20✓	VXH13✓	G34/G251✓	P22✓	VXF20✓

Stanchion Mount - VXHA Series



Hub Size	Series	Max Lamp Size	Complete Cat. # with globe/guard
1 1/4"		150 watt A-21	VXHA45GP✓
1 1/4"		200 watt A-23	VXHA42GP✓
1 1/4"		300 watt PS-25 & PS-30	VXHA43GP✓

Stanchion Mounting Module	Body	Globe	Guard
VXA4✓	VXH15✓	G54✓	P50✓
VXA4✓	VXH12✓	G24✓	P21✓
VXA4✓	VXH13✓	G34/G251✓	P22✓

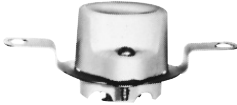
✓ – available with Lightning Service™
See Section G for complete details

1L
Incandescent
Fixtures



Medium Base Lamp Receptacle with Strap Shock Absorbing

Cat. #
V84✓



Reflectors



Dome



30° Angle

Max. Lamp Size	Dome Cat. #	30° Angle Cat. #
150 watt, A-21	RD64✓	RA64✓
200 watt, A-23, A-25, PS-25 and 300 watt, PS-30	RD71✓	RA71✓



VXFT – 5 Hubs, 4 Plugs

Hub Size	Cat. #
1/2	VXFT10✓
3/4	VXFT20✓

For use when rear wiring entry is required. Use in lieu of VXF10 or VXF20.

✓ – available with Lightning Service™
See Section G for complete details

Globes† and Guards



150 and 200W globe



300W globe

Plastic Globes①



Shatterproof polycarbonate plastic globe**

Maximum Lamp Size

150 Watt, A-21	200 Watt, A-23, A-25, PS-25	300 Watt, PS-25 PS-30‡
----------------	-----------------------------	------------------------

Color	Cat. #	Cat. #	Cat. #
Clear (heat-resisting)	G54✓	G24 ♦ ✓	{ G34✓ G251✓
Green	G55*✓	G25	
Blue	G56*✓	G26	
Red	G57*✓	G27	
Amber	G58*✓	G28	



Guard P50 and P21



Guard P22

Guards for Glass Globes (Not for use with plastic globes)

Cat. #	Maximum Lamp Size
P50✓	150 watt, A-21
P21✓	200 watt, A-23, A-25, PS-25
P22✓	300 watt, PS-30 (with G251 only)

Mounting Adapter Kit

- Allows for the mounting of non-Crouse-Hinds outlet boxes to the VXT20 wall mount bracket and VXH ceiling mount bracket

Cat. #
VXT-K1



VXT-K1

Application:

For use in:

- food processing plants and canneries, dairies, breweries and bakeries
- emergency lighting

Features:

- Shatterproof, which precludes contamination of food products with broken particles of glass.
- Designed to comply with U.S. Dept. of Agriculture specification for food processing plants.
- Provides protection against vandalism, with resultant lower replacement and maintenance costs.
- Particularly adaptable for use on emergency police or fire alarm boxes.
- Same size as G24 series glass globes. Existing installations can be changed to plastic globes simply by replacing globe.
- For use with 200 watt series luminaires such as VDA22, etc.
- For use without guard.

Color	Max. Wattage, Lamp Size	Cat. #
Natural	200 watt, A-23	G63 ✓
Green	200 watt, A-23	G65
Red	200 watt, A-23	G67

Note: Polycarbonate globes for non-hazardous locations only.

♦ G24 is available with a TEFLON® coating for increased shatter protection by adding suffix S808.

* With G55, G56, G57, G58 color globes, maximum lamp size is 60 watt for outdoor applications.

** Prior to wash-down, globes must be cool.

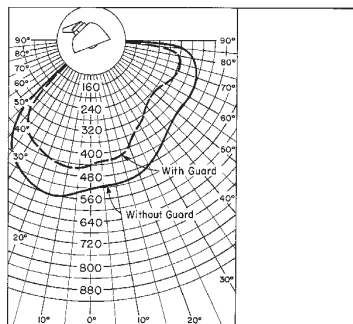
† All glass globes are configured type, having fluted side and stippled bottom.

‡ Globe G251 required when guard P22 is used. Use globe G34 when guard is not used.

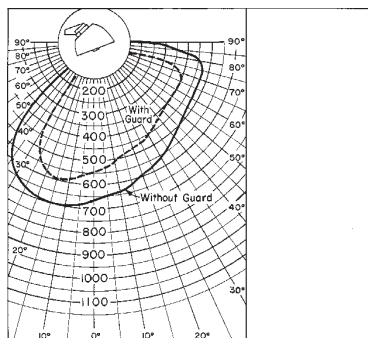
① Lamp must be mounted in vertical position base up to 45°C (stanchion) only.

1L



Luminaire VXHA45GPRA
Lamp: 150W/A-21
Total Bare Lamp Lumens: 2850

Measurements taken from A-A' plane.

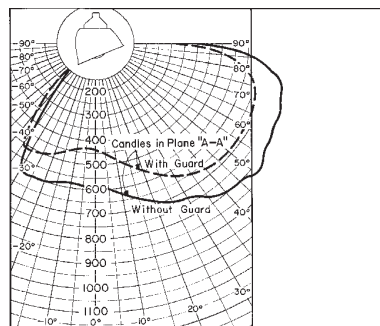

	Total Lumens	Eff. %
With Guard	1490	52.3
Without Guard	1881	66.0

Luminaire VXHA42GPRA
Lamp: 300W/PS-30
Total Bare Lamp Lumens: 6300

Measurements taken from A-A' plane.

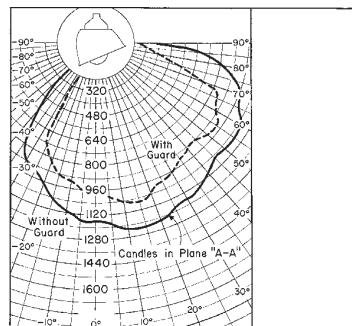

	Total Lumens	Eff. %
With Guard	3630	57.6
Without Guard	4271	67.8

**Luminaire With Globe, 30° Angle Reflector and With
or Without Guard**
Lamp: 100W/A-21 through 200W/A-23
Total Bare Lamp Lumens: 4000

NOTE: All data provided is for 200W/A-23 incandescent lamp. Use
following candlepower/lumen multipliers for other lamp sizes:
100W 0.42; 150W 0.7


Measurements taken from A-A' plane.


	Without Guard		With Guard	
Lamp Size	Total Lumens	Eff. %	Total Lumens	Eff. %
100W	1141		949	
150W	1890		1582	
200W/A-23	2700	67.5	2260	56.5
200W/PS-25	2174		1819	

**Luminaire With Globe, 30° Angle Reflector and With
or Without Guard**
Lamp: 300W/PS-30
Total Bare Lamp Lumens: 6000

Measurements taken from A-A' plane.


	Total Lumens	Eff. %
With Guard	3360	56.0
Without Guard	3954	65.9

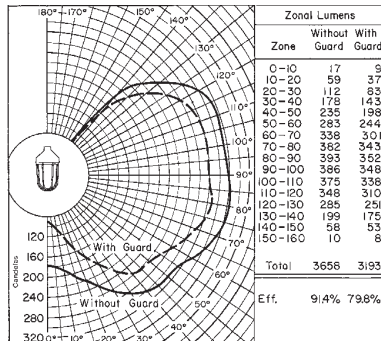
Lamp: 100W/A-21 through 200W/PS-25

Total Bare Lamp Lumens: 4000

To determine number and placement of luminaires see Lighting Selector Guide, pages 665 to 689.

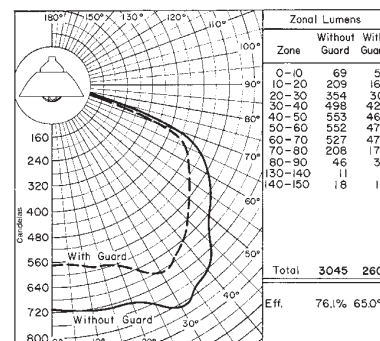
NOTE: All data provided is for 200W/A-23 incandescent lamp. Use following candela/lumen multipliers for other lamp sizes: 100W 0.42; 150W 0.7; 200W/PS-25 0.82

Luminaire With Globe and With or Without Guard



Example: Zonal Lumens for 200W/A-23 lamp with guard for 0-40° is 272 Zonal Lumens for 150W lamp with guard for 0-40° is $272 \times 0.7 = 190$.

Luminaire With Globe, Dome Reflector and With or Without Guard



Example: Zonal Lumens for 200W/A-23 lamp with guard for 0-40° is 948 Zonal Lumens for 150W lamp with guard for 0-40° is $948 \times 0.7 = 664$.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.654	.549	.471	.407	.353
	30	.608	.486	.400	.333	.282
	10	.567	.432	.345	.277	.228
70	50	.603	.506	.434	.375	.326
	30	.563	.449	.370	.309	.260
	10	.523	.401	.320	.257	.211
50	50	.509	.424	.363	.312	.273
	30	.477	.380	.313	.260	.220
	10	.449	.341	.271	.218	.179
30	50	.422	.349	.297	.255	.223
	30	.399	.315	.259	.214	.180
	10	.376	.285	.225	.180	.147
10	50	.343	.280	.237	.202	.176
	30	.324	.253	.206	.170	.142
	10	.307	.230	.180	.143	.115

% Reflectance		Room Cavity Ratio				
Eff Ceil.	Wall	6	7	8	9	10
80	50	.315	.279	.249	.226	.201
	30	.244	.210	.183	.162	.140
	10	.193	.164	.137	.118	.100
70	50	.289	.257	.230	.208	.185
	30	.225	.194	.170	.150	.130
	10	.177	.150	.127	.110	.093
50	50	.242	.215	.192	.175	.156
	30	.189	.163	.143	.126	.109
	10	.150	.126	.106	.092	.077
30	50	.198	.175	.158	.143	.128
	30	.155	.134	.116	.103	.088
	10	.123	.102	.086	.075	.061
10	50	.157	.140	.124	.114	.101
	30	.122	.106	.091	.080	.068
	10	.096	.080	.066	.057	.045

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.604	.522	.454	.395	.347
	30	.576	.480	.404	.340	.290
	10	.552	.444	.364	.298	.248
70	50	.591	.512	.445	.387	.339
	30	.565	.472	.398	.336	.286
	10	.543	.440	.361	.296	.246
50	50	.564	.490	.428	.372	.327
	30	.544	.457	.387	.327	.280
	10	.526	.428	.354	.292	.245
30	50	.541	.470	.411	.358	.315
	30	.525	.444	.377	.319	.273
	10	.509	.419	.348	.288	.241
10	50	.521	.452	.396	.345	.304
	30	.507	.429	.367	.311	.268
	10	.494	.409	.342	.283	.238

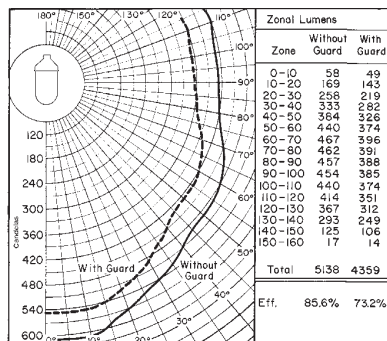
Reflectance		Room Cavity Ratio				
Eff Ceil.	Wall	6	7	8	9	10
80	50	.309	.274	.244	.222	.193
	30	.253	.220	.192	.170	.142
	10	.214	.184	.155	.135	.110
70	50	.303	.270	.241	.219	.189
	30	.250	.217	.191	.168	.142
	10	.211	.181	.154	.135	.110
50	50	.291	.260	.232	.211	.184
	30	.245	.212	.186	.166	.139
	10	.209	.179	.153	.134	.109
30	50	.281	.250	.225	.204	.178
	30	.239	.209	.182	.162	.136
	10	.207	.177	.152	.133	.107
10	50	.272	.243	.217	.198	.173
	30	.234	.205	.179	.159	.134
	10	.205	.175	.150	.131	.106

Lamp: 300W/PS-30

Total Bare Lamp Lumens: 6000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe Only



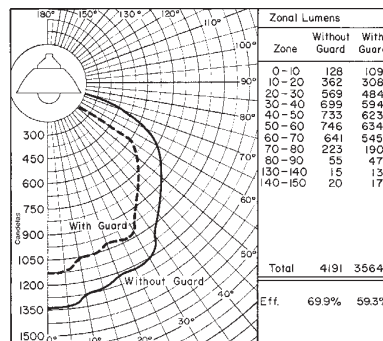
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.692	.582	.499	.431	.373
	30	.644	.515	.425	.354	.300
	10	.602	.459	.367	.295	.243
70	50	.636	.534	.458	.396	.345
	30	.594	.475	.392	.327	.276
	10	.552	.425	.339	.273	.223
50	50	.532	.444	.380	.327	.286
	30	.500	.398	.328	.272	.230
	10	.470	.358	.285	.229	.188
30	50	.437	.362	.308	.264	.230
	30	.412	.326	.268	.222	.186
	10	.389	.295	.234	.186	.152
10	50	.350	.285	.241	.205	.179
	30	.331	.258	.210	.172	.144
	10	.313	.235	.183	.145	.116

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.333	.295	.263	.238	.212
	30	.258	.223	.194	.170	.147
	10	.205	.173	.145	.125	.105
70	50	.305	.271	.241	.219	.194
	30	.238	.204	.178	.157	.136
	10	.188	.158	.133	.115	.097
50	50	.253	.224	.200	.181	.162
	30	.198	.170	.148	.131	.113
	10	.157	.132	.110	.095	.079
30	50	.204	.180	.162	.146	.130
	30	.160	.138	.119	.105	.090
	10	.127	.105	.088	.075	.061
10	50	.158	.141	.124	.114	.101
	30	.123	.106	.091	.080	.067
	10	.096	.079	.066	.055	.044

Luminaire With Globe and Dome Reflector



Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

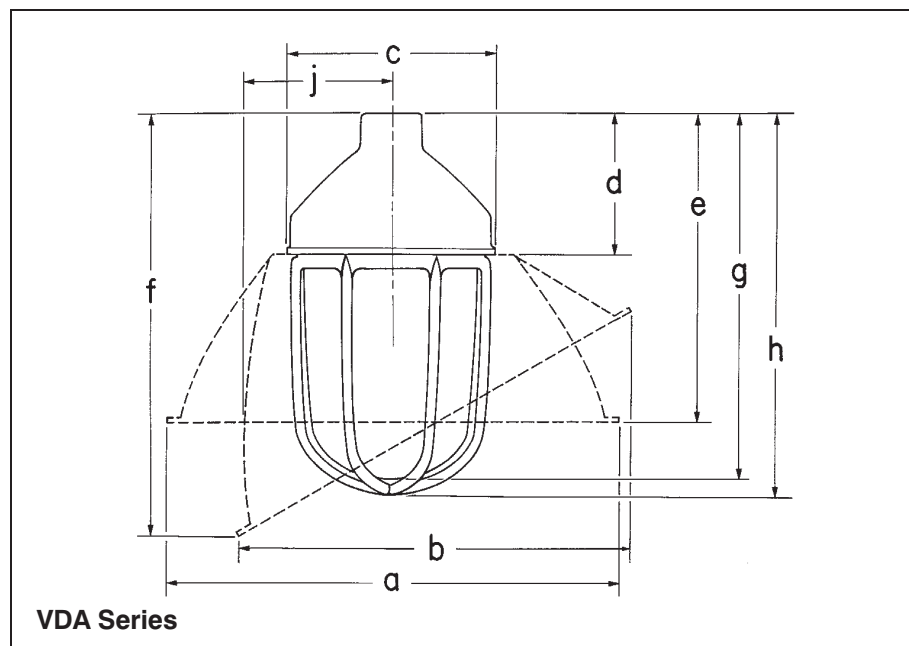
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.766	.671	.587	.514	.454
	30	.734	.621	.528	.448	.385
	10	.706	.579	.482	.398	.334
70	50	.750	.657	.577	.505	.443
	30	.720	.610	.521	.444	.380
	10	.694	.573	.477	.395	.332
50	50	.717	.630	.555	.485	.429
	30	.693	.592	.507	.432	.372
	10	.672	.558	.468	.390	.329
30	50	.688	.606	.535	.468	.414
	30	.670	.575	.494	.422	.364
	10	.651	.546	.460	.385	.325
10	50	.663	.584	.516	.452	.400
	30	.647	.557	.482	.412	.357
	10	.632	.534	.452	.379	.321

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.404	.360	.322	.293	.254
	30	.337	.294	.258	.229	.191
	10	.289	.250	.212	.185	.151
70	50	.397	.354	.317	.288	.249
	30	.333	.290	.256	.227	.191
	10	.285	.246	.211	.185	.151
50	50	.383	.342	.306	.279	.243
	30	.326	.284	.250	.223	.187
	10	.283	.244	.209	.184	.150
30	50	.371	.330	.297	.270	.235
	30	.320	.280	.245	.218	.184
	10	.281	.241	.208	.182	.148
10	50	.359	.322	.288	.262	.229
	30	.313	.275	.241	.215	.181
	10	.277	.239	.206	.180	.146

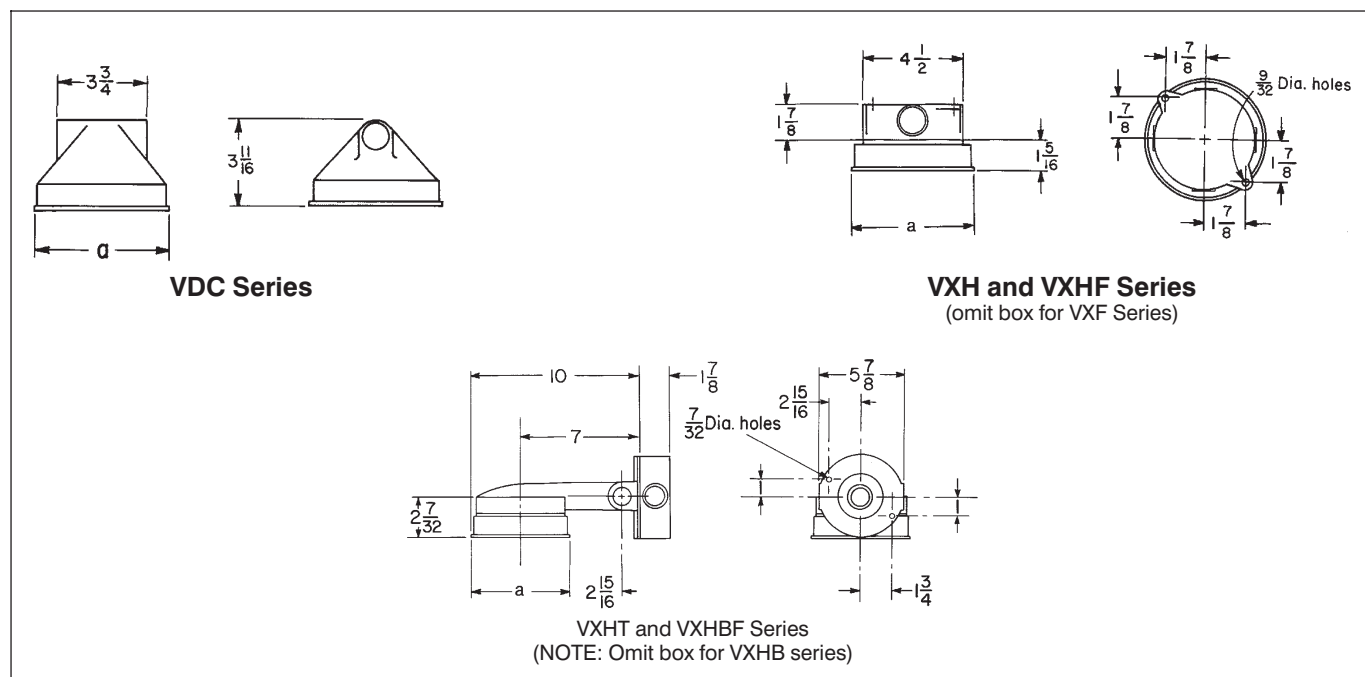
VAPORGARD™ Incandescent Luminaires

Dimensions

1L



	150 watt, A-21	200 watt, PS-25	300 watt, PS-30
a	12 ⁷ / ₈	16 ⁷ / ₈	16 ⁷ / ₈
b	11 ¹ / ₈	14 ⁵ / ₈	14 ⁵ / ₈
c	5 ³ / ₈	6	6
d	3 ¹³ / ₁₆	4	4
e	8 ⁷ / ₁₆	9 ¹ / ₈	9 ¹ / ₈
f	12	14	14
g	8 ¹³ / ₁₆	10 ¹ / ₂	12
h	9	10 ¹³ / ₁₆	13 ¹ / ₈
j	4 ¹ / ₂	6 ¹¹ / ₁₆	6 ¹¹ / ₁₆



Max. Lamp Size
150 watt, A-21 a
5³/₈

200 watt, A-23, A-25, PS-25
and 300 watt, PS-30 6

1L Incandescent
Fixtures

Application:

V-Series incandescent luminaires are used:

- indoors or outdoors in industrial locations where enclosed and gasketed fixtures are required
- in tunnels, building entrances and similar locations, where moisture, dirt, chemicals, vibration or rough usage are a problem
- for flush or surface mounting on ceiling or wall, with or without a cast outlet box, pendant or in conduit systems

Features:

- Designed to exclude dirt, moisture and corrosive vapors from the interior of the fixtures and the conduit system.
- Several body styles provide a wide variety of mountings, while all use the same globes, guards and optional accessories.
- Rugged and corrosion resistant.

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Guards – copper-free aluminum
- Globes – glass
- Reflectors – *Krydon*® fiberglass-reinforced polyester material reflectors

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- *Krydon*® material – high reflectance white

Size Ranges:

- ¾ hubs
- Maximum wattage lamp:
 - Glass globes 150W, A23
 - Polycarbonate 75W, A33

Options:

Description	Suffix
<i>Corro-free</i> ™ epoxy powder coat	S752
plastic polycarbonate globe	Order separately. See below

Certifications and Complies:

- Wet locations
- NEMA: 3, 3R
- UL Standard: 1598

**VDA**

Cat. #
VDA2759

Description
With plain globe and guard

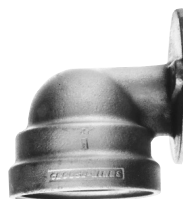
Without globe and guard

VDA275

**VC**

Cat. #
VC2759

VC275

**VG**

Cat. #
VG2759

VG275

**VJ**

Cat. #
VJ2759

VJ275

**VD**

Cat. #
VD2759

VD275

Glass Globes**Guard For Glass Globes****Polycarbonate Globes****Application:**

- Polycarbonate globes are used:
- in food processing plants, canneries, dairies, breweries and bakeries
 - in emergency lighting
 - emergency police and fire alarm boxes

Features:

- Polycarbonate globes are shatterproof, preclude contamination of food products with broken particles of glass.
- Comply with U.S. Dept. of Agriculture specification for food processing plants.

**V63**

Color
Clear (heat resisting)
Green
Blue
Red
Amber

Cat. #
V63
VN72
VN73
VN75
VN76

**V911**

Globe Size
6¾"

Cat. #
V911

**V470**

Color
Natural
Red

Cat. #
V470
V475



Dome



Angle

Reflectors

Krydon® – fiberglass-reinforced polyester
(Must be used with V 911 Guard)

Lamp Size	Dome	
	Dia.	Cat. #
50-150W	12"	RD60
Lamp Size	30° Angle	
	Dia.	Cat. #
50-150W	12"	RA60

NOTE: Angle reflector cannot always be used with bracket style fixtures. Check distance from mounting surface to center of body against reflector size to determine if reflector will fit.



Receptacles (medium base)

Cat. #
V46



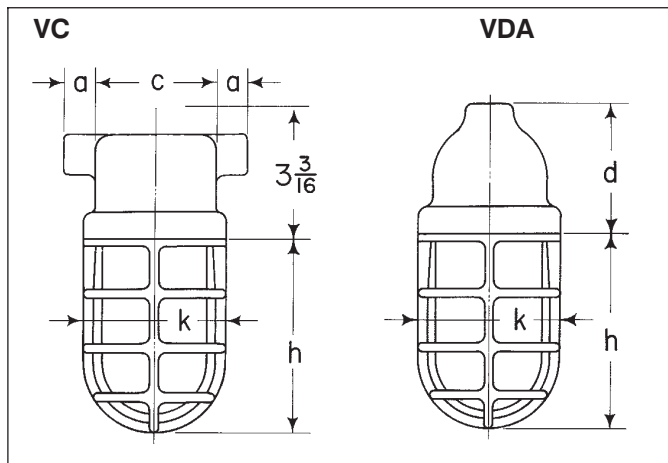
Gasket

Cat. #
GASK213

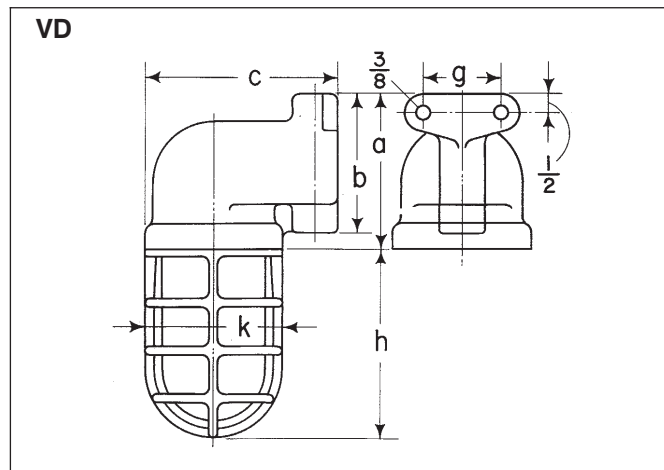
1L

V-Series Incandescent Luminaires

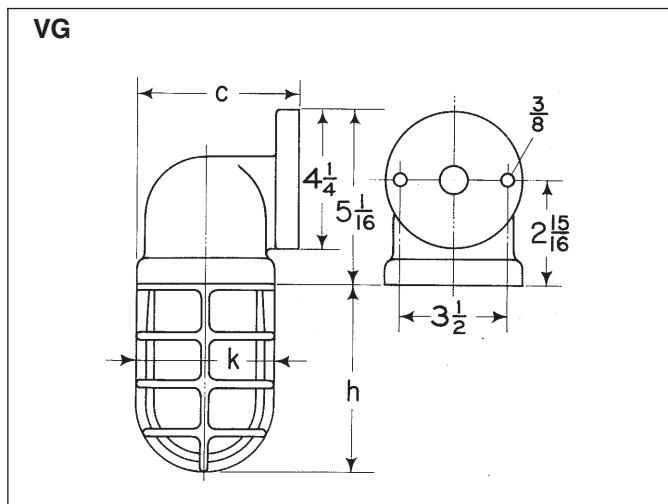
Enclosed and Gasketed Dimensions



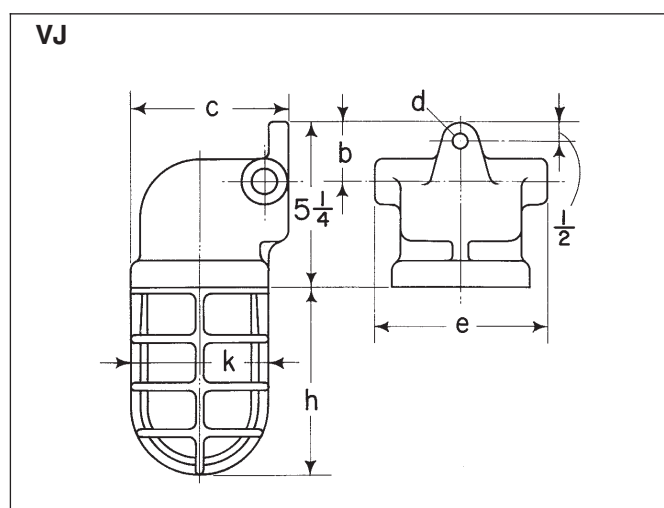
Hub Size	a	c	d	h	k
1/2	7/8	3 11/16	4	6 3/16	4 9/16
3/4	7/8	3 11/16	4	6 3/16	4 9/16



Hub Size	a	b	c	g	h	k
1/2	4 15/16	4 3/16	5 15/16	2 1/2	6 3/16	4 9/16
3/4	4 15/16	4 3/16	6 3/16	2 3/4	6 3/16	4 9/16



Hub Size	c	h	k
1/2	4 7/8	6 3/16	4 9/16
3/4	4 7/8	6 3/16	4 9/16



Hub Size	b	c	d	e	h	k
1/2	1 13/16	4 7/8	3/8	5 3/8	6 3/16	4 9/16
3/4	1 15/16	4 7/8	3/8	5 3/8	6 3/16	4 9/16

V-Series Incandescent Luminaires

Photometric Data

1L

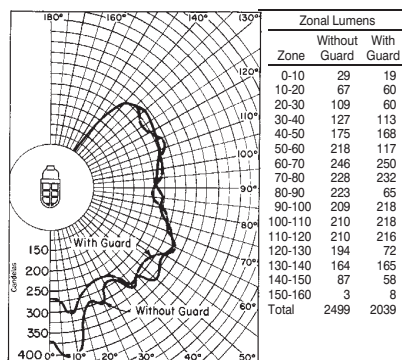
Enclosed and Gasketed

Luminaires V-Series

Lamp: 150W/A23 Clear

Total Bare Lamp Lumens: 2800

To determine number and placement of fixtures, see Lighting Selector Guide pages 665 to 689.



NOTE: All data provided is for 150W incandescent lamp. Use following candela/lumen multipliers for the other lamp sizes:
100W – 0.61

Example: Zonal lumens for 150W lamp for 0-40° with guard is 252.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.659	.558	.479	.416	.361
	30	.623	.504	.417	.349	.298
	10	.591	.458	.367	.298	.248
70	50	.609	.515	.442	.384	.336
	30	.577	.466	.386	.324	.275
	10	.545	.426	.342	.278	.230
50	50	.515	.434	.372	.321	.282
	30	.491	.397	.328	.274	.234
	10	.469	.364	.293	.238	.197
30	50	.429	.359	.307	.264	.232
	30	.411	.332	.274	.228	.194
	10	.395	.307	.245	.198	.165
10	50	.350	.290	.246	.211	.185
	30	.337	.269	.221	.183	.156
	10	.325	.251	.199	.160	.132
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.325	.290	.261	.236	.211
	30	.259	.227	.199	.176	.153
	10	.212	.183	.157	.136	.116
70	50	.299	.268	.241	.219	.194
	30	.240	.210	.186	.164	.143
	10	.197	.170	.146	.127	.108
50	50	.252	.226	.203	.185	.165
	30	.205	.178	.158	.140	.122
	10	.169	.145	.125	.109	.092
30	50	.208	.186	.169	.153	.137
	30	.170	.149	.131	.117	.101
	10	.141	.121	.105	.091	.076
10	50	.167	.151	.135	.124	.110
	30	.136	.121	.106	.094	.081
	10	.114	.098	.084	.073	.060

1L Incandescent Fixtures

NDA Corro•Gard™ Corrosion-Resistant Incandescent Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Corrosive
Wet Locations
NEMA 3,3R,4,4X

Application:

Corro•Gard™ NDA series Luminaires made of Krydon® fiberglass-reinforced polyester are used to provide incandescent lighting:

- indoors or outdoors in industrial wet or dirty locations and where corrosion is a problem
- in marine applications, above and below deck, where salt spray corrosion shortens fixture life
- in food and beverage industries where frequent wash-downs are necessary
- for walkways, bridges, tunnels, security lighting, cold storage facilities, garages, coal handling areas, shipboard, processing plants, and nuclear generating plant containment areas

Features:

- Luminaire is molded Krydon® for excellent corrosion, heat, and impact resistance.
- Accommodates all popular incandescent lamps up to 300W, PS-25.
- Attractive modern design and color complement other Corro•Gard products.
- Weighs only 8½ lbs. complete with lamp and globe.
- Medium screw base porcelain lamp socket has a vibration absorbing mounting bracket.
- All joints are gasketed to ensure watertightness.
- Configured glass globe reduces glare.
- Corro•Gard reflectors made of Krydon® reflect light better than porcelainized steel; do not yellow or discolor with age; cannot chip, peel, rust or dent.

Standard Materials:

- Bodies and reflectors – Krydon® fiberglass-reinforced polyester material
- Globes – configured heat-resistant glass

Standard Finishes:

- Bodies – natural
- Reflectors – natural, high reflectance white

Options:

- TEFLON® coating on G24 globe for increased shatter protection. add suffix S808.

Accessories & Parts

Globe



Color
Clear (heat resisting)
Green
Blue
Red
Amber

Cat. #
G24
G25
G26
G27
G28

Guard



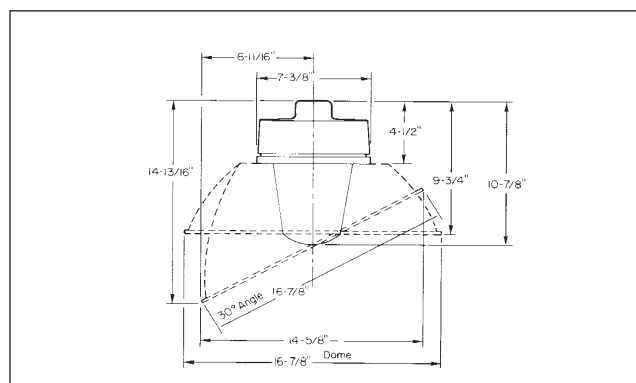
Cat. #
P21



Certifications and Compliances:

- UL Standard: 1598
- Wet Locations
- Suitable for 40°C ambient temperature

Dimensions



NDA Series Ordering Information For Pendant Mounting

Hub Size	Max. Lamp Size	Body Only Cat. #	Globe Only Cat. #	Body With Globe† Cat. #
¾"	300W PS-25 Med. Base 120V	NDA22	G24	NDA22G

Temperature Performance Data: (based on 40°C ambient)

Max. Lamp Size	T-Number	Supply Wire (°C)
300W	T2A	150°C

(Note: Fixtures are not marked with T-Number.)

Replacement Lamp Receptacles with Strap Shock Absorbing



Cat No. NV84

Reflectors (Order separately)



Dome



30° Angle

Type
Dome
30° Angle

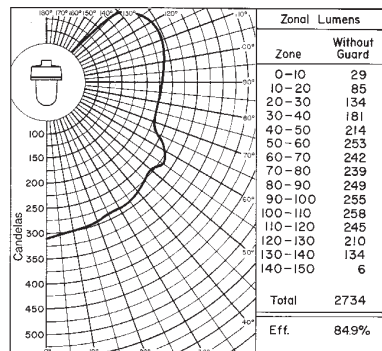
Cat. #
RD725 (RD75)
RA725 (RA75)

Lamp: 200W/PS-25

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for incandescent with 200W/PS-25 lamp. See Multipliers for other wattages and lamp types.

Luminaire With Globe



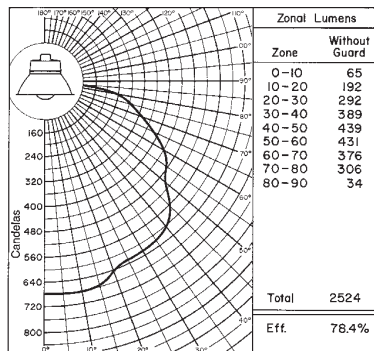
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil. Wall		1	2	3	4	5
80	50	.762	.651	.565	.494	.433
	30	.715	.585	.491	.416	.358
	10	.673	.529	.433	.357	.300
70	50	.708	.605	.526	.461	.406
	30	.667	.546	.460	.390	.335
	10	.626	.496	.407	.336	.282
50	50	.608	.519	.452	.395	.292
	30	.576	.473	.399	.339	.250
	10	.547	.432	.356	.295	.248
30	50	.516	.439	.382	.335	.297
	30	.492	.404	.342	.290	.250
	10	.469	.372	.307	.254	.215
10	50	.433	.366	.319	.279	.247
	30	.413	.339	.287	.244	.211
	10	.396	.315	.259	.215	.181
0	0	.354	.277	.226	.184	.154

% Reflectance		Room Cavity Ratio				
Eff. Ceil. Wall		6	7	8	9	10
80	50	.389	.348	.312	.284	.253
	30	.312	.273	.240	.214	.185
	10	.258	.222	.190	.166	.141
70	50	.363	.324	.291	.266	.236
	30	.293	.256	.226	.201	.175
	10	.242	.208	.179	.157	.133
50	50	.312	.280	.252	.230	.205
	30	.256	.223	.198	.177	.153
	10	.213	.183	.158	.139	.117
30	50	.266	.238	.216	.197	.175
	30	.220	.193	.170	.152	.131
	10	.185	.158	.137	.121	.100
10	50	.223	.201	.180	.166	.147
	30	.185	.163	.144	.129	.110
	10	.156	.135	.116	.102	.084
0	0	.132	.112	.096	.084	.068

Luminaire With Globe and Dome Reflector



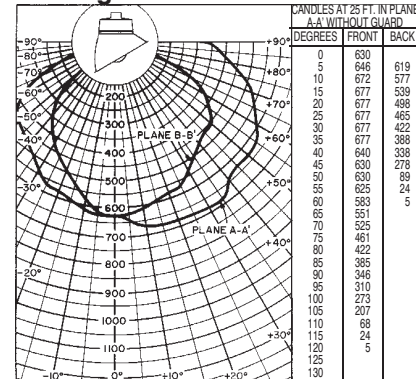
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil. Wall		1	2	3	4	5
80	50	.809	.703	.615	.541	.481
	30	.773	.647	.550	.470	.408
	10	.742	.601	.499	.416	.354
70	50	.791	.688	.604	.531	.470
	30	.758	.636	.542	.465	.403
	10	.729	.595	.494	.413	.315
50	50	.756	.659	.580	.510	.455
	30	.729	.617	.528	.453	.395
	10	.706	.579	.485	.408	.349
30	50	.726	.634	.558	.492	.439
	30	.705	.599	.514	.442	.385
	10	.684	.566	.477	.402	.344
10	50	.699	.610	.539	.475	.424
	30	.663	.580	.501	.431	.378
	10	.580	.553	.468	.396	.340
0	0	.647	.536	.451	.378	.323

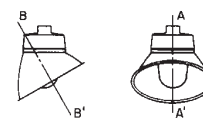
% Reflectance		Room Cavity Ratio				
Eff. Ceil. Wall		6	7	8	9	10
80	50	.431	.386	.347	.317	.277
	30	.360	.317	.280	.250	.211
	10	.309	.269	.231	.204	.169
70	50	.423	.380	.342	.312	.272
	30	.356	.312	.277	.247	.211
	10	.305	.265	.231	.204	.169
50	50	.408	.368	.331	.302	.265
	30	.348	.305	.272	.243	.207
	10	.303	.263	.229	.202	.167
30	50	.396	.355	.321	.294	.257
	30	.342	.301	.266	.238	.203
	10	.300	.260	.227	.201	.165
10	50	.383	.346	.311	.285	.250
	30	.334	.295	.262	.235	.200
	10	.297	.258	.225	.199	.163
0	0	.281	.243	.210	.184	.150

Luminaire With Globe and 30° Angle Reflector



Total Lumens
2595

Eff. %
80.6



Multipliers for Other Lamps

Photometric data was developed using a 200 watt/PS-25 inside frosted incandescent lamp (3,220 lumens). For other incandescent watts/lamp size, use the following conversion factors (multipliers):

Watts	Lamp Size	Lamp Lumens	Conversion Factor
100	A-19	1750	.54
100	A-21	1690	.52
150	A-21	2880	.89
150	PS-25	2680	.83
200	A-23	4010	1.25
300	PS-25	6360	1.98

Example: Zonal lumens for 200W/PS-25 luminaire with globe and dome reflector for 30-40° is 389. Zonal lumens for 100W/A-21 luminaire with globe and dome reflector for 30-40° is 389 x .52 = 202.

Notes Page

[illegible]

Description	Page No.
Application/Selection	Page 710
Class I Hazardous Area Luminaires	
EVI Series Groups C, D	711-719
EV Series Groups A, B, C, D	720

2L Incandescent Luminaires

Hazardous Application and Selection

Application:

- For use in areas made hazardous by presence of flammable vapors, gases, or dusts
- For indoor or outdoor use. For general area or spot lighting

Considerations for Selection:

Environmental:

- What is the hazardous area classification (NEC)/(CEC) of the location in which the luminaires will be installed?

Lighting levels required:

- What wattage fixture(s) will provide the desired light level? (See Lighting Selector Guide, pages 665 through 689, to determine number and location of luminaires required.)

Physical arrangement:

- Type of luminaire mounting needed

Product Selection:

Two product families are included in Section 2L as follows:

- EVI models suitable for use in Class I, Groups C, D, and Class II, Groups E, F and G locations. These luminaires may be ordered with a wide variety of reflector styles and mounting arrangements to provide the required light distribution, depending on application, mounting height and lamp size. Check individual catalog pages for specific hazardous location suitabilities of each luminaire. Models are available for lamp sizes 100 watt, A-19 to 500 watt, PS-40.
- EV Models suitable for use in Class 1, Groups A, B, C, D locations. These luminaires may be ordered with a wide variety of reflector styles and arrangements to provide the required light distribution, depending on application, mounting height and lamp size. Check individual catalog pages for specific hazardous location suitabilities of each luminaire. Models are available for lamp size 300 watt PS35 mogul base.

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

EVI Series Explosionproof Incandescent Luminaires

Factory Sealed

100-500W Medium and Mogul Base

Cl. I, Div. 1, Groups C,D
Cl. I, Zone 1 & 2, Group IIB
Cl. II, Groups E,F,G (Max 150W-Med. base)
Cl. III & Simultaneous Presence (Max 150W-Med. base)
Marine and Wet Locations • Type 4X; IP66

2L



Application:

EVI series incandescent luminaires are used:

- for **Type 4X, marine**, wet location and hose down environments.

- where a consistent light level relatively unaffected by extremes in ambient temperature (-40°C to +65°C) is required.
- in areas that require lamps to reach full illumination immediately.
- in areas that require lamps to be frequently turned on and off.
- indoor & outdoor in locations which are hazardous due to the presence of flammable vapors or gases, ignitable dusts or ignitable fibers & flyings.
- where a luminaire is required for tough environmental conditions involving corrosives, water, dust and extreme temperatures.
- manufacturing plants, heavy industrial facilities, industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical and platforms.
- for lighting of loading docks, tunnels, stairways, storage closets & task lighting.

Features:

- **Ambient suitability to 65°C.**
- **Standard 90°C rated building wire for 150W max 40°C ambient application - represents more than 75% of all applications.**
- **Type 4X, marine outdoor locations.**
- **Factory sealed - no external seals required.**
- Quick connect - fixture threads onto the mounting module for easy installation.
- One size luminaire for all medium base incandescent lamps through 300W.
- One size luminaire for all mogul base incandescent lamps through 500W.
- Small compact size - ceiling mount is 13¾" long.
- Shock absorbing receptacle.
- Easy to assemble & relamp.
- Silicone gaskets seal out dirt and moisture.
- Epoxy powder coat for corrosion resistance.
- Same mounting modules as used with the EVM & EVLP series.

Standard Materials:

- Body, mounting modules and guard - copperfree aluminum
- Globe - heat & impact resistant glass
- Gaskets - silicone
- External hardware - stainless steel
- Reflectors - Krydon® fiberglass-reinforced polyester

Standard Finishes:

- Copper free aluminum - Corro-free™ epoxy powder coat
- Stainless steel - Natural
- Krydon® Reflectors - High reflectance white

Electrical Ratings:

Sources/Wattages

- Medium Base - Maximum 300W (PS25)
- Mogul Base - Maximum 500W (PS40)

Voltages

- Medium Base 120V (250V with suffix /250)
- Mogul Base 277V

Hub Size

- ¾" or 1" NPT pendant, ceiling, wall mount
- ¾" NPT bulkhead mount

Certifications and Compliances:

NEC & CEC:

- Class I, Division 1, Groups C & D
- Class I, Zone 1, Group IIB
- Class II, Groups E, F & G
- Marine Locations, Wet Locations, Enclosure Type 4X, IP66
- UL Listed
- cUL Listed (Certified by UL to CSA Standards)

NEC:

- Class III; Simultaneous Presence

UL Standards:

- 844 Electric Fixture Hangers for Hazardous Locations
- 1598 Luminaires
- 1598A Luminaires for Installation on Marine Vessels

CSA Standards:

- C22.2 No. 137

Options:

Description

- 250V luminaire for export applications (medium base only)

Suffix to be
added to Cat. No.
/250

Accessories:

- Reflectors - See Ordering by Components on page 713.



2L Incandescent Fixtures

2L



EVI Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base

Cl. I, Div. 1, Groups C,D
Cl. I, Zone 1 & 2, Group IIB
Cl. II, Groups E,F,G (Max 150W-Med. base)
Cl. III & Simultaneous Presence (Max 150W-Med. base)
Marine and Wet Locations • Type 4X; IP66

	Mounting Style	Hub Size	EVI301 SERIES Medium Base with EV505 Guard (Max. 300W PS25)	EVI501 SERIES Mogul Base with EV503 Guard (Max. 500W PS40)
	Pendant Mount	3/4"	EVI2301	EVI2501
		1"	EVI3301	EVI3501
	Ceiling Mount	3/4"	EVICX2301	EVICX2501
		1"	EVICX3301	EVICX3501
	Wall Mount	3/4"	EVIBX2301	EVIBX2501
		1"	EVIBX3301	EVIBX3501
	Bulkhead Mount	3/4"	EVIBH2301	—
		1"	—	—
	Stanchion Mount	1 1/4"	EVIJ4301	EVIJ4501
	Luminaire with Guard Less Mounting Module		EVI301✓	EVI501✓

Note:

Medium base luminaires (EVI301 Series) - For A19 lamps up to 100W, use Leviton socket extension catalog number 2005.
Mogul base luminaires (EVI501 Series) - For PS30 medium base lamps, use Cooper Wiring Devices socket adapter catalog number 332.

✓ - Available with Lightning Service™ Delivery. See Section G for complete details.

EVI Series Explosionproof Incandescent Luminaires

Ordering By Components

2L



Factory Sealed 100-500W Medium and Mogul Base

EVI Luminaires are available in components.

A complete luminaire consists of:

- I. Mounting Module
- II. EVI Luminaire Body and Globe Assembly
- III. Guard, Reflector

I. Mounting Module:

Type	Conduit	Cat. No.
Pendant	3/4"	EVMP2✓
	1"	EVMP3✓
Ceiling and Wall Box	3/4"	EV22✓
	1"	EV33✓
Wall Bracket Arm	3/4"	EV22✓ & EV87✓
	1"	EV33✓ & EV87✓
Stanchion	1 1/4"	EVMJ4✓
Bulk Head	3/4"	EVIJ2✓

II. Luminaire Body and Globe Assembly with Guard

Type	Cat. No.
Medium Base	EVI301✓
Mogul Base	EVI501✓

III. Guards and Reflectors

Type	Cat. No.
Guard - Fits EVI301 Series (medium base)	EV505
Guard - Fits EVI501 Series (mogul base)	EV503
Dome Reflector - Fits EVI301 Series (medium base)	RD636
Angle Reflector - Fits EVI301 Series (medium base)	RA636
Dome Reflector - Fits EVI501 Series (mogul base)	RD739
Angle Reflector - Fits EVI501 Series (mogul base)	RA739

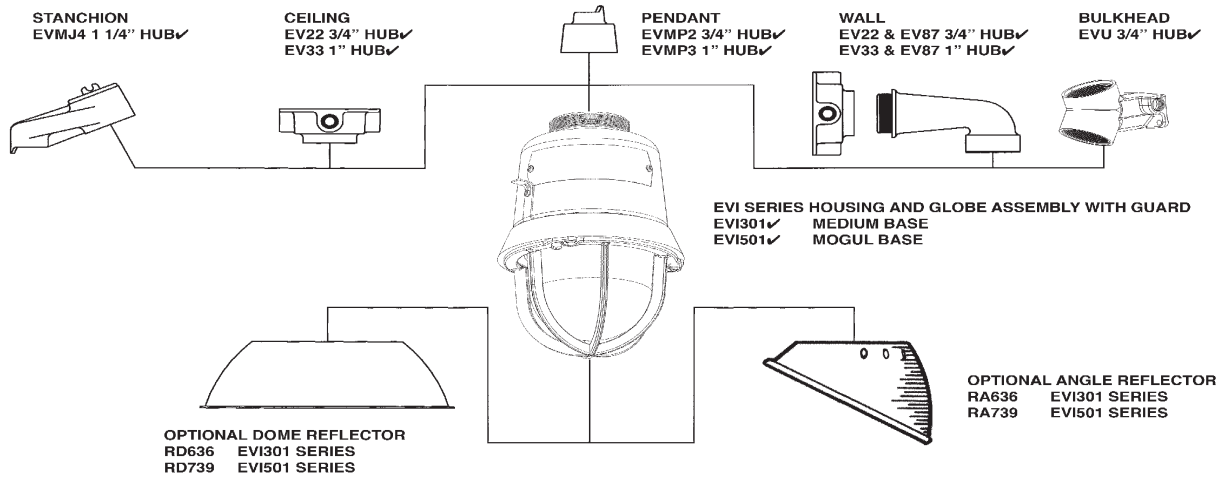
✓ - Available with Lightning Service™ Delivery. See Section G for complete details.



EVl Series Explosionproof Incandescent Luminaires

Factory Sealed
100-500W Medium and Mogul Base

Family Tree
Temperature Performance Data



Temperature Performance Data:

Type	Watts/Lamp	Class I, Div 1 (Class I, Zone 1)			Class II	Simultaneous Presence	Supply Wire Temp (°C)		
		Ambient			Ambient	Ambient	Ambient		
		40°C	55°C	65°C	40°C	40°C	40°C	55°C	65°C
EV1301 Medium Base	100W/A21 or A19*	T4	T3C	T3C	T3C	T3C	90°C	105°C	125°C
	150W/A21	T4	T3C	T3C	T3C	T3C	90°C	105°C	125°C
	200W/A23 or A25	T3	T2D	T2C	—	—	105°C	125°C	125°C
	300W/PS25	T3	T2D	T2C	—	—	105°C	125°C	125°C
EV1501 Mogul Base	200W/PS30*	T4A	T4	T4	T3A	T3A	90°C	90°C	105°C
	300W/PS35	T4	T3C	T3C	—	—	90°C	90°C	105°C
	500W/PS40	T3A	T3	T3	—	—	105°C	125°C	125°C

* Note:

Medium base luminaires (EVI301 Series) - For A19 lamps up to 100W, use Leviton socket extension catalog number 2005.

Mogul base luminaires (EVI501 Series) - For PS30 medium base lamps, use Cooper Wiring Devices socket adapter catalog number 332.

✓ - Available with Lightning Service™ Delivery. See Section G for complete details.

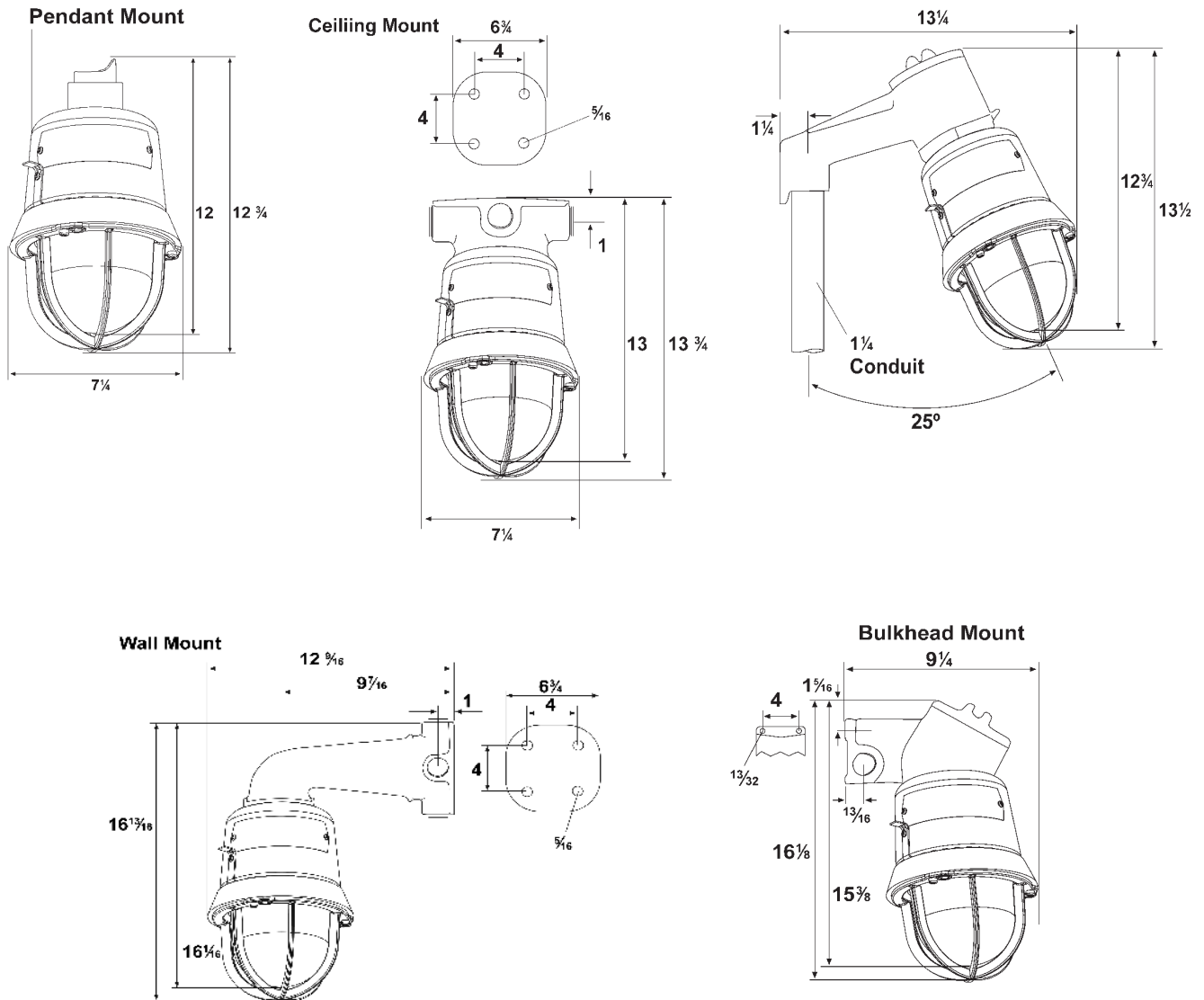
EVI Series Explosionproof Incandescent Luminaires

Medium Base Dimensions and Weights

2L

Factory Sealed
100-500W Medium and Mogul Base

Medium Base EVI Luminaire Dimensions (Inches):



Medium Base Net Luminaire Weights (lbs.):

EVI301 with guard

11 lbs.

Add mounting modules:

Pendant	1.0 lbs
Ceiling	2.0 lbs
Wall	4.5 lbs
Bulkhead	2.2 lbs
Stanchion	2.5 lbs

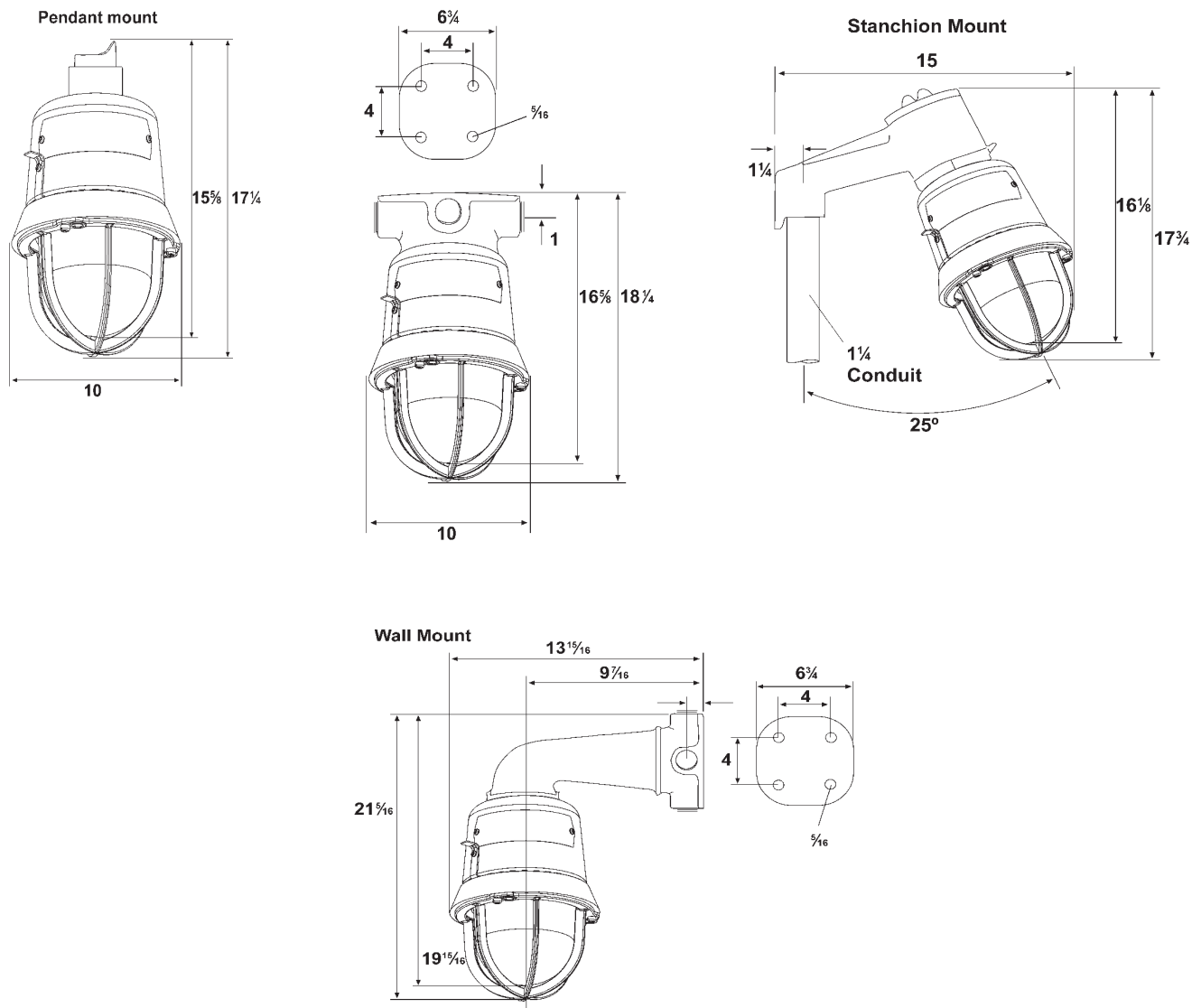
Add for Reflectors

RD636 (Dome Reflector, Small)	1.5 lbs
RA636 (Angle Reflector, Small)	1.0 lbs
RD739 (Dome Reflector, Small)	2.0 lbs
RA739 (Angle Reflector, Small)	1.4 lbs

2L Incandescent Fixtures

Factory Sealed
100-500W Medium and Mogul Base

Medium Base EVI Luminaire Dimensions (Inches):



Mogul Base Net Luminaire Weights (lbs.):

EVI501 with guard

24 lbs.

Add mounting modules:

Pendant

1.0 lbs

Ceiling

2.0 lbs

Wall

4.5 lbs

Bulkhead

2.2 lbs

Stanchion

2.5 lbs

Add for Reflectors

RD636 (Dome Reflector, Small)

1.5 lbs

RA636 (Angle Reflector, Small)

1.0 lbs

RD739 (Dome Reflector, Small)

2.0 lbs

RA739 (Angle Reflector, Small)

1.4 lbs

EVI Series Explosionproof Incandescent Luminaires

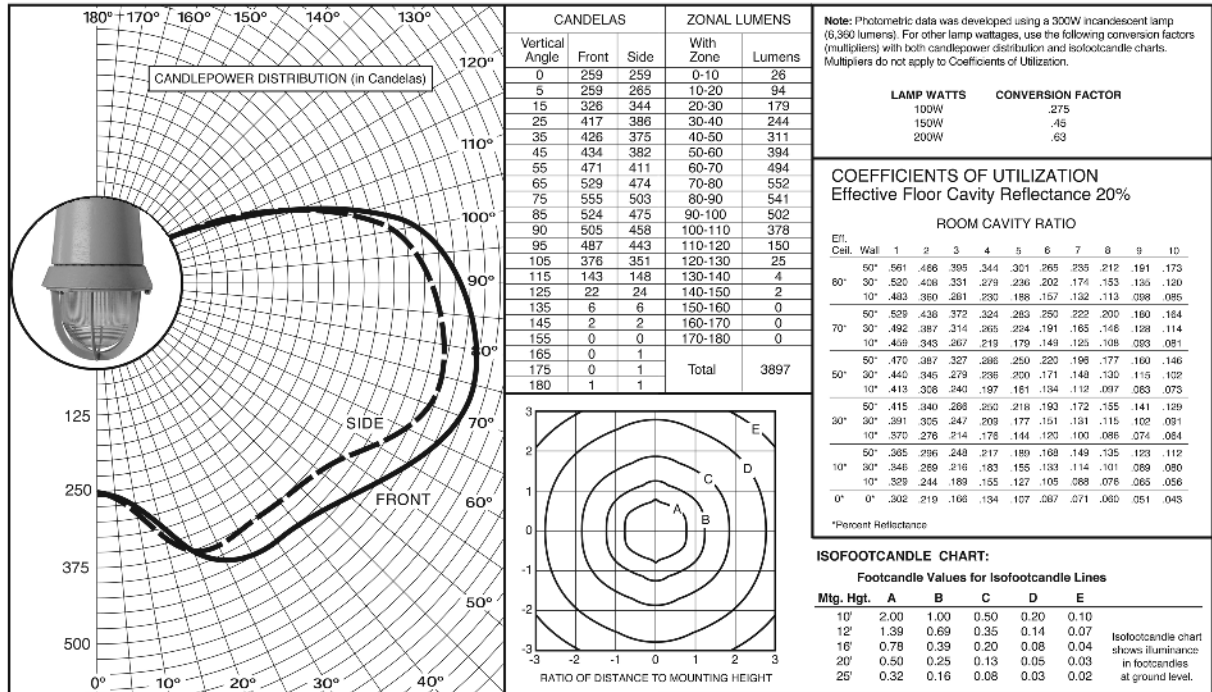
Photometric Data

2L

Factory Sealed
100-500W Medium and Mogul Base

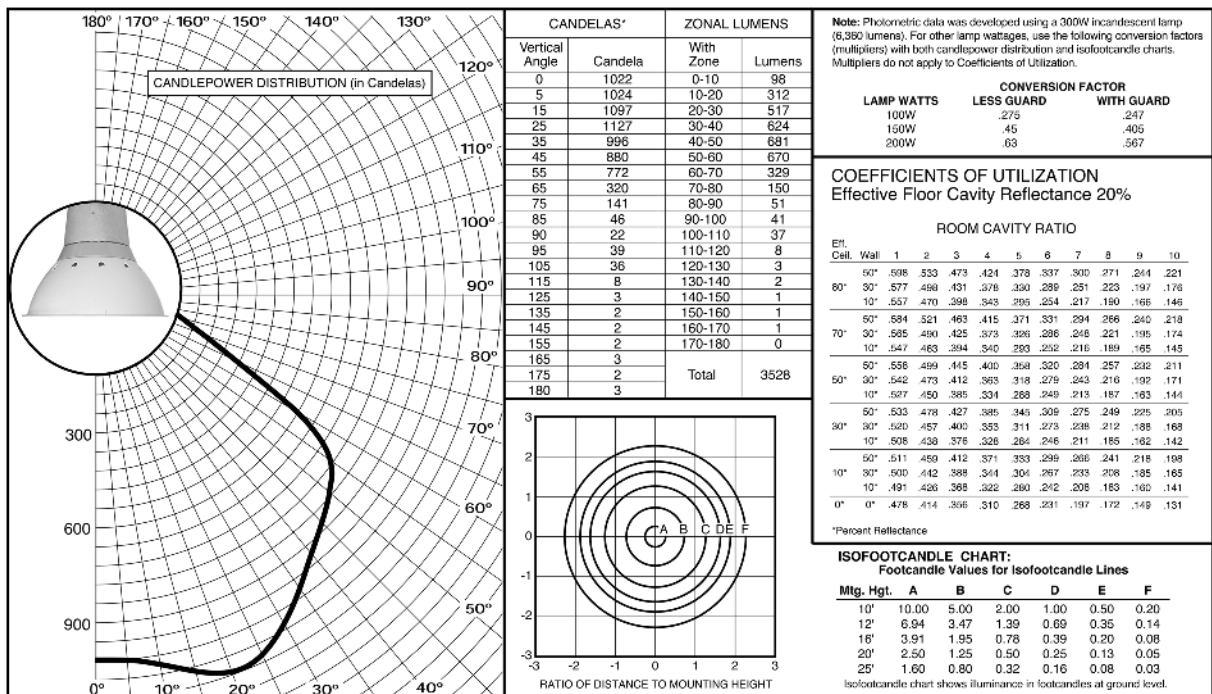
Medium Base

Luminaire with Globe and Guard
EVICX2301 Lamp: 300W/PS25 Incandescent



Medium Base

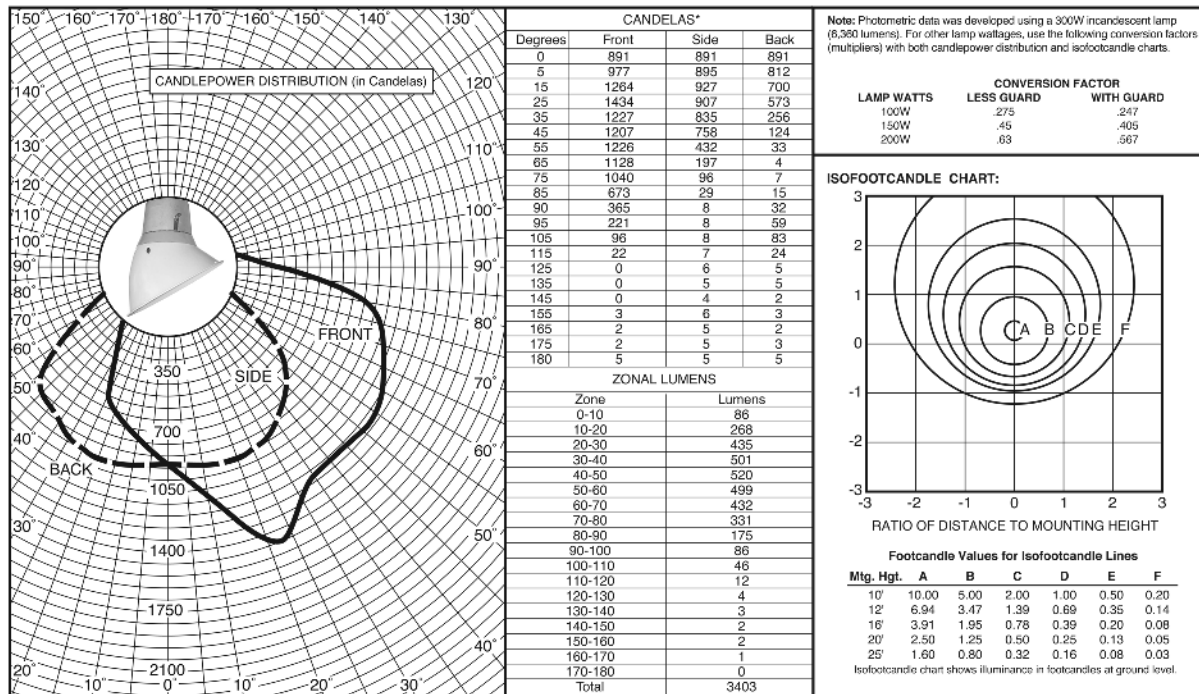
Luminaire with Globe and Dome Reflector (Less Guard)
EVICX2300 Lamp: 300W/PS25 Incandescent



EVI Series Explosionproof Incandescent Luminaires **Factory Sealed** **100-500W Medium and Mogul Base**

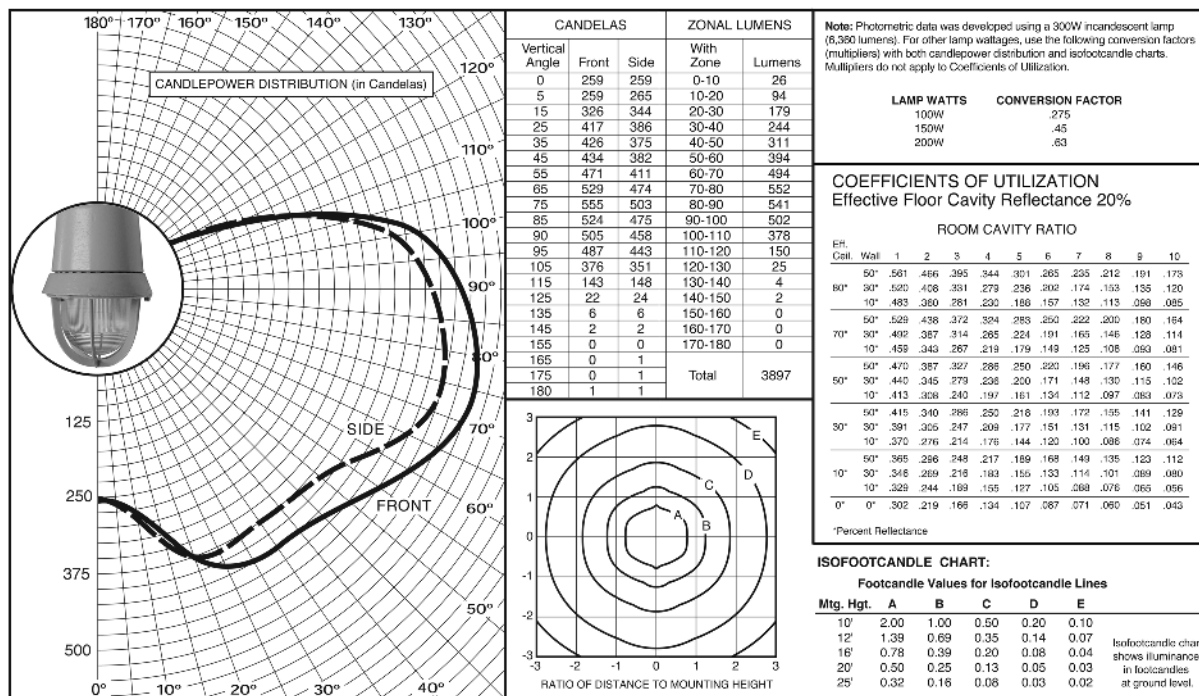
Medium Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVICX2300 Lamp: 300W/PS25 Incandescent



Mogul Base

Luminaire with Globe and Guard
EVIA2501 Lamp: 500W/PS40 Incandescent



EVI Series Explosionproof Incandescent Luminaires

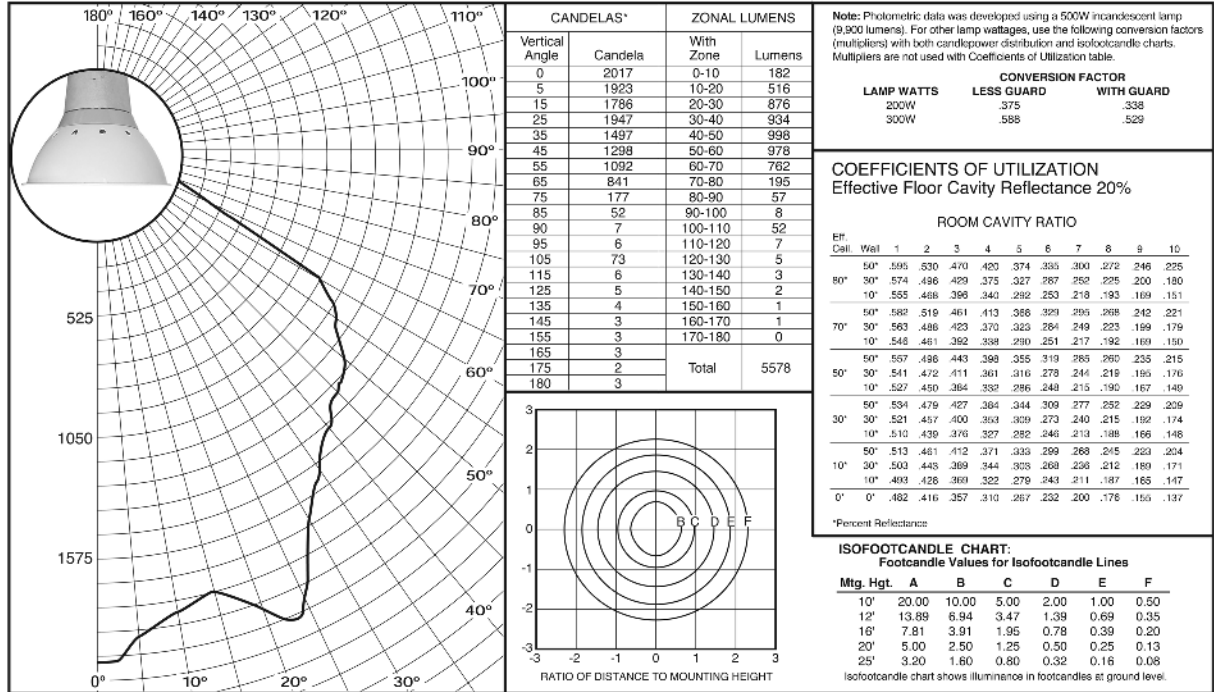
Photometric Data

2L

Factory Sealed
100-500W Medium and Mogul Base

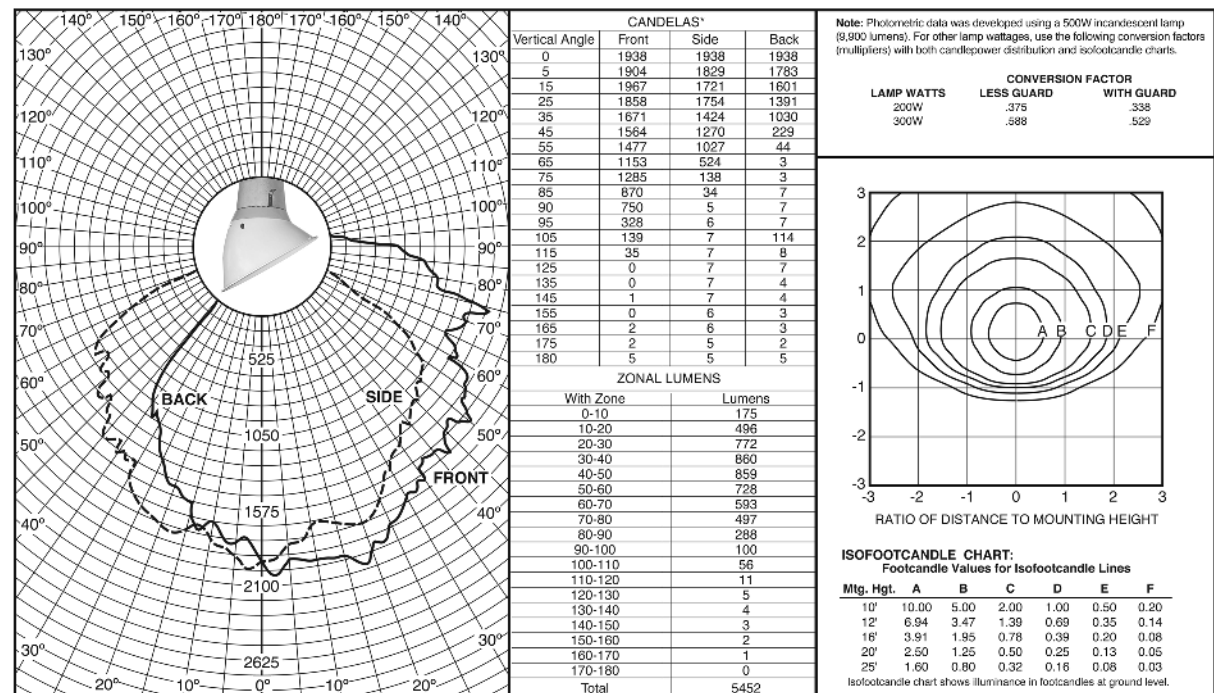
Mogul Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVIA2500 Lamp: 500W/PS40 Incandescent



Mogul Base

Luminaire with Globe and Angle Reflector (Less Guard)
EVIA2500 Lamp: 500W/PS40 Incandescent



Application:

EV292 Series luminares are used:

- to provide incandescent lighting in locations made hazardous due to the presence of hydrogen, gases or vapors of an equivalent hazard, such as manufactured gas.
- hydrogen areas of process industries, missile bases where hydrogen fuel is used and gas manufacturing plants.
- in areas of lesser hazard than indicated above.
- EVA292 pendant mount luminaire is also suitable for use in locations made hazardous due to the presence of acetylene.

Features:

- Flametight threaded joints – no external seal needed
- Easy to assemble and relamp
- Shock absorbing receptacle
- Gasket seals out dirt and liquids
- Positive locking of globe holder
- Heat and impact resistant globe
- Inner reflector eliminates upward spill light
- Lightweight
- Corrosion Resistant
- Dome and 30° angle reflectors available

Standard Materials:

- Globes – heat and impact resistant glass
- Luminaire and bracket arm – copper-free aluminum
- Reflectors – *Krydon*® fiberglass-reinforced polyester
- Back box – *Feraloy*® iron alloy

Standard Finishes:

- Aluminum – epoxy powder coat
- *Krydon* – high reflectance white
- *Feraloy* – electrogalvanized and aluminum acrylic paint

Size Ranges:

- ¾" conduit hub

Capacity Ranges:

- 300 watt, PS-30 medium base lamps

Certifications and

Compliances:

- NEC/CEC: Class I, Divisions 1 and 2, Groups A,B,C,D – pendant mount
- Class I, Divisions 1 and 2, Groups B,C,D – ceiling and bracket mount
- UL Standard: 844
- CSA Standard: C22.2 No. 137

Temperature Performance

Data:

Style	Class I UL	Ambient Temp. °C	Supply Wire °C
Pendant	T3A	25/40	150°C
Ceiling	T3A	25/40	150°C
Bracket	T3A	25/40	150°C

NOTE: Photometric curves and data are the same as shown for EV Groups C, D series.



Pendant style with RD725 dome reflector

Style	Max. Lamp Size
Pendant	300 watt, PS-30 (medium base)

Pendant style with RA725 30° angle reflector

Style	Hub Size	Without Reflector Cat. #
Pendant	¾"	EVA292

Pendant style without reflector

Style	Dome Reflector Cat. #	30° Angle Reflector Cat. #
Pendant	RD725	RA725

Ceiling	300 watt, PS-30 (medium base)
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With Guard	¾"	EVCX292
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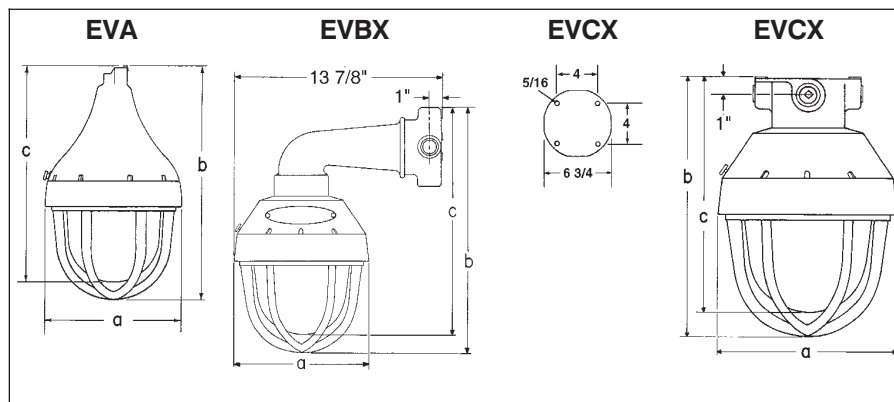
RD725	RA725
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Bracket	300 watt, PS-30 (medium base)
---------	-------------------------------------

With Guard	¾"	EVBX292
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Not Applicable

Dimensions



	EVA	EVBX	EVCX	Reflector Diameter Type
a	8 7/8"	8 7/8"	8 7/8"	Dome 16"
b	16 3/8"	18 1/8"	14 3/8"	30° Angle 16"
c	14 7/8"	16 5/8"	12 7/8"	

Description	Page No.
Application/Selection	722, 723
Champ® Series - Integrally Ballasted Luminaires	
Accessories	775, 776
Ballast Data (USA)	677-682
Ballast Data (Canada)	677-682
DMV Series 50 – 250W H.I.D.	743
Catalog Listings	744-749
Dimensions, Weights, Temperature Data	750, 751
Photometric Data	752, 753
LMV Series 35 – 150W H.I.D.	735
Catalog Listings	736-739
Dimensions, Weights, Temperature Data	740, 741
Photometric Data	742
VMV Series 50 – 175W H.I.D.	724
Catalog Listings	725-731
Dimensions, Weights, Temperature Data	731, 732
Photometric Data	733, 734
VMV High Wattage Series 200 – 400W H.I.D.	754
Catalog Listings	755-760
Dimensions, Weights, Temperature Data	761, 762
Photometric Data	763, 764
N2MV Non-Metallic H.I.D.	765
Catalog Listings	766-770
Dimensions, Weight, Temperature Data	771, 772
Photometric Data	773, 774
V2PC Photocell	777, 778

H.I.D. (High Intensity Discharge) Luminaires

Enclosed & Gasketed Application and Selection

Application:

Luminaires included in this section are enclosed and gasketed, designed for use with H.I.D. lamps as follows:

- in locations where protection is required from wet, dirty and corrosive atmospheres
- where long life lamps provide desirable maintenance cost savings and return on investment through use of fewer luminaires, circuits and ancillary apparatus.
- where relamping and maintenance difficulties require long life lamps.

Considerations for Selection:

Environmental:

- What are the hazardous areas classifications (NEC/CEC) of the locations in which the luminaires will be installed?
- Must luminaires be suitable for use in marine, hosedown, corrosive applications?

Lighting levels required:

- What wattage luminaire(s) will provide the desired light level? (See Lighting Selector Guide, Section L to determine number and location of luminaires required)

Product Selection:

Quick Selector Chart - (See specific sections for lamp type and wattage suitability)			
- Series -	- Watts HPS, MH & MV Lamps	Hazardous Area & Other Environmental Suitabilities NEC, CEC, IEC	- Ballast Voltages -
VMV Champ	50, 70, 100, 150, 175 Mogul Base	NEC & CEC Cl. I, Div. 2 Groups A, B, C, D Cl. II, Groups E, F, G Class III Simultaneous Presence Restricted Breathing (Suffix - S826) CL. I Div. 2 & Zone 2 AEx nR, Ex nR IIC Marine Outdoor & Wet Locations Type 3, 3R, 4, 4X IP56 to 1P66	Standard Voltage Ballasts (60 Hz) NEC (UL) Multi-tap: 120, 208, 240 & 277 Volt 60 Hz. Dual-tap: 120 & 277 Volt 60 Hz (50W HPS) 120 Volt 60 Hz 480 Volt 60 Hz
VMV High Wattage Champ	200, 250, 400 Mogul Base		CEC/CSA (cUL) Tri-tap: 120, 277 & 347 Volt 60 Hz Dual-tap: 120 & 277 Volt 60 Hz (50W HPS) 120 Volt 60 Hz
LMV Champ Low Profile	35, 50, 70, 100, 150 Medium Base		Optional Voltage Ballasts (50 or 60 Hz) CEC/CSA (cUL) 208 Volt 60 Hz CWI - Isolated 240 Volt 60 Hz CWI - Isolated 480 Volt 60 Hz CWI - Isolated 600 Volt 60 Hz CWI - Isolated EXPORT 220 Volt 50 Hz 230 Volt 50 Hz 240 Volt 50 Hz
DMV Champ Expanded Class II Suitability	50, 70, 100, 150, 175, 250 Mogul Base	IEC Certified for IEC Zone 2 (Suffix - S826TB) Ex nR IIC	
N2MV Champ Non Metallic	50, 70, 100, 150, 175 Mogul Base	IP 56 to IP 66	

Champ® H.I.D. Luminaires

VMV, LMV, DMV, VMV High Wattage & N2MV Series

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II, Groups E, F, G, Cl. III
- Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

3L

The *Champ* family is an extremely versatile industrial lighting system. Five different series of *Champ* Luminaires embrace a broad range of wattages, lamp sources, compliances, optics, and accessories. Each series is covered in detail on the following pages. General information to help in the proper selection of series and luminaires is shown below.

Application:

Heavy duty *Champ* lighting luminaires are used:

- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- in areas where ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- where combustible dusts are present
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found.

Features:

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements in each series, to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount.
- Wide range of light sources and wattages to meet specifiers' needs: 35, 50, 70, 100, 150, 200, 250 and 400 watt high pressure sodium (HPS); 100, 175, 250, and 400 watt mercury vapor (MV); 70, 100, 175, 250, and 400 watt metal halide (MH).
- Hinged ballast housings for ease of installation and maintenance; all mounting modules fit all ballast housings.
- Wide choice of photometric distributions. Globes available for lamps up through 400 watt HPS, and 250 watt MV and MH. Glass refractors available for all VMV and DMV units; reflector/lens for 200-400 watt VMV units
- All luminaires are designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.



- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to -40°C
- Dome and 30° angle reflectors made of bright white *Krydon*® fiberglass-reinforced polyester material provide superior reflectivity, with twist-on feature

requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode

- Grounding wire for safety
- Ballasts are high power factor (min P.F. 90%) and available in a variety of voltages to meet local area requirements.

3L
H.I.D. Lighting

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (HPS 50W, 70W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

VMV series *Champ* luminaires are used:

- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications
- in areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- where combustible dusts are present
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion, and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements are found

Features:

- Compact, lightweight design is ideal for medium and low mounting heights
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount
- Wide range of light sources and wattages to meet specifiers' needs: 50, 70, 100, and 150 watt high pressure sodium (HPS); 100, and 175 watt mercury vapor (MV); 70, 100, 175 watt metal halide (MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, refractors and compact refractors available for all wattage luminaires; plastic refractors (for non-hazardous applications only) for 50-100 watt luminaires
- All luminaires are designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (-40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode
- Grounding wire for safety
- High power factor ballasts (Min P.F. 90%) and available in a variety of voltages to meet local area requirements.
- Mogul base porcelain lamp socket



Standard Materials:

- Ballast housings and mountings – copper free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass (50-175 watts); plastic (50-100 watts), for non-hazardous applications.
- Guards: globe – copper-free aluminum refractor – stainless steel

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, 208, 240, 277, 347, 480, 600, Multi-tap* (120, 208, 240 and 277)
- 50 to 150W HPS; 100 to 175W MV; 70 to 175W MH

Certifications and

Compliances:

- NEC & CEC:
 - Class I, Division 2, Groups A,B,C,D
 - HPS 50W, 70W - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
 - Class I Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15

♦ VMV Series now available with Champ Induction Lighting System. See Section 5L.

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

Description **Suffix to be added to Cat. No.**

- **Factory Sealed Champs** **S865†**
 - **Class I Division 2 & Zone 2**
 - **Provides T3 code without conduit or cable seals**

- **Restricted breathing/Non-sparking**
- **Restricted Breathing Construction** . . . **S826†**
 - Class I Division 2 & Zone 2 Suitability
 - Cooler Operating Temperatures (T-Numbers)

- **Certified for IEC Zone 2** **S826TB**
 - Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT or TT)

- **Fused** – to protect ballast and capacitors against abnormal line conditions **S658*** (Not for use in Canada)

- **Ballast-Gard™** starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150W LX HPS only **BG**

- **Instant restrike** – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only **IR**

- **Quartz auxiliary lighting** for use with R2 & R5 large glass refractors only! – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For *non-hazardous* locations only **QTZ**

- **Stainless steel insert** - top hat with stainless steel threaded insert to attach ballast housing **S806**

- **TEFLON coating** on globe for increased shatter protection. **S808** T-Numbers not affected

- **Factory assembled with H.I.D. lamps** installed for additional labor savings. **FA**

(Note: BG and IR options cannot be used together. IR and QTZ options cannot be used together.)

Accessories:

- See pages 775 and 776 for complete listing.

TEFLON is a registered trademark of E.I. duPont Co.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

† For detailed information on Restricted Breathing and Non-Sparking, see page 32 of the Cooper Crouse-Hinds 2005 Code Digest.

50-150W High Pressure Sodium VMV Series

Champ® H.I.D. Luminaires

- CL I, Div 2, Groups A, B, C, D
- Restricted Breathing CL I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- CL II Groups E, F, G, CL III & Simultaneous Presence (50W, 70W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L



See Notes 1 (to specify voltage), 2 and 3. For guards and other optics see VMV Luminaires – Ordering by Components section.

BASIC CATALOG NUMBER

	Mounting Style	Hub Size	Lamp Watts	With G24 Globe and P21 Guard	With G241 Type I Compact Refractor	With G245 Type V Compact Refractor	With R5 Glass Refractor
	Pendant Mount	3/4	50	VMVS2A050GP	VMVS2A050G241	VMVS2A050G245	VMVS2A050R5
		1		VMVS3A050GP	VMVS3A050G241	VMVS3A050G245	VMVS3A050R5
		3/4	70	VMVS2A070GP ✓	VMVS2A070G241 ✓	VMVS2A070G245 ✓	VMVS2A070R5 ✓
		1		VMVS3A070GP ✓	VMVS3A070G241 ✓	VMVS3A070G245 ✓	VMVS3A070R5 ✓
		3/4	100	VMVS2A100GP ✓	VMVS2A100G241 ✓	VMVS2A100G245 ✓	VMVS2A100R5 ✓
		1		VMVS3A100GP ✓	VMVS3A100G241 ✓	VMVS3A100G245 ✓	VMVS3A100R5 ✓
		3/4	150	VMVS2A150GP ✓	VMVS2A150G241 ✓	VMVS2A150G245 ✓	VMVS2A150R5 ✓
		1		VMVS3A150GP ✓	VMVS3A150G241 ✓	VMVS3A150G245 ✓	VMVS3A150R5 ✓
	Flexible Pendant Mount	3/4	50	VMVS2HA050GP	VMVS2HA050G241	VMVS2HA050G245	VMVS2HA050R5
		3/4	70	VMVS2HA070GP ✓	VMVS2HA070G241 ✓	VMVS2HA070G245 ✓	VMVS2HA070R5 ✓
		3/4	100	VMVS2HA100GP ✓	VMVS2HA100G241 ✓	VMVS2HA100G245 ✓	VMVS2HA100R5 ✓
		3/4	150	VMVS2HA150GP ✓	VMVS2HA150G241 ✓	VMVS2HA150G245 ✓	VMVS2HA150R5 ✓
	Ceiling Mount Thru-Feed	3/4	50	VMVS2C050GP	VMVS2C050G241	VMVS2C050G245	VMVS2C050R5
		1		VMVS3C050GP	VMVS3C050G241	VMVS3C050G245	VMVS3C050R5
		3/4	70	VMVS2C070GP ✓	VMVS2C070G241 ✓	VMVS2C070G245 ✓	VMVS2C070R5 ✓
		1		VMVS3C070GP ✓	VMVS3C070G241 ✓	VMVS3C070G245 ✓	VMVS3C070R5 ✓
		3/4	100	VMVS2C100GP ✓	VMVS2C100G241 ✓	VMVS2C100G245 ✓	VMVS2C100R5 ✓
		1		VMVS3C100GP ✓	VMVS3C100G241 ✓	VMVS3C100G245 ✓	VMVS3C100R5 ✓
		3/4	150	VMVS2C150GP ✓	VMVS2C150G241 ✓	VMVS2C150G245 ✓	VMVS2C150R5 ✓
		1		VMVS3C150GP ✓	VMVS3C150G241 ✓	VMVS3C150G245 ✓	VMVS3C150R5 ✓
	Wall Mount Thru-Feed	3/4	50	VMVS2TW050GP	VMVS2TW050G241	VMVS2TW050G245	VMVS2TW050R5
		1		VMVS3TW050GP	VMVS3TW050G241	VMVS3TW050G245	VMVS3TW050R5
		3/4	70	VMVS2TW070GP ✓	VMVS2TW070G241 ✓	VMVS2TW070G245 ✓	VMVS2TW070R5 ✓
		1		VMVS3TW070GP ✓	VMVS3TW070G241 ✓	VMVS3TW070G245 ✓	VMVS3TW070R5 ✓
		3/4	100	VMVS2TW100GP ✓	VMVS2TW100G241 ✓	VMVS2TW100G245 ✓	VMVS2TW100R5 ✓
		1		VMVS3TW100GP ✓	VMVS3TW100G241 ✓	VMVS3TW100G245 ✓	VMVS3TW100R5 ✓
		3/4	150	VMVS2TW150GP ✓	VMVS2TW150G241 ✓	VMVS2TW150G245 ✓	VMVS2TW150R5 ✓
		1		VMVS3TW150GP ✓	VMVS3TW150G241 ✓	VMVS3TW150G245 ✓	VMVS3TW150R5 ✓
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½ ° Angle	3/4	50	VMVS25Q050GP	VMVS25Q050G241	VMVS25Q050G245	VMVS25Q050R5
		3/4	70	VMVS25Q070GP	VMVS25Q070G241	VMVS25Q070G245	VMVS25Q070R5
		3/4	100	VMVS25Q100GP	VMVS25Q100G241	VMVS25Q100G245	VMVS25Q100R5
		3/4	150	VMVS25Q150GP	VMVS25Q150G241	VMVS25Q150G245	VMVS25Q150R5
	Stanchion Mount 25° Angle	1½	50	VMVSJ050GP	VMVSJ050G241	VMVSJ050G245	VMVSJ050R5
		1½	70	VMVSJ070GP ✓	VMVSJ070G241 ✓	VMVSJ070G245 ✓	VMVSJ070R5 ✓
		1½	100	VMVSJ100GP ✓	VMVSJ100G241 ✓	VMVSJ100G245 ✓	VMVSJ100R5 ✓
		1½	150	VMVSJ150GP ✓	VMVSJ150G241 ✓	VMVSJ150G245 ✓	VMVSJ150R5 ✓
	Stanchion Mount Straight	1½	50	VMVSP050GP	VMVSP050G241	VMVSP050G245	VMVSP050R5
		1½	70	VMVSP070GP ✓	VMVSP070G241 ✓	VMVSP070G245 ✓	VMVSP070R5 ✓
		1½	100	VMVSP100GP ✓	VMVSP100G241 ✓	VMVSP100G245 ✓	VMVSP100R5 ✓
		1½	150	VMVSP150GP ✓	VMVSP150G241 ✓	VMVSP150G245 ✓	VMVSP150R5 ✓

Standard Voltage Ballasts - 60Hz

1. Voltage Suffix	NEC/UL			CEC/CSA (cUL)		
	Multi Tap /MT	Dual Tap /DT	120V /120	Tri Tap /TT	Dual Tap /DT	120V /120
(Multi Tap and Dual Tap ballasts are prewired for 277V)						

Optional Voltage Ballasts - 50 or 60Hz

Voltage Suffix	CEC/CSA (cUL) - CWI Isolated Ballasts					EXPORT		
	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. 150W HPS Luminaires, 55V Lamps is standard; for 100V lamps - Add suffix "CE". 50W HPS Luminaire is dual tap only.
 3. Options - Add the required options suffixes from page 724, in Alpha-numeric order.
 ✓ - available with Lightning Service™ delivery. See Section G for complete details.

3L

150-175W Pulse Start Metal Halide VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage). For guards and other optics see VMV Luminaires – Ordering by Components section.

BASIC CATALOG NUMBER

	Mounting Style	Hub Size	Lamp Watts	With G24 Globe and P21 Guard	With G245 Type V Compact Refractor	With R5 Glass Refractor
	Pendant Mount	3/4	150	VMVM2A150GP-S828	VMVM2A150G245-S828	VMVM2A150R5-S828
		1		VMVM3A150GP-S828	VMVM3A150G245-S828	VMVM3A150R5-S828
		3/4	175	VMVM2A175GP-S828	VMVM2A175G245-S828	VMVM2A175R5-S828
		1		VMVM3A175GP-S828	VMVM3A175G245-S828	VMVM3A175R5-S828
	Flexible Pendant Mount	3/4	150	VMVM2HA150GP-S828	VMVM2HA150G245-S828	VMVM2HA150R5-S828
		3/4	175	VMVM2HA175GP-S828	VMVM2HA175G245-S828	VMVM2HA175R5-S828
	Ceiling Mount Thru-Feed	3/4	150	VMVM2C150GP-S828	VMVM2C150G245-S828	VMVM2C150R5-S828
		1		VMVM3C150GP-S828	VMVM3C150G245-S828	VMVM3C150R5-S828
		3/4	175	VMVM2C175GP-S828	VMVM2C175G245-S828	VMVM2C175R5-S828
		1		VMVM3C175GP-S828	VMVM3C175G245-S828	VMVM3C175R5-S828
	Wall Mount Thru-Feed	3/4	150	VMVM2TW150GP-S828	VMVM2TW150G245-S828	VMVM2TW150R5-S828
		1		VMVM3TW150GP-S828	VMVM3TW150G245-S828	VMVM3TW150R5-S828
		3/4	175	VMVM2TW175GP-S828	VMVM2TW175G245-S828	VMVM2TW175R5-S828
		1		VMVM3TW175GP-S828	VMVM3TW175G245-S828	VMVM3TW175R5-S828
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	150	VMVM25Q150GP-S828	VMVM25Q150G245-S828	VMVM25Q150R5-S828
		3/4	175	VMVM25Q175GP-S828	VMVM25Q175G245-S828	VMVM25Q175R5-S828
	Stanchion Mount 25° Angle	1½	150	VMVMJ150GP-S828	VMVMJ150G245-S828	VMVMJ150R5-S828
		1½	175	VMVMJ175GP-S828	VMVMJ175G245-S828	VMVMJ175R5-S828
	Stanchion Mount Straight	1½	150	VMVMP150GP-S828	VMVMP150G245-S828	VMVMP150R5-S828
		1½	175	VMVMP175GP-S828	VMVMP175G245-S828	VMVMP175R5-S828

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz			CEC/CSA (cUL)	
	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT	120V /120
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz				
	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50	

100-175W Metal Halide VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L



See Note 1 (to specify voltage), 2 and 3. For guards and other optics see VMV Luminaires – Ordering by Components section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G24 Globe and P21 Guard	With G241 Type I Compact Refractor	With G245 Type V Compact Refractor	With R5 Glass Refractor	
	Pendant Mount	3/4	70	VMVM2A070GP	VMVM2A070G241	VMVM2A070G245	VMVM2A070R5
		1		VMVM3A070GP	VMVM3A070G241	VMVM3A070G245	VMVM3A070R5
			100	VMVM2A100GP ✓	VMVM2A100G241 ✓	VMVM2A100G245 ✓	VMVM2A100R5 ✓
		1		VMVM3A100GP ✓	VMVM3A100G241 ✓	VMVM3A100G245 ✓	VMVM3A100R5 ✓
		3/4	175	VMVM2A175GP ✓	VMVM2A175G241 ✓	VMVM2A175G245 ✓	VMVM2A175R5 ✓
	1		VMVM3A175GP ✓	VMVM3A175G241 ✓	VMVM3A175G245 ✓	VMVM3A175R5 ✓	
	Flexible Pendant Mount	3/4	70	VMVM2HA070GP	VMVM2HA070G241	VMVM2HA070G245	VMVM2HA070R5
		3/4	100	VMVM2HA100GP ✓	VMVM2HA100G241 ✓	VMVM2HA100G245 ✓	VMVM2HA100R5 ✓
		3/4	175	VMVM2HA175GP ✓	VMVM2HA175G241 ✓	VMVM2HA175G245 ✓	VMVM2HA175R5 ✓
	Ceiling Mount Thru-Feed	3/4	70	VMVM2C070GP	VMVM2C070G241	VMVM2C070G245	VMVM2C070R5
		1		VMVM3C070GP	VMVM3C070G241	VMVM3C070G245	VMVM3C070R5
		3/4	100	VMVM2C100GP ✓	VMVM2C100G241 ✓	VMVM2C100G245 ✓	VMVM2C100R5 ✓
		1		VMVM3C100GP ✓	VMVM3C100G241 ✓	VMVM3C100G245 ✓	VMVM3C100R5 ✓
		3/4	175	VMVM2C175GP ✓	VMVM2C175G241 ✓	VMVM2C175G245 ✓	VMVM2C175R5 ✓
	1		VMVM3C175GP ✓	VMVM3C175G241 ✓	VMVM3C175G245 ✓	VMVM3C175R5 ✓	
	Wall Mount Thru-Feed	3/4	70	VMVM2TW070GP	VMVM2TW070G241	VMVM2TW070G245	VMVM2TW070R5
		1		VMVM3TW070GP	VMVM3TW070G241	VMVM3TW070G245	VMVM3TW070R5
		3/4	100	VMVM2TW100GP ✓	VMVM2TW100G241 ✓	VMVM2TW100G245 ✓	VMVM2TW100R5 ✓
		1		VMVM3TW100GP ✓	VMVM3TW100G241 ✓	VMVM3TW100G245 ✓	VMVM3TW100R5 ✓
		3/4	175	VMVM2TW175GP ✓	VMVM2TW175G241 ✓	VMVM2TW175G245 ✓	VMVM2TW175R5 ✓
	1		VMVM3TW175GP ✓	VMVM3TW175G241 ✓	VMVM3TW175G245 ✓	VMVM3TW175R5 ✓	
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	70	VMVM25Q070GP	VMVM25Q070G241	VMVM25Q070G245	VMVM25Q070R5
		3/4	100	VMVM25Q100GP	VMVM25Q100G241	VMVM25Q100G245	VMVM25Q100R5
		3/4	175	VMVM25Q175GP	VMVM25Q175G241	VMVM25Q175G245	VMVM25Q175R5
	Stanchion Mount 25° Angle	1½	70	VMVMJ070GP	VMVMJ070G241	VMVMJ070G245	VMVMJ070R5
		1½	100	VMVMJ100GP ✓	VMVMJ100G241 ✓	VMVMJ100G245 ✓	VMVMJ100R5 ✓
		1½	175	VMVMJ175GP ✓	VMVMJ175G241 ✓	VMVMJ175G245 ✓	VMVMJ175R5 ✓
	Stanchion Mount Straight	1½	70	VMVMJ070GP	VMVMJ070G241	VMVMJ070G245	VMVMJ070R5
		1½	100	VMVMJ100GP ✓	VMVMJ100G241 ✓	VMVMJ100G245 ✓	VMVMJ100R5 ✓
		1½	175	VMVMJ175GP ✓	VMVMJ175G241 ✓	VMVMJ175G245 ✓	VMVMJ175R5 ✓

1.

Standard Voltage Ballasts - 60Hz
NEC/UL

CEC/CSA (cUL)

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz			CEC/CSA (cUL)		
	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT	120V /120	
Optional Voltage Ballasts - 50 or 60Hz						
Voltage Suffix	CEC/CSA (cUL) - CWI Isolated Ballasts			EXPORT		
	208V CWI /208CWI	480V CWI /240CWI	600V CWI /600CWI	220V 60Hz /220	220V 50Hz /220 50	240V 50Hz /240 50

2. Options - Add the required options suffixes from page 718, in Alpha-numeric order.

3. 70W Ballast not available in 480V.

✓ - available with Lightning Service™ delivery. See Section G for complete details.

3L

100-175W Mercury Vapor VMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Notes 1 (to specify voltage) and 2. For guards and other optics see VMV Luminaires – Ordering by Components section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G24 Globe and P21 Guard	With G241 Type I Compact Refractor	With G245 Type V Compact Refractor	With R5 Glass Refractor	
	Pendant Mount	3/4	100	VMVC2A100GP✓	VMVC2A100G241✓	VMVC2A100G245✓	VMVC2A100R5✓
		1		VMVC3A100GP✓	VMVC3A100G241✓	VMVC3A100G245✓	VMVC3A100R5✓
		3/4	175	VMVC2A175GP✓	VMVC2A175G241✓	VMVC2A175G245✓	VMVC2A175R5✓
		1		VMVC3A175GP✓	VMVC3A175G241✓	VMVC3A175G245✓	VMVC3A175R5✓
	Flexible Pendant Mount	3/4	100	VMVC2HA100GP✓	VMVC2HA100G241✓	VMVC2HA100G245✓	VMVC2HA100R5✓
		3/4	175	VMVC2HA175GP✓	VMVC2HA175G241✓	VMVC2HA175G245✓	VMVC2HA175R5✓
	Ceiling Mount Thru-Feed	3/4	100	VMVC2C100GP✓	VMVC2C100G241✓	VMVC2C100G245✓	VMVC2C100R5✓
		1		VMVC3C100GP✓	VMVC3C100G241✓	VMVC3C100G245✓	VMVC3C100R5✓
		3/4	175	VMVC2C175GP✓	VMVC2C175G241✓	VMVC2C175G245✓	VMVC2C175R5✓
		1		VMVC3C175GP✓	VMVC3C175G241✓	VMVC3C175G245✓	VMVC3C175R5✓
	Wall Mount Thru-Feed	3/4	100	VMVC2TW100GP✓	VMVC2TW100G241✓	VMVC2TW100G245✓	VMVC2TW100R5✓
		1		VMVC3TW100GP✓	VMVC3TW100G241✓	VMVC3TW100G245✓	VMVC3TW100R5✓
		3/4	175	VMVC2TW175GP✓	VMVC2TW175G241✓	VMVC2TW175G245✓	VMVC2TW175R5✓
		1		VMVC3TW175GP✓	VMVC3TW175G241✓	VMVC3TW175G245✓	VMVC3TW175R5✓
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	100	VMVC25Q100GP	VMVC25Q100G241	VMVC25Q100G245	VMVC25Q100R5
		3/4	175	VMVC25Q175GP	VMVC25Q175G241	VMVC25Q175G245	VMVC25Q175R5
	Stanchion Mount 25° Angle	1½	100	VMVCJ100GP✓	VMVCJ100G241✓	VMVCJ100G245✓	VMVCJ100R5✓
		1½	175	VMVCJ175GP✓	VMVCJ175G241✓	VMVCJ175G245✓	VMVCJ175R5✓
	Stanchion Mount Straight	1½	100	VMVCP100GP✓	VMVCP100G241✓	VMVCP100G245✓	VMVCP100R5✓
		1½	175	VMVCP175GP✓	VMVCP175G241✓	VMVCP175G245✓	VMVCP175R5✓
1. Standard Voltage Ballasts - 60Hz NEC/UL							
CEC/CSA (cUL)							

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz				CEC/CSA (cUL)	
	Multi Tap /MT	120V /120	480V /480		Tri Tap /TT	120V /120
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz				EXPORT	
	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50		240V 50Hz /240 50	

2. Options - Add the required options suffixes from page 724, in Alpha-numeric order.
✓ - available with Lightning Service™ delivery. See Section G for complete details.

VMV luminaires are available in components.

A complete luminaire consists of:

- I. Champ Cover (Mounting Module)
- II. VMV Ballast Housing - Include voltage and required option(s)
- III. Optical & Guard components - Globe, Reflector, Refractor, Guard

I. Champ Cover (Mounting Module)

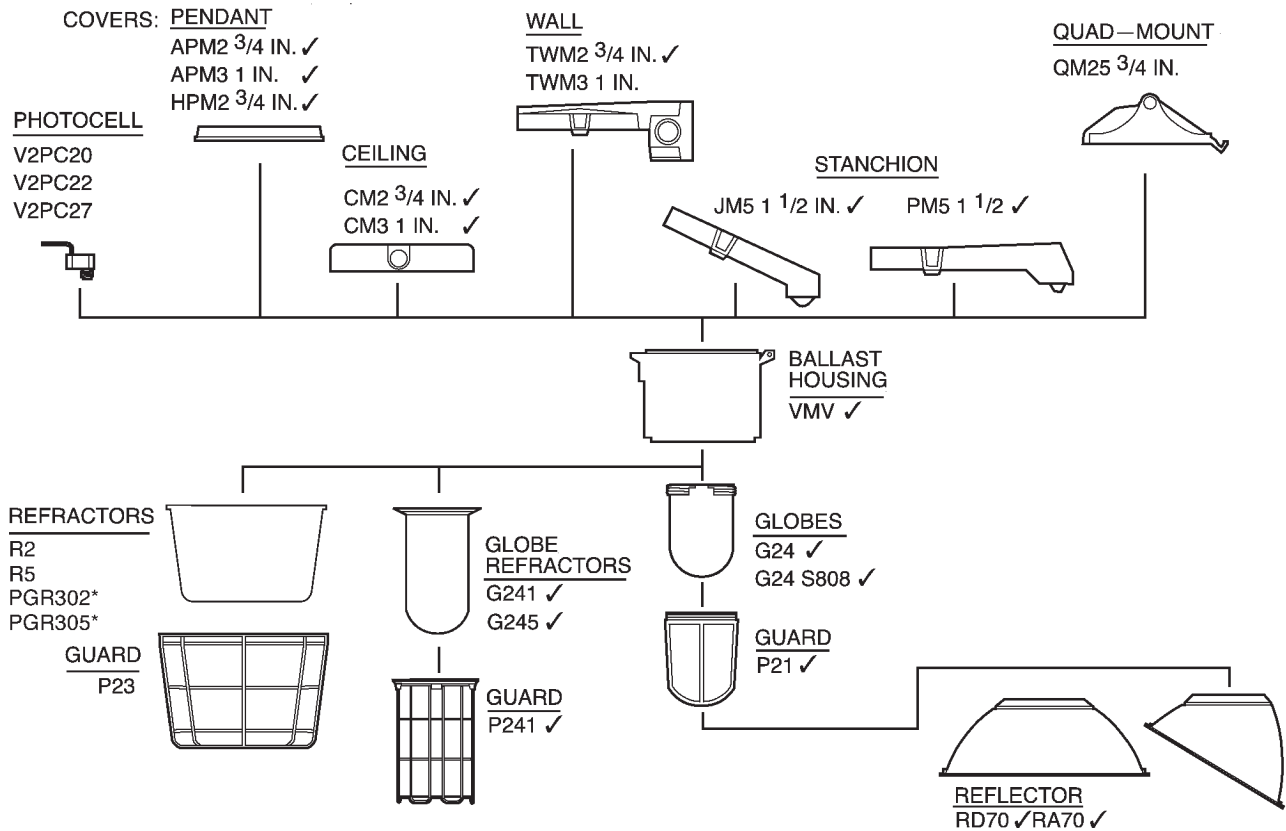
Type	Conduit	Cat. No.
Pendant	3/4 1	APM2 APM3
Flexible Pendant	3/4	HPM2
Ceiling	3/4 1	CM2 CM3
Wall	3/4 1	TWM2 TWM3
Stanchion - 25 Degree Angle	1 1/2	JM5
Stanchion - Straight	1 1/2	PM5
Quad-Mount	3/4	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Cat No.	
		For Globe and Compact Refractor	For Large Refractor
High Pressure Sodium	50	VMVS050/MT	VMVS050/MT-RM
	70	VMVS070/MT	VMVS070/MT-RM
	100	VMVS100/MT	VMVS100/MT-RM
	150	VMVS150/MT LX	VMVS150/MT LX-RM
Metal Halide	70	VMVM070/MT	VMVM070/MT-RM
	100	VMVM100/MT	VMVM100/MT-RM
	175	VMVM175/MT	VMVM175/MT-RM
Mercury Vapor	100	VMVC100/MT	VMVC100/MT-RM
	175	VMVC175/MT	VMVC175/MT-RM

III. Globe, Reflectors, Refractors, Guards

Type	Cat. No.
Globe	G24
Globe - Teflon Coated	G24-S808
Globe Guard	P21
Reflector - Dome	RD70
Reflector - Angle	RA70
Compact Refractor Type 1	G241
Compact Refractor Type 5	G245
Compact Refractor Guard	P241
Large Refractor Type 2	R2
Large Refractor Type 5	R5
Large Refractor Guard	P23
Large Plastic Refractor Type 2	PR2
Large Plastic Refractor Type 3	PR3
Large Plastic Refractor Type 5	PR5



✓ – available with Lightning Service™ delivery. See Section G for complete details.
 * Plastic refractors are for non-hazardous areas only (50-100W Max.)

	LAMP		RATED AMBIENT °C	CLASS I, DIVISION 2				CLASS II, DIVISION 1		CLASS I, ZONE 2			SUPPLY WIRE SUITABLE FOR °C	
				Globe (G24) w/ Reflector (RA70 or RD70)		Refractor (G241 or G245)	Group	Globe (G24) w/ or w/o Reflector (RA70 or RD70)	Simultaneous Presence Class I, Div. 2 Class II, Div.2	Restricted Breathing Suffix S826 w/ Globe (G24)	Factory Sealed Suffix S865 AEx nA nR II	Globe (G24)	Refractor (G241 or G245)	
Cat. No.	Wattage	Type		Globe (G24)										
VMVC100-S712	100	MV	40	T2B	T2B	—				T4	T3	75	—	
VMVC100	100	MV	40	—	—	—				T4	T3	75	75	
VMVC175	175	MV	40	T2	T2	T2B				T3	T3	90	85	
VMVM70	70	MH	40	T3A	T3A	T3A				T5	T3	90	90	
VMVM70	70	MH	55	T3	T3	T3				T4	T3	90	90	
VMVM70	70	MH	65	T3	T3	T3				T4	T3	90	90	
VMVM100	100	MH	40	T2D	T2D	T2D				T4	T3	90	90	
VMVM100-S849	100	MH	40	T2	T2	T2				T4	T3	75	75	
VMVM100	100	MH	55	T2D	T2D	T2D				T4	T3	90	90	
VMVM150	150	MH	40	T2A	T2A	T2B				T3	T3	90	90	
VMVM175	175	MH	40	T2A	T2A	T2B				T3	T3	90	90	
VMVS50	50	HPS	40	T3A	T3A	T3B	EFG	T4A	T3A	T5	T3	75	65	
VMVS50	50	HPS	55	T3A	T3A	T3A	EFG	T4	T3	T5	T3	75	75	
VMVS50	50	HPS	65	T3	T3	T3	EFG	T4	T2D	T5	T3	75	75	
VMVS70	70	HPS	40	T3	T3	T3B	EFG	T3C	T2C	T4	T3	75	65	
VMVS70	70	HPS	55	T3	T3	T3	EFG	T3C	T2B	T4	T3	90	90	
VMVS100	100	HPS	40	T2C	T2C	T2D	EFG	T3A	T2A	T4	T3	90	75	
VMVS100	100	HPS	55	T2B	T2B	T2C	EFG			T3	T3	105	90	
VMVS150	150	HPS	40	T2A	T2A	T2B				T3	T3	90	85	
VMVS150	150	HPS	55	T2	T2	T2A				T3	T3	105	105	
VMVIG055	55	Induction	40	T2C	T2C	—				T6	—	65	—	
VMVIG055	55	Induction	55	T2C	T2C	—				T5	—	65	—	

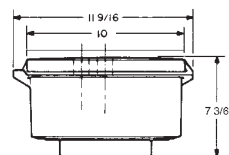
The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL 844 specifies how the temperatures are measured.

The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1 or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with lower temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

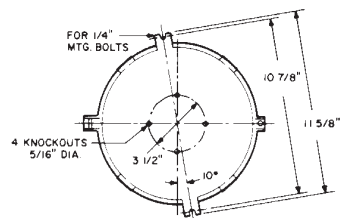
3L 50-175W VMV Series Champ® H.I.D. Luminaires

Dimensions and Weights

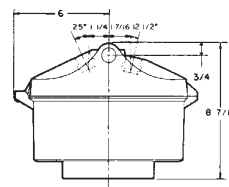
Pendant Mount



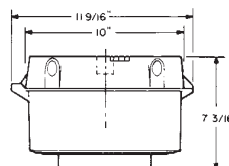
Ceiling Mount Top View



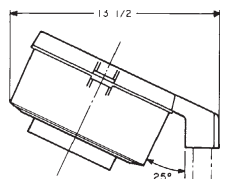
Quad-Mount



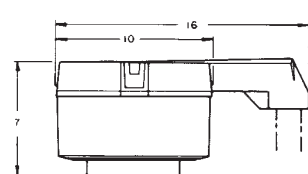
Ceiling Mount



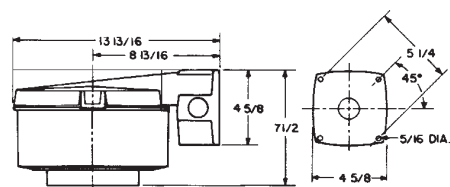
25° Angle Stanchion Mount



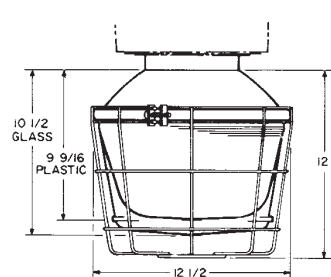
Straight Stanchion Mount



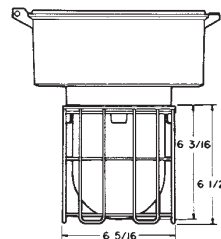
Wall Mount



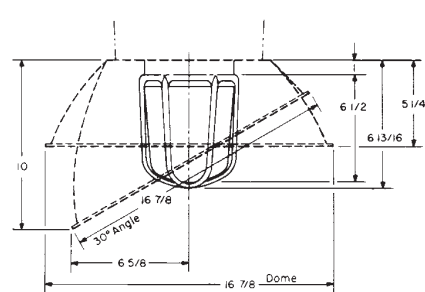
Luminaire With: Refractors, Guard



Compact Refractor



Globe, Guard, Reflectors



Net Luminaire Weights (lbs.):

Luminaire Series	50	70	100	150	175
------------------	----	----	-----	-----	-----

Luminaire with Globe, Guards (lbs):

VMVS	13 1/2	14 1/2	14 1/2	14 1/2	
VMVC			13 3/4		15 1/2
VMVM		13	13 3/4		15 1/2

Luminaire with Glass Refractor (lbs):

VMVS	21 3/4	22 3/4	22 3/4	22 3/4	
VMVC			21 1/2		23 3/4
VMVM		21	21 1/2		23 3/4

Add for mounting modules (lbs):

Pendant	1 1/4		Quad-Mount	3 1/2
Flexible Pendant	1 1/2		Angle Stanchion	3 1/2
Ceiling	2 3/4		Straight Stanchion	4 1/2
Wall	4 1/2			

Add for reflectors (lbs):

Dome	1 1/2		30° Angle	1 1/2
------	-------	--	-----------	-------

Deduct: 1/2 lb. for fixture without P21 Guard

Champ® H.I.D. Luminaires

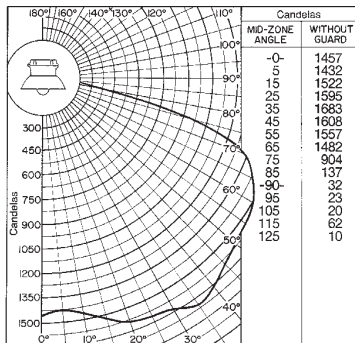
Lamp: 100W/E-23½ high pressure sodium (HPS)

Total bare lamp lumens: 9500

To determine number and placement of luminaires see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for high pressure sodium luminaires with 100W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any Champ Series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers (for use with candela curve only).

Luminaire Series	Lamp Watts	Conversion Factor
VMVS	50	0.42
	70	0.67
	150	1.68

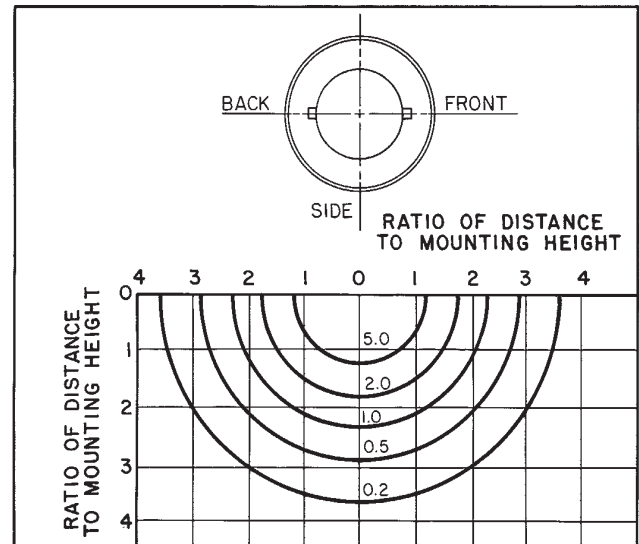
Luminaire spacing ratio: 1.85

Coefficient of Utilization

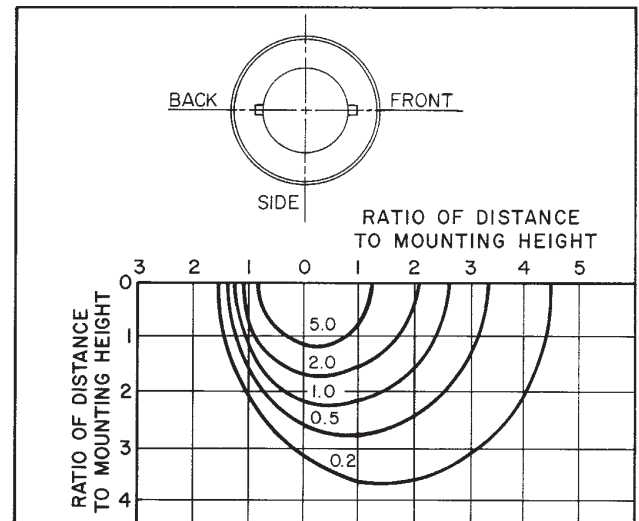
Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Cell	Wall	Room Cavity Ratio				
		1	2	3	4	5
80	50	.823	.707	.610	.529	.464
	30	.784	.646	.538	.451	.384
	10	.749	.594	.482	.391	.324
70	50	.804	.690	.597	.517	.452
	30	.767	.633	.530	.445	.377
	10	.734	.587	.477	.388	.321
50	50	.765	.658	.571	.494	.434
	30	.735	.611	.513	.431	.368
	10	.709	.569	.466	.381	.318
30	50	.731	.629	.546	.473	.416
	30	.708	.591	.497	.419	.357
	10	.685	.555	.456	.375	.312
10	50	.701	.603	.524	.454	.399
	30	.681	.569	.482	.406	.348
	10	.662	.541	.446	.367	.307
0	0	.644	.521	.427	.348	.288
% Reflectance Eff. Cell	Wall	Room Cavity Ratio				
		6	7	8	9	10
80	50	.412	.366	.326	.296	.258
	30	.334	.290	.253	.224	.187
	10	.278	.239	.201	.175	.142
70	50	.403	.359	.320	.291	.252
	30	.329	.285	.250	.221	.187
	10	.274	.235	.200	.174	.142
50	50	.386	.344	.307	.279	.244
	30	.320	.277	.244	.216	.182
	10	.271	.231	.197	.172	.140
30	50	.371	.329	.296	.269	.235
	30	.312	.272	.237	.210	.178
	10	.267	.227	.195	.170	.137
10	50	.357	.319	.285	.260	.227
	30	.304	.266	.232	.206	.173
	10	.263	.224	.192	.167	.135
0	0	.245	.207	.176	.152	.120

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector

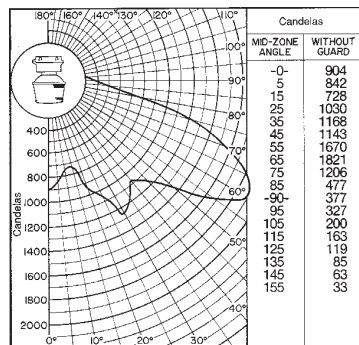


Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	14	0.51
8	1.56	16	0.39
12	0.70		

Lamp: 100W/E-23½ high pressure sodium (HPS)

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire with I.E.S. Type V Glass Refractor

NOTE: Photometric data was developed using a 100 watt clear high pressure sodium lamp (9500 lumens). For other clear lamps, use the following conversion factors (multipliers):

Luminaire Series	Lamp Watts	Conversion Factor
VMVS	50	0.42
	70	0.67
	150	1.68

Luminaire spacing ratio: 2.0

Coefficient of Utilization

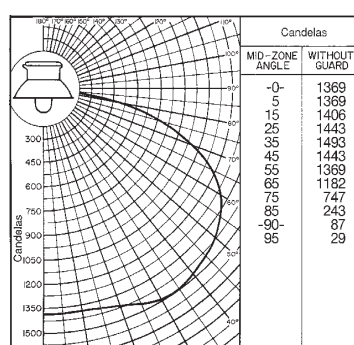
Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Room Cavity Ratio	1	2	3	4	5
80	50	.848	.709	.597	.508	.437
	30	.796	.631	.509	.414	.343
	10	.750	.566	.439	.341	.271
70	50	.818	.682	.576	.489	.419
	30	.770	.611	.493	.402	.331
	10	.726	.552	.428	.334	.264
50	50	.759	.632	.533	.451	.389
	30	.720	.574	.464	.377	.312
	10	.685	.521	.407	.318	.253
30	50	.706	.586	.493	.417	.359
	30	.675	.538	.435	.354	.291
	10	.645	.495	.386	.302	.240
10	50	.658	.544	.457	.385	.331
	30	.632	.504	.408	.331	.274
	10	.608	.469	.366	.286	.227
0	0	.581	.441	.340	.260	.203

% Reflectance Eff. Ceil.	Room Cavity Ratio	6	7	8	9	10
80	50	.384	.337	.299	.272	.238
	30	.292	.249	.214	.189	.159
	10	.226	.189	.154	.132	.103
70	50	.369	.325	.288	.262	.229
	30	.283	.240	.203	.183	.156
	10	.218	.182	.150	.130	.105
50	50	.341	.301	.266	.243	.214
	30	.266	.225	.195	.173	.146
	10	.209	.173	.143	.124	.099
30	50	.316	.277	.248	.225	.198
	30	.249	.213	.182	.161	.136
	10	.199	.163	.136	.117	.093
10	50	.292	.258	.223	.209	.134
	30	.233	.200	.171	.151	.127
	10	.188	.154	.128	.110	.087
0	0	.165	.133	.108	.091	.070

Lamp: 175W/E-28 mercury vapor (MV)

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire with Globe and Dome Reflector

NOTE: Photometric data was developed using a 175 watt diffuse mercury vapor lamp (8600 lumens). For other diffuse lamps, use the following conversion factors (multipliers):

Luminaire Series	Lamp Watts	Conversion Factor
VMVC	100	0.49
VMVM	70	0.65
	100	0.91
	175	1.63

Luminaire spacing ratio: 1.60

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance Eff. Ceil.	Room Cavity Ratio	1	2	3	4	5
80	50	.793	.682	.591	.515	.453
	30	.753	.623	.522	.440	.376
	10	.718	.572	.468	.382	.319
70	50	.775	.667	.580	.505	.442
	30	.738	.611	.514	.435	.370
	10	.705	.566	.463	.379	.316
50	50	.739	.637	.555	.483	.426
	30	.709	.591	.498	.422	.362
	10	.682	.550	.454	.374	.313
30	50	.707	.611	.532	.484	.409
	30	.683	.572	.485	.411	.352
	10	.660	.537	.445	.388	.309
10	50	.679	.588	.512	.446	.394
	30	.658	.553	.471	.400	.345
	10	.639	.525	.436	.362	.304
0	0	.622	.506	.418	.343	.287

% Reflectance Eff. Ceil.	Room Cavity Ratio	6	7	8	9	10
80	50	.403	.359	.320	.291	.253
	30	.328	.285	.250	.221	.185
	10	.275	.236	.199	.174	.142
70	50	.395	.352	.314	.286	.248
	30	.324	.281	.247	.219	.185
	10	.271	.233	.198	.174	.142
50	50	.379	.339	.303	.276	.241
	30	.316	.274	.241	.215	.181
	10	.298	.230	.196	.172	.140
30	50	.366	.325	.293	.266	.233
	30	.309	.268	.235	.209	.177
	10	.265	.226	.195	.170	.138
10	50	.353	.318	.282	.257	.225
	30	.301	.264	.231	.208	.179
	10	.282	.224	.193	.168	.136
0	0	.245	.208	.177	.153	.122

35-150W LMV Series

Champ® H.I.D. Luminaires Medium Base

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (HPS 35, 50W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L

Application:

LMV series *Champ*® luminaires are used:

- in applications involving low luminaire mounting heights or restricted mounting space or where luminaire weight is a factor
- in areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- where combustible dusts are present
- where combustible dusts and flammable vapors are present simultaneously
- in elevated ambient temperatures often found in industrial applications
- in marine applications where water spray and corrosive atmospheres are considerations
- wherever the damaging effects of wind, snow, sleet, or hot sun are found
- in manufacturing plants, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore or dockside installations, cold storage facilities, parking garages or wherever dust, dirt, water, vibration and rough usage are a problem

Features:

- Compact, lightweight design is ideal for low mounting heights.
- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall, straight stanchion, angle stanchion, and quad-mount.
- Wide range of lamp wattages to meet specifiers needs: 35, 50, 70, 100 and 150 watt (HPS); 70 and 100 watt (MH) medium base lamps.
- Hinged ballast housing for ease of installation and maintenance.
- All luminaires designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Low ambient capability to -40°C.
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode.
- Grounding wire for safety.
- Medium base lamp sockets.



Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant, internally fluted glass
- Guards – copper-free aluminum

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120 volts, dual-tap (120/277*), multi-tap*
- 35, 50, 70, 100, 150 watts HPS
- 70 and 100 watts MH

Certifications and Compliances:

- NEC and CEC:
 - Class I, Division 2, Groups A,B,C,D
 - HPS 35W, 50W - Class II, Class III & Simultaneous Presence (Class 1, Division 2 and Class II)
 - Class I Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

Description	Suffix to be Added to Cat. No.
• Restricted Breathing Construction . . .	S826
- Class I Division 2 & Zone 2 Suitability	
- Cooler Operating Temperatures (T-Numbers)	
• Certified for IEC Zone 2	S826TB
- Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT, or TT)	
• Fused – to protect ballast and capacitors against abnormal line conditions	S658*
(Not for use in Canada)	
• Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-100W HPS only	BG
• Factory assembled with H.I.D. lamps installed for additional labor savings.	FA
• Stainless steel insert - top hat with stainless steel threaded insert to attach ballast housing	S806

Accessories:

- See pages 775 and 776 for complete listing

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

3L

35-150W High Pressure Sodium

LMV Series Champ® H.I.D. Luminaires Medium Base

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G; Cl. III & Simultaneous Presence (35W, 50W)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage), 2 and 3. For guards and other optics see LMV Luminaires - Ordering by Components section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G54 Globe and P50 Guard		
	Pendant Mount	3/4	35	LMVS2A035GP	
		1		LMVS3A035GP	
		3/4	50	LMVS2A050GP	
		1		LMVS3A050GP	
		3/4	70	LMVS2A070GP ✓	
		1		LMVS3A070GP ✓	
		3/4	100	LMVS2A100GP ✓	
		1		LMVS3A100GP ✓	
	Flexible Pendant Mount	3/4	35	LMVS2HA035GP	
		3/4	50	LMVS2HA050GP	
		3/4	70	LMVS2HA070GP ✓	
		3/4	100	LMVS2HA100GP ✓	
		3/4	150	LMVS2HA150GP	
	Ceiling Mount Thru-Feed	3/4	35	LMVS2C035GP	
		1		LMVS3C035GP	
		3/4	50	LMVS2C050GP	
		1		LMVS3C050GP	
		3/4	70	LMVS2C070GP ✓	
		1		LMVS3C070GP ✓	
		3/4	100	LMVS2C100GP ✓	
		1		LMVS3C100GP ✓	
	Wall Mount Thru-Feed	3/4	35	LMVS2TW035GP	
		1		LMVS3TW035GP	
		3/4	50	LMVS2TW050GP	
		1		LMVS3TW050GP	
		3/4	70	LMVS2TW070GP ✓	
		1		LMVS3TW070GP ✓	
		3/4	100	LMVS2TW100GP ✓	
		1		LMVS3TW100GP ✓	
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	35	LMVS25Q035GP	
		3/4	50	LMVS25Q050GP	
		3/4	70	LMVS25Q070GP	
		3/4	100	LMVS25Q100GP	
		3/4	150	LMVS25Q150GP	
	Stanchion Mount 25° Angle	1½	35	LMVSJ035GP	
		1½	50	LMVSJ050GP	
		1½	70	LMVSJ070GP ✓	
		1½	100	LMVSJ100GP ✓	
		1½	150	LMVSJ150GP	
	Stanchion Mount Straight	1½	35	LMVSP035GP	
		1½	50	LMVSP050GP	
		1½	70	LMVSP070GP ✓	
		1½	100	LMVSP100GP ✓	
		1½	150	LMVSP150GP	
1. Standard Voltage Ballasts - 60Hz NEC/UL					
Voltage	Multi Tap	Dual Tap	120V	480V	Tri

1. Standard Voltage Ballasts - 60Hz					CEC/CSA (cUL)		
NEC/UL							
Voltage Suffix	Multi Tap /MT	Dual Tap /DT	120V /120	480V /480	Tri Tap /TT	Dual Tap /DT	120V /120

2. 150W HPS Luminaires, 55V Lamps is Standard . 50W HPS luminaire is dual-tap only.
 3. Options - Add the Required Options Suffixes from page 735, In Alpha-numeric Order
 ✓ - available with Lightning Service™ delivery. See Section G for complete details

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright® 2006 Cooper Crouse-Hinds

COOPER Crouse-Hinds

70-100W Metal Halide

LMV Series Champ® H.I.D. Luminaires Medium Base

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L

See Note 1 (to specify voltage), 2 and 3. For guards and other optics see LMV Luminaires - Ordering by Components section.

BASIC CATALOG NUMBER				
Mounting Style	Hub Size	Lamp Watts	With G54 Globe and P50 Guard	
	Pendant Mount	3/4	70	LMVM2A070GP
		1		LMVM3A070GP
		3/4	100	LMVM2A100GP
		1		LMVM3A100GP
	Flexible Pendant Mount	3/4	70	LMVM2HA070GP
		3/4	100	LMVM2HA100GP
	Ceiling Mount Thru-Feed	3/4	70	LMVM2C070GP
		1		LMVM3C070GP
		3/4	100	LMVM2C100GP
		1		LMVM3C100GP
	Wall Mount Thru-Feed	3/4	70	LMVM2TW070GP
		1		LMVM3TW070GP
		3/4	100	LMVM2TW100GP
		1		LMVM3TW100GP
	Stanchion Mount 25° Angle	1½	70	LMVMJ070GP
		1½	100	LMVMJ100GP
	Stanchion Mount Straight	1½	70	LMVMP070GP
		1½	100	LMVMP100GP

Standard Voltage Ballasts - 60Hz					
NEC/UL				CEC/CSA (cUL)	
Voltage Suffix	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT	120V /120

- Options - Add the Required Options Suffixes from page 735 in Alpha-numeric Order
- 70W Ballast not available in 480V.

3L
H.I.D. Lighting

3L LMV Luminaires - Ordering by Components

LMV luminaires are available in components

A complete luminaire consists of:

- I. Champ Cover (mounting module)
- II. LMV Ballast Housing - Include voltage and required option(s)
- III. Globe, Guard, Reflector

I. Champ Cover (Mounting Module):

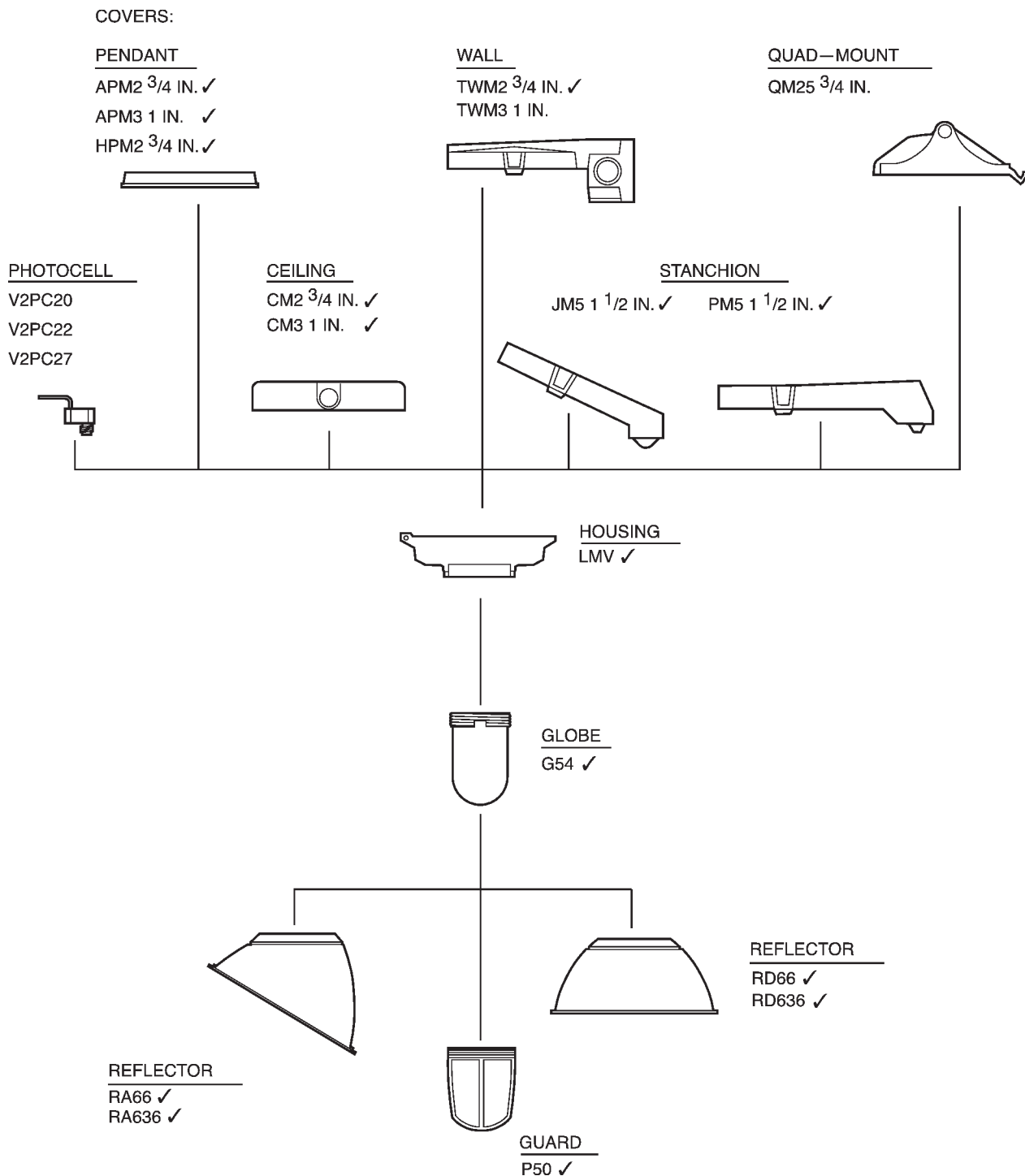
Type	Conduit	Cat. No.
Pendant	¾ 1	APM2 APM3
Flexible Pendant	¾	HPM2
Ceiling	¾ 1	CM2 CM3
Wall	¾ 1	TWM2 TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings: Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	35	LMVS035/MT
	50	LMVS050/MT
	70	LMVS070/MT
	100	LMVS100/MT
	150	LMVS150/MT LX
Metal Halide	70	LMVM070/MT
	100	LMVM100/MT

III. Globe, Guards and Reflectors:

Type	Catalog Number
Globe	G54
Globe Guard	P50
Globe Reflector-Dome	RD636
Globe Reflector-Angle	RA636



✓ – available with Lightning Service™ delivery. See Section G for complete details.

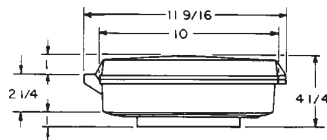
Cat. No.	LAMP		RATED AMBIENT °C	CLASS I, DIVISION 2	CLASS II, DIVISION 1		Simultaneous Presence Class I, Div. 2 Class II, Div. 1	CLASS I, ZONE 2		Supply Wire Suitable for °C
	Wattage	Type			Group	Globe (G54) w/ or w/o Reflector (RA636 or RD636)*		Restricted Breathing Suffix S826 w/ Globe (G54)	Factory Sealed Suffix S865 AEx nA nR II	
LMVS35	35	HPS	40	T3A	EFG	T4A	T2D	T6	T3	N/A
LMVS35	35	HPS	55	T3	EFG	T4	T2C	T5	T3	75
LMVS35	35	HPS	65	T3	EFG	T3C	T2C	T4	T3	85
LMVS50	50	HPS	40	T2D	EFG	T3C	T2B	T5	T3	N/A
LMVS50	50	HPS	55	T2C	—	—	—	T4	T3	75
LMVS50	50	HPS	65	T2C	—	—	—	T4	T3	85
LMVS70	70	HPS	40	T2B	—	—	—	T4	T3	75
LMVS70	70	HPS	55	T2B	—	—	—	T4	T3	85
LMVS100	100	HPS	40	T2	—	—	—	T4	T3	85
LMVS100	100	HPS	50	—	—	—	—	T3	T3	90
LMVM70	70	MH	40	T2B	—	—	—	T4	T3	75
LMVM70	70	MH	55	T2B	—	—	—	T4	T3	85
LMVM100	100	MH	40	—	—	—	—	T3	T3	85
LMVM150	150	HPS	40	T1 350°C	—	—	—	—	—	85

The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL 844 specifies how the temperatures are measured.

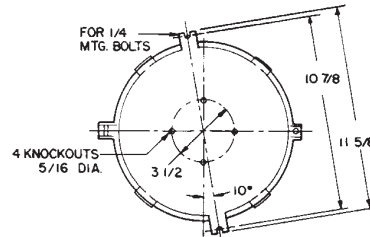
The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1 or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with lower temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

Dimensions

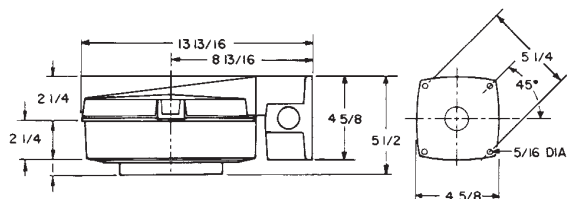
Pendant Mount



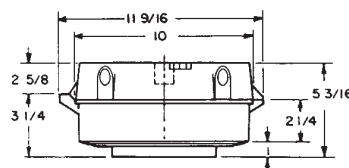
Top View



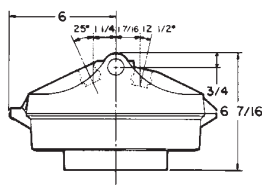
Wall Mount



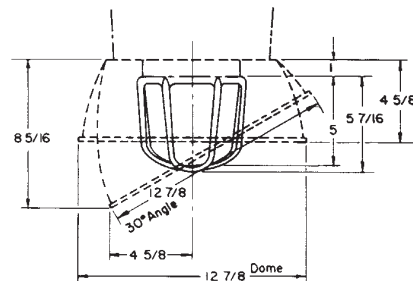
Ceiling Mount



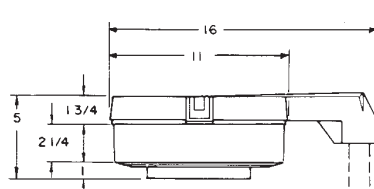
Quad-Mount



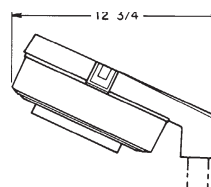
Luminaire with Globe, Guard, Reflectors



Straight Stanchion Mount



25° Angle Stanchion Mount



Luminaire Net Weights:

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)
LMVS	35	7 1/4
	50	7 3/4
	70	8 1/4
	100	8 3/4
	150	9 1/4
LMVM	70	9
	100	9

Add for mounting modules (lbs.)

Pendant	1 1/4	Wall	4 1/2
Flexible Pendant	1 1/2	Angle Stanchion	3 1/2
Ceiling	2 3/4	Straight Stanchion	4 1/2
Quad-Mount	3 1/2		

Add for reflectors (lbs.):

Dome 1.0 30° Angle 1.0

Deduct for luminaire without guard (lbs.):
P50 Guard 1/2

Champ® H.I.D. Luminaires

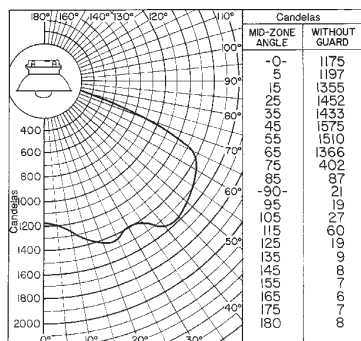
Lamp: 100W/E-17 high pressure sodium (HPS)

Total bare lamp lumens: 9500

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for high pressure sodium luminaires with 100W/E-17 clear lamps. Use conversion factors (multipliers) shown below for other lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* Series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers (for use with candlepower curves only).

Luminaire Series	Lamp Watts	Conversion Factors
LMVS	35	0.24
	50	0.42
	70	0.67
	150	1.68

Luminaire spacing ratio: 2.0

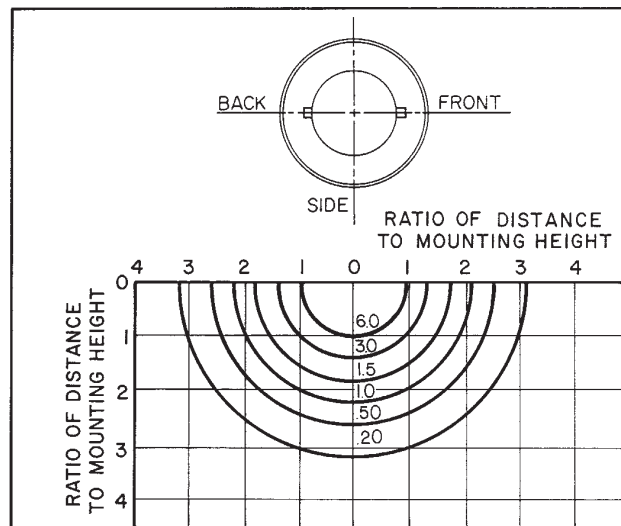
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

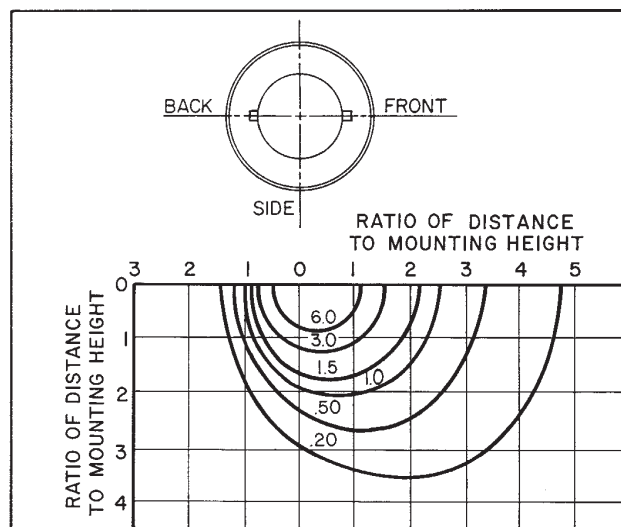
% Reflectance Eff. Cell	Room Cavity Ratio	1	2	3	4	5
80	50	.722	.628	.545	.473	.413
	30	.691	.579	.487	.408	.346
	10	.663	.537	.441	.358	.296
70	50	.705	.613	.534	.463	.403
	30	.676	.568	.479	.403	.340
	10	.650	.531	.436	.355	.293
50	50	.671	.585	.511	.442	.387
	30	.647	.548	.464	.390	.332
	10	.627	.514	.426	.349	.289
30	50	.641	.560	.489	.424	.371
	30	.623	.529	.450	.379	.322
	10	.605	.501	.416	.342	.284
10	50	.614	.537	.470	.407	.356
	30	.598	.510	.436	.367	.311
	10	.584	.488	.407	.335	.279
0	0	.568	.471	.391	.319	.263

% Reflectance Eff. Cell	Room Cavity Ratio	6	7	8	9	10
80	50	.366	.324	.288	.261	.226
	30	.300	.259	.225	.199	.165
	10	.253	.215	.180	.156	.127
70	50	.358	.318	.282	.256	.221
	30	.295	.255	.223	.196	.165
	10	.249	.212	.179	.156	.126
50	50	.343	.305	.271	.246	.214
	30	.288	.248	.217	.192	.161
	10	.246	.209	.177	.154	.124
30	50	.330	.292	.261	.237	.206
	30	.280	.243	.210	.186	.157
	10	.242	.205	.175	.152	.122
10	50	.317	.282	.251	.228	.199
	30	.272	.237	.206	.182	.152
	10	.238	.202	.172	.149	.120
0	0	.223	.187	.158	.136	.107

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	14	0.51
8	1.56	16	0.39
12	0.70		

50-250W DMV Series

Champ®

H.I.D. Lighting Luminaires
Enclosed & Gasketed

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L

Application:

DMV series *Champ* luminaires are used:

- in applications made hazardous by the presence of combustible dusts
- in areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- in marine applications where water spray and corrosive atmospheres are considerations
- in areas where combustible dusts and flammable vapors are present simultaneously
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion and rough usage are problems
- wherever the damaging effects of wind, snow, sleet, or hot sun are found
- in grain handling, storage and processing plants, coal preparation plants, coal conveying areas, food processing plants, manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, offshore, dockside, and harbor installations, and other heavy industrial applications

Features:

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements to suit any lighting layout – pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount.
- Wide range of light sources and wattages to meet specifiers needs: 50, 70, 100, 150 watt high pressure sodium (HPS); 100, 175, 250 watt mercury vapor (MV); 70, 100, 175, 250 watt metal halide.
- Hinged ballast housing for ease of installation and maintenance.
- All luminaires designed to perform in a 40° C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65° C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Low ambient capability to (-40° C.)
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware. Will not chip, peel, dent, rust, or corrode.
- Mogul base porcelain lamp socket.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.

DMV Series

* Now available with Champ Induction Lighting System. See Section 5L.



- Grounding wire for safety.
- Ballasts available in voltages of 120, 208, 240, 277, 347, 480, 600 and multi-tap.*

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1% copper)
- Guard and exterior hardware – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant, internally fluted glass

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* material – high reflectance white
- Stainless steel – natural

Electrical Ratings:

- 120, multi-tap* (120, 208, 240 and 277), tri-tap (120, 208, 347) 208, 240, 277, 347, 480, 600 volts
- 50-250W HPS; 100-250W† MV; 70-250W‡ MH

Certifications and Compliances:

- NEC & CEC:
 - Class I, Division 2, Groups A,B,C,D
 - 175W max - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
 - Class I Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

- | Description | Suffix to be Added to Cat. No. |
|---|--------------------------------|
| • Restricted Breathing Construction. | S826 |
| - Class I Division 2 & Zone 2 Suitability | |
| - Cooler Operating Temperatures (T-Numbers) | |
| • Restricted Breathing/Non-Sparking. | S865 |
| - Class I Division 2 & Zone 2 | |
| - Provides T3 code without conduit or cable seals | |
| • Certified for IEC Zone 2 | S826TB |
| - Furnished with terminal block, crimp terminals and dedicated voltage ballasts (no MT, DT or TT) | |
| • Fused – to protect ballast and capacitors against abnormal line conditions | S658* |
| (Not for use in Canada) | |
| • Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150W LX HPS only | BG |
| • Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only | IR |
| • Quartz auxiliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For <i>non-hazardous</i> locations only. (Note: QTZ lamp not included; use 100W single ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC) Consult factory for top-hat limitations. | QTZ |
| • Factory assembled with H.I.D. lamps installed for additional labor savings. | FA |
| • TEFLON® coated globe-for additional protection against breakage. For use with 50-150W HPS, 70-175W MH and 100-175W MV | S808 |
| NOTE: Some T-numbers (operating temperatures) change. See "Temperature Performance Data" section. | |
| • Stainless steel insert - top hat with stainless steel threaded insert to attach ballast housing | S806 |
| (Note: BG and IR options cannot be used together. IR and QTZ options cannot be used together.) | |

Accessories:

- See pages 775 and 776 for complete listing.
- See page 749 for family tree.
- ♦ TEFLON is a registered trademark of E.I. duPont Co.
- * When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

3L H.I.D. Lighting

3L

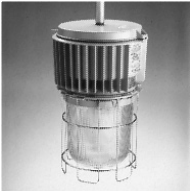
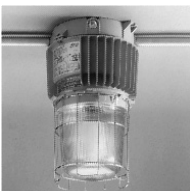
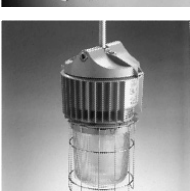
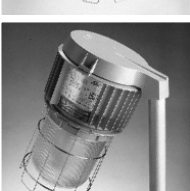
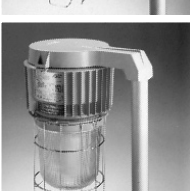
50-150W High Pressure Sodium

DMV Series
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G; Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

See notes 1 (to specify voltage) 2 and 3. For guards and other optics see DMV Luminaires - Ordering by Components section.

BASIC CATALOG NUMBER

	Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor
	Pendant Mount	3/4	50	DMVS2A050GP	DMVS2A050GR305
		1		DMVS3A050GP	DMVS3A050GR305
		3/4	70	DMVS2A070GP	DMVS2A070GR305
		1		DMVS3A070GP	DMVS3A070GR305
		3/4	100	DMVS2A100GP✓	DMVS2A100GR305✓
		1		DMVS3A100GP✓	DMVS3A100GR305✓
	3/4	150	DMVS2A150GP✓	DMVS2A150GR305✓	
	1		DMVS3A150GP✓	DMVS3A150GR305✓	
	Flexible Pendant Mount	3/4	50	DMVS2HA050GP	DMVS2HA050GR305
		3/4	70	DMVS2HA070GP	DMVS2HA070GR305
		3/4	100	DMVS2HA100GP✓	DMVS2HA100GR305✓
		3/4	150	DMVS2HA150GP✓	DMVS2HA150GR305✓
	Ceiling Mount Thru-Feed	3/4	50	DMVS2C050GP	DMVS2C050GR305
		1		DMVS3C050GP	DMVS3C050GR305
		3/4	70	DMVS2C070GP	DMVS2C070GR305
		1		DMVS3C070GP	DMVS3C070GR305
		3/4	100	DMVS2C100GP✓	DMVS2C100GR305✓
		1		DMVS3C100GP✓	DMVS3C100GR305✓
	3/4	150	DMVS2C150GP✓	DMVS2C150GR305✓	
	1		DMVS3C150GP✓	DMVS3C150GR305✓	
	Wall Mount Thru-Feed	3/4	50	DMVS2TW050GP	DMVS2TW050GR305
		1		DMVS3TW050GP	DMVS3TW050GR305
		3/4	70	DMVS2TW070GP	DMVS2TW070GR305
		1		DMVS3TW070GP	DMVS3TW070GR305
		3/4	100	DMVS2TW100GP✓	DMVS2TW100GR305✓
		1		DMVS3TW100GP✓	DMVS3TW100GR305✓
	3/4	150	DMVS2TW150GP✓	DMVS2TW150GR305✓	
	1		DMVS3TW150GP✓	DMVS3TW150GR305✓	
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	50	DMVS25Q050GP	DMVS25Q050GR305
		3/4	70	DMVS25Q070GP	DMVS25Q070GR305
		3/4	100	DMVS25Q100GP	DMVS25Q100GR305
		3/4	150	DMVS25Q150GP	DMVS25Q150GR305
	Stanchion Mount 25° Angle	1½	50	DMVSJ050GP	DMVSJ050GR305
		1½	70	DMVSJ070GP	DMVSJ070GR305
		1½	100	DMVSJ100GP✓	DMVSJ100GR305✓
		1½	150	DMVSJ150GP✓	DMVSJ150GR305✓
	Stanchion Mount Straight	1½	50	DMVSP050GP	DMVSP050GR305
		1½	70	DMVSP070GP	DMVSP070GR305
		1½	100	DMVSP100GP✓	DMVSP100GR305✓
		1½	150	DMVSP150GP✓	DMVSP150GR305✓
1. Standard Voltage Ballasts - 60Hz					
NEC/UL				CEC/CSA (cUL)	

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz				CEC/CSA (cUL)			
	Multi Tap /MT	Dual Tap /DT	120V /120	480V /480	Tri Tap /TT	Dual Tap /DT	120V /120	
Optional Voltage Ballasts - 50 or 60Hz								
CEC/CSA (cUL) - CWI Isolated Ballasts					EXPORT			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. 150W HPS Luminaires, 55V Lamps is Standard, for 100V lamps - Add suffix "CE". 50W HPS luminaire is dual-tap only.

3. Options - Add the Required Options Suffixes from page 743, in Alpha-numeric order.

✓ - available with Lightning Service™ delivery. See Section G for details.

150-250W Pulse Start Metal Halide

DMV Series
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L

See Notes 1 (to specify voltage) and 2. For Guards and other optics see DMV Luminaires - Ordering by Components Section

BASIC CATALOG NUMBER

	Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
	Pendant Mount	3/4	150	DMVM2A150GP-S828	DMVM2A150GR305-S828
		1		DMVM3A150GP-S828	DMVM3A150GR305-S828
		3/4	175	DMVM2A175GP-S828	DMVM2A175GR305-S828
		1		DMVM3A175GP-S828	DMVM3A175GR305-S828
		3/4	200	DMVM2A200GP-S828	DMVM2A200GR305-S828
		1		DMVM3A200GP-S828	DMVM3A200GR305-S828
	Flexible Pendant Mount	3/4	150	DMVM2HA150GP-S828	DMVM2HA150GR305-S828
		3/4	175	DMVM2HA175GP-S828	DMVM2HA175GR305-S828
		3/4	200	DMVM2HA200GP-S828	DMVM2HA200GR305-S828
		3/4	250	(Use Ceiling Mount) - Ceiling Mount has pendant conduit hub	
		1		(Use Ceiling Mount)	
	Ceiling Mount Thru-Feed	3/4	150	DMVM2C150GP-S828	DMVM2C150GR305-S828
		1		DMVM3C150GP-S828	DMVM3C150GR305-S828
		3/4	175	DMVM2C175GP-S828	DMVM2C175GR305-S828
		1		DMVM3C175GP-S828	DMVM3C175GR305-S828
		3/4	200	DMVM2C200GP-S828	DMVM2C200GR305-S828
		1		DMVM3C200GP-S828	DMVM3C200GR305-S828
	Wall Mount Thru-Feed	3/4	150	DMVM2TW150GP-S828	DMVM2TW150GR305-S828
		1		DMVM3TW150GP-S828	DMVM3TW150GR305-S828
		3/4	175	DMVM2TW175GP-S828	DMVM2TW175GR305-S828
		1		DMVM3TW175GP-S828	DMVM3TW175GR305-S828
		3/4	200	DMVM2TW200GP-S828	DMVM2TW200GR305-S828
		1		DMVM3TW200GP-S828	DMVM3TW200GR305-S828
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	150	DMVM25Q150GP-S828	DMVM25Q150GR305-S828
		3/4	175	DMVM25Q175GP-S828	DMVM25Q175GR305-S828
		3/4	200	DMVM25Q200GP-S828	DMVM25Q200GR305-S828
		3/4	250	DMVM25Q250GP-S828	DMVM25Q250GR305-S828
	Stanchion Mount 25° Angle	1½	150	DMVMJ150GP-S828	DMVMJ150GR305-S828
		1½	175	DMVMJ175GP-S828	DMVMJ175GR305-S828
		1½	200	DMVMJ200GP-S828	DMVMJ200GR305-S828
		1½	250	DMVMJ250GP-S828	DMVMJ250GR305-S828
	Stanchion Mount Straight	1½	150	DMVMP150GP-S828	DMVMP150GR305-S828
		1½	175	DMVMP175GP-S828	DMVMP175GR305-S828
		1½	200	DMVMP200GP-S828	DMVMP200GR305-S828
		1½	250	DMVMP250GP-S828	DMVMP250GR305-S828

1.

Standard Voltage Ballasts - 60Hz
NEC/UL

CEC/CSA (cUL)

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz				CEC/CSA (cUL)	
	Multi Tap /MT	120V /120	480V /480		Tri Tap /TT	120V /120
Optional Voltage Ballasts - 50 or 60Hz						
EXPORT						
Voltage Suffix	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50		240V 50Hz /240 50	

2. Options - Add the Required Options Suffixes for page 743 in Alpha-numeric Order

3L

70-250W Metal Halide

DMV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage), 2 and 3. For Guards and other optics see DMV Luminaires - Ordering by Components Section

BASIC CATALOG NUMBER

	Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
	Pendant Mount	¾	70	DMVM2A070GP	DMVM2A070GR305
		1		DMVM3A070GP	DMVM3A070GR305
		¾	100	DMVM2A100GP	DMVM2A100GR305
		1		DMVM3A100GP	DMVM3A100GR305
		¾	175	DMVM2A175GP	DMVM2A175GR305
		1		DMVM3A175GP	DMVM3A175GR305
		¾	250	(Use Ceiling Mount) (Use Ceiling Mount)	- Ceiling Mount has pendant conduit hub
	Flexible Pendant Mount	¾	70	DMVM2HA070GP	DMVM2HA070GR305
		¾	100	DMVM2HA100GP	DMVM2HA100GR305
		¾	175	DMVM2HA175GP	DMVM2HA175GR305
		¾	250	(Use Ceiling Mount)	- Ceiling Mount has pendant conduit hub
	Ceiling Mount Thru-Feed	¾	70	DMVM2C070GP	DMVM2C070GR305
		1		DMVM3C070GP	DMVM3C070GR305
		¾	100	DMVM2C100GP	DMVM2C100GR305
		1		DMVM3C100GP	DMVM3C100GR305
		¾	175	DMVM2C175GP	DMVM2C175GR305
		1		DMVM3C175GP	DMVM3C175GR305
		¾	250	DMVM2C250GP DMVM3C250GP	DMVM2C250GR305 DMVM3C250GR305
	Wall Mount Thru-Feed	¾	70	DMVM2TW070GP	DMVM2TW070GR305
		1		DMVM3TW070GP	DMVM3TW070GR305
		¾	100	DMVM2TW100GP	DMVM2TW100GR305
		1		DMVM3TW100GP	DMVM3TW100GR305
		¾	175	DMVM2TW175GP	DMVM2TW175GR305
		1		DMVM3TW175GP	DMVM3TW175GR305
		¾	250	DMVM2TW250GP DMVM3TW250GP	DMVM2TW250GR305 DMVM3TW250GR305
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	¾	70	DMVM25Q070GP	DMVM25Q070GR305
		¾	100	DMVM25Q100GP	DMVM25Q100GR305
		¾	175	DMVM25Q175GP	DMVM25Q175GR305
		¾	250	DMVM25Q250GP	DMVM25Q250GR305
	Stanchion Mount 25° Angle	1½	70	DMVMJ070GP	DMVMJ070GR305
		1½	100	DMVMJ100GP	DMVMJ100GR305
		1½	175	DMVMJ175GP	DMVMJ175GR305
		1½	250	DMVMJ250GP	DMVMJ250GR305
	Stanchion Mount Straight	1½	70	DMVMP070GP	DMVMP070GR305
		1½	100	DMVMP100GP	DMVMP100GR305
		1½	175	DMVMP175GP	DMVMP175GR305
		1½	250	DMVMP250GP	DMVMP250GR305

1.

Standard Voltage Ballasts - 60Hz
NEC/UL

CEC/CSA (cUL)

1.

Standard Voltage Ballasts - 60Hz

NEC/UL

CEC/CSA (cUL)

Voltage Suffix	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT	120V /120
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Optional Voltage Ballasts - 50 or 60Hz

CEC/CSA (cUL) - CWI Isolated Ballasts - 175W and

250W MH only

EXPORT

Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50
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2. 70W Ballast not available in 480V

3. Options - Add the required options suffixes from page 743, in Alpha-numeric order.

US: 1-866-764-5454 CAN: 1-800-265-0502 Copyright© 2006 Cooper Crouse-Hinds


COOPER Crouse-Hinds

100-250W Mercury Vapor

DMV Series

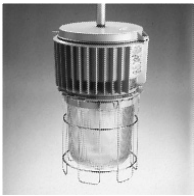
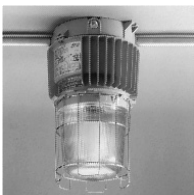
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

3L

See Note 1 (to specify voltage) and 2. For Guards and other optics see DMV Luminaires - Ordering by Components Section

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
	Pendant Mount	3/4 1	DMVC2A100GP	DMVC2A100GR305
			DMVC3A100GP	DMVC3A100GR305
	3/4 1	175	DMVC2A175GP	DMVC2A175GR305
			DMVC3A175GP	DMVC3A175GR305
	3/4 1	250	DMVC2A250GP	DMVC2A250GR305
			DMVC3A250GP	DMVC3A250GR305
	Flexible Pendant Mount	3/4	DMVC2HA100GP	DMVC2HA100GR305
		3/4	DMVC2HA175GP	DMVC2HA175GR305
		3/4	DMVC2HA250GP	DMVC2HA250GR305
	Ceiling Mount Thru-Feed	3/4	DMVC2C100GP	DMVC2C100GR305
		1	DMVC3C100GP	DMVC3C100GR305
		3/4	DMVC2C175GP	DMVC2C175GR305
		1	DMVC3C175GP	DMVC3C175GR305
		3/4	DMVC2C250GP	DMVC2C250GR305
		1	DMVC3C250GP	DMVC3C250GR305
	Wall Mount Thru-Feed	3/4	DMVC2TW100GP	DMVC2TW100GR305
		1	DMVC3TW100GP	DMVC3TW100GR305
		3/4	DMVC2TW175GP	DMVC2TW175GR305
		1	DMVC3TW175GP	DMVC3TW175GR305
		3/4	DMVC2TW250GP	DMVC2TW250GR305
		1	DMVC3TW250GP	DMVC3TW250GR305
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle	3/4	DMVC25Q100GP	DMVC25Q100GR305
		3/4	DMVC25Q175GP	DMVC25Q175GR305
		3/4	DMVC25Q250GP	DMVC25Q250GR305
	Stanchion Mount 25° Angle	1½	DMVCJ100GP	DMVCJ100GR305
		1½	DMVCJ175GP	DMVCJ175GR305
		1½	DMVCJ250GP	DMVCJ250GR305
	Stanchion Mount Straight	1½	DMVCP100GP	DMVCP100GR305
		1½	DMVCP175GP	DMVCP175GR305
		1½	DMVCP250GP	DMVCP250GR305

1.	Standard Voltage Ballasts - 60Hz				
	NEC/UL			CEC/CSA (cUL)	
	Voltage Suffix	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT 120V /120
2.	Optional Voltage Ballasts - 50 or 60Hz				
	EXPORT				
	Voltage Suffix	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

Options - Add the required options suffixes from page 743, in Alpha-numeric order.

3L DMV Luminaires - Ordering by Components

DMV luminaires are available in components

A complete luminaire consists of:

- I. Champ Cover (mounting module)
- II. DMV Ballast Housing - Include voltage and required option(s)
- III. Globe, Refractor, Guard, Reflector

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾ 1	APM2 APM3
Flexible Pendant	¾	HPM2
Ceiling	¾ 1	CM2 CM3
Wall	¾ 1	TWM2 TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	50	DMVS050/MT
	70	DMVS070/MT
	100	DMVS100/MT
	150	DMVS150/MT LX
	250	DMVS250/MT
Metal Halide	70	DMVM070/MT
	100	DMVM100/MT
	175	DMVM175/MT
	250	DMVM250/MT
Mercury Vapor	100	DMVC100/MT
	175	DMVC175/MT
	250	DMVC250/MT

III. Globe, Refractors, Reflectors, Guards

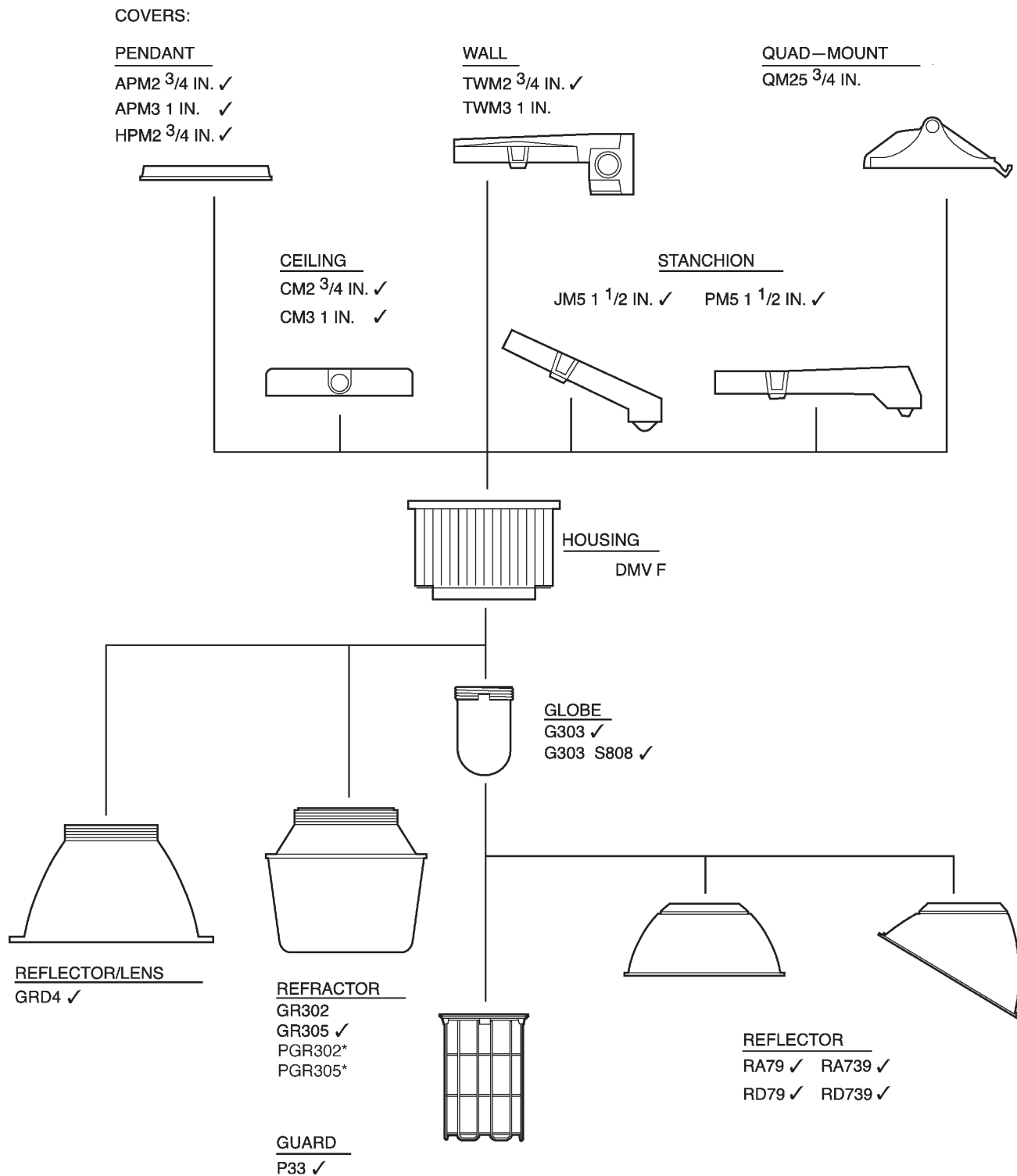
Type	Catalog Number
Globe	G303
Globe - Teflon Coated	G303-S808
Globe Guard	P33
Reflector-Dome	RD739
Reflector-Angle	RA739
Refractor - Type 2	GR302
Refractor - Type 5	GR305
Large Plastic Refractor Type 2	PGR302
Large Plastic Refractor Type 3	PGR303
Large Plastic Refractor Type 5	PGR305
Refractor Guard	P23
High Bay Reflector/Lens	GRD4

50-250W DMV Series

Champ® H.I.D. Luminaires

Family Tree

3L



3L H.I.D. Lighting

✓ – available with Lightning Service™ delivery. See Section G for complete details.
 * Plastic refractors are for non-hazardous areas only (50-100W Max.)

Cat. No.	LAMP		RATED AMBIENT °C	CLASS I, DIVISION 2			CLASS II, DIVISION 1		Simultaneous Presence Class I, Div.2 Class II, Div.1 (with G303 Globe only)	CLASS I, ZONE 2			Supply Wire Suitable for °C
	Wattage	Type		Globe (G303) w/ or w/o Reflector (RA739 or RD739)*	Reflector (GR302 or GR305)	Group	Refractor (G302 or G305) or Globe (G303)**	Globe (G303) with Reflector (RA739 or RD739)		Restricted Breathing Suffix S826 w/ Globe (G303)	Globe (G303) with Reflector (RA739 or RD739)	Factory Sealed Suffix S865 AEx nA nR II	
DMVS50	50	HPS	40	T3A	T3A	EFG	T6	T6	T3A	T6	T6	T3	75
DMVS50	50	HPS	55	T3	T3	EFG	T5	T5	T3	T5	T5	T3	85
DMVS50	50	HPS	65	T3	T3	EFG	T4A	T4A	T3	T5	T5	T3	90
DMVS70	70	HPS	40	T3A	T3A	EFG	T6	T6	T3A	T6	T6	T3	75
DMVS70	70	HPS	55	T3	T3	EFG	T5	T5	T3	T5	T5	T3	85
DMVS70	70	HPS	65	T3	T3	EFG	T4A	T4A	T3	T5	T5	T3	90
DMVS100	100	HPS	40	T2D	T2D	EFG	T5	T5	T3D	T6	T6	T3	75
DMVS100	100	HPS	55	T2C	T2C	EFG	T4A	T4A	T2C	T5	T5	T3	85
DMVS100	100	HPS	65	T2C	T2C	—	—	—	—	T4	T4	T3	90
DMVS150	150	HPS	40	T2B	T2B	EFG	T3C	T3C	T2A	T5	T5	T3	75
DMVS150	150	HPS	55	T2B	T2B	EFG	T4A	—	—	T4	T4	T3	85
DMVS150	150	HPS	65	T2A	T2B	EFG	—	—	—	—	—	T3	85
DMVC100	100	MV	40	T3	T3	EFG	T4A	T4A	T2B	T5	T5	T3	75
DMVC100	100	MV	55	T2D	T2D	EFG	T4	T4	T2B	T4	T4	T3	85
DMVC100	100	MV	65	T2C	T2C	EFG	T3C	T3C	T2B	T4	T4	T3	90
DMVC175	175	MV	40	T2A	T2	EFG	T3B	T3C	T2A	T4	T4	T3	75
DMVC175	175	MV	55	T2A	T2	EFG	T4	—	—	T4	T4	T3	85
DMVC175	175	MV	65	T2A	T2	—	—	—	—	T3	T3	T3	90
DMVC250	250	MV	40	T1	—	—	—	—	—	T3	T3	T3	85
DMVC250	250	MV	55	T1	—	—	—	—	—	T3	T3	T3	110
DMVM70	70	MH	40	T3C*	T3C	—	—	—	—	T6	T6	T3	60
DMVM70	70	MH	55	T3B*	T3C	—	—	—	—	T5	T5	T3	75
DMVM70	70	MH	65	T3A*	T3A	—	—	—	—	T5	T5	T3	85
DMVM100	100	MH	40	T3*	T3A	—	—	—	—	T5	T5	T3	60
DMVM100	100	MH	55	T3*	T3A	—	—	—	—	T5	T5	T3	75
DMVM100	100	MH	65	T2D*	T2D	—	—	—	—	T4	T4	T3	85
DMVM175	175	MH	40	T2B*	T2	EFG	T3C	T3C	T2A	T4	T4	T3	85
DMVM175	175	MH	55	T2A*	T2	EFG	T4	—	—	T4	T4	T3	85
DMVM175	175	MH	65	T2A*	T2	—	—	—	—	T3	T3	T3	90
DMVM200	200	MH	40	T2	—	—	—	—	—	T4	T4	T3	75
DMVM200	200	MH	55	T1 (325)	—	—	—	—	—	T3	T3	T3	90
DMVM250	250	MH	40	T2	—	—	—	—	—	T4	T4	T3	75
DMVM250	250	MH	55	T1 (325)	—	—	—	—	—	T3	T3	T3	90
DMVF26	2/13 (26)	CF	40	T3A	—	EFG	T6	T6	—	T6	T6	T3	60
DMVF39	3/13 (39)	CF	40	T3A	—	EFG	T6	T6	—	T6	T6	T3	60
DMVF52	2/26 (52)	CF	40	T3	—	EFG	T6	—	—	T6	T6	T3	60
DMVF64	2/32 (64)	CF	40	T3	—	EFG	T6	—	—	T6	T6	T3	60
DMVIG85	85	Induction	40	T3	—	—	—	—	—	T6	T6	—	60
DMVIG165	165	Induction	40	T3	—	—	T2D	—	T2D	T5	—	—	75

The Class I, Division 2 T-codes apply to luminaires without the restricted breathing (S826) or factory sealed (S865) options. These luminaires are listed to UL 844. UL 844 specifies how the temperatures are measured.

The Class I, Zone 2 T-codes are for luminaires that are additionally listed to UL 60079-15 that specify a different method for measuring temperatures. Since NEC® 501.1 states that equipment "...for use in Class I, Zone 0, 1 or 2 locations shall be permitted in Class I, Division 2 locations..." then these luminaires are suitable for Class I, Division 2 but with lower temperature ratings. They also have the advantage of meeting the more rigorous mechanical tests of UL 844.

* All DMVM 175W and below MH luminaires provided with Catalog number G303-S808 have a T2A T-code.

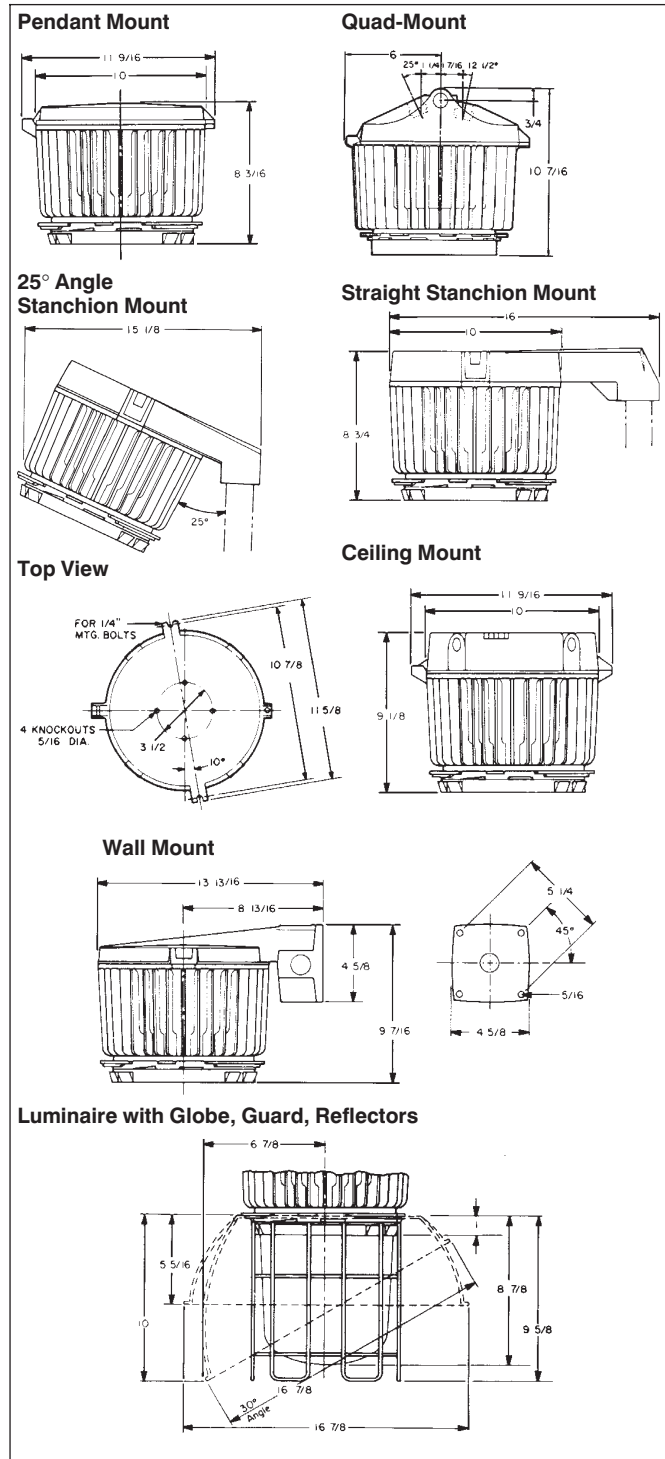
** For use with refractor only when this table indicates by means of a T-code that the refractor is suitable for use with Class I, Division 2 luminaires.

50-250W DMV Series

Champ® H.I.D. Luminaires Dimensions and Weights

3L

DMV Dimensions



Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)	Lamp Watts	Luminaire with Globe, Guard (lbs.)
DMVS	50	23	70	23 1/16
	100	24 1/16	150	26 1/8
DMVC	100	21 1/16	175	22 1/4
	250	24		
DMVM	70	21	100	21 1/16
	175	22 1/4	250	24

Add for mounting modules (lbs.):

Pendant	1 1/4	Flexible Pendant	1 1/2
Ceiling	2 3/4	Wall	4 1/2
Quad Mount	3 1/2	Angle Stanchion	3 1/2
Straight Stanchion	4 1/2		

Add for reflectors (lbs.):

Dome	1 1/4	30° Angle	1 3/4
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Deduct: 1 lb. for luminaire without P33 Guard.

Add: 5 1/2 lbs. for luminaire with GR305 refractor.

Champ® H.I.D. Luminaires

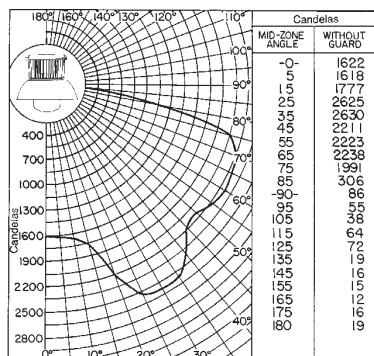
Lamp: 150W/E-23-1/2 clear high pressure sodium (HPS)

Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for high pressure sodium luminaires with 150W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaires.

Luminaire with Globe and Dome Reflector



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
DMVS	50	0.25
	70	0.40
	100	0.59

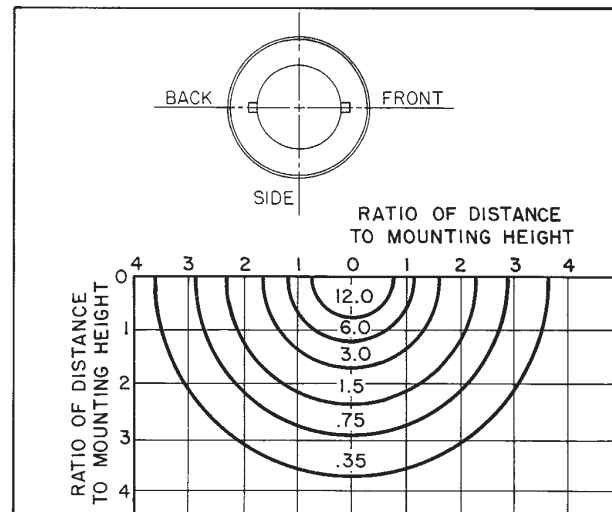
Luminaire spacing ratio: 1.90

Coefficient of Utilization

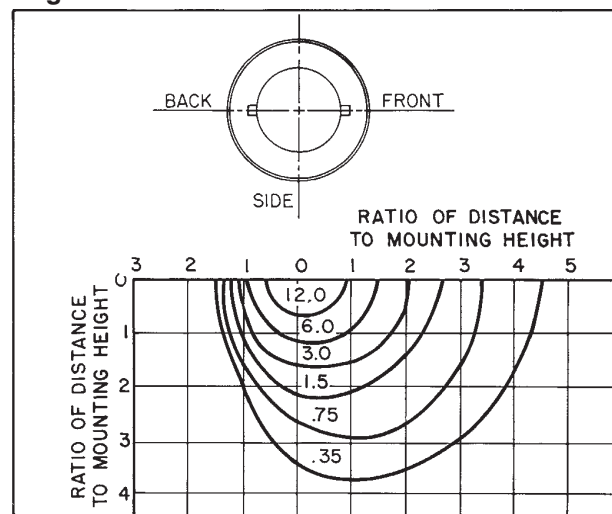
Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.759	.643	.551	.476	.418
	30	.719	.582	.480	.400	.340
	10	.683	.530	.424	.342	.283
70	50	.740	.627	.538	.465	.406
	30	.703	.570	.471	.394	.334
	10	.669	.523	.418	.338	.280
50	50	.703	.595	.512	.442	.388
	30	.672	.548	.455	.381	.324
	10	.645	.506	.408	.332	.276
30	50	.669	.567	.488	.422	.370
	30	.646	.528	.439	.368	.314
	10	.622	.492	.399	.325	.270
10	50	.640	.541	.466	.403	.354
	30	.619	.508	.424	.356	.305
	10	.600	.479	.389	.318	.265
0	0	.582	.459	.370	.299	.247
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.371	.330	.294	.267	.231
	30	.296	.257	.224	.198	.164
	10	.243	.208	.174	.151	.121
70	50	.362	.323	.288	.262	.226
	30	.291	.252	.221	.195	.164
	10	.238	.204	.173	.151	.121
50	50	.345	.309	.275	.250	.218
	30	.283	.244	.215	.190	.159
	10	.235	.201	.170	.148	.119
30	50	.331	.294	.265	.240	.209
	30	.275	.239	.208	.184	.154
	10	.231	.196	.168	.146	.116
10	50	.317	.284	.253	.231	.201
	30	.266	.233	.203	.180	.150
	10	.227	.193	.165	.143	.114
0	0	.210	.177	.149	.128	.100

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

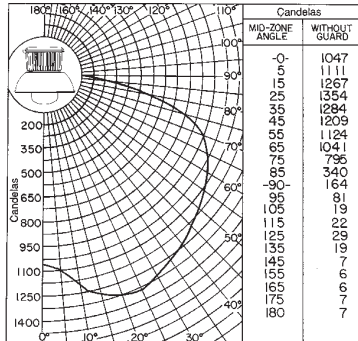
Champ® H.I.D. Luminaires

Lamp: 175W/E-28 coated mercury vapor (MV)
Total bare lamp lumens: 8600

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for mercury vapor luminaires with 175W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
DMVC	100	0.49
	250	1.41
DMVM	175	1.63
	250	2.38

Luminaire spacing ratio: 1.7

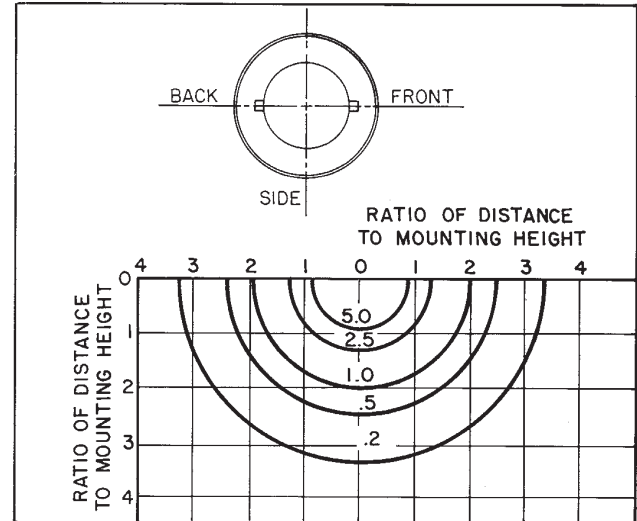
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

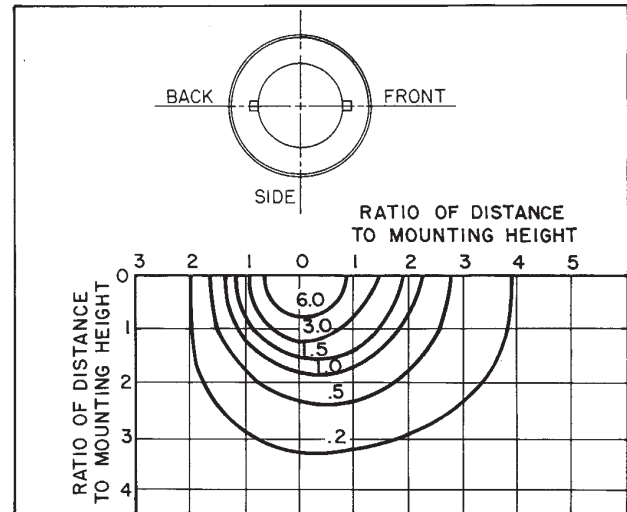
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.723	.619	.536	.467	.412
	30	.684	.561	.470	.396	.340
	10	.649	.512	.417	.342	.286
70	50	.705	.604	.524	.456	.401
	30	.668	.549	.461	.390	.334
	10	.635	.505	.412	.338	.283
50	50	.668	.572	.498	.434	.384
	30	.638	.528	.445	.377	.324
	10	.611	.488	.401	.331	.279
30	50	.635	.545	.474	.414	.366
	30	.611	.508	.429	.365	.314
	10	.588	.474	.391	.324	.273
10	50	.606	.519	.453	.395	.350
	30	.585	.488	.414	.352	.305
	10	.566	.460	.381	.317	.268
0	0	.549	.442	.363	.299	.251

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.368	.329	.294	.269	.234
	30	.298	.261	.229	.204	.172
	10	.248	.215	.182	.160	.131
70	50	.359	.322	.289	.263	.229
	30	.293	.256	.226	.201	.171
	10	.244	.211	.181	.159	.131
50	50	.343	.308	.276	.252	.221
	30	.284	.248	.220	.196	.166
	10	.240	.207	.178	.157	.128
30	50	.329	.294	.266	.243	.212
	30	.276	.243	.213	.190	.162
	10	.236	.203	.176	.154	.126
10	50	.315	.284	.255	.233	.205
	30	.268	.236	.208	.186	.157
	10	.231	.200	.173	.151	.123
0	0	.216	.184	.158	.138	.110

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

VMV high wattage series *Champ* luminaires are used:

- in manufacturing plants, refineries, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, and other heavy industrial applications
- in applications involving medium and high mounting heights
- in applications where energy efficient, high lumen output is required
- in areas in which ignitable concentrations of flammable gases or vapors will be present only due to abnormal, unusual, or accidental conditions
- in marine applications where water spray and corrosive atmospheres are considerations
- in elevated ambient temperatures often found in industrial applications
- in installations where moisture, dirt, dust, vibration, corrosion and rough usage are problems
- wherever the damaging effects of water, wind, snow, sleet, hot sun, or any combination of these elements, are problems

Features:

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion
- Six mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket, angle stanchion, straight stanchion and quad-mount.
- Wide range of light sources and wattages to meet specifiers needs: 200, 250, 400 watt high pressure sodium (HPS); 250 and 400 watt mercury vapor (MV); 250 and 400 watt metal halide (MH)
- Hinged ballast housing for ease of installation and maintenance
- Wide choice of photometric distributions. Glass globes, glass refractors, and reflector/lens are available
- All luminaires designed to perform in a 40°C ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with integral conduit stop and bushing to help prevent damage to field wiring during installation
- Low ambient capability to (-40°C)
- Dome and 30° angle reflectors made of bright white *Krydon*® material and etched Alzak® high bay reflectors provide superior reflectivity
- Grounding wire for safety
- High power factor ballasts (Min. P. F. 90%) are available in a variety of voltages to meet local area requirements.
- Mogul base lamp socket

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware and guards – stainless steel
- Reflectors (dome and angle) – *Krydon* fiberglass-reinforced polyester material
- Globes – heat and impact resistant internally fluted glass
- Refractors – glass
- Reflector lens – spun Alzak aluminum, tempered glass, stainless steel door frame

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- Alzak aluminum – natural
- Stainless steel – natural
- *Krydon* material – high reflectance white

Certifications and Compliances:

- NEC and CEC:
 - Class I, Division 2, Groups A, B, C, D
 - with Glass Refractor - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
 - Class 1 Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.

- | Description | Suffix to be Added to Cat. No. |
|--|--------------------------------|
| • Restricted Breathing Construction | .. S826† |
| - Class I Division 2 & Zone 2 Suitability | |
| Cooler Operating Temperatures (T-Numbers) | |
| • Certified for IEC Zone 2 | S826TB‡ |
| - Furnished with terminal block crimp terminals and dedicated voltage ballasts (no MT, DT, or TT) | |
| • Fused – to protect ballast and capacitors against abnormal line conditions | S658†* |
| • Quartz auxiliary lighting – comes to full brightness immediately and remains lit until the HID lamp attains 60-70% of full illumination. For <i>non-hazardous</i> locations only | QTZ |
| (NOTE: Quartz lamp not included use 100W single ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC). Consult factory for top-hat limitations. | |
| • Ballast-gard™ starter cutout switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 200-400W HPS only | BG |
| • Factory assembled with H.I.D. lamps installed for additional labor savings. | FA |
| • Top hat with stainless steel threaded insert to attach ballast housing. | S806 |



Pendant mount with globe and guard



Ceiling mount with etched Alzak reflector and tempered glass lens



Ceiling mount with glass refractor

Electrical Ratings:

- 120 to 600 volts and multi-tap*
- 200, 250, 400W HPS; 250, 400W MV and MH

Accessories:

- See pages 775 to 776 for complete listing.

*Alzak is a registered trademark of ALCOA.

† Not for use in Canada.

‡ Suffix S826 and S826TB cannot be used with GRD4 Reflector/Lens

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

200-400W High Pressure Sodium

VMV High Wattage Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

3L



See notes 1 (to specify voltage) and 2. For guards and other optics see VMV Luminaires - Ordering by Components section.

BASIC CATALOG NUMBER

	Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens²
	Pendant Mount (Rigid or Flexible)	¾	200	VMVS2A200GP	VMVS2A200GR305	VMVS2A200GRD4
		1		VMVS3A200GP	VMVS3A200GR305	VMVS3A200GRD4
		¾	250	VMVS2A250GP✓	VMVS2A250GR305✓	VMVS2A250GRD4✓
		1		VMVS3A250GP✓	VMVS3A250GR305✓	VMVS3A250GRD4✓
		¾	400	VMVS2A400GP✓	VMVS2A400GR305✓	VMVS2A400GRD4✓
		1		VMVS3A400GP✓	VMVS3A400GR305✓	VMVS3A400GRD4✓
	Ceiling Mount Thru-Feed	¾	200	VMVS2C200GP	VMVS2C200GR305	VMVS2C200GRD4
		1		VMVS3C200GP	VMVS3C200GR305	VMVS3C200GRD4
		¾	250	VMVS2C250GP✓	VMVS2C250GR305✓	VMVS2C250GRD4✓
		1		VMVS3C250GP✓	VMVS3C250GR305✓	VMVS3C250GRD4✓
		¾	400	VMVS2C400GP✓	VMVS2C400GR305✓	VMVS2C400GRD4✓
		1		VMVS3C400GP✓	VMVS3C400GR305✓	VMVS3C400GRD4✓
	Wall Mount Thru-Feed	¾	200	VMVS2TW200GP	VMVS2TW200GR305	
		1		VMVS3TW200GP	VMVS3TW200GR305	
		¾	250	VMVS2TW250GP✓	VMVS2TW250GR305✓	
		1		VMVS3TW250GP✓	VMVS3TW250GR305✓	
		¾	400	VMVS2TW400GP✓	VMVS2TW400GR305✓	
		1		VMVS3TW400GP✓	VMVS3TW400GR305✓	
	Quad-Mount	¾	200	VMVS25Q200GP	VMVS25Q200GR305	VMVS25Q200GRD4
	Pendant, Adjustable	¾	250	VMVS25Q250GP	VMVS25Q250GR305	VMVS25Q250GRD4
	Thru-Feed, 25° Angle, 12½° Angle	¾	400	VMVS25Q400GP	VMVS25Q400GR305	VMVS25Q400GRD4
	Stanchion Mount 25° Angle	1½	200	VMVSJ200GP	VMVSJ200GR305	VMVSJ200GRD4
		1½	250	VMVSJ250GP✓	VMVSJ250GR305✓	VMVSJ250GRD4✓
		1½	400	VMVSJ400GP✓	VMVSJ400GR305✓	VMVSJ400GRD4✓
	Stanchion Mount Straight	1½	200	VMVSP200GP	VMVSP200GR305	
		1½	250	VMVSP250GP✓	VMVSP250GR305✓	
		1½	400	VMVSP400GP✓	VMVSP400GR305✓	

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz				CEC/CSA (cUL)			
	Multi Tap /MT	120V /120	480V /480		Tri Tap /TT	120V /120		
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz				EXPORT			
	CEC/CSA (cUL) - CWI Isolated Ballasts							
	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. Options - Add the Required Options Suffixes from page 754, in Alpha-numeric Order.
✓ - available with Lightning Service™ delivery. See Section G for details

3L

250-400W Pulse Start Metal Halide

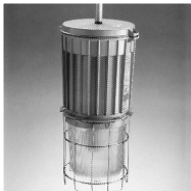
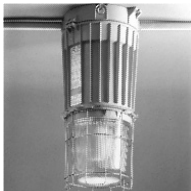
VMV High Wattage Series
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

See Note 1 (to specify voltage) and 2. For guards and other optics, see VMV luminaires - ordering by components section

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens
	Pendant Mount (Rigid or Flexible)	3/4	250	VMVM2A250GR305-S828	VMVM2A250GRD4-S828
		1	250	VMVM3A250GR305-S828	VMVM3A250GRD4-S828
		3/4	320	VMVM2A320GR305-S828	VMVM2A320GRD4-S828
		1	320	VMVM3A320GR305-S828	VMVM3A320GRD4-S828
		3/4	400	VMVM2A400GR305-S828	VMVM2A400GRD4-S828
		1	400	VMVM3A400GR305-S828	VMVM3A400GRD4-S828
	Ceiling Mount Thru-Feed	3/4	250	VMVM2C250GP-S828	VMVM2C250GRD4-S828
		1	250	VMVM3C250GP-S828	VMVM3C250GRD4-S828
		3/4	320	VMVM2C320GR305-S828	VMVM2C320GRD4-S828
		1	320	VMVM3C320GR305-S828	VMVM3C320GRD4-S828
		3/4	400	VMVM2C400GR305-S828	VMVM2C400GRD4-S828
		1	400	VMVM3C400GR305-S828	VMVM3C400GRD4-S828
	Wall Mount Thru-Feed	3/4	250	VMVM2C250GP-S828	VMVM2C250GRD4-S828
		1	250	VMVM3C250GP-S828	VMVM3C250GRD4-S828
		3/4	320	VMVM2C320GR305-S828	VMVM2C320GRD4-S828
		1	320	VMVM3C320GR305-S828	VMVM3C320GRD4-S828
		3/4	400	VMVM2C400GR305-S828	VMVM2C400GRD4-S828
		1	400	VMVM3C400GR305-S828	VMVM3C400GRD4-S828
	Quad-Mount	3/4	250	VMVM25Q250GP-S828	VMVM25Q250GRD4-S828
		3/4	320	VMVM25Q320GR305-S828	VMVM25Q320GRD4-S828
		3/4	400	VMVM25Q400GR305-S828	VMVM25Q400GRD4-S828
	Stanchion Mount	1 1/2	250	VMVMJ250GP-S828	VMVMJ250GRD4-S828
		1 1/2	320	VMVMJ320GR305-S828	VMVMJ320GRD4-S828
		1 1/2	400	VMVMJ400GR305-S828	VMVMJ400GRD4-S828
	Stanchion Mount	1 1/2	250	VMVMP250GP-S828	VMVMP250GRD4-S828
		1 1/2	320	VMVMP320GR305-S828	VMVMP320GRD4-S828
		1 1/2	400	VMVMP400GR305-S828	VMVMP400GRD4-S828

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz			
	Multi Tap /MT	120V /120	480V /480	CEC/CSA (cUL)
				Tri Tap /TT
				120V /120
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz			
	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. Options - Add the Required Options Suffixes from page 754, In Alpha-numeric Order.

250-400W Metal Halide

VMV High Wattage Series Champ® H.I.D. Luminaires

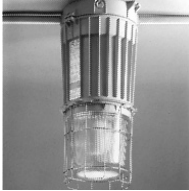
- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

3L

See Note 1 (to specify voltage) and 2. For guards and other optics, see VMV luminaires - ordering by components section

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens
 Pendant Mount (Rigid or Flexible)	3/4	250	VMVM2A250GP	VMVM2A250GR305	VMVM2A250GRD4
	1		VMVM3A250GP	VMVM3A250GR305	VMVM3A250GRD4
	3/4	400	N/A	VMVM2A400GR305	VMVM2A400GRD4
	1		N/A	VMVM3A400GR305	VMVM3A400GRD4
 Ceiling Mount Thru-Feed	3/4	250	VMVM2C250GP	VMVM2C250GR305	VMVM2C250GRD4
	1		VMVM3C250GP	VMVM3C250GR305	VMVM3C250GRD4
	3/4	400	N/A	VMVM2C400GR305	VMVM2C400GRD4
	1		N/A	VMVM3C400GR305	VMVM3C400GRD4
 Wall Mount Thru-Feed	3/4	250	VMVM2TW250GP	VMVM2TW250GR305	
	1		VMVM3TW250GP	VMVM3TW250GR305	
	3/4	400	N/A	VMVM2TW400GR305	
	1		N/A	VMVM3TW400GR305	
 Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12 1/2° Angle	3/4	250	VMVM25Q250GP	VMVM25Q250GR305	VMVM25Q250GRD4
	3/4	400	N/A	VMVM25Q400GR305	VMVM25Q400GRD4
 Stanchion Mount 25° Angle	1 1/2	250	VMVMJ250GP	VMVMJ250GR305	VMVMJ250GRD4
	1 1/2	400	N/A	VMVMJ400GR305	VMVMJ400GRD4
 Stanchion Mount Straight	1 1/2	250	VMVMP250GP	VMVMP250GR305	
	1 1/2	400	N/A	VMVMP400GR305	

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz				CEC/CSA (cUL)			
	Multi Tap /MT	120V /120	480V /480		Tri Tap /TT	120V /120		
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz				EXPORT			
	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI		220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. Options - Add the Required Options Suffixes from page 754, In Alpha-numeric Order.

3L

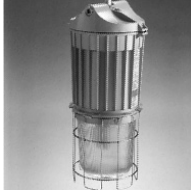
250-400W Mercury Vapor

VMV High Wattage Series
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence (with Glass Refractor)
- Marine (with Globe or Glass Refractor) & Wet Locations
- 3, 3R, 4, 4X; IP66

See Note 1 (to specify voltage) and 2. For guards and other optics see VMV - Luminaires - Ordering by Components section.

			BASIC CATALOG NUMBER		
Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor	With GRD4 Reflector/Lens²
	3/4	250	VMVC2A250GP	VMVC2A250GR305	VMVC2A250GRD4
	1		VMVC3A250GP	VMVC3A250GR305	VMVC3A250GRD4
	3/4	400	N/A	VMVC2A400GR305	VMVC2A400GRD4
	1		N/A	VMVC3A400GR305	VMVC3A400GRD4
	3/4	250	VMVC2C250GP	VMVC2C250GR305	VMVC2C250GRD4
	1		VMVC3C250GP	VMVC3C250GR305	VMVC3C250GRD4
	3/4	400	N/A	VMVC2C400GR305	VMVC2C400GRD4
	1		N/A	VMVC3C400GR305	VMVC3C400GRD4
	3/4	250	VMVC2TW250GP	VMVC2TW250GR305	
	1		VMVC3TW250GP	VMVC3TW250GR305	
	3/4	400	N/A	VMVC2TW400GR305	
	1		N/A	VMVC3TW400GR305	
	3/4	250	VMVC25Q250GP	VMVC25Q250GR305	VMVC25Q250GRD4
	3/4	400	N/A		
			N/A	VMVC25Q400GR305	VMVC25Q400GRD4
	1½	250	VMVCJ250GP	VMVCJ250GR305	VMVCJ250GRD4
	1½	400	N/A	VMVCJ400GR305	VMVCJ400GRD4
	1½	250	VMVCP250GP	VMVCP250GR305	
	1½	400	N/A	VMVCP400GR305	

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz			CEC/CSA (cUL)	
	Multi Tap /MT	120V /120	480V /480	Tri Tap /TT	120V /120
Optional Voltage Ballasts - 50 or 60Hz					
EXPORT					
Voltage Suffix	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50	

2. Options - Add the required options suffixes from page 754, in Alpha-numeric order.

VMV High Voltage Luminaires - Ordering by Components

3L

VMV High Wattage Luminaires are available in components

A complete luminaire consists of:

- I. Champ Cover (mounting module)
- II. VMV Ballast Housing - Include voltage and required option(s)
- III. Optical & Guard Components - Globe, Reflector, Refractor, Guard

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾	APM2
	1	APM3
Ceiling	¾	CM2
	1	CM3
Wall	¾	TWM2
	1	TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

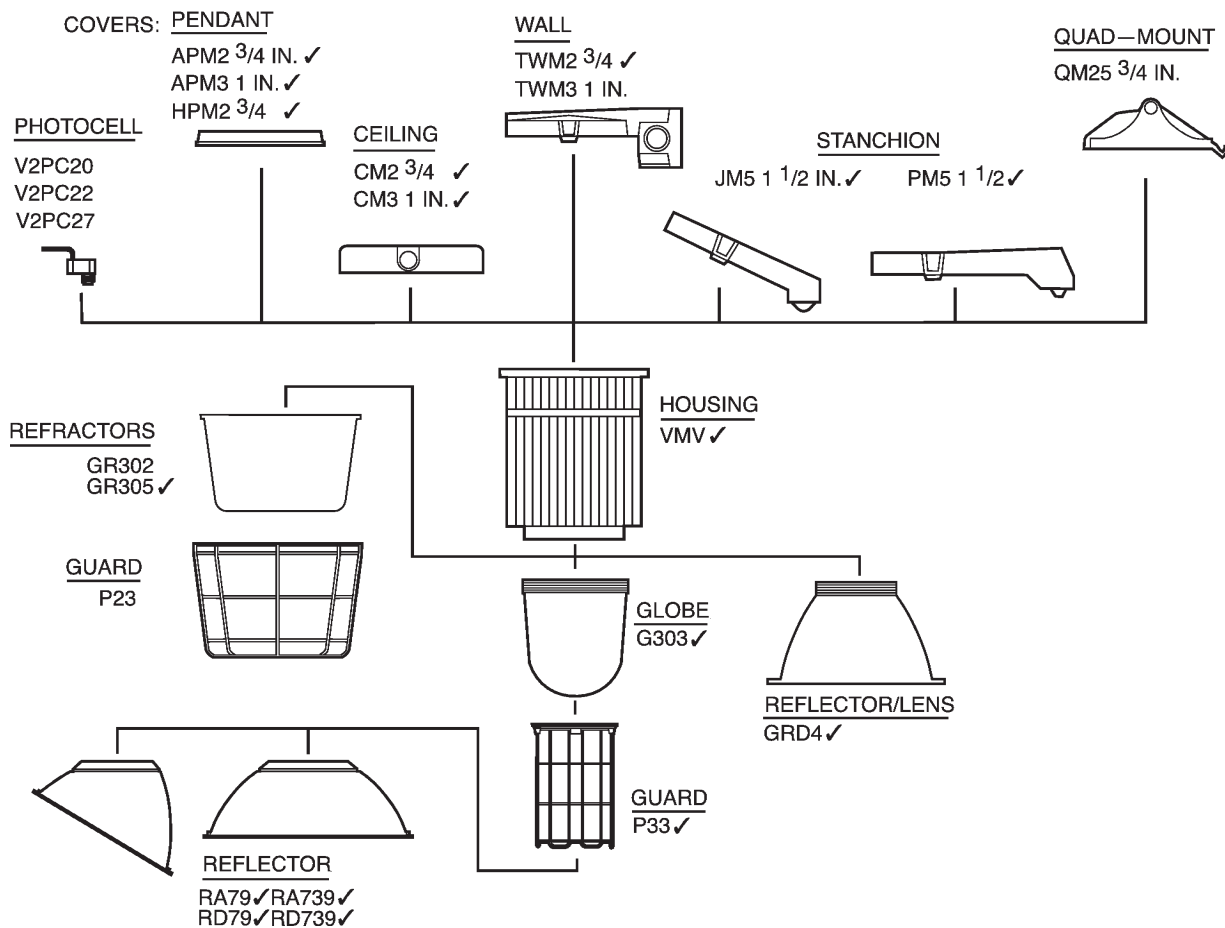
II. Ballast Housings.

Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	200	VMVS200/MT
	250	VMVS250/MT
	400	VMVS400/MT
Metal Halide	70	LMVM070/MT
	250	VMVM250/MT
	400	VMVM400/MT
Mercury Vapor	250	VMVC250/MT
	400	VMVC400/MT

III. Globe, Refractors, Reflectors, Guards

Type	Catalog Number
Globe	G303
Globe Guard	P33
Reflector-Dome	RD739
Reflector-Angle	RA739
Refractor - Type 2	GR302
Refractor - Type 5	GR305
Refractor Guard	P23
High Bay Reflector/Lens	GRD4



✓ – available with Lightning Service™ delivery. See Section G for complete details.

200-400W VMV High Wattage Series

Champ® H.I.D. Luminaires

Temperature Performance Data

3L

Lamp Watts	Ambient Temp C	Optics	Class I (Gas/Vapors)				Class II (Dust) and Class III	Simultaneous Presence Gas and Dust Present in the Same Area			Supply Wire Temp C	
			Non Restricted Breathing		Restricted Breathing			Non Restricted Breathing		Restricted Breathing		
					Ex nR					Ex nR		
			Standard Product		Option S826(TB)			Standard Product		Option S826		
			Division 2		Zone 2 or Division 2			Standard Product		Class I, Division 2 and Class II		Class I, Zone 2 or Division 2 and Class II
		G303	X	–	X	–	–	–	–	–		
		GR305	–	X	–	X	X	X	X	X		
GRD4	X	–	–	–	–	–	–	–				

High Pressure Sodium

200	40	325 C	325 C	T3	T4	T3C	T1/T3C	T3C	75
	55	325 C	325 C	T3	T4	–	–	–	75
	65	325 C	325 C	T3	–	–	–	–	85
250	40	350 C	350 C	T3	T4	T3C	T1/T3C	T3C	75
	55	350 C	350 C	T3	T4	–	–	–	85
	65	350 C	350 C	T3	–	–	–	–	–
400	40	350 C	350 C	T3	T4	T3C	T1/T3C	T3C	85
	55	T1	T1	T3	T4	–	–	–	90

Metal Halide

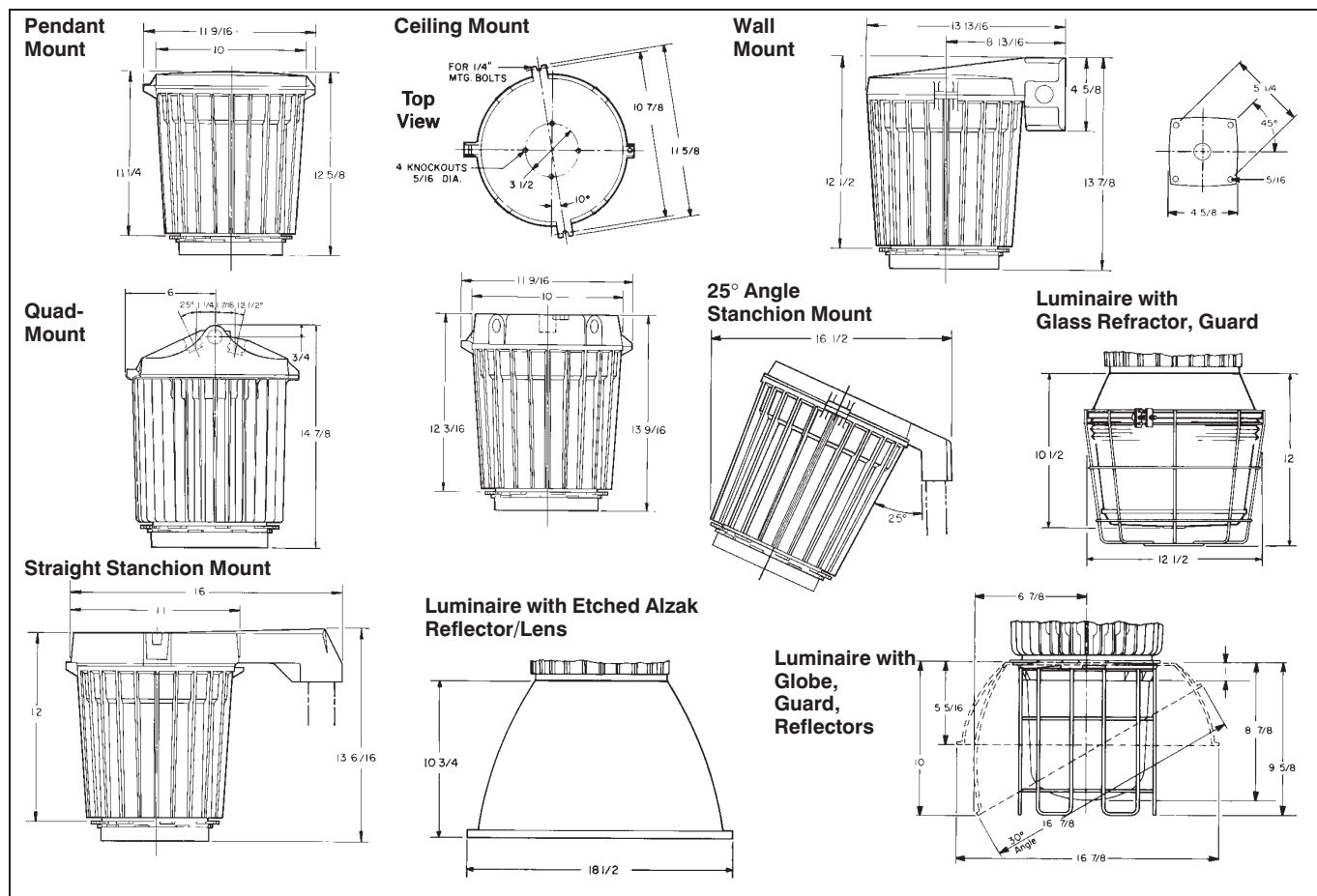
200 (S828)	40	350 C	325 C	T3	T4	T3B	350 C/T3B	T3B	85
	55	350 C	350 C	T4	T3	–	–	–	90
250 (Includes S828)	40	350 C	325 C	T3	T4	T3B	350 C/T3B	T3B	85
	55	350 C	350 C	T3	T3	–	–	–	90
320 (S828)	40	–	325 C	T1	T4	T3B	350 C/T3B	T3B	85
	55	–	–	–	–	–	–	–	–
400 (includes S828)	40	–	325 C	T1	T4	T3B	350 C/T3B	T3B	85
	55	–	–	–	–	–	–	–	–

Mercury Vapor

250	40	350 C	325 C	T3	T4	T3B	350 C/T3B	T3B	85
	55	T1	350 C	T3	T3	–	–	–	90
400	40	–	325 C	T1	T4	T3B	350 C/T3B	T3B	85
	55	–	–	–	–	–	–	–	–

3L
H.I.D. Lighting

Champ® H.I.D. Luminaires



Net Luminaire Weights (lbs.):

Luminaire Series	Lamp Watts	Luminaire with:		
		Globe, Guard	Reflector/Lens	Glass Refractor
VMVS	200	29½	30	32½
	250	29½	30	32½
	400	38½	39	41½
VMVC	250	29½	30	35½
	400		33	35½
VMVM	250	32½	33	35¾
	400		34	35½

Add for mounting modules (lbs):

Pendant	1¼	Quad-Mount	3½
Ceiling	2¾	Angle Stanchion	3½
Wall	4½	Straight Stanchion	4½

Add for reflectors (lbs):

Dome	1½	30° Angle	1½
High Bay	1¾		

Deduct: 1½ lb. for Luminaire without P33 Guard

200-400W VMV High Wattage Series

Champ® H.I.D. Luminaires

Photometric Data

3L

Lamp: 250W/E-18 high pressure sodium (HPS)

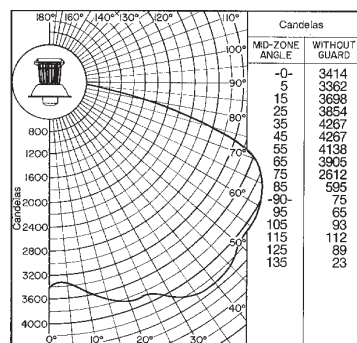
Total bare lamp lumens: 27500

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689. NOTE: All data provided is for high pressure sodium luminaires with 250W/E-18 clear lamps.

Use conversion factors (multipliers) shown below for other clear lamp types and wattages.

Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers (for use with candela curves only)

Luminaire Series	Lamp Watts	Conv- ersion Factors
VMVS	200	0.80
	400	1.82

Luminaire spacing ratio: 2.0

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio					
Eff. Ceil. Wall		1	2	3	4	5	
80	50	.750	.640	.550	.476	.416	
	30	.711	.582	.482	.402	.341	
	10	.677	.532	.429	.346	.285	
70	50	.732	.625	.538	.465	.405	
	30	.696	.570	.474	.397	.335	
	10	.664	.526	.424	.343	.282	
50	50	.695	.594	.513	.443	.388	
	30	.666	.549	.458	.384	.326	
	10	.641	.509	.414	.336	.279	
30	50	.663	.567	.490	.423	.371	
	30	.640	.530	.443	.372	.316	
	10	.618	.496	.405	.330	.273	
10	50	.635	.542	.469	.405	.355	
	30	.615	.510	.429	.360	.307	
	10	.597	.483	.395	.323	.268	
0	0	.580	.464	.377	.305	.251	
% Reflectance		Room Cavity Ratio					
Eff. Ceil. Wall		6	7	8	9	10	
80	50	.369	.327	.290	.263	.229	
	30	.295	.255	.222	.196	.163	
	10	.243	.208	.173	.150	.121	
70	50	.360	.320	.285	.258	.224	
	30	.291	.251	.219	.193	.163	
	10	.239	.204	.172	.149	.121	
50	50	.344	.306	.272	.247	.216	
	30	.283	.243	.213	.189	.159	
	10	.236	.200	.170	.147	.119	
30	50	.330	.292	.262	.238	.207	
	30	.275	.238	.207	.183	.154	
	10	.233	.196	.167	.145	.116	
10	50	.317	.282	.251	.229	.200	
	30	.267	.233	.202	.179	.150	
	10	.229	.194	.165	.142	.114	
0	0	.212	.178	.149	.128	.101	

Temperature Performance Data with Globe & Guard

Lamp Watts	Ambient Temp °C	Class I Division 2 Globe & Guard	Supply Wire °C
High Pressure Sodium:			
200	40	325°C	75
	55	325°C	75
	65	325°C	85
250	40	350°C	75
	55	350°C	85
	65	350°C	—
400	40	T1	85
	55	T1	90
	65	—	—
Mercury Vapor:			
250	40	350°C	85
	55	T1	85
	65	—	—
400	40	—	85
	55	—	—
	65	—	—
Metal Halide:			
250	40	350°C	75
	55	350°C	90
	65	—	90
400	40	—	75
	55	—	—
	65	—	—

(Data not applicable with QTZ suffix)

Temperature Data With GR305 or GR302 Refractor

				Simultaneous Presence	
Wattage	Ambient Temp °C	Class I Division 2	Class II Division 1	Class I, Div. 2/ Class II, Div. 1	Supply Wire °C
High Pressure Sodium					
200	40	350°C	T3C	T1/T3C	75
	55	T1	—	—	75
250	40	350°C	T3C	T1/T3C	75
	55	T1	—	—	85
400	40	350°C	T3C	T1/T3C	85
	55	T1	—	—	90
Mercury Vapor					
250	40	325°C	T3B	350°C/T3B	85
	55	350°C	—	—	85
400	40	325°C	T3B	350°C/T3B	85
Metal Halide					
250	40	325°C	T3B	350°C/T3B	85
	55	350°C	—	—	90
400	40	325°C	T3B	350°C/T3B	85

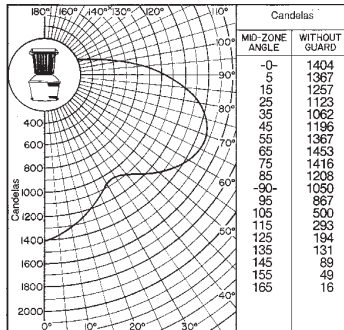
3L H.I.D. Lighting

Lamp: 250W/E-28 coated (DX) mercury vapor (MV)
Total bare lamp lumens: 13000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for mercury vapor luminaires, with 250W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with I.E.S. Type V Glass Refractor



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
VMVC	400	1.73
VMVM	250	1.58
	400	2.77

Luminaire spacing ratio: 1.30

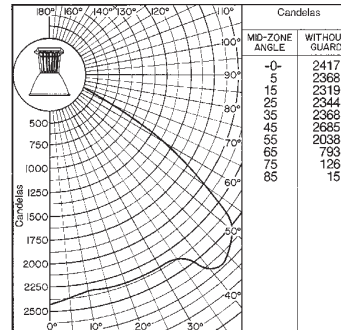
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.711	.585	.508	.440	.384
	30	.659	.524	.430	.358	.304
	10	.614	.464	.368	.295	.244
70	50	.677	.566	.484	.418	.365
	30	.630	.500	.411	.343	.291
	10	.586	.446	.353	.285	.234
50	50	.611	.509	.435	.376	.330
	30	.573	.456	.375	.313	.266
	10	.538	.409	.326	.263	.217
30	50	.551	.457	.390	.337	.296
	30	.521	.414	.341	.285	.242
	10	.482	.375	.299	.242	.200
10	50	.496	.409	.349	.301	.265
	30	.471	.374	.308	.257	.219
	10	.449	.343	.273	.220	.182
0	0	.419	.314	.246	.195	.159

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.343	.306	.274	.251	.223
	30	.285	.231	.203	.181	.156
	10	.209	.180	.152	.134	.113
70	50	.326	.292	.262	.240	.213
	30	.253	.220	.195	.174	.151
	10	.199	.171	.147	.129	.109
50	50	.294	.264	.237	.218	.195
	30	.232	.201	.179	.160	.139
	10	.185	.158	.136	.120	.101
30	50	.265	.237	.215	.197	.177
	30	.212	.185	.162	.146	.127
	10	.171	.145	.125	.110	.092
10	50	.238	.215	.193	.178	.160
	30	.191	.168	.148	.133	.115
	10	.155	.133	.114	.101	.083
0	0	.135	.113	.096	.084	.068

Luminaire with Etched Alzak® Reflector and Tempered Glass Lens



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
VMVC	400	1.73
VMVM	250	1.58
	400	2.77

Luminaire spacing ratio: 1.60

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.681	.609	.544	.483	.430
	30	.658	.573	.500	.433	.376
	10	.638	.542	.465	.394	.337
70	50	.667	.598	.536	.476	.422
	30	.646	.564	.494	.429	.372
	10	.627	.537	.461	.391	.335
50	50	.639	.576	.518	.459	.410
	30	.622	.548	.482	.419	.366
	10	.607	.523	.453	.387	.332
30	50	.615	.556	.501	.445	.397
	30	.602	.533	.471	.410	.358
	10	.589	.512	.446	.382	.328
10	50	.594	.537	.486	.432	.386
	30	.582	.518	.460	.401	.352
	10	.571	.501	.438	.377	.324
0	0	.559	.489	.426	.364	.312

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.383	.340	.302	.273	.234
	30	.329	.286	.249	.220	.182
	10	.291	.250	.212	.183	.148
70	50	.377	.335	.298	.269	.230
	30	.326	.283	.248	.218	.182
	10	.288	.247	.211	.183	.148
50	50	.365	.325	.289	.261	.225
	30	.320	.277	.243	.214	.178
	10	.286	.245	.209	.182	.147
30	50	.356	.315	.282	.254	.218
	30	.315	.274	.238	.210	.175
	10	.284	.242	.208	.180	.145
10	50	.346	.308	.274	.247	.213
	30	.309	.270	.235	.208	.173
	10	.281	.240	.206	.179	.144
0	0	.269	.228	.194	.168	.133

Alzak is a registered trademark of Alcoa.

50-175W N2MV Series

Champ® H.I.D. Luminaires Non-Metallic

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

3L

Application:

- N2MV series *Champ* luminaires are used:
- in areas in which ignitable concentrations of flammable gases or vapors will be present due to abnormal, unusual or accidental conditions.
 - in installations where moisture, dirt, vibration, corrosion or rough usage are concerns.
 - wherever the damaging effects of water, wind, snow, sleet, hot sun or any combination of these elements are found.
 - ideal for marine use; resists the harmful effects of salt water.
 - withstands the harshest of corrosive environments.
 - to provide low wattage spot and floodlighting.
 - for general area lighting.
 - in areas where the ambient temperature will get as low as 40°C (-40°F).
 - In manufacturing plants, refineries, chemical, petrochemical and other industrial process facilities, wastewater and sewage treatment facilities, offshore, dockside and harbor installations as well as other heavy industrial applications.

Features:

- Housing and mounting modules made of polyphenylene sulfide (PPS) for strength and maximum resistance to corrosion.
- Pendant mounting module equipped with integral hub set screws for vibration resistance.
- Hubs are provided with an integral bushing to help prevent damage to field wiring during installation and ground connection for positive bonding.
- Guard, hub inserts, stanchion elbow and hardware made of stainless steel for maximum resistance to corrosion.
- Grounding wire for safety.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Hinged assembly allows the luminaire to hang free during installation to permit the use of both hands when wiring.
- One, external captive screw for ease of installation.
- Handle – hinge assembly doubles as a handle for ease of installation, especially when carrying up a ladder.



Standard Materials:

- Housing, mounting modules, component pallets – polyphenylene sulfide PPS
- Guard, hub inserts, stanchion elbow, hardware – stainless steel
- Globe – heat tempered
- Gaskets – silicone rubber

Electrical Ratings:

- 120, multi-tap/MT* (120, 208, 240 and 277), Dual-Tap/DT (120, 277 volts), Tri-Tap/TT (120, 277, 347 volts) 480 volt, 600 volt, 220/240 volt-50 Hz
- 50-150W HPS; 100-175W MV; 70-175W MH

Certifications and Compliance:

- NEC and CEC:
 - Class I, Division 2, Groups A, B, C, D
 - 100W Maximum - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)
 - Class 1 Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.:

- | Description | Suffix to be Added to Cat. No. |
|---|--------------------------------|
| • Restricted Breathing Construction. | S826 |
| – Class I Division 2 & Zone 2 Suitability | |
| – Cooler Operating Temperatures (T-Numbers) | |
| • Certified for IEC Zone 2 | S826TB |
| – Furnished with terminal block crimp terminals and dedicated voltage ballasts (no MT, DT, or TT) | |
| • Wall Mount Arm. For converting a ceiling-mount luminaire to a wall-mount. | N2MV-WM1 |
| • Ballast Gard™ starter cut-out switch. Prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life. Available for use with 50-150 watt – HPS | BG |
| • Factory Assembled. For a factory assembled luminaire with lamp installed . . | FA |
| • Instant Restrike. Enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 50-150W LX HPS only. | IR |
| • Quartz Auxiliary Lighting. Comes to full brightness immediately and remains lit until the HID lamp attains 60–70% of full illumination. For <i>non-hazardous</i> locations only. (Note: QTZ lamp not included; use 100W single ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC) Consult factory for top-hat limitations | QTZ |
| • Fused. To protect ballast and capacitor against abnormal line conditions | S658 |
| (Not for use in Canada) | |
| • Furnished with Lamps. | S714 |
| • Teflon® Coated Globe. For additional protection against breakage. For use with 50–100W HPS, 70–175W MH and 100–175W MV | S808 |

Accessories:

- See pages 775 and 776 for complete listing.

3L H.I.D. Lighting

3L

50-150W High Pressure Sodium

N2MV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

See notes 1 (to specify voltage) 2 and 3. For guards and other optics see N2MV Luminaires - Ordering by Components Section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor
Pendant Mount	3/4	50	N2MVS2A050GP	N2MVS2A050GR305
	1		N2MVS3A050GP	N2MVS3A050GR305
	3/4	70	N2MVS2A070GP	N2MVS2A070GR305
	1		N2MVS3A070GP	N2MVS3A070GR305
	3/4	100	N2MVS2A100GP	N2MVS2A100GR305
	1		N2MVS3A100GP	N2MVS3A100GR305
Ceiling Mount Thru-Feed	3/4	150	N2MVS2A150GP	N2MVS2A150GR305
	1		N2MVS3A150GP	N2MVS3A150GR305
	3/4	50	N2MVS2C050GP	N2MVS2C050GR305
	1		N2MVS3C050GP	N2MVS3C050GR305
	3/4	70	N2MVS2C070GP	N2MVS2C070GR305
	1		N2MVS3C070GP	N2MVS3C070GR305
Stanchion Mount 25° Angle	3/4	100	N2MVS2C100GP	N2MVS2C100GR305
	1		N2MVS3C100GP	N2MVS3C100GR305
	3/4	150	N2MVS2C150GP	N2MVS2C150GR305
	1		N2MVS3C150GP	N2MVS3C150GR305
	1 1/2	50	N2MVSJ050GP	N2MVSJ050GR305
	1 1/2	70	N2MVSJ070GP	N2MVSJ070GR305
	1 1/2	100	N2MVSJ100GP	N2MVSJ100GR305
	1 1/2	150	N2MVSJ150GP	N2MVSJ150GR305

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz						CEC/CSA (cUL)	
	Multi Tap /MT	Dual Tap /DT	120V /120	480V /480	Tri Tap /TT	Dual Tap /DT	120V /120	
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz						EXPORT	
	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. 150W HPS Luminaires, 55V Lamps is standard, for 100V lamps - Add suffix "CE". 50W HPS luminaire is dual-tap only.
 3. Options - Add the required options suffixes from page 765, in Alpha-numeric order.

150-175W Pulse Start Metal Halide

N2MV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

3L

See notes 1 (to specify voltage) and 2. For guards and other optics see N2MV Luminaires - Ordering by Components Section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305-S828 Glass Refractor
Pendant Mount	¾	150	N2MVM2A150GP-S828	N2MVM2A150GR305-S828
	1		N2MVM3A150GP-S828	N2MVM3A150GR305-S828
	¾	175	N2MVM2A175GP-S828	N2MVM2A175GR305-S828
	1		N2MVM3A175GP-S828	N2MVM3A175GR305-S828
Ceiling Mount Thru-Feed	¾	150	N2MVM2C150GP-S828	N2MVM2C150GR305-S828
	1		N2MVM3C150GP-S828	N2MVM3C150GR305-S828
	¾	175	N2MVM2C175GP-S828	N2MVM2C175GR305-S828
	1		N2MVM3C175GP-S828	N2MVM3C175GR305-S828
Stanchion Mount 25° Angle	1½	150	N2MVMJ150GP-S828	N2MVMJ150GR305-S828
	1½	175	N2MVMJ175GP-S828	N2MVMJ175GR305-S828

1.	Standard Voltage Ballasts - 60Hz				
	Voltage Suffix		Multi Tap /MT	120V /120	480V /480
2.	Options - Add the required options suffixes from page 765, In Alpha-numeric order				
	Optional Voltage Ballasts - 50 or 60Hz				
Voltage Suffix	220V 60Hz /220		220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

3L

70-175W Metal Halide

N2MV Series
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

See notes 1 (to specify voltage), 2 and 3. For guards and other optics see N2MV Luminaires - Ordering by Components Section.

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.	With GR305 Glass Refractor Cat. No.
Pendant Mount	¾	70	N2MVM2A070GP	N2MVM2A070GR305
	1		N2MVM3A070GP	N2MVM3A070GR305
	¾	100	N2MVM2A100GP	N2MVM2A100GR305
	1		N2MVM3A100GP	N2MVM3A100GR305
	¾	175	N2MVM2A175GP	N2MVM2A175GR305
	1		N2MVM3A175GP	N2MVM3A175GR305
Ceiling Mount Thru-Feed	¾	70	N2MVM2C070GP	N2MVM2C070GR305
	1		N2MVM3C070GP	N2MVM3C070GR305
	¾	100	N2MVM2C100GP	N2MVM2C100GR305
	1		N2MVM3C100GP	N2MVM3C100GR305
	¾	175	N2MVM2C175GP	N2MVM2C175GR305
	1		N2MVM3C175GP	N2MVM3C175GR305
Stanchion Mount 25° Angle	1½	070	N2MVMJ070GP	N2MVMJ070GR305
	1½	100	N2MVMJ100GP	N2MVMJ100GR305
	1½	175	N2MVMJ175GP	N2MVMJ175GR305

100-175W Mercury Vapor

N2MV Series
Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups F, G, Cl. III & Simultaneous Presence (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

BASIC CATALOG NUMBER

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard	With GR305 Glass Refractor
Pendant Mount	¾	100	N2MVC2A100GP	N2MVC2A100GR305
	1		N2MVC3A100GP	N2MVC3A100GR305
	¾	175	N2MVC2A175GP	N2MVC2A175GR305
	1		N2MVC3A175GP	N2MVC3A175GR305
Ceiling Mount Thru-Feed	¾	100	N2MVC2C100GP	N2MVC2C100GR305
	1		N2MVC3C100GP	N2MVC3C100GR305
	¾	175	N2MVC2C175GP	N2MVC2C175GR305
	1		N2MVC3C175GP	N2MVC3C175GR305
Stanchion Mount 25° Angle	1½	100	N2MVCJ100GP	N2MVCJ100GR305
	1½	175	N2MVCJ175GP	N2MVCJ175GR305

1.

Voltage Suffix	Standard Voltage Ballasts - 60Hz				CEC/CSA (cUL)			
	Multi Tap /MT	120V /120	480V /480		Tri Tap /TT	120V /120		
Voltage Suffix	Optional Voltage Ballasts - 50 or 60Hz				EXPORT			
	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI		220V 60Hz /220	220V 50Hz /220 50	230V 50Hz /230 50	240V 50Hz /240 50

2. 70W Ballast not available in 480V.

3. Options - Add the required options suffixes from page 765, in Alpha-numeric order.

N2MV Luminaires - Ordering by Components

3L

N2MV luminaires are available in components

A complete luminaire consists of:

- I. N2MV Cover (mounting module)
- II. N2MV Ballast Housing - Include voltage and required option(s)
- III. Globe, Refractor, Guard, Reflector

I. N2MV Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	3/4 1	N2APM2 N2APM3
Ceiling	3/4 1	N2CM2 N2CM3
Wall (Use wall bracket accessory with Ceiling Cover)	3/4 1	N2MV - WM1 and N2CM2 N2MV - WM1 and N2CM3
Stanchion - 25 Degree Angle	1 1/2	N2JM5

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (MT shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Catalog Number
High Pressure Sodium	50 70 100 150	N2MVS050/MT N2MVS070/MT N2MVS100/MT N2MVS150/MT LX
Metal Halide	70 100 175	N2MVM070/MT N2MVM100/MT N2MVM175/MT
Mercury Vapor	100 175	N2MVC100/MT N2MVC175/MT

III. Globe, Refractors, Guards and Reflectors

Type	Catalog Number
Globe	G303
Globe Teflon Coated	G303-S808
Globe Guard	P33
Reflector-Dome	RD739
Reflector-Angle	RA739
Refractor - Type 2	GR302
Refractor - Type 5	GR305
Refractor Guard	P23
Large Plastic Refractor Type 2	PGR302
Large Plastic Refractor Type 3	PGR303
Large Plastic Refractor Type 5	PGR305

3L
H.I.D. Lighting

Non-Metallic Champ® H.I.D. Luminaires

N2MV Champ Series Luminaire

A complete luminaire consists of a cover mount, a ballast housing and a globe,
with or without guard, refractor or reflector.

PHOTOCELL

V2PC20
V2PC22
V2PC27

COVERS: PENDANT

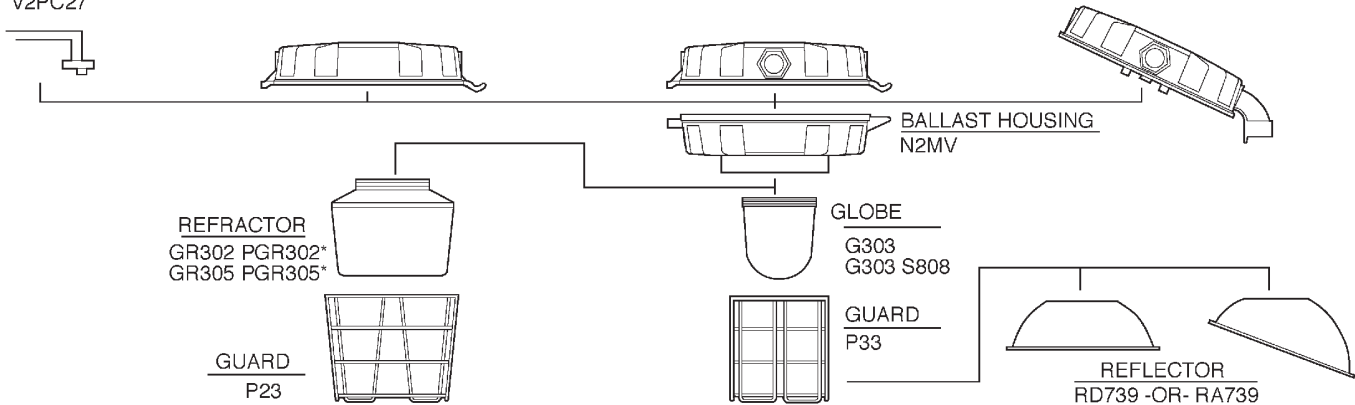
N2APM2 3/4 IN.
N2APM3 1 IN.

CEILING

N2CM2 3/4 IN.
N2CM3 1 IN.

STANCHION

N2JM5 1 1/2 IN.



* These plastic refractors are for non-hazardous areas only (50-100W max.)

Lamp Watts	Ambient Temp C	Optics	Class I (Gas/Vapors)		Class II (Dust) and Class III	Simultaneous Presence Gas and Dust Present in the Same Area		Supply Wire Temp C
			Non Restricted Breathing	Restricted Breathing		Non Restricted Breathing	Restricted Breathing	
				Ex nR			Ex nR	
			Standard Product	Option S826(TB)		Standard Product	Option S826	
			Division 2	Zone 2 or Division 2		Class I, Division 2 and Class II	Class I, Zone 2 or Division 2 and Class II	
		G303	X	X	X	X	X	
		GR305	X	X	X	X	X	

High Pressure Sodium

50	40	T3A	T5	T4A	T2C/T4A	T4A	75
	55	T3A	T5	—	—	—	85
	65	—	—	—	—	—	—
70	40	T3A	T5	T4A	T2C/T4A	T4A	75
	55	T3A	T5	—	—	—	85
	65	—	—	—	—	—	—
100	40	T2D	T5	T4A	T2C/T4A	T4A	85
	55	T2C	T4	—	—	—	100
	65	—	—	—	—	—	—
150	40	T2C	T4	—	—	—	85
	55	—	—	—	—	—	—
	65	—	—	—	—	—	—

Metal Halide

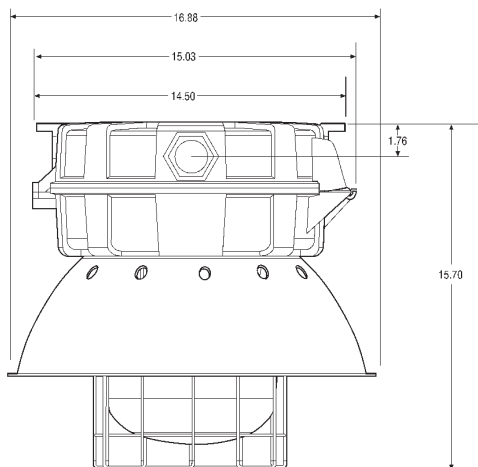
70	40	T3C	T5	T4	T2B/T4	T4	75
	55	T3B	T5	—	—	—	85
	65	—	—	—	—	—	—
100	40	T2B	T4	T4	T2B/T4	T4	85
	55	T2B	T4	—	—	—	—
	65	—	—	—	—	—	—
150 (S828)	40	T2	T3	—	—	—	—
	55	—	—	—	—	—	—
	65	—	—	—	—	—	—
175 (Includes S828)	40	T2	T3	—	—	—	—
	55	—	—	—	—	—	—
	65	—	—	—	—	—	—

Mercury Vapor

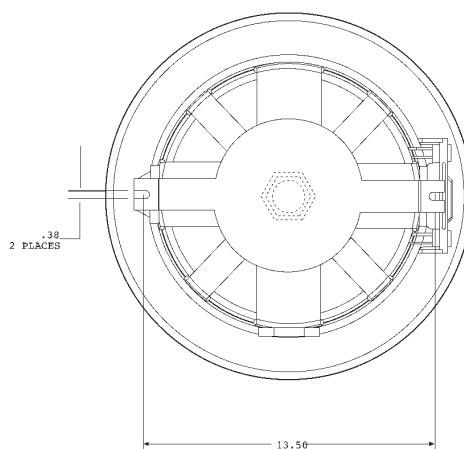
100	40	T2B	T4	T4	T2B/T4	T4	75
	55	T2B	T4	—	—	—	85
	65	—	—	—	—	—	—
175	40	T2	T3	—	—	—	85
	55	—	—	—	—	—	—
	65	—	—	—	—	—	—

N2MV Dimensions

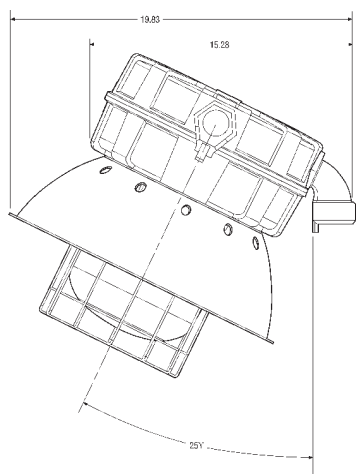
Ceiling Mount



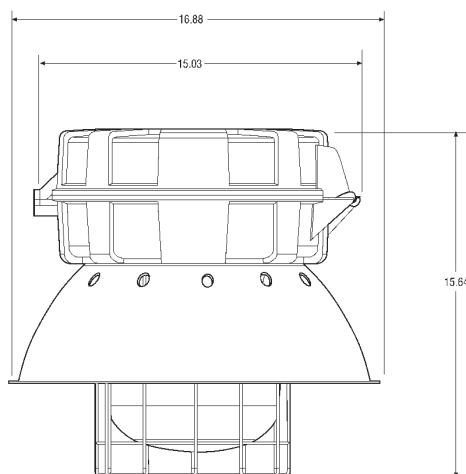
Ceiling Mount – Top View



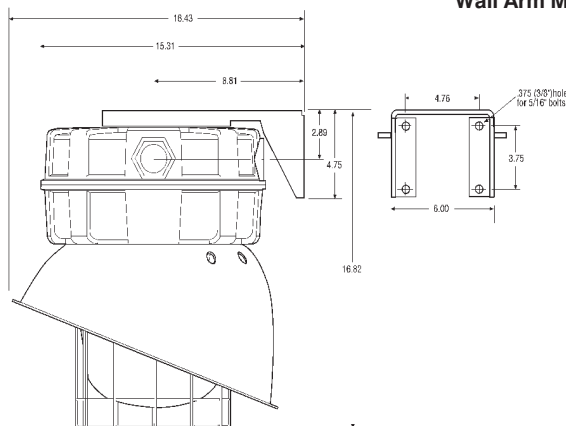
25° Angle Stanchion Mount



Pendant Mount



Wall Arm Mount



Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)	Lamp Watts	Luminaire with Globe, Guard (lbs.)
N2MVS	50	23	70	23 1/16
	100	24 1/16	150	26 1/8
N2MVC	100	21 1/16	175	22 1/4
	250	24		
N2MVM	70	21	100	21 1/16
	175	22 1/4	250	24

Add for mounting modules (lbs.):

Pendant	1 1/4	Flexible Pendant	1 1/2
Ceiling	2 3/4	Wall	4 1/2
Quad Mount	3 1/2	Angle Stanchion	3 1/2
Straight Stanchion	4 1/2		

Add for reflectors (lbs.):

Dome	1 1/4	30° Angle	1 3/4
------	-------	-----------	-------

Deduct: 1 lb. for luminaire without P33 Guard.

Add: 5 1/2 lbs. for luminaire with GR305 refractor.

50-175W N2MV Series

Champ® H.I.D. Luminaires

Non-Metallic

Photometric Data

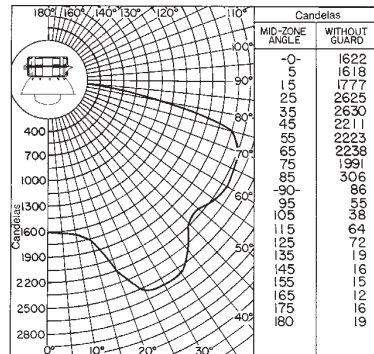
3L

Lamp: 150W/E-23-1/2 clear high pressure sodium (HPS)
Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for high pressure sodium luminaires with 150W/E-23½ clear lamps. Use conversion factors (multipliers) shown below for other clear lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaires.

Luminaire with Globe and Dome Reflector



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
N2MVS	50	0.25
	70	0.40
	100	0.59

Luminaire spacing ratio: 1.90

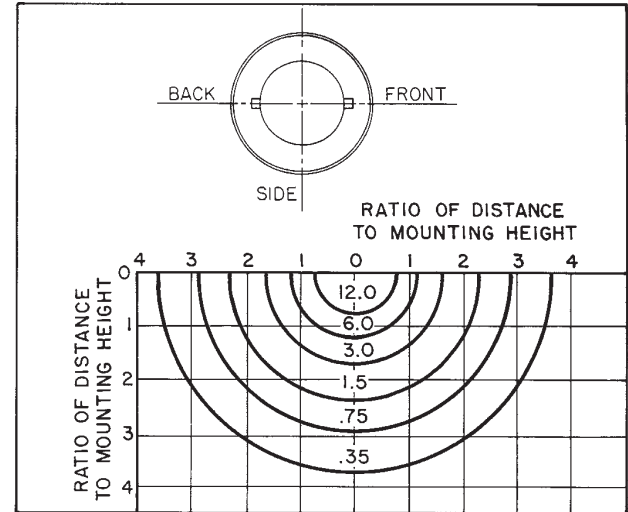
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

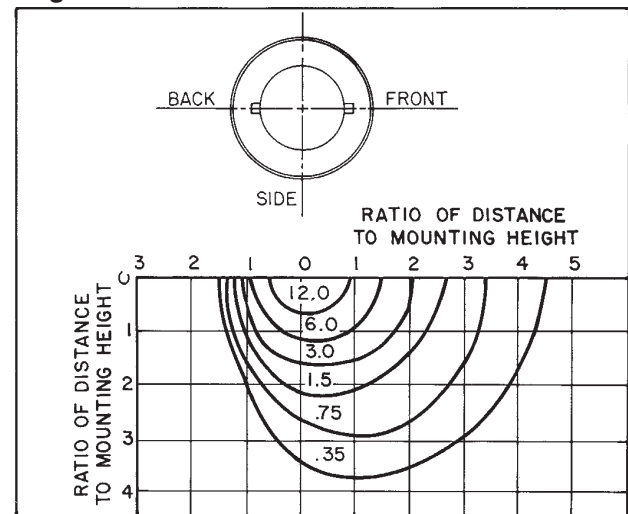
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.759	.643	.551	.476	.418
	30	.719	.582	.480	.400	.340
	10	.683	.530	.424	.342	.283
70	50	.740	.627	.538	.465	.406
	30	.703	.570	.471	.394	.334
	10	.669	.523	.418	.338	.280
50	50	.703	.595	.512	.442	.388
	30	.672	.548	.455	.381	.324
	10	.645	.506	.408	.332	.276
30	50	.669	.567	.488	.422	.370
	30	.646	.528	.439	.368	.314
	10	.622	.492	.399	.325	.270
10	50	.640	.541	.466	.403	.354
	30	.619	.508	.424	.356	.305
	10	.600	.479	.389	.318	.265
0	0	.582	.459	.370	.299	.247

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.371	.330	.294	.267	.231
	30	.296	.257	.224	.198	.164
	10	.243	.208	.174	.151	.121
70	50	.362	.323	.288	.262	.226
	30	.291	.252	.221	.195	.164
	10	.238	.204	.173	.151	.121
50	50	.345	.309	.275	.250	.218
	30	.283	.244	.215	.190	.159
	10	.235	.201	.170	.148	.119
30	50	.331	.294	.265	.240	.209
	30	.275	.239	.208	.184	.154
	10	.231	.196	.168	.146	.116
10	50	.317	.284	.253	.231	.201
	30	.266	.233	.203	.180	.150
	10	.227	.193	.165	.143	.114
0	0	.210	.177	.149	.128	.100

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

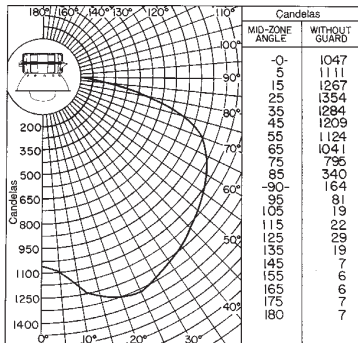
3L H.I.D. Lighting

Lamp: 175W/E-28 coated mercury vapor (MV)
Total bare lamp lumens: 8600

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

NOTE: All data provided is for mercury vapor luminaires with 175W/E-28 diffuse lamps. Use conversion factors (multipliers) shown below for other diffuse lamp types and wattages. Consult Cooper Crouse-Hinds for additional photometric data on any *Champ* series luminaire.

Luminaire with Globe and Dome Reflector



Multipliers: (for use with candela curves only).

Luminaire Series	Lamp Watts	Conversion Factor
N2MVC	100	0.49
	250	1.41
N2MVM	175	1.63
	250	2.38

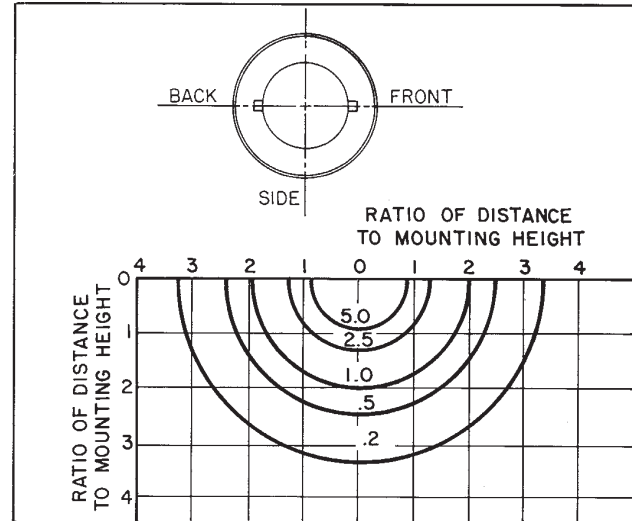
Luminaire spacing ratio: 1.7

Coefficient of Utilization

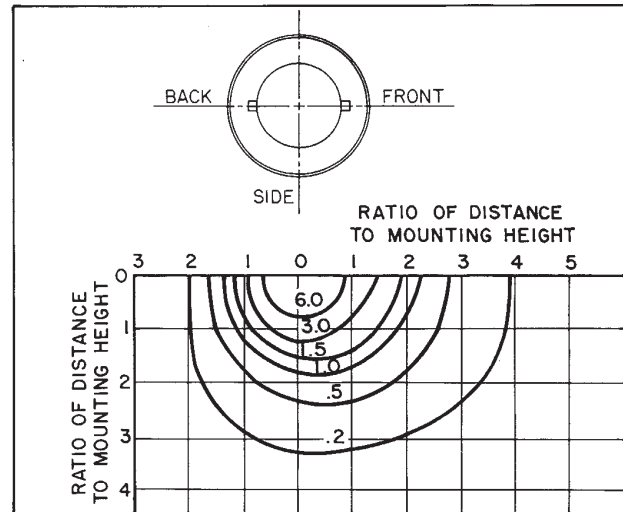
Effective Floor Cavity Reflectance 20%

% Reflectance	Room Cavity Ratio	1	2	3	4	5
Eff. Ceil. Wall						
50	1	.723	.619	.536	.467	.412
80	30	.684	.561	.470	.396	.340
	10	.649	.512	.417	.342	.286
70	50	.705	.604	.524	.456	.401
	30	.668	.549	.461	.390	.334
	10	.635	.505	.412	.338	.283
50	50	.668	.572	.498	.434	.384
	30	.638	.528	.445	.377	.324
	10	.611	.488	.401	.331	.279
30	50	.635	.545	.474	.414	.366
	30	.611	.508	.429	.365	.314
	10	.588	.474	.391	.324	.273
10	50	.606	.519	.453	.395	.350
	30	.585	.488	.414	.352	.305
	10	.566	.460	.381	.317	.268
0	0	.549	.442	.363	.299	.251
% Reflectance	Room Cavity Ratio	6	7	8	9	10
Eff. Ceil. Wall						
50	6	.368	.329	.294	.269	.234
80	30	.298	.261	.229	.204	.172
	10	.248	.215	.182	.160	.131
70	50	.359	.322	.289	.263	.229
	30	.293	.256	.226	.201	.171
	10	.244	.211	.181	.159	.131
50	50	.343	.308	.276	.252	.221
	30	.284	.248	.220	.196	.166
	10	.240	.207	.178	.157	.128
30	50	.329	.294	.266	.243	.212
	30	.276	.243	.213	.190	.162
	10	.236	.203	.176	.154	.126
10	50	.315	.284	.255	.233	.205
	30	.268	.236	.208	.186	.157
	10	.231	.200	.173	.151	.123
0	0	.216	.184	.158	.138	.110

Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector



Isofootcandle charts show illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

Height (Ft.)	Factor	Height (Ft.)	Factor
8	1.56	16	.391
12	.694	20	.250
14	.510		

VMV, LMV, DMV, VMV High Wattage & N2MV Series



Globes



G54



G24



G303

Lamp Watts	Luminaire Series	Type	Cat. #
35-150	LMVS, LMVM	Heat/impact resistant	G54✓
50-175	VMVC, VMVM, VMVS	Heat/impact resistant	G24✓
50-250	DMVC, DMVM, DMVS	Heat/impact resistant	G303✓
200-400	VMVS	Heat/impact resistant	G303✓
250	VMVC, VMVM	Heat/impact resistant	G303✓
50-175	N2MVC, N2MVM, N2MVS	Heat/impact resistant	G303✓

Guards



P50 – use with G54 globe



P21 – use with G24 globe



P33 – use with G303 globe



P23 – use with refractors

Lamp Watts	Luminaire Series	Type	Cat. #
35-150	LMVS, LMVM	Copper-free aluminum	P50✓
50-175	VMVC, VMVM, VMVS	Copper-free aluminum	P21✓
50-250	DMVC, DMVM, DMVS	Stainless steel	P33✓
200-400	VMVS	Stainless steel	P33✓
250	VMVC, VMVM	Stainless steel	P33✓
Refractors	All	Stainless steel	P23
50-175	N2MVC, N2MVM, N2MVS	Stainless steel	P33

✓ – available with Lightning Service™ delivery.
See Section G. for complete details.

Reflectors



Dome – Krydon® material



30° Angle – Krydon material

Lamp Watts	Luminaire Series	Dome Cat. #	Angle Cat. #
35-150	LMVS, LMVM	RD636 (RD66)✓	RA636 (RA66)✓
50-175	VMVC, VMVM, VMVS	RD70✓	RA70✓
50-250	DMVC, DMVM, DMVS	RD739 (RD79)✓	RA739 (RA79)✓
200-400	VMVS	RD739 (RD79)✓	RA739 (RA79)✓
250	VMVC, VMVM	RD739 (RD79)✓	RA739 (RA79)✓
50-175	N2MV, N2MVF(B)	RD739✓	RA740



Reflector/Lens – Etched Alzak aluminum reflector/tempered glass lens

Lamp Watts	Luminaire Series	Type	Cat. #
200-400	VMVC, VMVM, VMVS	Reflector/Lens	GRD4✓
70-250	DMVS, DMVC, DMVM	Reflector/Lens	GRD4✓

Globes – Teflon Coated

Teflon coated for increased shatter protection

Lamp Watts	Luminaire Series	Cat. #
50-175	VMVC, VMVM, VMVS	G24-S808
50-175	DMVC, DMVM, DMVS	G303-S808

Alzak is a registered trademark of Alcoa.
Teflon is a registered trademark of E.I. DuPont Co.



Refractors



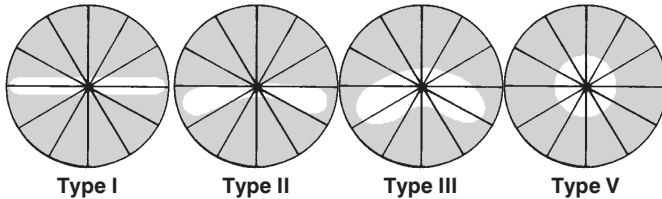
R2, R5, PR2, PR3, PR5



GR302, GR305

Lamp Watts	Luminaire Series	I.E.S. Type	Glass Cat. #	Plastic (100W max. non hazardous) Cat. #
50-175	VMVC,	II	R2	PR2
	VMVM,	III		PR3
	VMVS }	V	R5	PR5
200-400	VMVC,	II	GR302	
	VMVM,	V	GR305✓	
	VMVS }			
50-250	DMVC,	II	GR302	PGR302
	DMVS,	III		PGR303
	DMVM }	V	GR305✓	PGR305
50-175	N2MV }			

I.E.S. Distribution Curves



Compact Refractors



G241, G245



With optional P241 wire guard.

Lamp Watts	Luminaire Series	IES Type	Glass Cat. #
50-175	VMVC,	I	G241✓
	VMVM,	V	G245✓
	VMVS }		

Optional stainless steel wire guard

P241✓

Safety Lighting Options

Quartz Auxiliary Lamp



The quartz auxiliary lamp comes to full brightness instantly and remains lit until the H.I.D. lamp attains 60-70% of full illumination. Quartz auxiliary lamps can be used with all DMV, VMV and VMV high wattage series *Champ*® luminaires. Use for non-hazardous applications ONLY.

(NOTE: VMV luminaires (50-175W) ordered with this option must use large glass refractor optics, not compact refractors).

Quartz auxiliary lamp (100W single ended lamp – Q100CL/DC, Q100DC or 100Q/CL/DC NOT furnished)

Add suffix **QTZ** to Cat. No.

Instant Restrike

Factory installed instant restrike device will restart a hot high pressure sodium lamp (50-150W LX) after a momentary power interruption, without the typical delay for cooling.

Instant restrike for use in 50-150W "LX" HPS luminaires.

Add suffix **IR** to Cat. No.

Ballast-gard™

Ballast-gard starter cut-out switch prevents starter pulsing after a time delay of approximately two minutes if the lamp fails to start. For use in 50-400 watt HPS luminaires only. Add suffix **BG** to Cat. No.

✓ – available with Lightning Service™ delivery.
See Section G for complete details

The only UL recognized photocell for Class I, Division 2 areas eliminates the need for an explosionproof box.

When mounting in EIH enclosures for Class I, Division 1 applications (EV21H Series) seals are not required for Groups C & D.

Cooper Crouse-Hinds V2PC factory-sealed, field installed photocell offers reliable, dusk-to-dawn lighting control in Class I, Division 2 locations. The V2PC is ideal for walkways, security lighting, and any other outdoor lighting application that utilizes Champ® H.I.D. lighting luminaires.

Applications:

The V2PC is designed:

- to provide control for automatic dusk-to-dawn lighting.
- for use with LMV, DMV, VMV, VMV High Wattage, N2MV and FMV Series Champ® lighting luminaires.
- for use on 35-400 watt H.I.D., incandescent, or fluorescent lighting luminaires.
- to save energy by operating luminaires only when necessary.
- for safety by turning on outdoor luminaires in critical passageways at night.
- for walkways, parking areas, outdoor process areas, security lighting, or any outdoor lighting application in Class I, Division 2 locations and corrosive environments.
- for remote mounting in FS boxes (D2S Series).
- for mounting in EIH enclosures for Class I, Division 1 applications (EV21H Series).

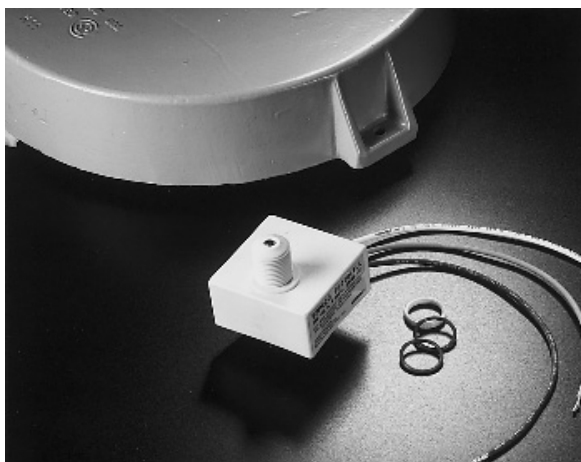
Features:

- Field-installable.
 - Solid-state design for performance and dependability.
 - Factory sealed components.
- Explosionproof enclosure not required for Class I, Division 2 locations.
- Luminaires turn on at 3 footcandles, off at 8 footcandles insuring that the luminaires are operating only when needed.
 - Built-in 10 second time delay to eliminate nuisance tripping.
 - Eight-year operating life.
 - Furnished with 6" stranded 600 volt color coded wire leads.
 - Constructed from corrosion-resistant thermoplastic polyester.
 - Available on a DS cover for use with any FS/FD box (D2S Series).
 - Available in an EIH enclosure for use in Class I, Division 1, Groups B†, C, and D locations (EV21H Series). No seals required.

Electrical Rating Ranges:

- 120, 208, 220, 240, 277 VAC
- 50/60 Hz
- 35-400 watt H.I.D., incandescent, or fluorescent
- V2PC20 – 3.3A max. current rating
- V2PC22 – 1.8A max. current rating
- V2PC27 – 1.4A max. current rating

† For Group B applications, seal within 1½" of enclosure in accordance with Section 501-5 of the National Electric Code®.



Certifications and Compliances:

V2PC and D2S

- NEC/CEC: Class I, Division 2, Groups A, B, C, D

- UL Standard: 844 – Hazardous (Classified) Locations

- CSA: C22.2 No. 55

EV21H

- NEC/CEC:

- Class I, Division 1 and 2, Groups B, C, D
- Class II, Division 1, Groups E, F, G
- Class II, Division 2, Groups F, G
- Class III

- NEMA: 3, 4, 7BCD, 9EFG

- UL Standard: 844 – Hazardous (Classified) Locations

- CSA: C22.2 No. 30, 55

Options:

To order luminaire with **photocell factory installed**:

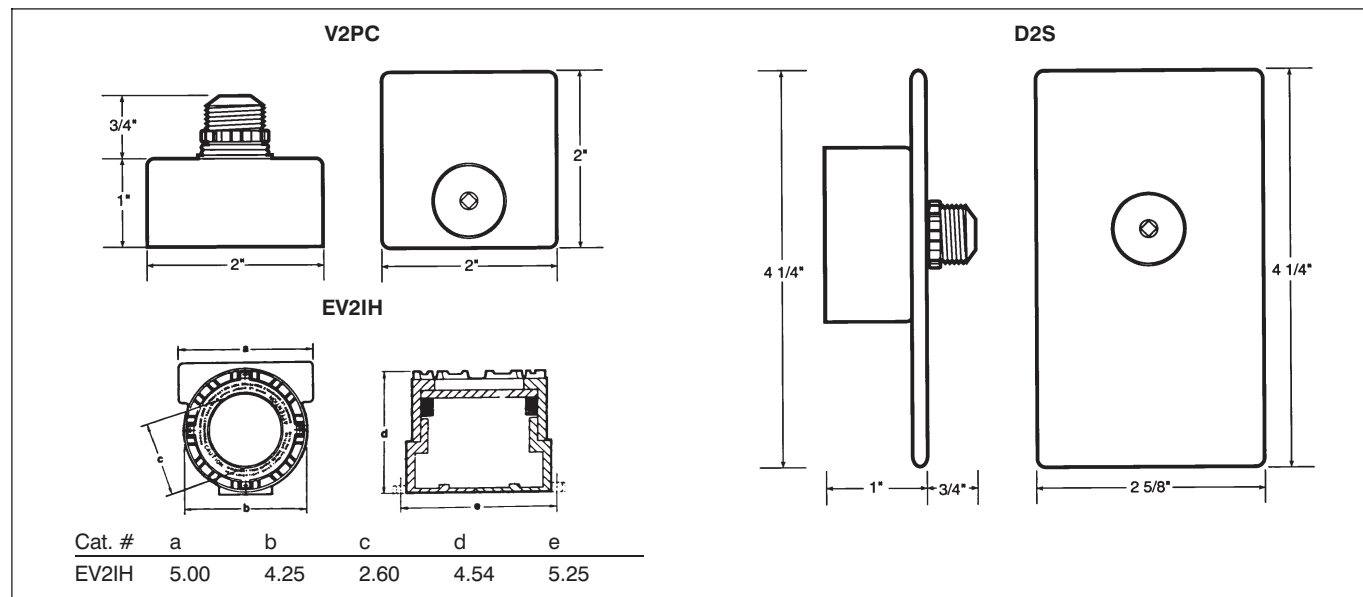
1. Specify luminaire dedicated supply voltage (not MT, DT, or TT)
2. Add photocell Cat. No. to fixture Cat. No. as follows:
V2PC20
V2PC22
V2PC27

Example: VMVSJ070GP/120-V2PC20 is a 120V 60Hz luminaire with a factory installed photocell.

Dimensions Ordering Information

- Cl. I, Div. 2, Groups A,B,C,D
- Maintains Cl.I, Div. 2
Suitability of Cooper Crouse-Hinds
Champ® Series Luminaires

Dimensions:



Ordering Information



Photocell for field installation*

Catalog #	Voltage Range
V2PC20	120V, 50/60 Hz
V2PC22	208-240V, 50/60 Hz
V2PC27	277V, 50/60 Hz

* Must be factory installed in Canada — see page 777.



Photocell in DS cover for use with FS/FD box

Catalog #	Voltage Range
D2S20	120V, 50/60 Hz
D2S22	208-240V, 50/60 Hz
D2S27	277V, 50/60 Hz



Photocell in EIH enclosure for use in Class I, Division 1, Groups B, C, and D; Class II, Division 1, Groups E, F, and G; and Class III locations

Catalog #	Voltage Range
EV2IH20	120V, 50/60 Hz
EV2IH22	208-240V, 50/60 Hz
EV2IH27	277V, 50/60 Hz

High Intensity Discharge (H.I.D.) Luminaires Hazardous

4L

Description	Page No.
Application/Selection	780
Class I Hazardous Area Lighting	
Integrally Ballasted Luminaires	
EVLP Lo-Pro™ Hazard•Gard® Series	781-791
EVM Hazard•Gard® Series	792-800
HPS, Pulse Start MH, MH, MV	
Class II Hazardous Area Lighting	
Integrally Ballasted Luminaires	
EVLP Lo-Pro™ Hazard•Gard® Series	781-791
EVM Hazard•Gard® Series	792-800
HPS, Pulse Start MH, MH, MV	

4L
H.I.D.
Fixtures

High Intensity Discharge (H.I.D.) Luminaires

Hazardous Application and Selection Quick Selector Chart

Application:

Luminaires contained in this section are for use:

- in indoor or outdoor hazardous locations
- as general area or spot lighting applications
- where longer lamp life provides desirable maintenance cost savings and return on investment through use of fewer luminaires, circuits and ancillary apparatus
- where relamping and maintenance difficulties require longer lamp life

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Considerations for Selection:

Environmental:

- Make sure luminaire meets NEC/CEC requirements for area in which it will be used

Lighting levels required:

- Can luminaire accept lamp of sufficient size to yield desired light level (see Lighting Selector Guide to determine the number and location of luminaires required)

NOTE: For details on luminaire selection and methods for determining number and location luminaires, see Lighting Selector Guide, pages 665 to 689.

Quick Selector Chart

Series	NEC Compliance	Electrical Characteristics		Ballast
		Watts	Volts	
EVM <i>Hazard•Gard™</i>	Cl. I, Groups B, C, D	50, 70, 100, 150, 175, 200, 250, 320, 400 (Mogul base)	120, 208, 240, 277, 347, 480, 600, MT	High power factor, constant wattage, reactor or autotransformer integral
	Cl. II, Groups E, F, G	50, 70, 100, 150, 175 (Mogul base)	120, 208, 240, 277, 347, 480, 600, MT	
Champ® Series (see Section 3L)	Cl. II, Groups E, F, G	70, 100, 150, 175 (Mogul base)	120, 208, 240, 277, 347, 480, 600, MT	High power factor, constant wattage integral
EVLP <i>Hazard•Gard™</i>	Cl. I, Groups B, C, D	70, 100, 150, 175 (Medium base) 70, 100, 150, 175, 200, 250 (Mogul base)	120, 208, 240, 277, 347, 480, MT, TT	High power factor, constant wattage, reactor or autotransformer, integral.
	Cl. II, Groups E, F, G Cl. III	70, 100 (Medium base) 70, 100, 150, 175 (Mogul base)	120, 208, 240, 277, 347, 480, MT, TT	

EVLP Low Profile Hazard•Gard® (H.I.D.) Luminaires

Medium and Mogul Base

- Cl. I, Div. 1, Groups B (GB suffix), C, D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix – GB), IIB, IIA
- Cl. II, Div. 1 Groups E, F, G; Class III, Simultaneous Presence (175W max)
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

4L

Application:

Cooper Crouse-Hinds Low Profile Hazard•Gard® luminaires are used in:

- areas where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and pharmaceutical plants, oil terminals, gas plants and other heavy process industry facilities
- waste treatment facilities
- drilling platforms and other coastal and offshore hazardous areas

Features - Benefits:

- Small compact size is perfect where low mounting restrictions are a concern.
- Two start Acme threaded construction allows for easier assembly, installation and maintenance.
- Light weight copper-free aluminum housing with powdered epoxy finish for superior corrosion resistance.
- All exterior hardware is corrosion-resistant stainless steel.
- Four mounting arrangements; pendant, ceiling, wall bracket and stanchion suit any lighting layout.
- Wide range of light sources and wattages to meet specific lighting needs.
- Marine and Nema 4X construction suitable for outdoor, hose down, marine and corrosive environments.
- Integral ballast for lowest installed cost.
- High power factor (90%+) ballasts allows more fixtures per circuit.
- Uses same mounting modules as the standard Hazard•Gard® for easy retrofitting when the Lo-Pro™ is the preferred choice.
- Internally fluted glass globe reduce glare and distributes light evenly – ideal for adverse environments typical of industrial facilities.
- Krydon® construction dome and angle reflectors – won't rust, corrode, dent, chip or peel
- Now available in components – luminaire body, mounting module, guard, reflectors – allowing for easy stocking for Quick Ship requirements.

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



Standard Finishes:

- Copper-free aluminum – *Corro-free™*
powdered epoxy
- Krydon – *white*
 - Stainless steel guard

Ratings (Electrical/Size):

- Sources/wattage:
- Medium Base 70-150W HPS, 70-175W MH
 - Mogul Base 70-150W HPS, 70-250W MH
- Voltages:
- Medium & Mogul H.I.D.
 - 120V 60Hz
 - Multi-tap (120, 208, 240, 277V 60Hz)
 - Tri-tap (120, 277, 347V 60Hz)
 - 480V 60Hz
 - Other voltages – consult Cooper Crouse-Hinds
- Conduit entries:
- ¾", 1" NPT – pendant, wall bracket, ceiling
 - 1¼" NPT – stanchion

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
BallastGard (HPS only)	BG
Instant restrike (Mogul Base only)	IR
70-150W LX HPS	
Cannot use with BG Option	
Fused	S658*
Quartz auxiliary lighting (Mogul Base only)	QTZ
Cannot use with IR option	
Uses 100W single ended double contract lamp	
Quartz lamp not included	
Factory assembled with lamps	FA

Accessories:

Description	Cat. #
Dome reflector	RD739
Angle reflector	RA739

Certification & Compliances:

- NEC and CEC:
 - Class I, Division 1, Groups B (with suffix GB), C, D – All Wattages
 - Class I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA – All Wattages
 - Class II, Class III & Simultaneous Presence – (medium base 100 watt max., Mogul Base 175 watt max.)
- UL Standards:
 - 844, Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137

4L
H.I.D.
Fixtures

4L

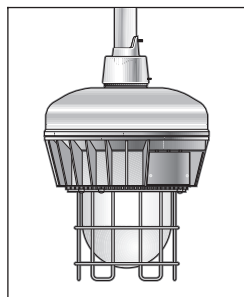
EVLP Low Profile Hazard•Gard®

Medium Base

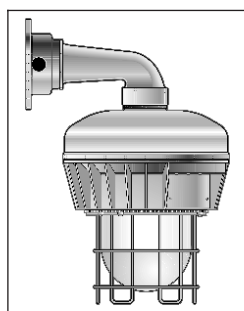
- Cl. I, Div. 1, Groups B(GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (With Suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence (100W max)

- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

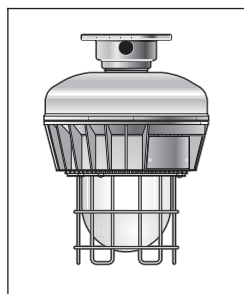
Medium Base Ordering Information



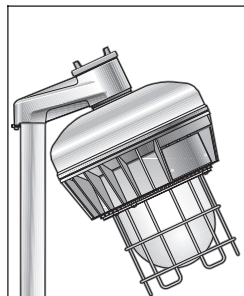
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and bracket mounts have 4 hubs: 3 are plugged.

Luminaire Body Less Mounting Module & Guard					
	Pendant	Wall Brckt	Ceiling	Stanchion	
Watt	Hub Size	With Guard Catalog #	With Guard Catalog #	With Guard Catalog #	Catalog #
High Pressure Sodium					
70W	¾	EVLPA142071	EVLBPBX142071	EVLPCX142071	EVLPA14070
	1	EVLPA143071	EVLBPBX143071	EVLPCX143071	
	1¼			EVLJP144071	
100W	¾	EVLPA142101	EVLBPBX142101	EVLPCX142101	EVLPA14100
	1	EVLPA143101	EVLBPBX143101	EVLPCX143101	
	1¼			EVLJP144101	
150W	¾	EVLPA142151	EVLBPBX142151	EVLPCX142150	EVLPA14151
	1	EVLPA143151	EVLBPBX143151	EVLPCX143151	
	1¼			EVLJP144151	
Pulse Start Metal Halide					
150W	¾	EVLPA192151-S828	EVLBPBX192151-S828	EVLPCX192151-S828	EVLPA19150-S828
	1	EVLPA193151-S828	EVLBPBX193151-S828	EVLPCX193151-S828	
	1¼			EVLJP194151-S828	
175W	¾	EVLPA192171-S828	EVLBPBX192171-S828	EVLPCX192171-S828	EVLPA19175-S828
	1	EVLPA193171-S828	EVLBPBX193171-S828	EVLPCX193171-S828	
	1¼			EVLJP194171-S828	
Metal Halide					
70W	¾	EVLPA192071	EVLBPBX192071	EVLPCX192071	EVLPA19070
	1	EVLPA193071	EVLBPBX193071	EVLPCX193071	
	1¼			EVLJP194071	
100W	¾	EVLPA192101	EVLBPBX192101	EVLPCX192101	EVLPA19100
	1	EVLPA193101	EVLBPBX193101	EVLPCX193101	
	1¼			EVLJP194101	
175W	¾	EVLPA192171	EVLBPBX192171	EVLPCX192171	EVLPA19175
	1	EVLPA193171	EVLBPBX193171	EVLPCX193171	
	1¼			EVLJP194171	

Complete Catalog Number as follows:

1.		Standard Voltage Ballasts – 60HZ NEC/UL				CEC/CSA (cUL)		
Voltage Suffix		Multi-tap /MT		120V /120	480V /480	Tri-tap /TT		120V /120
Optional Voltage Ballasts– 50 Or 60HZ								
*CEC/CSA (cUL)– CWI Isolated Ballasts					Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50	

2. 150W HPS Luminaires Only
- 55V lamps – add suffix "LX"
 - 100V lamps – add suffix "CE"

* CWI Isolated Ballasts are only available for high pressure sodium and 175W metal halide (non pulse start) luminaires.

H.I.D. Fixtures
4L

EVLP Low Profile Hazard•Gard®

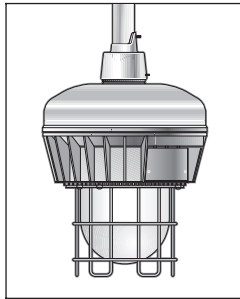
Mogul Base

- Cl. I, Div 1, Groups B (GB suffix), C, D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence (175W max)

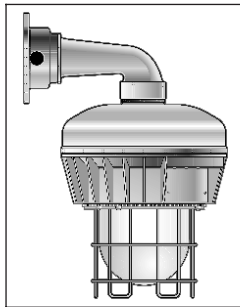
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

4L

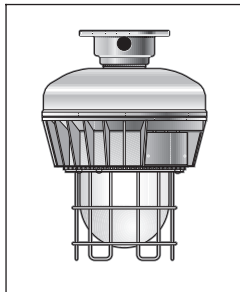
Mogul Base Ordering Information



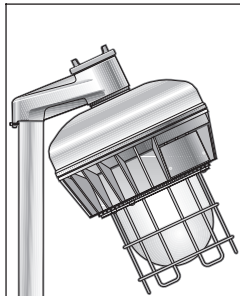
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and wall bracket mounts have 4 hubs: 3 are plugged.

Luminaire Body Less Mounting Module & Guard					
	Pendant	Wall Bracket	Ceiling	Stanchion	
Watt	Hub Size	With Guard Catalog #	With Guard Catalog #	With Guard Catalog #	Catalog #
High Pressure Sodium					
70W	¾ 1 1¼	EVLPA042071 EVLPA043071	EVLPBX042071 EVLPBX043071	EVLPCX042071 EVLPCX043071 EVLJP044071	EVLPA04070
100W	¾ 1 1¼	EVLPA042101 EVLPA043101	EVLPBX042101 EVLPBX043101	EVLPCX042101 EVLPCX043101 EVLJP044101	EVLPA04100
150W	¾ 1 1¼	EVLPA042151 EVLPA043151	EVLPBX042151 EVLPBX043151	EVLPCX042151 EVLPCX043151 EVLJP044151	EVLPA04150
Pulse Start Metal Halide					
150W	¾ 1 1¼	EVLPA092151S828 EVLPA093151S828	EVLPBX092151S828 EVLPBX093151S828	EVLPCX092151S828 EVLPCX093151S828 EVLJP094151S828	EVLPA09150S828
175W	¾ 1 1¼	EVLPA092171S828 EVLPA093171S828	EVLPBX092171S828 EVLPBX093171S828	EVLPCX092171S828 EVLPCX093171S828 EVLJP094171S828	EVLPA09170S828
200W	¾ 1 1¼	EVLPA092201S828 EVLPA093201S828	EVLPBX092201S828 EVLPBX093201S828	EVLPCX092201S828 EVLPCX093201S828 EVLJP094201S828	EVLPA09201S828
250W	¾ 1 1¼	EVLPA092251S828 EVLPA093251S828	EVLPBX092251S828 EVLPBX093251S828	EVLPCX092251S828 EVLPCX093251S828 EVLJP094251S828	EVLPA09250S828
Metal Halide					
70W	¾ 1 1¼	EVLPA092071 EVLPA093071	EVLPBX092071 EVLPBX093071	EVLPCX092071 EVLPCX093071 EVLJP094071	EVLPA09070
100W	¾ 1 1¼	EVLPA092101 EVLPA093101	EVLPBX092101 EVLPBX093101	EVLPCX092101 EVLPCX093101 EVLJP094101	EVLPA09100
175W	¾ 1 1¼	EVLPA092171 EVLPA093171	EVLPBX092171 EVLPBX093171	EVLPCX092171 EVLPCX093171 EVLJP094171	EVLPA09170
250W	¾ 1 1¼	EVLPA092251 EVLPA093251	EVLPBX092251 EVLPBX093251	EVLPCX092251 EVLPCX093251 EVLJP094251	EVLPA09250

Complete Catalog Number as follows:

1.		Standard Voltage Ballasts – 60HZ				CEC/CSA (cUL)	
		NEC/UL					
Voltage Suffix		Multi-tap /MT		120V /120	480V /480	Tri-tap /TT	120V /120
Optional Voltage Ballasts– 50 Or 60HZ							
*CEC/CSA (cUL)– CWI Isolated Ballasts				Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires Only
- 55V lamps – add suffix "LX"
 - 100V lamps – add suffix "CE"
- Example: **EVLPA043151/MT-LX**

* CWI Isolated Ballasts are only available for high pressure sodium and 175W–250W metal halide (non pulse start) luminaires.

4L
H.I.D.
Fixtures

EVLP Luminaires are available in components. A complete luminaire consists of:

- Mounting Module
- Luminaire Body
- Guard, Dome Reflector or Angle Reflector

Mounting Modules

Type	Conduit	Catalog Number
Pendant	¾"	EVMP2
	1"	EVMP3
Ceiling & Wall Box	¾"	EV22
	1"	EV33
Wall Bracket Arm	Use EV22 or EV33 box with EV87	EV87
Stanchion	1¼"	EVMJ4
Guards		
Medium		EV511
Mogul		EV512
Reflectors		
Dome		RD739
Angle		RA739

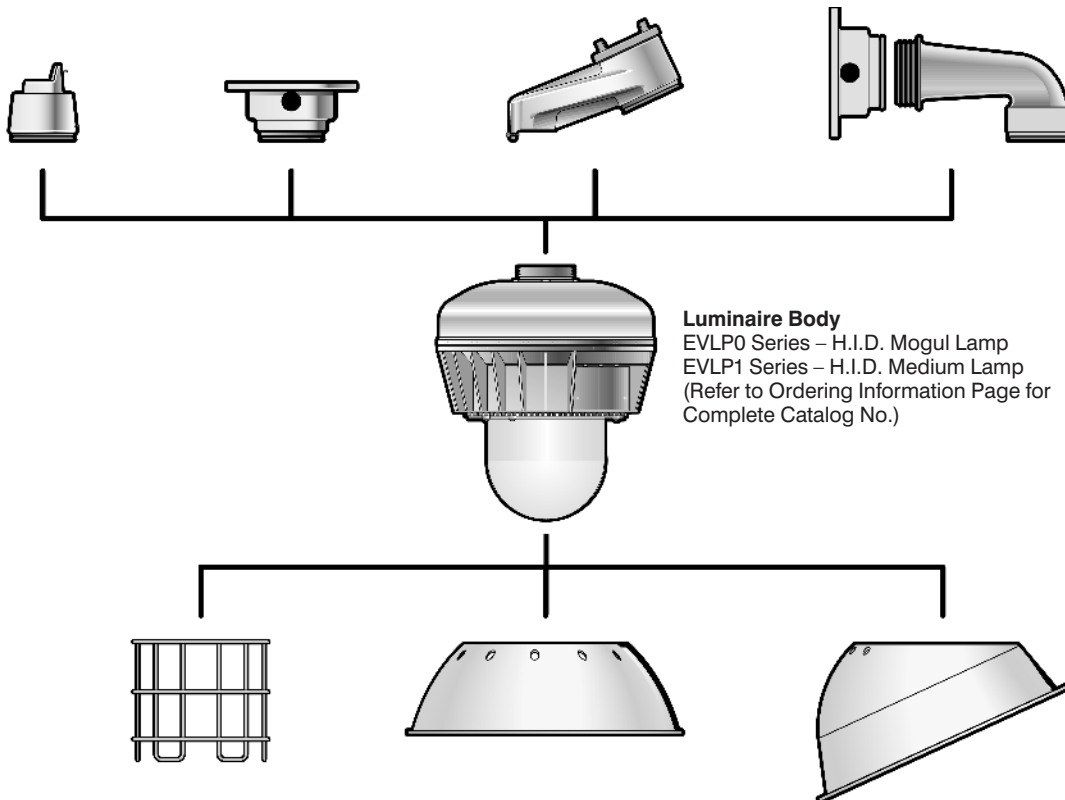
Pendant
EVMP2
EVMP3

Ceiling
EV22
EV33

Stanchion
EVMJ4

Ceiling
EV22
EV33

Wall Bracket
EV87 & EV22 or EV33



Luminaire Body

EVLP0 Series – H.I.D. Mogul Lamp
EVLP1 Series – H.I.D. Medium Lamp
(Refer to Ordering Information Page for Complete Catalog No.)

Guards
EV511
EV512

Dome Reflector
RD739

Angle Reflector
RA739

Medium Base Lamp Luminaires

Maximum Ambient	Watts	Class I, Group B (w/GB suffix) Groups C, D			Class II, Groups E, F, G Class III Simultaneous Presence 40°C	Supply Wire °C
		40°C	55°C	65°C		
High Pressure Sodium	70W	T5	T4A	T4A	T4A	90°C
	100W	T4A	T4A	T4	T4	90°C
	150W	T4	T3C	—	—	90°C
Metal Halide (including pulse start)	70W	T5	T4A	T4A	T4	85°C
	100W	T3C	T3C	—	—	90°C
	150W	T3C	T3B	—	—	90°C
	175W	T3C	T3B	—	—	90°C

Mogul Base Lamp Luminaires

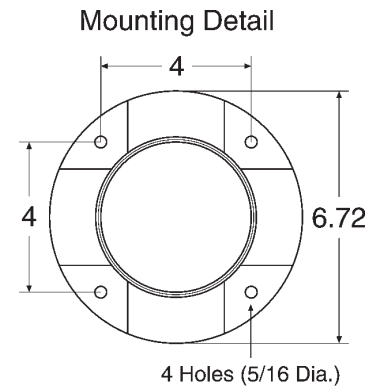
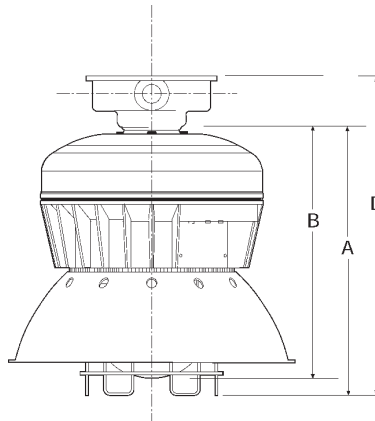
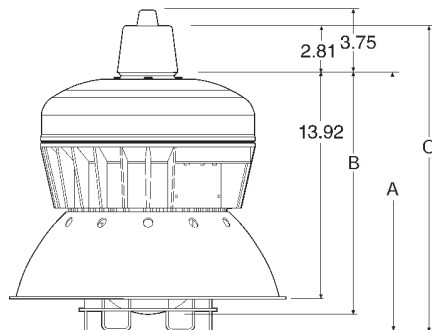
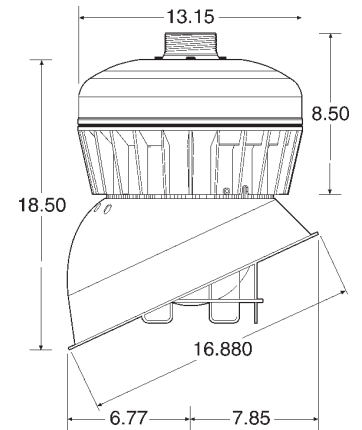
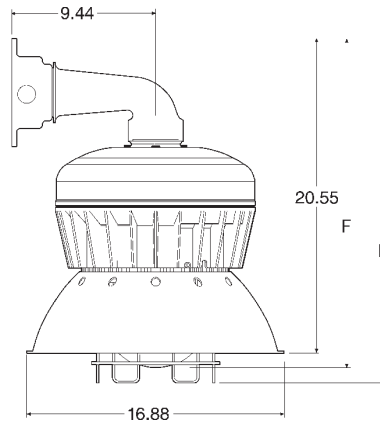
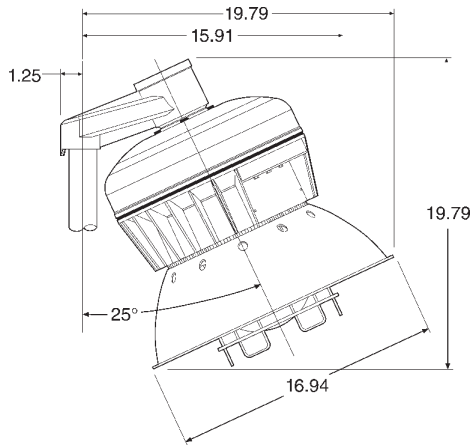
Maximum Ambient	Watts	Class I, Group B (w/GB suffix) Groups C, D			Class II, Groups E, F, G Class III Simultaneous Presence 40°C	Supply Wire °C
		40°C	55°C	65°C		
High Pressure Sodium	70W	T6	T5	T5	T5	90°C
	100W	T5	T4A	—	T4A	90°C
	150W	T4A	T4	—	T4	90°C
Metal Halide (including pulse start)	70W	T6	T5	T5	T5	85°C
	100W	T5	T4A	T4A	T4A	90°C
	150W	T4	T3C	—	T3C	90°C
	175W	T4	T3C	—	T3C	90°C
	200W	T3C	—	—	—	90°C
	250W	T3C	—	—	—	90°C

4L

EVLP Low Profile Hazard•Gard® Dimensions and Weights

Dimensions (inches):

	A	B	C	D	E	F
Medium Base	13.92	12.73	16.50	16.71	20.59	19.36
Mogul Base	15.69	14.69	18.25	18.46	22.34	21.30



Wall & Ceiling Mount

Weights (lbs)

Source	Watts	Luminaire w/guard	
		Medium	Mogul
High Pressure Sodium	70	34	36.5
	100	36	38.5
	150	36.5	39
Metal Halide	70	33.5	36
	100	34.5	37
	150	36	38.5
	175	36	38.5
	200	—	40.5
	250	—	40.5
Add Mounting Modules:			
Pendant		1	1
Ceiling		2	2
Bracket		4.5	4.5
Stanchion		2.5	2.5
Add For Reflectors			
RA739		1	1
RD739		1	1
Deduct for Wire Guard		0.5	0.5

H.I.D. Fixtures
4L

EVLP Low Profile Hazard•Gard® Medium Base

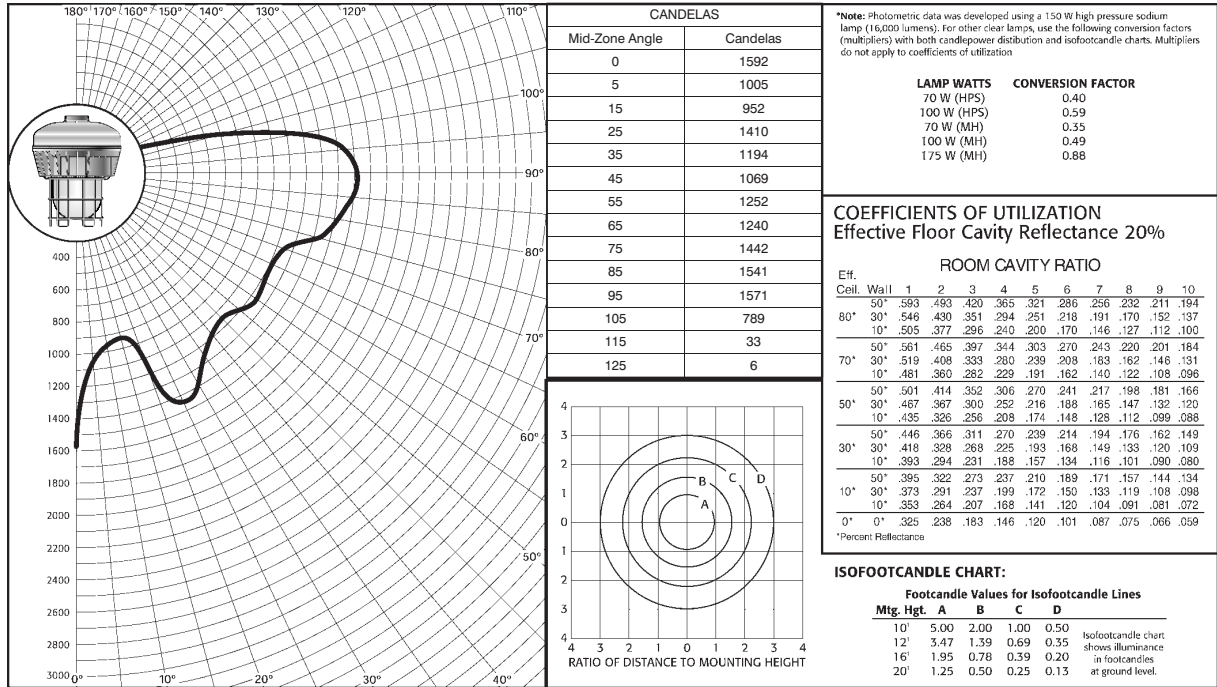
Photometric Data

4L

Medium Base

Luminaire with Globe and Guard

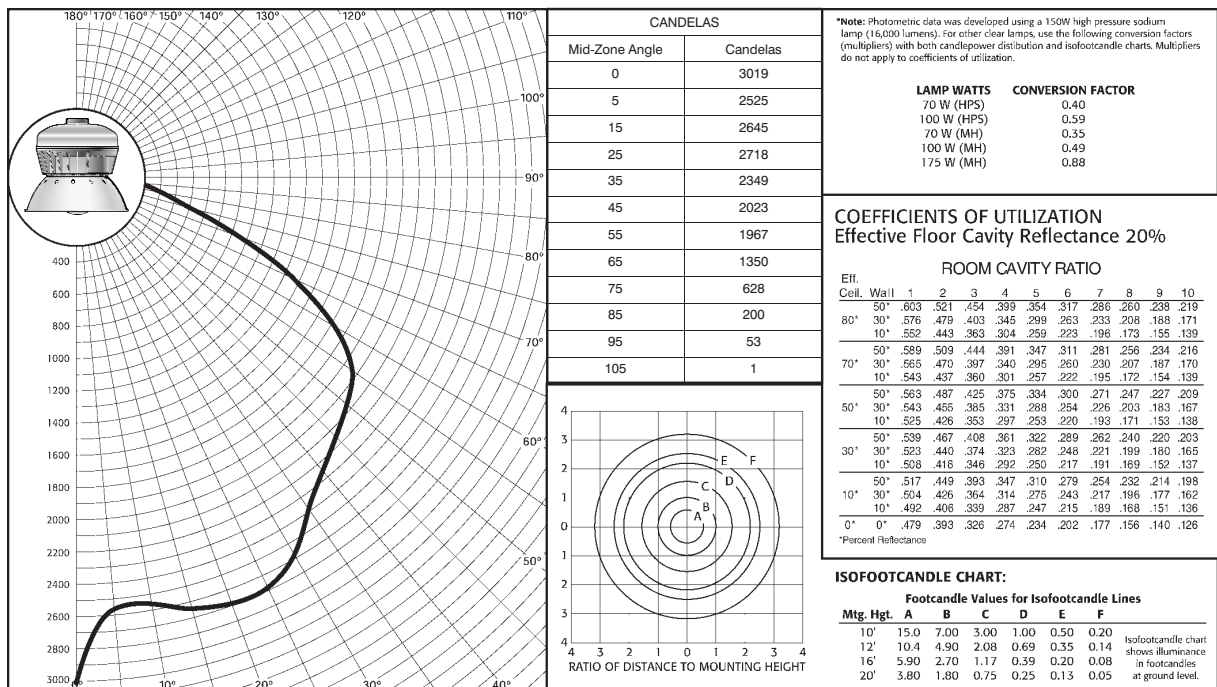
EVLP143151 Lamp: 150W/B17 High Pressure Sodium (HPS)



Medium Base

Luminaire with Globe and Dome Reflector (Less Guard)

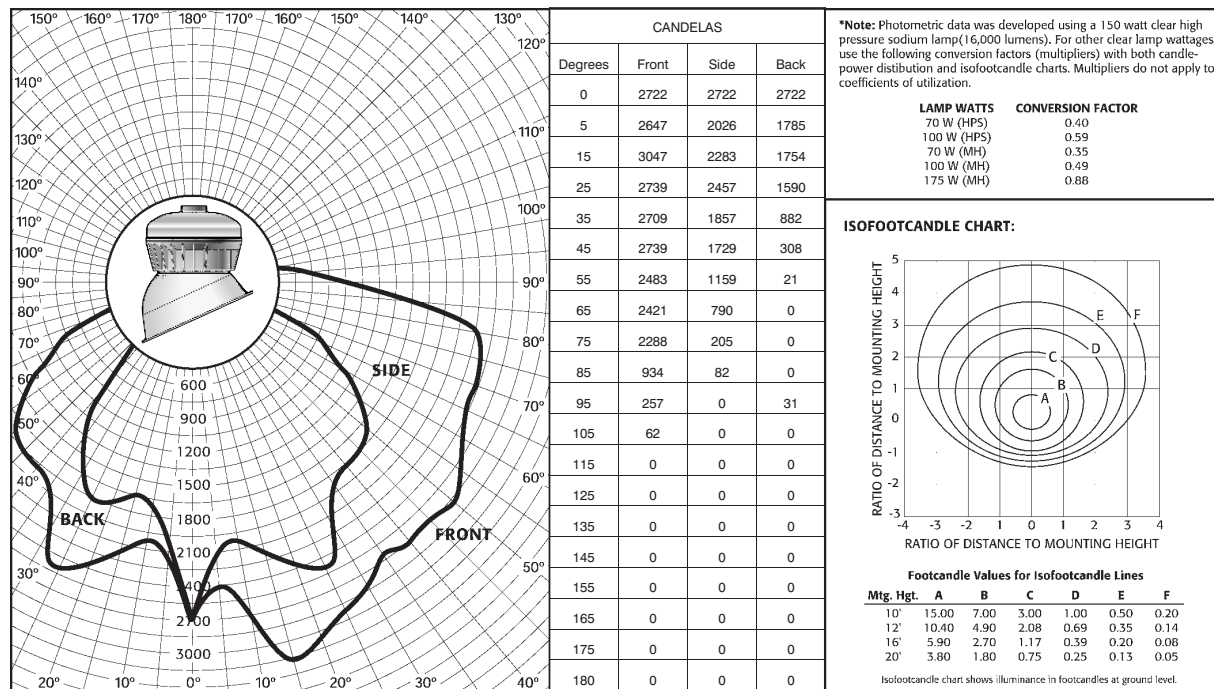
EVLP143150RD Lamp: 150W/B17 High Pressure Sodium (HPS)



EVLP Low Profile Hazard•Gard® Medium and Mogul Base

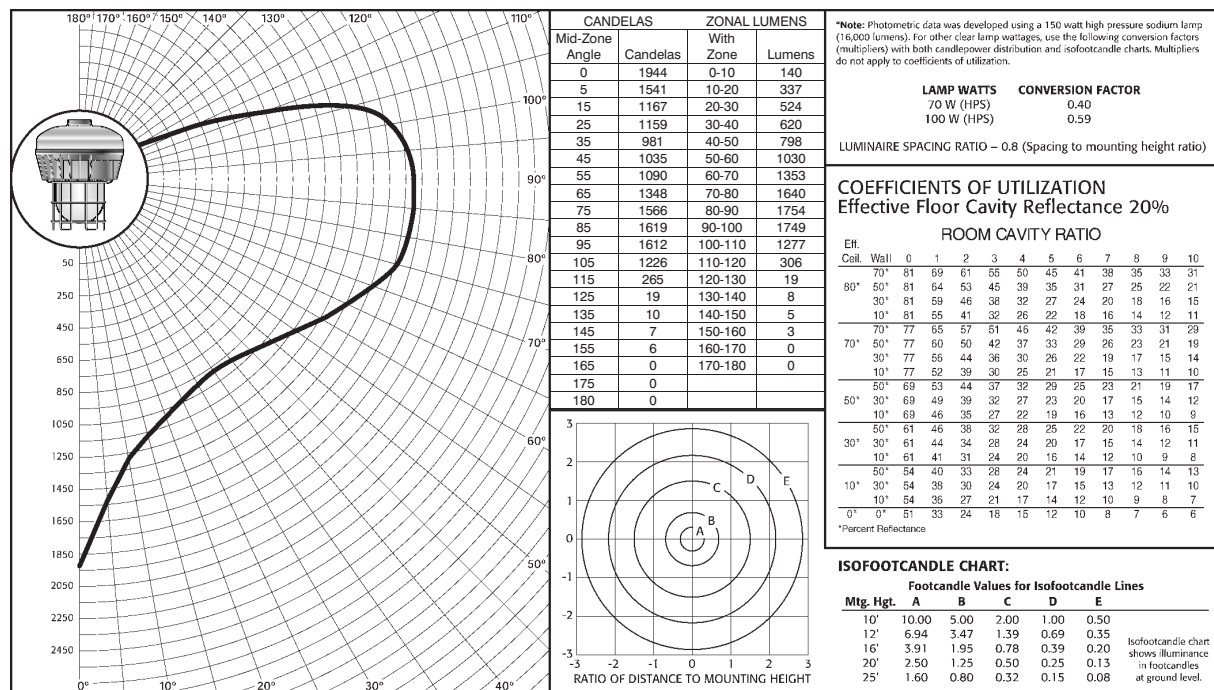
Medium Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLPA143150RA Lamp: 150W/B17 High Pressure Sodium (HPS)



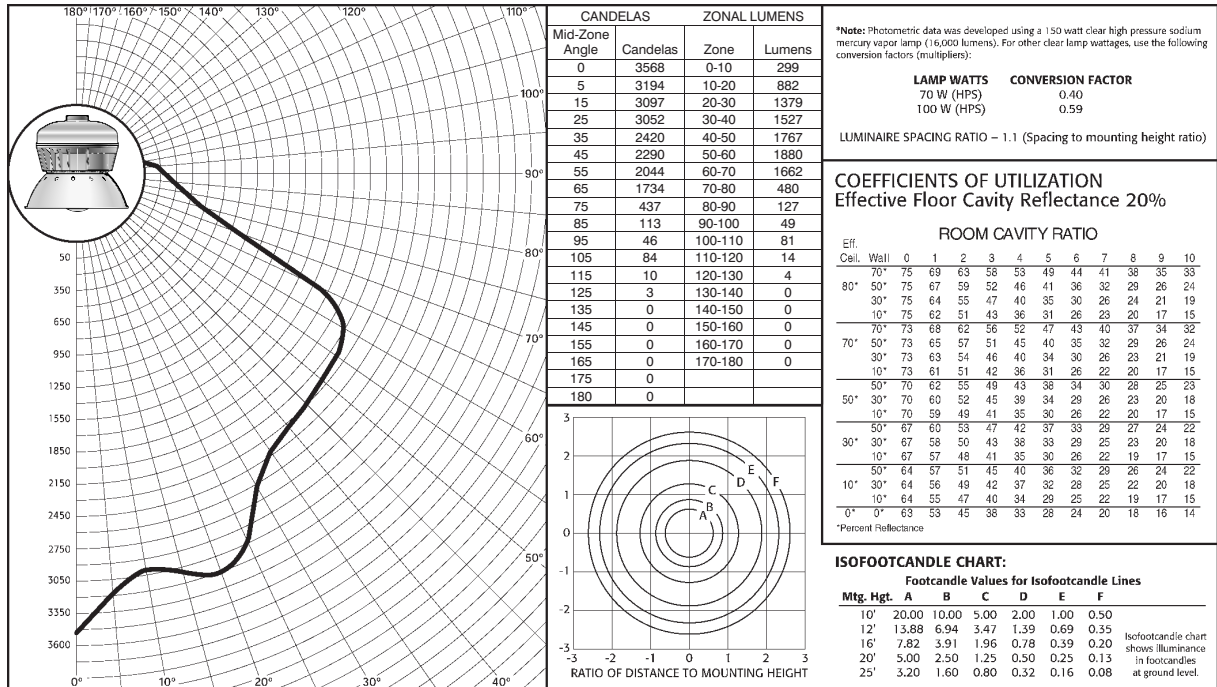
Mogul Base

Luminaire with Globe and Guard
EVLPA043151 Lamp: 150W/E23½ High Pressure Sodium (HPS)



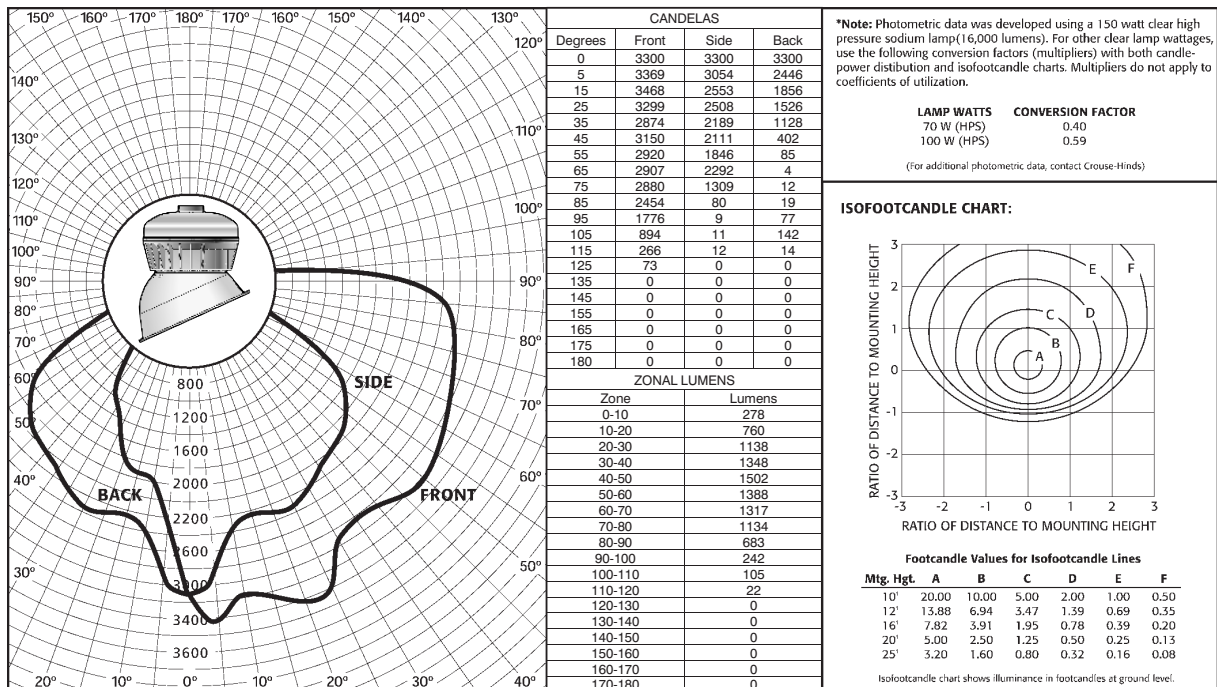
Mogul Base

Luminaire with Globe and Dome Reflector (Less Guard)
EVLP A043150RD Lamp: 150W/E23½ High Pressure Sodium (HPS)



Mogul Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLP A043150RA Lamp: 150W/E23½ High Pressure Sodium (HPS)

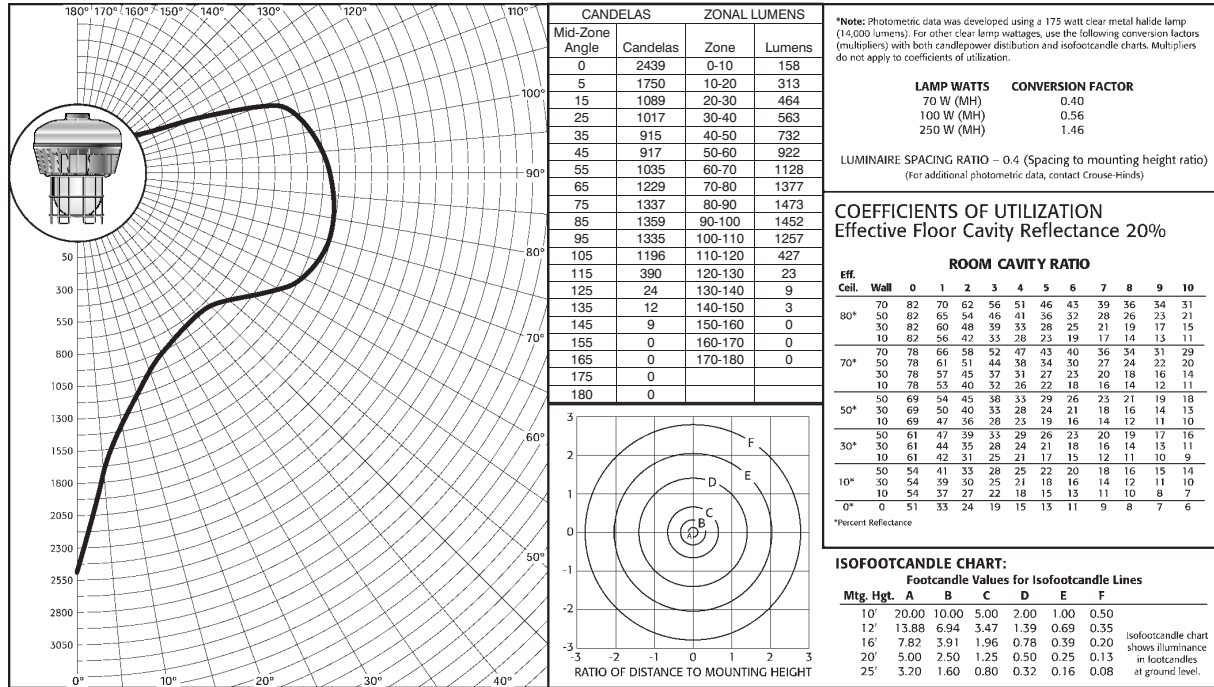


EVLP Low Profile Hazard•Gard® Mogul Base

Mogul Base

Luminaire with Globe and Guard

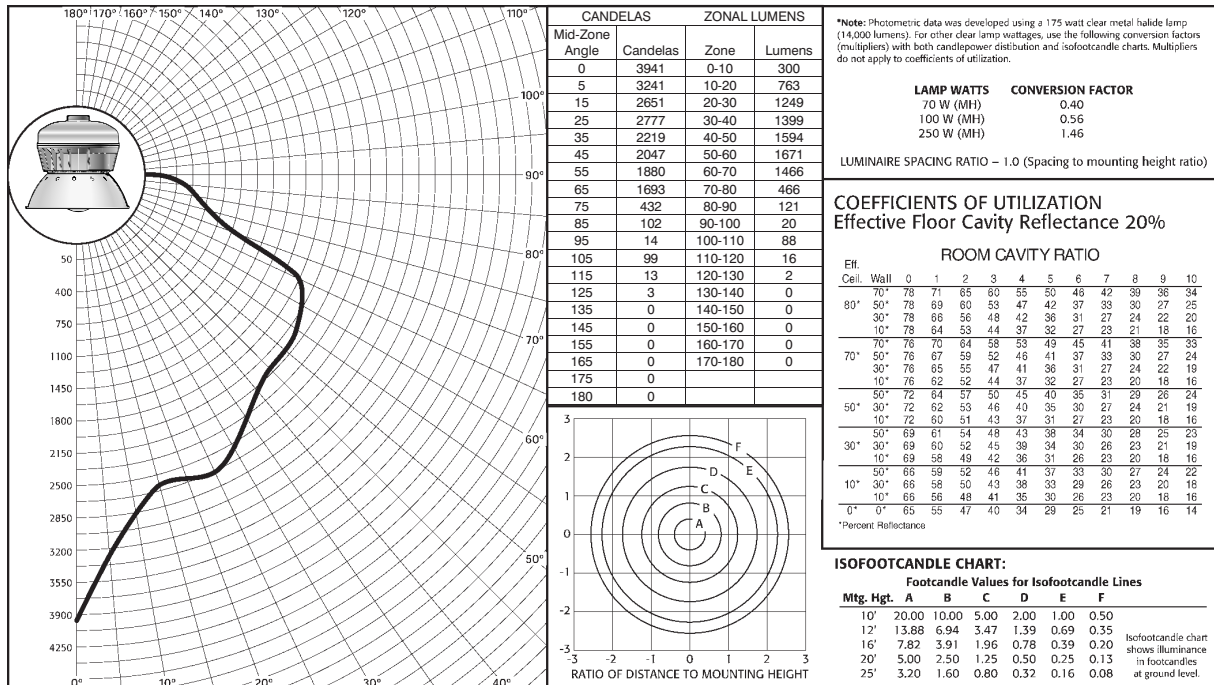
EVLP093171 Lamp: 175W/ED28 Metal Halide (MH)



Mogul Base

Luminaire with Globe and Dome Reflector (Less Guard)

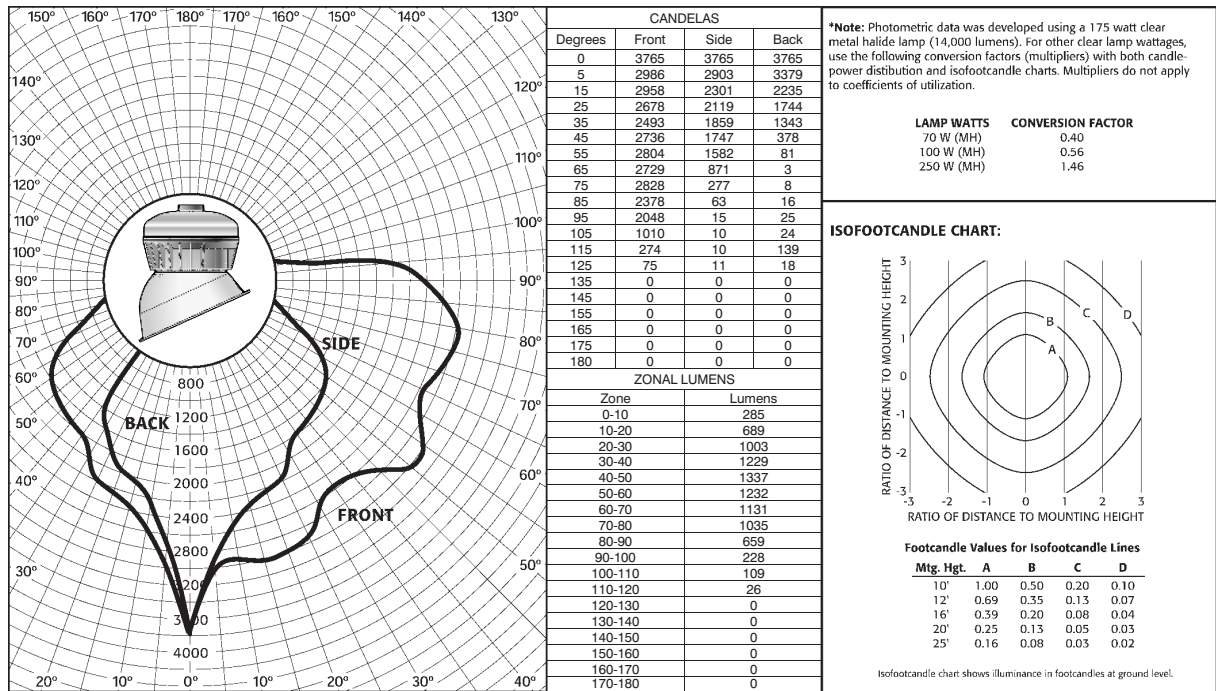
EVLP093170RD Lamp: 175W/ED28 Metal Halide (MH)



Mogul Base

Mogul Base

Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLP A093170RA Lamp: 175W/ED28 Metal Halide (MH)



EVM Hazard•Gard® H.I.D. Luminaires

**Mogul Base
Factory Sealed (Groups C.D)**

- Cl. I, Div. 1 Groups B (GB suffix), C, D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix – GB), IIB IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence (175W max)
- Paint Spray (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

Hazard•Gard® luminaires are used in:

- heavy process industries where flammable or explosive vapors, gases or combustible dusts are present
- hazardous areas, both indoors and outdoors where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and other heavy process industry facilities
- paint spray facilities
- hazardous locations requiring elevated ambient capability

Features:

- Luminaire is factory wired; power is fed through “wireless” connection block which serves as a mechanical seal between conduit and ballast compartments, eliminating the need for an external, field installed seal. The result is fast, easy installation.
- Dome and 30° angle reflectors made of *Krydon*® material – won’t rust, corrode, dent, chip or peel (order separately – page 796).
- High bay reflectors of Alzak® aluminum for high wattage applications
- Internally fluted glass globes reduce glare and provide comfortable viewing light.
- Wide range of light sources and wattages to meet specific lighting needs – 50 – 400W high pressure sodium (HPS); 100 – 400W mercury vapor (MV); 70 – 400W metal halide (MH).
- High power factor (90%+) ballasts reduce power costs – allow more luminaires per circuit.
- Four mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket and stanchion.
- Paint spray booth suitability on 50 to 100 watt luminaires provides efficient, economical H.I.D. lighting for areas where paint residue may accumulate on luminaires.
- Elevated ambient capability permits reliable operation at high ambient temperature. Selected luminaires are suitable for ambient temperature up to 75°C.
- Integral ballasts – separate ballasts are not required. Lowest installed cost.
- Factory sealed, porcelain, mogul base socket.

Standard Materials:

- Mounting modules, cover, ballast housing, guard, globe ring – copper-free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Lamp socket – porcelain with stainless steel screw shell
- Reflectors – dome and angle: *Krydon* fiberglass-reinforced polyester material; high bay: Alzak aluminum

Alzak is a registered trademark of ALCOA.

* IR and BG options cannot be used together.

** Can be used with BG option.

* CSA Certified luminaires are not available with multi-tap ballast or S658 fuse option.

† When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- *Krydon* – high reflectance white
- Alzak – natural (anodized)

Options:

- Fused – to protect ballast and capacitor against abnormal line conditions. Add suffix **S658** to Cat. No.★†
- Instant restrike – enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of a cold lamp (50-150W LX HPS only). Add suffix **IR** to Cat. No.*
- Quartz auxiliary lighting – quartz lamp comes to full brightness instantly upon restoration of power to provide emergency illumination during the normal restrike period of the H.I.D. lamp (for use with ED28 lamp). Add suffix **QTZ** to Cat. No.** (Note: Quartz lamp not included; use 100 W single-ended lamp – Q100DC, Q100CL/DC, or 100Q/CL/DC.)
- Ballast•Gard – to eliminate the normally continuous high voltage pulsing in the event of a cycling lamp, inoperative lamp, or no lamp in the socket extending the life of the ballast. (For use with 50-400W HPS lamps.) Add suffix **BG** to Cat. No.*
- Group B suitability – luminaires suitable for use in Class I, Group B hazardous (classified) locations. Add suffix **GB** to Cat. No.

- Hazard•Gard® supplied with trunnion arm for floodlighting applications. For use on pendant mount luminaires only. Add suffix **S812** to Cat. No. – See Floodlight Section

Size Ranges:

- ¾", 1" and 1¼" hubs (see ordering information – pages 793 to 795)

Electrical Rating Ranges:

- 120, 208, 240, 277, 347, 480, 600, multi-tap★.
- 50 to 400 watts

Certifications and Compliances:

- NEC and CEC:
Class I, Division 1, Groups B (with suffix GB), C, D
Class I, Zone 1, Groups IIB + H2 (with suffix GB), IIB, IIA
100W max – Paint Spray Suitability
175W max – Class II, Class III, + Simultaneous Presence
- UL Standards:
844 Hazardous (Classified) Locations
1598 Luminaires
1598A Marine Locations
- CSA Standards:
C22.2 No. 137

50-400W EVM
Hazard•Gard® H.I.D.
Luminaires
Mogul Base
Factory Sealed (Groups C,D)

- Cl. I, Div. 1, Groups B(GB suffix),C,D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E,F,G; Class III, Simultaneous Presence (175W max)

- Paint Spray (100W max)
- Marine & Wet Locations
- 3,3R,4,4X; IP66

4L



Watts	Hub Size	Pendant Luminaires		Wall Bracket Luminaires		Ceiling Luminaires		Stanchion Luminaires (25°)	
		Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #
High Pressure Sodium									
50	¾	EVMA42050	EVMA42051	EVMBX42050	EVMBX42051	EVMCX42050	EVMCX42051	EVMJ44050	EVMJ44051
	1	EVMA43050	EVMA43051	EVMBX43050	EVMBX43051	EVMCX43050	EVMCX43051		
	1¼								
70	¾	EVMA42070	EVMA42071	EVMBX42070	EVMBX42071	EVMCX42070	EVMCX42071	EVMJ44070	EVMJ44071
	1	EVMA43070	EVMA43071	EVMBX43070	EVMBX43071	EVMCX43070	EVMCX43071		
	1¼								
100	¾	EVMA42100	EVMA42101	EVMBX42100	EVMBX42101	EVMCX42100	EVMCX42101	EVMJ44100	EVMJ44101
	1	EVMA43100	EVMA43101	EVMBX43100	EVMBX43101	EVMCX43100	EVMCX43101		
	1¼								
150	¾	EVMA42150	EVMA42151	EVMBX42150	EVMBX42151	EVMCX42150	EVMCX42151	EVMJ44150	EVMJ44151
	1	EVMA43150	EVMA43151	EVMBX43150	EVMBX43151	EVMCX43150	EVMCX43151		
	1¼								
200	¾	EVMA42200	EVMA42201	EVMBX42200	EVMBX42201	EVMCX42200	EVMCX42201	EVMJ44200	EVMJ44201
	1	EVMA43200	EVMA43201	EVMBX43200	EVMBX43201	EVMCX43200	EVMCX43201		
	1¼								
250	¾	EVMA42250	EVMA42251	EVMBX42250	EVMBX42251	EVMCX42250	EVMCX42251	EVMJ44250	EVMJ44251
	1	EVMA43250	EVMA43251	EVMBX43250	EVMBX43251	EVMCX43250	EVMCX43251		
	1¼								
400	¾	EVMA42400	EVMA42401	EVMBX42400	EVMBX42401	EVMCX42400	EVMCX42401	EVMJ44400	EVMJ44401
	1	EVMA43400	EVMA43401	EVMBX43400	EVMBX43401	EVMCX43400	EVMCX43401		
	1¼								

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

1. Standard Voltage Ballasts – 60HZ								
NEC/UL					CEC/CSA (cUL)			
Voltage Suffix	Multi-tap /MT	120V /120	480V /480		Tri-tap /TT	120V /120		
Optional Voltage Ballasts – 50 or 60HZ								
CEC/CSA (cUL)– CWI Isolated Ballasts					Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires, 55V Lamps is Standard, for 100V lamps - Add suffix "CE"
3. Options - Add the Required Options Suffixes from page 792, in Alpha-numeric Order

4L
H.I.D.
Fixtures

4L

70-400W EVM Hazard•Gard® H.I.D. Luminaires Factory Sealed (Groups C,D)

- Cl. I, Div. 1, Groups B (GB suffix), C, D
- Cl. I, Zone 1 Groups IIB + H2
(with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III,
Simultaneous Presence (175W max)

- Paint Spray (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66



Watts	Hub Size	Pendant Luminaires		Wall Bracket Luminaires		Ceiling Luminaires		Stanchion Luminaires (25°)	
		Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #
Pulse Start Metal Halide									
150	¾	EVMA92150-S828	EVMA92151-S828	EVMBX92150-S828	EVMBX92151-S828	EVMCX92150-S828	EVMCX92151-S828	EVMJ94150-S828	EVMJ94151-S828
	1	EVMA93150-S828	EVMA93151-S828	EVMBX93150-S828	EVMBX93151-S828	EVMCX93150-S828	EVMCX93151-S828		
	1¼								
175	¾	EVMA92170-S828	EVMA921701-S828	EVMBX92170-S828	EVMBX921701-S828	EVMCX92170-S828	EVMCX921701-S828	EVMJ94170-S828	EVMJ94171-S828
	1	EVMA93170-S828	EVMA931701-S828	EVMBX93170-S828	EVMBX931701-S828	EVMCX93170-S828	EVMCX931701-S828		
	1¼								
200	¾	EVMA92200-S828	EVMA92201-S828	EVMBX92200-S828	EVMBX92201-S828	EVMCX92200-S828	EVMCX92201-S828	EVMJ94200-S828	EVMJ94201-S828
	1	EVMA93200-S828	EVMA93201-S828	EVMBX93200-S828	EVMBX93201-S828	EVMCX93200-S828	EVMCX93201-S828		
	1¼								
250	¾	EVMA92250-S828	EVMA92251-S828	EVMBX92250-S828	EVMBX92251-S828	EVMCX92250-S828	EVMCX92251-S828	EVMJ94250-S828	EVMJ94251-S828
	1	EVMA93250-S828	EVMA93251-S828	EVMBX93250-S828	EVMBX93251-S828	EVMCX93250-S828	EVMCX93251-S828		
	1¼								
320	¾	EVMA92320-S828	EVMA92321-S828	EVMBX92320-S828	EVMBX92321-S828	EVMCX92320-S828	EVMCX92321-S828	EVMJ94320-S828	EVMJ94321-S828
	1	EVMA93320-S828	EVMA93321-S828	EVMBX93320-S828	EVMBX93321-S828	EVMCX93320-S828	EVMCX93321-S828		
	1¼								
400	¾	EVMA92400-S828	EVMA92401-S828	EVMBX92400-S828	EVMBX92401-S828	EVMCX92400-S828	EVMCX92401-S828	EVMJ94400-S828	EVMJ94401-S828
	1	EVMA93400-S828	EVMA93401-S828	EVMBX93400-S828	EVMBX93401-S828	EVMCX93400-S828	EVMCX93401-S828		
	1¼								
Metal Halide									
70	¾	EVMA92070	EVMA92071	EVMBX92070	EVMBX92071	EVMCX92070	EVMCX92071	EVMJ94070	EVMJ94071
	1	EVMA93070	EVMA93071	EVMBX93070	EVMBX93071	EVMCX93070	EVMCX93071		
	1¼								
100	¾	EVMA92100	EVMA92101	EVMBX92100	EVMBX92101	EVMCX92100	EVMCX92101	EVMJ94100	EVMJ94101
	1	EVMA93100	EVMA93101	EVMBX93100	EVMBX93101	EVMCX93100	EVMCX93101		
	1¼								
175	¾	EVMA92170	EVMA92171	EVMBX92170	EVMBX92171	EVMCX92170	EVMCX92171	EVMJ94170	EVMJ94171
	1	EVMA93170	EVMA93171	EVMBX93170	EVMBX93171	EVMCX93170	EVMCX93171		
	1¼								
250	¾	EVMA92250	EVMA92251	EVMBX92250	EVMBX92251	EVMCX92250	EVMCX92251	EVMJ94250	EVMJ94251
	1	EVMA93250	EVMA93251	EVMBX93250	EVMBX93251	EVMCX93250	EVMCX93251		
	1¼								
400	¾	EVMA92400	EVMA92401	EVMBX92400	EVMBX92401	EVMCX92400	EVMCX92401	EVMJ94400	EVMJ94401
	1	EVMA93400	EVMA93401	EVMBX93400	EVMBX93401	EVMCX93400	EVMCX93401		
	1¼								

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

1. Standard Voltage Ballasts – 60HZ							
NEC/UL				CEC/CSA (cUL)			
Voltage Suffix	Multi-tap /MT	Dual-Tap /DT	120V /120	480V /480	Tri-tap /TT	Dual-Tap /DT	120V /120
Optional Voltage Ballasts – 50 or 60HZ							
CEC/CSA (cUL)– CWI Isolated Ballasts				Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. 150W HPS Luminaires, 55V Lamps is Standard, for 100V lamps - Add suffix "CE"

3. Options - Add the Required Options Suffixes from page 792, In Alpha-numeric Order

* CWI Isolated Ballasts are only available for 175W–400W metal halide (non pulse start) luminaires.

70-400W EVM Hazard•Gard® H.I.D. Luminaires

Factory Sealed (Groups C,D)

- Cl. I, Div. 1, Groups B (GB suffix), C, D
- Cl. I, Zone 1 Groups IIB + H2 (with suffix GB), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence (175W max)
- Paint Spray (100W max)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

4L



Watts	Hub Size	Pendant Luminaires		Wall Bracket Luminaires		Ceiling Luminaires		Stanchion Luminaires (25°)	
		Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #	Without Guard Cat. #	With Guard Cat. #
Mercury Vapor									
100	¾	EVMA82100	EVMA82101	EVMBX82100	EVMBX82101	EVMCX82100	EVMCX82101	EVMJ84100	EVMJ84101
	1	EVMA83100	EVMA83101	EVMBX83100	EVMBX83101	EVMCX83100	EVMCX83101		
	1¼								
175	¾	EVMA82170	EVMA82171	EVMBX82170	EVMBX82171	EVMCX82170	EVMCX82171	EVMJ84170	EVMJ84171
	1	EVMA83170	EVMA83171	EVMBX83170	EVMBX83171	EVMCX83170	EVMCX83171		
	1¼								
250	¾	EVMA82250	EVMA82251	EVMBX82250	EVMBX82251	EVMCX82250	EVMCX82251	EVMJ84250	EVMJ84251
	1	EVMA83250	EVMA83251	EVMBX83250	EVMBX83251	EVMCX83250	EVMCX83251		
	1¼								
400	¾	EVMA82400	EVMA82401	EVMBX82400	EVMBX82401	EVMCX82400	EVMCX82401	EVMJ84400	EVMJ84401
	1	EVMA83400	EVMA83401	EVMBX83400	EVMBX83401	EVMCX83400	EVMCX83401		
	1¼								

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

1. Standard Voltage Ballasts – 60HZ								
NEC/UL								
CEC/CSA (cUL)								
Voltage Suffix	Multi-tap /MT	Dual-Tap /DT	120V /120	480V /480	Tri-tap /TT	Dual-Tap /DT	120V /120	
Optional Voltage Ballasts – 50 or 60HZ								
CEC/CSA (cUL)– CWI Isolated Ballasts					Export			
Voltage Suffix	208V CWI /208CWI	240V CWI /240CWI	480V CWI /480CWI	600V CWI /600CWI	220V 60HZ /220	220V 50HZ /220 50	230V 50HZ /230 50	240V 50HZ /240 50

2. Options - Add the Required Options Suffixes from page 792, in Alpha-numeric Order

4L
H.I.D.
Fixtures

Reflectors



Dome



30° Angle



High Bay

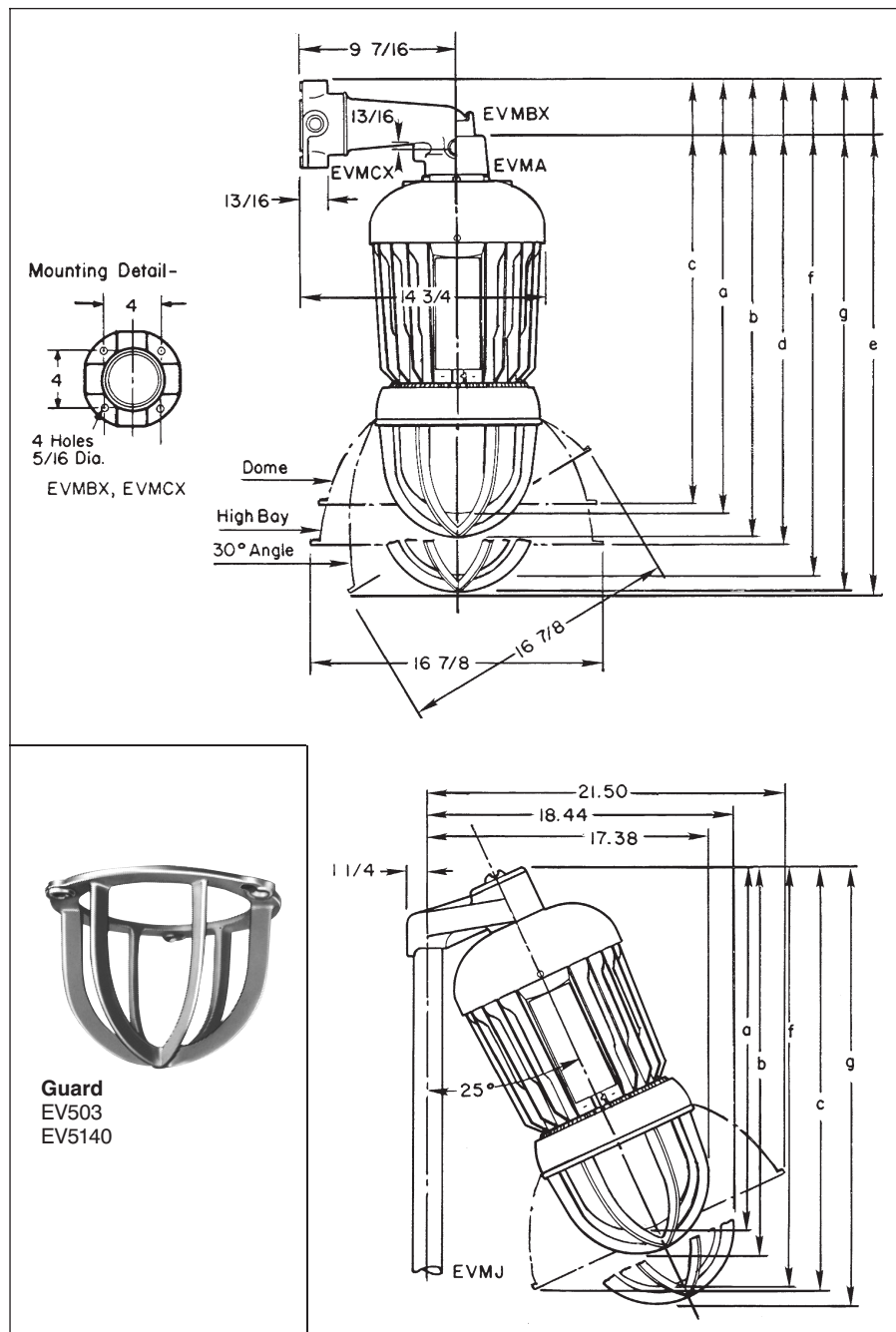
Type	Cat. #
Dome	RD739
30° Angle	RA739
High Bay	EV3912

Temperature Performance Data

Maximum Ambient						Simultaneous Presence 40°C	Paint Spray Booth 40°C	Supply Wire °C
Watts	40°C	Class I		Class II (E,F,G) 40°C				
		55°C	65°C		75°C			
High Pressure Sodium								
50	T6	T6	T6	T5	T4	T4	T4A	90
70	T6	T6	T5	T4A	T4	T4	T4A	90
100	T5	T5	T4A	T4A	T4	T4	T4A	90
150	T4A	T4A	T4	—	T3C	T3C	—	90
200	T4A	T4A	T4	—	—	—	—	90
250	T4	T3C	—	—	—	—	—	90
400	T3C	—	—	—	—	—	—	90
Mercury Vapor								
100	T5	T5	T4A	T4A	T3C	T3C	T4A	90
175	T4A	T4	T4	—	T3C	T3C	—	90
250	T3C	T3B	—	—	—	—	—	90
400	T3	—	—	—	—	—	—	90
Metal Halide (Including Pulse Start)								
70	T6	T6	T5	T3	T3C	T3C	T4A	90
100	T5	T5	T4A	T3	T3C	T3C	T4A	90
150	T4A	T4	T4	—	T3C	T3C	—	90
175	T4A	T4	T4	—	T3C	T3C	—	90
200	T4	T3C	—	—	—	—	—	90
250	T4	T3C	—	—	—	—	—	90
320	T3A	—	—	—	—	—	—	90
400	T3A	—	—	—	—	—	—	90

Dimensions and Weights

Dimensions



Luminaire Net Weights:

H.I.D. Source	Lamp Watts	Luminaire Only with Globe and Guard (Lbs.)
	50	40
	70	40
	100	44
High Pressure Sodium	150 (55V)	45
	150 (100V)	44
	200	46
	250	46
	400	55
Mercury Vapor	100	38
	175	41
	250	43
	400	49
Metal Halide	70	39
	100	39
	175	42
	250	43
	400	51

Add for Mounting Modules:

Pendant	1 lb.	Bracket	4 1/4 lbs.
Ceiling	2 lbs.	Stanchion	2 1/4 lbs.

Deduct:

Guard	1 1/2 lbs.
-------	------------

Add for Reflectors:

RD739	1 1/4 lbs.
RA739	2 lbs.
EV3912	2 1/2 lbs.

Type	100, 175, 250W MV 50, 70, 100, 150W HPS 70, 100, 175, 250W MH	100, 175, 250W MV 50, 70, 100, 150W HPS 70, 100, 175, 250W MH	All luminaires with QTZ option and 200, 250, 400W HPS 400W MV & MH	All - Reflectors	Dome - c	High Bay - d	30° Angle - e
EVMA	25 1/16	26	27 5/16	28 1/4	23 7/8	26 7/16	28 9/16
EVMBX	27 7/8	28 13/16	30 1/8	31 1/16	26 1 1/16	29 3/4	31 3/8
EVMCX	24	24 15/16	26 1/4	27 3/16	22 3/4	25 3/8	27 1/2
EVMJ	22 11/16	24 1/8	25 1/4	26 1/8	25 3/8	27 1 1/16	28 3/4

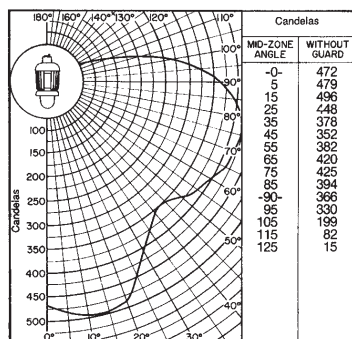
† Suitable for Class III when listed for Class II, Group G.

♦ See Options listing.

Lamp: 100W/E-23½ mercury vapor – (MV)
Total bare lamp lumens: 4200

To determine number and placement of luminaires, see Lighting Selector guide, pages 665 to 689

Luminaire With Globe and Without Guard



NOTE: Photometric data was developed using a 100 watt diffuse mercury vapor lamp (4,200 lumens). For other diffuse lamps, use the following conversion factors (multipliers): 175W MV – 2.05; 70W MH – 1.33; 100W MH – 1.85; 175W MH (metal halide) – 3.33. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.30.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

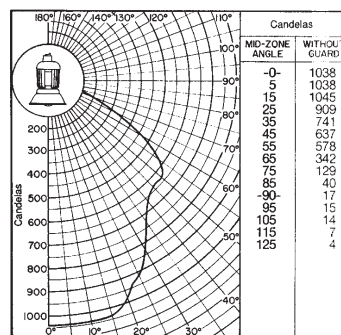
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.694	.584	.503	.439	.386
	30	.644	.516	.428	.361	.311
	10	.600	.459	.369	.302	.253
70	50	.660	.556	.479	.418	.368
	30	.615	.493	.410	.347	.297
	10	.572	.441	.355	.291	.244
50	50	.596	.501	.432	.377	.334
	30	.559	.450	.375	.317	.274
	10	.526	.405	.328	.270	.227
30	50	.538	.451	.389	.339	.302
	30	.509	.410	.342	.290	.250
	10	.481	.373	.302	.249	.210
10	50	.485	.405	.349	.305	.271
	30	.461	.371	.310	.263	.223
	10	.439	.341	.277	.228	.193
0	0	.410	.313	.251	.204	.171

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.347	.312	.282	.259	.230
	30	.273	.241	.214	.192	.166
	10	.220	.192	.165	.147	.125
70	50	.331	.298	.270	.248	.220
	30	.262	.231	.206	.185	.162
	10	.211	.184	.160	.143	.121
50	50	.300	.272	.246	.227	.203
	30	.241	.212	.190	.172	.150
	10	.197	.171	.149	.134	.113
30	50	.272	.245	.225	.207	.185
	30	.222	.196	.175	.158	.138
	10	.183	.158	.139	.124	.105
10	50	.246	.224	.203	.188	.169
	30	.202	.180	.160	.146	.127
	10	.168	.147	.129	.115	.096
0	0	.148	.128	.111	.099	.082

Lamp: 100W/E23½ mercury vapor – (MV)
Total bare lamp lumens: 4200

To determine number and placement of luminaires, see Lighting Selector guide, pages 665 to 689

Luminaire With Globe, Dome Reflector and Without Guard



NOTE: Photometric data was developed using a 100 watt diffuse mercury vapor lamp (4,200 lumens). For other diffuse lamps, use the following conversion factors (multipliers): 175W MV – 2.05; 70W MH – 1.33; 100W MH – 1.85; 175W MH (metal halide) – 3.33. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.25.

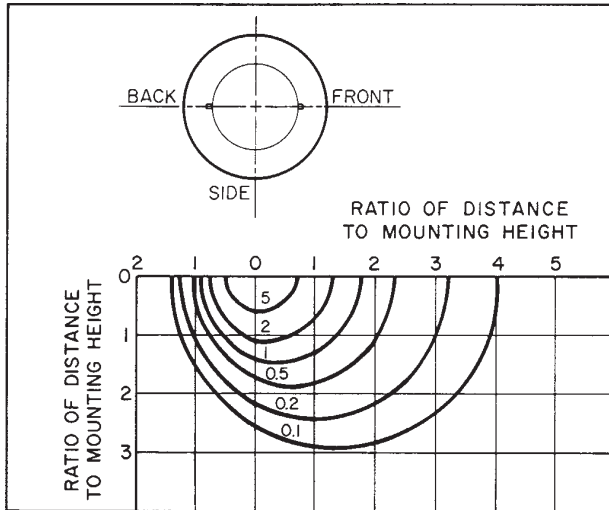
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.715	.637	.570	.509	.458
	30	.688	.596	.521	.455	.401
	10	.665	.562	.483	.413	.359
70	50	.699	.624	.560	.500	.448
	30	.675	.586	.514	.450	.396
	10	.652	.556	.478	.410	.356
50	50	.668	.598	.539	.481	.434
	30	.648	.568	.500	.438	.388
	10	.631	.540	.468	.404	.353
30	50	.640	.576	.519	.465	.420
	30	.624	.550	.487	.428	.379
	10	.609	.527	.459	.398	.348
10	50	.615	.554	.502	.450	.407
	30	.602	.533	.474	.418	.372
	10	.589	.514	.450	.391	.343
0	0	.575	.500	.436	.377	.329

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.414	.375	.340	.313	.275
	30	.358	.319	.286	.259	.222
	10	.318	.282	.247	.222	.187
70	50	.407	.369	.335	.308	.271
	30	.354	.315	.283	.256	.222
	10	.315	.278	.246	.221	.187
50	50	.394	.358	.325	.299	.264
	30	.347	.309	.278	.252	.217
	10	.312	.275	.244	.219	.185
30	50	.383	.346	.316	.292	.257
	30	.340	.304	.273	.248	.214
	10	.308	.272	.242	.217	.183
10	50	.371	.338	.307	.284	.251
	30	.333	.299	.268	.244	.210
	10	.304	.269	.240	.215	.181
0	0	.292	.257	.227	.204	.170

Isofootcandle Chart: Luminaire With Globe and 30° Angle Reflector, Without Guard



Lamp: 100W/E-23½ diffuse mercury vapor (MV)

Total bare lamp lumens: 4200

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Illumination in footcandles on work plane 10 feet below light center. Multiply by factor shown to convert to other mounting heights.

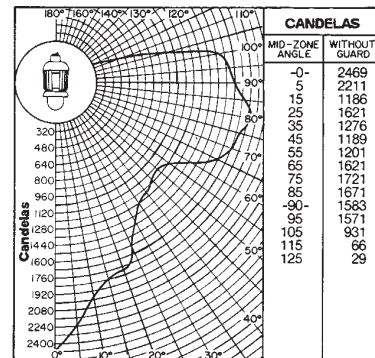
Height (Ft.)	Factor	Height (Ft.)	Factor
6	2.78	9	1.23
7	2.04	11	0.83
8	1.56	12	0.70

Lamp: 150W/E-23½ high pressure sodium (HPS)

Total bare lamp lumens: 16,000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe and Without Guard



NOTE: Photometric data was developed using a 150 watt clear high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers): 50W HPS - .25; 70W HPS - .40; 100W HPS - .59. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 0.80.

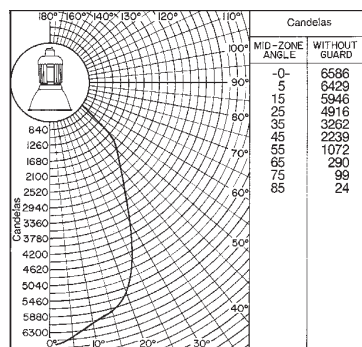
Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.695	.579	.494	.410	.382
	30	.644	.509	.417	.326	.305
	10	.599	.450	.356	.262	.246
70	50	.659	.549	.469	.387	.363
	30	.613	.484	.397	.311	.291
	10	.570	.431	.341	.251	.236
50	50	.592	.491	.419	.344	.327
	30	.555	.439	.360	.279	.265
	10	.522	.393	.312	.229	.218
30	50	.531	.438	.373	.304	.292
	30	.502	.396	.325	.250	.240
	10	.474	.358	.284	.207	.200
10	50	.476	.390	.331	.267	.260
	30	.451	.355	.291	.222	.217
	10	.429	.325	.257	.184	.181
0	0	.399	.295	.230	.159	.159
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.342	.306	.278	.265	.233
	30	.266	.234	.209	.198	.168
	10	.212	.184	.160	.153	.127
70	50	.324	.292	.265	.253	.222
	30	.254	.223	.201	.191	.163
	10	.202	.176	.155	.149	.123
50	50	.292	.263	.240	.231	.203
	30	.232	.203	.184	.177	.150
	10	.187	.162	.143	.139	.114
30	50	.262	.236	.218	.210	.185
	30	.211	.186	.167	.162	.138
	10	.172	.148	.132	.129	.105
10	50	.234	.213	.195	.191	.167
	30	.190	.169	.152	.149	.125
	10	.156	.135	.121	.118	.096
0	0	.135	.116	.103	.103	.081

Lamp: 150W/E-23½ high pressure sodium (HPS)
Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe, Hi-Bay Reflector and Without Guard


NOTE: Photometric data was developed using a 150 watt clear high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers): 50W HPS – .25; 70W HPS – .40; 100W HPS – .59. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.00.

Coefficient of Utilization

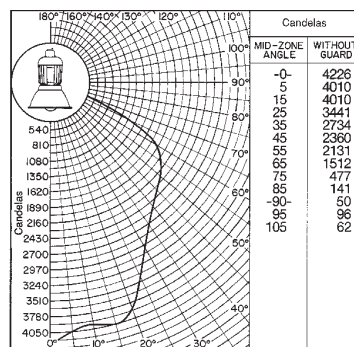
Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.668	.618	.573	.531	.494
	30	.651	.592	.542	.495	.455
	10	.636	.569	.517	.468	.427
70	50	.655	.608	.566	.525	.487
	30	.639	.583	.536	.491	.452
	10	.625	.564	.513	.464	.425
50	50	.629	.587	.550	.511	.476
	30	.616	.568	.525	.482	.446
	10	.606	.550	.505	.459	.422
30	50	.606	.569	.535	.498	.466
	30	.597	.554	.514	.474	.438
	10	.588	.539	.497	.454	.418
10	50	.586	.553	.522	.487	.457
	30	.578	.539	.504	.466	.433
	10	.570	.528	.489	.449	.413
0	0	.560	.517	.479	.439	.404

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.460	.427	.396	.369	.328
	30	.420	.388	.358	.330	.288
	10	.394	.361	.330	.303	.262
70	50	.455	.423	.392	.366	.325
	30	.418	.385	.356	.328	.288
	10	.391	.359	.329	.303	.262
50	50	.444	.414	.385	.360	.320
	30	.412	.380	.352	.325	.285
	10	.388	.357	.328	.301	.261
30	50	.436	.406	.379	.354	.315
	30	.407	.377	.348	.322	.282
	10	.385	.354	.326	.300	.259
10	50	.428	.400	.373	.348	.311
	30	.402	.373	.345	.319	.280
	10	.382	.352	.324	.298	.258
0	0	.373	.343	.315	.290	.249

Lamp: 150W/E-23½ high pressure sodium (HPS)
Total bare lamp lumens: 16000

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.

Luminaire With Globe, Dome Reflector and Without Guard


NOTE: Photometric data was developed using a 150 watt clear high pressure sodium lamp (16,000 lumens). For other clear lamps, use the following conversion factors (multipliers): 50W HPS – .25; 70W HPS – .40; 100W HPS – .59. Multipliers are for use with candela curve only.

Luminaire spacing ratio is 1.20.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.716	.637	.568	.507	.455
	30	.689	.596	.519	.452	.398
	10	.666	.561	.480	.410	.355
70	50	.700	.624	.559	.498	.446
	30	.675	.585	.512	.447	.393
	10	.653	.555	.476	.407	.353
50	50	.668	.598	.538	.479	.432
	30	.648	.567	.498	.435	.385
	10	.631	.539	.466	.400	.349
30	50	.640	.575	.518	.463	.417
	30	.625	.549	.485	.425	.376
	10	.610	.526	.457	.394	.344
10	50	.615	.554	.500	.447	.404
	30	.602	.532	.472	.415	.369
	10	.590	.513	.448	.388	.339
0	0	.575	.498	.434	.373	.326

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.413	.373	.339	.312	.275
	30	.355	.318	.285	.258	.222
	10	.316	.280	.246	.221	.187
70	50	.405	.368	.334	.308	.271
	30	.352	.314	.283	.256	.222
	10	.312	.277	.245	.221	.187
50	50	.392	.356	.324	.299	.264
	30	.345	.307	.277	.252	.217
	10	.309	.274	.243	.219	.185
30	50	.380	.345	.316	.291	.257
	30	.338	.303	.272	.247	.214
	10	.306	.270	.241	.217	.183
10	50	.369	.337	.307	.283	.251
	30	.331	.298	.267	.244	.210
	10	.301	.267	.238	.215	.181
0	0	.289	.255	.226	.203	.170

Luminaires with Induction Lighting System

5L

Hazardous and Non-Hazardous

Description	Page No.
VMVIG Series	802-808
DMVIG Series	802-808

Note: Induction Lighting is also available with our Champ-Pak™ Wall Pack Luminaires.
Please see page 867 in Section 7L for more details.



Class I, Division 2, Groups A,B,C,D

Class I, Zone 2, Group IIC

Restricted Breathing Suffix S826 for Cl.I, Div 2 & Zone 2

Enclosure Type 4X, IP66 • Marine Locations

Wet Locations • UL and cUL Listed

Get uninterrupted light for up to 11 years, without changing a lamp.

Cooper Crouse-Hinds® Champ Luminaire with Induction Light Source delivers up to 100,000 hours of white light in a hazardous location, corrosion-resistant watertight package. That's 5 to 8 times the typical life of conventional fluorescent or HID lamps. And, with no maintenance required for up to 11 years, you'll reduce your maintenance and lamp replacement costs.

Compelling reasons to choose the new Champ Induction luminaire as the light source for industrial and hazardous locations include:

- Crisp white light (80+ color rendering index) provides increased safety by clearly illuminating signs, instrument panels, equipment and more with vibrant natural colors.
- Up to 100,000 hours of lamp life minimizes routine maintenance costs. If you operate this luminaire for 24 hours, 7 days a week, you will not need to change the lamp for up to 11 years!
- Instant illumination — no waiting for lamp warm-up time. Increases productivity and safety.
- Delivers the best possible luminaire temperature rating — T6 (85°C) when used with the Champ restricted breathing option. Ideal for hazardous areas where a low ignition temperature is required.
- Starts in low temperatures — as low as -40°C.



165W Champ Induction provides as much light as a 175W Metal Halide but lasts 7 times longer!

ADDITIONAL FEATURES & BENEFITS:

The Champ Induction luminaire is suitable for Class I, Division 2 and Zone 2 areas with the assurance of Cooper Crouse-Hinds quality and reliability. They are ideal for use in hard-to-reach applications and where process requirements demand continuous luminaire operation.

Features:

- High lumens per watts (72 lpw for the 165W Champ) will save energy
- Retains strong light output (retains more than 70% output) throughout the life of the lamp
- Will not add electrical noise to the circuits — Total Harmonic Distortion is less than 10%
- Excellent power factor of .96 increases useable watts to an excellent level and reduces energy consumption
- Internal electronics are enclosed to ensure that there is no interference with external instrumentation

Luminaires with Induction Lighting System

VMVIG and DMVIG Series

Class I, Division 2, Groups A,B,C,D
Class I, Zone 2, Group IIC
Restricted Breathing Suffix S826 for Cl.I, Div 2 & Zone 2
Enclosure Type 4X, IP66 • Marine Locations
Wet Locations • UL and cUL Listed

5L



APPLICATIONS:

Champ Induction luminaires are ideal:

- Where an extra long life lamp source (up to 100,000 hrs) is required.
- In areas that require lamps to reach full illumination immediately.
- Where cool temperature ratings on the luminaire globe are needed to ensure safe operation in hazardous areas.
- In hard-to-reach applications where relamping is costly.
- Where luminaire maintenance is difficult due to continuous process operation requirements that restrict or prohibit shut down except in emergency situations.
- To provide a cost-effective lighting system (low installed/life cost) by minimizing or even eliminating routine luminaire maintenance.
- In cold environment applications.

CERTIFICATIONS AND COMPLIANCES:

NEC & CEC:

- Class I, Division 2 and Zone 2
- Class I, Division 2 Groups A, B, C, D
Class I, Zone 2 Group IIC
- Restricted Breathing Suffix S826 for Class I, Division 2 & Zone 2
- Marine Locations, Wet Locations, Enclosure Type 3, 3R, 4, 4X; IP66
- UL and cUL Listed

UL Standards: 844, 60079-15, 1598, 1598A

CSA Standards: C22.2 No.137, E79 Series

Compliances and approvals for the lamp system

- | | |
|--------------------------|----------------------|
| • RFI < 30 MHz | EN 55015 |
| • RFI > 30 MHz | EN 55022 |
| • Harmonics | EN 61000-3-2 |
| • Immunity | EN 61547 |
| • Safety | EN 61347-2-3 & UL935 |
| | EN 60928 |
| • Performance | EN 60929 |
| • Vibration & bump tests | IEC 68-2-6-Fc |
| | IEC 68-2-29-Eb |
| • Quality standards | ISO 9001 |
| • Environmental standard | ISO 14001 |

STANDARD MATERIALS:

- Ballast housings and mountings — copper-free aluminum (less than 0.4 of 1%)
- Exterior hardware — stainless steel
- Reflectors (dome and angle) — Krydon fiberglass-reinforced polyester material
- Globes — heat and impact-resistant internally fluted glass
- Guards — copper-free aluminum (55W), stainless steel (85W).

STANDARD FINISHES:

- Copper-free aluminum — epoxy powder coat
- Krydon® material — high reflectance white
- Stainless steel — natural

OPTIONS:

DESCRIPTION	SUFFIX TO ADD TO CATALOG NO.
Restricted Breathing Construction Class I, Division 2 & Zone 2 suitability Cooler operating temperatures (T-Codes)	S826

ACCESSORIES:

MOUNTING MODULES	CAT. NO.
¾ NPT Pendant	APM2
1 NPT Pendant	APM3
¾ NPT Flexible Pendant	HPM2
¾ NPT Ceiling Mount	CM2
1 NPT Ceiling Mount	CM3
¾ NPT Wall Mount	TWM2
1 NPT Wall Mount	TWM3
¾ NPT Quad Mount	QM25
1 ½ NPT Stanchion Mount — 25 Degree Angle	JM5
1 ½ NPT Stanchion Mount — Straight	PM5

WATTAGE	DOME REFLECTOR CATALOG NO.	ANGLE REFLECTORS CATALOG NO.
55W	RD70	RA70
85W	RD739	RA739
165W	RD739	RA739

DIMENSIONS:

See Catalog 6000 Section 3L for dimensional information on VMV and DMV Series

AMPERAGE:

Power consumption for specific voltages as follows:

55W LUMINAIRES

- a. 120VAC x .460mA = 55.70 watts
b. 230VAC x .260mA = 59.80 watts

85W LUMINAIRES

- c. 120VAC x .710mA = 85.20 watts
d. 230VAC x .400mA = 92.00 watts

165W LUMINAIRES

- e. 230VAC x .700mA = 161.00 watts

5L

Luminaires with Induction Lighting System

VMVIG and DMVIG Series



Class I, Division 2, Groups A,B,C,D

Class I, Zone 2, Group IIC

Restricted Breathing Suffix S826 for Cl.I, Div 2 & Zone 2

Enclosure Type 4X, IP66 • Marine Locations

Wet Locations • UL and cUL Listed

LAMP DATA:

	SYSTEM Power (W)	LUMEN (LM)		EFFICACY (LM/W)		COLOR RENDERING INDEX*	LUMEN MAINTENANCE AFTER 60,000 HRS (%)
		INITIAL	MEAN	INITIAL	MEAN		
VMV	55	3500	2800	65	51	80	75
DMV	85	6000	4800	70	57	80	75
DMV	165	12000	9600	72	58	80	70

* Lamp sources with 80+ CRI provide excellent color rendering. CRI scale is 0-100 with 100 considered as ideal.

TEMPERATURE PERFORMANCE DATA:

CATALOG #	WATTS	AMBIENT TEMP °C	SUPPLY WIRE TEMP °C	CLASS I, DIV. 2 TEMP. RATING	CLASS II, DIV. 1, CLASS III TEMP. RATING	SIMULTANEOUS PRESENCE CLASS I, DIV. 2	RESTRICTED BREATHING (SUFFIX S826)
							Aex nR IIC, Ex nR IIC CLASS I, DIV. 2/Zone 2
VMVIG055	55	40	60	T2C	—	—	T6
VMVIG055	55	55	75	T2C	—	—	T5
DMVIG085	85	40	60	T2D	T2D	T2D	T6
DMVIG085	85	55	75	T2D	—	—	T6
DMVIG165	165	40	75	T3	—	—	T5

Champ Induction DMV 85-watt is now Class II Div.1 – suitable for dust environments

ORDERING INFORMATION:

To complete Catalog Number, add Voltage and Option suffix(es).

MOUNTING STYLE	HUB SIZE (INCHES)	55W INDUCTION CATALOG NUMBER (WITH G24 GLOBE & P21 GUARD)	85W INDUCTION CATALOG NUMBER (WITH G303 GLOBE & P33 GUARD)	165W INDUCTION CATALOG NUMBER (WITH G303 GLOBE & P33 GUARD)
Pendant	3/4 1	VMVIG2A055GP VMVIG3A055GP	DMVIG2A085GP DMVIG3A085GP	*DMVIG2A165GP *DMVIG3A165GP
Flexible Pendant	3/4	VMVIG2HA055GP	DMVIG2HA085GP	*DMVIG2HA165GP
Ceiling Mount	3/4	VMVIG2C055GP	DMVIG2C085GP	*DMVIG2C165GP
	1	VMVIG3C055GP	DMVIG3C085GP	*DMVIG3C165GP
Wall Mount	3/4	VMVIG2TW055GP	DMVIG2TW085GP	*DMVIG2TW165GP
	1	VMVIG3TW055GP	DMVIG3TW085GP	*DMVIG3TW165GP
Quad Mount	3/4	VMVIG25Q055GP	DMVIG25Q085GP	*DMVIG25Q165GP
Stanchion Mount 25° Angle	1 1/2	VMVIGJ055GP	DMVIGJ085GP	*DMVIGJ165GP
Stanchion Mount Straight	1 1/2	VMVIG2P055GP	DMVIG2P085GP	*DMVIG2P165GP
Luminaire with Globe and Guard less Mounting Module	—	VMVIG055GP	DMVIG085GP	*DMVIG165GP

Standard Voltage

120V, 50/60 Hz
200V-277V, 50/60 Hz

Suffix

/120
/200 277

Operative range of 108-132 VAC

Operates on 208, 220, 230, 240, 277 VAC

Add the voltage suffix to the

above catalog number.

Ex. - DMVIG2A085GP/120

* 165W Champ Induction Luminaires are only available in 200-277VAC

Luminaires with Induction Lighting System

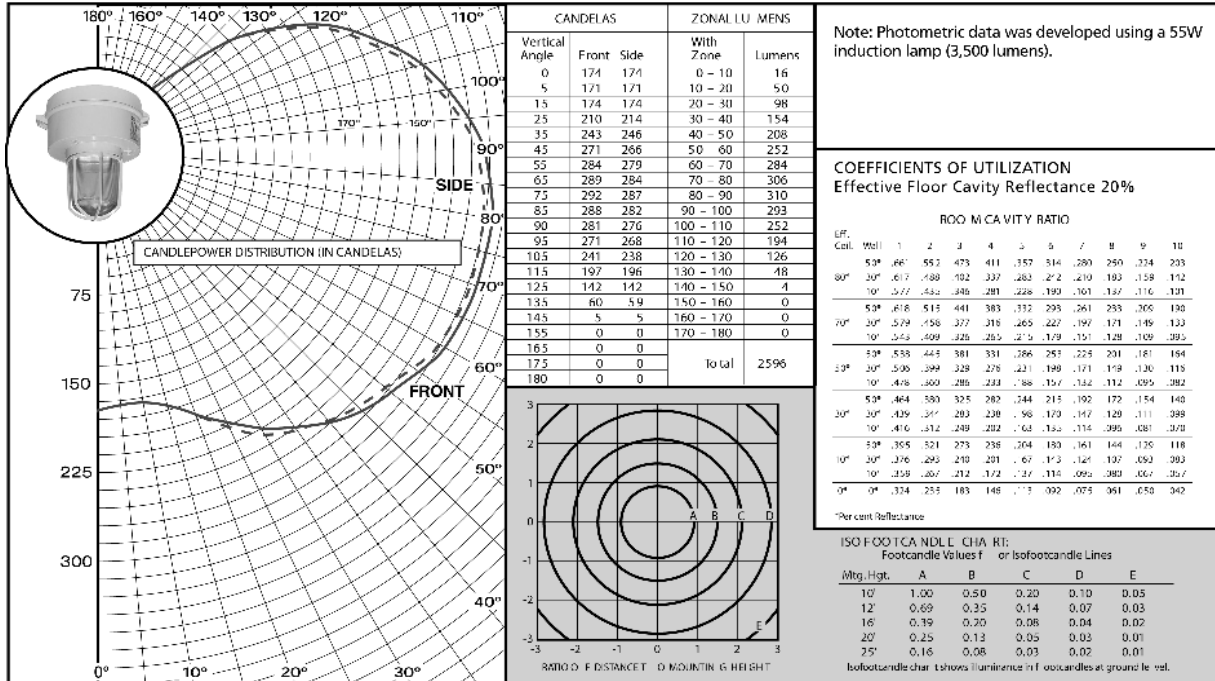
VMVIG and DMVIG Series

Photometric Data

5L

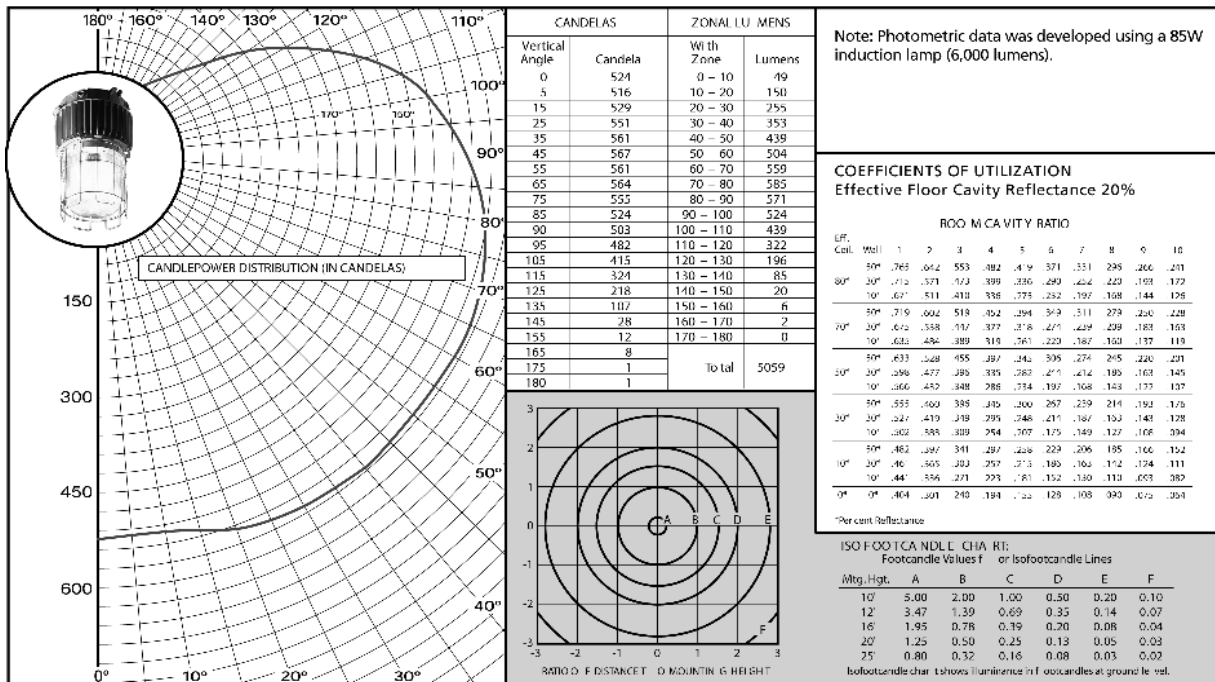
55 WATT INDUCTION

LUMINAIRE WITH GLOBE AND GUARD
VMVIG055GP LAMP: 55W INDUCTION



85 WATT INDUCTION

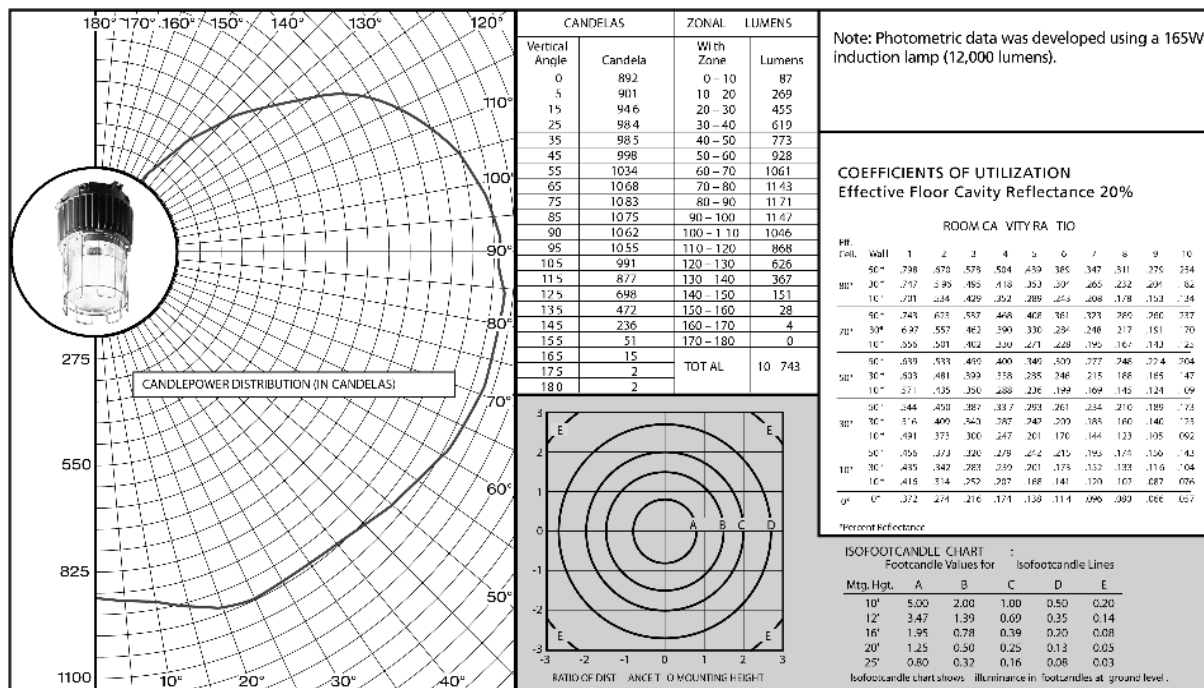
LUMINAIRE WITH GLOBE AND GUARD
DMVIG085GP LAMP: 85W INDUCTION



Photometric Data: For additional photometric information, see the Resources area of our website. Photometric .ies files for use with our Luxicon Lighting Layout Software are available to download

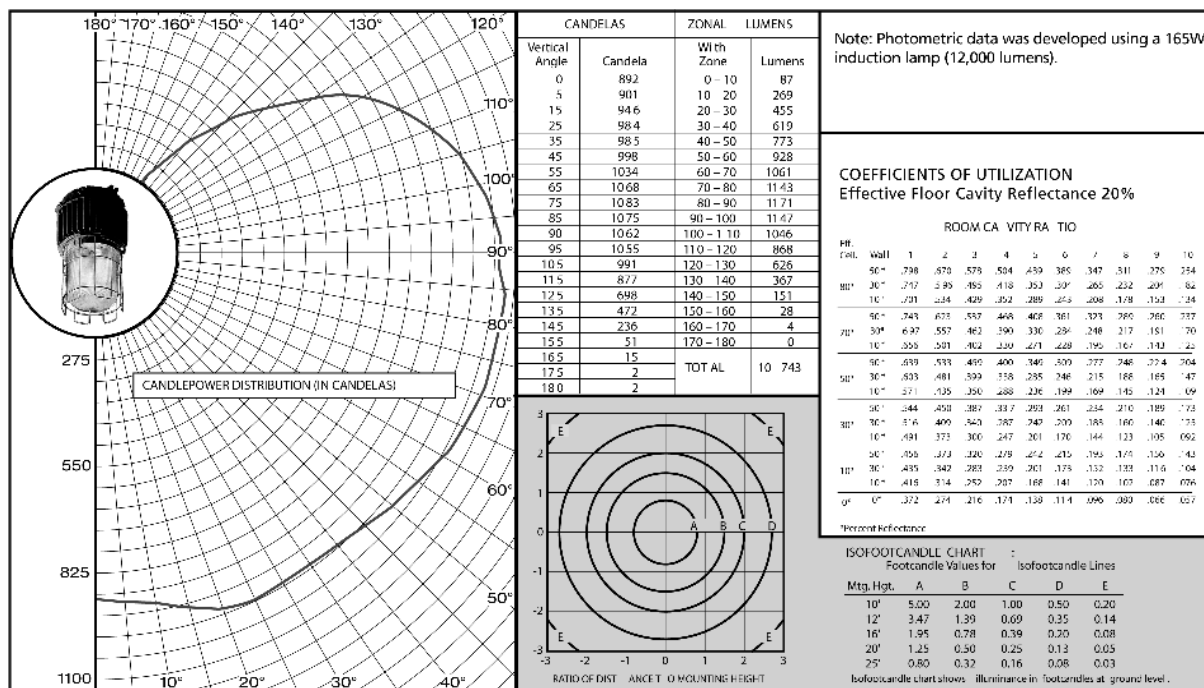
165 WATT INDUCTION

LUMINAIRE WITH GLOBE
DMVIG165G LAMP: 165W INDUCTION



165 WATT INDUCTION

LUMINAIRE WITH GLOBE AND GUARD
DMVIG165GP LAMP: 165W INDUCTION



Photometric Data: For additional photometric information, see the Resources area of our website. Photometric .ies files for use with our Luxicon Lighting Layout Software are available to download

Luminaires with Induction Lighting System

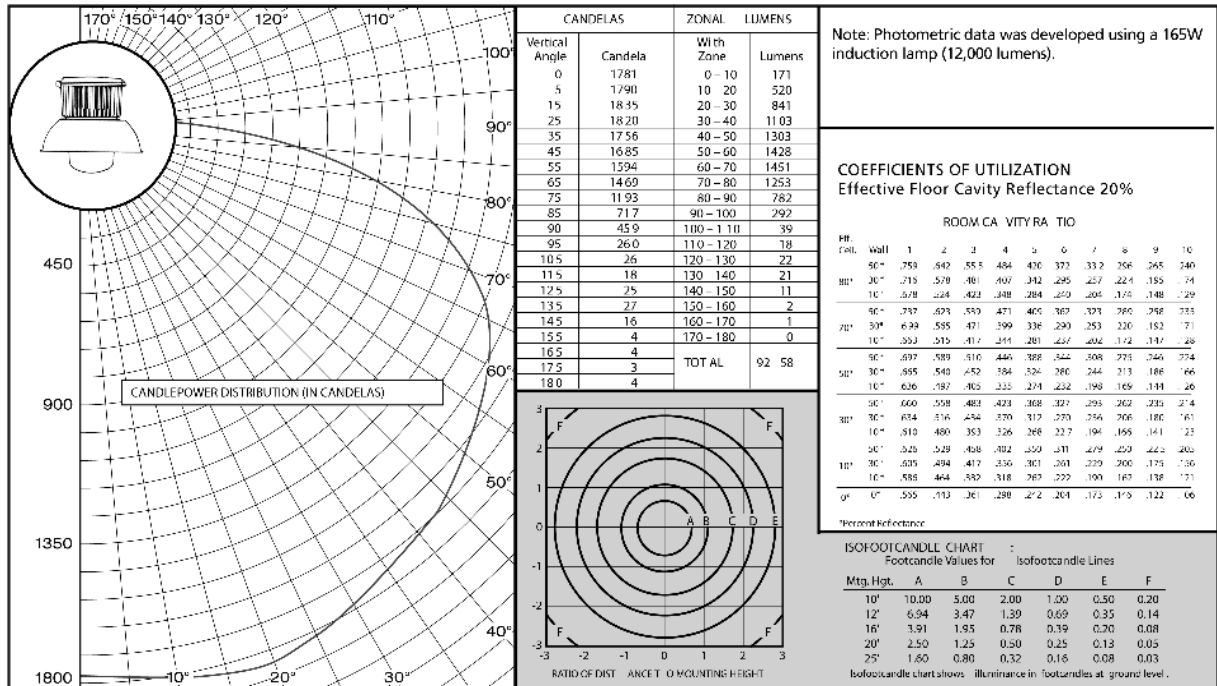
VMVIG and DMVIG Series

Photometric Data

5L

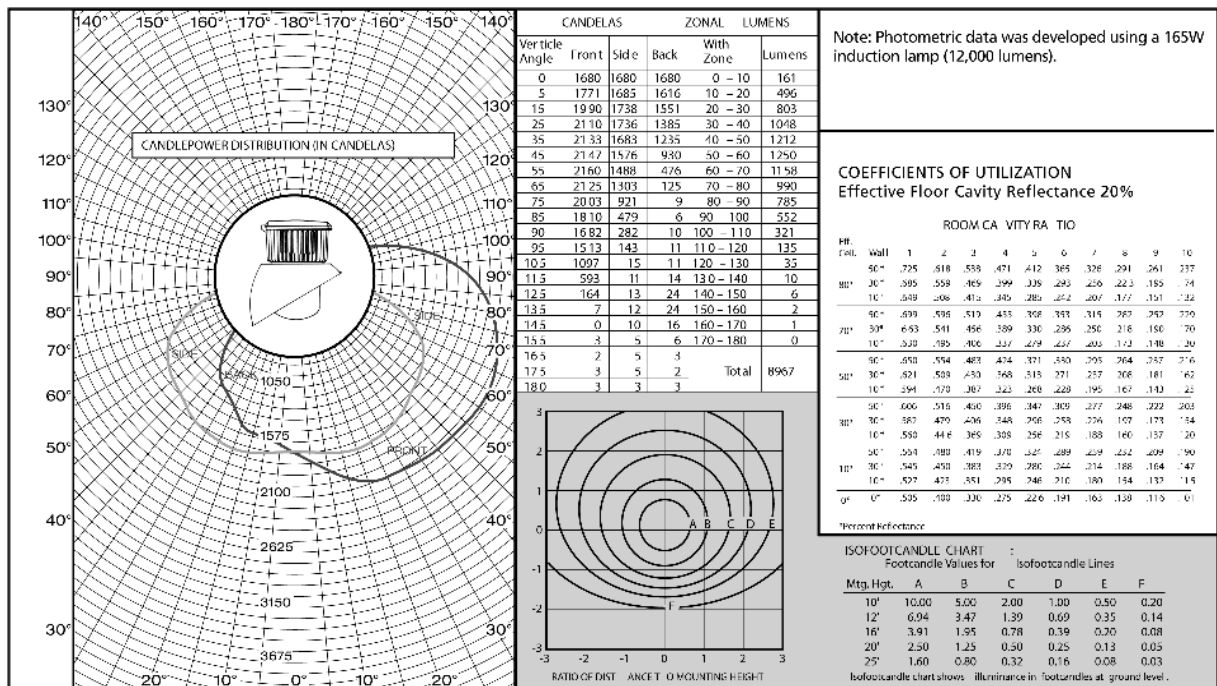
165 WATT INDUCTION

LUMINAIRE WITH GLOBE AND RD739 DOME REFLECTOR
DMVIG165G LAMP: 165W INDUCTION



165 WATT INDUCTION

LUMINAIRE WITH GLOBE AND RA739 (30° ANGLE) REFLECTOR
DMVIG165G LAMP: 165W INDUCTION



Photometric Data: For additional photometric information, see the Resources area of our website. Photometric .ies files for use with our Luxicon Lighting Layout Software are available to download

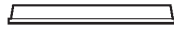
COVERS:

PENDANT

APM2 3/4 IN.

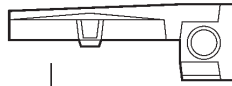
APM3 1 IN.

HPM2 3/4 IN.

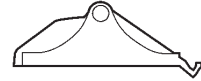
WALL

TWM2 3/4 IN.

TWM3 1 IN.

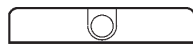
QUAD—MOUNT

QM25 3/4 IN.

CEILING

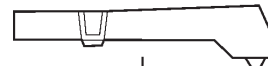
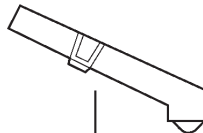
CM2 3/4 IN.

CM3 1 IN.

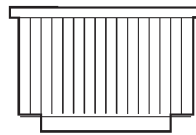
STANCHION

JM5 1 1/2 IN.

PM5 1 1/2 IN.

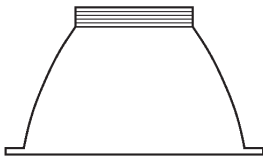
HOUSING

DMV

GLOBE

G303

G303 S808

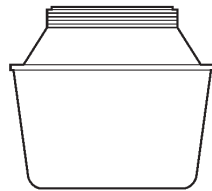

REFLECTOR/LENS
GRD4
REFRACTOR

GR302

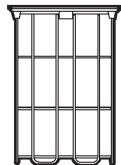
GR305

PGR302

PGR305

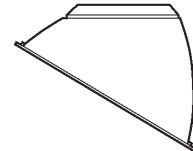
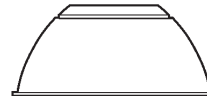
GUARD

P33

REFLECTOR

RA79 RA739

RD79 RD739



Description	Page No.
Application/Selection	810
General Purpose Luminaires VF Vaporgard™ Series	811-813
Non-Metallic Luminaires NFL Series N2MVF	843-845 823-828
Hazardous Area Luminaires CPMVF DMVF eLLB20 Series eLLK Series EVLPF EVF Series EVFDR Series EVFT Illuminator™ Series FVN Series FVS Series nLLK Series	814, 815 816-822 855-857 846-848 829-835 858-861 862, 863 839-842 852-854 836-838 849-851

6L Fluorescent Lighting Luminaires

Hazardous and Non-Hazardous Application and Selection Quick Selector Chart

Application:

- for use in hazardous or non-hazardous areas (as shown in the Quick Selector Chart below)
- low operating cost
- high light output per watt
- low brightness
- low glare
- uniform light
- instant illumination

Considerations for Selection:

Having made the determination that a fluorescent luminaire is required, the remaining selection is the type of luminaire (i.e., number and kind of lamps) and placement of luminaire. To determine the number of luminaires:

1. Determine Cavity Ratios for room, ceiling and floor.
2. Determine Coefficient of Utilization
3. Determine Light Loss
4. Determine Lamp Lumens required = $\frac{\text{Footcandles} \times \text{Area}}{\text{Coefficient of Utilization} \times \text{Light Loss Factor}}$
5. Determine number of luminaires required = $\frac{\text{Total Lamp Lumens Required}}{\text{Lamp Lumens per Luminaire}}$

A more complete explanation of the steps to be followed can be found in the Lighting Selector Guide, pages 665 through 689.

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Quick Selector Chart

Series	NEC – Hazardous Area Compliance	Lamp Watts	Volts	No. of Lamps
VF	Cl. I, Division 2, Groups A,B,C,D	5, 7, 9	120	2
NFL	Cl. I, Division 2, Groups A,B,C,D	32, 40	120-277V 50-60Hz	1, 2
FVN	Cl. I, Division 2, Groups A,B,C,D; Cl. II, Groups F,G; Cl. III	32, 40, 60	120, 277, 220/240 50 or 60 Hz	2, 3
EVF	Cl. I, Groups C,D; Cl. II, Groups E,F,G	32, 40, 60, 110	120, 277, 347, 220/240 50 or 60 Hz	1, 2, 3, 4
EVFDR	Cl. I, Groups C,D; Cl. II, Groups E,F,G	32, 40, 60, 110	120, 277, 220/240 50 or 60 Hz	2
EVFT	Cl. I, Groups B,C,D; Cl. II, Groups E,F,G; Cl. III	39	120, 277, 220/240 50 or 60 Hz	2, 4
FVS	Cl. I, Division 2, Groups B,C,D; Cl. II, Groups E,F,G; Cl. III	40	120-277V, 50-60Hz or 347V, 60Hz	2
DMVF	Cl. I, Division 2, Groups A,B,C,D; Cl. II, Groups E,F,G; Cl. III; Simultaneous Presence	26, 32	120-277V, 50-60Hz or 347V, 60Hz	2, 3
N2MVF	Cl. I, Div. 2, Groups A,B,C,D Class II, Groups F,G Class III; Simultaneous Presence	26, 32	120-277V, 50-60Hz or 347V, 60Hz	2
EVLP	Cl. I, Div.1, Groups (B), C, D Cl. II, Groups E, F, G Cl. III; Simultaneous Presence	26, 32	120-277V, 50-60Hz or 347V, 60Hz	2
CPMVF	Cl. I, Div. 2, Groups A, B, C, D	26, 32, 42	120-277V, 50-60Hz, 347V 60Hz	2
eLLB 20	Cl. I, Division 2, Groups A,B,C,D; Cl. I, Zone 1, Group IIC; Cl. II, Division 2, Groups F,G	17, 32	120-240V, 50-60Hz 110-230 VDC	2
ELLK	Cl. I, Zone I & Div 2 Cl. II, Div 2	32	120-254V	2
nLLK	Cl. I, Division 2, Groups A,B,C,D; Cl. I, Zone 2 AEx nA II; Cl. II, Division 2, Groups F,G	17, 32	120-277V, 60Hz	2

VF Series Vaporgard™ Fluorescent Luminaires

- Cl. I, Div. 2, Groups A,B,C,D*
- Cl. I, Zone 2 IIC*
- Wet Locations
- NEMA 3,3R

6L

Application:

VF series *Vaporgard* fluorescent lighting luminaires are used:

- indoors or outdoors in industrial locations where enclosed and gasketed luminaires are required
- where the energy efficiency and long life of single twin-tube compact fluorescent lamps are desired
- where luminaires may be subject to wet, damp, dirty locations
- where vibration and rough usage are a problem
- to retrofit existing *Vaporgard* incandescent luminaires
- in tunnels, building entrances, utility rooms, hallways and similar locations
- with clear or colored globes to illuminate or mark critical locations or processes

Features:

- Compact size and light weight allow adaptation and easy installation in many industrial applications
- Cast copper-free aluminum (less than 0.4 of 1% copper) construction and epoxy powder finish provide excellent resistance to corrosion
- Variety of mounting arrangements to suit any lighting layout – pendant, ceiling, wall bracket, angle stanchion, through feed, box mount
- VFH luminaire components can be installed on existing *Vaporgard* incandescent components and standard stamped metal boxes
- Fixtures available for use with two compact fluorescent lamps. Lamps rated at 5, 7 or 9 watts can be used with all luminaires
- Dome and 30° angle reflectors made of bright white *Krydon*® material provide superior reflectivity. Will not chip, peel, dent, rust or corrode. (Order separately – see page 812)
- Glass globes are internally fluted and stippled to reduce glare and provide even light distribution. Exteriors are smooth to shed dust
- All luminaires 120 VAC only!
- Grounding wire for safety

Standard Materials:

- Bodies and guards – copper-free aluminum (less than 0.4 of 1%)
- Globes – clear or colored, glass or plastic
- Reflectors – *Krydon* fiberglass-reinforced polyester material

Standard Finishes:

- Copper-free aluminum – powder epoxy finish
- *Krydon* material – high reflectance white

Electrical Ratings:

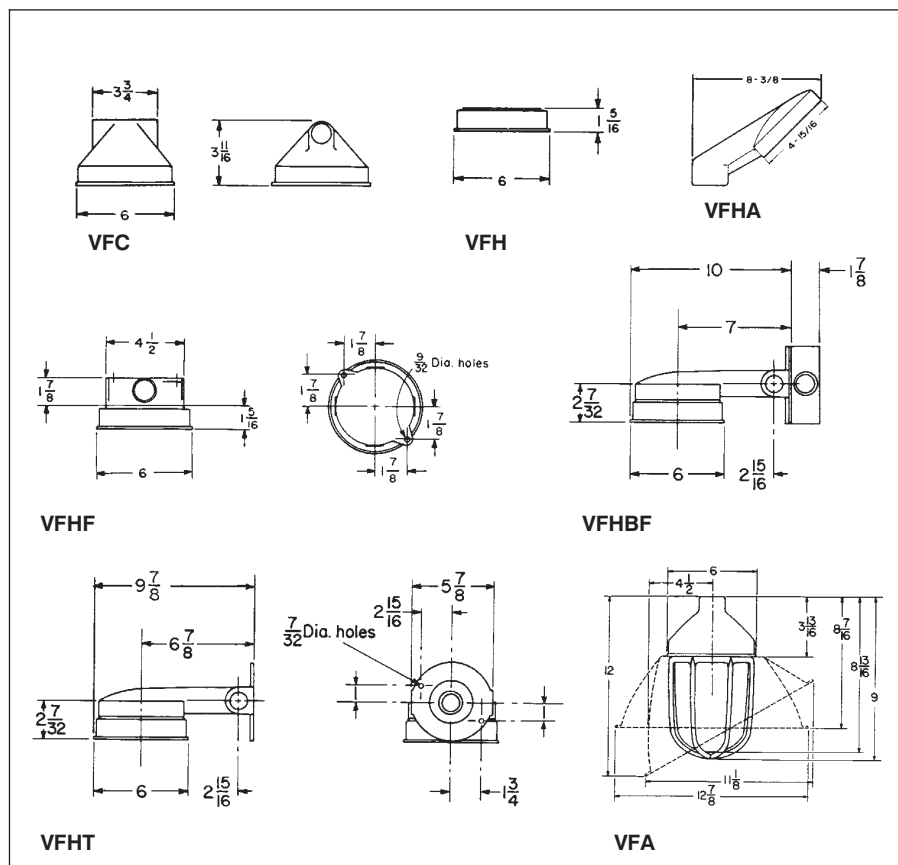
- Input voltage – 120 VAC, 60 hertz
- Wattages: two 5, 7 or 9 watt lamps



Certifications and Compliances:

- UL Standard: 1598, 844
- CSA Standard C22.2 No. 137

Dimensions



Accessories:

- See page 812 for complete listing

Luminaire Net Weights:

Fixture Type	1-Lamp Luminaire With Globe & Guard (lbs.)	2-Lamp Luminaire With Globe & Guard (lbs.)
VFA	4¾	5
VFHF	5	5¼
VFHBF	7¼	7½

Add for Reflectors (lbs.):

Dome	1	30° Angle	1
------	---	-----------	---

Deduct (lbs.): P21 Guard ½

Temperature Performance Data:

Lamp	Class I Div. 2	Max. Ambient	Supply Wire °C	Minimum Operating
5, 7W	T3B	40°C	75°C	-18°C (0°F)
9W	T3B	40°C	75°C	-4°C (25°F)

* All mountings except stanchion.

6L

VF Series Vaporgard™ Fluorescent Luminaires

- Cl. I, Div. 2, Groups A,B,C,D**
- Cl. I, Zone 2 IIC**
- Wet Locations
- NEMA 3,3R

Twin-Tube Fluorescent with G24 Clear Glass Globe and P21 Guard (lamps not included)

Luminaire Watts	Hub Size	Pendant Mount Cat. #	Ceiling Mount Cat. #	Wall Mount (w/Box) Cat. #	Wall Mount (No Box) Cat. #	Angle Stanchion Mount* Cat. #	Through Feed Mount Cat. #	Box Mount & Retrofit Cat. #
2 Lamps, 18 watts max.	1/2	VFA122GP	VFHF122GP✓	VFHBF122GP✓	VFHT122GP✓		VFC122GP	VFH122GP✓
	3/4	VFA222GP✓	VFHF222GP✓	VFHBF222GP✓	VFHT222GP✓		VFC222GP✓	
	1	VFA322GP						
	1 1/4					VFHA422GP✓*		

VF Series with Colored Glass Globes or Plastic Globes.

To obtain:

- Substitute appropriate globe designation for "G" in above Cat. Nos.
- Refer to section 1L for globe designations.

Accessories and Components

Reflectors



Dome
Cat. # RD71✓
(Cannot be used with wall mount luminaires)



30° Angle
Cat. # RA71✓

Globes



Color

Clear
Green
Blue
Red
Amber

Glass Cat.

G24✓
G25
G26
G27
G28

Plastic Cat. *

G63
G65
G67

Guard For use with glass globes only



Cat. #
P21✓

Junction Boxes and Bracket Bodies



VXF – 4 Hubs, 3 Plugs

Hub Size	Cat. #
1/2	VXF10✓
3/4	VXF20✓



VXT – 3 Hubs, 2 Plugs

Hub Size	Cat. #
1/2	VXT10✓
3/4	VXT20✓



VXA – Stanchion Mount (Non Hazardous Locations)

Hub Size	Cat. #
1 1/4	VXA4✓



VXFT – 5 Hubs, 4 Plugs

Hub Size	Cat. #
1/2	VXFT10✓
3/4	VXFT20✓

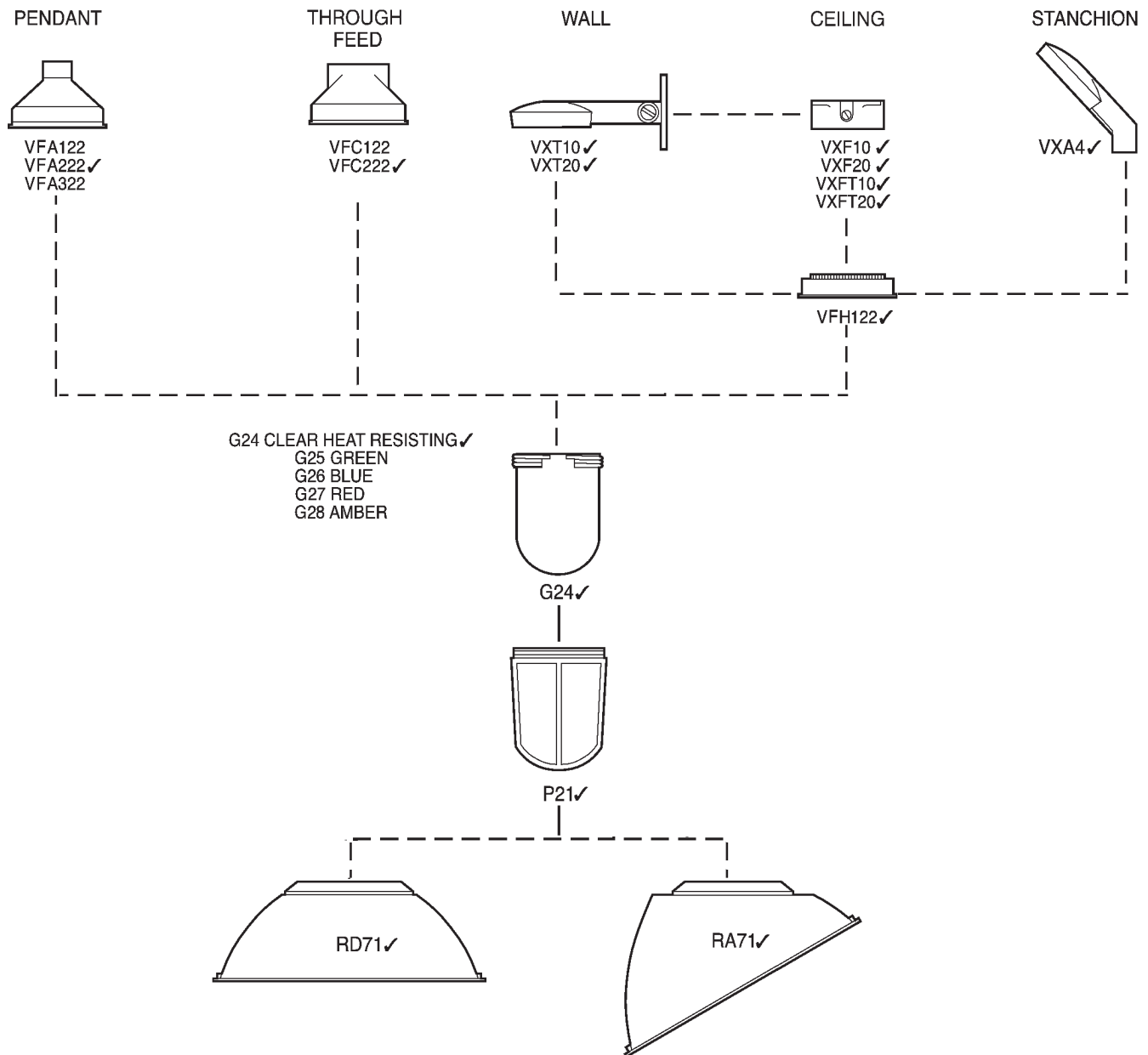


VXB – 3 Hubs, 2 Plugs

Hub Size	Cat. #
1/2	VXB10 (Includes adapter plate and two gaskets for mounting to VXF, GRF or 4" outlet boxes.)✓
3/4	VXB11 (Includes 1 gasket for mounting to VXF or GRF junction boxes.)✓

* For non-hazardous locations.
✓ – available with Lightning Service™ delivery
See Section G for complete details

** All mountings except stanchion.



✓ – available with Lightning Service™ delivery. See Section G for complete details.

CPMVF Champ-Pak™ Compact Fluorescent Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div. 2 & Zone 2* (Suffix S826)
- Certified for IEC Zone 2* (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence*
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56

Application:

CPMVF Champ-Pak™ luminaires are used:

- Indoor and outdoor wall mounting or vertical surface mounting where minimal luminaire depth is required in:
 - Manufacturing plants and heavy industrial facilities
 - Industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical and platforms
 - Waste or sewage treatments plants
 - Offshore, dockside and harbor installations
- For security and safety lighting in industrial facilities for lighting of loading docks, tunnels and stairways
- For marine, wet location, hosedown and corrosive environments

Features & Benefits:

- Unique compact shallow-profile design mounts virtually anywhere
- Side hinged cover with two screw closing for easy installation and maintenance
- Gray Corro-free™ epoxy powder coat two-piece housing provides superior corrosion resistance
- Unique stainless steel wire guard accessory attaches without any additional hardware for easy installation and maintenance
- Glass refractor provides uniform light distribution to eliminate glare
- Silicon gaskets make luminaire suitable for NEMA 4X, Marine environments
- High power factor ballasts (+90%) are standard, which allow more luminaires per circuit

Standard Materials:

- Luminaire housing and door frame assembly – copper-free aluminum
- External hardware – stainless steel
- Lens – heat and impact-resistant refractor style glass
- Gaskets – silicon rubber
- Reflector – aluminum light sheet
- Wire guard – stainless steel

Standard Finishes:

- Aluminum – Corro-free™ epoxy powder coat
- Stainless steel – natural

Certificates and Compliances:

- NEC and CEC:
 - Class I, Division 2, Groups A, B, C, D
 - Class II, Class III & Simultaneous Presence (Class I, Division 2 and Class II)*
 - Class I Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15

Energy Savings:

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.



Electrical Rating Ranges:

- Wattages: Two 26, 32, or 42 watt lamps.
- 120-277V, 50-60Hz
- 347V, 60Hz
- 12, 24 & 125VDC (Consult Cooper Crouse-Hinds)

Options:

Suffix to add
to Cat. No. #

- Restricted Breathing Construction
 - Class I Division 2 & Zone 2 Suitability **S826***
 - Cooler Operating Temperatures (T-Numbers)
- Certified for IEC Zone 2 (Suffix S826TB) **S826TB***
(Guard Required)
 - Furnished with
 - Terminal Block
 - Crimp Terminals
- Factory Assembled with Lamp **FA**
- Fused - protects ballast and capacitors **S658†**
against abnormal line conditions
(Not for use in Canada)
(Not for Marine use)

Accessories:

	Cat. #
Photocell for Field Installation	
• 120V, 50/60Hz	V2PC20
• 208-240V, 50/60Hz	V2PC22
• 277V, 50/60Hz	V2PC27
Stainless Steel Wire Guard	P55

† When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

* Contact Cooper Crouse-Hinds

CPMVF Champ-Pak™ Compact Fluorescent Luminaires

Ordering Information
Temperature Performance Data
Dimensions & Weights

6L

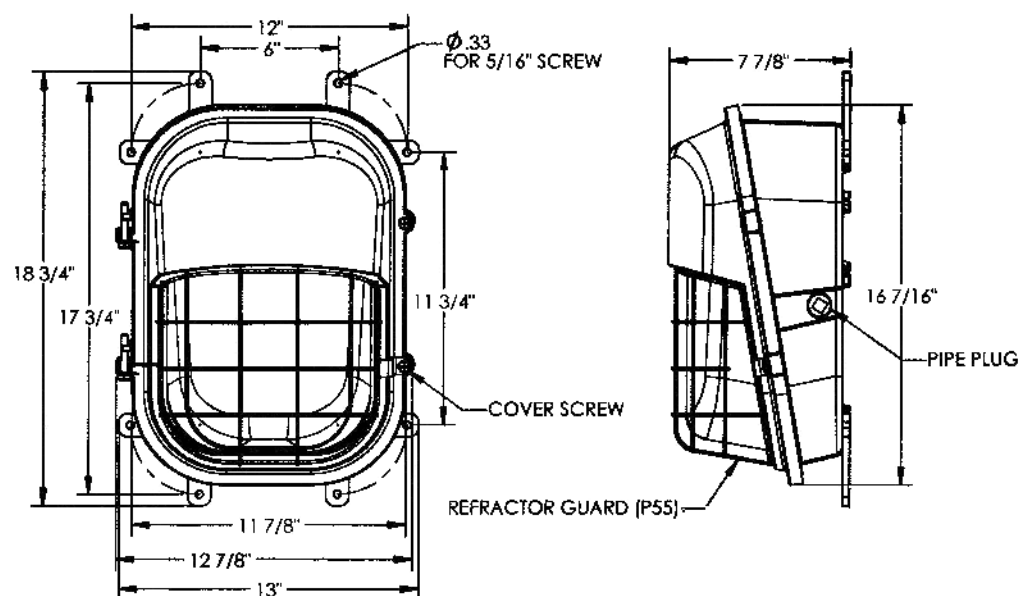
Ordering Information:

Hub Size	Luminaire Watts	Catalog Number
3/4 NPT	52	CPMVF2W052
3/4 NPT	64	CPMVF2W064
3/4 NPT	84	CPMVF2W084

STANDARD VOLTAGE BALLASTS			OPTIONAL BALLASTS		
	NEC/UL & CEC/CSA (cUL)	CEC/CSA (cUL)	(Consult Cooper Crouse-Hinds)		
Voltage Suffix	120-277V 50-60Hz /UNV	347V 60Hz /347	125V DC /125VDC	12V DC /012VDC	24V DC /024VDC

CPMVF Temperature Performance Data – Consult Cooper Crouse-Hinds

Dimensions (Inches)



Net Weight:

CPMVF Less Guard	17 Lbs
P55 Guard	0.5 Lbs

6L
Fluorescents

DMVF Series Compact Fluorescent Champ® Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

DMVF series Champ luminaires are used:

- in areas made hazardous by abnormal conditions resulting in the presence of flammable vapors or gases.
- in areas made hazardous by the presence of combustible dusts.
- where combustible dusts and flammable vapors are present simultaneously.
- in marine applications where water spray and corrosive atmospheres are considerations.
- on installations where vibration and rough usage are problems.
- where a cool, efficient light source is required.
- in areas that require lamps to reach full illumination immediately.
- in refineries, chemical and petrochemical facilities, grain processing, handling or storage facilities, manufacturing plants waste water treatment plants sewage treatment plants, oil terminals, food processing facilities, breweries, and any other manufacturing or processing facility where safe, reliable, hazardous area fluorescent or auxiliary lighting is needed.

Standard Features:

- Housings made of die-cast copper-free aluminum (less than 0.4 of 1% copper) for strength and resistance to corrosion.
- Mounting modules equipped with integral hub set screws for vibration resistance (ceiling, pendant, and quad mounts).
- Hubs are provided with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Epoxy powder finish and stainless steel external hardware for resistance to corrosion.
- Long-life gaskets which provide seals between mounting module, housing, and optical assembly.
- Grounding wire for safety.
- Cool operating design.
- Optional stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Optional battery pack ballast for auxiliary lighting.

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%).
- Exterior hardware and guards – stainless steel.
- Reflectors – Krydon® fiberglass-reinforced polyester material.
- Globe – heat and impact resistant internally fluted glass.

Standard Finishes:

- Aluminum – gray epoxy powder coat.
- Krydon material – high reflectance white.
- Stainless steel – natural.

Electrical Rating Ranges:

- Wattage: Two 26 or 32 watt lamps
- 120-277V, 50-60 Hz
- 347V, 60Hz
- 12, 24, & 125VDC

Certificates and Complies:

- NEC and CEC:
Class I, Division 2, Groups A, B, C, D
Class II, Class III &
Simultaneous Presence (Class 1,
Division 2 and Class II)
Class I Zone 2
- IEC:
Zone 2 Ex nR IIC
- UL Standards:
844, 2279 Hazardous (Classified)
Locations
1598 Luminaires
1598A Marine Locations
- CSA Standards
C22.2 No. 137
- IEC Standards
60079-15

Options:

Description

- | | |
|---|--------|
| • Restricted Breathing Construction
Class I Division 2 & Zone 2 Suitability
Cooler Operating Temperatures (T-Numbers) | S826 |
| • Certified for IEC Zone 2 (Suffix S826TB)
Furnished with
Terminal Block
Crimp Terminals | S826TB |
| • Factory Assembled with lamps installed for additional labor savings. | FA. |
| • Fused – to protect ballast against abnormal line conditions (not available on
CSA certified fixtures) | S658* |
| • Lamps supplied with fixture | S714. |
| • Top hat with stainless steel threaded insert to attach ballast housing | S806. |
| • TEFLON® coating on globe for increased shatter protection | S808. |

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.



Accessories:

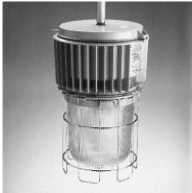
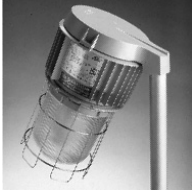
- (Order separately)
- Reflectors (to be used with globe)
Dome Cat. # RD739
30° Angle Cat. # RA739

Suffix to add
to Cat. No. #

DMVF Series Compact Fluorescent Champ® Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

6L

				DMVF Series Fluorescent Cat. No. with G303 Globe and P33 Guard	
Mounting Style	Hub Size	Luminaire Watts			
	Pendant Mount		3/4	52	DMVF2A052GP
			1		DMVF3A052GP
			3/4	64	DMVF2A064GP
			1		DMVF3A064GP
	Flexible Pendant Mount		3/4	52	DMVF2HA052GP
			3/4	64	DMVF2HA064GP
	Ceiling Mount Thru-Feed		3/4	52	DMVF2C052GP
			1		DMVF3C052GP
			3/4	64	DMVF2C064GP
			1		DMVF3C064GP
	Wall Mount Thru-Feed		3/4	52	DMVF2TW052GP
			1		DMVF3TW052GP
			3/4	64	DMVF2TW064GP
			1		DMVF3TW064GP
	Quad-Mount		3/4	52	DMVF25Q052GP
	Pendant, Adjustable Thru-Feed, 25° Angle, 12½° Angle		3/4	64	DMVF25Q064GP
	Stanchion Mount		1½	52	DMVFJ052GP
	25° Angle		1½	64	DMVFJ064GP
	Stanchion Mount		1½	52	DMVFP052GP
	Straight		1½	64	DMVFP064GP

1. Catalog numbers are basic numbers. Voltages must be specified.

Voltage Suffix	STANDARD VOLTAGE BALLASTS		OPTIONAL BALLASTS		
	NEC/UL & CEC/CSA (cUL)	CEC/CSA (cUL)	125V DC /125VDC	12V DC /012VDC	24V DC /024VDC
	120-277V 50-60Hz /UNV	347V 60Hz /347			

6L
Fluorescents

6L DMVF Series - Ordering by Components

DMVF luminaires are available in components

A complete luminaire consists of:

- I. Champ Cover (Mounting Module)
- II. DMVF Ballast Housing
- III. Globe, Globe Guard, Globe Reflectors

I. Champ Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾ 1	APM2 APM3
Flexible Pendant	¾	HPM2
Ceiling	¾ 1	CM2 CM3
Wall	¾ 1	TWM2 TWM3
Stanchion - 25 Degree Angle	1½	JM5
Stanchion - Straight	1½	PM5
Quad-Mount	¾	QM25

II. Ballast Housings. Complete catalog number must have the **voltage suffix** (UNV shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Catalog Number
Compact Fluorescent	2 (26W) 2 (32W)	DMVF052/UNV DMVF064/UNV

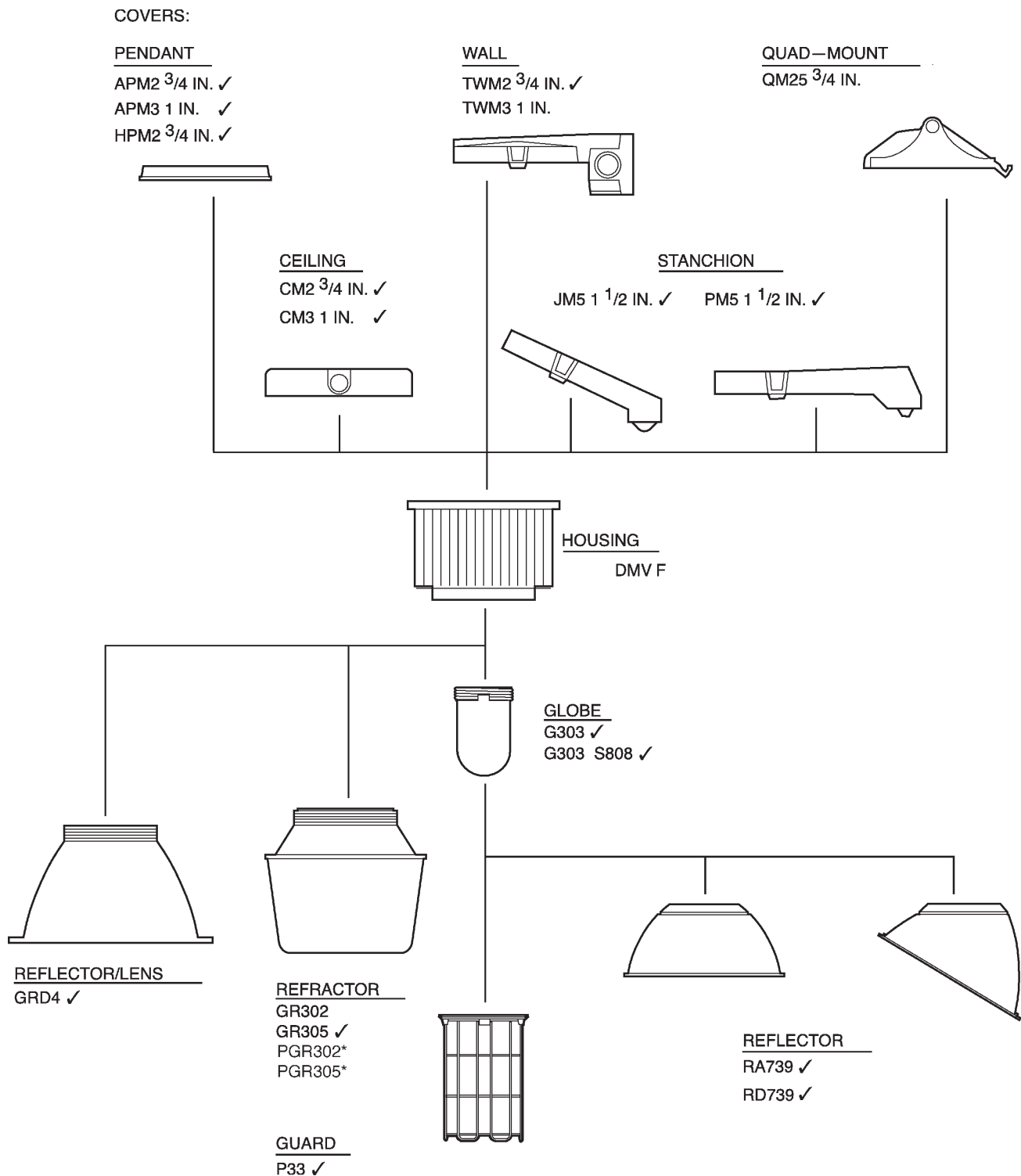
III. Globe, Guards and Reflectors

Type	Catalog Number
Globe	G303
Teflon Coated	G303-S808
Globe Guard	P33
Globe Reflector-Dome	RD739
Globe Reflector-Angle	RA739

DMVF Series Compact Fluorescent Champ® Luminaires

Family Tree

6L



* These plastic reflectors are for non-hazardous areas only (50-100W max.)

✓ – available with Lightning Service™ delivery. See Section G for complete details.

Temperature Performance Data:

Lamp Watts	Minimum Operating Temperature	Maximum Ambient Temp	Class I		Class II	Simultaneous Presence		Supply Wire °C
			Non-Restricted Breathing	Restricted Breathing		Non-Restricted Breathing	Restricted Breathing	
Fluorescent:	DMVF		Div. 2	Zone 2 or Div. 2	Division 1	Cl.I, Div. 2/Cl.II	Cl.I, Zone 2 or Div. 2/Cl.II	
52 & 64 Watt	-20°C (4°F)	40°C (104°F)	T3	T6	T6	T3/T6	T6	60

Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Globe, Guard (lbs.)
DMVF	52, 64	18¼

Add for mounting modules (lbs.):

Pendant	1¼
Flexible Pendant	1½
Ceiling	2¾
Wall	4½
Quad-Mount	3½
Angle Stanchion	3½
Straight Stanchion	4½

Add for reflectors (lbs.):

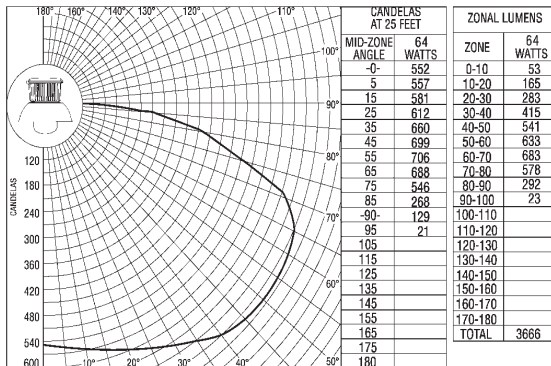
Dome	1¼	30° Angle	1¾
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Deduct: 1 lb. for luminaire with P33 Guard

DMVF Series Compact Fluorescent Champ® Luminaires

Photometric Data

6L



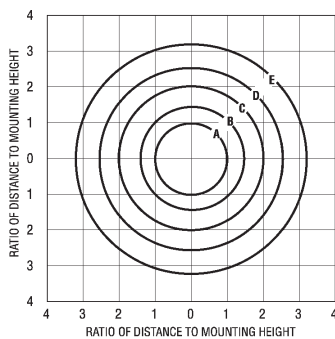
NOTE: For 52 watt DMVF applications, use a .75 multiplier.

DMVF Photometric Data

ISOFOOTCANDLE CHART:

Luminaire with globe and dome reflector

DMVF064GRD Dome Reflector



DMVF064GRD Dome Reflector

Coefficients of Utilization

Effective Floor Cavity Reflectance 20%

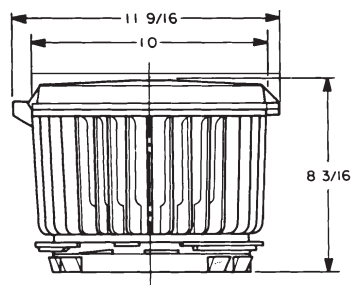
Room Cavity Ratio

Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.741	.617	.524	.452	.396	.351	.314	.283	.258	.236
	30*	.694	.548	.445	.370	.314	.271	.237	.210	.188	.169
	10*	.652	.491	.382	.308	.254	.214	.183	.159	.140	.125
70*	50*	.722	.601	.510	.440	.386	.342	.307	.277	.252	.231
	30*	.679	.537	.437	.364	.309	.267	.234	.207	.185	.167
	10*	.640	.483	.378	.305	.252	.212	.182	.158	.139	.124
50*	50*	.686	.570	.484	.418	.367	.326	.293	.265	.242	.223
	30*	.650	.516	.421	.351	.299	.259	.227	.202	.181	.163
	10*	.617	.470	.369	.299	.247	.209	.180	.155	.138	.123
30*	50*	.653	.542	.460	.398	.350	.311	.280	.254	.233	.214
	30*	.623	.497	.406	.340	.290	.251	.221	.197	.176	.160
	10*	.596	.457	.361	.293	.243	.206	.177	.154	.136	.121
10*	50*	.622	.516	.437	.379	.333	.297	.268	.244	.224	.206
	30*	.598	.478	.392	.329	.271	.244	.215	.192	.172	.156
	10*	.576	.444	.352	.287	.239	.203	.175	.152	.135	.120
0*	0*	.557	.424	.332	.267	.220	.184	.157	.136	.119	.105

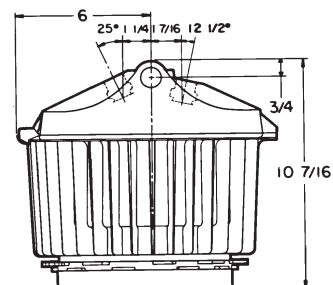
* Percent Reflectance

DMVF Dimensions

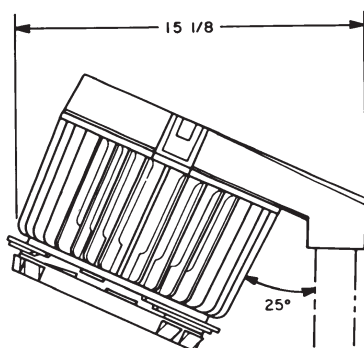
Pendant Mount



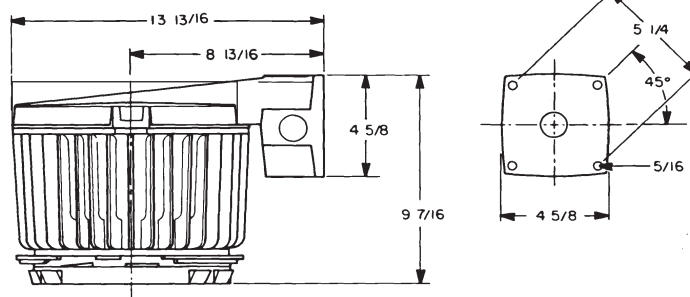
Quad-Mount



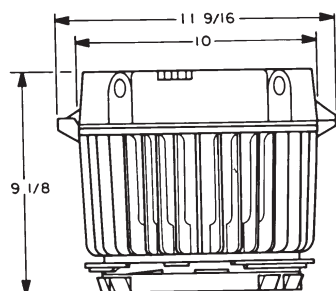
25° Angle Stanchion Mount



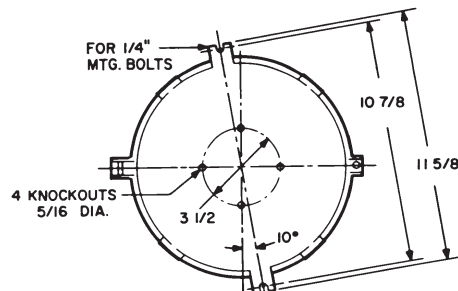
Wall Mount



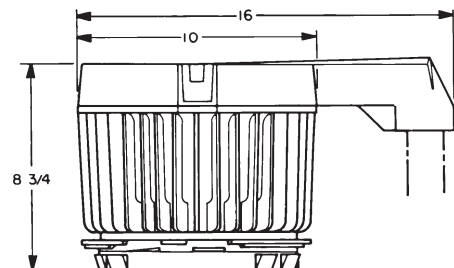
Ceiling Mount



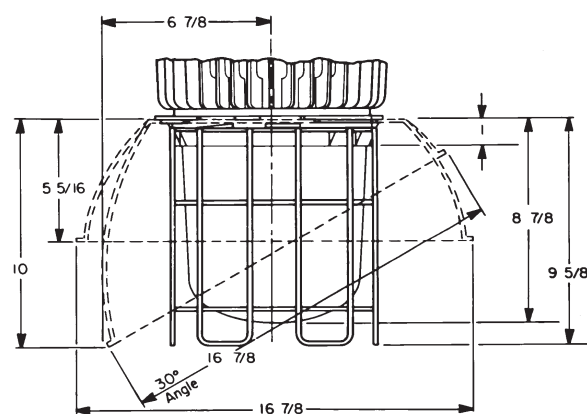
Ceiling Mount – Top View



Straight Stanchion Mount



Luminaire with Globe, Guard, Reflectors



N2MVF Series Compact Fluorescent Champ® Non-metallic Luminaires

- Cl. I, Div. 2, Groups A,B,C,D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F,G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP56

6L

Application:

- N2MVF series Champ luminaires are used:
- in areas in which ignitable concentrations of flammable gases or vapors will be present due to abnormal, unusual or accidental conditions.
 - in installations where moisture, dirt, vibration, corrosion or rough usage are concerns.
 - wherever the damaging effects of water, wind, snow, sleet, hot sun or any combination of these elements are found.
 - ideal for marine use; resists the harmful effects of salt water.
 - withstands the harshest of corrosive environments.
 - to provide low wattage spot and floodlighting.
 - for general area lighting.
 - in manufacturing plants, refineries, chemical, petrochemical and other industrial process facilities, wastewater and sewage treatment facilities, offshore, dockside and harbor installations as well as other heavy industrial applications.

Features and Benefits:

- Housings and mounting modules made of polyphenylene sulfide (PPS) for strength and maximum resistance to corrosion.
- Pendant mounting module equipped with integral hub set screws for vibration resistance.
- Hubs are provided with an integral bushing to help prevent damage to field wiring during installation and ground connection for positive bonding.
- Guard, hub inserts, stanchion elbow and hardware made of stainless steel for maximum resistance to corrosion.
- Grounding wire for safety.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Hinged assembly allows the luminaire to hang free during installation to permit the use of both hands when wiring.
- One, external captive screw for ease of installation.
- Handle – hinge assembly doubles as a handle for ease of installation, especially when carrying up a ladder.

Additional Features:

FLUORESCENT ENERGY SAVINGS

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

Certifications and Compliances:

- NEC and CEC:
 - Class I, Division 2, Groups A,B,C,D
 - Class II, Class III & Simultaneous Presence (Class I Division 2 and II)
 - Class I Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards:
 - 844. 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards:
 - C22.2 No. 137
- IEC Standards:
 - 60079-15

Standard Materials:

- Housing, mounting modules – polyphenylene sulfide (PPS)
- Guard, hub inserts, stanchion elbow, hardware – stainless steel
- Globe – heat & impact resistant, internally fluted glass
- Gaskets – silicone rubber

Electrical Ratings:

- Wattages: Two 26 or 32 watt lamps.
- 120 – 277V, 50-60 Hz
- 347V, 60 Hz
- 12, 24 & 125 VDC



Options:

- | Description | Suffix to be added to Cat. No. |
|---|--------------------------------|
| • Restricted Breathing Construction Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers) | S826 |
| • Certified for IEC Zone 2 | S826TB |
| Furnished with Terminal Block Crimp Terminals | |
| Wall-Mount Arm | |
| For converting a ceiling-mount luminaire to a wall mount | N2MV-WM1 |
| Factory Assembled | |
| For a factory assembled luminaire with lamps installed | FA |
| Fusing | |
| To protect ballast against abnormal line conditions | S658 |
| Furnished with Lamps | S714 |
| Teflon Coated Globe | |
| Provides additional protection against shattered glass fragments when subject to thermal shock, etc. | S808 |

Average Luminaire Weight (lbs.)

Body, mounting module, globe, guard and reflector 30 lbs.

6L
Fluorescents

6L

N2MVF Series Compact Fluorescent

Champ® Non-metallic
Luminaires

- Cl. I, Div. 2, Groups A,B,C,D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups F,G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP56

N2MVF ORDERING INFORMATION

Mounting Style	Hub Size	Lamp Watts	With G303 Globe and P33 Guard Cat. No.†
Pendant Mount	¾	52	N2MV2A052GP
	1	52	N2MV3A052GP
	¾	64	N2MV2A064GP
	1	64	N2MV3A064GP
Ceiling Mount Thru-Feed	¾	52	N2MV2C052GP
	1	52	N2MV3C052GP
	¾	64	N2MV2C064GP
	1	64	N2MV3C064GP
Stanchion Mount	1½	52	N2MVJ052GP
	1½	64	N2MVJ064GP

STANDARD VOLTAGE BALLASTS

NEC/UL & CEC/CSA (cUL)

CEC/CSA (cUL)

OPTIONAL BALLASTS

Voltage
Suffix

120-277V 50-60Hz
/UNV

347V 60Hz
/347

125V DC
/125VDC

12V DC
/012VDC

24V DC
/024VDC

Temperature Performance Data:

Lamp Watts	Minimum Operating Temperature	Maximum Ambient Temp	Class I		Class II	F & G Simultaneous Presence		Supply Wire °C
			Non-Restricted Breathing	Restricted Breathing		Non-Restricted Breathing	Restricted Breathing	
Fluorescent:	N2MV		Division 2	Zone 2	Division 1	Cl.I, Div 2/Cl.II	Cl.I, Zone 2/Cl.II	
52 & 64 Watt	-18°C (0°F)	40°C (104°F)	T2D	T6	T4	T2B/T4	T4	85

6L
Fluorescents

N2MVF Series- Ordering by Components

6L

N2MVF luminaires are available in components

A complete luminaire consists of:

- I. N2MV Cover (Mounting Module)
- II. N2MV Ballast Housing
- III. Globe, Refractors, Guards, Reflectors

I. N2MV Cover (Mounting Module):

Type	Conduit	Cat. No.
Pendant	¾ 1	N2APM2 N2APM3
Ceiling	¾ 1	N2CM2 N2CM3
Wall (Use wall bracket accessory with Ceiling Cover)	¾ 1	N2MV-WM1 and N2CM2 N2MV-WM1 and N2CM3
Stanchion - 25 Degree Angle	1½	N2JM5

II. Ballast Housings.

Complete catalog number must have the **voltage suffix** (UNV shown) and any **options suffixes**.

Lamp Type	Lamp Watts	Catalog Number
Compact Fluorescent	2 (26W)	N2MVF052/UNV
	2 (32W)	N2MVF064/UNV

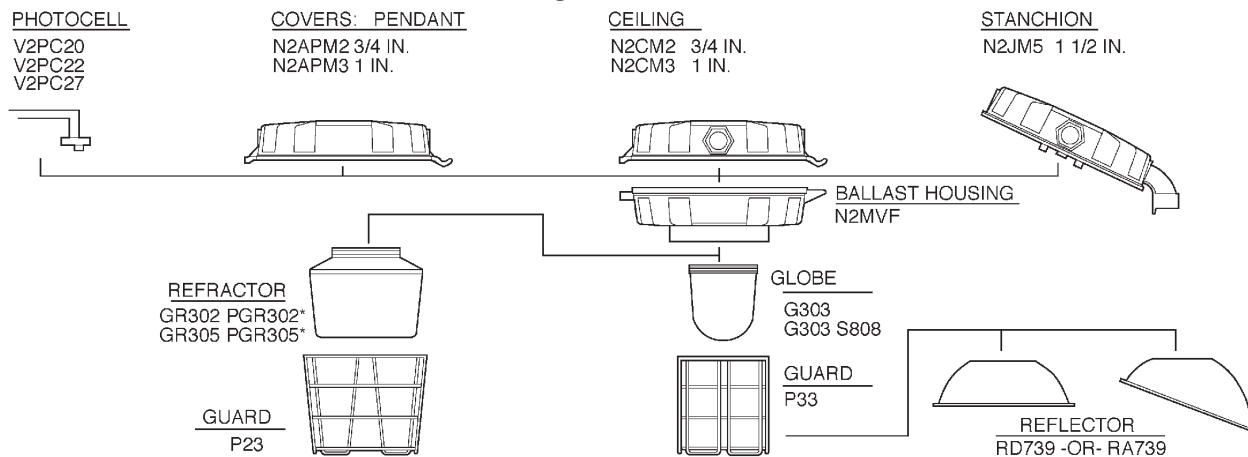
III. Globe, Guard and Reflectors

Type	Catalog Number
Globe	G303
Globe Teflon Coated	G303-S808
Globe Guard	P33
Reflector Dome	RD739
Reflector Angle	RA740

N2MVF Series Compact Fluorescent Champ® Non-metallic Luminaires

Family Tree

A complete luminaire consists of a cover mount, a ballast housing and a globe,
with or without guard, refractor or reflector.



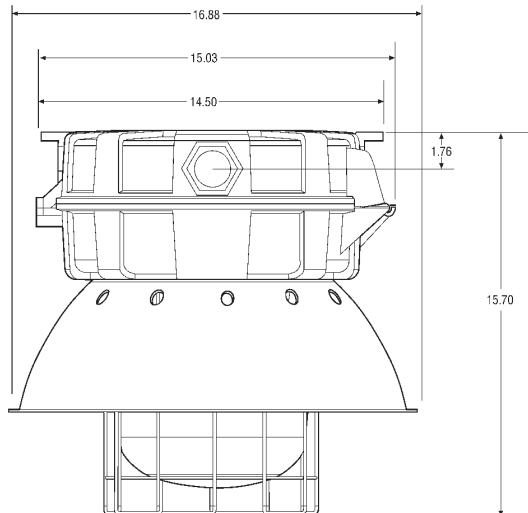
ALL COMPONENTS ARE SUITABLE FOR
USE IN ORDINARY LOCATIONS, CLASS 1,
DIV.2 AND WET LOCATIONS.

N2MVF Series Compact Fluorescent Champ® Non-Metallic Luminaires

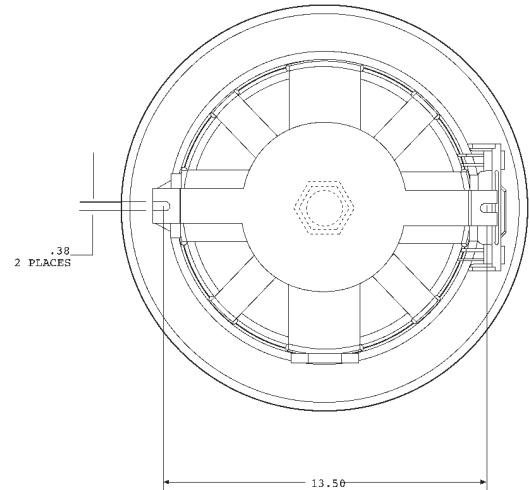
Dimensions
Weights

6L

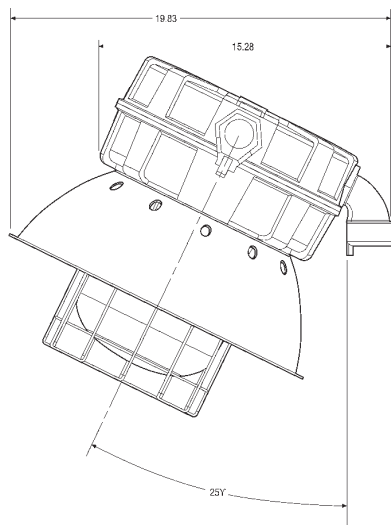
Pendant Mount



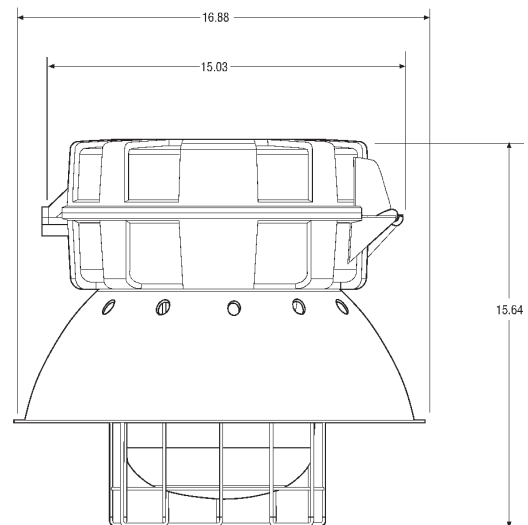
Ceiling Mount – Top View



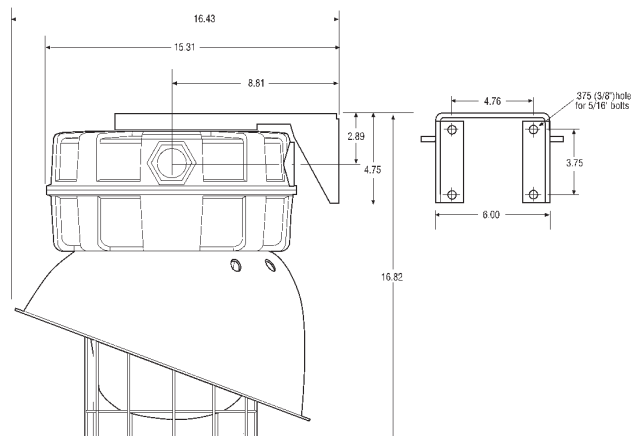
25° Angle Stanchion Mount



Ceiling Mount



Wall Arm Mount



Net Luminaire Weights (lbs.)

Luminaire Series	Lamp Watts	Luminaire with Mounting Module, Globe, Guard & Refractor (lbs.)
N2MVFO52	52	30
N2MVFO64	64	30

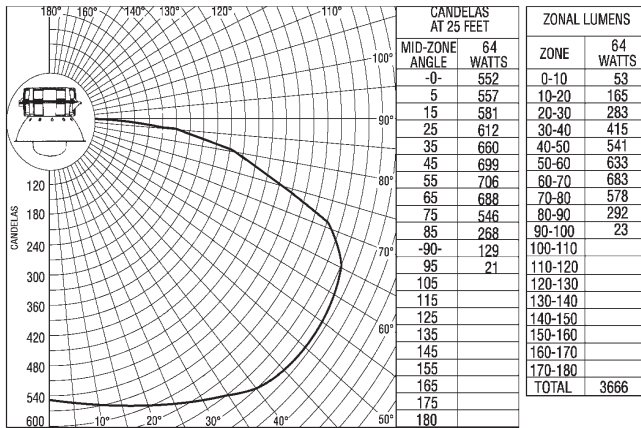
Accessories (Order Separately)

Reflectors (to be used with globe)	
Dome Cat.	RD739 (RD79)
30° Angle Cat.	RA739 (RA79)

6L
Fluorescents

N2MVF Series Compact Fluorescent Champ® Non-Metallic Luminaires

Photometric Data



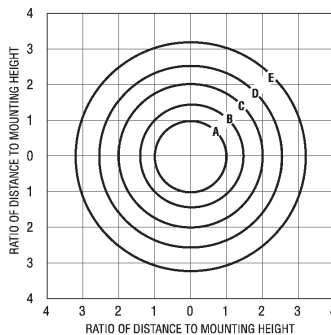
NOTE: For 52 watt N2MVF applications, use a .75 multiplier.

N2MVF Photometric Data

ISOFOOTCANDLE CHART:

Luminaire with globe and dome reflector

N2MVF064GRD Dome Reflector



Footcandle Values for Isofootcandle Lines

MTG. HGT.	A	B	C	D	E
8'	4.00	2.00	1.00	0.50	0.25
10'	2.56	1.28	0.64	0.32	0.16
12'	1.78	0.89	0.44	0.22	0.11
16'	1.00	0.50	0.25	0.13	0.06

N2MVF064GRD Dome Reflector

Coefficients of Utilization

Effective Floor Cavity Reflectance 20%

		Room Cavity Ratio									
Eff. Ceil.	Wall	1	2	3	4	5	6	7	8	9	10
80*	50*	.741	.617	.524	.452	.396	.351	.314	.283	.258	.236
	30*	.694	.548	.445	.370	.314	.271	.237	.210	.188	.169
	10*	.652	.491	.382	.308	.254	.214	.183	.159	.140	.125
70*	50*	.722	.601	.510	.440	.386	.342	.307	.277	.252	.231
	30*	.679	.537	.437	.364	.309	.267	.234	.207	.185	.167
	10*	.640	.483	.378	.305	.252	.212	.182	.158	.139	.124
50*	50*	.686	.570	.484	.418	.367	.326	.293	.265	.242	.223
	30*	.650	.516	.421	.351	.299	.259	.227	.202	.181	.163
	10*	.617	.470	.369	.299	.247	.209	.180	.155	.138	.123
30*	50*	.653	.542	.460	.398	.350	.311	.280	.254	.233	.214
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10*	50*	.622	.516	.437	.379	.333	.297	.268	.244	.224	.206
	30*	.598	.478	.392	.329	.271	.244	.215	.192	.172	.156
	10*	.576	.444	.352	.287	.239	.203	.175	.152	.135	.120
0*	0*	.557	.424	.332	.267	.220	.184	.157	.136	.119	.105

* Percent Reflectance

EVLPF Series Compact Fluorescent Low Profile Hazard•Gard® Luminaires

- Cl. I, Div. 1, Groups B (GB Suffix), C, D
- Cl. I, Zone 1, Groups IIB + H2 (GB Suffix), IIB, IIA
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence

- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

6L

Application:

Cooper Crouse-Hinds Low Profile Hazard•Gard® luminaires are used in:

- areas where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and pharmaceutical plants, oil terminals, gas plants and other heavy process industry facilities
- waste treatment facilities
- drilling platforms and other coastal and offshore hazardous areas

Features - Benefits:

- Small compact size
- Two start Acme threaded construction
- Light weight copper-free aluminum housing with powdered epoxy finish
- All exterior hardware is corrosion-resistant stainless steel
- Four mounting arrangements pendant, ceiling, wall bracket and stanchion
- Wide range of light sources and wattages
- Marine and Nema 4X construction
- Integral ballast
- High power factor (90%+) ballasts
- Uses same mounting modules as the standard Hazard•Gard®
- Internally fluted glass globes
- Krydon® construction dome and angle reflectors – won't rust, corrode, dent, chip or peel
- Now available in components – luminaire body, mounting module, guard, reflectors
- Three wire construction is standard on Fluorescent Emergency Lighting
- Perfect where low mounting restrictions are a concern
- Easier assembly, installation and maintenance
- Superior corrosion resistance
- Suit any lighting layout
- Meet specific lighting needs
- Outdoor, hose down, marine and corrosive environments suitable
- Lowest installed cost
- Allows more luminaires per circuit
- Easy retrofitting when the Lo-Pro™ is the preferred choice
- Reduces glare and distributes light evenly – ideal for adverse environments typical of industrial facilities
- Ideal for adverse environments typical of industrial facilities
- Easily stocked for quick ship requirements
- For energy conservation, luminaires can be switched off without affecting the emergency operation feature

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester



Standard Finishes:

Copper-free aluminum – *Corro-free™*
powdered epoxy

- Krydon – white
- Stainless steel guard

Ratings (Electrical/Size):

Sources/wattage:

- 52W (2-26W lamps) & 64W (2-32W lamps)
- 120-277V, 50-60 Hz
- 347V, 60Hz
- 12, 24, 125 VDC

Conduit entries:

- ¾", 1" NPT – Pendant, Wall Bracket, Ceiling
- 1¼" NPT – Stanchion

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
Fused	S658*
Factory assembled with lamps	FA

Accessories:

Description	Cat. #
Dome reflector	RD739
Angle reflector	RA739

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

Certification & Compliances:

- NEC and CEC:
Class I, Division 1, Groups B (GB suffix), C, D
Class I, Zone 1 Groups IIB + H2 (GB Suffix), IIB, IIA
Class II, Class III & Simultaneous Presence (Class I and Class II)
- UL Standards
844 Hazardous (Classified) Locations
1598 Luminaires
1598A Marine Locations
- CSA Standards
C22.2 No. 137

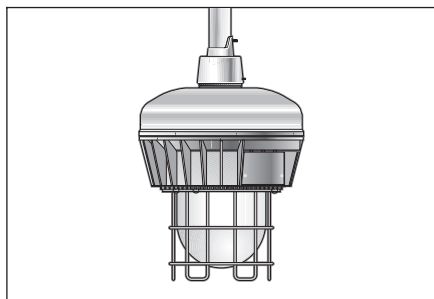
6L
Fluorescents

6L

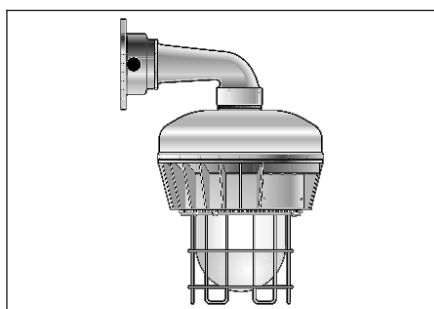
EVLPF Series **Compact Fluorescent** **Low Profile Hazard•Gard®** **Luminaires**

- Cl. I, Div. 1, Groups B (GB Suffix), C, D
- Cl. I, Zone 1, Groups IIB + H2 (GB Suffix), IIB, IIA
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

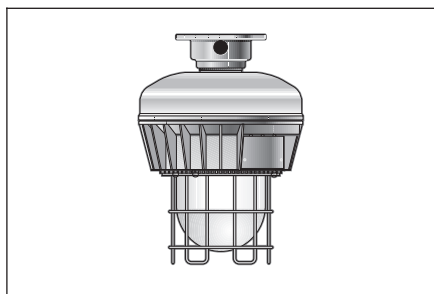
Ordering Information



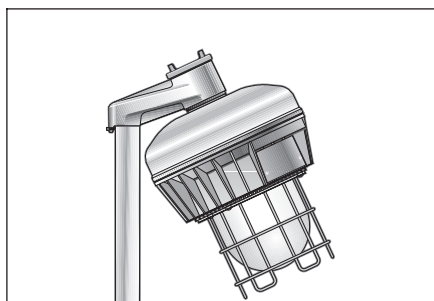
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and bracket mounts have 4 hubs: 3 are plugged.

			Pendant	Wall Brckt†	Ceiling†	Stanchion	Luminaire Body Less Mounting Module & Guard
Watt	Hub	Size	With Guard Catalog #	With Guard Catalog #	With Guard Catalog #	With Guard Catalog #	Catalog #
Fluorescent—High Power Factor Ballast (Min. P.F. 90%)							
52W	¾		EVLPPFA02521	EVLPPFBX02521	EVLPPFCX02521		EVLPPF0520
	1		EVLPPFA03521	EVLPPFBX03521	EVLPPFCX03521		
	1¼					EVLPPFJ04521	
64W	¾		EVLPPFA02641	EVLPPFBX02641	EVLPPFCX02641		EVLPPF0640
	1		EVLPPFA03641	EVLPPFBX03641	EVLPPFCX03641		
	1¼					EVLPPFJ04641	

Complete Catalog Number as follows:

1. Voltages - Add Suffix as follows:

Standard Voltage Ballasts - 60Hz			Optional Ballasts		
Voltage Suffix	NEC/UL & CEC/CSA (cUL) 120-277V 50-60Hz /UNV	CEC/CSA (cUL) 347V 60 Hz /347	125V DC /125VDC	12V DC /012VDC	24V DC /024VDC

6L Fluorescents

EVLPF Series Ordering By Components

6L

EVLP Luminaires are available in components.

A complete light fixture consists of:

I. Mounting Module

II. Fixture Body

III. Guard, Dome Reflector, Angle Reflector or Exit Sign

Mounting Modules

Type	Conduit	Catalog Number
Pendant	3/4	EVMP2
	1	EVMP3
Ceiling & Wall Box	3/4	EV22
	1	EV33
Wall Bracket Arm	Use EV22 or EV33 box with EV87	
		EV87
Stanchion	1 1/4	EVMJ4
Guards Fluorescent		EV512
Reflectors Dome		RD739
Angle		RA739

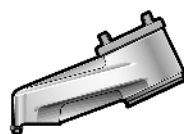
PENDANT
EVMP2
EVMP3



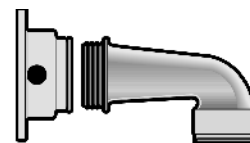
CEILING
EV22
EV33



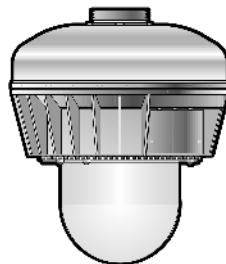
STANCHION
EVMJ4



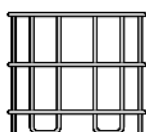
CEILING
EV22
EV33



WALL BRACKET
EV87 & EV22 or EV33



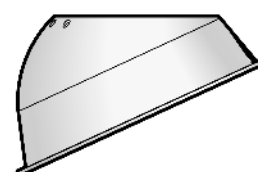
FIXTURE BODY
EVLPF0520/UNV
EVLPF0521/UNV
EVLPF0640/UNV
EVLPF0641/UNV



GUARDS
EV511
EV512



DOME REFLECTOR
RD739



ANGLE REFLECTOR
RA739



6L
Fluorescents

6L

EVLPF Series

Compact Fluorescent

Low Profile Hazard•Gard[®]

Luminaires

Temperature Performance Data

Fluorescent Fixtures		Class I, Group B (w/GB suffix) Groups C, D Class I Zone I 40°C	Class II Groups E, F, G Class III Simultaneous Presence 40°C	Supply Wire °C	Minimum Operating Temperature
Maximum Ambient					
Fluorescent	52W & 64W	T6	T6	75°C	-18°C

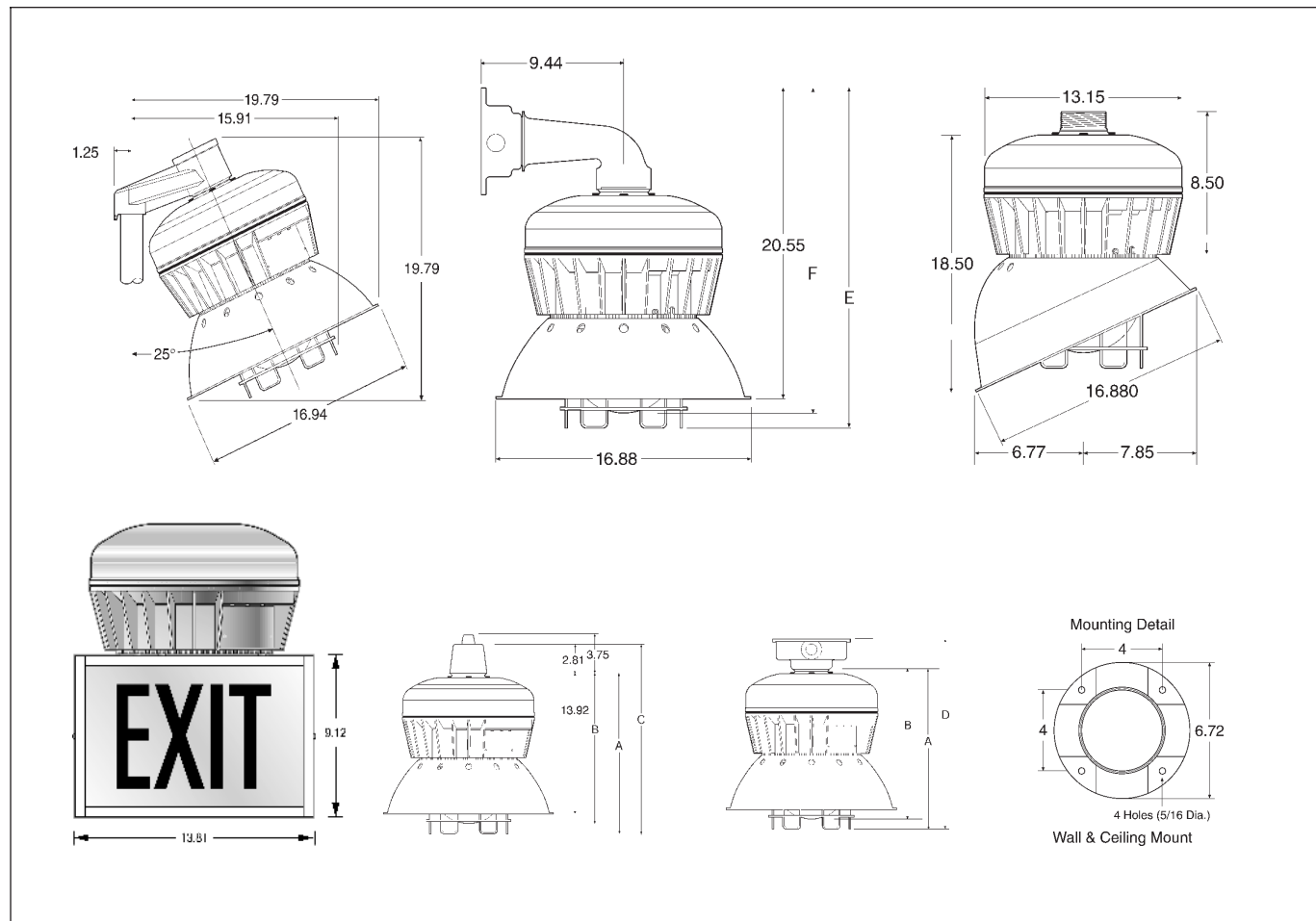
EVLPF Series Compact Fluorescent

Low Profile Hazard•Gard® Luminaires

Dimensions and Weights

6L

	A	B	C	D	E	F
Fluorescent	15.69	14.69	18.25	18.46	22.34	21.30



WEIGHTS (LBS.)

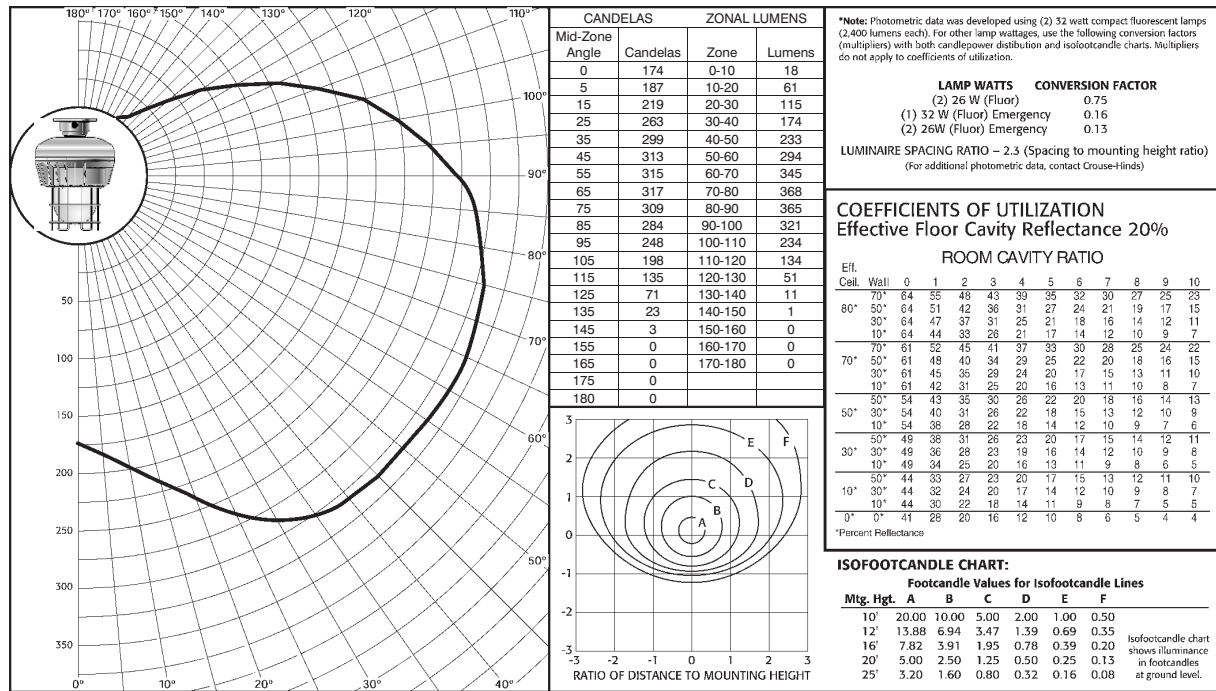
Item	Weights
Fluorescent (EVLPF)	31.5
Add Mounting Modules	
Pendant	1
Ceiling Bracket	2
Stanchion	4.5
Add For Reflectors & Exit Sign	
RA739	1
RD739	1
DMVF-EXD	5
Deduct for Wire Guard	.5

6L
Fluorescents

EVLPF Series Compact Fluorescent Low Profile Hazard•Gard® Luminaires

Photometric Data

Luminaire with Globe and Guard
EVLPFA03641 (2) 32 W Compact Fluorescent

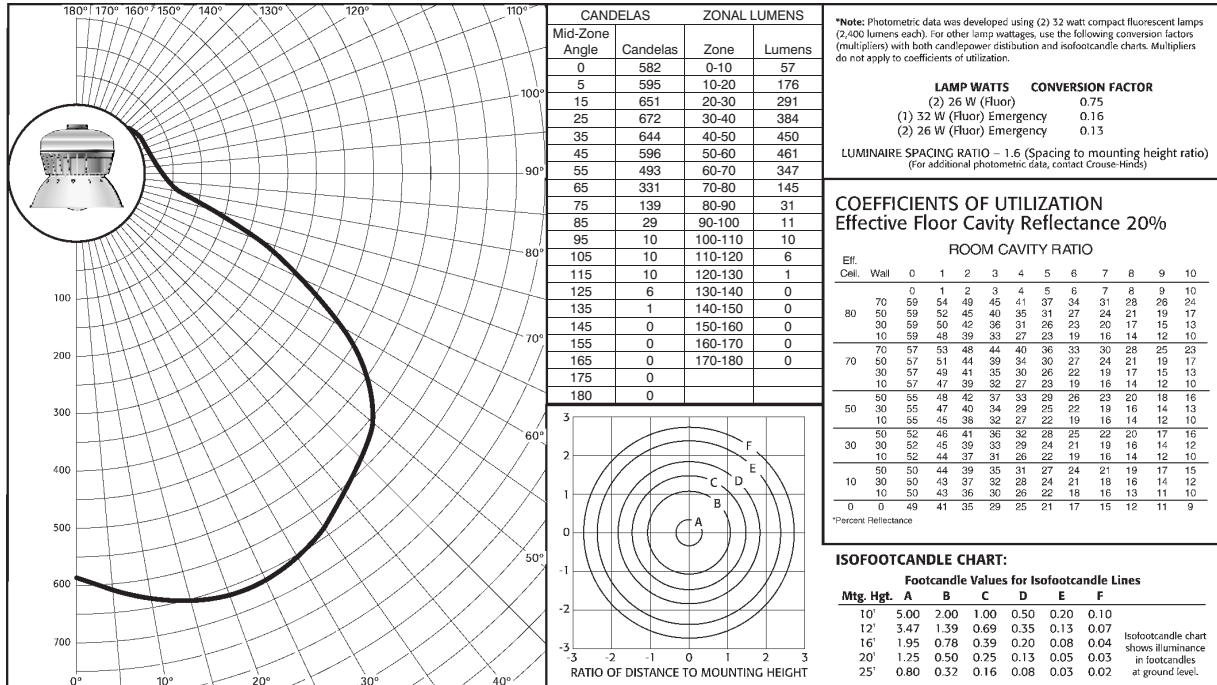


EVLPF Series Compact Fluorescent Low Profile Hazard•Gard® Luminaires

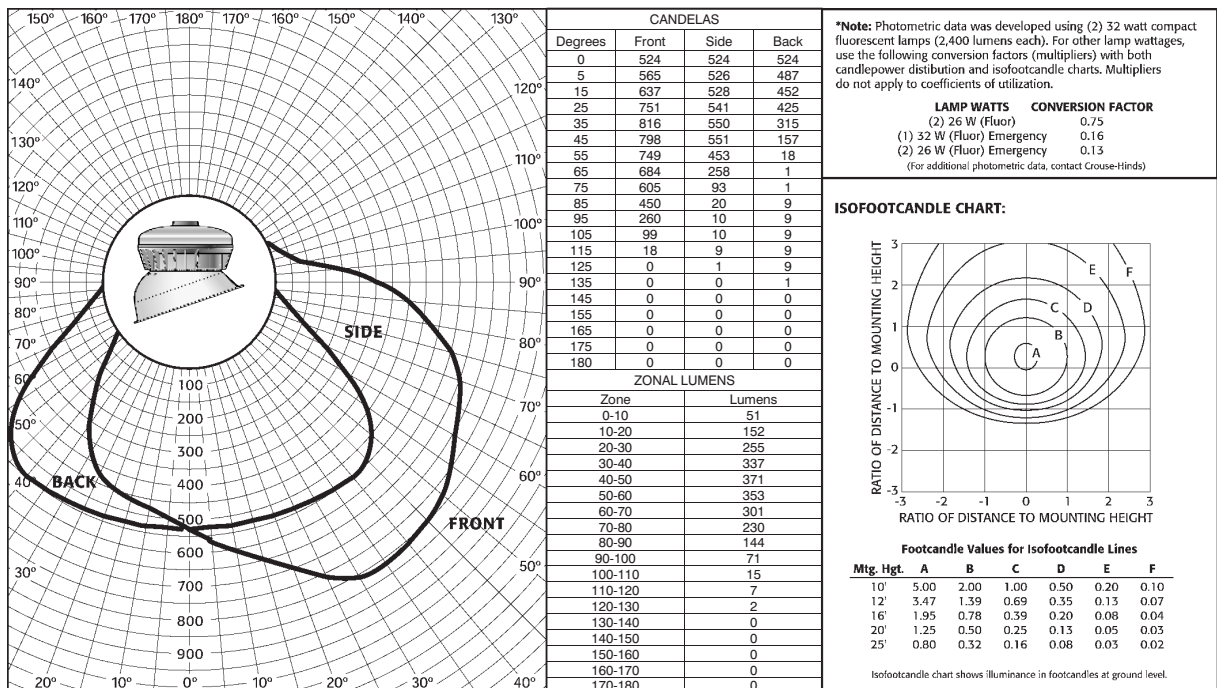
Photometric Data

6L

Luminaire with Globe and Dome (Less Guard)
EVLPPA03640RD Lamp: (2) 32 W Compact Fluorescent



Luminaire with Globe and 30° Angle Reflector (Less Guard)
EVLPPA03640RA Lamp: (2) 32 W Compact Fluorescent



FVS Series Long Twin Tube Fluorescent Luminaires

- Cl. I, Div. 2, Groups B, C, D
- Cl. I, Zone 1, Groups IIC (Suffix S813)
- Cl. II, Div 1, Groups E, F, G (Suffix S813)
- Cl. II, Div 2, Groups F, G
- Cl. III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

Application:

FVS compact fluorescent luminaires are used:

- where low mounting heights or limited mounting room exists.
- for task oriented lighting.
- where a cool, efficient light source is required.
- in areas that require lamps to reach full illumination immediately.
- in industrial and chemical processing.
- in pulp and paper facilities.
- in waste or sewage treatment facilities.
- in non-hazardous commercial and industrial areas.
- in food and pharmaceutical plants where a non-glass lens is required.
- where fluorescent lighting has been preferred, but unavailable due to limited space and practicality.

Features:

- Compact, lightweight, low profile design is ideal for confined areas and tight corners.
- Reaches full illumination immediately and delivers light output equivalent to fixtures twice its size.
- Fast-Latch™ closure provides quick and easy access for relamping and maintenance – no tools necessary.
- Silicone sealing gasket provides exceptional watertight and dust-tight bond, providing excellent performance in wet and corrosive environments.
- Power disconnect switch (Cooper Crouse-Hinds ESWP) automatically cuts power to the lamps and ballast when the lens is opened.
- Shatter-resistant polymeric lens (.125 thick) provides environmental and corrosion protection.
- Available in 120, 277, 220/240 and 347 50/60hz voltages.
- 2 lamp fixture, uses single-ended 40 watt lamps.
- Multiple mounting capability.
- Energy saving electronic ballast is standard.

Standard Materials:

- Corrosion-resistant die cast copper-free aluminum housing.
- Shatter-resistant nylon lens.
- Polycarbonate lens (suffix-S813)
- Silicone rubber gasket.
- Extruded aluminum hinges and closure hardware with stainless steel pivots.

Standard Finishes:

- Epoxy powder coated housing.
- Anodized hinges and closure hardware.
- Highly specular aluminum reflector.

Size Ranges:

- All luminaires are 24"L x 12"W x 3.12"H.
- Conduit entrances are 3/4".

Electrical Ratings:

- 120-277V, 50-60 Hz
- 347V, 60Hz
- Two 40 watt long twin tube lamps



Certifications and Complies:

- NEC and CEC:
Class I, Division 2, Groups B,C,D
Class I, Zone 1 Group IIC (suffix S813)
Class II, Division 1, Groups E, F, G (Suffix S813)
Class II Division 2 Groups F, G
Class III & Simultaneous Presence (Cl. I and Cl. II)

Note: Aiming Limitations

Cl. II, Cl. III & Simultaneous Presence

Aim down to Horizontal
Cannot aim up

- UL Standards
844 Hazardous (Classified) Locations
1598 Luminaires
1598A Marine Locations
- CSA Standards
C22.2 No. 137

Options:

Suffix to be added to
Description Cat. No.

- Fused to protect ballast under abnormal line conditions. Not available on CSA certified fixtures. S658*
- Fixture supplied with two F40BX/SPX35 lamps S714
- Corro-free™ epoxy finish inside and out S753
- Class I, Zone 1, Group IIC and Class II, Div. 1, Groups E, F, G suitability. S813
- Tamperproof . . . consult Cooper Crouse-Hinds

Temperature Performance Data:

Style	Ambient Temp °C	Class I Div. 2	Class I Zone I	Class II See Aiming	Simultaneous Presence Limitations	Supply Wire	Minimum Operating Temperature
All	40°C	T3C	T3	T6	T3C/T6	75°C	-18°C (0°F)
All	55°C	T3C	—	—	—	75°C	-18°C (0°F)

Luminaire Weight (lbs.)

without lamps

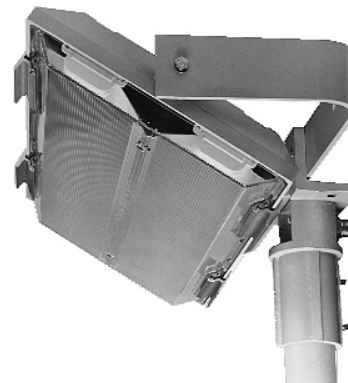
- Standard 2 lamp FVS 12.0

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

Accessories

FVS Trunnion Mount Kit (FVS-K5)

- Permits vertical mounting of luminaire on a beam when used with a standard beam clamp.
- Can be mounted directly to a wall or ceiling.
- Can be pole mounted when used in conjunction with a SFA6 slipfitter adapter (ordered separately).
- Constructed from copper-free aluminum.
- Supplied with a CGB cord connector.



FVS with Trunnion Arm and Slipfitter

FVS Series Long Twin Tube Fluorescent Luminaires

- Cl. I, Div 2, Groups B,C,D
- Cl. I, Zone 1 Group IIC (suffix S813)
- Cl. II, Div 1, Groups E,F,G (suffix S813)
- Cl. II, Div 2, groups F,G
- Cl. III, Simultaneous Presence

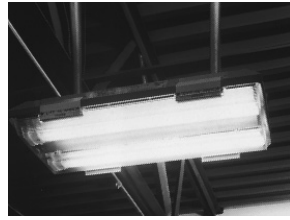
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

6L

Luminaire includes all necessary provisions for these installations:



Ceiling Mount



Pendant Mount



Corner Mount



Horizontal Wall Mount



Vertical Wall Mount

FVS compact fluorescent (2 lamp luminaire):

Voltage	Wattage/ Lamp	Hub Size (4)	Cat. Number	Cat. # with Class I, Zone 1 and Class II, Div. 1 Suitability
120 (50 or 60 Hz)	40	3/4"	FVS20	FVS20-S813
277 (50 or 60 Hz)	40	3/4"	FVS27	FVS27-S813
120-277 (50 or 60 Hz)	40	3/4"	FVS20UNV	FVS20UNV-S813
347 (50 or 60 Hz)	40	3/4"	FVS23	FVS23-S813

Accessories Separately

Ordered

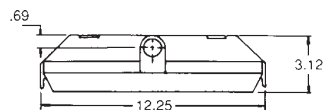
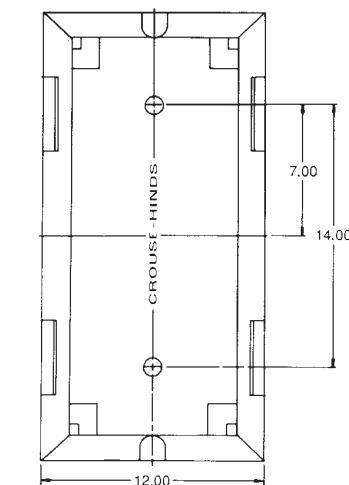
- Trunnion arm kit FVS-K5
- Slipfitter adapter to be used with
trunnion arm SFA6

Dimensions:

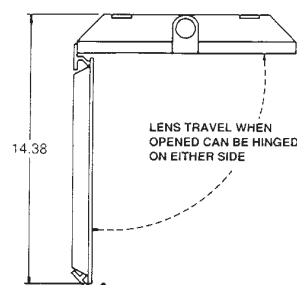
FVS with Trunnion Arm: 26 1/4" x 13.5"W x 3.12"H

Top View

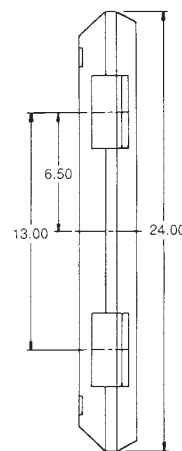
Top View



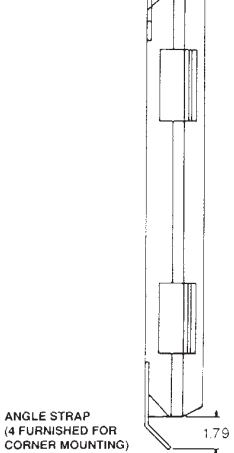
FVS With Lens Open



Side View

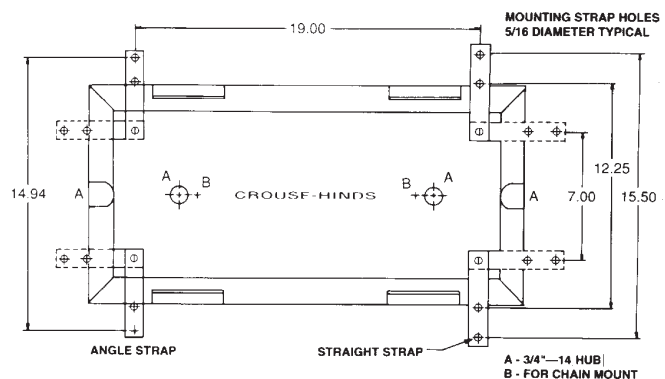


STRAIGHT STRAP
(2 FURNISHED FOR
WALL OR CEILING
MOUNTING)



ANGLE STRAP
(4 FURNISHED FOR
CORNER MOUNTING)

FVS Showing
Mounting Strap Positioning



6L Fluorescents

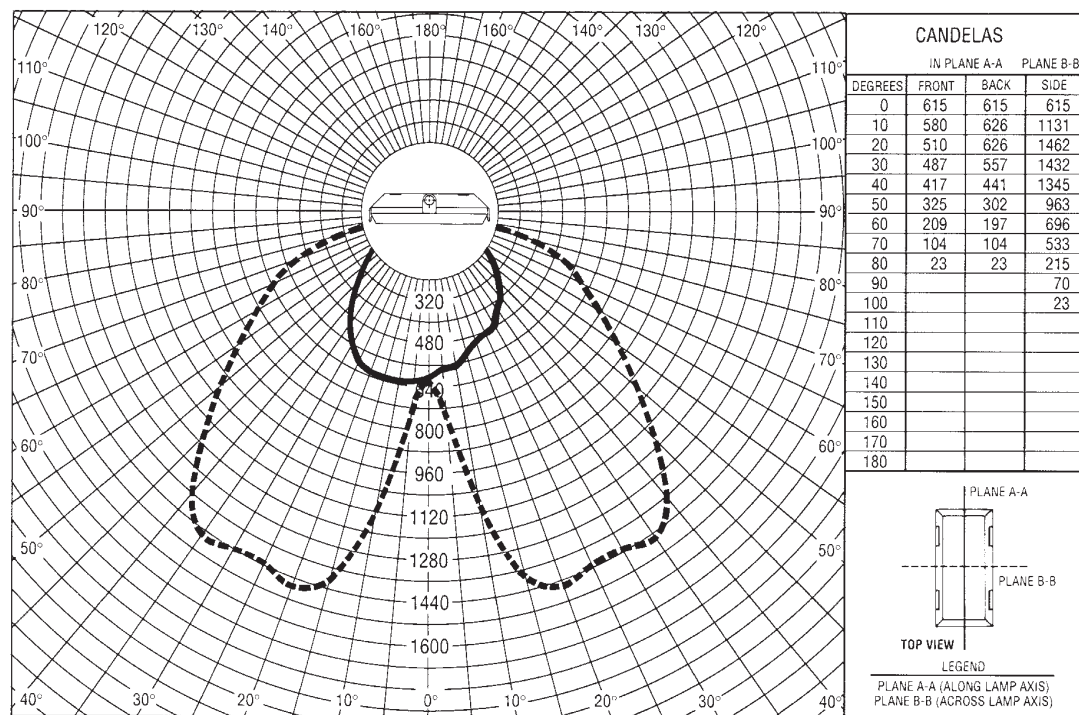
FVS Series Long Twin Tube Fluorescent Luminaires

Photometric Data

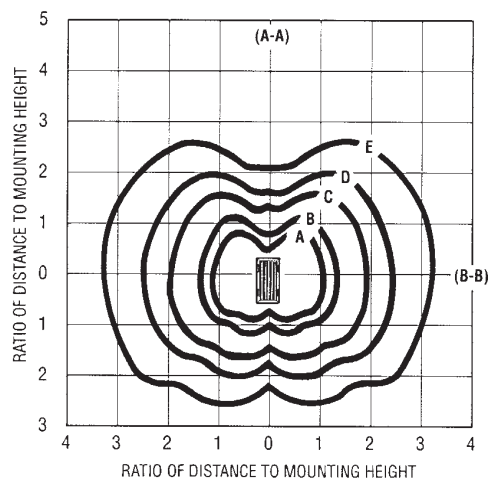
Luminaire: **FVS**

Lamp: (2) F40BX/SPX35/RS single-ended fluorescent.

Total initial lumens: 6300



Isofootcandle Chart



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
8'	5.00	3.00	1.00	0.50	0.20
10'	3.20	1.92	0.64	0.32	0.13
12'	2.22	1.33	0.44	0.22	0.09
16'	1.25	0.75	0.25	0.13	0.05

Spacing to Mounting Height Ratio

Along lamp axis (A-A)	0.6
Across lamp axis (B-B)	1.1

Coefficients of Utilization

Effective Floor Cavity Reflectance 20%

Eff. Ceil.	Room Cavity Ratio	1	2	3	4	5	6	7	8	9	10
80*	50*	.621	.538	.469	.414	.367	.329	.297	.269	.246	.225
	30*	.594	.495	.419	.359	.312	.273	.242	.216	.195	.176
	10*	.569	.459	.378	.317	.270	.234	.204	.180	.160	.144
70*	50*	.606	.526	.459	.405	.360	.323	.291	.265	.242	.222
	30*	.582	.487	.412	.354	.308	.270	.240	.214	.193	.175
	10*	.560	.453	.374	.314	.268	.232	.203	.179	.160	.143
50*	50*	.580	.503	.441	.389	.347	.311	.281	.256	.234	.216
	30*	.560	.470	.400	.345	.300	.265	.235	.210	.190	.172
	10*	.541	.442	.367	.310	.265	.230	.201	.178	.159	.143
30*	50*	.555	.483	.423	.374	.334	.301	.272	.248	.227	.210
	30*	.539	.455	.389	.336	.293	.259	.230	.207	.187	.170
	10*	.524	.431	.360	.305	.262	.227	.199	.176	.157	.142
10*	50*	.533	.464	.407	.361	.322	.290	.264	.241	.221	.204
	30*	.520	.441	.378	.327	.287	.254	.226	.203	.184	.167
	10*	.507	.421	.353	.300	.258	.225	.197	.175	.156	.141
0*	0*	.494	.407	.339	.286	.245	.212	.185	.163	.145	.130

* Percent Reflectance

* FVS suitable for Class II, Div. 1, Groups E, F, G when ordered with suffix S813.

EVFT Illuminator™ Long Twin Tube Fluorescent Luminaires

- Cl. I, Div, Groups B & C(suffix GB), D
- Cl. I, Zone 1 Group IIB + H2(suffix GB), IIA
- Cl. II, Div 1, Groups E,F,G
- Cl. III Simultaneous Presence

- Paint Spray
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

6L

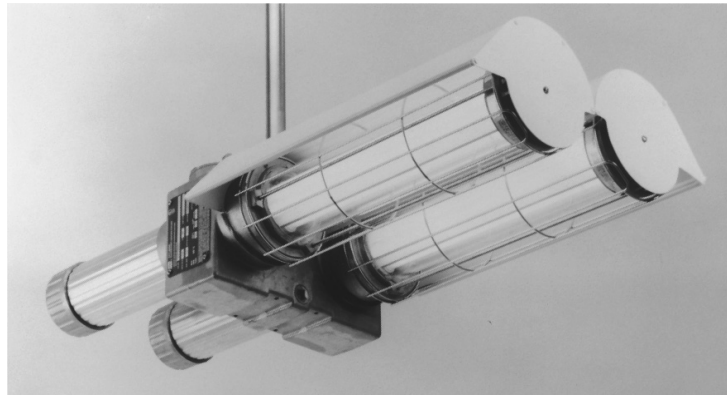
Application:

Illuminator™ compact fluorescent luminaires are used:

- In areas made hazardous by the presence of flammable gases and vapors, combustible dusts, or easily ignitable fibers and flyings.
- In areas where combustible dusts and flammable gases are present simultaneously.
- In applications involving low mounting heights, restricted mounting space, or where luminaire weight must be minimized.
- In areas where corrosion, vibration, moisture, dirt and rough usage are a problem.
- In refineries, chemical and petrochemical facilities, grain processing, handling and storage facilities, manufacturing plants, waste water treatment facilities, airline and mass transit maintenance areas, paint spray facilities, breweries, pharmaceutical plants and other areas where safe, reliable hazardous area lighting is required in a compact, cool operating and efficient light source.

Features:

- Efficient fluorescent light source in 78 and 156 watts.
- Adjustable right and left asymmetrical reflectors provide excellent light "aimability" – ideal for task oriented lighting.
- Compact, light weight and low profile design allows easy installation and broad industrial application.
- Cast copper-free aluminum with epoxy powder finish (less than 0.4 of 1% copper) provides excellent resistance to corrosion.
- Versatile luminaire housing provides choice of pendant, wall or ceiling mount.
- Suitable for paint spray areas. Linear light source provides excellent color rendition for paint spray tasks. Easy to install, disposable, clear tube wrap helps maintain maximum light output during painting operations.
- Threaded construction, factory wiring and sealing help minimize installation time. No external seals are required.
- Fixtures are used with two or four long twin tube single-ended fluorescent lamps.
- Optional stainless steel guard provides extra protection for lamps and lamp tube.
- Optional clear polycarbonate tube provides 360° protection for lamps and lamp tube; ideal for maintenance pit and pharmaceutical applications.
- Grounding connection for safety.
- Available for 120 or 277 VAC.
- Standard electronic ballast.



4 lamp with stainless steel wire guard and adjustable reflectors

Certifications and Complies:

- NEC and CEC:
 - Class I, Division 1 Group D
 - Class I, Division 1 Group B,C,D (suffix GB)
 - Class I, Zone 1 Group IIA
 - Class I, Zone 1 Group IIB + H2 (suffix GB)
 - Class II Groups E,F,G
 - Class III
- Simultaneous Presence (Cl. I and Cl. II)
- Paint Spray

Note: Aiming Limitations

- Cl. II, Cl III & Simultaneous Presence
 - Aim Down to Horizontal
 - Cannot aim up
- UL Standards
 - 844 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137

Standard Materials:

- Center and ballast housings, end caps – copper-free aluminum
- Lamp tube – heat resistant glass.
- Guards – stainless steel or clear polycarbonate material.
- Reflectors – aluminum

Standard Finishes:

- Center and ballast housings, end caps, guards – natural
- Reflectors – white epoxy finish

Temperature Performance Data:

Luminaire Type	Minimum Operating Temp.	Maximum Ambient Temp.	Class I, Division 1 & Zone 1 Class II, Division 1 Simultaneous Presence	Supply Wire
2 and 4 Lamp	10°C (50°F)	40°C (104°F)	T4A	75°C

Electrical Ratings:

- Input voltage – 120 or 277 VAC, 60Hz
- Wattages – 78 – 2-lamp luminaire
156 – 4-lamp luminaire

Options:

Suffix to be added to Catalog Number

- Fused to protect circuit under abnormal conditions (not available on CSA certified luminaires). S658*
- Luminaire supplied with lamps S714
- Class I, Groups B and C suitability
Pendant mount only! GB

Fixture Weights (lbs.):

Illuminator – 2 lamp with guard 19.5
Illuminator – 4 lamp with guards 36.5
RAL1, RAR1 reflectors (each) 3.0
Deduct for luminaire without P51 Guard:
1 lb. for 2 lamp
2 lbs. for 4 lamp

* When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

6L

EVFT Illuminator™ Long Twin Tube Fluorescent Luminaires

- Cl. I, Div 1, Groups B & C (Suffix B), D
- Cl. I, Zone 1, Groups IIB + H2 (Suffix B), IIA
- Cl. II, Div 1, Groups E, F, G
- Cl. III, Simultaneous Presence
- Paint Spray
- Marine & Wet Locations
- 3,3R, 4,4X; IP66

EVFT Illuminator

Style	Hub Size	Luminaire Voltage	Class I Cat. No. with Group D Suitability		Class I Cat. No. with Group B, C & D Suitability	
			Without Guard	With P51 Guard†	Without Guard	With P51 Guard†
2 Lamp	3/4	120	EVFT22320	EVFT22321	EVFT22320-GB	EVFT22321-GB
	3/4	277	EVFT22370	EVFT22371	EVFT22370-GB	EVFT22371-GB
4 Lamp	3/4	120	EVFT24320	EVFT24321	EVFT24320-GB	EVFT24321-GB
	3/4	277	EVFT24370	EVFT24371	EVFT24370-GB	EVFT24371-GB

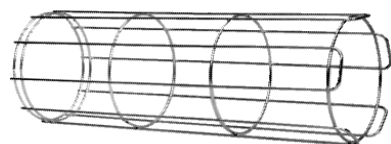
† P51 supplied in separate carton.

Accessories

- Stainless steel wire guard P51
- Reflector right hand RAR1
- Reflector left hand RAL1
- Polycarbonate tube PG1
(not used with optional stainless steel wire guard)
- Disposable clear wrap – 5 pack. PTW1
(for use with optional polycarbonate tube)



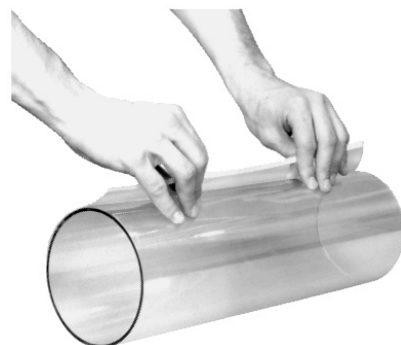
Reflectors (as viewed facing front of fixture).



Stainless steel guard



Polycarbonate tube and retaining plate

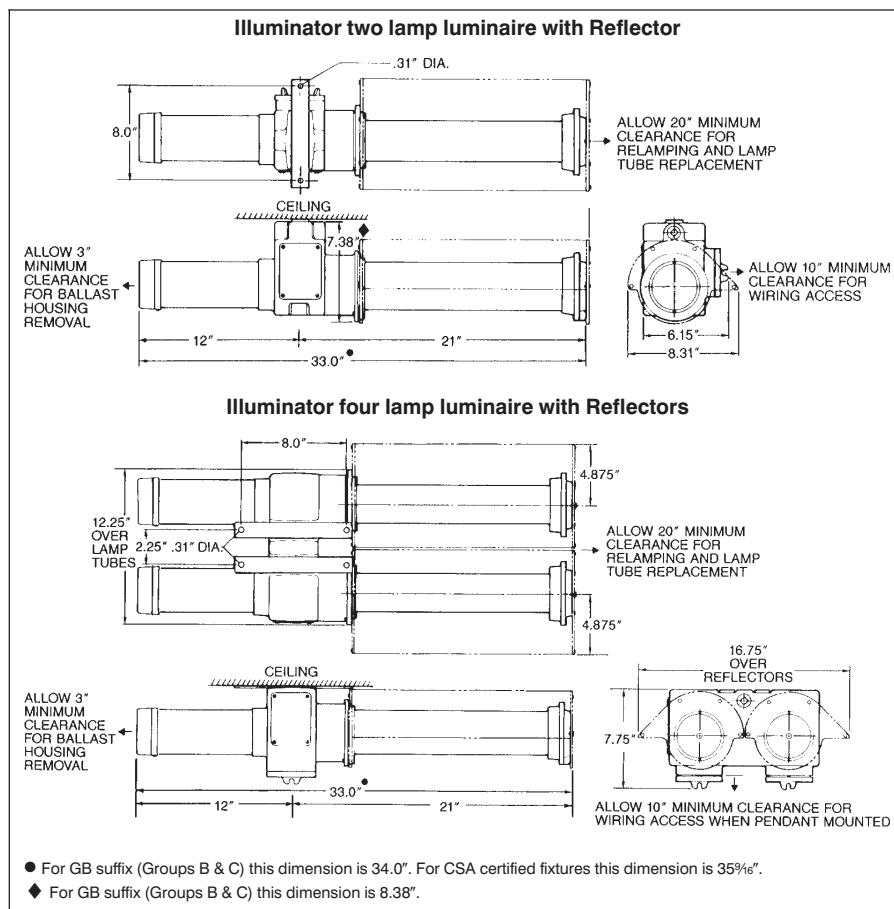


Disposable polyester tube wrap
(used over optional polycarbonate tube)

Note: Aiming Limitations: In Class II, Class III and Simultaneous Presence locations

- Aim down to Horizontal.
- To prevent dust from accumulating in reflector, do not aim up.

Dimensions



EVFT Illuminator™ Long Twin Tube Fluorescent Luminaires

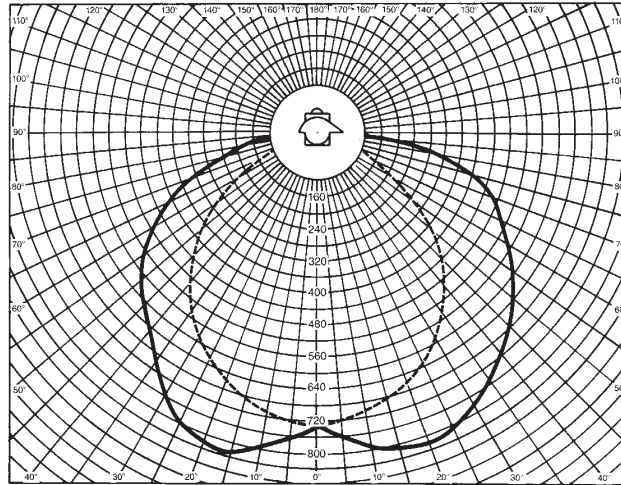
Photometric Data

6L

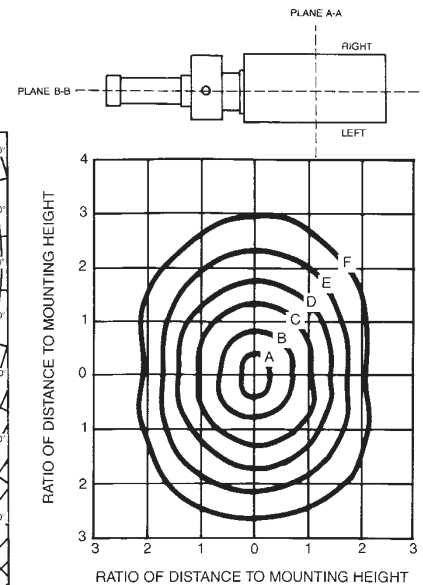
Illuminator two lamp luminaire with Reflector (without Guard)

Lamps: (2) 39 watt BIAX* fluorescent

CANDELAS in Plane A-A			
DEGREES	LEFT	RIGHT	Plane B-B SIDE
0	729	729	729
10	792	797	703
20	820	821	658
30	757	777	582
40	648	709	488
50	567	632	370
60	474	535	239
70	340	469	109
80	201	312	21
90	102	116	
100	9	7	
110			
120			
130			
140			
150			
160			
170			
180			



LEGEND
 — PLANE A-A ACROSS LAMP AXIS
 - - - PLANE B-B ALONG LAMP AXIS



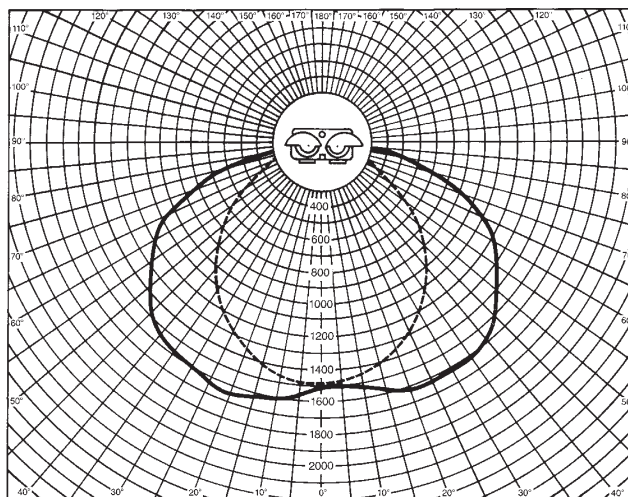
Footcandle Values for Isofootcandle Lines
MTG. HT

(FT)	A	B	C	D	E	F
8	10.0	5.00	2.00	1.00	0.50	0.25
10	6.4	3.20	1.28	0.64	0.32	0.16
12	4.4	2.22	0.89	0.44	0.22	0.11
16	2.5	1.25	0.50	0.25	0.13	0.06

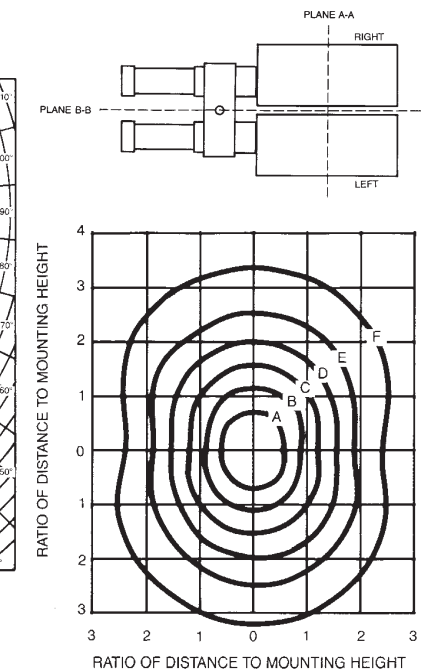
Illuminator four lamp luminaire with Reflectors (without Guards)

Lamps: (4) 39 watt BIAX* fluorescent

CANDELAS in Plane A-A			
DEGREES	LEFT	RIGHT	Plane B-B SIDE
0	1486	1486	1486
10	1601	1520	1448
20	1633	1615	1346
30	1570	1602	1199
40	1530	1558	1000
50	1343	1390	763
60	1162	1208	492
70	803	921	225
80	375	488	45
90	136	168	2
100	13	18	1
110	2	6	
120	1	4	
130			
140	2		1
150		1	1
160			1
170	2	1	1
180	2	2	2



LEGEND
 — PLANE A-A ACROSS LAMP AXIS
 - - - PLANE B-B ALONG LAMP AXIS



Footcandle Values for Isofootcandle Lines
MTG. HT

(FT)	A	B	C	D	E	F
10	8.0	4.00	2.00	1.00	0.50	0.20
12	5.6	2.78	1.39	0.69	0.35	0.14
16	3.1	1.56	0.78	0.39	0.20	0.08
20	2.0	1.00	0.50	0.25	0.13	0.05

* BIAX is a trademark of the General Electric Company.

EVFT Illuminator™ Long Twin Tube Fluorescent Luminaires

LUMINAIRE: EVFT 22320 with RAR1 Reflector
Lamps: Two (2) F39BX/SPX35/RS
Lumen Rating: 2900 Lumens/Lamp

Effective Floor Cavity Reflectance 20%
% Reflectance

Eff. Ceil.	Wall	Room Cavity Ratio										
		0	1	2	3	4	5	6	7	8	9	10
80	70	.51	.46	.41	.38	.34	.31	.29	.26	.24	.22	.21
	50	.51	.44	.38	.33	.29	.25	.23	.20	.18	.16	.15
	30	.51	.41	.35	.29	.25	.21	.19	.16	.14	.13	.11
	10	.51	.40	.32	.26	.22	.18	.16	.14	.12	.10	.09
70	70	.49	.45	.40	.37	.33	.30	.28	.26	.24	.22	.20
	50	.49	.43	.37	.32	.28	.25	.22	.20	.18	.16	.14
	30	.49	.41	.34	.29	.25	.21	.18	.16	.14	.12	.11
	10	.49	.39	.31	.26	.22	.18	.16	.14	.12	.10	.09
50	50	.47	.41	.35	.31	.27	.24	.21	.19	.17	.15	.14
	30	.47	.39	.33	.28	.24	.21	.18	.16	.14	.12	.11
	10	.47	.38	.31	.26	.22	.18	.16	.13	.12	.10	.09
30	50	.45	.39	.34	.30	.26	.23	.21	.19	.17	.15	.14
	30	.45	.38	.32	.27	.24	.20	.18	.16	.14	.12	.11
	10	.45	.37	.30	.25	.21	.18	.15	.13	.11	.10	.09
10	50	.43	.37	.33	.29	.25	.22	.20	.18	.16	.14	.13
	30	.43	.36	.31	.27	.23	.20	.17	.15	.13	.12	.10
	10	.43	.35	.29	.25	.21	.18	.15	.13	.11	.10	.08
0	0	.43	.35	.28	.24	.20	.17	.14	.12	.10	.09	.08

DETERMINED IN ACCORDANCE WITH CURRENT IES PUBLISHED PROCEDURES

LUMINAIRE: EVFT 24320 with RAR1 & RAL1 Reflectors
Lamps: Four (4) F39BX/SPX35/RS
Lumen Rating: 2900 Lumens/Lamp

Effective Floor Cavity Reflectance 20%
% Reflectance

Eff. Ceil.	Wall	Room Cavity Ratio										
		0	1	2	3	4	5	6	7	8	9	10
80	70	.48	.44	.40	.37	.33	.30	.28	.26	.24	.22	.20
	50	.48	.42	.37	.32	.29	.25	.22	.20	.18	.16	.15
	30	.48	.40	.34	.29	.25	.21	.19	.16	.14	.13	.11
	10	.48	.39	.31	.26	.22	.19	.16	.14	.12	.10	.09
70	70	.47	.43	.39	.36	.33	.29	.27	.25	.23	.21	.20
	50	.47	.41	.36	.32	.28	.25	.22	.20	.18	.16	.14
	30	.47	.40	.33	.29	.25	.21	.18	.16	.14	.12	.11
	10	.47	.38	.31	.26	.22	.18	.16	.14	.12	.10	.09
50	50	.45	.39	.34	.30	.27	.24	.21	.19	.17	.15	.14
	30	.45	.38	.32	.28	.24	.21	.18	.16	.14	.12	.11
	10	.45	.37	.30	.26	.22	.18	.16	.14	.12	.10	.09
30	50	.43	.38	.33	.29	.26	.23	.20	.18	.17	.15	.14
	30	.43	.37	.31	.27	.23	.20	.18	.16	.14	.12	.11
	10	.43	.36	.30	.25	.21	.18	.16	.13	.12	.10	.09
10	50	.41	.36	.32	.28	.25	.22	.20	.18	.16	.14	.13
	30	.41	.35	.30	.26	.23	.20	.17	.15	.13	.12	.11
	10	.41	.35	.29	.25	.21	.18	.15	.13	.12	.10	.09
0	0	.41	.34	.28	.24	.20	.17	.15	.13	.11	.09	.08

DETERMINED IN ACCORDANCE WITH CURRENT IES PUBLISHED PROCEDURES

NFL Series Fluorescent Luminaires

- Higher Ambient Suitability: 55°C
- Cold Weather Start (32W T8 Lamps)
- Cl. I, Div 2, Groups A, B, C, D
- Cl. I, Zone 2 Group IIC
- Wet Locations
- 3, 3R, 4, 4X

6L



Application:

The NFL light luminaires are used:

- In non-hazardous locations where dust, dirt, combustible vapors, smoke, fumes, moisture, corrosive & wet conditions are present.
- Where lamps may be broken due to physical abuse or movable equipment, such as in manufacturing areas or warehouses.
- Where cleanliness and sanitation are prime factors such as in dairies, canneries, food processing plants, bottling plants & laboratories.
- In dock areas for protection against salt spray.
- In areas where low mounting height and the even light distribution associated with a line type light source are required.

Standard Materials:

- Housing – Non-metallic, one piece fiberglass reinforced polyester
- Latches – Celcon™ acetel plastic
- Crepe Pattern Lens – Acrylic plastic
- Gasket – Seamless thermoset polyurethane
- Mounting Bracket – Stainless steel

Standard Finishes:

- Fiberglass housing – White
- Acrylic Plastic lens – Clear

Certifications and Compliances:

- UL Listed 844
- cUL
- Wet locations
- 4X

Ratings (Electrical/Size):

Sources/Wattage: Luminaires are for use with the following lamps

- NFL2140
 - one 40 W long twin tube
- NFL4232
 - two 32W T8 lamps
- NFL4240
 - two 34W “F40 Style” T12 lamps

Voltages

- 120V 60Hz
- 120 - 277V, 50 - 60 Hz
- 347V 60Hz

Conduit Entries

- Two 1/2" inch Myers hubs, one on each end.

Options:

Description

**Suffix to be
added to Cat. No.**

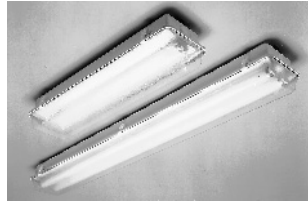
- Fused **S658†**
- Factory assembled with lamps installed **.FA**
- Battery Backup Emergency Ballast †
(NFL 2140 and NFL 4232 only) **S799***
- Increased Impact-Resistant Acrylic Lens **DR1295046***
- Polycarbonate Lens **DR1295306***
- Stainless Steel Latches **S863***
- Tamperproof Latches **S861***

✓ – available with Lightning Service™ delivery See Section G for complete details

† For non-hazardous locations

‡ When ordering Fuses for luminaires, option S658, you must specify the operating voltage. S658 can not be ordered with /MT in the catalog number.

* UNV voltages: 120, 208, 230, 240, 277, 50-60 Hz



Key Features

- UL, cUL Listed for Class I, Division 2, Groups A, B, C, D areas with ambient suitability of 40°C (104°F) and 55°C (131°F) Ambient suitability
- NEMA 4X with Myers Hubs and threaded metal plug (furnished)
- Non-metallic construction enclosure
- Continuous form in place gasket
- Molded in place mounting studs – eliminate the need of bracket gaskets
- Standard construction includes:
S.S. mounting brackets
Electronic ballast
Cold weather ballast (4' F32 T8)
- S.S. mounting bracket
Combination ceiling & chain
- S.S. mounting brackets
- Electronic Ballast
- Cold Weather Ballast (4' F32 T8)
- Two 1/2" conduit Myers hubs for end and feed through wiring
- Full metal fixture interior
- Provisions (drill mark) on 4 ft. unit to field drill for pendant mounting

Benefits

Suitable for higher ambients found in industrial environments. Exceeds the 25°C (77°F) ambient suitability of ordinary location lighting fixtures.

Outdoor locations, hose down and corrosive environments suitable.

Corrosion resistant.

Insure dust tight, moisture tight, & wet locations integrity.

Wet locations, and dust tight integrity is not compromised by aging or deteriorated bracket gaskets.

Eliminates the need to order options with associated long lead times.

Standard bracket not only surface mounts fixture, but also is for chain mounting using standard commercially available fixture chain.

Superior corrosion resistance.

Energy efficiency.

Cold weather start up requirements.

Simplify installation and wiring.

Provides improved photometrics as well as access to & concealment of ballast and wiring.

Application and installation flexibility.

Temperature Performance Data:

Ambient temperature range suitability:

- Two lamp, 32W T8, 4 ft luminaire –18°C to 55°C
- ALL others 0°C to 55°C
- Supply wire 75°C min.

Celecon™ is a trade name of Hoechst Celanese

Ordering Information:

Luminaire Cat #	Size/# of lamp(s)	Wattage/Lamp type	Voltage/Hz
NFL2140/UNV	2 ft/ 1-lamp	40W T5 compact single ended	120/60
NFL2140/347			120-277/50-60
NFL4232/UNV✓	4 ft/2-lamp	32W T8 rapid start	120/60
			120-277/50-60
NFL4240/120	4ft/2-lamp	34W T12	120/60
NFL4240/277		“F40 Style”	277/60
NFL4240/347		rapid start	347/60
N2FL4232/UNV			
N2FL4232/347	4ft/2-lamp	32W T8 rapid start	347/60

6L
Fluorescents

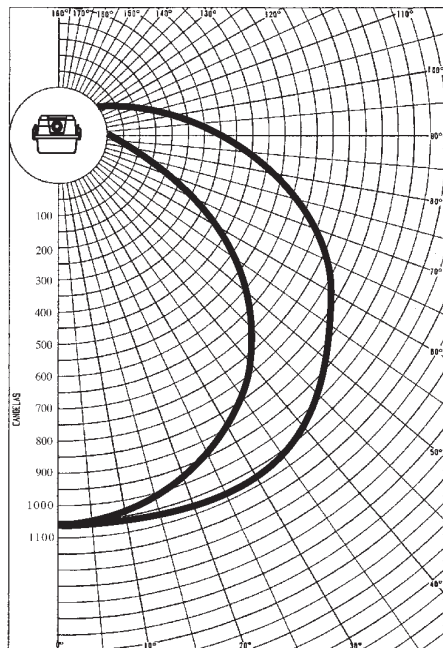
6L NFL Series Fluorescent Luminaires

Photometric Data

Luminaire: All NFL Luminaires

To determine number and placement of luminaires, see Lighting Selector Guide in Section L

Candlepower Distribution Curve (in Candelas)



CANDELAS		
Angle	Along	Across
0°	1049	1049
10°	1034	1056
20°	978	1071
30°	866	1075
40°	762	1027
50°	606	939
60°	416	838
70°	228	723
80°	92	549
90°	17	363
100°	19	243
110°	10	131
120°	5	46
130°	4	20
140°	4	9
150°	4	3
160°	4	0
170°	0	0
180°	0	0

ZONAL LUMENS	
Zone	Lumens
0-30	862
0-40	1462
0-60	2778
0-90	4130
0-180	4499

Photometric data, developed using two (2) F32T8/35K 2850 lumen lamps, represents the performance of all NFL series luminaires.

- Coefficient of Utilization – These values are for all NFL series luminaires (Do not use multipliers).
- Candlepower Distribution Curve (in candelas) and Zonal Lumens – These values are for all NFL series luminaires, adjusted by conversion factors (multipliers) below.

Luminaire Series	Lamp Qty	Watts	Type (Lumens ea.)	Conversion Factor (multipliers)
NFL4232	2	32	F32T8/35K (2850)	1.0
NFL4240	2	34	F40T12/RS (2650)	0.93
NFL2140	1	40	T5 Compact (3150)	0.55

Example:

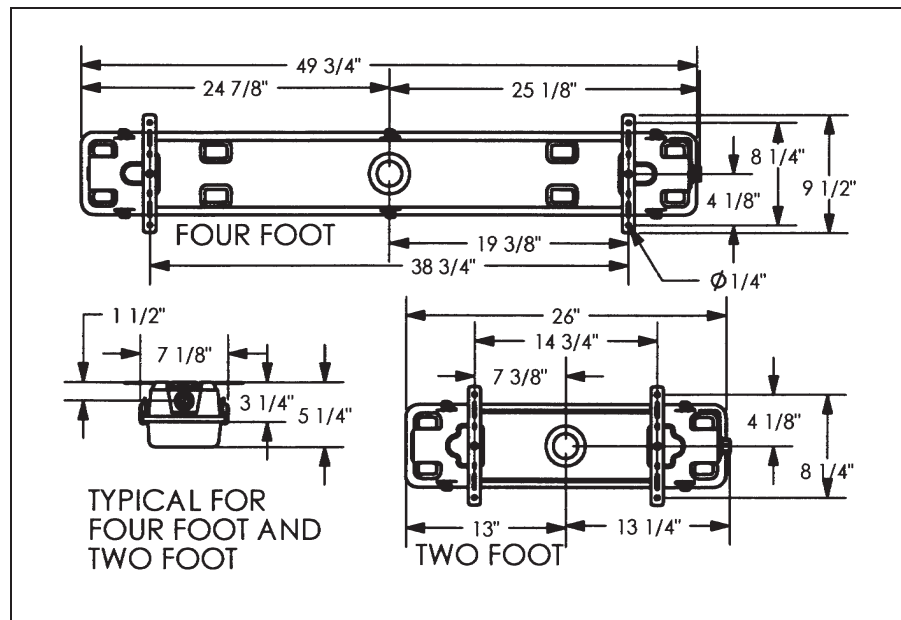
- Candlepower at 20° across for NFL4232 using 2-F32T/35K lamps (5700 lumen total) is 1071 candelas.
- Candlepower at 20° across for NFL2140 using 1 T5 compact lamp (3100 lumen total) is 1071 x .55 = 589 candelas.

Coefficient of Utilization: For all NFL Series Light Luminaires

Effective Floor Cavity Reflectance 20%

% REFLECTANCE		ROOM CAVITY RATIO									
Eff. Ceiling	Wall	1	2	3	4	5	6	7	8	9	10
80	70	.83	.75	.68	.62	.56	.51	.47	.44	.40	.37
	50	.78	.67	.59	.52	.45	.40	.36	.32	.29	.26
	30	.74	.61	.52	.44	.38	.33	.29	.25	.22	.20
	10	.71	.56	.46	.39	.32	.28	.24	.20	.17	.15
70	70	.80	.72	.65	.59	.54	.49	.46	.42	.39	.36
	50	.76	.65	.57	.50	.44	.39	.35	.31	.28	.26
	30	.72	.60	.51	.43	.37	.32	.28	.25	.22	.19
	10	.69	.55	.46	.38	.32	.27	.23	.20	.17	.15
50	50	.71	.61	.54	.47	.42	.37	.33	.30	.27	.24
	30	.68	.57	.48	.42	.35	.31	.27	.24	.21	.19
	10	.66	.53	.44	.37	.31	.26	.23	.20	.17	.15
30	50	.67	.58	.51	.45	.39	.35	.32	.28	.25	.23
	30	.65	.54	.46	.40	.34	.30	.26	.23	.20	.18
	10	.62	.51	.42	.36	.30	.26	.22	.19	.16	.14
10	50	.63	.54	.48	.42	.37	.33	.30	.27	.24	.22
	30	.61	.51	.44	.38	.33	.29	.25	.22	.19	.17
	10	.59	.48	.41	.35	.29	.25	.22	.18	.16	.14
0	0	.57	.46	.39	.33	.27	.23	.20	.17	.14	.12

Dimensions:



Net Luminaire Weights (lbs)

Luminaire Series	Weight (lbs.)
NFL2140	9.1
NFL4232	14.3
NFL4240	14.3

Temperature Performance Data

Basic Cat #	Watts	Ambient Temp °C	Lamp Type	Supply Wire Temp °C	Class I, Div. 2 Temp. Rating	Class II Temp. Rating	Simultaneous Presence Class 1, Div. 2
NFL4232	32	40	T8	60	T6	-	-
NFL4232	32	55	T8	75	T5	-	-
NFL4240	34	40	T12	60	T6	-	-
NFL4240	34	55	T12	75	T5	-	-
NFL2140	40	40	T12	60	T6	-	-
NFL2140	40	55	T12	75	T5	-	-

- Cl. I, Div 2, Groups B,C,D
- Cl. I, Zone 1 Group IIC
- Cl. II, Div Groups E,F,G(Canada)
- Cl. II, Div 2, Groups F,G (US)
- Cl. III, Simultaneous Presence

- Wet Locations
- 3,3R,4,4X; IP66
- ATEX Certified

Application:

- eLLK fixtures are used in hazardous area where moisture or corrosion may be a problem.
- Offshore oil platforms, Pharmaceuticals, plants, Oil refineries.
- Where battery backup is critical.
- In non-hazardous and industrial locations.

Features:

- IEC: Zone 1 and 2 areas.
- NEC/CEC: Zone 1, Division 2 areas.
- Electronic Ballast:
- Operates at Voltage range of 110-254 VAC $\pm 10\%$, 50-60Hz.
- Lower ambient temperature suitability to -25°C .
- Lamps operate independently - one lamp failure will not effect remaining lamp operation.
- Standard Bi-pin Lamps - Most common lamp used in office environments. Energy efficient and cost effective.
- Interlocked Switch - Automatically cuts power to both lamps and ballast when the lens is opened.
- Removable Lens - Hinged on both sides for easy installation and maintenance.
- Dual entries - Extra large wire well eliminates need for separate junction boxes. (Own with cable gland and conduit hub).
- Corrosion-Resistant Construction - Non-metallic body, gasketed lenses, and lens locking system for an IP 66, NEMA 4X rating.
- Battery Backup Features:
- Operates one lamp for 1½ hours should power go out.
- Microprocessor monitors the charging functions of the battery.
- LEDs provide visual indication of battery life.



Certifications and Compliances:

- NEC and CEC:
 - Class I, Division 2 Group B, C, D
 - Class I, Zone 1 Group IIC
 - Class II Division 1, Groups E,F,G (Canada)
 - Class II Division 2, Groups F, G (US)
 - Class III, Simultaneous Presence (Cl. I and Cl. II)
- UL Standards
 - 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
- CSA Standards
 - E79 Series
- ATEX Directive 94/9/EC
 - II 2 G
 - II 2 D T80°C
 - EEx edm ib IIC T4
 - PTB 96 ATEX 2144
- Type of Protection
- EC-Type Examination Certificate

Ordering Information:

Type - 2 Lamp	Length & Type	Conduit Hub Size*	Rated Current	Rated Voltage $\pm 10\%$, 47-63Hz	Order Number	Description
18W	2-foot T8	M25 metric hub	0.18A	110-254	1 2265 875 103	eLLK92018/UNV
36W	4-foot T8	M25 metric hub	0.34A	110-254	1 2266 875 103	eLLK92036/UNV
18W	2-foot T8	3/4" Myers hub	0.18A	110-254	1 2265 875 311	eLLK92018/UNV
18W (with battery)	2-foot T8	3/4" Myers hub	0.23A	110-120	1 2260 879 333	eLLK92018/18/NIB
18W (with battery)	2-foot T8	3/4" Myers hub	0.23A	220-254	1 2260 879 311	eLLK92018/18/NIB WH
36W	4-foot T8	3/4" Myers hub	0.34A	110-254	1 2266 875 311	eLLK92032/UNV
36W (with battery)	4-foot T8	3/4" Myers hub	0.40A	110-120	1 2261 879 333	eLLK92036/36/NIB
36W (with battery)	4-foot T8	3/4" Myers hub	0.40A	220-254	1 2261 879 311	eLLK92036/36/NIB

* 2 hubs provided. May be connected throughfeed or tandem. Cable glands ordered separately for 3/4" (remove hubs) or M 25 openings (remove hubs).

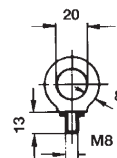
Lamp Selection:

	17W	32W
Phillips	F17T8/TI841	F32T8/TL841
GE	F17T8/SPX41	F32T8/SPX41
Osram/Sylvania	F017/841	F032/841

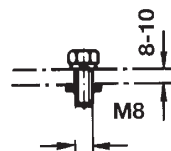
Weight

17 W	4.6 Kg (10 lb)
17 W (battery)	10 Kg (22 lb)
32 W	6.7 Kg (14 lb)
32 W	12 Kg (26 lb)

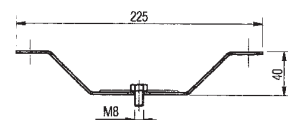
Accessories



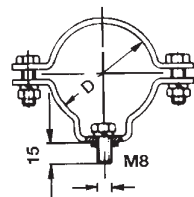
Eyebolt



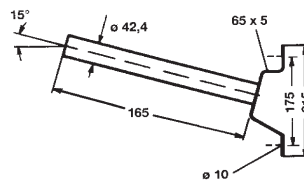
Hexagonal Screw



Ceiling Mounting Bracket



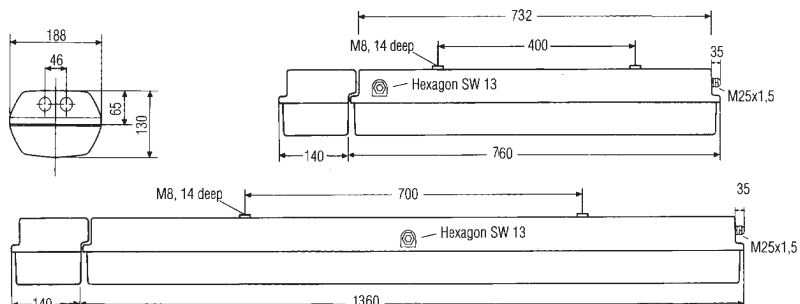
Pipe Clamp



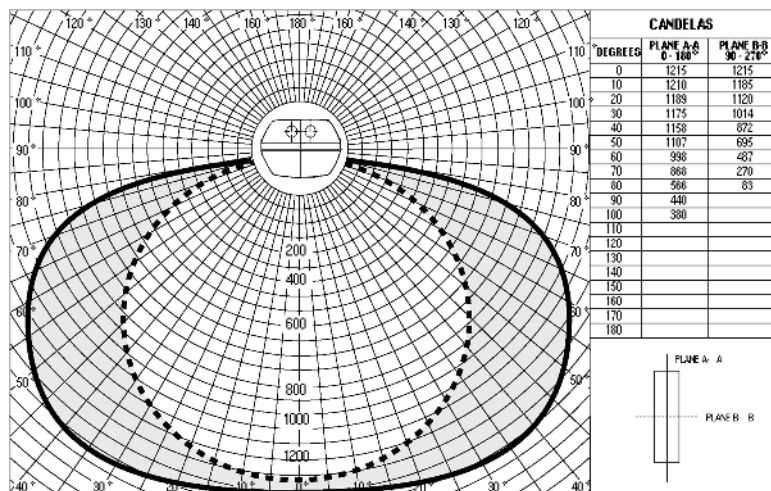
Wall Bracket

Dimensions: (mm)

Standard Luminaire with Backup



Type	Corrosion Protection	Pipe Din	Outer OD (mm)	Quantity per Luminaire	Order Number
Eyebolt	Galvanized	—	—	2	2 2480 002 000
Hexagon Screw S4	Cr Ni	—	—	2	2 2480 054 000
Ceiling Mounting	Cr Ni	—	—	2	2 2480 092 000
D92 Bracket	R12 Hot Galvanized	1 1/4"	38-42	2	2 2480 462 000
Pipe Clamp	R14 CrNi	1 1/4"	38-42	2	2 2480 464 000
	R22 Hot Galvanized	1 1/2"	47-51	2	2 2480 472 000
	R32 Hot Galvanized	2"	56-60	2	2 2480 482 000
Hexagon Key SW13	—	—	—	—	3 2485 000 005
eLLK 92	—	—	—	—	—



Photometric data developed
using 2 - F32T8 3350
lumen lamps.
For the 17 W eLLK, use a
0.45 multiplier.

Coefficients of Utilization

Effective Floor Cavity Reflectance 20%

			Room Cavity Ratio								
Eff. Ceil.	Wall	Work	1	2	3	4	5	6	7	8	9
80*	70*	20*	41	49	55	61	65	70	74	77	80
	50*	20*	30	38	44	50	55	62	67	71	75
	30*	20*	23	30	36	43	48	55	61	65	70
	10*	20*	18	25	30	37	42	50	56	61	66
70*	70*	20*	40	47	53	58	62	68	71	74	77
	50*	20*	29	37	42	49	54	60	65	68	72
	30*	20*	22	30	35	42	47	54	59	64	68
	10*	20*	18	24	30	36	42	49	54	59	64
50*	50*	20*	27	35	40	46	50	56	61	64	68
	30*	20*	21	28	34	40	45	51	56	60	64
	10*	20*	17	24	29	35	40	47	52	57	61
30*	50*	20*	26	38	37	43	47	58	57	60	64
	30*	30*	20	27	32	38	43	49	53	57	61
	10*	20*	17	23	28	34	39	45	50	54	58
10*	50*	20*	24	31	35	41	45	50	54	57	60
	30*	20*	20	26	31	36	41	46	51	54	68
	10*	20*	16	22	27	33	37	43	48	52	55
0*	0*	20*	14	20	25	31	35	41	46	49	53

* Percent Reflectance

nLLK Series Nonmetallic Fluorescent Luminaires

CL.I, Div. 2, Groups A,B,C,D
CL.I, Zone 2 Aex nA II
CL.II, Division 2, Groups F,G
Enclosure Type 4X

Wet Locations
UL and cUL Listed
ATEX Certified

6L



The Cooper Crouse-Hinds SpecOne™ nLLK Series Fluorescent Luminaire is an ideal source of general illumination indoors or out, in ordinary or hazardous environments. Its heavy-duty, nonmetallic construction stands up to tough physical and environmental demands, making it an excellent choice where dust, dirt, gas, vapor, smoke, fumes, moisture, corrosive and wet conditions are present. As with all SpecOne products, the nLLK luminaire meets the standards and codes of regulating agencies throughout the world, which simplifies product specifying for multinational users.



APPLICATIONS

nLLK series luminaires are used:

In indoor or outdoor, ordinary or hazardous areas

Where a heavy-duty, nonmetallic luminaire is required to hold up to tough physical and environmental demands including corrosives, water, dust and extreme temperatures

- manufacturing plants
- heavy industrial facilities
- industrial process facilities
- refineries
- chemical
- petrochemical
- pharmaceutical
- waste water and sewage treatment plants

In areas where low mounting height, immediate full illumination, and the even light distribution associated with a linetype light source are required

- loading docks
- tunnels
- stairways

Where wet location or Type 4X protection is required

- dock areas
- production platforms

In hosedown areas where cleanliness and sanitation are prime factors

- dairies
- canneries
- food processing plants
- bottling plants
- laboratories

CERTIFICATIONS & COMPLIANCES

NEC

- Class I, Division 2, Groups A, B, C, D
- Class I, Zone 2 AEx nA II
- Class II, Division 2, Groups F, G
- Wet Locations
- UL Listed

CEC

- Class I, Zone 2 Ex nA II
- Class I, Division 2, Groups A, B, C, D
- Class II, Division I, Groups E, F, G
- cUL Listed (certified by UL)

Enclosure

- Type 4X
- IP65

UL Standards

- 2279 Hazardous (Zones Classified) Locations
- 1598 Luminaires

CSA Standards

- C22.2 No. 9
- CAN/CSA-E79-15

ATEX

- ATEX Directive 94/9/EC

- Type of Protection
- EC-Type Examination Certificate
- EC-Type Examination Certificate

Ex II 3 G
Ex II 2 D/II 3 D T80°C
EEx nA II T4 nach EN 50021
PTB 96 ATEX 2208

DMT 02 ATEX E116

STANDARD MATERIALS

- one-piece housing—fiber-glass reinforced polyester
- lens—polycarbonate
- gasket—silicone

STANDARD FINISHES

- fiberglass housing—natural (white)
- lens—natural (clear)

RATINGS (ELECTRICAL/ SIZE)

Sources/Wattages

- two 17 W or two 32 W linear fluorescent

Voltages

- 120–277 V, 50–60 Hz.
- 347 V, 60 Hz.—consult factory

Hub Size

- four 25 mm entries, two on each end, three plugged
- two Myers® STM2 25 mm to ¾" NPT adapter hubs provided standard for through-feed or tandem wiring

6L

nLLK Series Nonmetallic Flourescent Luminaires

CL.I, Div. 2, Groups A,B,C,D
CL.I, Zone 2 Aex nA II
CL.II, Division 2, Groups F,G
Enclosure Type 4X

Wet Locations
UL and cUL Listed



IP65, Type 4X heavy-duty construction

- nonmetallic body, gasketed lens and unique labyrinth lens locking system
- dust-tight, water-tight and moisture-tight
- corrosion and impact-resistant
- ideal for outdoor applications

Electronic ballast

- lower ambient temperatures suitability to -18°C
- high-power factor ballast (+90%) allows for more luminaires per circuit

Standard T8 bi-pin lamps—most common lamp used; energy-efficient and cost-effective

Removable lens—hinged on both sides for easy installation and maintenance

Easy wiring and installation—

- four 25 mm entries. Two Myers® ¾" NPT adapter hubs supplied standard
- suitable for through-feed or tandem applications
- extra-large wire well eliminates need for separate junction boxes

Worldwide suitability

- NEC/CEC: Class I, Zone 2 and Division 2 areas
- IEC/CENELEC certified luminaires available. Consult factory.



ORDERING INFORMATION

HUB SIZE*	LAMP DESCRIPTION	VOLTAGE/HZ.	CATALOG NO.
¾" NPT	17 W T8, Rapid Start—2 lamps	120–277 V, 60 Hz.	nLLK98 2217/UNV
¾" NPT	32 W T8, Rapid Start—2 lamps	120–277 V, 60 Hz.	nLLK98 4232/UNV

* 25 mm entries—supplied with two Myers® STM2 25 mm to ¾" NPT adapter hubs.

ACCESSORIES

DESCRIPTION	CATALOG NO.
SW13 hexagon key (for maintenance and lamp replacement)	3 2485 000 005
Myers® 25 mm to ¾" NPT adapter hub	STM2

MOUNTING ACCESSORIES

TYPE	CORROSION PROTECTION	PIPE DIN	OUTER DIA.	QTY. PER LUMINIAIRE	CATALOG NO.
Eyebolt A2	Galvanized			2	2 2480 002 000
Hexagon Screw S4 (to attach ceiling mounting bracket or pipe clamp to luminaire)	Nickel Chromium			2	2 2480 054 000
Ceiling Mounting Bracket D92	Nickel Chromium			2	2 2480 092 000
Pipe Clamp R12	Hot Galvanized	1¼"	38–42 mm	2	2 2480 462 000
Pipe Clamp R14	Nickel Chromium	1¼"	38–42 mm	2	2 2480 464 000
Pipe Clamp R22	Hot Galvanized	1½"	47–51 mm	2	2 2480 472 000
Pipe Clamp R32	Hot Galvanized	2"	56–60 mm	2	2 2480 482 000

6L Fluorescents

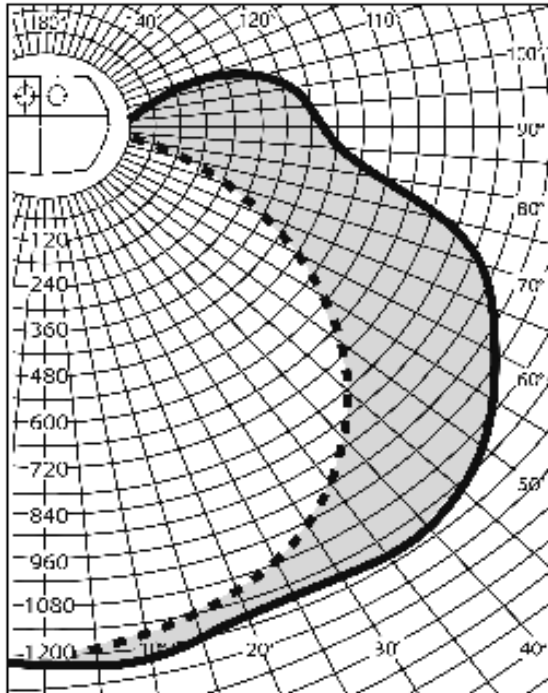
nLLK Series Nonmetallic Flourescent Luminaires

CL.I, Div. 2, Groups A,B,C,D
CL.I, Zone 2 Aex nA II
CL.II, Division 2, Groups F,G
Enclosure Type 4X

Wet Locations
UL and cUL Listed

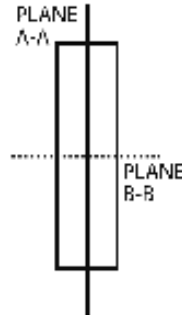
6L

PHOTOMETRIC DATA



CANDELAS

DEGREES	PLANE A-A E 180°	PLANE B-B 90° 240°
0	1215	1215
10	1215	1195
20	1189	1120
30	1175	1014
40	1158	877
50	1107	695
60	958	487
70	868	270
80	556	83
90	440	
100	390	
110		
120		
130		
140		
150		
160		
170		
180		



TEMPERATURE PERFORMANCE

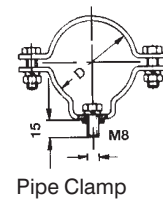
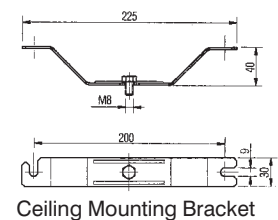
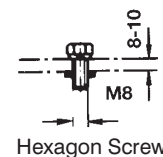
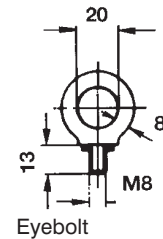
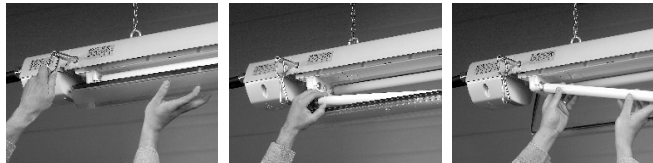
Minimum Starting Temperature: -18°C

WATTS	AMBIENT	CLASS I, DIV. 2 (CLASS I, ZONE 2)	CLASS II, DIV. 1 (CEC) CLASS II, DIV. 2 (NEC)	SUPPLY WIRE TEMP °C
Two 17 W T8 lamps	40°C	T4	T6	60
Two 32 W T8 lamps	40°C	T4	T6	60

MAINTENANCE AND RELAMPING

(eLLK Series Div. 1/Zone 1 luminaire is shown. Maintenance procedures are the same for the nLLK.)

1. **One quarter turn** with the SW13 hexagon key or a 5/16" (M8) Allen hex head wrench releases multiple locking points.
2. **Lamps can be stored** in open lens, freeing up hands for easy relamping.
3. **Replace the bi-pin lamp**, lock with one quarter turn of the wrench for an IP65, Type 4X seal.



DIMENSIONS (mm) & WEIGHT

Weight: 8.8 lbs. (4.0 kg.)—17 W 13.2 lbs. (6.0 kg.)—32 W



6L Fluorescents



FVN Luminaires are ideal for use:

- In areas made hazardous by the abnormal conditions resulting in the presence of flammable vapors or gases and combustible dusts as defined by the National Electrical Code®.
- Where broken lamps would damage machinery or processes, or harm people working in the area.
- In areas where stringent sanitation requirements exist.

Features

- One-piece seamless sheet steel housing with welded end caps keeps dirt, dust and moisture away from ballast and lamps. Easy to clean.
- A silicone rubber gasket provides a dust-tight seal between the lens/frame assembly and housing.
- Lens/frame assembly is hinged and wireway cover is held by safety chain for ease of lamp replacement and maintenance.
- Polyester powder coat finish provides high reflectance and corrosion resistance for long life and dependable service.
- Two ½" NPT pendant hubs and two ½" NPT thru-feed end hubs are standard.
- Electronic ballast is standard on 32, 40/(UNV only) and 54 watt luminaires.

FVN Fluorescent Luminaires with T5 HO lamps offer...

- High lumen output per watt - provides energy savings versus other higher wattage fluorescent luminaires with similar lumen output.
- Longer lamp life and good lumen maintenance - reduced maintenance and lamp replacement costs.

Certifications and Compliances:

NEC and CEC:

- Class I, Division 2 Groups A, B, C & D
- Class I, Zone 2 Groups IIC
- Class II, Division 1 Groups F, G
- Class III
- Simultaneous Presence (Cl. I and Cl. II)

UL Standards:

- 844 Hazardous (Classified) Areas
- 1598 Luminaires

CSA Standards:

- C22.2 NO. 137

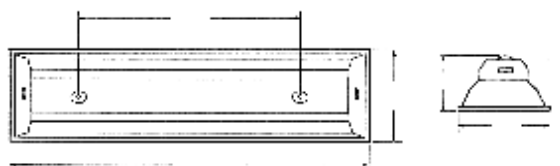
Standard Materials:

- Luminaire housing - 20-gauge seamless sheet steel
- Lens/Frame Assembly - stainless steel
- Glass - 3/16" tempered
- Suspension flanges - seamless sheet steel
- Gaskets - silicone
- Lampholders - white thermoset plastic
- Clamps - stainless steel

Standard Finishes:

- Reflector housings - corrosion resistant white polyester powder coat
- Lens/Frame - natural

Dimensions:



Ordering Information (Lamps not supplied): Supercedes ordering information in Catalog 6000, Section 5L.

Lamp Watts	Line Voltage/Hertz	Lamp Type	Hub Size	2-Lamp Cat. No.	3-Lamp Cat. No.
32	120-277/50-60	T8	1/2 NPT	FVN4232TG/UNV	FVN4332TG/UNV
32	347/60	T8	1/2 NPT	FVN4232TG/347	FVN4332TG/347
40	120-277/50-60	T12	1/2 NPT	FVN4240TG/UNV	FVN4340TG/UNV
40	347/60	T12	1/2 NPT	FVN4240TG/347	FVN4340TG/347
60	120/60	T12HO	1/2 NPT	FVN4260TG/120	—
60	277/60	T12HO	1/2 NPT	FVN4260TG/277	—
60	347/60	T12HO	1/2 NPT	FVN4260TG/347	—
60	220/50	T12HO	1/2 NPT	FVN4260TG/200-50	—
FVN Fluorescent Luminaires with T5 HO Lamps (Lamps not supplied)					
54	120-277/50-60	T5HO	1/2 NPT	FVN4254TG/UNV	—
54	347/60	T5HO	1/2 NPT	FVN4254TG/347	—

FDN Series Flourescent Luminaires

CI.I, Div. 2, Groups A,B,C,D
 CI.I, Zone 2 Group IIC
 CI.II, Div. 1, Groups F,G
 CI.III & Simultaneous Presence

Wet Locations
 NEMA 3,3R

6L

Options:

The following special options are available from the factory by adding suffix to luminaire Cat. No.

Description	Suffix
• Low temperature electromagnetic ballast, 40W rated 0°F (-18°C), 60W rated -20°F (-29°C)	BY
• 45° angle brackets (field installed)	AG
• Adjustable angle brackets (field installed)	KH
• Angle bars for chain suspension (field installed)	CX
• Individually fused balast (internal)	FB
• Emergency lighting battery unit (Class I, Division 2 only). Also available for use with T5 lamps Supplied with charging indicator light and instructions for use with a remote push-to-test station.	S799†

† If push-to-test operator installed in the luminaire is required, consult factory.

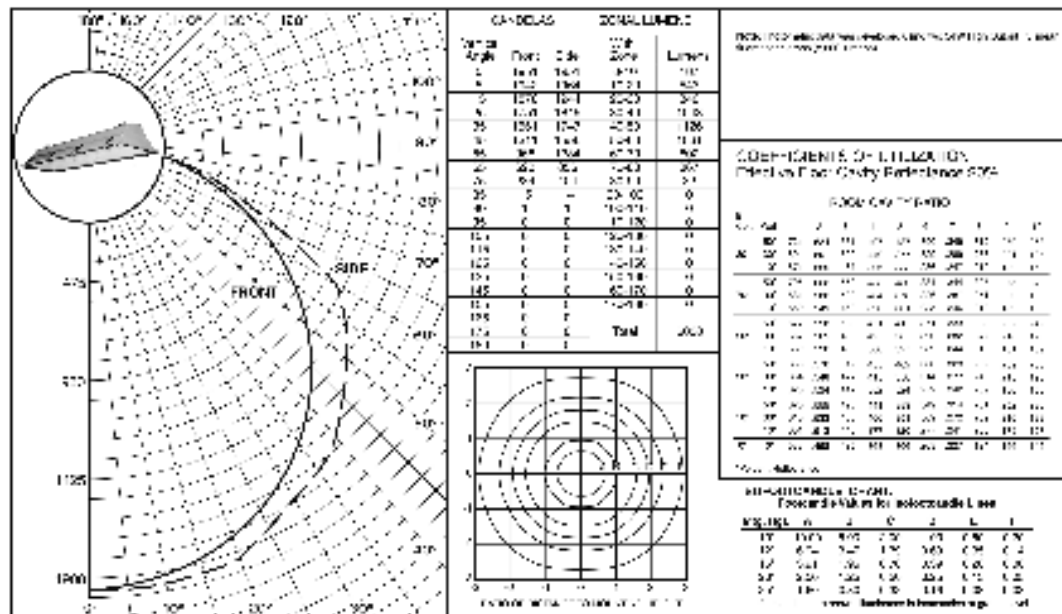
Temperature Performance Data: (Based on 40°C ambient)

Lamp	CI. I, Div. 2 & Zone 2		Class II		Simultaneous Presence		Supply Wire
	Supply2-Lamp	3-Lamp	2-Lamp	3-Lamp	2-Lamp	3-Lamp	
32W	T5	T5	T6	T6	T4	T4	60°C
40W	T5	T5	T6	T6	T4	T4	60°C
54W	T3C	—	T6	—	T3C/T6	—	75°C
60W	T4	—	T6	—	T4	—	90°C

Photometric Data:

Luminaire with two 54W High Output T5 Linear Fluorescent Lamps
 FVN4254

Luminaire with two 54W High Output T5 Linear Fluorescent Lamps
 FVN4254



FVN .ies photometric files for use with our Luxicon® Lighting Layout Software are available from the Resources area of our website.

6L **FVN Series** Fluorescent Luminaires

Photometric Data

Luminaire: FVN with 2-40W lamps (tempered lens)

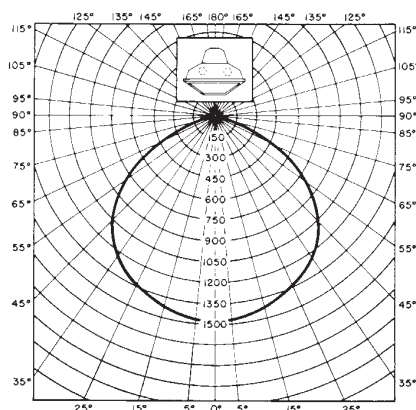
Lamp: 2-40/T-12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 1182 1971 3555 4284

Total Bare Lamp Lumens: 6300

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 2-lamp 40W RS cool white luminaires with tempered glass. Use 1.37 multiplier for 2-lamp 60W luminaires with tempered glass. Use .92 multiplier for 2-lamp 32W luminaires with tempered glass.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.721	.643	.575	.513	.461
	30	.695	.603	.527	.459	.404
	10	.673	.569	.489	.418	.362
70	50	.706	.631	.566	.505	.452
	30	.683	.594	.520	.455	.399
	10	.661	.564	.485	.415	.359
50	50	.677	.607	.547	.488	.439
	30	.657	.577	.508	.444	.392
	10	.641	.549	.476	.410	.357
30	50	.650	.586	.528	.473	.426
	30	.636	.561	.496	.435	.384
	10	.621	.538	.468	.405	.353
10	50	.627	.568	.512	.459	.414
	30	.614	.544	.484	.426	.378
	10	.602	.526	.460	.399	.349
0	0	.589	.512	.447	.385	.336
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.416	.375	.338	.309	.269
	30	.359	.319	.283	.254	.215
	10	.319	.281	.244	.217	.180
70	50	.409	.370	.333	.305	.265
	30	.356	.315	.281	.252	.215
	10	.316	.278	.244	.217	.180
50	50	.397	.359	.324	.297	.259
	30	.350	.309	.277	.249	.211
	10	.314	.276	.242	.215	.179
30	50	.386	.348	.316	.289	.253
	30	.344	.306	.272	.244	.208
	10	.311	.273	.240	.214	.177
10	50	.376	.341	.308	.282	.247
	30	.338	.301	.268	.242	.205
	10	.308	.271	.239	.212	.175
0	0	.295	.258	.226	.200	.164

Luminaire: FVN with 3-40W lamps (tempered lens)

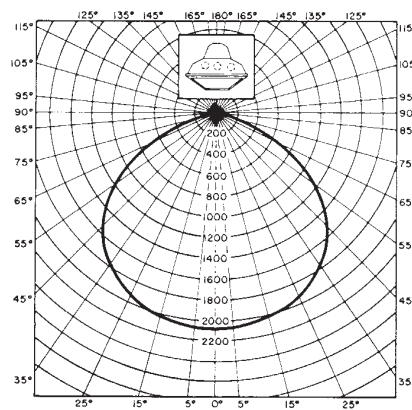
Lamp: 3-40/T-12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 1695 2834 5099 6079

Total Bare Lamp Lumens: 9450

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 2-lamp 40W RS cool white luminaires with tempered glass. Use 1.37 multiplier for 2-lamp 60W luminaires with tempered glass. Use .92 multiplier for 2-lamp 32W luminaires with tempered glass.

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.682	.610	.546	.488	.439
	30	.658	.572	.501	.438	.385
	10	.637	.540	.466	.399	.346
70	50	.668	.599	.538	.480	.430
	30	.646	.563	.495	.433	.381
	10	.625	.535	.462	.396	.343
50	50	.640	.576	.520	.464	.418
	30	.622	.547	.454	.423	.374
	10	.606	.521	.433	.391	.341
30	50	.615	.556	.502	.450	.406
	30	.601	.532	.472	.415	.367
	10	.587	.511	.446	.386	.337
10	50	.594	.537	.487	.437	.394
	30	.581	.517	.461	.406	.361
	10	.570	.499	.439	.381	.333
0	0	.557	.487	.426	.368	.321
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.396	.357	.322	.294	.256
	30	.343	.304	.270	.242	.205
	10	.305	.268	.234	.207	.172
70	50	.390	.352	.317	.290	.252
	30	.340	.301	.268	.240	.205
	10	.302	.266	.233	.207	.172
50	50	.378	.342	.309	.282	.247
	30	.334	.295	.264	.237	.201
	10	.300	.264	.231	.206	.171
30	50	.368	.332	.301	.276	.241
	30	.328	.292	.259	.233	.199
	10	.298	.261	.230	.204	.169
10	50	.358	.325	.294	.269	.235
	30	.322	.288	.256	.231	.196
	10	.294	.259	.228	.202	.168
0	0	.283	.247	.217	.192	.157

eLLB20 Series

Recessed Mount Fluorescent Luminaires

Class I, Div.2, Groups A,B,C,D
Class I, Zone 1, Groups IIC
ATEX Certified

Cl. II, Div 2, Groups F,G
Cl. II, Div 1, Groups E,F,G (Canada)
Wet Locations
Enclosure Type 4X and IP66

6L



Features & Benefits:

- One piece welded housing with fitted cover frame. The cover frame is an integral part of the housing to seal out dust & moisture.
- Adjustable mounting clamps:
 - permanently attached and adjustable through the cover frame for easy installation.
 - allow recess mounting in ceilings from 25mm to 100mm (1" to 4" approx) thick for maximum mounting flexibility.
- Support lugs (M8 x .6) to secure the luminaire to ceiling structural support members for safety.
- Frameless tempered glass lens:
 - 6mm (1/4") thick for added safety.
 - interior hinge for maximum dust shedding.
 - fitted with captive screws for ease of lamp replacement and maintenance.
- Isolating switch turns off power to the ballast and lamps when the lens is opened for added safety.
- 4 entries (2 on each end) supplied with (2) 3/4" NPT adapter hubs and extra large wire well for feedthrough and tandem applications without the need for separate junction boxes.
- Electronic ballast:
 - high power factor (95%) for energy efficiency, more luminaires per circuit and supply voltage flexibility.
 - features 2 channel circuitry for safety - if one lamp fails the 2nd lamp remains in operation.
- Uses T8 linear fluorescent lamps for high efficiency and reduced operating costs.
- 5 wire terminal block and through wiring are standard for quick and easy balancing of lighting loads on 3 phase systems.

Applications:

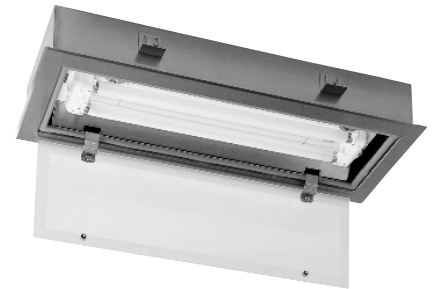
eLLB series luminaires are used:

- For flush or surface ceiling mounting.
- In cleanroom areas where it is important to have smooth, flush surfaces.
- Where extreme cleanliness is required as in pharmaceutical, chemical and electronics manufacturing facilities, as well as in paint shops and spray booths.
- For tough environmental conditions involving corrosives, water, dust and extreme temperatures.
- In areas that require lamps to reach full illumination immediately.
- Indoor & outdoor ordinary or hazardous areas.
- For Wet locations and areas with hose down / wash down requirements.

Adjustable Mounting Clamps



Hinged Glass Lens



Certifications & Compliances:

NEC :

- Class I, Division 2, Groups A,B,C,D
- Class I, Zone 1 AEx ed IIC
- Class II, Division 2, Groups F, G
- UL Listed

CEC:

- Class I, Division 2, Groups A,B,C,D
- Class I, Zone 1 Ex eds IIC
- Class II, Division 1 Groups E,F,G
- cUL Listed

Enclosure

- Type 4X
- IP66

UL Standards

- 2279 Hazardous (Classified) Locations
- 1598 Luminaires

CSA Standards

- C22.2 No. 9
- CAN/CSA-E60079-0:02
- CAN/CSA-E60079-1:02
- CAN/CSA-E60079-7
- CAN/CSA-E61241-1-1:02

ATEX

- ATEX Directive 94/9/EC
- Type of Protection
- EC-Type Examination Certificate
- II 2 G
- II 2 D T80°C
- EEx ed IIC T4
- EEx ed ib IIC T4 (CG-variant)
- DMT 02 ATEX E 069

Standard Materials:

- One piece welded housing and cover frame - sheet steel or stainless steel
- Lens - 6mm (1/4") thick tempered glass
- Gaskets - Silicone
- External hardware - stainless steel

Standard Finishes:

- Sheet steel - White epoxy coat
- Lens - Clear
- Stainless steel - Natural

6L
Fluorescents

6L

eLLB20 Series**Recessed Mount
Fluorescent Luminaires**Class I, Div.2, Groups A,B,C,D
Class I, Zone 1, Groups IIC
ATEX CertifiedCl. II, Div 2, Groups F,G
Cl. II, Div 1, Groups E,F,G (Canada)
Wet Locations
Enclosure Type 4X and IP66**Ratings (Electrical / Size):****Sources/Wattages**

- Two 32W or 17W T8 Linear Fluorescent

Voltages

- 120-240V, 50-60 Hz.
- 110-230VDC

Hub Size

- Four 25mm entries, 2 on each end, 3 plugged.
- Two 3/4" NPT adapter hubs provided standard, for feed-through or tandem wiring.

Terminals

- 5 wire terminal block, one on each end (L1, L2, L3, N, Ground)
- Two 6mm2 (#10 AWG) maximum per terminal

Temperature Performance Data:**Minimum Starting Temperature: -20°C**

Watts	Ambient Temp.	Cl. I, Div. 2 Cl. I, Zone 1 & 2	Class II	Supply Wire Temp
Two 17W T8 lamps	50°C	T4	T6	60°C
Two 32W T8 lamps	50°C	T4	T6	60°C

Accessories:

- 3/4" NPT adapter hub

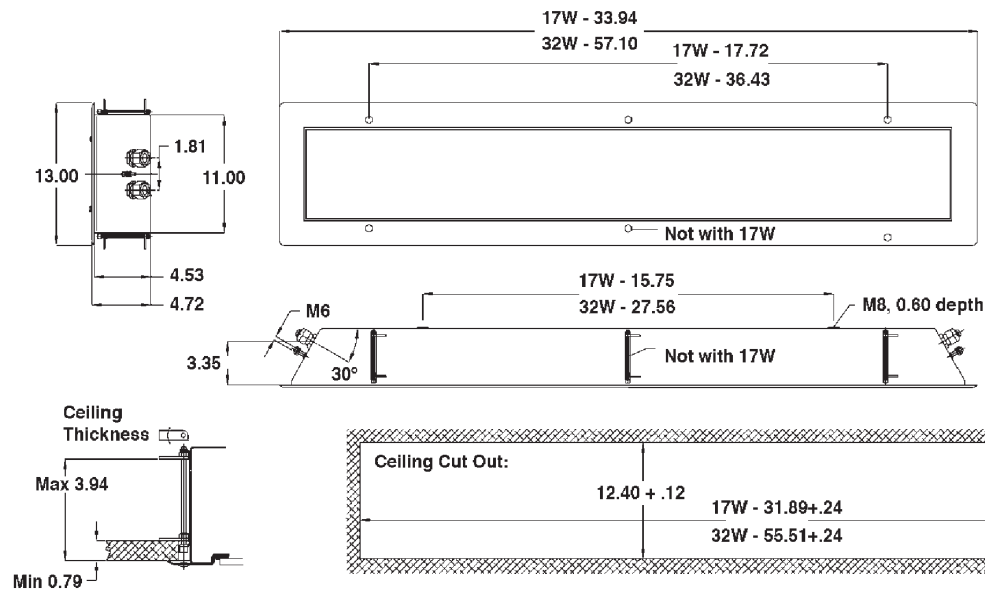
STM2**Mounting Accessories:**

- Eye Bolt for Support Lugs
- Hexagon Screw for Support Lugs

2 2480 002 000**2 2480 054 000****Ordering Information:**

Hub Size	Wattage/Lamp	Voltage/Hz	Operating Current	Catalog Number	
				Epoxy Coated Steel Enclosure	Stainless Steel Enclosure
3/4" NPT	Two 17 Watt T8 Rapid Start	120-240V, 50-60 Hz 110-230 VDC	.18A	eLLB20 2217/U240	eLLB20 2217SS/U240
3/4" NPT	Two 32 Watt T8 Rapid Start	120-240V, 50-60 Hz 110-230 VDC	.34A	eLLB20 4232/U240	eLLB20 4232SS/U240

IEC / CENELEC certified luminaires are available. Consult factory.

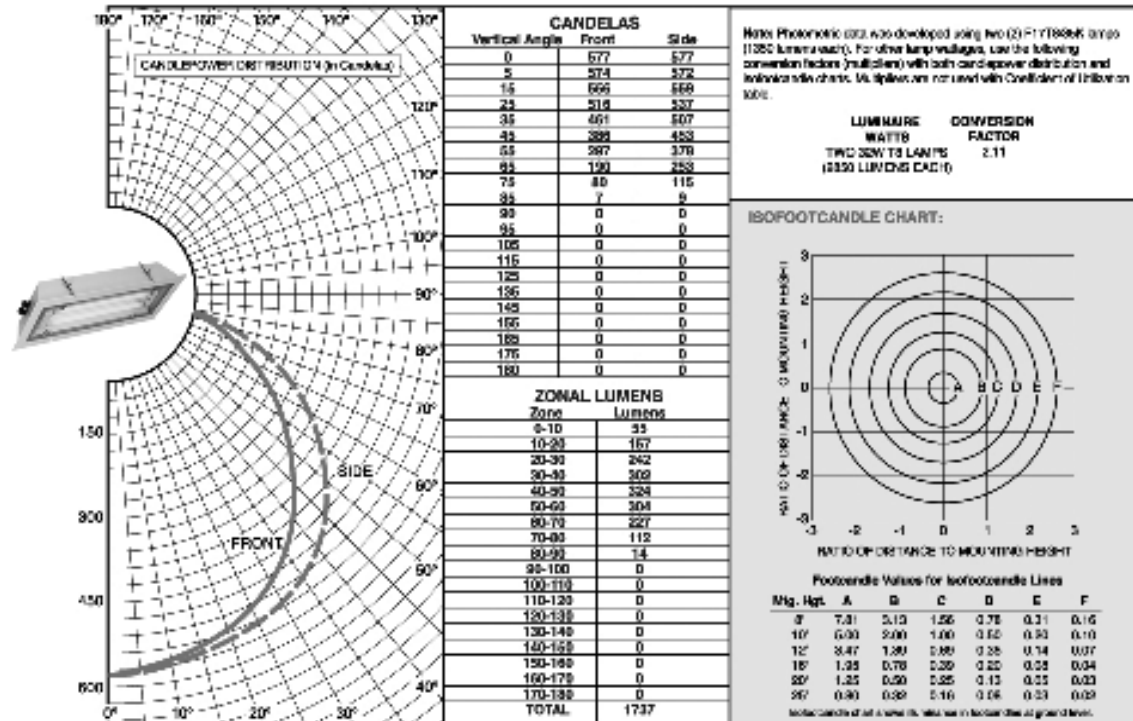
Dimensions (Inches) and Weights:

Item	Weight
eLLB20 2217	33 lbs.
eLLB20 4232	48 lbs.

6L Fluorescents

Photometric Data:

LUMINAIRE: eLLB20 2217 LAMP: TWO F17T8 LINEAR FLUORESCENT



COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD EFFECTIVE FLOOR CAVITY REFLECTANCE 20%

		ROOM CAVITY RATIO									
EFF. CEIL.	WALL	1	2	3	4	5	6	7	8	9	10
80°	50°	0.679	0.597	0.528	0.468	0.412	0.368	0.329	0.294	0.263	0.239
	30°	0.654	0.556	0.478	0.414	0.355	0.310	0.272	0.239	0.209	0.186
	10°	0.631	0.522	0.439	0.372	0.313	0.269	0.233	0.200	0.172	0.151
70°	50°	0.664	0.585	0.518	0.459	0.405	0.632	0.324	0.290	0.259	0.235
	30°	0.641	0.547	0.472	0.409	0.351	0.307	0.270	0.237	0.207	0.185
	10°	0.621	0.516	0.435	0.369	0.311	0.268	0.232	0.200	0.172	0.151
50°	50°	0.637	0.562	0.499	0.443	0.391	0.350	0.314	0.281	0.252	0.229
	30°	0.618	0.531	0.460	0.399	0.344	0.302	0.265	0.233	0.204	0.182
	10°	0.601	0.504	0.427	0.364	0.308	0.266	0.230	0.198	0.171	0.150
30°	50°	0.612	0.542	0.482	0.429	0.379	0.339	0.305	0.273	0.245	0.223
	30°	0.597	0.515	0.448	0.390	0.337	0.296	0.261	0.229	0.201	0.180
	10°	0.583	0.492	0.420	0.360	0.304	0.263	0.228	0.197	0.170	0.149
10°	50°	0.589	0.522	0.465	0.415	0.367	0.329	0.296	0.265	0.238	0.217
	30°	0.577	0.501	0.437	0.382	0.330	0.291	0.257	0.226	0.198	0.177
	10°	0.566	0.481	0.413	0.355	0.301	0.261	0.257	0.196	0.169	0.149
0°	0°	0.553	0.468	0.400	0.341	0.288	0.248	0.214	0.183	0.156	0.137

* PERCENT REFLECTANCE

EVF Series Fluorescent Luminaires

- Cl. I, Div 1, Groups C,D
- Cl. I, Zone 1 Group IIB
- Cl. II, Div 1, Groups E,F,G
- Cl. III, Simultaneous Presence

- Paint Spray (Suffix S718)
- Wet Locations (Suffix S718)
- 3,3R, IP54 (Suffix S718)

Application:

EVF luminaires are used in areas where hazardous fumes, gases, or dusts are present.

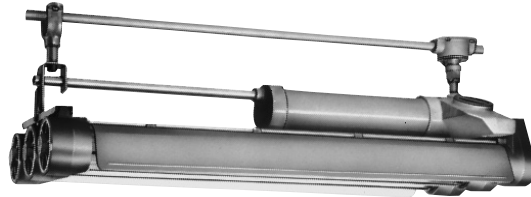
EVF luminaires with S718 option are designed specifically for use inside paint spray booths where hazardous fumes, gases, and paint residue are present. This includes powder paint process areas.

EVF luminaires with S718 option are also suitable for use in wet locations.

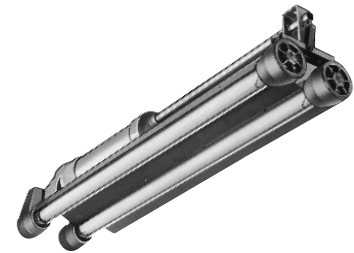
Features:

All EVF luminaires

- Provide cool, even light with natural color rendition
- Reduce relamping schedule (long lamp life)
- Continuous and uniform illumination made possible by mounting end to end (no space needed between luminaires for relamping)
- No special tools required for relamping. Threaded lamp tube cover provides quick and easy access for relamping
- Threaded joints on lamp tube and wiring chamber covers permit easy access for lower maintenance costs
- Reflectors can be removed or replaced with only a screwdriver
- Easy to install. Factory sealed and wired luminaire facilitates installation
- Standard electronic ballast for 32 watt and 40 watt rapid start luminaires.
- Standard energy efficient ballast for 40 watt slimline, 60 watt and 110 watt luminaires.
- Low temperature ballast is supplied as standard on 32 watt T8 (0°F), 40 watt slimline (0°F); 60 watt and 110 watt luminaires (-20°F).
- All exposed hardware is stainless steel for maximum protection against corrosion, and for longer luminaire life
- Copper-free aluminum construction throughout means lighter luminaire weight, easier installation, and excellent corrosion resistance
- All exterior materials are non-sparking
- Type P ballasts furnished in compliance with NEC
- Heavy-duty glass lamp tubes provide maximum strength and impact resistance to protect lamps



3-lamp



2-lamp with angle reflector

EVF

Furnished For Use With	Hub Size	Line Volts 60 Hz.*	1-Lamp Cat. #	2-Lamp Cat. #	3-Lamp Cat. #	4-Lamp Cat. #
32 watt, T-8 medium Bi-pin 265MA lamps	3/4"	120-277	EVF21029/UNV	EVF22029/UNV	EVF23029/UNV	EVF24029/UNV
	3/4"	347	EVF21029/347	EVF22029/347	EVF23029/347	EVF24029/347
40 watt, T-12 medium Bi-pin rapid start 430MA lamp†	3/4"	110-125	EVF21082	EVF22082	EVF23082	EVF24082
	3/4"	277	EVF21087	EVF22087	EVF23087	EVF24087
	3/4"	347	EVF21089/347	EVF22089/347	EVF23089/347	EVF24089/347
40 watt, T-12 single pin, slimline 425MA lamps	3/4"	110-125	EVF21032	EVF22032	EVF23032	EVF24032
	3/4"	277	EVF21037	EVF22037	EVF23037	EVF24037
	3/4"	347	EVF21039/347	EVF22039/347	EVF23039/347	EVF24039/347
60 watt, T-12 recessed contact, 800MA lamp†	3/4"	110-125	EVF21062	EVF22062	EVF23062	EVF24062
	3/4"	277	EVF21067	EVF22067	EVF23067	EVF24067
	3/4"	347	EVF21069/347	EVF22069/347	EVF23069/347	EVF24069/347
110 watt, T-12 recessed contact, 1500MA lamp†	3/4"	110-125	EVF21072	EVF22072	EVF23072	EVF24072
	3/4"	277	EVF21077	EVF22077	EVF23077	EVF24077
	3/4"	347	EVF21079/347	EVF22079/347	EVF23079/347	EVF24079/347

* For 220 volt 50 hz, 240 volt 50 hz or 240 volt 60 hz operation change the last "2" in the 120 volt 60 hz catalog number to a "9" and add "/220 50", "/240 50" or "/240 60" respectively.

† For a 2 lamp, 40 watt rapid start luminaire for 220 volt 50 hz operation order an EVF22089/220 50.

‡ 50 Hz not available.

EVF luminaires with S718 option

- All joints sealed
- Inside paint booth mounting capabilities provide greater flexibility in luminaire placement, avoids necessity of complicated design and installation work, and improves task lighting control
- Smooth simple design makes it easy to remove any accumulated deposits of paint residue

Mounting

Accessories:

Various hazardous area fittings are used to mount EVF luminaires. The fittings shown on page 859 support the unwired (relamping) end. For the wired (ballast) end any of the luminaire hangers for hazardous locations (listed in Section 7L) can be used. CPS conduit outlet bodies with hub covers (listed in Section 4F) are also suitable

Options:

- For suitability for wet locations and locations having deposits of readily combustible paint residue – add Cat. No. Suffix **S718**
- *Corro-free™* epoxy powder coat – add Cat. No. Suffix **S752**
- With 45° angle reflectors in lieu of straight down reflectors – add Cat. No. Suffix **S369**
- Clear disposable polyester tube wrap – consult Cooper Crouse-Hinds
- Fused – add suffix **S658†**
- Furnished with lamps - add suffix **S714**.
- Low temperature electromagnetic ballast for 40 watt T12 rapid start luminaires rated for 0°F - add suffix **BY**.

Size Ranges:

- 1, 2, 3, and 4-lamp

Electrical Rating Ranges:

- 32 to 110 watts

Standard Materials:

- Copper-free aluminum except sheet aluminum reflectors

Standard Finishes:

- Natural except reflectors
- Reflectors – white epoxy powder coat

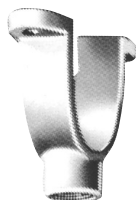
Certifications and Compliances:

- NEC and CEC: Class I, Division 1 Group C, D Class I, Zone 1 Group IIB Class II Group E, F, G Class III Simultaneous Presence (Cl. I and Cl. II) Paint Spray (S718)
- UL Standards: 844 Hazardous (Classified) Locations 1598 Luminaires
- CSA Standards: C22.2 No. 137

† When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

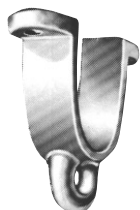
Temperature Performance Data: (Based on 40°C Ambient)

Lamp Type	1 Lamp	Class I/Class II/Zone 1 2 Lamp	3 Lamp	4 Lamp	Supply Wire
32/40W	T5	T5	T5	T5	75°C
60W	T5	T5	T5	T5	75°C
110W	T4	T4	T4	T4	90°C



**Ceiling Saddle for
Conduit Support**

Size $\frac{3}{4}$ Cat. # EVF20



**Ceiling Saddle for
Support Hook**

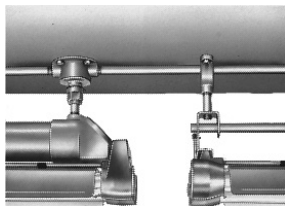
Cat. # EVF021



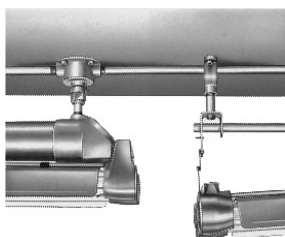
**Support Hook for
Conduit**

Size $\frac{3}{4}$ Cat. # EVF21

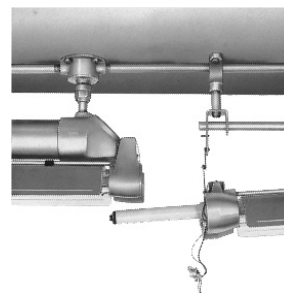
Relamping Information



Adjacent ends of two
fixtures suspended in line
close together



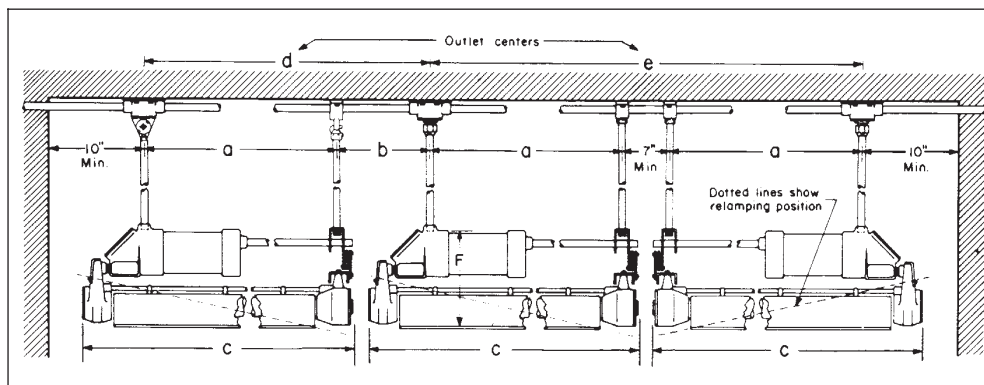
End of one fixture
lowered for relamping



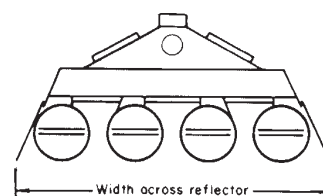
One cover removed and
lamp partly withdrawn

Where fixtures abut, space for relamping is obtained by lowering one end of the tube assembly as shown. Without tools, the lamp receptacle and mounting plate assemblies can be removed and the lamp withdrawn. In inserting, the reverse procedure is followed.

Dimensions



End view



6L
Fluorescents

Fixture Type	No. Lamps	a	b	c	d	e	f
32 watt, T-8 Bi-pin	1 or 2	44	11	53 $\frac{3}{8}$	55	95	10 $\frac{1}{4}$
40 watt, T-12 Bi-pin							
40 watt, T-12 Single pin slimline	3 or 4	46 $\frac{1}{2}$	8 $\frac{1}{2}$	53 $\frac{3}{8}$	55	100	10 $\frac{1}{4}$
60 watt, T-12 Recessed contact							
110 watt, T-12 Recessed contact							

	Width
1-Lamp	6 $\frac{1}{8}$
2-Lamp	11 $\frac{1}{2}$
3-Lamp	18
4-Lamp	24 $\frac{1}{2}$

Luminaire: All 1-Lamp EVF Luminaires

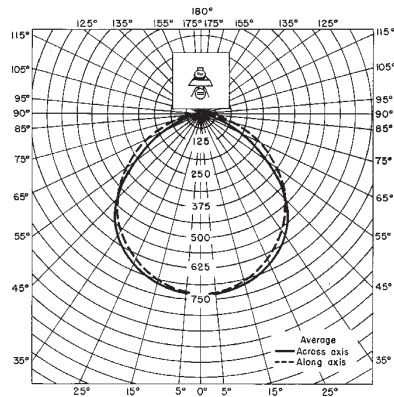
Lamp: 1-40/T-12, 1-60/T-12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 580 953 1633 1897

Total Bare Lamp Lumens: 3100

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes: 32W 0.90 40W Slimline 0.84 60W Cool white 1.29 110W Cool white 2.19

Example: Zonal lumens of 1-40W lamp for 0-60° is 1633. Zonal lumens of 1-60W lamp for 0-60° is $1633 \times 1.29 = 2107$

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.697	.616	.546	.485	.434
	30	.670	.574	.497	.430	.376
	10	.647	.539	.458	.388	.334
70	50	.682	.604	.538	.477	.425
	30	.658	.565	.490	.426	.372
	10	.635	.534	.454	.385	.331
50	50	.653	.580	.518	.460	.412
	30	.633	.549	.478	.416	.365
	10	.616	.520	.446	.380	.329
30	50	.627	.559	.500	.445	.399
	30	.612	.533	.467	.407	.357
	10	.597	.509	.438	.375	.325
10	50	.605	.539	.484	.431	.388
	30	.591	.517	.455	.397	.351
	10	.579	.498	.431	.370	.321
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.391	.351	.316	.289	.252
	30	.334	.295	.262	.235	.198
	10	.294	.257	.223	.197	.164
70	50	.384	.346	.312	.285	.248
	30	.330	.292	.260	.233	.198
	10	.290	.255	.222	.197	.164
50	50	.372	.336	.303	.277	.242
	30	.324	.286	.255	.229	.195
	10	.288	.252	.221	.196	.162
30	50	.361	.325	.295	.270	.236
	30	.319	.283	.251	.225	.192
	10	.286	.249	.219	.194	.161
10	50	.351	.318	.287	.263	.230
	30	.312	.278	.247	.222	.189
	10	.283	.248	.218	.193	.159

Luminaire: All 2-Lamp EVF Luminaires

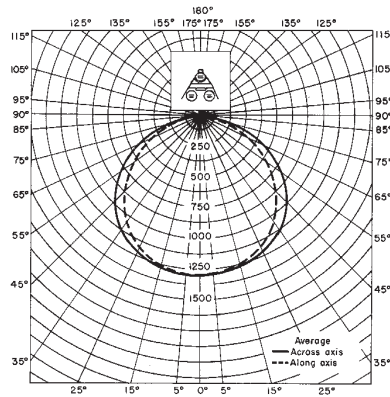
Lamp: 2-40/T-12, 2-38/T-12, 2-60/T-12, 2-110/T12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 1055 1765 3262 4125

Total Bare Lamp Lumens: 6300

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes: 32W 0.90 40W Slimline 0.84 60W Cool white 1.29 110W Cool white 2.19

Example: Zonal lumens of 2-40W lamp for 0-60° is 3262. Zonal lumens of 2-60W lamps for 0-60° is $3262 \times 1.29 = 4208$

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	1	2	3	4	5
80	50	.697	.616	.546	.485	.434
	30	.670	.574	.497	.430	.376
	10	.647	.539	.458	.388	.334
70	50	.682	.604	.538	.477	.425
	30	.658	.565	.490	.426	.372
	10	.635	.534	.454	.385	.331
50	50	.653	.580	.518	.460	.412
	30	.633	.549	.478	.416	.365
	10	.616	.520	.446	.380	.329
30	50	.627	.559	.500	.445	.399
	30	.612	.533	.467	.407	.357
	10	.597	.509	.438	.375	.325
10	50	.605	.539	.484	.431	.388
	30	.591	.517	.455	.397	.351
	10	.579	.498	.431	.370	.321
% Reflectance		Room Cavity Ratio				
Eff. Ceil.	Wall	6	7	8	9	10
80	50	.391	.351	.316	.289	.252
	30	.334	.295	.262	.235	.198
	10	.294	.257	.223	.197	.164
70	50	.384	.346	.312	.285	.248
	30	.330	.292	.260	.233	.198
	10	.290	.255	.222	.197	.164
50	50	.372	.336	.303	.277	.242
	30	.324	.286	.255	.229	.195
	10	.288	.252	.221	.196	.162
30	50	.361	.325	.295	.270	.236
	30	.319	.283	.251	.225	.192
	10	.286	.249	.219	.194	.161
10	50	.351	.318	.287	.263	.230
	30	.312	.278	.247	.222	.189
	10	.283	.248	.218	.193	.159

Luminaire: All 3-Lamp EVF Luminaires

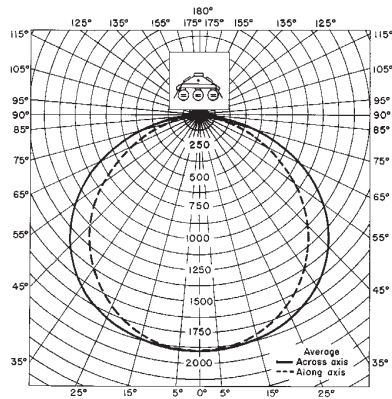
Lamp: 3-40/T-12, 3-38/T-12, 3-60/T-12, 3-110/T-12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 1917 3226 6066 7919

Total Bare Lamp Lumens: 9300

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes:
32W 0.90
40W Slimline 0.84
60W Cool white 1.29
110W Cool white 2.19

Example: Zonal lumens of 3-40W lamps for 0-40° is 3226. Zonal lumens of 3-40W Slimline lamps for 0-40° is $3226 \times 0.84 = 2710$

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio					
Eff. Ceil.	Wall	1	2	3	4	5	
80	50	.712	.626	.553	.489	.436	
	30	.683	.581	.500	.431	.376	
	10	.658	.544	.459	.386	.331	
70	50	.697	.614	.544	.481	.427	
	30	.670	.572	.494	.426	.371	
	10	.646	.539	.455	.383	.328	
50	50	.667	.589	.524	.463	.414	
	30	.645	.555	.481	.416	.364	
	10	.626	.524	.446	.378	.326	
30	50	.640	.567	.505	.447	.400	
	30	.623	.539	.469	.407	.356	
	10	.607	.513	.439	.374	.322	
10	50	.617	.547	.488	.433	.388	
	30	.602	.523	.457	.397	.350	
	10	.589	.502	.431	.368	.318	
% Reflectance		Room Cavity Ratio					
Eff. Ceil.	Wall	6	7	8	9	10	
80	50	.392	.352	.317	.289	.252	
	30	.332	.293	.260	.233	.196	
	10	.290	.254	.219	.194	.160	
70	50	.385	.347	.312	.285	.248	
	30	.329	.290	.258	.230	.196	
	10	.287	.251	.218	.194	.160	
50	50	.372	.336	.303	.277	.242	
	30	.322	.284	.253	.227	.193	
	10	.285	.248	.217	.192	.159	
30	50	.362	.325	.295	.269	.236	
	30	.317	.280	.248	.223	.190	
	10	.282	.245	.215	.191	.157	
10	50	.351	.317	.286	.262	.230	
	30	.310	.276	.244	.220	.187	
	10	.279	.244	.214	.189	.156	

Luminaire: All 4-Lamp EVF Luminaires

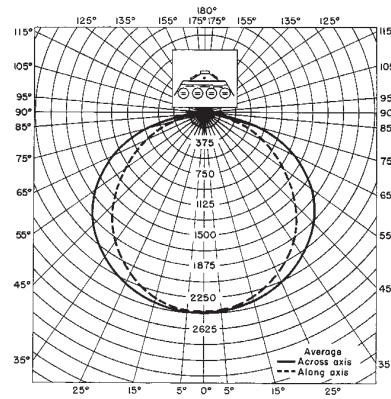
Lamp: 4-40/T-12, 4-38/T-12, 4-60/T-12, 4-110/T-12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 1961 3305 6250 8224

Total Bare Lamp Lumens: 12400

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for 40W rapid start cool white lamps. Use following candlepower/lumen multipliers for other lamp sizes:
32W 0.90
40W Slimline 0.84
60W Cool white 1.29
110W Cool white 2.19

Example: Zonal lumens of 4-40W lamps for 0-30° is 1961. Zonal lumens of 4-110W lamps for 0-30° is $1961 \times 2.19 = 4295$

Coefficient of Utilization

Effective Floor Cavity Reflectance 20%

% Reflectance		Room Cavity Ratio					
Eff. Ceil.	Wall	1	2	3	4	5	
80	50	.692	.607	.535	.473	.421	
	30	.664	.563	.484	.416	.362	
	10	.639	.526	.442	.372	.318	
70	50	.678	.595	.526	.465	.412	
	30	.652	.554	.477	.411	.357	
	10	.628	.521	.439	.369	.315	
50	50	.648	.571	.507	.447	.399	
	30	.627	.538	.465	.401	.351	
	10	.609	.507	.431	.364	.313	
30	50	.622	.550	.488	.432	.386	
	30	.606	.522	.453	.392	.343	
	10	.590	.497	.423	.360	.309	
10	50	.600	.530	.472	.418	.374	
	30	.585	.506	.442	.383	.337	
	10	.572	.486	.416	.354	.305	
% Reflectance		Room Cavity Ratio					
Eff. Ceil.	Wall	6	7	8	9	10	
80	50	.379	.340	.306	.279	.243	
	30	.320	.282	.250	.224	.189	
	10	.278	.243	.210	.185	.153	
70	50	.372	.335	.301	.275	.239	
	30	.316	.279	.248	.221	.189	
	10	.275	.240	.209	.185	.153	
50	50	.359	.324	.292	.267	.233	
	30	.310	.273	.243	.218	.185	
	10	.273	.238	.208	.184	.152	
30	50	.349	.313	.284	.260	.227	
	30	.305	.269	.238	.214	.182	
	10	.271	.235	.206	.183	.150	
10	50	.339	.306	.276	.253	.221	
	30	.298	.265	.235	.211	.179	
	10	.268	.234	.205	.181	.149	

- Cl. I, Div. 1, Groups C,D
- Cl. I, Zone 1 Group IIB
- Cl. II, Div 1, Groups E,F,G
- Cl. III, Simultaneous Presence
- Marine & Wet Locations
- 3,3R,4,4X: IP66

Applications:

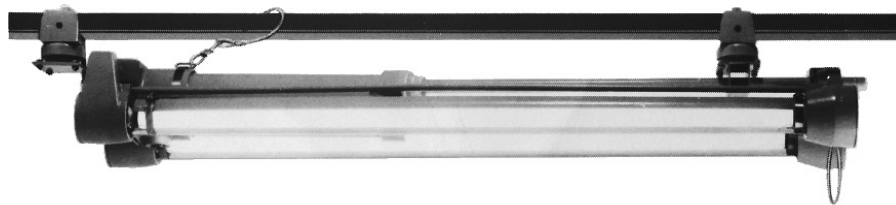
- EVFDR luminaires are suitable for wet locations and marine environments, above and below deck, where hazardous vapors, gases or dusts are present
- Ideally suited for use on offshore drilling/production platforms and on shipboard in hazardous areas
- For mounting where headroom is limited
- For hazardous areas where watertightness and corrosion resistance are required

Features:

- Exterior surfaces finished with gray epoxy enamel for corrosion resistance
- Exterior hardware stainless steel
- All joints sealed and gasketed for watertightness
- Vibration resistant
 - shock mounts
 - sockets are spring loaded for tight lamp contact connection
- Heavy duty glass lamp tubes for maximum strength and impact resistance
- All exterior materials are non-sparking
- C-type beam clamps provide quick and easy mounting
- Luminaire is adjustable 30° either side of fixture axis, allowing for control of light output
- Beam clamp support is adjustable allowing beam clamp to be located to suit structure
- Low profile – luminaire height is 7¹³/₁₆" with standard mounting, 11¹¹/₁₆" with shock mounting option – for maximum clearance where headroom is critical
- Provides cool light with natural color rendition
- Continuous and uniform illumination made possible by mounting end to end (no space needed between luminaires for relamping) – see page 859 for relamping information
- Relamping is accomplished without tools. Quarter-turn fastener allows end of luminaire to be lowered quickly. Cable supports end of luminaire while relamping – both hands are free. Threaded lamp tube cover provides quick and easy access to lamp and receptacle
- Reflectors can be removed or replaced with only a screwdriver
- Ballast housing readily accessible
- Minimum weight – copper-free aluminum construction throughout
- Type P ballast furnished in compliance with NEC
- Standard electronic ballast for 32 watt and 40 watt rapid start.
- Standard energy efficient electromagnetic ballast (40W slimline, 60W and 110W) is standard.
- Low temperature ballasts are standard on 32WT8, 40W slimline, 60W and 110W. 32 watt and 40 watt low temperature ballasts are rated for 0°F. 60 and 100 watt low temperature ballasts are rated for -20°F.

Standard Materials:

- Housing – copper-free aluminum
- Exposed hardware – stainless steel



Options:

- Furnished with lamps – add suffix **S714** to Cat. No.
- Furnished with safety cable for high vibration areas - add suffix **S715** to Cat. No.
- Beam clamps with shock mounts are available for ease of installation and resistance to vibration – add suffix **KIT40** to Cat. No.
- Beam clamps only – add suffix **KIT41** to Cat. No.
- Low Temperature Electromagnetic Ballast: 40W rapid start rated 0°F - add suffix **BY** to Cat. No.
- Emergency lighting battery unit – add suffix **S799** to Cat. No.

Size Ranges:

- 2-lamp only

Electrical Rating Ranges:

- 32, 40, 60 and 110W

Certifications and Complies:

- NEC and CEC:
 - Class I, Division 1 Group C,D
 - Class I, Zone 1 Group IIB
 - Class II Groups E,F,G
 - Class III
 - Simultaneous Presence (Cl. and Cl. II)
- UL Standards
 - 844 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137

Temperature Performance

Data: (Based on 40°C Ambient)

	Class I	Class II	Supply
2-Lamp	Zone 1		Wire
32, 40W	T5		75°C
60W	T5		75°C
110W	T4		90°C

EVFDR

Furnished For Use With

32 watt, T-8 medium	3/4"
Bi-pin 265MA lamps	3/4"
40 watt, T-12 medium	3/4"
Bi-pin rapid start	3/4"
430MA lamps†	
60 watt, T-12 recessed	3/4"
contact, 800MA lamps	3/4"
110 watt, T-12 recessed	3/4"
contact, 1500MA lamps†	3/4"

Hub Size

3/4"
3/4"
3/4"
3/4"
3/4"
3/4"
3/4"
3/4"
3/4"

Line Volts 60 Hz.*

120-277
347
110-125
277
110-125
277
110-125
277
110-125
277

2-Lamp

Cat. #
EVFDR22029/UNV
EVFDR22029/347
EVFDR22082
EVFDR22087
EVFDR22062
EVFDR22067
EVFDR22072
EVFDR22077

* For 220 volt 50 Hz, 240 volt 50 Hz or 240 volt 60 Hz operation change the last "2" in the 120 volt 60 Hz catalog number to a "9" and add "/220 50", "/240 50" or "/240 60" respectively.
ie. For a 2 lamp, 40 watt rapid start fixture for 220 volt 50 Hz operation order an EVFDR22089/220 50.
† 50 Hz. not available.

Standard Finishes:

- All exterior metal components – gray epoxy enamel
- Reflectors – white epoxy powder coat

Luminaire: All EVFDR Luminaires

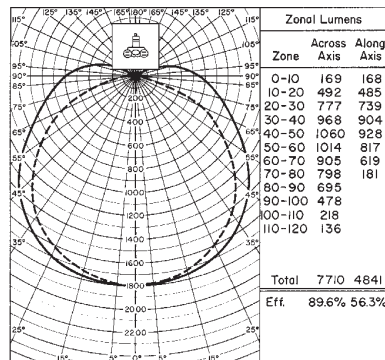
Lamp: 2-40/T-12, 2-60/T-12, 2-110/T-12

Zonal Degrees: 0-30 0-40 0-60 0-90

Zonal Lumens: 1416 2352 4263 5863

Total Bare Lamp Lumens: 8600

To determine number and placement of luminaires, see Lighting Selector Guide, pages 665 to 689.



NOTE: All data provided is for two 60 watt, T-12 recessed contact 800MA cool white lamps (EVFDR22062). For other wattages use the following conversion factors:

32W	.67
40W, Rapid Start	.73
40W, Slimline	.70
110W, Cool White	1.60

Example: Zonal lumens for EVFDR226 fixture, across the axis, for 40-50° is 1,060. Zonal lumens for EVFDR223 fixture, across the axis, is 40-50° is: 1,060 × .70 = 742

Coefficient of Utilization

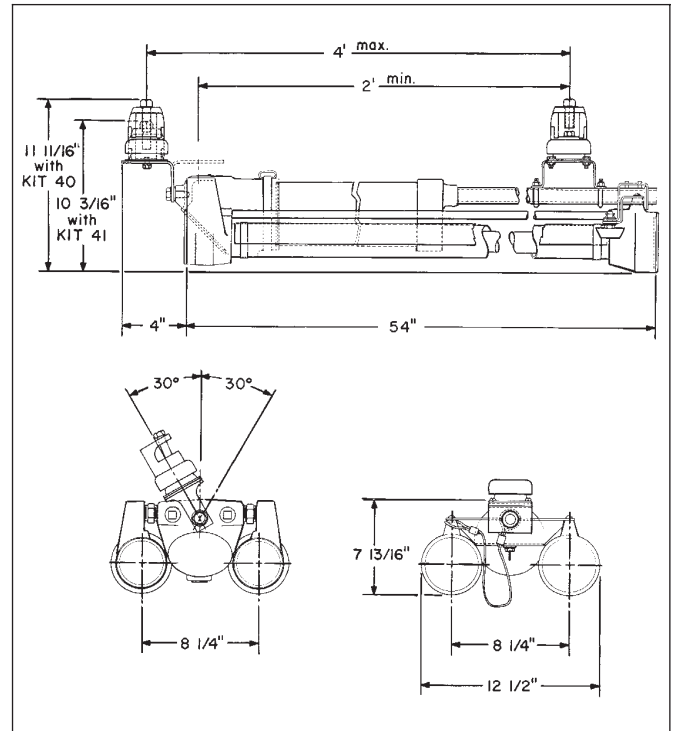
Effective Floor Cavity Reflectance 20%

% Reflectance Room Cavity Ratio

Eff. Ceil.	Wall	1	2	3	4	5
80	50	.735	.645	.570	.506	.452
	30	.700	.594	.512	.442	.387
	10	.670	.551	.466	.394	.339
70	50	.714	.627	.557	.494	.440
	30	.682	.580	.501	.435	.380
	10	.653	.542	.458	.388	.334
50	50	.673	.593	.528	.468	.420
	30	.647	.554	.482	.418	.368
	10	.624	.520	.444	.378	.327
30	50	.636	.562	.501	.446	.401
	30	.616	.530	.463	.403	.354
	10	.596	.502	.430	.368	.319
10	50	.603	.533	.477	.425	.383
	30	.585	.507	.444	.388	.343
	10	.570	.483	.416	.358	.311
0	0	.551	.465	.399	.340	.294

Eff. Ceil.	Wall	6	7	8	9	10
80	50	.408	.368	.332	.304	.266
	30	.344	.305	.271	.243	.207
	10	.298	.262	.228	.202	.169
70	50	.398	.360	.325	.297	.260
	30	.338	.299	.267	.240	.206
	10	.293	.258	.226	.201	.168
50	50	.380	.344	.311	.285	.250
	30	.327	.289	.259	.233	.199
	10	.287	.252	.221	.197	.164
30	50	.364	.328	.299	.274	.240
	30	.317	.282	.251	.226	.193
	10	.281	.246	.217	.193	.160
10	50	.348	.316	.286	.263	.231
	30	.306	.274	.244	.220	.188
	10	.274	.241	.213	.189	.157
0	0	.259	.226	.198	.175	.144

Dimensions



Notes Page

[illegible]

Champ-Pak™ Wall Pack & Floodlight Luminaires Hazardous and Non-Hazardous

7L

Description	Page No.
Application/Selection	866
Floodlights	
Luminaires	
Champ-Pak® CPMV	867-873
H.I.D.	
Voyager nR™ Stainless Steel Series	874-876
F2MV Champ® Series	877-879
FMV Champ® Series	880-882
FMV High Wattage Champ® Series	883-885
EVMA S812 Hazard*Gard with Trunnion Arm	890
FZD Series	887-889
Incandescent	
RCDE Series	891, 892

Application:

- General illumination of hazardous and non-hazardous areas

Table 500-3(d) Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Considerations for Selection:

Environmental:

- What is the hazardous area classification (NEC®/CEC) of the location in which the luminaires will be installed?

Lighting levels required:

- What wattage luminaire(s) will provide the desired light levels? See Lighting Selector Guide, pages 665 to 689, to determine number and location of luminaires required.

Physical arrangement:

- Type of luminaire mounting required, threaded hub or mounting feet.

Quick Selector Chart

Luminaire	NEC Hazardous Area Compliance	Lamp Size (Watts)	Lamp Base
CPMV	Cl. I, Division 2	50-150 HID	Mogul
EVMA-S812	Cl. I, Groups C, D Cl. I, Groups B (suffix GB), C & D	50-400 HID	Mogul
VOYAGER nR (SSFMV)	Cl. I, Division 2 Cl. I, Zone 2	150-400 HID	Mogul
F2MV, FMV, FMV High Wattage	Cl. I, Division 2	70-1500 HID	Mogul
FZD	Cl. I, Division 1 Groups B, C, D	150-400 HID	Mogul
RCDE-6	Cl. I, Groups C, D Cl. I, Group D	150 Incandescent 300 Incandescent	Medium
RCDE-10	Cl. I, Group D	500 Incandescent	Extended Mogul End Prong

Champ-Pak™ Wall Pack Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
Certified for IEC Zone 2 (Suffix S826TB)
Cl. II, Groups F & G
Cl. III & Simultaneous Presence
Marine & Wet Locations • Enclosure Type 4X, IP66

7L



The first low-profile wall pack designed specifically for hazardous areas.

The Cooper Crouse-Hinds® Champ-Pak™ wall pack luminaire is ideal for low-profile mounting in hazardous and industrial environments. **In fact, it is suitable for any area with adverse conditions such as dust, dirt, moisture, vibration, high-pressure hosedowns and high thermal ambients.** Its precisely designed glass refractor minimizes fixture depth while providing uniform, glare-free illumination.

- Unique compact shallow-profile design mounts virtually anywhere.
- Side-hinged cover with two-screw closing for easy installation and maintenance.
- Gray Corro-free™ epoxy powder-coated two-piece housing provides superior corrosion resistance.
- Unique stainless steel wire guard accessory attaches without any additional hardware for easy installation and maintenance.
- Glass refractor provides uniform light distribution to eliminate glare.
- Vertical lamp design provides even lamp heat distribution for cooler operation, providing expanded hazardous area suitability.
- Silicone gaskets make luminaire suitable for enclosure Type 4X, Marine and IP66 environments.
- Available in two different conduit entry configurations to permit flexible installation and mounting.
- four ¾" NPT hubs, one on each side
- two ½" NPT hubs on bottom for feed-through applications

APPLICATIONS

- indoor and outdoor wall mounting or vertical surface mounting where minimal fixture depth is required in:
 - manufacturing plants and heavy industrial facilities
 - industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical, and production platforms
 - waste or sewage treatment plants
 - offshore, dockside and harbor installations
- for security and safety lighting in industrial facilities
- for lighting of loading docks, tunnels and stairways
- for marine, wet location, hosedown and corrosive environments

ADDITIONAL FEATURES & BENEFITS

- Variety of lamp types and wattages—HID, fluorescent and induction—to meet specific lighting needs.
- High-power-factor ballasts (+90%) are standard, which allow more luminaires per circuit.
- Up to 65°C ambient suitability on select lamp types and wattages. Ambient suitability of +40°C is standard. Allows for installation in higher ambient environments commonly found in industrial facilities.
- Low ambient starting capability (to -40°C)—perfect for colder climates.
- Shock-absorbing HID mogul base lamp socket cushions lamp, improves lamp life in harsh environments.
- Compact fluorescent emergency luminaire provides 90 minutes of lighting during power outages, meeting UL924 and life safety code.
- Cost-effective induction lamp system provides extra-long lamp life—up to 100,000 hours. Reaches full illumination immediately, providing crisp white light.
- NEC/CEC Restricted Breathing construction is available to provide cooler temperature classes (T codes) for expanded hazardous area suitability.
- Simplified method for compliance to NEC Restricted Breathing conduit sealing requirements makes installation easier.

07L Floodlights



Cl. I, Div. 2, Groups A,B,C,D
 Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
 Certified for IEC Zone 2 (Suffix S826TB)
 Cl. II, Groups F & G
 Cl. III & Simultaneous Presence
 Marine & Wet Locations • Enclosure Type 4X, IP66

STANDARD MATERIALS

- fixture housing and door frame assembly—copper-free aluminum
- external hardware—stainless steel
- refractor lens—borosilicate glass
- gasket—silicone
- reflector—aluminum light sheet
- wire guard—stainless steel

STANDARD FINISHES

- aluminum—Corro-free™ epoxy powder coat
- stainless steel—natural

CERTIFICATIONS & COMPLIANCES

Luminaires For Use With ANSI Lamps (Mogul Base)

- UL/cUL Listed
- NEC and CEC Class I, Division 2 and Class I, Zone 2
- Restricted Breathing Class I, Division 2 and Zone 2 (suffix S826)
- Class II, Groups F and G
- Class III
- Simultaneous Presence
- Certified for IEC Zone 2 (suffix S826TB)
- Wet Locations; Marine Locations; Enclosure Type 4X; IP66

UL Standards

- 844—hazardous (divisions classified) locations
- 2279—hazardous (zones classified) locations
- 1598—luminaires
- 1598A—luminaires for marine vessels
- 924—emergency lighting (fluorescent emergency luminaire)

CSA Standards

- C22.2 No. 9 and 137
- CAN/CSA-E60079-15:02

IEC Standards

- 60079-15

RATINGS (ELECTRICAL/SIZE)

Sources/Wattages

- high-pressure sodium (HPS)—mogul base 50, 70, 100 & 150
- metal halide (MH)—mogul base 70, 100 & 150
- mercury vapor (MV)—mogul base 100
- compact fluorescent 26, 32, 42, 52, 64 & 84
- emergency fluorescent 26
- induction 55 & 85

Voltages

HID STANDARD-VOLTAGE BALLASTS

- Dual tap (120 & 277 V, 60 Hz—for 50 W HPS only)—prewired at 277 V
- Multitap (120, 208, 240 & 277 V, 60 Hz)—prewired at 277 V
- Tritap (120, 277 & 347 V, 60 Hz)—prewired at 347 V
- 120 V, 60 Hz
- 480 V, 60 Hz

FLUORESCENT STANDARD-VOLTAGE BALLASTS

- 120–277 V, 50–60 Hz
- 120 V, 50 Hz (for Canada only)
- 347 V, 60 Hz (for Canada only)

INDUCTION STANDARD-VOLTAGE BALLASTS

- 120 V, 50–60 Hz (also 120 V DC)
- 230 V, 50–60 Hz (also 240 V DC)

HID OPTIONAL VOLTAGE BALLASTS

- 220 V, 50 Hz
- 220 V, 60 Hz
- 240 V, 50 Hz

FLUORESCENT OPTIONAL VOLTAGE BALLASTS (Consult Factory)

- 125 V DC
- 12 V DC
- 24 V DC

ISOLATED BALLASTS AND SPECIALS (Consult Factory)

- 208 V, 60 Hz CWI Isolated Ballast
- 240 V, 60 Hz CWI Isolated Ballast
- 480 V, 60 Hz CWI Isolated Ballast

Conduit Entries

- four 3/4" NPT entries, one on each side, top and bottom (3 plugged)
- two 1/2" NPT entries on bottom for feed-through (1 plugged)
- metric entries—consult factory

Champ-Pak™ Wall Pack Luminaires

Cl. I, Div. 2, Groups A,B,C,D
Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
Certified for IEC Zone 2 (Suffix S826TB)
Cl. II, Groups F & G
Cl. III & Simultaneous Presence
Marine & Wet Locations • Enclosure Type 4X, IP66

7L



ORDERING INFORMATION

To complete Catalog Number, add Voltage and Option suffix(es).

HID Luminaires

HUB SIZE	LAMP WATTS	CATALOG NUMBER FOR USE WITH ANSI LAMPS
HIGH-PRESSURE SODIUM		
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	50	CPMVS2W050 CPMVS1W050
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	70	CPMVS2W070 CPMVS1W070
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	100	CPMVS2W100 CPMVS1W100
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	150 (for 55 V lamp)	CPMVS2W150 CPMVS1W150
METAL HALIDE		
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	70	CPMVM2W070 CPMVM1W070
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	100	CPMVM2W100 CPMVM1W100
METAL HALIDE—PULSE START		
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	150	CPMVM2W150-S828 CPMVM1W150-S828
MERCURY VAPOR		
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	100	CPMVC2W100 CPMVC1W100

VOLTAGE SUFFIXES

NEC (UL)

Voltage (60 Hz) Suffix	Dual Tap /DT	Multitap /MT	120 /120	480 /480
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CEC (CSA/cUL)

Voltage (60 Hz) Suffix	Dual Tap /DT	Tritap /TT	120 /120
---------------------------	-----------------	---------------	-------------

50 W HPS is available only with suffix /DT.

Induction Luminaires With Lamp (100,000 hours)

HUB SIZE	LAMP WATTS	CATALOG NUMBER
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	55	CPMVG2W055 CPMVG1W055
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	85	CPMVG2W085 CPMVG1W085

VOLTAGE SUFFIXES

Voltage	120 V (also 120 V DC) (50–60 Hz) /120	230 V (also 240 V DC) (50–60 Hz) /230
Suffix		

Fluorescent Luminaires

HUB SIZE	LAMP WATTS	CATALOG NUMBER
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	26 (one 26 W lamp)	CPMVF2W026 CPMVF1W026
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	32 (one 32 W lamp)	CPMVF2W032 CPMVF1W032
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	42 (one 42 W lamp)	CPMVF2W042 CPMVF1W042
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	52 (two 26 W lamps)	CPMVF2W052 CPMVF1W052
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	64 (two 32 W lamps)	CPMVF2W064 CPMVF1W064
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	84 (two 42 W lamps)	CPMVF2W084 CPMVF1W084

VOLTAGE SUFFIXES

	NEC/CEC (UL, CSA, cUL)	CEC (CSA, cUL)
Voltage	120–277 V (50–60 Hz) /UNV	347 V (60 Hz) /347
Suffix		

Fluorescent Emergency Luminaires —Continuous Operation

HUB SIZE	LAMP WATTS	CATALOG NUMBER
Four 3/4" NPT (one each side) Two 1/2" NPT (on bottom)	26 (one 26 W lamp)	CPMVF2W026 CPMVF1W026

VOLTAGE SUFFIXES

	NEC (UL)	CEC (CSA, cUL)	
Voltage	120–277 V (50–60 Hz)	120 V (60 Hz)	347 V (60 Hz)
Suffix	/UNV	/120 CAN	/347

Compelling reasons to choose the new Champ Induction luminaire as the light source for industrial and hazardous locations include:

- Crisp white light (80+ color rendering index) provides increased safety by clearly illuminating signs, instrument panels, equipment and more with vibrant natural colors.
- Up to 100,000 hours of lamp life minimizes routine maintenance costs. If you operate this luminaire for 24 hours, 7 days a week, you will not need to change the lamp for up to 11 years!
- Instant illumination — no waiting for lamp warm-up time. Increases productivity and safety.
- Delivers the best possible luminaire temperature rating — T6 (85°C) when used with the Champ restricted breathing option. Ideal for hazardous areas where a low ignition temperature is required.
- Starts in low temperatures — as low as -40°C.

7L
Floodlights



Cl. I, Div. 2, Groups A,B,C,D
 Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
 Certified for IEC Zone 2 (Suffix S826TB)
 Cl. II, Groups F & G
 Cl. III & Simultaneous Presence
 Marine & Wet Locations • Enclosure Type 4X, IP66

OPTIONS

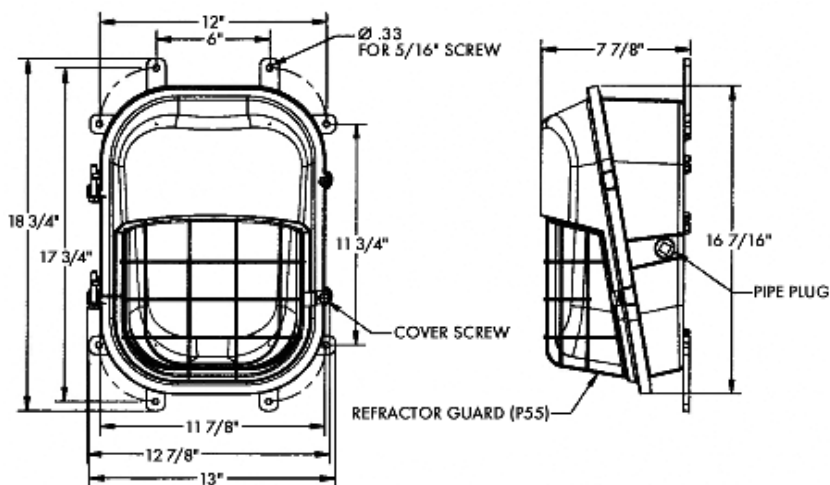
SUFFIX TO ADD TO CATALOG NUMBER	
BALLAST-GARD™ STARTER CUT-OUT SWITCH	BG
- prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life - available for use with HPS only - not available with IR or QTZ options	
FACTORY ASSEMBLED WITH LAMP INSTALLED	FA
INSTANT RESTRIKE	IR
- enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage; it has no effect on the warm-up period of cold lamps - available for use with HPS only - not available with BG or QTZ options	
GUARD—FACTORY INSTALLED ON LUMINAIRE	P
(Guard suffix follows wattage designation, e.g., CPMVS2W100P/MT)	
QUARTZ AUXILIARY	QTZ
- quartz auxiliary lighting comes to full brightness immediately and remains lit until the HID lamp attains 60–70% of full illumination - available for use with HID only - for nonhazardous locations only - quartz lamp not furnished—use 100 W single-ended lamp Q100DC, Q100DL/DC or 100Q/CL/DC	
FUSED	S658*
- protects ballast and capacitors against abnormal line conditions (not for use in Canada or marine locations) - not available with CPMVIG and CPMVFB luminaires	
RESTRICTED BREATHING CONSTRUCTION (AEx nR, Ex nR)	S826

Suitable for NEC/CEC Class I, Division 2 and Zone 2
 • provides cooler temperature classes (T codes)
 • furnished with P55 guard
 TEFLON is a registered trademark of E.I. duPont Co.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

DIMENSIONS (INCHES)

NOTE: Approximate weight less guard 28 lbs.
 P55 guard 0.5 lbs.



OPTIONS

SUFFIX TO ADD TO CATALOG NUMBER	
CERTIFIED FOR IEC ZONE 2 (Ex nR) (UL CLASSIFIED TO THE IEC STANDARD)	S826TB
Furnished with:	
4 mm², 3-point terminal block - crimp internal wiring connections - P55 guard	
V2PC PHOTOCELL—FACTORY INSTALLED	
120 V, 50–60 Hz 208–240 V, 50–60 Hz 277 V, 50–60 Hz	/V2PC20 /V2PC22 /V2PC27
OPTIONAL VOLTAGE BALLASTS FOR HID LUMINAIRE	
220 V, 50 Hz 220 V, 60 Hz 240 V, 50 Hz	/220 50 /220 60 /240 50
OPTIONAL VOLTAGE BALLASTS FOR FLUORESCENT LUMINAIRE (Consult Factory)	
125 V DC 12 V DC 24 V DC	/125 VDC /12 VDC /24 VDC
ISOLATED BALLAST FOR HID LUMINAIRE (Consult Factory)	
208 V, 60 Hz 240 V, 60 Hz 480 V, 60 Hz	/208CWI /240CWI /480CWI

ACCESSORIES (ORDER SEPARATELY)

CATALOG NUMBER	
PHOTOCELL FOR FIELD INSTALLATION	
120 V, 50–60 Hz 208–240 V, 50–60 Hz 277 V, 50–60 Hz	V2PC20 V2PC22 V2PC27

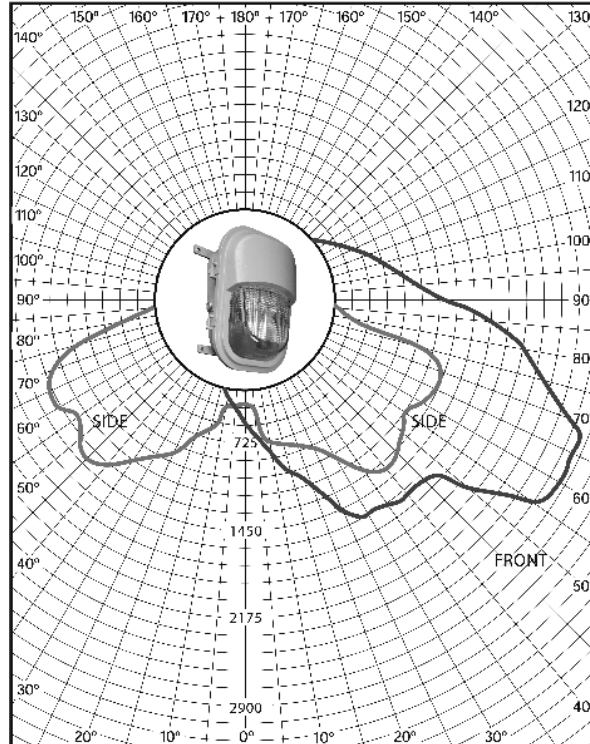
In Canada, use factory-installed photocell only.

STAINLESS STEEL WIRE GUARD	P55
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CPMV PHOTOMETRIC DATA

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD

CPMVS2W150 Lamp: 150 W/E23-1/2 Clear High Pressure Sodium (HPS)



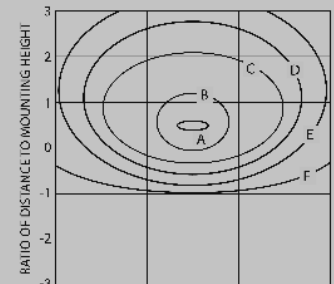
CANDELAS			
Vertical Angle	Front	Side	Back
0	413	413	413
5	470	418	367
15	877	654	265
25	1343	947	169
35	1629	1135	126
45	1614	1369	68
55	2434	1267	17
65	2505	1281	0
75	2084	916	4
85	1555	322	8
90	1148	265	11
95	956	228	8
105	723	156	9
115	527	86	9
125	355	56	8
135	224	40	4
145	150	20	1
155	64	11	1
165	19	9	3
175	0	8	1
180	3	3	3
ZONAL LUMENS			
Zone	Lumens		
0-10	42		
10-20	178		
20-30	371		
30-40	587		
40-50	760		
50-60	1095		
60-70	1277		
70-80	1028		
80-90	666		
90-100	462		
100-110	338		
110-120	236		
120-130	175		
130-140	91		
140-150	31		
150-160	10		
160-170	2		
170-180	0		
Total	7349		

Note: Photometric data was developed using a 150 watt E23-1/2 clear high pressure sodium lamp (16,000 lumens). For other clear lamp wattages, use the following conversion factors (multiplier) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
50 W (HPS)	0.25
70 W (HPS)	0.40
100 W (HPS)	0.59

(For additional photometric data, contact Cooper Crouse-Hinds)

ISOFOOTCANDLE CHART:

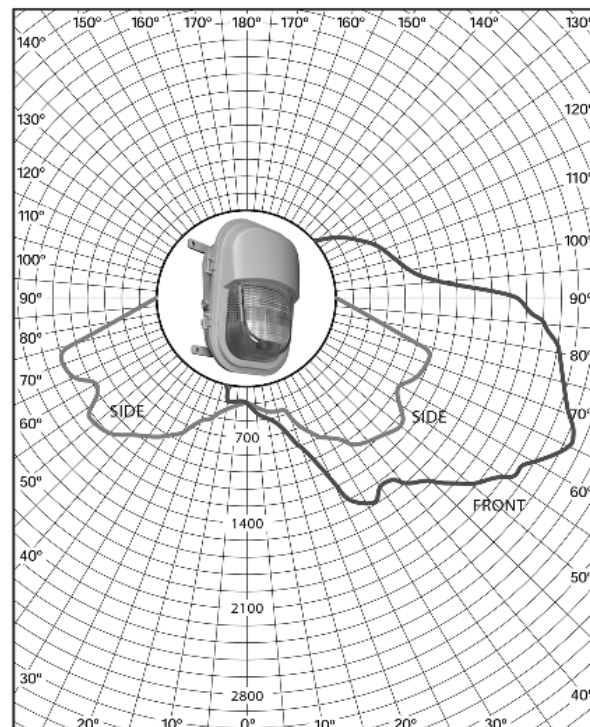


Footcandle Values for Isofootcandle Lines						
Mtg. Hgt.	A	B	C	D	E	F
8'	15.63	7.81	3.13	1.56	0.78	0.31
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD

CPMVM2W150-S828 Lamp: 150 W/ED28 Clear Pulse Start Metal Halide



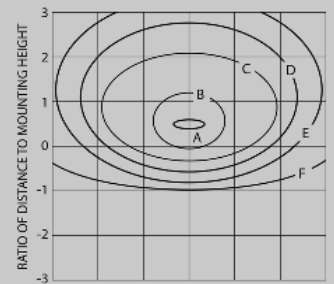
CANDELAS			
Vertical Angle	Front	Side	Back
0	404	404	404
5	442	424	413
15	692	549	238
25	1345	748	136
35	1475	946	99
45	1683	1121	56
55	2105	1095	15
65	2421	1107	3
75	2230	924	0
85	1946	349	0
90	1612	280	0
95	1154	231	0
105	738	164	0
115	535	97	0
125	360	55	0
135	237	39	0
145	139	22	0
155	56	12	0
165	17	8	0
175	0	8	0
180	3	3	0
ZONAL LUMENS			
Zone	Lumens		
0-10	42		
10-20	150		
20-30	320		
30-40	537		
40-50	709		
50-60	921		
60-70	1218		
70-80	1153		
80-90	829		
90-100	492		
100-110	347		
110-120	242		
120-130	167		
130-140	113		
140-150	35		
150-160	10		
160-170	2		
170-180	0		
Total	7287		

Note: Photometric data was developed using a 150 watt ED28 clear metal halide pulse start lamp (14,000 lumens). For other clear lamp wattages, use the following conversion factors (multiplier) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
70 W (MH)	.40
100 W (MH)	.56
100 W (MV)	.30

(For additional photometric data, contact Cooper Crouse-Hinds)

ISOFOOTCANDLE CHART:



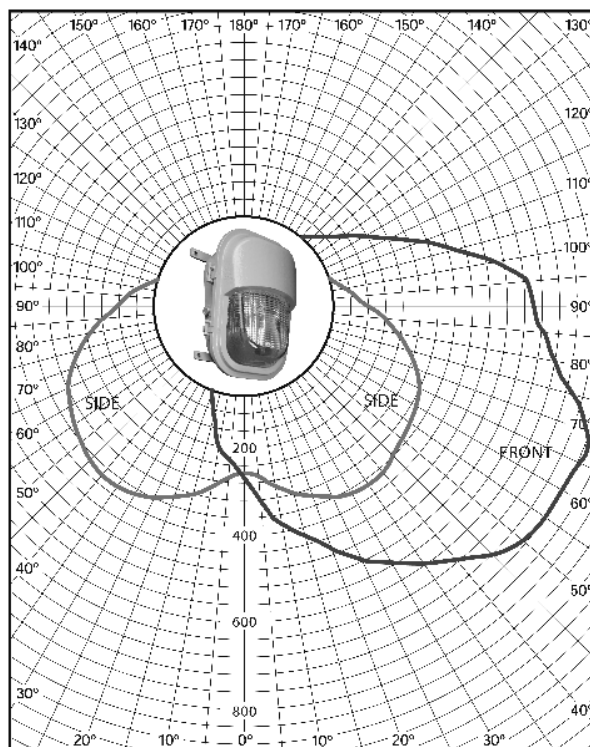
Footcandle Values for Isofootcandle Lines						
Mtg. Hgt.	A	B	C	D	E	F
8'	15.63	7.81	3.13	1.56	0.78	0.31
10'	10.00	5.00	2.00	1.00	0.50	0.20
12'	6.94	3.47	1.39	0.69	0.35	0.14
16'	3.91	1.95	0.78	0.39	0.20	0.08
20'	2.50	1.25	0.50	0.25	0.13	0.05
25'	1.60	0.80	0.32	0.16	0.08	0.03

Isofootcandle chart shows illuminance in footcandles at ground level.

For additional photometric data, contact Cooper Crouse-Hinds.

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD

CPMVF2W084 Lamps: (2) PL-T 42W/30/4P Compact Fluorescent



CANDELAS			
Vertical Angle	Front	Side	Back
0	258	258	258
5	319	269	227
15	421	316	139
25	516	361	58
35	590	376	33
45	671	362	10
55	720	347	0
65	725	317	0
75	657	264	0
85	566	195	0
90	541	160	0
95	526	132	0
105	409	86	0
115	277	49	0
125	145	31	0
135	97	21	0
145	52	11	0
155	34	3	0
165	8	1	0
175	0	0	0
180	0	0	0

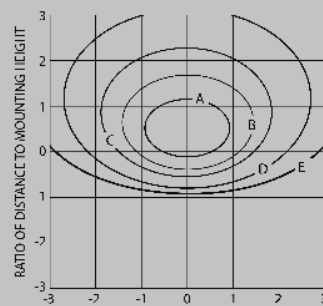
ZONAL LUMENS	
Zone	Lumens
0-10	26
10-20	87
20-30	155
30-40	223
40-50	286
50-60	334
60-70	357
70-80	349
80-90	309
90-100	262
100-110	188
110-120	113
120-130	64
130-140	36
140-150	16
150-160	5
160-170	0
170-180	0
Total	2810

Note: Photometric data was developed using two clear compact fluorescent lamps (3,200 lumens each). For other clear lamp wattages, use the following conversion factors (multiplier) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
32 W (FLUORESCENT)	.56
64 W (FLUORESCENT)	.75

For additional photometric data, contact Cooper Crouse-Hinds.

ISOFOOTCANDLE CHART:



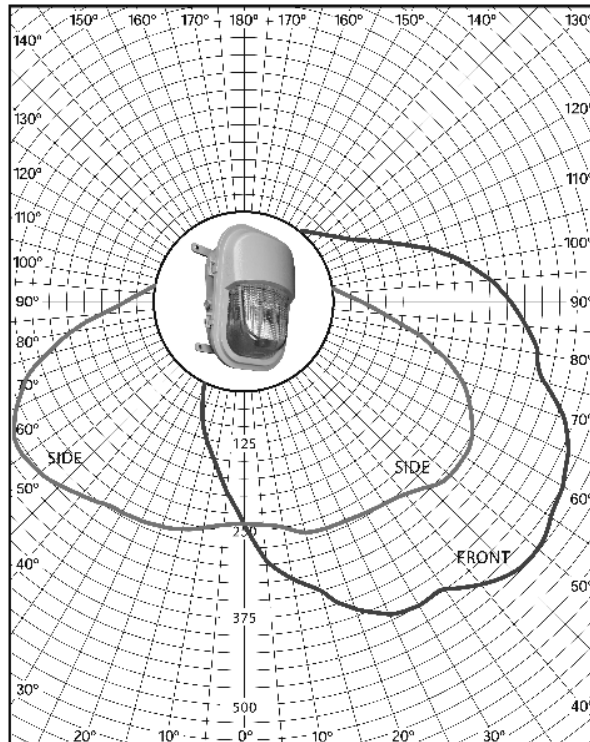
Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
8'	3.13	1.56	0.78	0.31	0.16
10'	2.00	1.00	0.50	0.20	0.10
12'	1.39	0.69	0.35	0.14	0.07
16'	0.78	0.39	0.20	0.08	0.04
20'	0.50	0.25	0.13	0.05	0.03
25'	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows luminance in footcandles at ground level.

LUMINAIRE WITH REFRACTOR LESS WIRE GUARD

CPMVG2W055 Lamp: 55 W Philips Induction Lamp System



CANDELAS			
Vertical Angle	Front	Side	Back
0	241	241	241
5	290	243	199
15	352	259	110
25	414	268	45
35	427	274	28
45	475	295	12
55	462	306	3
65	439	285	0
75	364	214	0
85	330	124	1
90	309	86	2
95	276	63	2
105	206	38	2
115	121	28	1
125	80	20	2
135	55	18	1
145	32	8	1
155	21	5	2
165	5	2	0
175	0	2	0
180	1	1	1

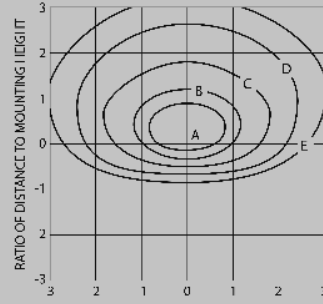
ZONAL LUMENS	
Zone	Lumens
0-10	23
10-20	70
20-30	114
30-40	154
40-50	194
50-60	224
60-70	228
70-80	205
80-90	169
90-100	130
100-110	86
110-120	52
120-130	34
130-140	21
140-150	9
150-160	3
160-170	1
170-180	0
Total	1717

Note: Photometric data was developed using a 55 W Philips QL Series induction lamp system (3,500 lumens). For other lamp wattages, use the following conversion factors (multiplier) with both candlepower distribution and isofootcandle charts. For luminaires with guard use an additional conversion factor (multiplier) of .96.

LAMP WATTS	CONVERSION FACTOR
85 W	1.72

For additional photometric data, contact Cooper Crouse-Hinds.

ISOFOOTCANDLE CHART:



Footcandle Values for Isofootcandle Lines

Mtg. Hgt.	A	B	C	D	E
8'	3.13	1.56	0.78	0.31	0.16
10'	2.00	1.00	0.50	0.20	0.10
12'	1.39	0.69	0.35	0.14	0.07
16'	0.78	0.39	0.20	0.08	0.04
20'	0.50	0.25	0.13	0.05	0.03
25'	0.32	0.16	0.08	0.03	0.02

Isofootcandle chart shows luminance in footcandles at ground level.

For additional photometric data, contact Cooper Crouse-Hinds.

TEMPERATURE PERFORMANCE DATA

WATTS	AMBIENT Temp °C	CLASS I DIVISION 2 and ZONE 2		CLASS II and CLASS III	SIMULTANEOUS PRESENCE CLASS I/CLASS II (Gas and Dust Present in the Same Area)		SUPPLY WIRE TEMP °C
		STANDARD PRODUCT	RESTRICTED BREATHING AEx nR/Ex nR OPTION S826		STANDARD PRODUCT Suitable for Class I. Division 2/Class II	RESTRICTED BREATHING AEx nR/Ex nR OPTION S826 Suitable for Class I, Division 2 or Zone 2 and Class II	
HIGH-PRESSURE SODIUM							
50	40	T3A	T6	T5	T3A/T5	T5	90
	55	T3A	T6	T4A*	T3/T4A*	T4*	105
	65*	T3	T5	—	—	—	105
70	40	T3A	T6	T5	T3A/T5	T5	90
	55	T3A	T6	—	—	—	105
	65*	T3	T5	—	—	—	105
100	40	T2C	T5	Consult Factory for Class II Suitability with 105°C Supply Wire			90
	55*	T2C	T4				105
150	40*	T2B	T4	—	—	—	105
METAL HALIDE							
70	40	T3C	T6	T5	T3C/T5	T5	90
	55	T3C	T6	—	—	—	105
	65*	T3C	T5	—	—	—	105
100	40	T3	T6	—	—	—	90
150PS (S828)	40	T2D	T5	—	—	—	105
MERCURY VAPOR							
100	40	T2C	T5	—	—	—	90
	55*	T2B	T4	—	—	—	105
COMPACT FLUORESCENT							
26 (347 V)	40	T3B	T6	T6	T3B/T6	T6	75
	55	T3A	T6	—	—	—	75
	40	T3	T6	—	—	—	75
32 (347 V)	40	T3B	T6	T6	T3B/T6	T6	75
	55	T3A	T6	—	—	—	75
	40	T3	T6	—	—	—	75
42 (120–277 V) 42 (347 V)	40	T3B	T6	T6	T3B/T6	T6	75
	55	T3A	T6	—	—	—	75
	40	T3	T6	—	—	—	75
52	40	T3	T6	T6	T3/T6	T6	75
	55	T3	T6	—	—	—	90
64	40	T3	T6	T6	T3/T6	T6	75
	55	T3	T6	—	—	—	90
84	40	T2C	T6	—	—	—	90
EMERGENCY FLUORESCENT							
26	40*	T3B	T6	—	—	—	75
INDUCTION							
55	40*	T2D	T6	T6	—	T6	75
	55*	T2D	T6	—	—	—	75
85	40*	T2B	T6	—	—	—	75

*Fuses (suffix S658) are not available for indicated light sources and ambient temperatures.

NOTE: Luminaires requiring 105°C supply wire are furnished with 3 ft. of rated wire for external wiring connection



At last, a hazardous-area luminaire with complete stainless steel exterior, low temperature ratings and standard with the restricted breathing rating (vapor-tight design).

Cooper Crouse-Hinds® Champ Voyager nR stainless steel floodlight offers the industry's coolest temperature ratings—so it can operate below the ignition temperature of vapors and gases in your classified area.

It's also the only mogul-base Class I, Division 2 and Zone 2 stainless steel floodlight with restricted breathing (vapor-tight design) as standard construction.

The Champ Voyager nR Floodlight boasts a wide, powerful beam to deliver more light to your process or pathway. Standard terminal blocks and a removable ballast-component tray bring you the best combination of easy wiring and simple maintenance in one rugged package.

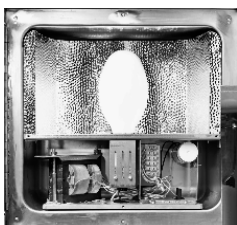
This unique combination of features makes the Champ Voyager nR Floodlight ideal for outdoor, marine, corrosive, and high temperature locations such as:

- offshore platforms and drilling rigs, ship channels and refineries
- chemical, petrochemical and pharmaceutical plants, waste water and sewage treatment plants, pulp and paper mills
- storage tanks and racks, vehicle and pedestrian passageways, outdoor process areas and parking areas

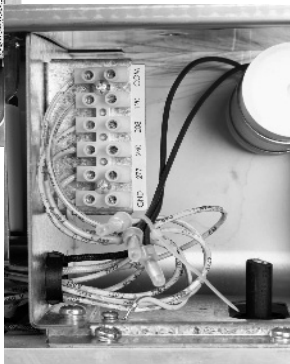
And because the Champ Voyager nR Floodlight meets international standards, you can install it anywhere in the world.

KEY FEATURES AND BENEFITS

- **AEx nR, Ex nR restricted breathing rating is standard**—a hazardous location luminaire with excellent T-3 and T-4 ratings without additional accessories or options.
- **NEMA 7x6 “butterfly beam” floodlight pattern**—wide, uniform and far reaching to reduce the number of luminaires you need providing excellent luminaire efficiency—more light where you need it.
- **easy wiring**—standard terminal block with marked terminals saves time and eliminates wiring errors.
- **removable ballast-component tray**—for capacitor, igniter and terminal block to simplify maintenance and save money.
- **316 stainless steel housing, hinges, door cover and mounting yoke for marine and wet locations**—robust construction suitable for saltwater and corrosive applications.



Removable ballast component tray



Easy wiring with standard terminal blocks

Champ® Voyager nR™ Stainless Steel Floodlight

Cl. I, Div. 2, Groups A,B,C & D
Cl. I, Zone 2, Group IIC
Enclosure Type 4X
IP66
UL and cUL Listed

Wet Locations
Marine Locations

7L



CERTIFICATIONS AND COMPLIANCES

NEC/CEC

- Class I, Division 2
- Class I, Zone 2
- Wet Locations
- Marine Locations
- Enclosure Type 4X, IP66
- UL Listed
- cUL Listed (Certified by UL to CSA Standards)

IEC/NEC/CEC

- Class I, Zone 2, Group IIC
- Class I, Division 2, Group A,B,C,D

UL STANDARDS

- 844 — Hazardous (Divisions Classified) Locations
- 1598 — Luminaires
- 1598A — Supplemental requirements for luminaires for installation on marine vessels.

CSA STANDARDS

- C22.2 No. 137
- CAN/CSAD9 Series

IEC STANDARDS

- 60079-15

STANDARD MATERIALS

- Enclosure (housing & lens frame)—316 Stainless Steel
- Lens—heat and impact resistant tempered glass
- Gaskets—silicone rubber
- Yoke and yoke bracket—316 Stainless Steel
- Reflector—formed specular (dimpled glossy surface) aluminum
- Cable gland cord grip and locknut—polyamide 6, neoprene bushing

STANDARD FINISHES

- 316 Stainless Steel—natural

RATINGS

SOURCES/WATTAGES (MOGUL BASE LAMPS)

- High Pressure Sodium (HPS) 150, 250 & 400 watts
- Metal Halide (MH) 175, 250 & 400 watts

VOLTAGES

Standard Voltage Ballasts

- Multi-tap (120, 208, 240 & 277 V, 60 Hz)
- 480 V, 60 Hz
- Tri-tap (120, 277, 347 V, 60 Hz)

Optional Voltage Ballasts

- 220 V or 240 V, 50 Hz (for export)
- 220 V, 60 Hz (for export)

Isolated Ballasts (consult Cooper Crouse-Hinds)

- 208, 240, or 480 V (for Canada)

HUB SIZE

- Standard: 3/4" NPT with a 3/4" sealing cord grip installed

ORDERING INFORMATION

To complete catalog number, add voltage and option suffix(es)
Example: SSFMVSY150/MT-76 BG-FA

LAMP TYPE	WATTS	CATALOG NUMBER
High-Pressure Sodium	150	SSFMVSY150
	250	SSFMVSY250
	400	SSFMVSY400
Metal Halide	175	SSFMVMY175
	250	SSFMVMY250
	400	SSFMVMY400

VOLTAGE SUFFIXES

VOLTAGE (60 Hz)	SUFFIX	OPTIONAL VOLTAGES	SUFFIX
Tri-tap (120, 277, 347, 60 Hz)	/TT	220 50 Hz	/220 50
Multi-tap (120, 208, 240, 277V, 60 Hz)	/MT	220 60 Hz	/220
480 V, 60 Hz	/480	240 50 Hz	/240 50

OPTIONS

SUFFIX TO ADD TO CAT. NO.

Ballast-Gard™ starter cut-out switch prevents starter pulsing when lamp is cycling or inoperative. Prolongs ballast and igniter life 150 W HPS only. Not available with options IR or QTZ

BG

Factory assembled w/HID lamp installed

FA

Instant restrike—150W HPs only. Not available with options BG or QTZ

IR

Quartz auxiliary (lamp not supplied). For non-hazardous applications only.

Not available with options BG or IR

QTZ

Fused (not for marine or cUL)

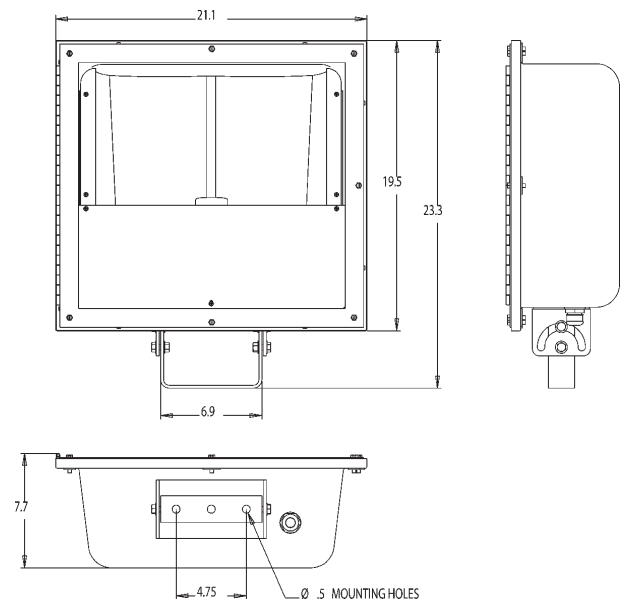
S658

ACCESSORIES (order separately)

CATALOG NO.

Stainless Steel Slipfitter Adapter	SFA6 SS
Stainless Steel Wall Mount Bracket	SWB6 SS
Standard Slipfitter adapter (cast aluminum, epoxy coat)	SFA6
Standard Wall Mount bracket (cast aluminum, epoxy coat)	SWB6

DIMENSIONS (inches)



LUMINAIRE WEIGHTS (lbs.)

LUMINAIRE	HPS	MH
150W	39	—
175W	—	39
250W	43	41
400W	45	43

7L Floodlights

PHOTOMETRICS

HPS Wide Beam Reflector

ISO FOOTCANDLE CHART

Stainless Steel Floodlight 400 W High Pressure Sodium (HPS)

Catalog Number: SSMVSY400/MT

Lamp: 400 W Clear HPS

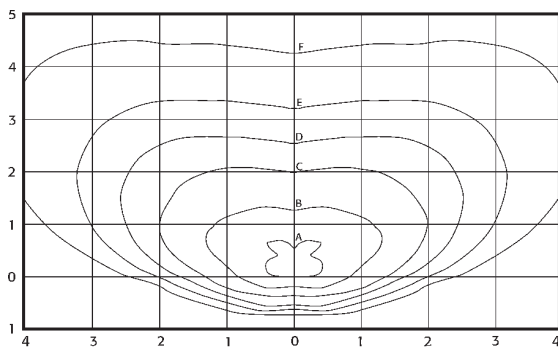
Lumen Rating: 50,000

Luminaire located at 0,0° Aiming Angle at 45° down from horizontal

For 150 W HPS, multiply footcandles by 0.32.

For 250 W HPS, multiply footcandles by 0.57.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10'	40.000	20.000	8.000	4.000	2.000	0.800
15'	17.778	8.889	3.555	1.778	0.889	0.356
20'	10.000	5.000	2.000	1.000	0.500	0.200
25'	6.400	3.200	1.280	0.640	0.320	0.128
30'	4.444	2.222	0.889	0.444	0.222	0.089
35'	3.265	1.633	0.653	0.327	0.163	0.065
40'	2.500	1.250	0.500	0.250	0.125	0.050



LUMINAIRE IS LOCATED AT 0,0 AND AIMED 45 DEGREES DOWN FROM HORIZONTAL

MH Wide Beam Reflector

ISO FOOTCANDLE CHART

Stainless Steel Floodlight 400 W Metal Halide (MH)

Catalog Number: SSFMY400/MT

Lamp: 400 W Clear MH

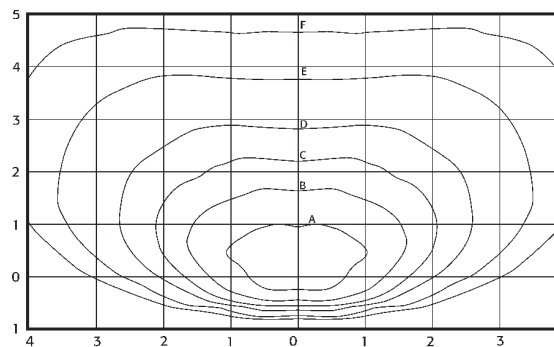
Lumen Rating: 34,000

Luminaire located at 0,0° Aiming Angle at 45° down from horizontal

For 175 W MH, multiply footcandles by 0.42

For 250 W HPS, multiply footcandles by 0.65

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10'	20.000	8.000	4.000	2.000	0.800	0.400
15'	8.889	3.555	1.778	0.889	0.356	0.178
20'	5.000	2.000	1.000	0.500	0.200	0.100
25'	3.200	1.280	0.640	0.320	0.128	0.064
30'	2.222	0.889	0.444	0.222	0.089	0.044
35'	1.633	0.653	0.327	0.163	0.065	0.033
40'	1.250	0.500	0.250	0.125	0.050	0.025



LUMINAIRE IS LOCATED AT 0,0 AND AIMED 45 DEGREES DOWN FROM HORIZONTAL

TEMPERATURE PERFORMANCE DATA

AMBIENT TEMP.	DIV. 2		ZONE 2		SUPPLY	
	40°C	55°C	40°C	55°C	WIRE 0°C (40°C)	WIRE 0°C (55°C)
150 W HPS	T1(350°C)	T1(350°C)	T4	T3	90°C	105°C
250 W HPS	T1(350°C)	T1(350°C)	T4	T3	90°C	105°C
400 W HPS	T1(400°C)	—	T3	—	90°C	—
175 W MH	T1(325°C)	T1(325°C)	T3	T3	90°C	105°C
250 W HPS	T1(325°C)	T1(325°C)	T3	T3	90°C	105°C
400 W MH	T1(325°C)	—	T3	—	105°C	—

EFFECTIVE PROJECTED AREA (EPA)

 • For windloading
 AIMING ANGLE

 • For proper pole selection
 EPA

0 degrees	2.15 ft²
30 degrees	1.86 ft²
60 degrees	1.07 ft²

50-175W F2MV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

7L

Application:

Champ F2MV floodlights are used:

- on platforms and in refineries, chemical and petrochemical plants, pharmaceutical plants, waste water and sewage treatment plants, pulp and paper mills, and other outdoor as well as indoor industrial locations.
- to light outdoor industrial applications such as storage tanks and racks, vehicle and pedestrian passageways, outdoor process areas, and parking areas in industrial facilities.
- for security & safety lighting in industrial and process facilities.
- in high ambient temperatures.
- in marine and wet locations
- in outdoor locations where the damaging effects of rain, snow, wind, dirt & other contaminants are present
- in Class I, Division 2 hazardous (classified) locations as defined by the NEC & CEC
- in Class I, Zone 2 hazardous (classified) areas as defined by the NEC & CEC
- in Zone 2 hazardous (classified) areas as defined by the IEC

Ratings (Electrical/Size):

Sources/Wattage (Mogul Base Lamps)

- High Pressure Sodium (HPS) 50, 70, 100 & 150
- Metal Halide (MH) 70, 100, & 175
- Mercury Vapor (MV) 100 & 175

Voltages

Standard Voltage Ballasts

- Multi-tap (120, 208, 240 & 277 volts 60 Hz)
- Dual tap (120, 277 volts 60 Hz) — 50W HPS only
- 480 volts 60 Hz
- Tri-tap (120, 277, 347 volts 60 Hz).

Optional Voltage Ballasts (consult Cooper Crouse-Hinds)

- 220 volt or 240 volt 50 Hz (for export)
- 220 volt 60 Hz (for export)
- Isolated Ballasts 208, 240 or 480 volt (For Canada)

Hub Sizes

- Standard — (2) ¾" NPT
- Optional — (2) 25mm (M25x1.5)



Certifications and Compliances:

- NEC/CEC: Class I Division 2, Groups A, B, C, D Class I Zone 2
- IEC: Zone 2 Ex nR IIC
- UL Standards: 844, 2279 Hazardous (Classified) Locations 1598 Luminaires 1598A Marine Locations
- CSA Standards: C22.2 No. 137:
- IEC Standards: 60079-15

Options:

- | Description | Suffix to be Added to Cat. No. |
|---|--------------------------------|
| • Ballast-Gard
-50-150W HPS only
-Cannot use with options IR or QTZ | BG |
| • Factory assembled w/HID lamp installed | FA |
| • Instant Restrike
-50-150W HPS only
-Cannot use with options BG or QTZ | IR |
| • Quartz auxiliary (lamp not supplied)
-For nonhazardous applications only.
-Cannot use with options BG or IR | QTZ |
| • Fused | S658* |
| • Restricted Breathing, (AEx nR, Ex nR) | S826 |
| -For NEC/CEC Class I Zone 2 | |
| • Restricted Breathing (Ex nR)
for IEC Zone 2. Includes:
-3pt. 4mm squared terminal block
-Crimp internal wiring connections
-For use with dedicated voltages only
-(not DT, MT, TT) | S826TB |
| • V2PC Photocell Available
Factory Installed Only | Consult Crouse-Hinds |

Accessories: (Order Separately)

- SFA-6 Slipfitter adapter
- SWB-6 Wall Mount bracket

Description Suffix to be added to Cat. No.

- Restricted Breathing Construction Class I Division 2 & Zone 2 Suitability Cooler Operating Temperatures (T-Numbers) **S826**
- Certified for IEC Zone 2 (Suffix S826TB) **S826TB**
Furnished with

- Terminal Block
- Crimp Terminals
- Dedicated voltage ballasts (no MT, DT or TT).

Key Features

- Copper free aluminum enclosure with stainless steel hardware
- Continuous silicone gasketing
- Small compact size
- Available in a variety of lamp sources and wattages
- NEMA 7x6 standard floodlight pattern with lamp orientation base down
- 40° and 55°C ambient suitability standard with some wattages (less fuses) to 65°C
- Stainless steel chain secures cover to housing
- Low ambient capability to -40°C
- Shock absorbing mogul base lamp socket
- Variety of system voltages available
- Trunnion (yoke) mount design

- For use with other accessories
 - SFA-6 Slip Fitter Adapter
 - SWMB-6 Wall Mount Bracket
- Restricted Breathing sealing compliance

- Severe vibration testing compliance
 - UL 844
 - 3-Axis Resonance Withstand

Benefits

- Robust design, Industrial grade construction
- Insures wet & marine locations integrity
- Easy to install & maintain
- Provides specifiers with the right product for the task at hand.
- Most common for industrial applications
- Addresses high ambients common at industrial facilities
- Ease of maintenance
- Perfect for colder climates
- Cushions lamp, improves lamp life in harsh environments
- Meets global supply voltage requirements
- Standard construction provides the greatest mounting flexibility — can be mounted vertically (wall), horizontally (floor) or any angle in between
- Further enhances mounting flexibility

Complies with the NEC sealing requirements for Class I Zone 2 and Class I Division 2 locations using the standard wiring method of a Cooper Crouse-Hinds CGB 294SA connector with 16/3 SO extra hard usage cord

Exceeds vibration tests as required by UL

Standard Materials:

- Enclosure (housing & lens cover) — copper-free aluminum
- Cover chain and external hardware — stainless steel
- Lens — heat & impact resistant glass
- Gaskets — silicone rubber
- Yoke — galvanized steel
- Reflector — diffuse aluminum lighting sheet

Standard Finishes:

- Enclosure & Yoke — Corro-free epoxy powder coat
- Stainless steel — natural

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

7L

50-175W F2MV Series

Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Ordering Information

*To complete Catalog Number, add Voltage and Option suffix(s)
Example: F2MVSY150/MT-BG-FA-S658-S826

Lamp Type	Lamp Watts	Base Catalog Number*	
		with 3/4" NPT Hub	with 25MM Hub
High Pressure Sodium	50	F2MVSY050	F2MVS25Y050
	70	F2MVSY070	F2MVS25Y070
	100	F2MVSY100	F2MVS25Y100
	150	F2MVSY150	F2MVS25Y150
Metal Halide	70	F2MVMY070	F2MVM25Y070
	100	F2MVMY100	F2MVM25Y100
	175	F2MVMY175	F2MVM25Y175
Pulse Start Metal Halide	150	F2MVMY150-S828	
	175	F2MVMY175-S828	
Mercury Vapor	100	F2MVCY100	F2MVC25Y100
	175	F2MVCY175	F2MVC25Y175

Voltage Suffixes

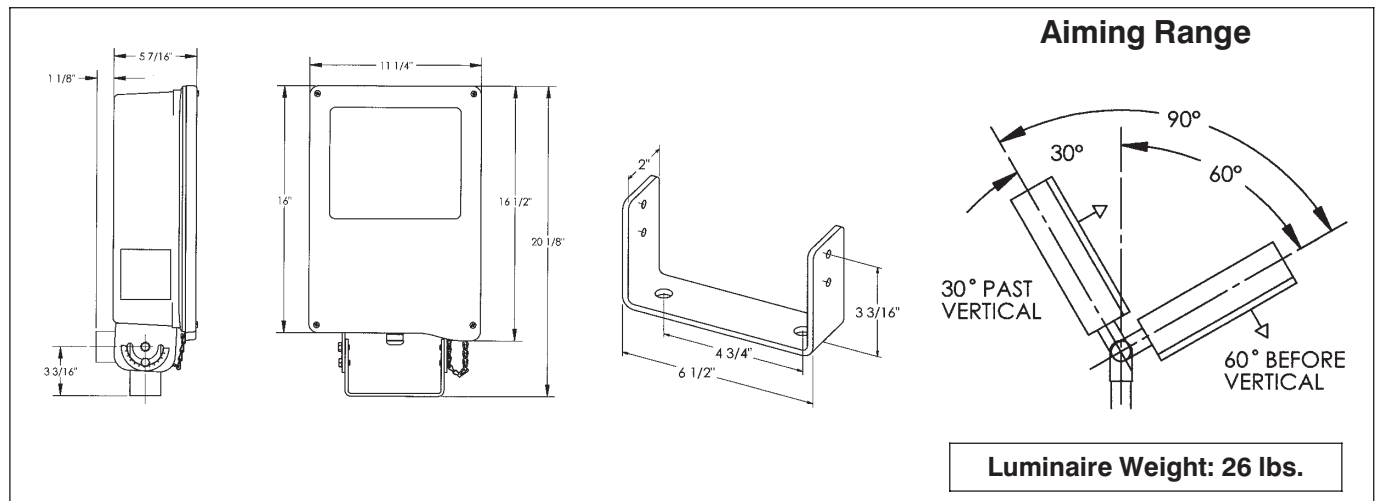
Voltage (60Hz)	Dual-Tap (50W HPS)	Tri-Tap	Multi-Tap	480
Suffix	/DT	/TT	/MT	/480

Temperature Performance Data

		Class 1		
	Ambient	Non Restricted Breathing	Restricted Breathing (S826TB)	Supply
Lamp Watts	Temp °C	Division 2	Zone 2	Wire °C
High Pressure Sodium				
50 Watt	40	T3C	T6	75
	55	T3C	T5	75
	65	T3B	T5	75
70 Watt	40	T3A	T6	60
	55	T3A	T5	75
	65	T3	T4	85
100 Watt	40	T2D	T4	75
	55	T2C	T4	90
	65	n/a	n/a	n/a
150 Watt	40	T2A	T4	75
	55	T2A	T4	85
	65**	T2A	T3	110
Metal Halide				
70 Watt	40	T3C	T6	75
	55	T3A	T5	75
	65	T3A	T4	85
100 Watt	40	T2D	T4	75
	55	T2D	T4	75
	65	T2C	T4	85
175 Watt	40	T2A	T3	75
	55	T2A	T3	85
	65**	T2	T3	110
Mercury Vapor				
100 Watt	40	T2B	T4	75
	55	T2B	T4	85
	65	T2A	T4	90
175 Watt	40	T2B	T3	75
	55	T2A	T3	85
	65**	T2A	T3	110

*Restricted breathing explosion protection
**Suitable for use in 65°C ambient without optional fuses

Dimensions and Weights:



Isofootcandle Chart

F2MV 150W High Pressure Sodium

Catalog Number F2MVSY150

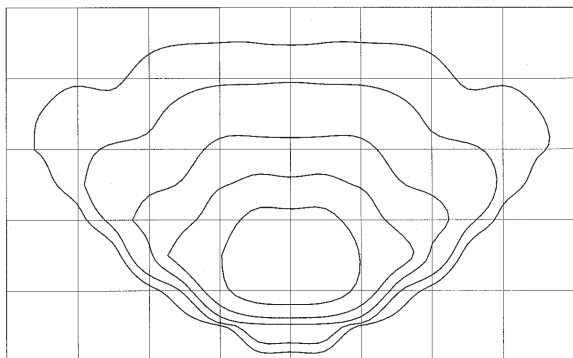
Lamp: 150 watt clear high pressure sodium

Lumen rating: 16,000

For 100W high pressure sodium, multiply footcandles by .55

For 70W high pressure sodium, multiply footcandles by .40

For 50W high pressure sodium, multiply footcandles by .24



Isofootcandle Chart

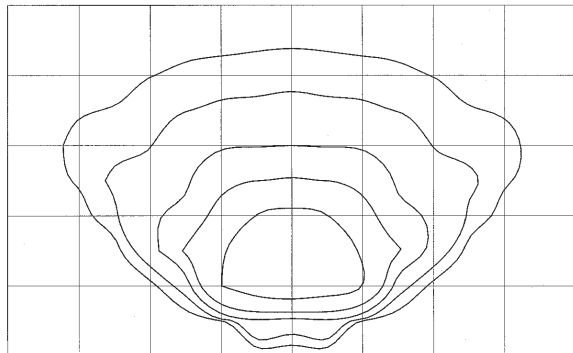
F2MV 175W Mercury Vapor

Catalog Number F2MVCY175

Lamp: 175 watt clear mercury vapor

Lumen rating: 8,600

For 100W mercury vapor, multiply footcandles by .49



Luminaire located at $0^\circ, 0^\circ$

Aiming angle 45°

Note: Luminaire aiming angle limited to 30° past vertical through 60° before vertical.

Isofootcandle Chart

F2MV 175W Metal Halide

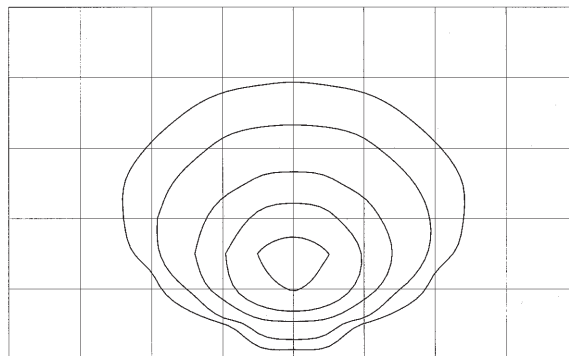
Catalog Number F2MVMY175

Lamp: 175 watt clear metal halide

Lumen rating: 14,000

For 100W metal halide, multiply footcandles by .58

For 70W metal halide, multiply footcandles by .37



Footcandle Table

Mounting Height	Footcandle Values for Isofootcandle Lines				
	A	B	C	D	E
10'	8.00	4.00	2.00	0.80	0.40
15'	3.56	1.78	0.89	0.36	0.18
20'	2.00	1.00	0.50	0.20	0.10
25'	1.28	0.64	0.32	0.13	0.06
30'	0.89	0.44	0.22	0.09	0.04

Effective Projected Area (EPA)

- For windloading
- For proper pole selection

Aiming Angle	EPA
0°	1.6 ft ²
30°	1.6 ft ²
60°	1.1 ft ²

Series Champ® H.I.D. Luminaires

- Cl. I, Div 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP56 to IP66

Application:

Champ FMV Floodlights are used:

- in refineries, chemical and petrochemical plants, waste and sewage treatment plants, pulp and paper mills, and other outdoor industrial locations.
- to light outdoor industrial applications such as storage tanks and racks, vehicle and pedestrian passageways, outdoor process areas, and parking areas in industrial facilities.
- for security and safety lighting in industrial and process facilities.
- in Class I, Division 2 hazardous (classified) locations, as defined by the National Electrical Code.
- in high ambient temperatures
- in wet locations/marine locations
- in outdoor locations where the damaging effects of rain, snow, wind, dirt, and other contaminants are present.

Features:

- Available in a wide variety of light sources and wattages: 70-400 watt high pressure sodium, 175-400 watt metal halide, and 175-400 watt mercury vapor.
- Multi-tap ballasts are standard, offering a choice of 120, 208, 240, and 277 volts. 220V 50 Hz, 240V 50 Hz, Tri-Tap (120, 277 and 347) and 480 volt ballasts are also available.
- All luminaires are high power factor for energy efficient operation and optimal circuit conductor sizing.
- Three mounting styles – yoke (trunnion), slipfitter adapter & wall mount bracket – are available to satisfy all mounting requirements.
- Door frame assembly is hinged and has captive cover screws for ease of relamping.
- Silicone rubber gaskets are standard, ensuring long life and reliable environmental sealing even under adverse conditions.
- All die-cast aluminum components are provided with powder epoxy finish for superior corrosion resistance.
- All external hardware is stainless steel for corrosion resistance and reliability.
- Yoke is aluminum for excellent combination of strength, corrosion resistance and durability.
- All FMV Champ floodlights can be easily adjusted to aim light where it is needed.
- NEMA 7x6 beam spread is ideal for most industrial floodlighting requirements.
- Includes ballast core handle for convenient ballast replacement.
- Wing-type ballast insulators protect personnel during maintenance and relamping and provide quick and easy accessibility to internal components.

Standard Materials:

- Luminaire housing and door frame assembly – die-cast aluminum.
- External hardware – stainless steel.
- Lens – heat and impact-resistant glass.
- Yoke – aluminum.

Standard Finishes:

- Die-cast aluminum – epoxy powder coat
- Stainless steel – natural.

Electrical Rating Ranges:

- 70-150 (HPS), 175, 250, 400 watt
- Multi-tap* (120, 208, 240, 277 volts), 480 volts and 220V, 240V 50 Hz.
- Tri-tap (120, 277, 347 volts)

Certifications and Compliances:

- NEC/CEC:
Class I, Division 2, Groups A,B,C,D
Class I Zone 2
- IEC:
Zone 2 Ex nR IIC
- UL Standards:
844, 2279 Hazardous (classified) locations
1598 Luminaires
1598A Marine locations
- CSA Standards:
C22.2 No. 137
- IEC Standards:
60079-15

Ordering Information:

(For Voltages, See Note 1)

	Lamp Watts	Yoke Mount
High Pressure Sodium	150 (See Note 2)	FMVSY150/MT-76
	250	FMVSY250/MT-76
	400	FMVSY400/MT-76
Metal Halide	175	FMVMY175/MT-76
	250	FMVMY250/MT-76
	400	FMVMY400/MT-76
Pulse Start Metal Halide	250	FMVMY250/MT-76 S828
	320	FMVMY320/MT-76 S828
	400	FMVMY400/MT-76 S828
Mercury Vapor	175	FMVCY175/MT-76
	250	FMVCY250/MT-76
	400	FMVCY400/MT-76

Notes to Ordering Information

1. Catalog numbers shown are for multi-tap ballasts (120, 208, 240, or 277 volt; wired for 277 volt operation). 220 V 50 Hz, 240 V 50 Hz, and 480 volts ballasts also available. To order with other ballasts, change "MT" in catalog number to appropriate voltage. Example: FMVSY400/220-50-76. For Tri-tap ballast (120, 277, 347 volts) change MT to TT.
2. 150 watt HPS luminaires are furnished with ANSI spec./S55 ballasts for 55 volt lamps.
3. Luminaires are furnished with a 3/4" NPT drilled and tapped entrance.

Accessories

- (Order Separately)
- Slipfitter adapter** (To be mounted to yoke mount luminaire) **SFA6**
(Note: SFA6 fits onto 2" pipe/conduit)
- Wall bracket** (use with slipfitter adapter SFA6 for easy wall mounting & increased adjustability.) **SWB6**



Yoke mounted FMV Champ floodlight with SFA6 slipfitter adapter.

Options

- Description** **Suffix to be Added to Cat. No.**
- Fused (not available with IR) **S658***
- Quartz auxiliary **QTZ**
- Non-hazardous locations only.
 - Lamp not furnished
- Instant restrike **IR**
- Cannot be used with BG or QTZ.
 - 50-150W LX HPS only.
- Ballast Guard **BG**
- Restricted Breathing Construction. **S826**
- Class I Division 2 & Zone 2 Suitability
Cooler Operating Temperatures
(T-Numbers)
- Certified for IEC Zone 2 **S826TB**
- Furnished with
- Terminal Block
 - Crimp Terminals
 - Dedicated voltage ballasts (no MT, DT or TT).

* CSA certified luminaires are not available with multi-tap ballasts or fusing option.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

Isofootcandle Chart

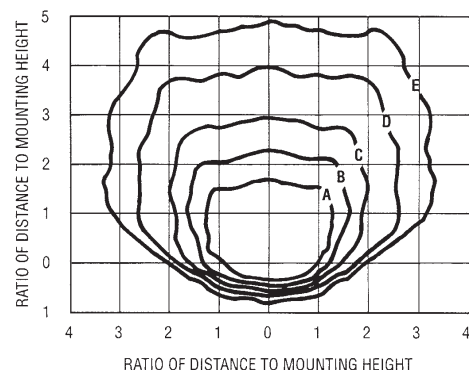
FMV 400W high pressure sodium

Catalog number FMVSY400-76

Lamp: 400 watt clear high pressure sodium

Lumen rating: 50,000

For 150 watt high pressure sodium, multiply footcandles by 0.32. For 250 watt superior high pressure sodium, multiply footcandles by 0.6.



Luminaire located at 0°, 0° (Note: Luminaire aiming angle limited to Aiming angle at 45° 30° past vertical through 60° before vertical.)

Isofootcandle Chart

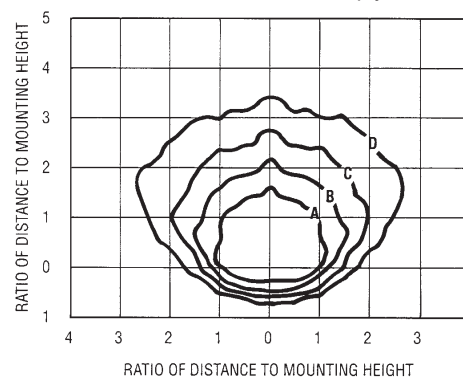
FMV 400W metal halide

Catalog number FMVMY400-76

Lamp: 400 watt clear metal halide

Lumen rating: 34,000

For 250 watt clear metal halide, multiply footcandles by 0.6.



Luminaire located at 0°, 0° (Note: Luminaire aiming angle limited to Aiming angle at 45° 30° past vertical through 60° before vertical.)

EPA Data – Aiming Angle

0°=2.9

30°=2.5

45°=2.1

• 50 hertz ballast – luminaires can be ordered with either 220V 50 hertz or 240V 50 hertz ballasts.

• Ballast-Gard™ starter cut-out switch – prevents starter pulsing when lamp is cycling or inoperative; prolongs ballast and ignitor life.

Available for use with 70-400W HPS only. add suffix BG.

Dimensions

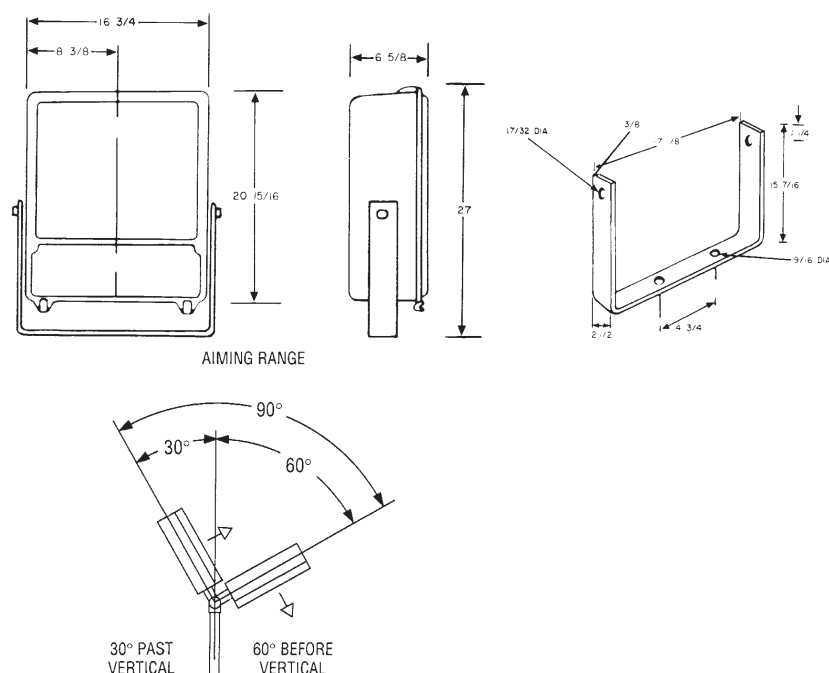


Table of Footcandle Values at Various Mounting Heights FMV 400W

Footcandle Values for both Isofootcandle Charts

Mounting Height	A	B	C	D	E
15'	8.0	4.0	2.0	0.8	0.4
20'	4.5	2.3	1.1	0.5	0.23
25'	2.9	1.4	0.7	0.3	0.14
30'	2.0	1.0	0.5	0.2	0.1
35'	1.5	0.7	0.4	0.15	0.07
40'	1.1	0.6	0.3	0.11	0.06

Temperature Performance Data:

Class 1

Lamp Watts	Ambient Temp °C	Non-restricted Breathing	Restricted Breathing (S826TB)	Supply Wire °C
		Division 2	Zone 2	
High Pressure Sodium				
150 Watt	40	T2C	T6	75
	55	T2C	T5	90
	65	T2B	T4	90
250 Watt	40	T2	T4	75
	55	T2	T4	90
	65	325 °C	T4	90
400 Watt	40	T1	T4	75
	55	T1	T3	90
	65	—	—	—
Metal Halide & Pulse Start				
175 Watt	40	T2	T4	75
	55	T2	T3	90
	65	325 °C	T3	90
250 Watt	40	T2	T4	75
	55	T2	T3	90
	65	325 °C	T3	90
320/400 Watt	40	325 °C	T3	75
	55	T1	T3	90
	65	—	—	—
Mercury Vapor				
175 Watt	40	325 °C	T4	75
	55	325 °C	T3	90
	65	325 °C	T3	90
250 Watt	40	325 °C	T3	75
	55	325 °C	T3	90
	65	325 °C	T3	90
400 Watt	40	325 °C	T3	75
	55	T1	T3	90
	65	—	—	—

Net Weights (lbs.)

Luminaires	FMVS	FMVM	FMVC
70-150W	37	—	—
175-250W	40	42	37
400W	44	44	41

SFA6 (Slipfitter Adapter) – Add 4 lbs.

SWB6 (Wall Bracket) – Add 6 lbs.

1000-1500W FMV

High Wattage Series Champ® H.I.D. Luminaires

- Wet Locations
- 3, 3R

7L

Application:

FMV1000 Series Very High Wattage Floodlights with wet locations suitability are used outdoors:

- at refineries, chemical, pharmaceutical and petrochemical plants, waste and sewage treatment plants, pulp and paper mills and other industrial facilities containing hazardous (classified) areas.
- to light process areas, storage tank and rack areas, loading docks, rail yards, building perimeters, parking areas, vehicle and pedestrian passageways and even sports applications.
- for security and safety lighting in industrial and process facilities.
- in industrial locations where the damaging effects of rain, snow, wind, moisture, dirt, corrosion, vibration and rough usage may be a problem.
- to produce superior light at low cost with great efficiency.

Standard Materials:

- Housing—Copper-free aluminum
- External hardware—stainless steel
- Yoke—Steel
- Lens—Heat and impact-resistant tempered glass
- Gasketing—neoprene

Standard Finishes:

- Aluminum—epoxy powder coat
- Steel (Yoke)—hot dipped galvanized
- Stainless Steel—natural

Ratings (Electrical/Size):

Sources/Wattages (Mogul Base Lamps)

- High Pressure Sodium (HPS) 1000W
- Metal Halide (MH) 1000W & 1500W
- Mercury Vapor (MV) 1000W

Voltages

Standard Voltage Ballasts

Hub Size

- ¾" NPT
- Furnished prewired with cord connector And 3 ft. of 14/3 SO cord

Certifications and Compliances:

- NEC:
Class I, Division 2, Groups A, B, C, D
- UL Standards
844
1598 Luminaires

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.



Key Features

- Heavy duty copper-free aluminum housing with epoxy powder coat finish.
- Unique 3 piece housing design.
- Prewired with 3 ft. of 14/3 SO cord.
- Requires only two bolts to mount
- Easily adjustable to aim light where desired
- Heat and impact resistant tempered glass lens
- Heavy duty neoprene gasketing
- Anodized precision formed aluminum reflector
- NEMA 7x6 beam spread for light pattern
- Removable top plate provides easy access to lamp compartment

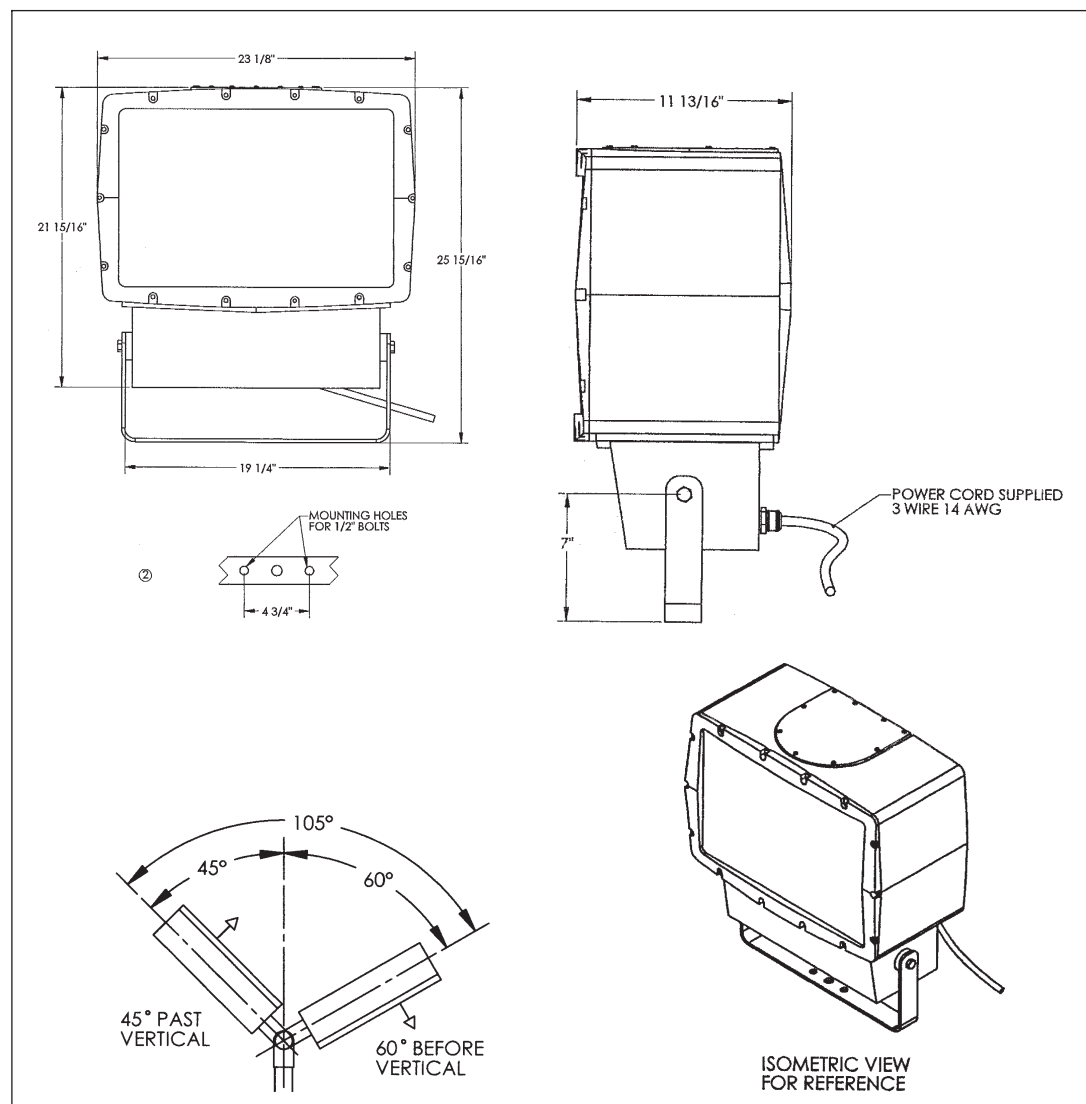
Benefits

- Superior performance, life and corrosion resistance
- Provides coolest operation for increased component life
- Simplifies installation
- Allows mounting location flexibility, roof top, wall mount, etc.
- Provides exceptional stability
- Insures a reliable and long life environmental seal
- Superior beam control, distribution and efficiency.
- The ideal light distribution for industrial applications
- Minimizes maintenance. Lens removal is not required for lamp replacement.

Options:

Description	Suffix to be Added to Cat. No.
• Fusing.....	S658*
• Slipfitter adapter (To be mounted to yoke mount luminaire)	SFA6 (Note: SFA6 fits onto 2" pipe/conduit)
• Wall bracket (use with slipfitter adapter SFA6 for easy wall mounting & increased adjustability.)	SWB6

Dimensions:



Net Luminaire Weights (lbs)

Luminaire Series	Weight (lbs.)
FMVSY1000	95
FMVMY1000	88
FMVMY1500	98
FMVCY1000	92

Ordering Information:

*To complete Catalog Number, add Voltage and Options suffix(es)

Example: FMVSY1000/480-76-S658

Lamp Type	Watts	Base Catalog No.*
High Pressure Sodium	1000	FMVSY1000__-76
Metal Halide	1000	FMVMY1000__-76
	1500	FMVMY1500__-76
Pulse Start Metal Halide	1000	FMVMY1000__-76 S828
Mercury Vapor	1000	FMVCY1000__-76

Complete the Catalog Number by Adding Voltage and Options Suffixes as Follows:

- Standard Voltages - Add one of the following Suffixes (For other Voltages Consult Cooper Crouse-Hinds)

Voltage	120	480	MT	TT
Suffix	/120	/480	/MT	/TT

- Options - Add the Required Options Suffixes from page 883, In Alpha-numeric Order

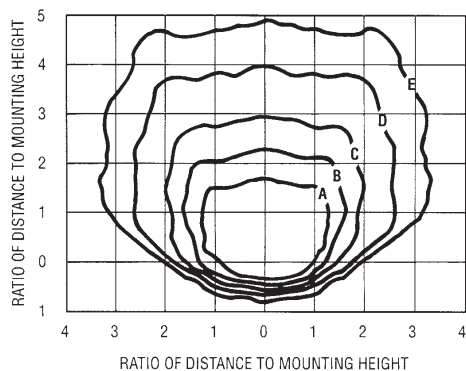
Isofootcandle Chart

FMV1000W High Pressure Sodium

Catalog Number FMVSY1000-76

Lamp: 1000 watt clear high pressure sodium

Lumen rating: 140,000



Luminaire located at 0°, 0°

Aiming Angle at 45°

(Note: Luminaire aiming angle limited to 45° past vertical through 60° before vertical.)

Isofootcandle Chart

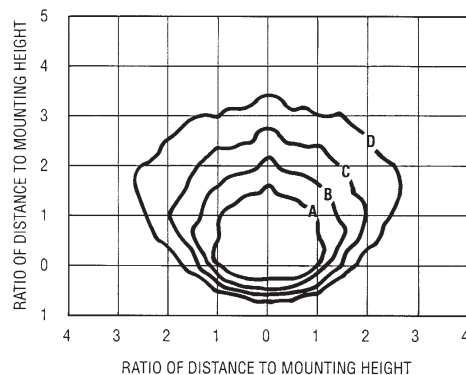
FMV1000W Metal Halide

Catalog Number FMVMY1000-76

Lamp: 1000 watt clear metal halide

Lumen rating: 110,000

For 1500 watt clear metal halide, multiply footcandles by 1.4.



Luminaire located at 0°, 0°

Aiming Angle at 45°

(Note: Luminaire aiming angle limited to 45° past vertical through 60° before vertical.)

Footcandle Table for FMVS1000W

Mounting Height	Footcandle Values for Isofootcandle Lines				
	A	B	C	D	E
20'	12.6	6.4	3.1	1.4	.64
25'	8.1	3.9	2.0	0.8	0.4
30'	5.6	2.8	1.4	0.6	0.2
35'	4.2	2.1	1.0	.42	0.2
40'	3.1	1.6	0.8	.32	.17

Effective Projected Area (EPA)

- For windloading
- For proper pole selection

Aiming Angle	EPA
0°	3.5 ft²
45°	3.6 ft²
60°	2.9 ft²

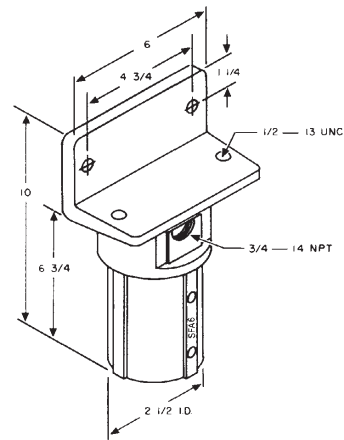
Temperature Performance Data:

Class 1

Lamp	Watts	Non-restricted Breathing	Restricted Breathing	Ambient
		Division 2	Zone 2	
HPS	1000	T1	—	40 °C
Metal Halide	1000	T1	—	40 °C
Mercury Vapor	1000	T1	—	40 °C



**2.5" O.D.
SWB6 Wall Bracket**



SFA6 Slipfitter



Finally, a true floodlight luminaire for hazardous areas.

Cooper Crouse-Hinds® FZD-Series™ Luminaires are the first to deliver NEMA 7x6 floodlight distribution patterns for Class I, Division 1 and Zone 1 environments. That means you'll need fewer of them to illuminate a given area. With their labor-saving features and flexible mounting options, the FZD series is ideal for:

- heavy process industries where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, including those requiring elevated ambient capability, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and other heavy-process industrial facilities
- mounting to a wall, structure or pole (with pole mount adapter accessory)



FZD with separate ballast enclosure

KEY FEATURES AND BENEFITS

- **NEMA 7x6 floodlight distribution pattern is standard**—ideal light distribution for industrial applications; requires fewer luminaires in general lighting applications than required when using general-area luminaires with high-bay reflectors
- **Internal reflector**—available in wide and narrow-beam options; enclosed in glass tube, reducing maintenance and enhancing light output
- **Heavy-duty, cast copper-free aluminum construction with epoxy powder-coat finish and stainless steel hardware**—provides long life in industrial, abusive environments

- **Explosionproof threaded construction**—suitable for hazardous and industrial applications; easy to maintain with no bolted covers
- **O-ring gaskets on all threaded openings**—allow NEMA Type 4X and Marine Listing for the harshest outdoor environments
- **40°C, 55°C and 65°C ambient suitability**—ideal for use in high ambient temperature areas common in industrial facilities
- **Factory-sealed ballast housing**—keeps ballast isolated from wiring chamber
- **Trunnion (yoke) mount design**—standard construction provides the greatest mounting flexibility; can be vertically (wall) or horizontally (rooftop or floor) mounted

- **Simple installation**—requires only two bolts to mount
- **Mounting flexibility**—pole mount with SFA6-XP pole mount adapter (shown below) or wall or ceiling mount with FZD-KIT1 mounting accessory kit (shown above).



POLE MOUNT ADAPTER

CERTIFICATIONS AND COMPLIANCES

NEC/CEC

- Class I, Division 1, Groups B (with suffix -GB*), C and D
- Class I, Zone 1, Groups IIB+H₂ (with suffix -GB*), IIB
- AEx d IIB+H₂ (with suffix -GB*), IIB
- Ex d IIB+H₂ (with suffix -GB*), IIB
- Marine Locations
- Wet Locations
- Enclosure Type 4X
- IP66
- UL Listed (UL Standards 844, 1598, 1598A, 2279)
- cUL Listed (certified by UL to CSA Standard C22.2 No. 137 and CAN/CSA-E60079-1)

*See options for Group B and IIB+H₂ ordering information

STANDARD MATERIALS

- luminaire housing, covers, socket holder, lamptube end rings—copper-free aluminum
- external hardware—stainless steel
- glass lamp tube—heat and impact-resistant tempered glass
- O-ring gaskets—neoprene/silicone
- yoke—aluminum
- trunnion adapter—brass

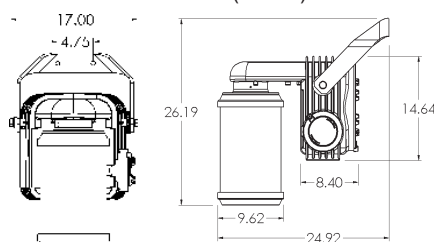
STANDARD FINISHES

- aluminum—Corro-free™ epoxy powder coat
- stainless steel—natural
- brass—natural

LUMINAIRE WEIGHTS (lbs)

LUMINAIRE	FZDS (HPS)	FZDM (MH)
150-watt	72	75
175 to 250-watt	77	77
400-watt	80	80

DIMENSIONS (inches)



RATINGS

SOURCES/WATTAGES (MOGUL BASE LAMPS)

- HPS—150, 250 & 400 watts
- MH—175, 250 & 400 watts

VOLTAGES

Standard Voltage Ballasts

- Multi-tap (120, 208, 240 & 277 V, 60 Hz)
- 120 V, 60 Hz
- 480 V, 60 Hz
- Tri-tap (120, 277 & 347 V, 60 Hz)

Optional Voltage Ballasts

- 220 V, 60 Hz
- 220 V, 50 Hz

HUB SIZE

- Standard: Two ¾" NPT entries
- Optional: Two 25 mm (M25) entries (consult Cooper Crouse-Hinds)

EFFECTIVE PROJECTED AREA (EPA)

- For windloading
- For proper pole selection

AIMING ANGLE	EPA
0 degrees	1.8 ft²
45 degrees	2.3 ft²



ORDERING INFORMATION

To complete the catalog number, add option suffix(es) if desired.

Example: FZDS2NY400W/MT-S658

LAMP TYPE	WATTS	CATALOG NUMBER* YOKE MOUNT WITH 3/4" NPT HUBS
WIDE-BEAM REFLECTOR—NEMA 7x6 DISTRIBUTION		
High-Pressure Sodium	150**	FZDS2NY150W/MT
	250	FZDS2NY250W/MT
	400	FZDS2NY400W/MT
Metal Halide	175	FZDM2NY175W/MT
	250	FZDM2NY250W/MT
	400	FZDM2NY400W/MT
Pulse-Start Metal Halide	175	FZDM2NY175W/MT-S828
	250	FZDM2NY250W/MT-S828
	400	FZDM2NY400W/MT-S828
NARROW-BEAM REFLECTOR—SPOTLIGHT DISTRIBUTION		
High-Pressure Sodium	150**	FZDS2NY150N/MT
	250	FZDS2NY250N/MT
	400	FZDS2NY400N/MT
Metal Halide	175	FZDM2NY175N/MT
	250	FZDM2NY250N/MT
	400	FZDM2NY400N/MT
Pulse-Start Metal Halide	175	FZDM2NY175N/MT-S828
	250	FZDM2NY250N/MT-S828
	400	FZDM2NY400N/MT-S828

*All FZD catalog numbers shown above are with multi-tap ballasts (120, 208, 240 & 277 V, 60 Hz).

The "MT" in the catalog number may be changed to any of the voltage suffixes listed below.

**150-watt HPS luminaires are furnished with ANSI spec/S55 ballasts for 55 V lamps.

FZD WITH SEPARATE BALLAST ENCLOSURE

GLASS FIBER REINFORCED POLYESTER BALLAST ENCLOSURE WITH CABLE ENTRY

LAMP TYPE	WATTS	T-CODE	CATALOG NUMBER
WIDE BEAM REFLECTOR – NEMA 7×6 DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 506
Metal Halide	400	T3	NOR 000 005 194 106
High Pressure Sodium	400	T3	NOR 000 005 194 006
NARROW BEAM REFLECTOR – SPOTLIGHT DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 505
Metal Halide	400	T3	NOR 000 005 194 105
High Pressure Sodium	400	T3	NOR 000 005 194 005

STAINLESS STEEL BALLAST ENCLOSURE WITH CABLE ENTRY

WIDE BEAM REFLECTOR – NEMA 7×6 DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 502
Metal Halide	400	T3	NOR 000 005 194 102
High Pressure Sodium	400	T3	NOR 000 005 194 002
NARROW BEAM REFLECTOR – SPOTLIGHT DISTRIBUTION			
HPS/MH	250	T4	NOR 000 005 192 501
Metal Halide	400	T3	NOR 000 005 194 101
High Pressure Sodium	400	T3	NOR 000 005 194 001

VOLTAGE SUFFIXES

STANDARD VOLTAGES	SUFFIX	OPTIONAL VOLTAGES	SUFFIX
Multi-tap (120, 208, 240, 277 V, 60 Hz)	/MT	220 V, 50 Hz	/220 50
Tri-tap (120, 277, 347 V, 60 Hz)	/TT	220 V, 60 Hz	/220
120 V, 60 Hz	/120		
480 V, 60 Hz	/480		

OPTIONS

Ballast-Gard™ starter cut-out switch prevents starter pulsing when lamp is cycling or inoperative. Prolongs ballast and igniter life. HPS only. Not available with IR option.

	SUFFIX TO ADD TO CAT.NO.
Factory Assembled with HID lamp installed for additional labor savings.	-FA
Factory Certified: Class I, Division 1, Group B and Class I, Zone 1, Group IIB+H2	-GB
Instant Restrike enables a hot HPS lamp to immediately restrike after a momentary loss of arc due to voltage fluctuation or power outage. It has no effect on the warm-up period of cold lamps. Available for use with 150-watt HPS only.	-IR
Fusing protects ballast and capacitor against abnormal line conditions.	-S658*

ACCESSORIES (order separately)

FOR POLE MOUNTING	CATALOG NO.
Pole mount adapter	SFA6-XP
• Class I, Division 1, Groups B, C and D	
• Attach to yoke; fits 2" NPT conduit pole	
Flexible explosionproof coupling	ECLK236
Elbow fitting	EL296-SA

FOR WALL OR CEILING MOUNTING

Kit includes:

EABC26-SA conduit outlet box,
ECLK236 flexible explosionproof coupling,
and EL296-SA elbow fitting.

FZD-KIT1

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

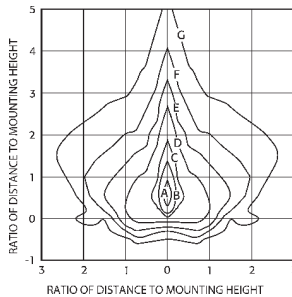
TEMPERATURE PERFORMANCE DATA

LAMP	AMBIENT TEMP °C	CLASS I, DIVISION 1, ZONE 1	SUPPLY WIRE °C
150-watt HPS	40	T3C	75
	55	T3C	75
	65	T3B	90
250-watt HPS	40	T3C	75
	55	T3C	75
	65	T3B	90
400-watt HPS	40	T3C	75
	55	T3C	75
	65	T3B	90
175-watt Metal Halide	40	T3A	75
	55	T3	75
	65	T3	90
250-watt Metal Halide	40	T3A	75
	55	T3	75
	65	T3	90
400-watt Metal Halide	40	T3A	75
	55	T3	75
	65	T3	90

PHOTOMETRICS

Note: There are no aiming angle limitations for the FZD. The only limitations are those encountered by interference of the trunnion arm. The trunnion arm may be mounted on vertical or horizontal surfaces to overcome any limitations.

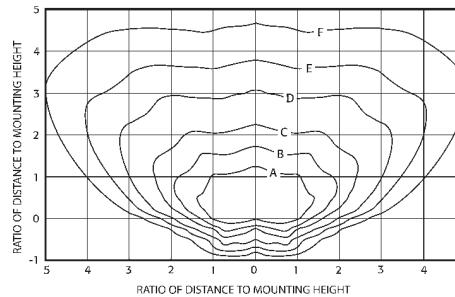
HPS Narrow Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W High Pressure Sodium (HPS)
Catalog Number FZDS2NY400N
Lamp: 400 W Clear HPS
Lumen rating: 50,000
Luminaire located at 0°, 0° Aiming Angle at 45° down from horizontal
For 150 W HPS, multiply footcandles by 0.32.
For 250 W HPS, multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES						
	A	B	C	D	E	F	G
10'	200.00	100.00	50.00	20.00	10.00	5.00	2.00
12'	138.89	69.44	34.72	13.89	6.94	3.47	1.39
16'	78.13	39.06	19.53	7.81	3.91	1.95	0.78
20'	50.00	25.00	12.50	5.00	2.50	1.25	0.50
25'	32.00	16.00	8.00	3.20	1.60	0.8	0.32

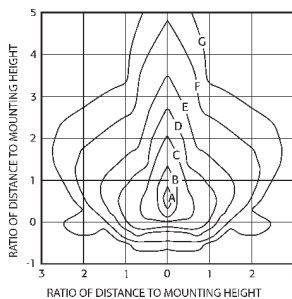
HPS Wide Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W High Pressure Sodium (HPS)
Catalog Number FZDS2NY400W
Lamp: 400 W Clear HPS
Lumen rating: 50,000
Luminaire located at 0°, 0° Aiming Angle at 45° down from horizontal
For 150 W HPS, multiply footcandles by 0.32.
For 250 W HPS, multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.89	6.94	3.47	1.39	0.69	0.35
16'	7.81	3.91	1.95	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

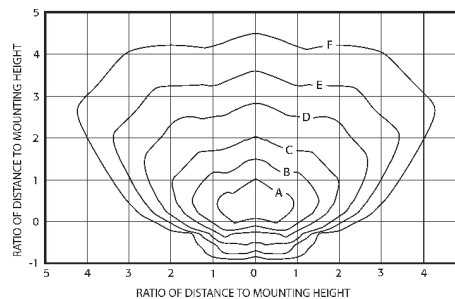
MH Narrow Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W Metal Halide (MH)
Catalog Number FZDM2NY400N
Lamp: 400 W Clear MH
Lumen rating: 34,000
Luminaire located at 0°, 0° Aiming Angle at 45° down from horizontal
For 175 W MH, multiply footcandles by 0.38.
For 250 W MH, multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES						
	A	B	C	D	E	F	G
10'	100.00	50.00	20.00	10.00	5.00	2.00	1.00
12'	64.99	34.72	13.89	6.94	3.47	1.39	0.69
16'	39.06	19.53	7.81	3.91	1.95	0.78	0.39
20'	25.00	12.50	5.00	2.50	1.25	0.50	0.25
25'	16.00	8.00	3.20	1.60	0.80	0.32	0.16

MH Wide Beam Reflector



ISO FOOTCANDLE CHART
FZD 400 W Metal Halide (MH)
Catalog Number FZDM2NY400W
Lamp: 400 W Clear MH
Lumen rating: 34,000
Luminaire located at 0°, 0° Aiming Angle at 45° down from horizontal
For 175 W MH, multiply footcandles by 0.38.
For 250 W MH, multiply footcandles by 0.6.

MOUNTING HEIGHT	FOOTCANDLE VALUES FOR ISO FOOTCANDLE LINES					
	A	B	C	D	E	F
10'	20.00	10.00	5.00	2.00	1.00	0.50
12'	13.89	6.49	3.47	1.39	0.69	0.35
16'	7.81	3.91	1.95	0.78	0.39	0.20
20'	5.00	2.50	1.25	0.50	0.25	0.13
25'	3.20	1.60	0.80	0.32	0.16	0.08

Application:

Hazard•Gard luminaires with Trunnion Arm (S812 suffix) and EV912 high bay reflector are used in:

- heavy process industries where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and other heavy process industry facilities
- hazardous locations requiring elevated ambient capability
- for mounting to a wall or structure
- mounted on a pole, when used with the SFA6 slipfitter adapter

Features:

- Luminaire is factory wired; power is fed through "wireless" connection block which serves as a mechanical seal between conduit and ballast compartments, eliminating the need for an external, field installed seal. The result is fast, easy installation.
- High bay reflectors of Alzak® aluminum
- Internally fluted glass globes reduce glare and provide comfortable viewing light.
- Wide range of light sources and wattages to meet specific lighting needs – 50, 70, 100, 150, 200, 250 and 400W high pressure sodium (HPS); 100, 175, 250 and 400W mercury vapor (MV); 70, 100, 175, 250 and 400W metal halide (MH).
- High power factor (90%+) ballasts reduce power costs – allow more luminaires per circuit.
- Elevated ambient capability permits reliable operation at high ambient temperature. Selected luminaires are suitable for ambient temperatures up to 65°C.
- Integral ballasts – separate ballasts are not required. Lowest installed cost.
- Factory sealed, porcelain, mogul base socket.
- the trunion arm gives you the ability to offer a Hazard•Gard floodlight with varying degrees of adjustability between -90° and +90°.
- when mounting on a wall, there are numerous mounting arrangements – due to the pre-drilled openings in the wall bracket.

Standard Materials:

- Mounting module, cover, ballast housing, guard, globe ring – copper-free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Lamp socket – porcelain with stainless steel screw shell
- Reflector – high bay: Alzak aluminum

Standard Finishes:

- Copper-free aluminum – epoxy powder coat
- Alzak – natural (anodized)

Options:

- | Description | Suffix to be Added to Cat. No. |
|---|--------------------------------|
| • Fused | S658 |
| • Ballast•Gard | BG |
| • 50-400 HPS only | |
| • Instant Restrike | IR |
| • Cannot be used with BG or QTZ options | |
| • 50-150W LX HPS only | |
| • Quartz Auxiliary Lighting | QTZ |
| • Not available with 400W MH or MV | |
| • Uses 100 watt single ended lamp | |
| • Lamp not included | |
| • Group B Suitability | GB |

Size Ranges:

¾"

Electrical Rating Ranges:

- 120, 208, 240, 277, 347, 480, 600, multi-tap★.
- 50 to 400 watts

Certifications and Compliances:

- NEC/CEC
Class I, Division 1 and 2, Groups B (with GB suffix), C, D
- UL Standard: 844, 595
- CSA Standard: C22.2 No. 137

Ordering Information

- Catalog number includes Guard, Trunnion Arm and High Bay Reflector

Luminaire Cat. No.

NOTE: Replace "volts" with Suffix from Voltage Suffix Table below

HIGH PRESSURE SODIUM

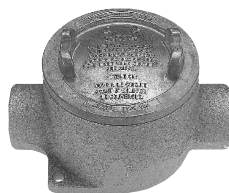
Watts	Hub Size
EVMA42051/volts S812 EV3912	50 ¾"
EVMA42071/volts S812 EV3912	70 ¾"
EVMA42101/volts S812 EV3912	100 ¾"
EVMA42151/volts S812 EV3912	150 ¾"
EVMA42201/volts S812 EV3912	¾"
EVMA42251/volts S812 EV3912	¾"
EVMA42401/volts S812 EV3912	¾"

MERCURY VAPOR

EVMA82101/volts S812 EV3912	100 ¾"
EVMA82171/volts S812 EV3912	175 ¾"
EVMA82251/volts S812 EV3912	250 ¾"
EVMA82401/volts S812 EV3912	400 ¾"

METAL HALIDE

EVMA92071/volts S812 EV3912	70 ¾"
EVMA92101/volts S812 EV3912	100 ¾"
EVMA92171/volts S812 EV3912	175 ¾"
EVMA92251/volts S812 EV3912	250 ¾"
EVMA92401/volts S812 EV3912	400 ¾"



EABC

Hub Size

¾"

Cat. #

EABC26



UNL

90° Angle

Size

¾ to ¾"

Cat. #

UNL205



Temperature Performance Data

Hazard•Gard Luminaire with Trunnion Arm (S812 suffix)

Watts	Maximum Ambient Class I		
	40°C	55°C	65°C
High Pressure Sodium			
50	T4	T4	T3C
70	T4	T4	T3C
100	T4	T4	T3C
150	T4	T4	T3C
200	T3A	—	—
250	T3A	—	—
400	T3A	—	—
Mercury Vapor			
100	T3	T3	—
175	T3	T3	—
250	T3	T3	—
400	T2D	—	—
Metal Halide			
70	T3	T3	—
100	T3	T3	—
175	T3	T3	—
250	T3	T3	—
400	T2D	—	—

NOTE: See Section 4L for additional luminaire information.

Alzak is a registered trademark of ALCOA

★ CSA Certified luminaires are not available with multi-tap ballast or S658 fuse option.



ECGJH

Flexible

Length

30

Size

¾"

Cat. #

ECGJH230

RCDE Series

Incandescent Floodlights

Cl. I, Div. 1 and 2, Groups C,D
Cl. I, Zone 1

7L

Application:

RCDE incandescent lighting luminaires are permanently installed to provide general illumination in locations having hazardous atmospheres, such as:

- oil refineries
- oil and gasoline loading docks
- aircraft servicing docks and shelters
- distilleries
- paint manufacturing plants
- pumping stations
- other Class I, Groups C and D locations

Features:

RCDE incandescent lighting luminaires have fixed mountings as follows:

- RCDE-6 – junction box base with four mounting feet or 2" threaded hub (fill sealing chamber with *Chico*® A after conductors are in place)
- RCDE-6 adjustment allows rotation of 360° horizontally and 75° vertically.
- Locking screws hold housing firmly in position
- RCDE-10 – junction box base with four mounting feet
- door which threads into housing includes heat and impact-resistant lens. Door has notches or holes provided for ease of removing or tightening
- factory wired leads through explosion-proof seal to junction box
- adjustment that allows rotation of 360° horizontally and 135° vertically. Locking bolts or clamps hold housing firmly in position

Standard Materials:

Body – copper-free aluminum;
Lens – glass, heat and impact resistant

Standard Finishes:

- Natural

Size Ranges:

- RCDE – Fixed mounting – 3/4" hubs

Capacity Ranges:

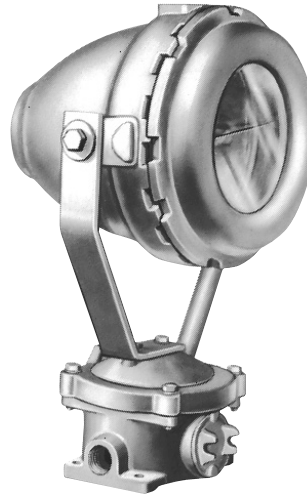
- RCDE-6 – 150 watt, PAR38 or R40; 300 watt, R40 (medium base)
- RCDE-10 – 500 watt, PAR64 (Ext. Mog End Prong)

Certifications and Compliances:

- NEC/CEC:
RCDE – Class I, Division 1 and 2, Groups C,D Class I, Zone 1 (see photometric data listing)
 - UL Standard: 844
 - CSA Standard: C22.2 No. 137 (RCDE6 only)
- Note: CEC/CSA Certified RCDE6- Cooper Crouse-Hinds Canada luminaires only.

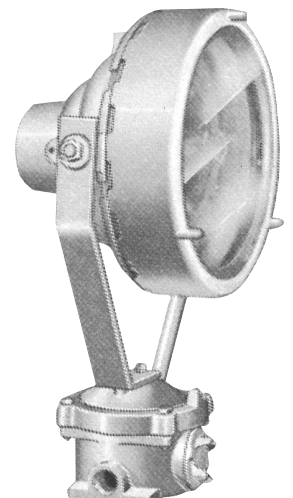
Ordering Information:

After identifying the hazardous area, select the model of lighting luminaire required for that area. Then from the photometric data, select appropriate Cat. No. based on type of mounting desired. Example: RCDE-10 No. 47282



RCDE-6

Description	Cat. #
Junction box base (2" threaded hub)	44978A
Junction box base (4 mtg. feet)	44719B



RCDE-10

Description	Cat. #
Junction box base (4 mtg. feet)	47282A

Temperature Performance Data

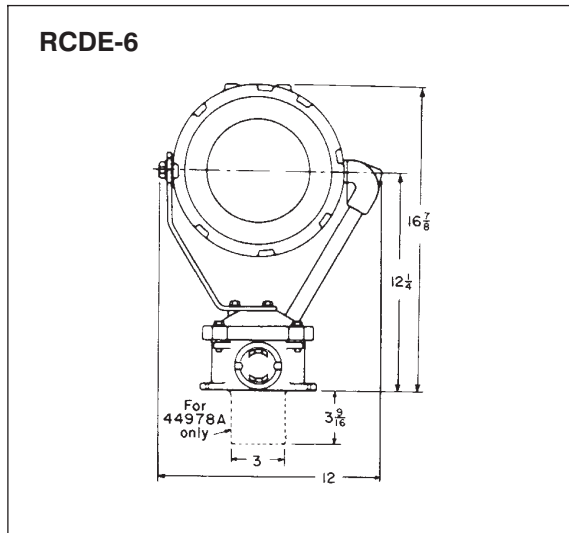
(based on 40°C Ambient)

	150W	300W	500W
RCDE-6	T3B	T2B	
RCDE-10			T3C

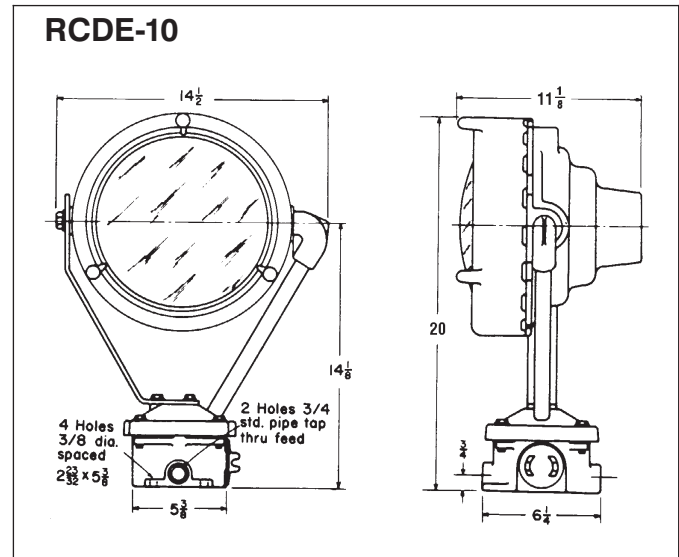
7L RCDE Series Incandescent Floodlights

Dimensions & Weights
Photometric Data
Cl. I, Div. 1 and 2, Group D
Explosionproof

Dimensions (inches)



Dimensions



Fixture Weights

RCDE-6		RCDE-10	
Cat. #	Lbs. (Net)	Cat. #	Lbs. (Net)
44719B	21.0	47282A	26.0
44978A	21.0		

RCDE Photometric Data

Lamp Watts and Type	Location	Beam Spread		Beam Lumens	Av. Max. Candle Power	Model
		Hor.	Vert.			
150 Watt PAR38 Flood	Class I Groups C,D	60°	60°	1690	4000	RCDE-6
150 Watt PAR38 Spot		28°	28°	1200	11500	
300 Watt* R40 Flood	Class I Group D	123°	123°	3200	1950	RCDE-10
300 Watt R40 Spot		60°	60°	3100	8900	
500 Watt, PAR64 (500 PAR64/NSP)	Class I, Group D	19°	14°	3000	110000	
500 Watt, PAR64 (500 PAR64/MFL)		35°	19°	3300	37000	
500 Watt, PAR64 (500 PAR64/WFL)		55°	32°	3400	13000	

* CSA certified fixtures are for 150 watt lamp maximum.

Description	Page No.
Application/Selection	894-897
Hazardous Area Hangers	
Adjustable Type UNR	911
Flexible Type EC Series	905
Locking Coupling COUP Series	911
Outlet Box Type EAHC/EFHC Series GUA/GUF Series CPS Series	906 909, 910 908
Outlet Box Type with Flexible Cushion EFHX Series	907
Non-Hazardous Area Fittings	
Conduit Clamps CHS Series	903
Non-Hazardous Area Hangers – Flexible Type	
Ball and Cushion ARB Series UNJ/UNJC Series	901 899, 900
Cushion – Vaportight AHG Series UNHC Series	899, 900 903
Hooks and Loops UNE, UNH, UNHC Series	902, 903
Outlet Box – Ball and Cushion AL Series	898, 900
Quick Disconnect Type FHM Series	904

8L Luminaire Hangers and Accessories – For Pendant Mount

Application & Selection

Application:

Luminaire hangers listed in this section are used for pendant suspension of incandescent, high intensity discharge and fluorescent industrial luminaires. They are especially suitable for use in locations where moisture, dust, and corrosion are a problem.

Hangers for Non-Hazardous Locations:

- Hangers listed provide a wide variety of mounting means. Luminaires may be suspended from cast outlet boxes, stamped steel outlet boxes, or directly from the conduit system. Also offered are several styles of hook type hangers, used to suspend luminaires by means of conduit stems or support rods from span wires, horizontal conduit and luminaire loops.
- All hangers are flexible, permitting luminaire and supporting stem to swing freely. This feature permits luminaires to hang plumb and prevents damage to the luminaire, stem and outlet box in case of high wind or accidental impact.
- Hangers are constructed so that luminaires cannot be rotated, thereby eliminating wire twisting and possible damage to connections.
- Cushion hangers, listed for most styles, include a spring which carries the weight of the luminaire. This feature prolongs lamp life and protects the luminaire assembly from shock or vibration.
- All hangers are easily installed. With many, the luminaire, stem and support member can be assembled and wired at the work bench before making the final installation. With several, a quick disconnect plug and receptacle feature is either provided or can be easily arranged, to facilitate luminaire installation and removal for maintenance.

Hangers for Hazardous Locations:

- As required by NEC Article 501 and CEC Part I Section 18, rigid conduit luminaire stems longer than 12" must be permanently and effectively braced or flexibility provided in the form of a fitting or flexible support.
- A variety of hangers is offered for both rigid conduit suspension and flexible suspension. Flexible luminaire hangers listed comply with NEC Article 501 and CEC Part I Section 18 and also permit luminaires to hang plumb.

Considerations for Selection:

Location:

- Will it be a hazardous or non-hazardous location?

- Will it require more stringent corrosion protection material?

Lighting luminaire to be used:

- Some hangers can be used with a multitude of luminaires; others are specialized.
- Weight of luminaire is a consideration in selecting cushion hangers.

Typical Luminaire Weights:

Luminaire Type	Weight (lbs.)	Luminaire Type	Weight (lbs.)	Luminaire Type	Weight (lbs.)
Incandescent:		H.I.D.:		Hazard-Gard® Series	
<i>VAPORGARD™ Series</i>		<i>Champ® Series</i>			
VDA12	1½	AMV	20¼	EVMA50W HPS	41
VDA12G	4	DMVC2A100GP	28¾	EVMA70W HPS	41
VDA12GP	4¼	DMVC2A175GP	30	EVMA100W HPS	45
VDA15	1¼	DMVC2A250GP	31¾	EVMA100W MV	39
VDA15G	3	DMVM2A175GP	33	EVMA150W HPS	
VDA15GP	3¾	DMVM2A250GP	33¾	(55V)	46
VDA23	1½	DMVS2A070GP	30¾	EVMA150W HPS	
VDA23G	4	DMVS2A100GP	31¾	(100V)	45
V Series		DMVS2A150GP	34	EVMA175W MV	42
V275	2¾	LMVS2A035GP	10¾	EVMA175W MH	43
V2759	4¼	LMVS2A050GP	11¾	EVMA200W HPS	47
		LMVS2A070GP	11¾	EVMA250W HPS	47
EV Series		LMVS2A100GP	12¼	EVMA250W MV	44
EVA240	7½	VMVC2A100GP	15	EVMA250W MH	44
EVA210	7¾	VMVC2A175GP	17¼	EVMA400W HPS	56
EVA215	8	VMVC2A250GP	31	EVMA400W MV	50
EVA220	10½	VMVC2A250GR305	34	EVMA400W MH	52
EVA230	19	VMVC2A250GRD4	31½	Fluorescent:	
EVA292	18	VMVC2A400GR305	37	DMVF2A026GP	19¼
<i>Corro®Gard® Series</i>		VMVC2A400GRD4	34½	DMVF2A039GP	22¼
NDA32	5½	VMVM2A175GP	17¼	DMVFB2A026GP	19½
NDA32G	7½	VMVM2A250GP	34	DMVFB2A039GP	22½
NDA33	5½	VMVM2A250GR305	37	EVF22062	57
NDA33G	8¼	VMVM2A250GRD4	34½	EVF24062	94
		VMVM2A400GR305	38	EVF22082	52
		VMVM2A400GRD4	35½	FDV4240	52
		VMVS2A050GP	15¼	FDV4340	54
		VMVS2A070GP	16¼	FDV4260	58
		VMVS2A100GP	16¼	NFW4240	21
		VMVS2A150GP	16½	VFA222G	4
		VMVS2A200GP	31	EVFT (2 Lamp)	19½
		VMVS2A200GR305	34	EVFT (4 Lamp)	36½
		VMVS2A200GRD4	31½	FVS	12
		VMVS2A250GP	31	Reflector/Refractor Type	
		VMVS2A250GR305	34	EV3912	1
		VMVS2A250GRD4	31½	RA64, 636	1¼
		VMVS2A400GP	40	RA70, 71, 739, 725	1
		VMVS2A400GR305	43	RD64, 636	1¼
		VMVS2A400GRD4	40½	RD70, 71, 739, 725	1
				PR2, 3, 5	3
				R2	13½
				R5	13
				GRD4	13¾
				G241	2¼
				G245	2¼
				GR305, GR205	14

Luminaire Hangers and Accessories – For Pendant Mount

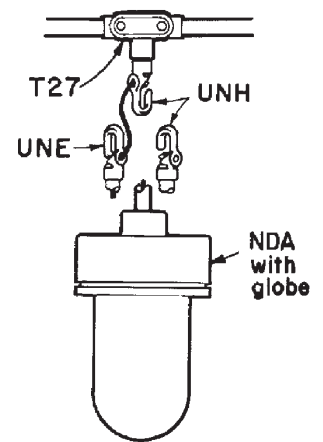
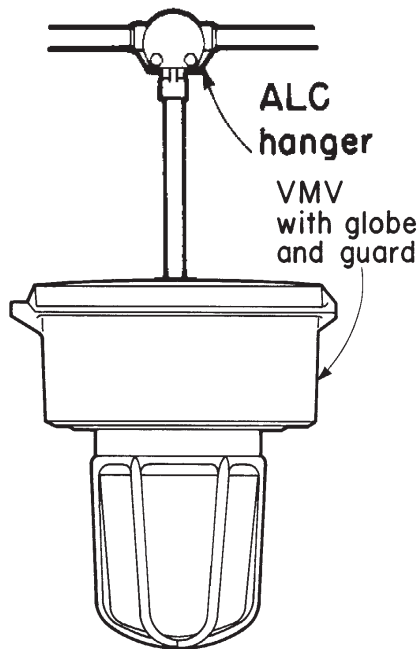
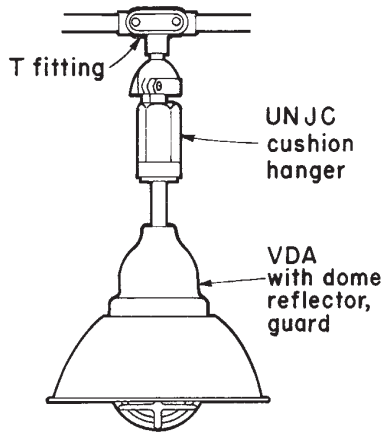
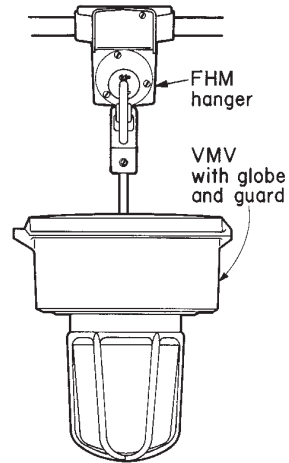
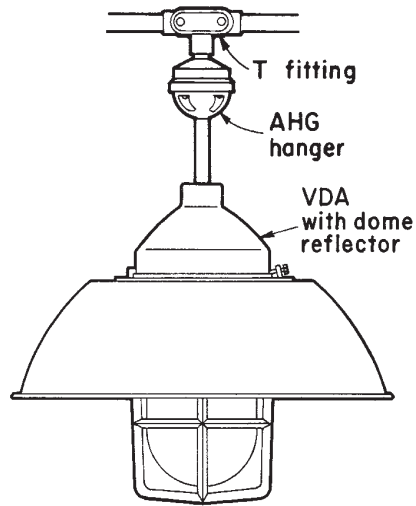
8L

Quick Selector Chart

Quick Selector Chart

Hanger Type	Function	NEC/CEC Hazardous Area Compliances	Use with Luminaire Type	Use with Mtg. Box	Luminaire Weight Capacity (Cushion)	Luminaire Weight Capacity (Ball or Plain Type)	Standard Material
AL	Outlet box and hanger	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	None needed	3-48 lbs.	125 lbs.	Body – Feraloy® iron alloy Nipple – malleable iron Cover – sheet steel
FHM	Quick disconnect between luminaire and outlet box	Not applicable	Any non-hazardous	None needed		125 lbs.	Body – copper-free aluminum Cover – steel Loop and assembly – copper-free aluminum or steel
AHG	Gasketed hanger (vaportight)	Class I, Div. 2; Class II, Div. 2; Class III Wet locations NEMA 3, 3R	Any non-hazardous or Div. 2 luminaires	Any	4-30 lbs.	—	Housing – malleable iron and Feraloy iron alloy Stem support – Feraloy iron alloy
UNJ/UNJC	Ball and cushion hanger	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	Any	6-48 lbs.	125 lbs.	Body – malleable iron Clamp – copper-free aluminum
ARB	Ball or cushion hanger	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	GRF	4-30 lbs.	125 lbs.	Body – Feraloy iron alloy
UNE, UNH, UNHC	Quick disconnect hanger hook	Class I, Div. 2	Any non-hazardous or Class I, Div. 2	Not applicable	12-64 lbs.	125 lbs.	Malleable iron, copper-free aluminum
EC	Explosion-proof flexible hanger	Cl. I, Groups A, B, C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	Any	—	—	Body – bronze hose Fittings – steel
GUA, GUJ, GUF	Explosion-proof boxes and hanger covers	Cl. I, Groups C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	None needed	—	125 lbs.	Boxes – Feraloy iron alloy Cover – copper-free aluminum
EAHC, EFHC	Explosion-proof hanger	Cl. I, Groups A, B, C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	None needed	—	125 lbs.	Body – Feraloy iron alloy Cover – copper-free aluminum
UNR	Explosion-proof adjustable hanger	Cl. I, Groups C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous or non-hazardous	Any	—	125 lbs.	Feraloy iron alloy
EFH	Explosion-proof boxes and hangers	Cl. I, Groups C, D; Cl. II, Groups E, F, G; Cl. III	Any hazardous	None needed	65 lbs.	—	Feraloy iron alloy

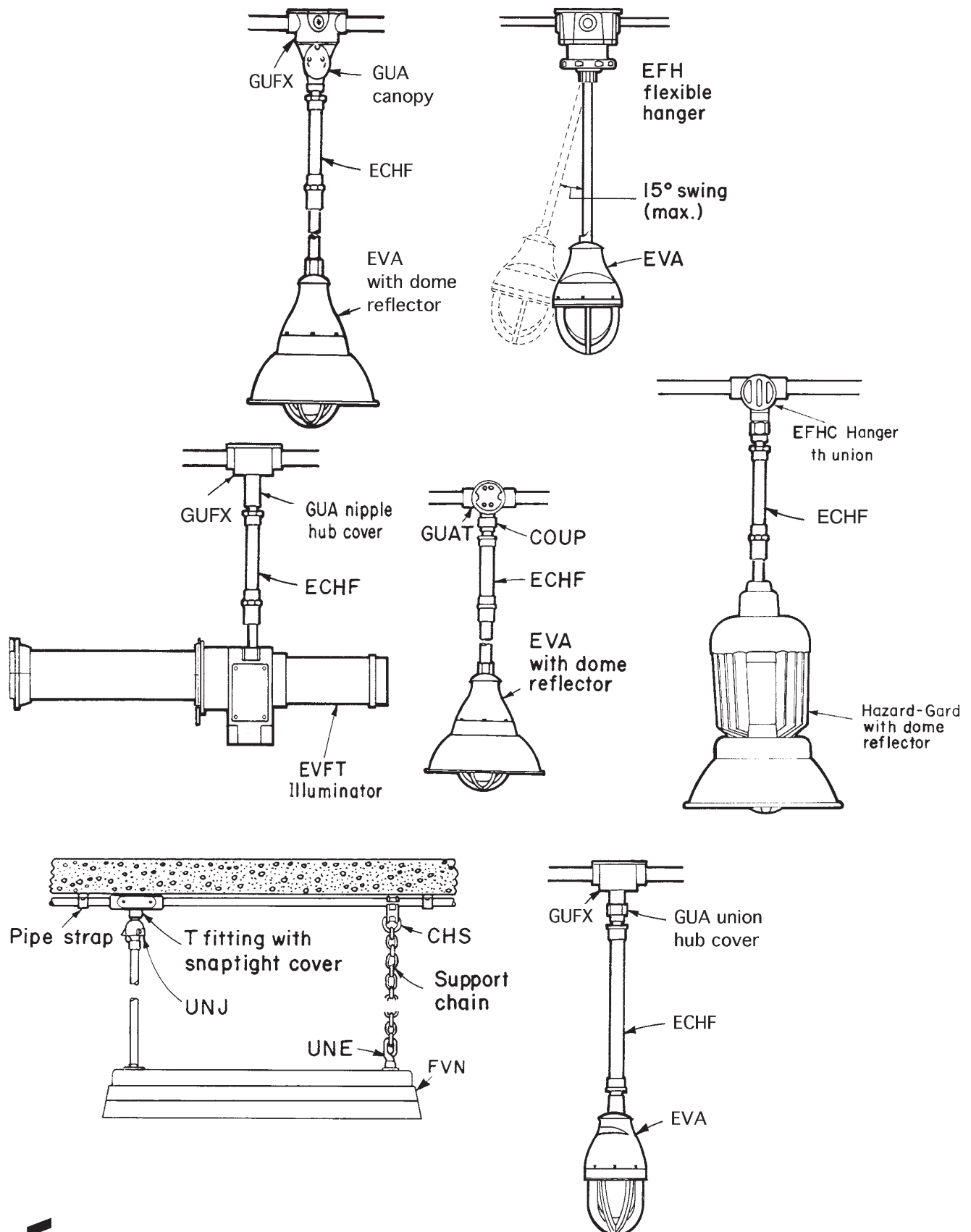
8L Luminaire Hangers and Accessories – For Pendant Mount Typical Installations



Luminaire Hangers and Accessories – For Pendant Mount

Typical Installations

8L



8L Lighting Accessories

8L AL Flexible Luminaire Hangers For Pendant Mount

Class I, Div. 2, Groups A, B, C, D

Features:

Functions as both conduit outlet box and luminaire hanger. Hubs are provided for threading the conduit directly into the hanger body. For use with incandescent, H.I.D. and fluorescent luminaires.

- Supporting nipple, ball or cushion type, is a universal joint permitting luminaire to swing through an angle of 20 degrees in any direction from the perpendicular.
- Cover has one screw hole and one open slot – easily swung aside for wiring without removal and possible loss of cover.
- Luminaire, conduit stem and nipple can be assembled and wired at the work bench. The assembly is then placed in the hanger body and luminaire wires spliced to the circuit wires.
- Provided with a separate grounding wire for ground connections.

Standard Materials:

- Body – Feraloy® iron alloy
- Nipple – malleable iron
- Cover – sheet steel

Standard Finishes:

- Feraloy and malleable iron – zinc electroplate and aluminum acrylic paint
- Sheet steel – electrogalvanized with chromate finish

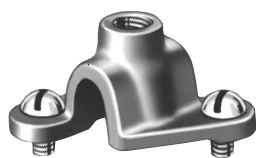
Size Ranges:

- Conduit hubs – 3/4" to 1"
- Luminaire stem – 1/2" and 3/4"
- Luminaire weight – cushion type, 3 to 48 lbs.; ball type, 125 lbs.

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description	Suffix to be Added to	
	Cat. #	
Suspension attachment for span wire or threaded rod. See listings	S1	



Suspension Attachment

For horizontal cable or vertical support rod

AL hangers can be furnished with a loop fastened to the top of the body to provide a means for suspending luminaires from vertical support rods or horizontal span wires. The loop will take a wire or cable with a maximum diameter of 3/8". The boss on top of the loop is tapped 3/8"-16 to accept a threaded rod.



Ball



Cushion

ALC

Ball

Luminaire Stem Size	Conduit Size	Cat. #
1/2	3/4	ALC21
3/4	3/4	ALC22
3/4	1	ALC32

Cushion

Luminaire Stem Size	Conduit Size	Luminaire Weight Lbs.	Cat. #
1/2	3/4	3 to 6	ALC214
3/4	3/4		ALC224
3/4	1		ALC324
1/2	3/4	6 to 12	ALC218
3/4	3/4		ALC228
3/4	1		ALC328
1/2	3/4	12 to 24	ALC2116
3/4	3/4		ALC2216
3/4	1		ALC3216
1/2	3/4	24 to 48	ALC2132
3/4	3/4		ALC2232
3/4	1		ALC3232



Ball



Cushion

ALT

Ball

Luminaire Stem Size	Conduit Size	Cat. #
1/2	3/4	ALT21
3/4	3/4	ALT22
3/4	1	ALT32

Cushion

Luminaire Stem Size	Conduit Size	Luminaire Weight Lbs.	Cat. #
1/2	3/4	3 to 6	ALT214
3/4	3/4		ALT224
3/4	1		ALT324
1/2	3/4	6 to 12	ALT218
3/4	3/4		ALT228
3/4	1		ALT328
1/2	3/4	12 to 24	ALT2116
3/4	3/4		ALT2216
3/4	1		ALT3216
1/2	3/4	24 to 48	ALT2132
3/4	3/4		ALT2232
3/4	1		ALT3232

AHG, UNJ and UNJC Flexible Luminaire Hangers

For Pendant Mount

AHG – Class I, Div. 2, Groups A, B, C, D
Class II, Div. 2, F, G
Class III

Wet Locations NEMA 3, 3R

UNJ, UNJC – Class I, Div. 2, Groups A, B, C, D

8L

Features:

- For connection to conduit hub or hub cover of supporting conduit fitting
- For incandescent, H.I.D., and fluorescent luminaires
- Cushion support for conduit stem is a universal joint permitting luminaire to swing through an angle of 8 degrees in any direction from the perpendicular
- Gasketed by means of a durable neoprene diaphragm which excludes moisture and dirt from both luminaire and conduit system

Standard Materials:

- Housing: top cap – malleable iron; bottom cap – *Feraloy*® iron alloy
- Luminaire stem support – *Feraloy* iron alloy

Standard Finishes:

- *Feraloy* iron alloy and malleable iron – electrogalvanized and aluminum acrylic paint

Size Ranges:

- Male nipple – 3/4"
- Luminaire stem – 3/4"
- Luminaire weight – 4 to 30 lbs.



AHG

Cushion Vaportight for Class I, Div. 2; Class II, Div. 2; Class III

Luminaire Stem Size*	Male Nipple Size*	Luminaire Weight Lbs.	Cat. #
3/4	3/4	4 to 8	AHG22103
3/4	3/4	8 to 16	AHG22104
3/4	3/4	16 to 30	AHG22111

Certifications and Compliances:

Class I, Div. 2
Class II, Div. 2
Class III
Wet Locations
NEMA 3,3R

Features:

- For connection to conduit hub or hub cover of supporting conduit fitting
- For incandescent, H.I.D., and fluorescent luminaires
- Supporting nipple, ball or cushion type, is a universal joint permitting luminaires to swing through an angle of 20 degrees in any direction from the perpendicular

Standard Materials:

- Body and nipple – malleable iron
- Clamp – copper-free aluminum

Standard Finishes:

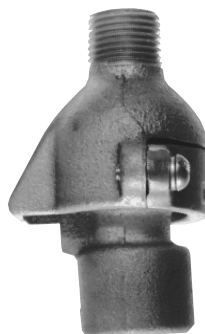
- Malleable iron – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural finish

Size Ranges:

- Male nipple – 1/2" and 3/4"
- Luminaire stem – 1/2" and 3/4"
- Luminaire weight: cushion type – 6 to 48 lbs.; ball type – 125 lbs.

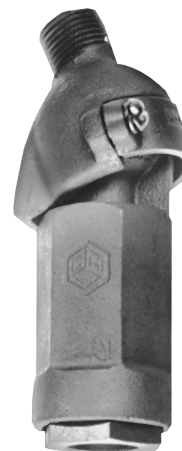
Certifications and Compliances:

- NEC: Class I, Div. 2.



UNJ Ball

Luminaire Stem Size	Male Nipple Size	Cat. #
1/2	1/2	UNJ1
3/4	3/4	UNJ2



UNJC Cushion

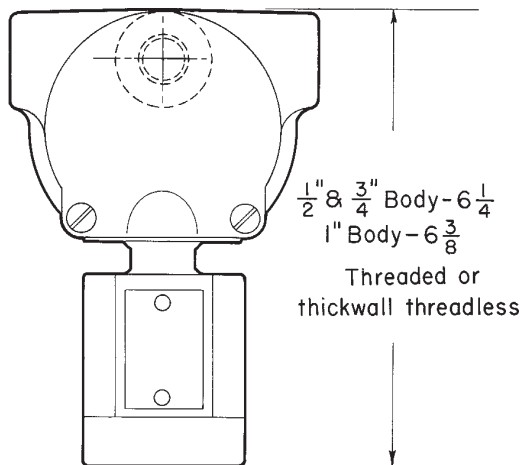
Luminaire Stem Size*	Male Nipple Size*	Luminaire Weight Lbs.	Cat. #
3/4	3/4	6 to 12	UNJC28
3/4	3/4	12 to 24	UNJC216
1/2	1/2	24 to 48	UNJC132
3/4	3/4		UNJC232

* 1/2" connection can be made by using reducers.

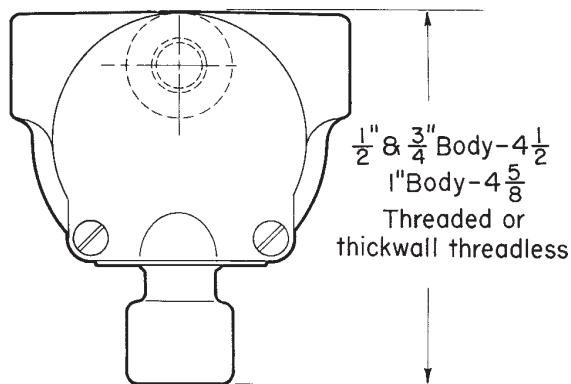
8L Flexible Luminaire Hangers

For Pendant Mount
Dimensions

AL Series

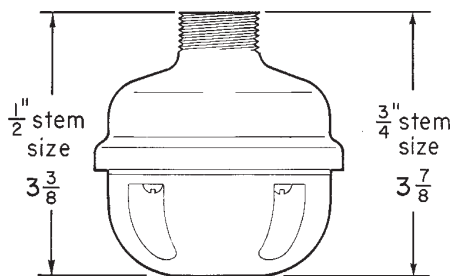


Cushion

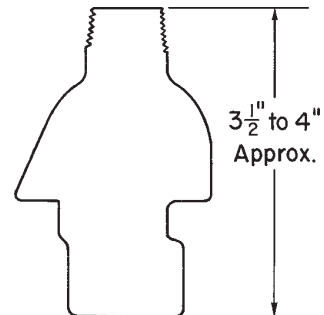


Ball

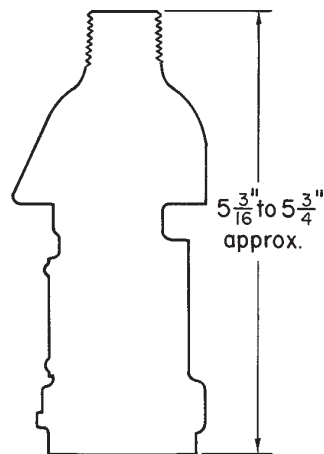
AHG



UNJ



UNJC



ARB and GS Flexible Luminaire Hangers

For Pendant Mount

Class I, Div. 2, Groups A, B, C, D

8L

Features:

- Available in two styles – one for direct attachment to GRF cast outlet boxes by 4 screws, the other for direct attachment to 4" octagonal stamped steel outlet boxes by 2 screws. For incandescent, H.I.D. and fluorescent luminaires
- Both styles available with ball or cushion support for conduit stem to permit luminaire swing in any direction. Ball type provides 11 degree swing, cushion type 8 degree swing from the perpendicular
- Gasketed cushion hangers for GRF are provided with a durable neoprene diaphragm which excludes moisture and dirt from both luminaire and conduit system

Standard Materials:

- Mounting plate: for GRF – *Feraloy*® iron alloy; for 4" outlet boxes – sheet steel
- Hanger body and luminaire stem support – *Feraloy* iron alloy

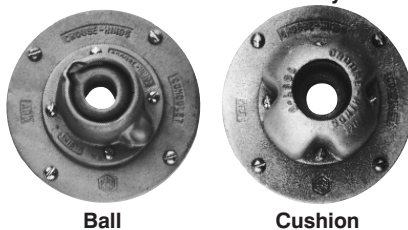
Standard Finishes:

- Feraloy* – electrogalvanized and aluminum acrylic paint
- Sheet steel – electrogalvanized with chromate finish

Size Ranges:

- Luminaire stem – 1/2" and 3/4"
- Luminaire weight: cushion type – 4 to 30 lbs.; ball type – 125 lbs. (ARB6 and ARB2 maximum weight 60 lbs.)

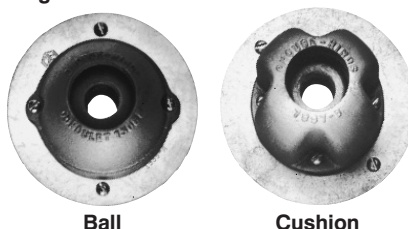
For GRF and VXF outlet boxes only



Ball

Cushion

For GRF and VXF outlet boxes and 4" octagonal outlet boxes



Ball

Cushion

ARB Fits GRF and VXF Outlet Boxes

Ball

Description	Luminaire Stem Size	Luminaire Weight (Max.)	Cat. #
Surface	1/2	125	ARB62
Flush	1/2	125	ARB67
Surface	125	3/4	ARB662

Cushion Surface

Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
1/2	4 to 8	ARB82
1/2	8 to 16	ARB102
1/2	16 to 30	ARB122

Cushion Surface – Vaportight with Neoprene Diaphragm

Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
1/2	4 to 8	ARB821
1/2	8 to 16	ARB1021
1/2	16 to 30	ARB1221

ARB Fits GRF, VXF and 4" Outlet Boxes

Ball

Luminaire Stem Size	Luminaire Weight (Max.)	Cat. #
1/2	60	ARB6
3/4	60	ARB2

Cushion

Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
1/2	4 to 8	ARB8
1/2	8 to 16	ARB10
1/2	16 to 30	ARB12

8L UNE, UNH and UNHC Flexible Luminaire Hangers For Pendant Mount

Cl. I, Div. 2 Groups A, B, C, D

The following applies to all items on this page:

Application:

- Provides a simple, inexpensive, quick disconnect method for hanging pendant luminaires. For incandescent, H.I.D. and fluorescent luminaires
- Permits free swing in any direction to prevent damage to luminaire stem. Cushion style provides additional protection from vibration to prolong lamp life

Features:

- Female hooks and loops are used with rigid conduit luminaire stems to suspend luminaires. They may also be used with male hooks and loops, threaded into a conduit outlet hub.
- All hooks and loops are provided with openings for passage of luminaire wires. Luminaire, conduit stem and hook or loop can be assembled and wired at the work bench. The assembly is then hung on the fixed hook and connection made.
- For ease of relamping and maintenance, the outlet fitting can be equipped with an attachment plug receptacle cover and a matching plug cap used with the luminaire assembly. For permanent wiring a wire hole cover may be used.

Applicable to UNE and UNH (upper listings) only:

Features:

- Shape of hooks is such that accidental disengagement is impossible
- Diameter of wire opening 1/2"

Standard Materials:

- Malleable iron

Standard Finishes:

- Cadmium electrogalvanized and aluminum acrylic paint

Size Ranges:

- Luminaire stem or hub – 1/2" and 3/4"
- Luminaire weight – 125 lbs.



Male



Female



Male



Female

UNH

UNE

UNE and UNH Flexible Luminaire Hangers For Pendant Mount

Type	Style	Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
UNH	Male	1/2	125	UNH16
		3/4	125	UNH26
	Female	1/2	125	UNH1
		3/4	125	UNH2
UNE	Male	1/2	125	UNE16
	Female	1/2	125	UNE1
		3/4	125	UNE26
		3/4	125	UNE2



Female



Female Cushion

UNH and UNHC Flexible Luminaire Hangers

Type	Style	Luminaire Stem Size	Luminaire Weight Lbs.	Cat. #
UNH	Female	1/2	125	UNH182
UNHC	Female Cushion	3/4	12 to 24	UNHC216
		3/4	24 to 48	UNHC232
		3/4	48 to 64	UNHC264

Applicable to UNH and UNHC (lower listings) only:

Features:

- Hooks are shaped to permit easy installation of large heavy luminaires, such as H.I.D. and fluorescent units
- Diameter of wire opening 5/8"

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Size Ranges:

- Luminaire stem – 1/2" and 3/4"
- Luminaire weight: cushion type – 12 to 64 lbs.; plain type – 125 lbs.

For Support Only CHS Conduit Clamp; UNH Conduit Hook; For Pendant Mount Fluorescent Luminaires

Application:

- Used for support of pendant fluorescent luminaires
- UNHC provides cushion support for luminaires suspended by 1/4" or 5/16" threaded rod, and is used with the ring of CHS conduit clamps
- UNH hook provides an extremely simple means of conduit suspension for the unwired end of a fluorescent luminaire, as it merely hooks over the horizontal supporting conduit

Features:

- The bushing in UNHC cushion hangers is tapped for both 1/4" and 5/16" suspension rod, with the lower half tapped 5/16". Either size rod can be used without reversing the bushing
- CHS conduit clamp firmly grips the conduit and the ring at bottom accepts either a hooked rod or the UNHC cushion hanger for threaded rod. Will also accept UNH and UNHC hangers for conduit stem listed on the preceding page.
- The UNH conduit hook fits over conduit up to and including 1" and has a hub for attachment of a 1/2" conduit stem



UNHC Cushion Luminaire Hangers

Luminaire Weight Lbs.	Support Rod Tap	Cat. #
12 to 24	1/4"-20	UNHC2816
24 to 48	and	UNHC2832
48 to 64	5/16"-18	UNHC2864



Clamp



Hook

CHS Conduit Clamp and UNH Hook

Conduit Size	Clamp Cat. #	Hook Cat. #	Hook Hub Size
1/2	CHS1437	UNH13	1/2
3/4	CHS2437		
1	CHS3437		

Standard Materials:

- UNHC – copper-free aluminum
- CHS-body – malleable iron; clamp – copper-free aluminum; ring – steel wire
- UNH – *Feraloy*® iron alloy

Standard Finishes:

- Copper-free aluminum – natural finish
- *Feraloy* and malleable iron – electrogalvanized and aluminum acrylic paint
- Steel wire – electrogalvanized with chromate finish

Size Ranges:

- Luminaire stem (UNH) – 1/2"
- Conduit (CHS): 1/2" to 1"
- Luminaire weight: UNHC cushion – 12 to 64 lbs.; CHS, UNH – 125 lbs.

8L FHM Power Hook Luminaire Hangers

For Pendant Luminaires

Features:

- For mounting H.I.D. type luminaires in non-hazardous locations
- Power hook housing has two $\frac{3}{4}$ " through feed hubs and one $\frac{3}{4}$ " hub on the top for pendant mounting. Through feed hubs are furnished with flush plugs
- Cast mounting lugs are provided for direct ceiling mounting
- Housing contains a roomy 15 cu. in. splicing chamber and interlocking type receptacle with leads
- Plugs and receptacles are interlocking type to prevent accidental disengagement. When plug is inserted, hook is blocked and luminaire assembly cannot be removed. To service the luminaire, pull the plug, unhook the loop luminaire assembly and take it to a convenient servicing area
- Loop can move a maximum of 30° , allowing the power hook to be mounted on a canted ceiling. The luminaire assembly will hang true to the vertical
- Loop and hook are shaped for self alignment and resist twisting of luminaire by gusts of wind or light drafts
- Supporting loop is furnished with 16" of #16-3/C type SO cord and an interlocking type plug

Standard Materials:

- Power hook body – copper-free aluminum
- Access cover – zinc plated cold rolled steel
- Loop – copper-free aluminum

Standard Finishes:

- Copper-free aluminum – natural finish
- Steel – electrogalvanized with chromate finish

Size Ranges:

- Hubs – $\frac{3}{4}$ "
- Luminaire weights: loop – up to 125 lbs.;
- Loop luminaire stem size – $\frac{3}{4}$ "

Electrical Rating Ranges:

- 480 volts, 14 amps, 2 wire, 3 pole

Certifications and

Compliances:

- Meet UL and NEMA requirements for the listed electrical ratings

FHM

For H.I.D. Type Luminaires with voltages up to 480 volts

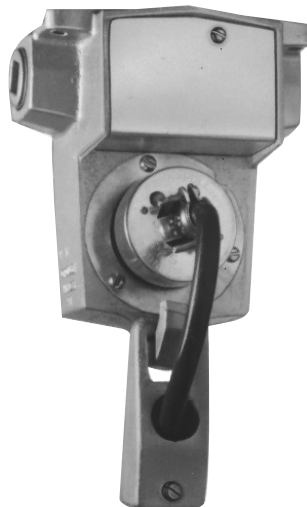
Loop
Plain

Hubs*
 $\frac{3}{4}$

Luminaire
Stem*
 $\frac{3}{4}$

Luminaire
Weight
Lbs.
125

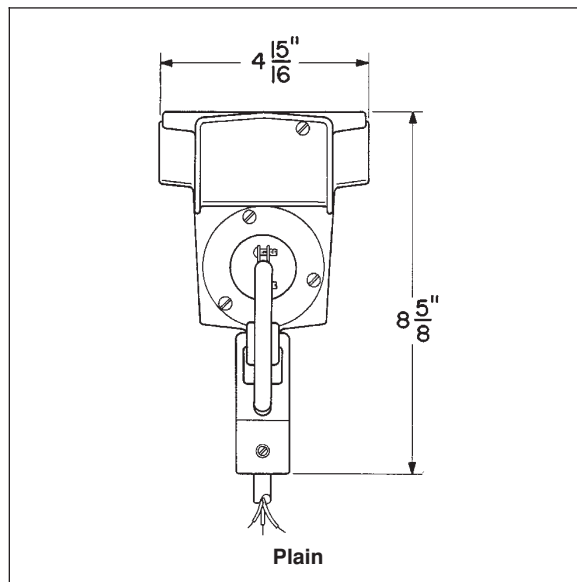
Cat. #
FHM201



Plain

* $\frac{1}{2}$ " connection can be obtained by using reducers

Dimensions



ECHF Flexible Luminaire Supports

For Pendant Mount

Cl. I, Div. 1 & 2, Groups A, B, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

8L

Application:

ECHF series flexible luminaire supports are used in hazardous locations:

- where a luminaire must hang more than 12" from its supporting junction box (as specified by NEC Article 501 and CEC Part I Section 18)
- to assure that luminaires hang plumb and will swing freely if accidentally struck.
- Prevents damage to luminaire and supporting outlet fitting

Features:

- Complies with NEC Article 501/CEC Part I Section 18
- Free swinging in any direction through a large arc
- Good electrical continuity – no bonding jumpers needed
- Watertight construction
- Insulating liner of asphalt impregnated fiber to protect conductors
- Constructed to reinforced flexible metal hose
- Two female end fittings, each with a removable short nipple
- Nipples fit set screw type luminaire hubs
- Female end fittings are equipped with set screws to prevent turning during relamping and loosening of fitting with vibrations

Standard Materials:

- Inner core – brass
- Outer braid – bronze
- End fittings – bronze
- End fittings – brass (CSA certified units)

Standard Finishes:

- Brass and bronze – natural

Options:

Suffix to be
Added to
Cat. #

Description

Material – stainless steel hose and end fittings S516

Finish – flexible neoprene protective coating S758

Special lengths and sizes available Detailed information on request

Size Ranges:

- Flexible length – 4" to 18"
- Nipple size – 1/2" and 3/4" (see "Options")
- Luminaire weight – up to 125 lbs.

Certifications and Compliances:

- NEC/CEC: Class I, Groups A, B, C, D
Class II, Groups E, F, G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



ECHF

Description

Flexible Length	Nipple Size	Overall Length	Cat. #
4	1/2	10	ECHF14
	3/4	10	ECHF24
6	1/2	12	ECHF16
	3/4	12	ECHF26
8	1/2	14	ECHF18
	3/4	14	ECHF28
10	1/2	16	ECHF110
	3/4	16	ECHF210
12	1/2	18	ECHF112
	3/4	18	ECHF212
15	1/2	21	ECHF115
	3/4	21	ECHF215
18	1/2	24	ECHF118
	3/4	24	ECHF218

8L EAHC and EFHC Luminaire Hangers For Pendant Mount

Cl. I, Div. 1 & 2, Groups A*, B*, C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

Application:

EAHC and EFHC luminaire hangers are for use in hazardous areas to:

- suspend explosionproof pendant luminaires from the conduit system
- function as both conduit outlet box and luminaire hanger

Features:

- Through feed hubs are provided for threading the conduit directly into the hanger body
- Has large threaded cover for accessibility and ease of wiring
- Bottom hub, threaded or union style, is equipped with set screws to securely lock luminaire stem in place. Takes conduit stem or EC flexible luminaire hanger for stems longer than 12" (in compliance with NEC Article 501 and CEC Part I Section 18)

Standard Materials:

- Bodies – *Feraloy*® iron alloy
- Covers – copper-free aluminum

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description **Suffix to be Added to Cat. #**
Finish – *Corro-free*™ epoxy enamel S752

Suspension attachment for span wire or threaded rod – see listings S1

Mounting strap – see listings S294

Size Ranges:

- Conduit hubs – 3/4" and 1"
- Luminaire stem – 1/2" and 3/4"
- Luminaire weight – 125 lbs.

Certifications and Compliances:

- NEC/CEC:
EAHC –
Class I, Groups A, B, C, D
Class II, Groups E, F, G
Class III
EFHC –
Class I, Groups C, D
Class II, Groups E, F, G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 20



With union hub

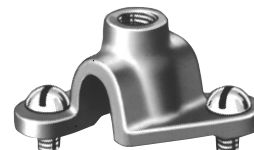


With threaded hub



Mounting Strap

Mounting strap can be furnished to fasten luminaire hangers to mounting surface, independent of conduit straps. To order, add suffix S294 to EAHC or EFHC Cat. No.



Suspension Attachment

EAHC and EFHC hangers can be furnished with a loop fastened to the top of the body to suspend luminaire and conduit from vertical support rods or horizontal span wires. The loop will take a wire or cable with a maximum diameter of 3/8". The boss on top of the loop is tapped 3/8"-16 to accept a threaded rod. To order, add suffix S1 to Cat. No.

EAHC*

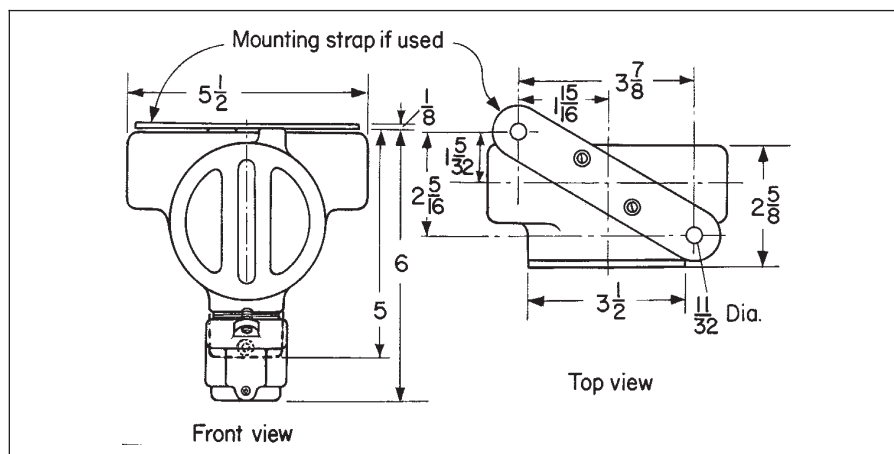
Hub Size	Luminaire Stem Size	Threaded Hub for Luminaire Stem Cat. #	Union Hub for Luminaire Stem Cat. #
3/4	1/2	EAHC2701	EAHC2601
	3/4	EAHC2702	EAHC2602
1	1/2	EAHC3701	EAHC3601
	3/4	EAHC3702	EAHC3602

EFHC

3/4	1/2	EFHC2701	EFHC2601
	3/4	EFHC2702	EFHC2602
1	1/2	EFHC3701	EFHC3601
	3/4	EFHC3702	EFHC3602

*EAHC only

Dimensions



EFH Flexible Cushion Luminaire Hangers

For Pendant Mount

Cl. I, Div. 1 and 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

8L

Application:

EFH flexible cushion luminaire hangers are used in hazardous locations:

- where a luminaire must hang more than 12" from its supporting junction box (as required by NEC Article 501 and CEC Part I Section 18)
- to assure that luminaires hang plumb and will swing freely if accidentally struck. Prevents damage to luminaire, stem and supporting outlet box
- to provide a cushion support, prolonging lamp life and protecting the luminaire from shock and vibration. For luminaires weighing up to 65 lbs.

Features:

- Complies with NEC Article 501 and CEC Part I Section 18
- Free swinging in any direction through an angle of 15 degrees from perpendicular
- Weight of luminaire is supported by a high-strength brass bellows and a stainless steel cushioning spring
- Two part assembly consisting of luminaire hanger cover and CPS12 outlet box. Provides a wide variety of conduit arrangements. A set screw locks the conduit stem in place

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

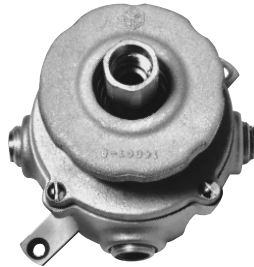
- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Conduit hubs – 3/4" with 3/4" to 1/2" reducers
- Luminaire stem – 1/2" and 3/4"
- Luminaire weight – 65 lbs. max.

Certifications and Compliances:

- NEC/CEC: Class I, Groups C, D
Class II, Groups E, F, G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



EFHX

Body Hub Size†	Luminaire Stem Size	With Mtg. Feet Cat. #
1/2 and 3/4	1/2	EFHX111
1/2 and 3/4	3/4	EFHX221

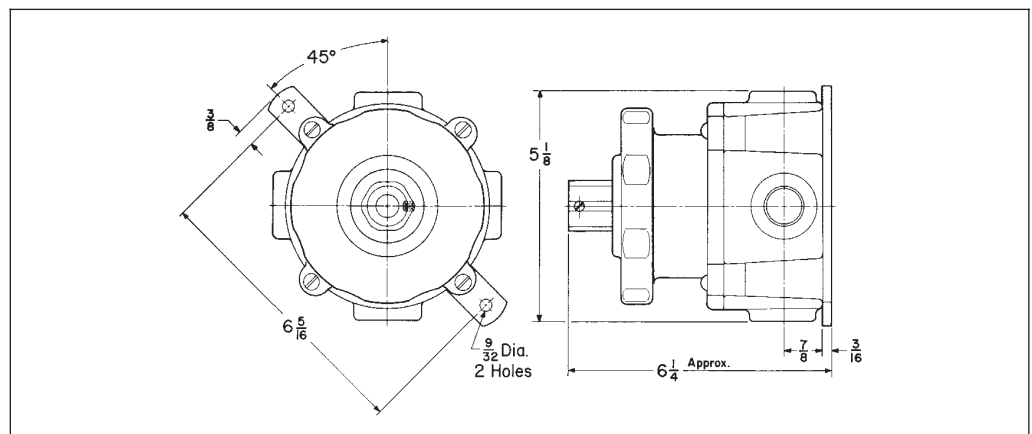


Cushion Luminaire Hanger Only

Stem Size	Cat. #
1/2	EFH01
3/4	EFH02

† Furnished with four 3/4" standard taper tapped, integrally bushed hubs. Each hub as a 3/4" to 1/2" reducer. Three hubs are plugged.

Dimensions



8L Lighting Accessories

Application:

CPS series conduit outlet boxes are installed in conduit systems in hazardous areas to:

- protect conductors in threaded rigid conduit
- act as pull and splice boxes
- change conduit direction
- interconnect lengths of conduit
- act as luminaire hangers with hub covers
- provide access to conductors for maintenance and future system changes

Features:

CPS conduit outlet boxes have:

- two types of cover:
 - blank for splice or pull box use
 - threaded hub for mounting luminaires
- wide, accurately machined body and cover mating surfaces, to insure flamtight joint
- blind tapped holes for cover screws to further insure flamtightness
- removable mounting feet for flush or surface mounting to wall or ceiling

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

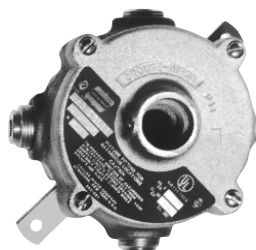
- Electrogalvanized and aluminum acrylic paint

Options:

- Corro-free™ epoxy powder coat
- Information available on request

Certifications and Compliances:

- NEC/CEC: Class I, Groups C, D
Class II, Groups E, F, G
Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



Box with Hub Cover

Hub Size

Body†	Cover	Cat. #
1/2 and 3/4	1/2	CPS12021
1/2 and 3/4	3/4	CPS12022

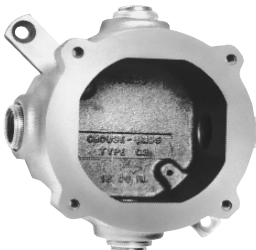


Box with Blank Cover

Hub Size

Cat. #

1/2 and 3/4	CPS12026
-------------	----------



Body

Hub Size†

Cat. #

1/2 and 3/4	CPS12
-------------	-------



Hub Covers

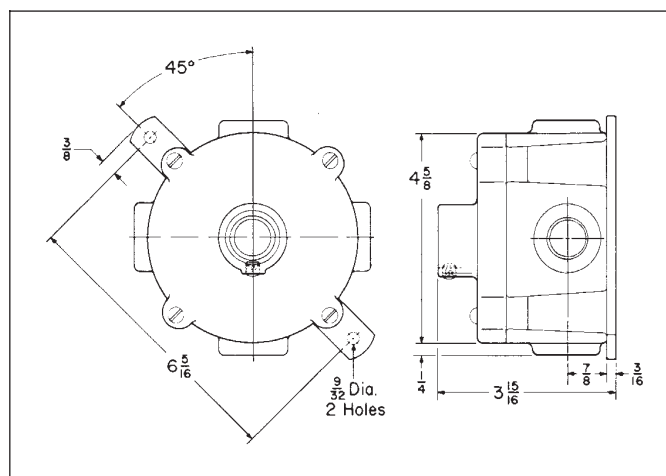
Hub Size

Cat. #

1/2	CPS021
3/4	CPS022

† Furnished with four 3/4" standard taper tapped, integrally bushed hubs. Each hub has a 3/4" to 1/2" reducer. Three hubs are plugged.

Dimensions



GUF Outlet Bodies and Luminaire Hanger Covers

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

8L

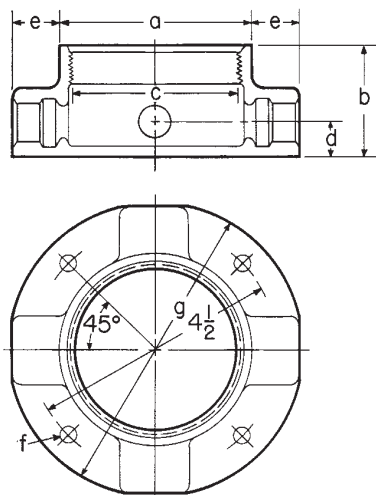


GUFX

Hub Size	Cat. #
1/2	GUFX160
3/4	GUFX260

Dimensions

GUF Series



Hub Size	a	b	c	d	e	f	g
1/2	3 1/2	2	3	5/8	7/8	5/16	5 3/8
3/4	3 1/2	2	3	3/4	7/8	5/16	5 3/8
1	3 1/2	2 3/8	3	7/8	1	5/16	5 3/8

Luminaire Hanger Covers

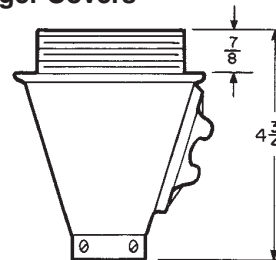
For GUA and GUF Series Junction Boxes



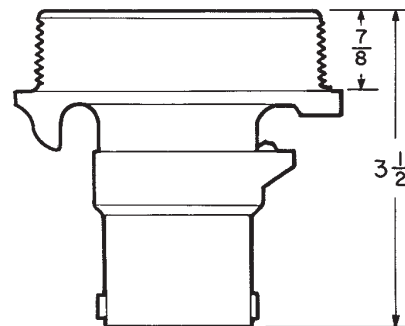
Nom. Dia. Cover Opening	Luminaire Stem Size	Luminaire canopies Cat. #	Luminaire covers union hub Cat. #	Nipple covers Cat. #
3	3/4	GUA068	GUA0687	GUA0672

Dimensions

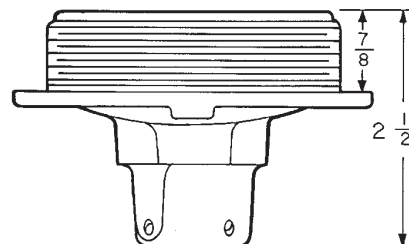
Hanger Covers



GUA 068



GUA 0687



GUA 0671

Cl. I, Div. 1 & 2, Groups C, D
 Cl. II, Div. 1, Groups E, F, G
 Cl. II, Div. 2, Groups F, G
 Cl. III

Explosionproof
 Dust-Ignitionproof

Application:

GUA, GUF and GUJ outlet bodies are used:

- with luminaire canopies, union hub and nipple covers for mounting EVA, EVM, EVLP, and EVF luminaires

Features:

- A threaded cover opening in the side of the canopy permits access to the interior for making splices or taps
- The luminaire with its conduit stem and canopy is wired before installation, which eliminates wire twisting when the canopy is screwed into the outlet body
- Union hub covers permits the cover to be screwed into the body without twisting wire leads
- All covers have set screws to lock the conduit stem or EC series flexible luminaire support firmly to the cover

Standard Materials:

Outlet bodies:

- GUA Series – *Feraloy* iron alloy
- GUFX – Copper-free aluminum

Luminaire hanger covers:

- GUA068 – *Feraloy* iron alloy
- GUA0687, GUA0672 – Copper-free aluminum

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural

Options:

Description

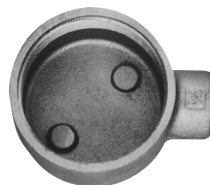
Finish – *Corro-free*™ epoxy enamel S752

Size Ranges:

- Bodies – 1/2" to 1" hubs
- Canopies – 1/2", 3/4" and 1 1/4" luminaire stem
- Union hub and nipple covers – 1/2" and 3/4" luminaire stem

Certifications and Compliances:

- NEC/CEC: Class I, Groups C, D
 Class II, Groups E, F, G
 Class III
- UL Standard: 886
- CSA Standard: C22.2 No. 30



GUA

Hub Size	Cat. #
1/2	GUA160
3/4	GUA260
1	GUA360



GUAC

Hub Size	Cat. #
1/2	GUAC160
3/4	GUAC260
1	GUAC360



GUAL

Hub Size	Cat. #
1/2	GUAL160
3/4	GUAL260
1	GUAL360



GUAT

Hub Size	Cat. #
1/2	GUAT160
3/4	GUAT260
1	GUAT360

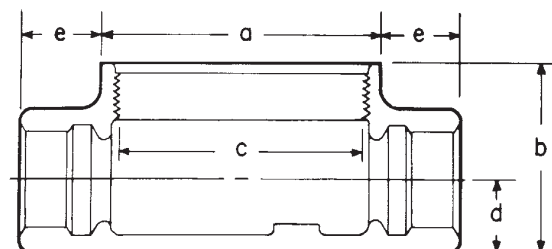


GUAX

Hub Size	Cat. #
1/2	GUAX160
3/4	GUAX260
1	GUAX360

Dimensions

GUA Series



Hub Size	a	b	c	d	e
1/2	3 1/2	2	3	5/8	7/8
3/4	3 1/2	2	3	3/4	7/8
1	3 1/2	2 5/16	3	7/8	1

UNR Adjustable Luminaire Hangers; COUP Locking Couplings

For Pendant Mount

Cl. I, Div. 1 & 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III

Explosionproof
Dust-Ignitionproof

8L

Application:

UNR adjustable luminaire hangers are used in hazardous areas to:

- mount between a luminaire and its outlet box so that the luminaire can be adjusted within the range of 0 degrees to 90 degrees
- permit pendant type luminaires to illuminate vertical surfaces such as a control board
- hang luminaires plumb when the supporting outlet box is not horizontal

Features:

- The luminaire is nipped onto one end of the UNR, and the other end of the UNR is nipped into the support outlet box
- Set screws are located on each end to lock the nipples in place to prevent loosening in relamping or from vibration
- Adjustment of UNR to the angle setting needed provides for the desired angle of the luminaire
- Degree markings are cast into the UNR
- Two set screws and a large stud and nut are provided, which are tightened to clamp the unit rigid

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

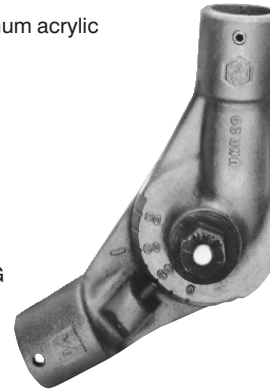
- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Hub – 3/4"
- Luminaire weight – 125 lbs.

Certifications and Compliances:

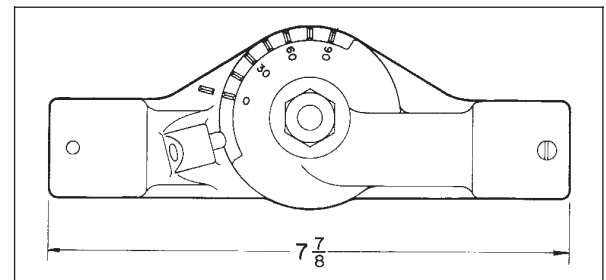
- NEC: Class I, Groups C, D
Class II, Groups E, F, G
Class III
- UL Standard: 886



**UNR
Adjustable
Luminaire Hanger**

Hub Size	Angle Adjustment	Cat. #
3/4	0° to 90°	UNR29

Dimensions



Application:

COUP locking couplings are used in both hazardous and non-hazardous areas to:

- lock a luminaire conduit stem into a conduit hub to prevent the conduit stem from loosening when the luminaire is relamped and torque transferred to luminaire stem
- prevent loosening of luminaire stem due to vibration
- hang pendant type luminaires from standard cast outlet boxes which do not have set screws in the hub where the luminaire stem is attached

Features:

- The large end is slipped over the cast hub and the set screws tightened. The luminaire stem is slipped through the small end and threaded securely into the cast hub. The set screws in the small end are then tightened, thereby preventing the stem from turning
- Permits support of luminaire from conduit hub of a hazardous location outlet body

Standard Materials:

- Feraloy® iron alloy

Standard Finishes:

- Electrogalvanized and aluminum acrylic paint

Size Ranges:

- Hub size – 1/2" to 1"
- Stem size – 1/2" and 3/4"

Certifications and Compliances:

- UL Standard: 886



**COUP
Locking
Couplings**

Hub Size	Stem Size	Cat. #
1/2	1/2	COUP101
3/4	1/2	COUP201
3/4	3/4	COUP202
1	3/4	COUP302

Notes Page

[illegible]

Description	Page No.
Application/Selection	914
Handlamps	
VS Series Incandescent	915
EVH Series Incandescent	916
EVH Series Fluorescent	921, 922
Portable Floodlights	
RCDER Series Incandescent	917, 918
EVP Series H.I.D.	919, 920
Worklights	
EVH Series Fluorescent	921, 922

Hazardous and Non-Hazardous Locations Application and Selection Quick Selector Chart

Applications:

Portable luminaires and accessories can be used:

- in areas made hazardous by the abnormal presence of flammable gases and vapors, combustible dusts or easily ignitable fibers and flyings.
- in areas where combustible dusts and flammable gases are present simultaneously.
- in aircraft manufacturing and maintenance facilities, shipyards, paint spray booths, refueling depots, storage tank cleanings, railcar manufacturing and maintenance facilities, refineries, chemical and petrochemical plants, textile mills, grain elevators, pharmaceutical plants, sewage treatment plants and wastewater treatment plants.
- during plant 'shut downs' for maintenance and installation requirements.
- in any adverse environment where portable lighting is preferred or required.
- in locations where fixed lighting is not practical.
- for task oriented lighting.
- for emergency lighting applications.
- when inspecting aircraft wing tanks, vats, process vessels, fuel tanks, etc. (handlamps).

Considerations for Selection:

Environmental:

- What is the hazardous area classification (NEC/CEC) of the location in which the luminaires will be installed?
- What wattages and light source (ie. fluorescent) will provide the desired light levels?
- Type of luminaire required: handlamp, portable flood or other special requirements.

**Table 500-3(d)
Identification Numbers.**

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

Quick Selector Chart

Luminaire	NEC Hazardous Area Compliances	Lamp Watts	Volts
EVH Handlamp (Incandescent)	Cl. I, Groups C and D Cl. II, Group G Cl. III	100 max.	250 vac
EVH Handlamp (Fluorescent)	Cl. I, Groups C and D Cl. II, Groups E, F, G Cl. III	13, 15	120, 220-50
EVP	Cl. I, Groups C and D Cl. II, Groups F and G Cl. III	35-150	120, 277, 347
RCDER	Cl. I, Groups C and D	150-500	
VS	Non-Hazardous areas	100 max.	

Incandescent Accessories

Application:

The incandescent VS portable hand lamps are used:

- in wet or corrosive locations to exclude moisture, dirt, corrosive chemicals, etc.
- where an incandescent lamp of up to 100 watts is required in a portable hand lamp

Features:

- Enclosed and gasketed
- Flexible cord or cable is attached through a watertight gland in the handle
- Is of rugged construction
- Clamp type guard available
- Provision is made in the lamp receptacle for a third conductor to ground all non-current-carrying metal parts

Standard Materials:

- Handle – molded rubber
- Globe – clear, plain glass
- Guard – cast aluminum or steel wire

Standard Finishes:

- Handle – Natural
- Guard – Zinc plated

Options:

- Materials: heat resistant glass globe; polycarbonate globe

Size Ranges:

- Up to 100 watt, A-23 lamp
- .250 to .625 cord O.D.

Certifications and Compliances:

- Weather resistant
 - UL Standard: 298
- (Note: CEC/CSA Certified VS handlamps - Cooper Crouse-Hinds Canada fixtures only.)



(No Cable Included)

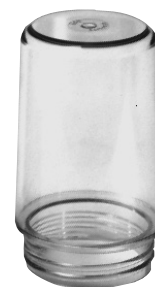
Globe Length	Max Lamp Size	Cord Dia.	Rubber Cat. #
6 $\frac{7}{8}$	100 W A-23†	.125 to .625	VS30

Note: Furnished with clear globe, wire guard and 4 rubber bushings.

Glass Globes



Polycarbonate Globes



Description	Maximum Lamp Size	Cat. #
Clear Glass, (Heat Resisting)	100W, A-23 – 6 $\frac{7}{8}$ "†	V63
Clear, Polycarbonate, Plain	75W, A-21"†	V470



Guards

Description	Size	Cat. #
Steel Wire	6 $\frac{7}{8}$ globe	VS97



Lamp Receptacle (medium base)

Description	Size	Cat. #
Composition keyless	660W, 600V	GS156



Cord Gland Bushings

Description	Size	Cat. #
Rubber	.125 to .250 Cord	BUSH92
	.250 to .375 Cord	BUSH93
	.375 to .500 Cord	BUSH 94
	.500 to .625 Cord	BUSH05

† Will take lamps with maximum dimensions of 6 $\frac{1}{2}$ " long and 2 $\frac{1}{8}$ " diameter.

Application:

EVH106 is used:

- as a portable handlamp in hazardous areas
- in inspecting aircraft wing tanks, vats, process vessels, fuel tanks, etc.

Features:

- Pressure connector terminals for portable cord
- Light weight – 4¼ lbs.
- Designed for rough service – swivel hook, ease in relamping

Standard Materials:

- Guard and globe holder – copper-free aluminum
- Handle – molded phenolic composition
- Globe – glass, heat and impact resistant

Standard Finishes:

- Natural

Size Ranges:

- #16 – 3 type SO cord/cable is to be used (not supplied)

Capacity Ranges:

- 50 to 100 watt, A-21
- Max. volts – 250 VAC

Certifications and

Compliances:

- NEC/CEC:
 - Class I, Division 1 and 2, Groups C, D – 100 watts max.
 - Class I, Zone 1 IIB
 - Class II, Division 1 and 2, Group G – 75 watts max.
 - Class III – 75 watts max.
- UL Standard: 781
- CSA Standard: C22.2 No. 137

Temperature Performance

Data: (based on 40°C Ambient)

Class I, Groups C, D
Class II, Group G
Class III

T3C



Cat. #	Cord Dia.
EVH106	.375 to .625
(Model M10)	

Replacement Parts

Description	Cat. #
Guard & globe assembly	EVH606
Handle assembly (including lampholder)	EVH607
Cord connector assembly	EVH605
Lampholder only	20V19-001

Note: See Section 2P of this catalog for suitable male plug.

Application:

RCDER portable incandescent luminaires provide general illumination in locations having hazardous atmospheres, such as:

- oil refineries
- oil and gasoline loading docks
- aircraft servicing docks and shelters
- distilleries
- paint manufacturing plants
- pumping stations
- other Class I, Groups C and D locations

Features:

- Wheel base
- Carrying handle
- Adjustment allows rotation of 75° vertically.
- Locking screws hold housing firmly in position
- Door which threads into housing includes heat and impact-resistant lens. Door has notches or projections for ease of removing or tightening
- Factory sealed

Standard Materials:

- Body – copper-free aluminum;
- Lens – glass, heat and impact resistant

Standard Finishes:

- Natural

Size Ranges:

- Take cable with O.D. of .375" to .500"

Capacity Ranges:

- RCDER-6 – 150 watt, PAR38 or R40; 300 watt, R40 (medium base)
- RCDER-10 – 500 watt, PAR64 (Ext. Mog End Prong)

Certifications and Compliances:

- NEC/CEC:
RCDER – Class I, Division 1 and 2, Groups (C), D Class I, Zone 1 II(B) A (see photometric data listing)
 - UL Standard: 844
 - CSA Standard: C22.2 No. 137 (RCDER-6 only)
- Note: CEC/CSA Certified RCDER6 - Cooper Crouse-Hinds Canada luminaires only.*

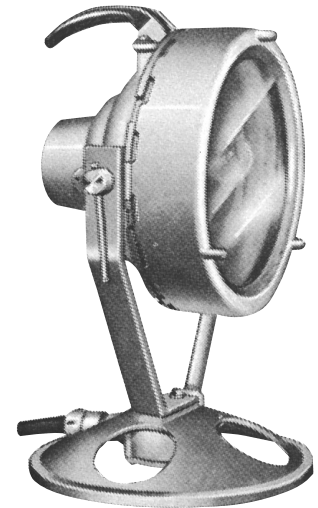
Ordering Information:

After identifying the hazardous area, select the model of luminaire required for that area. Then from the photometric data, select appropriate Cat. No. based on type of mounting desired. Example: RCDER-10 No. 47283A



RCDER-6

Cat. # 44655B



RCDER-10

Cat. # 47283A

Temperature Performance Data (based on 40°C Ambient)

	150W	300W	500W
RCDER-6	T3B	T2B	
RCDER-10			T3C

9L Portable Mounted Lights

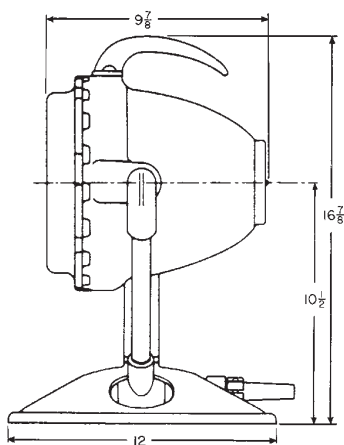
Photometric Data Dimensions and Weights

RCDER Photometric Data

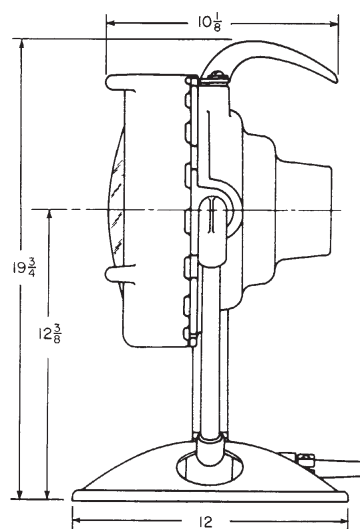
Lamp Watts and Type	Location	Beam Spread		Beam Lumens	Av. Max. Candle Power	Model
		Hor.	Vert.			
150 Watt PAR38 Flood	Class I Groups C, D (Zone 1 IIB)	60°	60°	1690	4000	RCDER-6
150 Watt PAR38 Spot		28°	28°	1200	11500	
300 Watt R40 Flood	Class I Group D (Zone 1 IIA)	123°	123°	3200	1950	
300 Watt R40 Spot		60°	60°	3100	8900	
500 Watt, PAR64 (500 PAR64/NSP)		19°	14°	3000	110000	RCDER-10
500 Watt, PAR64 (500 PAR64/MFL)	Class I, Group D	35°	19°	3300	37000	
500 Watt, PAR64 (500 PAR64/WFL)	(Zone 1 IIA)	55°	32°	3400	13000	

Dimensions

RCDER-6



RCDER-10



Fixture Weights

RCDER-6		RCDER-10	
Cat. #	Lbs. (Net)	Cat. #	Lbs. (Net)
44655	26.0	47283	25.0



Applications:

The EVP portable H.I.D. floodlight† is suitable for maintenance or emergency lighting:

- in areas made hazardous by the presence of flammable gases and vapors, combustible dusts, or easily ignitable fibers and flyings.
- in aircraft manufacturing and maintenance facilities, shipyards, refueling depots, storage tank cleaning, railcar manufacturing and maintenance facilities, refineries, chemical and petrochemical plants, textile mills, grain elevators and pharmaceutical plants, printing operations, wastewater and sewage treatment plants.
- in any adverse environment where portable lighting is preferred or required.
- in locations where lighting is not practical.
- for task oriented lighting.

Standard Materials:

- Housing – copper-free aluminum
- Wheel base – spun aluminum
- Handle – plastic rib covered aluminum
- Reflector – aluminum
- O-ring gasket – Nitrile rubber

Certifications and Compliances:

EVP and EVPG

- NEC/CEC:
 - Class I, Division 1 & 2, Groups C, D
 - Class I, Zone 1 IIB
 - Class II, Division 1 and 2, Groups F, G
 - Class III
 - Wet Locations
 - Marine Locations
- UL Standards: 781, 595, 1572
- CSA Standard: C22.2 No. 137, No. 12

Electrical Ratings

High pressure sodium – (medium base)

- 70, 100, & 150 watt
- 120 volt 60Hz

Metal Halide – (double end)

- 70 watt
- 120, 277 & 347 volt; 60Hz

† EVP fixtures are not supplied with plug.

Features and Benefits:

Product Features

- Strong spun aluminum wheel base.
- Sturdy hand knob.
- Plastic rib covered handle.
- Aluminum specular reflector.
- Tempered, 3/4" thick cover glass.
- Nitrile rubber O-ring gasket.
- Strain-relief clamps.
- Pre-wired, factory-sealed 100' of 16/3 type SOW cord supplied.
- Light weight (25 lbs.).
- Fixture housing has a safety yellow finish.

Ordering Information:

Cl. I, Div. 1, Groups C, D
Cl. II, Div. 1, Group F

	Cat. #
70 watts HPS, 120 volts	EVP4070
100 watts HPS, 120 volts	EVP4100
150 watts HPS, 120 volts	EVP4150*
70 watt MH, 120 volts	EVP9070
70 watt MH, 277 volts	EVP9070/277
70 watt MH, 347 volts	EVP9070/347

* Class II not available.

User Benefits

- Provides stability, allows fixture to be hung on a wall or lowered in an inverted position.
- Tightens to hold position for steady illumination and easy aiming.
- Firm, non-slip grip for transporting fixture.
- Directs intense beam for better visibility.
- Heavy duty service.
- Excellent sealing for use in wet locations.
- Provides extra protection against cord damage.
- Saves on installation time and maintenance costs.
- Easy to handle when transporting.
- Highly visible for safety precautions.

Cl. I, Div. 1, Groups C, D
Cl. II, Div. 1, Groups F, G
Cl. III

	Cat. #
100 watts HPS, 120 volts	EVPG4100
70 watt MH, 120 volts	EVPG9070
70 watt MH, 277 volts	EVPG9070/277
70 watt MH, 347 volts	EVPG9070/347

Fixtures for grain dust applications have a special limiting device to prevent the fixture head from being positioned in an upright position limiting dust buildup.

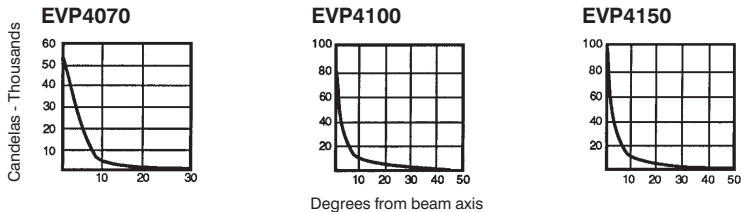
Temperature Performance Data:

Cat. #	Max. Ambient °C	Class I, Division 1		Class II, Division 1	
		T-Rating	Groups	T-Rating	Groups
EVP4070	40	T4A	C, D	T3	F
EVP4100	40	T4A	C, D	T3	F
EVP4150	25	T3C	C, D	—	—
EVP9070	40	T4	C, D	T3	F
EVPG4100	40	T4A	C, D	T3C	F, G
EVPG9070	40	T4	C, D	T4	F, G

Fixture Weight:

25.5 lbs.

Photometric Data:



Dimensions: 12½" D × 13⅛" W × 15⅞" H

EVH Fluorescent Handlamps & Worklights

Cl. I, Div. 1 and 2, Groups C, D
Cl. II, Div. 1, Groups E, F, G
Cl. II, Div. 2, Groups F, G
Cl. III
Cl. I, Zone 1, IIB

9L

Application:

Portable handlamps and worklights can be used:

- in areas made hazardous by the presence of flammable gases and vapors, combustible dusts or easily ignitable fibers & flyings.
- in aircraft manufacturing and maintenance facilities, shipyards, refueling depots, storage tank cleaning, railcar manufacturing and maintenance facilities, refineries, chemical and petrochemical plants, textile mills, grain elevators, pharmaceutical plants, sewage treatment plants and wastewater treatment plants.
- during plant 'shut downs' for maintenance and installation requirements.
- in any adverse environment where portable lighting is preferred or required.
- in locations where fixed lighting is not practical.
- for task oriented lighting.
- for emergency lighting applications.
- when inspecting aircraft wing tanks, vats, process vessels, fuel tanks, etc.

Features:

- built in metal reflector which eliminates glare and blinding, focusing all light on subject.
- protected by patented shock absorbers to withstand rough usage.
- enclosed ballast, remote from light source for easier handling and maneuverability.
- special rubber compound bumper guards and end caps combined with cast guard and metal rods, protecting against damage from falling objects, bumping, or dropping.
- luminaires come complete with lamp(s) and cord.
- The New EVH2625E and EVH2650E incorporate an electronic ballast in the handle for efficiency, cool operation and easy handling.

Standard Materials:

- Body and In line Ballast Unit – aluminum
- Tubeshield – annealed glass
- Bumper guards – rubber

Standard Finishes:

- Aluminum Body – White epoxy (handlamps)
- Aluminum Body – Natural (worklights)
- In Line Ballast Unit – Natural
- Rubber bumper guards – safety yellow

Size Ranges:

- Supplied with 18/3 SOW cord (25 ft or 50 ft)

Electrical Ratings:

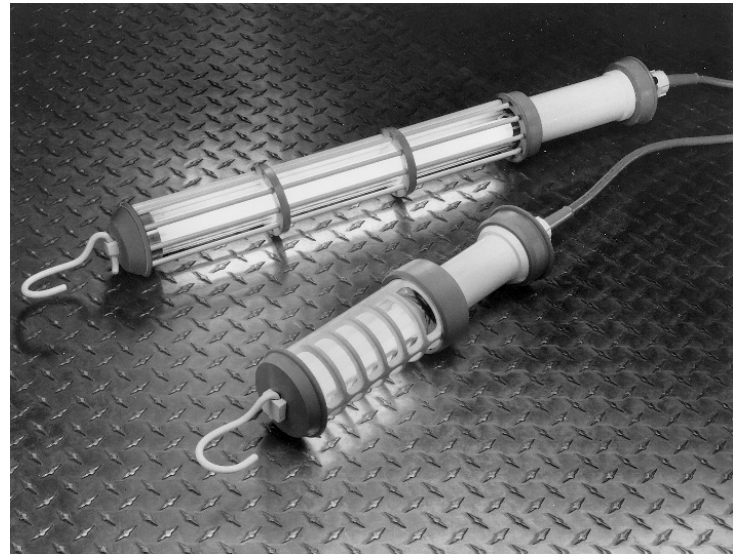
- 13 to 26 Watts
- Max. Volts 220VAC

Certifications and Compliances:

- NEC: Fluorescent Worklights (15 watt units)
Class I, Div. 1 and 2, Group D
Class I, Zone 1 IIB
Class II, Div. 1, Groups E, F, G
Class II, Div. 2, Groups F, G
Class III
- NEC: Fluorescent Handlamps (13 and 26 watt units)
Class I, Div. 1 and 2, Groups C, D
Class II, Div. 1, Groups E, F, G
Class II, Div. 2, Groups F, G
Class III
- FM: Classification 3615
- CSA: C22.2

Options:

- An isolated ballast is available on the EVH 13 Watt handlamps for additional protection, use suffix IB.



Temperature Performance Data: (Based on 40°C Ambient Temperature)

Class I, Div. 1			Class II, Div. 1	
Cat. No.	T-Rating	Groups	T-Rating	Groups
EVH1525	T5	D	T5	E, F, G
EVH1550	T5	D	T5	E, F, G
EVH1325	T5	C, D	T5	E, F, G
EVH1350	T5	C, D	T5	E, F, G
EVH2625	T3	C, D	T3	E, F, G
EVH2650	T3	C, D	T3	E, F, G
EVH1325 IB	T5	C, D	T5	E, F, G
EVH1350 IB	T5	C, D	T5	E, F, G
EVH2625E	T6	C, D	T6	E, F, G
EVH2650E	T6	C, D	T6	E, F, G

Ordering Information:

EVH Fluorescent Worklights

Line Voltage (60 Hz)	Watts	Cord Length (ft)	Lamp Type	Cat. No.
120	15	25 ft.	F15T8	EVH1525
120	15	50 ft.	F15T8	EVH1550

EVH Fluorescent Handlamps (With Magnetic Ballast in Cord)

Line Voltage (60 Hz)	Watts	Cord Length (ft)	Lamp Type	Cat. No.
120	13	25 ft.	F13TT	EVH1325
120	13	50 ft.	F13TT	EVH1350
120	26	25 ft.	F26DTT	EVH2625
120	26	50 ft.	F26DTT	EVH2650
(50 Hz)				
220	13	25 ft.	F13TT	EVH1325/220 50
220	13	50 ft.	F13TT	EVH1350/220 50
220	26	25 ft.	F26DTT	EVH2625/220 50
220	26	50 ft.	F26DTT	EVH2650/220 50

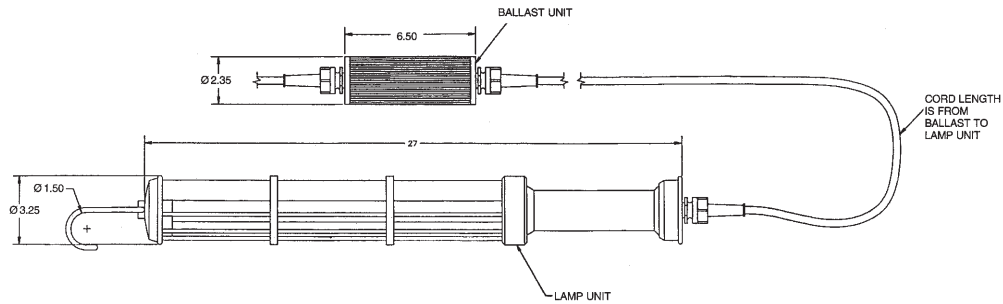
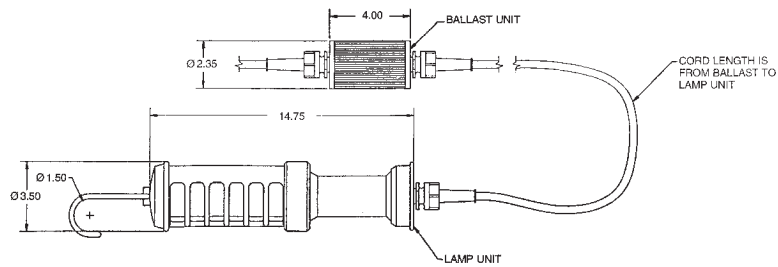
New – EVH Fluorescent Handlamps (With Electronic Ballast in Handle)

Line Voltage (60 Hz)	Watts	Cord Length (ft)	Lamp Type	Cat. No.
120	26	25 ft.	CF26DD/E/841	EVH2625E
120	26	50 ft.	CF26DD/E/841	EVH2650E

9L Portable Lighting

Dimensions (inches)

Work Light

Hand Lamp
(Magnetic Ballast Handlamps Only)

Description	Page No.
Exit Signs	
EXL Series	924, 925
EVLPF(B)-EXD	926
DMVF(B)-EXD	927
Light-Pak™ – Emergency Lighting Systems	
ELPS Series	928, 929
N2LPS Series	930, 931
Remote Luminaire Heads	
EVLA	928, 930
N2RF	930
Compact Fluorescent Emergency Luminaires	
CPMVFB	932, 933
DMVFB	934, 935
EVLFB	936, 937

Table 500-3(d)
Identification Numbers.

Maximum Temperature		Identification Number
Deg. C	Deg. F	
450	842	T1
300	572	T2
280	536	T2A
260	500	T2B
230	446	T2C
215	419	T2D
200	392	T3
180	356	T3A
165	329	T3B
160	320	T3C
135	275	T4
120	248	T4A
100	212	T5
85	185	T6

10L EXL Explosionproof Exit Sign

Factory Sealed

Cl. I, Div. 1 & 2, Groups C, D
Cl. I, Zone 1 IIB
Cl. II, Div. 1, Groups E, F, G

Application:

EXL exit signs are used:

- in locations deemed hazardous due to the presence of flammable vapors or gases, or combustible dusts
- in any building or enclosed area where people work – where illuminated exit signs are required
- to provide distinct, highly visible exit marking
- to indicate the direction of travel to exits

Features:

- Two incandescent lamps (not included) wired in parallel – to provide extra margin of light source reliability
- Solid state circuit for extended lamp life in AC units
- Six inch red letters on white acrylic sign panel make word "exit" stand out boldly and clearly
- Edge lighting characteristic of sign panel makes visibility excellent at all lighting levels
- Factory sealed explosion-proof housing
- Pendant, wall and end bracket mounts provide universal installation options
- Impact-resistant acrylic sign panel needs no guard – makes cleaning easy
- Internal rectifier extends lamp life beyond 1,000-hour rated life – reduces relamping cost
- Relamping tool provided

Standard Materials:

- Body – copper-free aluminum
- Sign panel – acrylic

Conduit Entrance:

- 3/4" hubs

Lamp Wattage:

- Two 60-watt, 60T10 clear lamps for AC units
- Two 25-watt, 25T10 clear lamps for DC units
- Lamps not included with luminaire

Electrical Ratings:

- 120VDC or 120VAC operation.

Certifications and Compliances:

- NEC: Class I, Groups C and D
Class II, Groups E, F, and G
- UL Standard: 844
- NFPA Life Safety Code No. 101-1991

Temperature Performance

Data (for both AC & DC operation):

Ambient Temp (°C)	Class I (C,D) Class II (E,F,G)	Supply Wire °C
25	T3C	150°C
40	T3C	

Ordering Information:

I. When ordering an EXL Series Exit Sign, you will need to specify:

- (A) Voltage (120VAC or 120VDC)
- (B) Mounting (Wall, End Bracket, or Pendant)
- (C) Exit Sign Designation

All units come standard with 3/4" hubs and exit signs with red lettering and white background. Complete catalog numbering is as follows:

EXL (A) 2 (B) (C)

(A) Voltage: 120VAC leave blank
120VDC D

(B) Mounting: Wall 1
End Bracket 2
Pendant 3

(C) Exit Sign Designation:

- A Single Face (Wall Mount)
- AA Double Face (End Bracket & Pendant)
- AB Double Face, one side arrowhead right, the other no arrowhead (End Bracket & Pendant)
- AC Double Face, one side arrowhead left, the other no arrowheads (End Bracket & Pendant)
- AD Double Face, one side arrowhead both ends, the other no arrowheads (End Bracket & Pendant)
- B Single Face, arrowhead right (Wall Mount)
- BC Double Face, one side arrowhead right, the other arrowhead left (End Bracket & Pendant)
- BD Double Face, one side arrowhead both ends, the other arrowhead right (End Bracket & Pendant)
- C Single Face, arrowhead left (Wall Mount)
- CD Double Face, one side arrowhead both ends, the other arrowhead left (End Bracket & Pendant)
- D Single Face, arrowhead both ends (Wall Mount)
- DD Double Face, both sides arrowhead both ends (End Bracket & Pendant)



Pendant Style



End Bracket Style



Wall Style

Ordering Examples Table:

Mounting Type	Sign Panel Description	Hub Size	AC Cat. #	DC Cat. #
Wall	Single face	3/4	EXL21A	EXLD21A
End bracket	Double face	3/4	EXL22AA	EXLD22AA
Pendant	Double face	3/4	EXL23AA	EXLD23AA

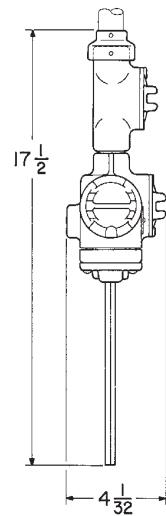
Suffix Options:

Exit Signs with green lettering on white background GN
Unit Provided with Epoxy powder Coat S752
277VAC – (Order ECT413 Transformer Separately)

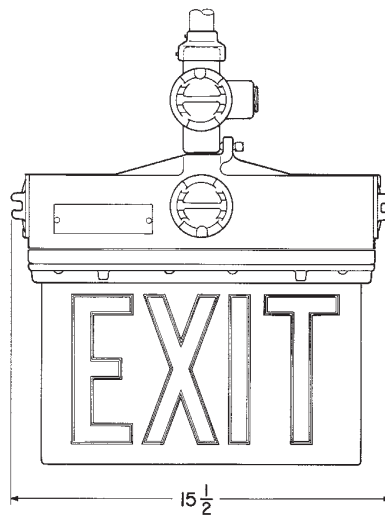
EXL Explosionproof Exit Sign

10L

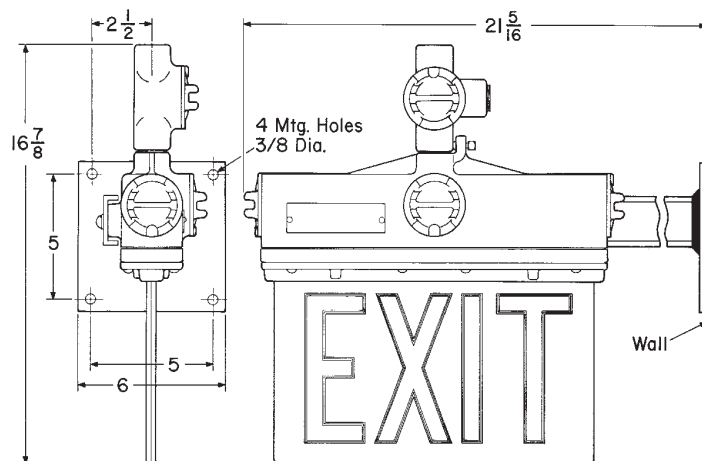
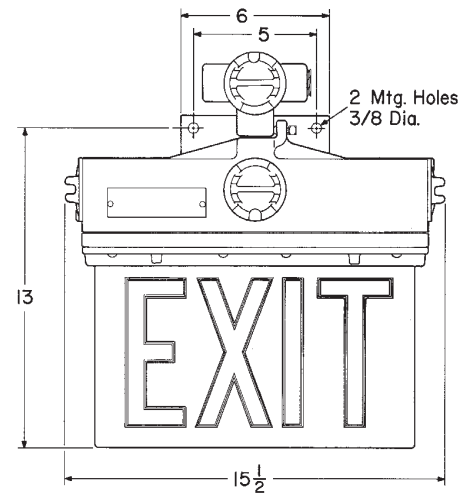
Factory Sealed
Dimensions



Pendant Style



Wall Style



End Bracket Style

EVLPF(B) - Exit Sign Fluorescent Luminaire

- Cl. I, Div 1, Groups B (suffix GB), C, D
- Cl. I, Zone 1, Groups IIB + H2 (GB suffix), IIB
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence

- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66

Application:

EVLPF(B)-EXD exit signs are used:

- in any building or enclosed area where people work - where illuminated exit signs are required
- to provide distinct, highly visible exit marking
- to indicate the direction of travel to exits
- in locations deemed hazardous due to the presence of flammable vapours or gases, or combustible dusts

Features - Benefits:

- Six inch red letters on white glass sign panel make the word "EXIT" stand out boldly and clearly
- Light weight copper-free aluminum housing with powdered epoxy finish
- All exterior hardware is corrosion-resistant stainless steel
- Three mounting arrangements pendant, ceiling and wall bracket
- Integral ballast
- High power factor (90%+) ballasts
- Easier assembly, installation and maintenance
- Outdoor, hose down, marine and corrosive environments suitable
- Ideal for adverse environments typical of industrial facilities
- Ground wire for safety
- Optional battery backup for operation during power outage

About the battery:

- Bodine fluorescent battery pack ballasts are UL Component Recognized
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case
- 90 minute illumination time
- 10-year life expectancy
- 2-year full warranty
- During emergency use 1 lamp has continuous operation
- A red indicator light indicates the battery is charging
- Wiring instructions for a "Push-to-Test" button is supplied with the luminaire

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder - copper free aluminum
- Globe - heat and impact resistant glass
- Exterior hardware - stainless steel

Standard Finishes:

Copper-free aluminum - *Corro-free™*
powdered epoxy

Ratings (Electrical/Size):

Sources/wattage:

- 52W (2-26W lamps)
- 120-277V, 50-60Hz
- 120V, 60Hz
- 347V, 60Hz

Conduit entries:

- 3/4", 1" NPT - Pendant, Wall Bracket, Ceiling

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output



Certification & Compliances:

- NEC and CEC:
 - Class I, Division 1, Groups B (GB suffix), C, D
 - Class I, Zone 1 Groups IIB + H2 (GB Suffix), IIB, IIA
 - Class II, Class III & Simultaneous Presence (Class I and Class II)
- UL Standards
 - 844 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
Factory assembled with lamps	FA

Ordering Information:

Mounting Type	Supply Voltage Volts/Hertz	Catalog Number	
		Fluorescent	Fluorescent with Battery Back-up
Pendant	120-277V / 50-60Hz	EVLPFA02520/UNV-EXD	EVLPFBA02520/UNV-EXD
	120V / 60Hz (Canada)		EVLPFBA0520/120CAN-EXD
	347V / 60Hz	EVLPFA02520/347-EXD	EVLPFBA0520/347-EXD
Ceiling	120-277V / 50-60Hz	EVLPCX02520/UNV-EXD	EVLPCBX02520/UNV-EXD
	120V / 60Hz (Canada)		EVLPCBX02520/120CAN-EXD
	347V / 60Hz	EVLPCX02520/347-EXD	EVLPCBX02520/347-EXD
Wall	120-277V / 50-60Hz	EVLFBX02520/UNV-EXD	EVLFBXB02520/UNV-EXD
	120V / 60Hz (Canada)		EVLFBXB02520/120CAN-EXD
	347V / 60Hz	EVLFBX02520/347-EXD	EVLFBXB02520/347-EXD

DMVF(B) - Exit Sign Fluorescent Luminaire

- Cl. I, Div. 2; Groups A, B, C, D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II, Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4X; IP66

10L

Application:

DMVF(B) exit signs are used:

- in any building or enclosed area where people work.
- where illuminated exit signs are required.
- to provide distinct, highly visible exit markings.
- to indicate the direction of travel to exits.
- in locations deemed hazardous due to the presence of flammable vapors or gases, or combustible dusts.

Features:

- Six inch letters on white glass sign panel make the word "exit" stand out boldly and clearly.
- Housings made of die-cast copper-free aluminum (less than 0.4 of 1% copper) for strength and resistance to corrosion).
- Mounting module equipped with integral hub set screws for vibration resistance (ceiling and pendant mounts).
- Hubs are provided with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Epoxy powder finish and stainless steel external hardware for resistance to corrosion.
- Long life gaskets which provide seals between mounting module, housing, and globe assembly.
- Grounding wire for safety.
- Cool operating design.
- Optional emergency battery backup operation during power outage.

About the battery:

- Bodine fluorescent battery pack ballasts are UL Component Recognized.
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case.
- 90 minute illumination time.
- 10-year life expectancy.
- 2-year full warranty.
- During emergency use, 1 lamp has continuous operation.
- A red indicator light indicates the battery is charging.
- Wiring instructions for a "Push-to-Test" button is supplied with the fixture.

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

Standard Materials:

- Ballast housings and mountings - copper-free aluminum (less than 0.4 of 1%).
- Exterior hardware - stainless steel.
- Globe - heat and impact resistant internally fluted glass.

Standard Finishes:

- Aluminum - gray epoxy powder coat.
- Krydon material - high reflectance white.
- Stainless steel - natural.

Electrical Rating Ranges:

- 52 Watt.
- 120-277V, 50-60 Hz.
- 120V, 60 Hz.
- 347V, 60 Hz.

Options:

Description

Lamps supplied with exit sign
Top hat with stainless steel threaded insert.
Restricted breathing construction.
Class I Division 2 & Zone 2 suitability.
Cooler operating temperatures (T -Numbers).
Certified for IEC Zone 2 (Suffix S826TB).
Furnished with
Terminal Block.
Crimp Terminals.
Dedicated voltage ballasts (no MT, DT or TT).

Suffix added to Cat. No.

S714
S806
S826

S826TB



Certifications and Compliances:

- **NEC and CEC:**
Class I, Division 2, Groups A, B, C, D
- Class II, Class III & Simultaneous Presence (Class I Division 2 and Class II)
- Class I Zone 2
- **IEC:**
Zone 2 Ex nR IIC
- **UL Standards:**
844, 2279 Hazardous (Classified) Locations.
1598 Luminaires.
1598A Marine Luminaires.
- **CSA Standards:**
C22.2 No. 137
- **IEC Standards:**
60079-15

Ordering Information:

Mounting Type	Supply Voltage Volts/Hertz	Catalog Number	
		Fluorescent	Fluorescent with Battery Back-up
Pendant	120-277V / 50-60Hz	DMVF2A052G/UNV-EXD	DMVFB2A052G/UNV-EXD
	120V / 60Hz (Canada) 347V / 60Hz	DMVF2A052G/347-EXD	DMVFB2A052G/120CAN-EXD DMVFB2A052G/347-EXD
Ceiling	120-277V / 50-60Hz	DMVF2C052G/UNV-EXD	DMVFB2C052G/UNV-EXD
	120V / 60Hz (Canada) 347V / 60Hz	DMVF2C052G/347-EXD	DMVFB2C052G/120CAN-EXD DMVFB2C052G/347-EXD
Wall	120-277V / 50-60Hz	DMVF2TW052G/UNV-EXD	DMVFB2TW052G/UNV-EXD
	120V / 60Hz (Canada) 347V / 60Hz	DMVF2TW052G/347-EXD	DMVFB2TW052G/120CAN-EXD DMVFB2TW052G/347-EXD

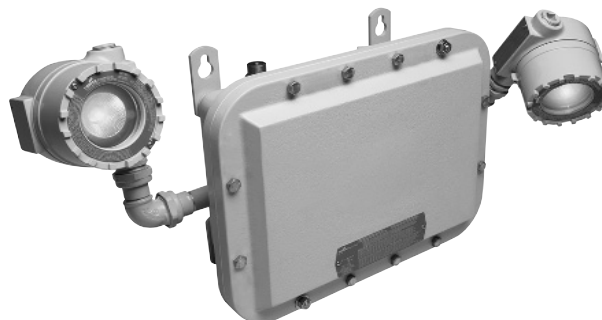
Application:

ELPS series emergency lighting systems are used:

- to provide safe, reliable illumination indoors or outdoors to designated areas during failure or interruption of power to the normal lighting system
- in areas made hazardous by the presence of flammable gases and vapors, combustible dusts or easily ignitable fibers and flyings
- in areas where corrosion, vibration, moisture, dirt and rough usage may be encountered
- where required by the National Electrical Code®, the Life Safety Code or other codes
- in refineries, chemical and petrochemical facilities, grain processing, handling or storage facilities, manufacturing plants, waste water treatment facilities and other areas where safe, reliable, hazardous area emergency lighting is needed

Features:

- Compact factory sealed luminaire assemblies are each furnished with a 12 watt tungsten-halogen lamp and inner reflector for appropriate photometrics in hazardous areas.
- Luminaire assemblies are fully adjustable and lockable on two axes to provide flexible and consistent light aiming capabilities.
- Luminaire lens ring is threaded for easy relamping and locks in place with hex head set screw; will not loosen due to vibration.
- Ground joint cover with external flange design permits large opening and easy access to internal components. Stud bolts in diagonally opposite corners of body ease cover removal and installation.
- Neoprene cover gasket seals out moisture for superior protection of internal components against wetness and corrosion.
- Light weight, compact size, and mounting feet ease installation and allow placement in confined areas.
- Two 1" NPT drilled and tapped conduit openings, with plugs, are standard, for choice of top or bottom feed.
- Factory-installed PUSH-TO-TEST pushbutton enables easy testing of system.
- MAIN POWER ON pilot light indicates AC power is being supplied to the battery charger; pilot light jewel is threaded for easy lamp replacement.
- Stainless steel drain minimizes moisture collection. Stainless steel breather with aluminum cap provides ventilation, minimizes moisture collection.
- CID 101 corrosion inhibitor device is provided with each ELPS system to help protect electrical components and connections.
- Rugged, long-life, maintenance-free, nickel cadmium battery provides 30 watts of power for the required 1½ hours.
- Solid state battery charger for long life and reliable service prevents deep discharge by automatically disconnecting luminaires from battery.



- Terminal block facilitates field wiring connections.
- Instruction sheet and maintenance record card provided with unit in a protective plastic envelope.
- A time delay is standard; time delay is preset at factory for 5 minute delay but can be field set for 5 seconds or 15 minutes, thus allowing HID type lamps time to restrike and reach desired illumination levels.
- Solid state battery charger will accept 120, 220/240 or 277 VAC, 50/60 Hz.

Electrical Ratings:

- Power supply:
Input: 120, 220/240, 277 VAC, 50 or 60 hertz
0.5 Amps Maximum
Output: 12 VDC
UL listed for 28 watts for 1½ hours at 0° – 40°C
- Luminaires:
Voltage: 12 VDC
Lamp Type: #789, miniature Tungsten halogen, G4, 2-pin, 14 watt.

Certifications and Complies:

- NEC: Class I, Groups B, C, D
Class II, Groups E, F, G
Class III
Simultaneous Presence
- NEMA: 3R, 4X*, 12 (ELPS power supply)
- Suitable for wet locations (EVLA fixtures)
- Marine (EVLA fixtures)
- UL Standard:
844 – Electric Luminaire – Hazardous Locations
924 – Emergency Lighting and Power Equipment
1203 – Explosionproof and Dust-Ignition-Proof Electrical Equipment
- Life Safety Code:
Section 5-9 (Emergency Lighting)
- Suitable for Wet Locations
- NEMA 3, 3R, 12
- Marine

* NEMA 4X pending with new ECD 4X breather and drain

Standard Materials:

- Power supply enclosure and luminaire assembly – copper-free aluminum (less than 0.4 of 1% copper)

Standard Finishes:

- Power supply enclosure and fixture assemblies—powder coat epoxy paint finish

Ordering Information:

CATALOG NUMBER	DESCRIPTION
ELPS502*	Standard unit with adjustable heads
ELPS-K50	Replacement power interior, includes circuit board and battery pack
ELPS50*	Power Supply
EVLA12*	Lamphead and arm
ELPS502-EXD	Exit sign, double sided with EVI, red letters
ELPS502-EXD GN	Exit sign, double sided with EVI, green letters
ELPS502-EXD GB	Exit sign, single or double sided with Group B EVA, red letters
ELPS502-EXD GB GN	Exit sign, single or double sided with Group B EVA, green letters
ELPS502-EXS	Exit sign, single sided with EVI, red letters
ELPS502-EXS GN	Exit sign, single sided with EVI, green letters

* Base unit comes standard with Class I, Division 1, Group B.

Options:

- Remote mounted EVLA12 lamp head mounted to a Cooper Crouse-Hinds EABC36 or EABL36 1" NPT outlet box
- S794 key operated disconnect switch as part of the ELPS502 emergency light system
- S854 keyless operated designated disconnect switch as part of the ELPS502 emergency light system

Temperature Performance Data:

EVLA12—Maximum Ambient Temperature 55°C (131°C)

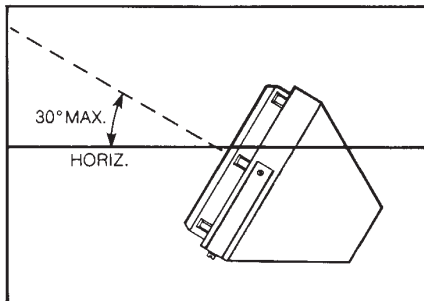
EVLA12 Temperature Codes (T-numbers):

● Class I—T4A ● Class II*—T3B ● Class III*—T3B

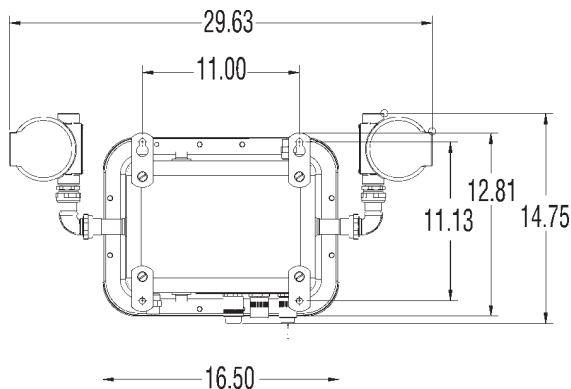
* For Class II and Class III applications, fixtures must not be aimed more than 30° above horizontal (see diagram below).

ELPS EVI & ELPS EVA—Maximum Ambient Temperature 40°C

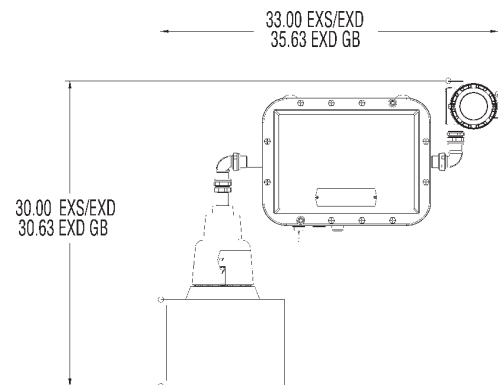
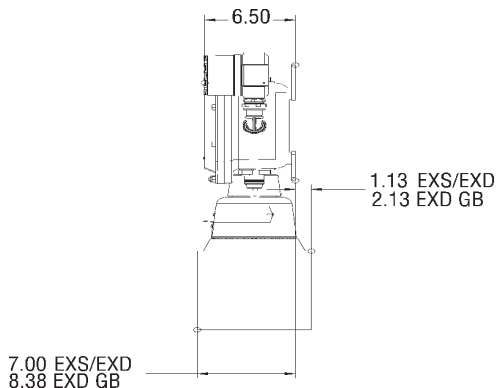
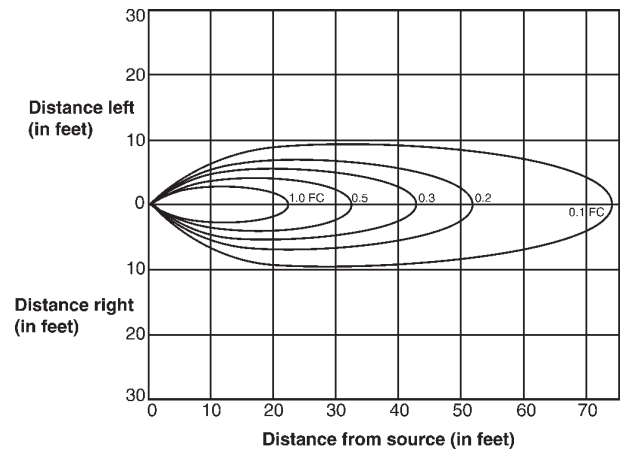
● Class I—T4 ● Class II—T3C



Dimensions



Photometric Data:



Unit Net Weights:

- ELPS502 complete emergency lighting system – 50 lbs.
- ELPS50 power supply – 40 lbs.
- EVLA12 luminaire assembly – 5 lbs.

Status Indication

LED Status	Condition	Meaning of the Indication
	No light	AC power is removed from the circuit
●	Steady light (no blinking)	Fully charged
●	Light blinks once	Charging
●●	Light blinks twice	Battery failure
●●●	Light blinks three times	Circuit failure
●●●●	Light blinks four times	Lamp failure

10L LIGHT-PAK™ N2LPS Emergency Lighting System

Cl. I, Div. 2, Groups B, C, D
Class I, Zone 2
Wet Locations
NEMA 3, 3R

Application:

Light-Pak N2LPS emergency lighting systems are used:

- to provide reliable illumination for egress areas during failure or interruption of power to the normal lighting system
- in areas where flammable gases or vapors may become present due to abnormal, unusual, or accidental conditions
- in manufacturing plants, refineries, petrochemical and chemical plants, waste and sewage treatment facilities, oil terminals, food processing facilities, breweries, and other industrial manufacturing or process industry facilities subject to wet or corrosive conditions
- to illuminate machinery or panels during a loss of AC power
- where moisture, dirt, dust, or corrosion will limit the life and reliability of ordinary emergency lighting systems
- where required by the National Electrical Code®, the Life Safety Code® or other applicable codes
- Outdoor applications

Features:

- Compact factory assembled system with two 8 watt sealed beam halogen lamps.
- Nonmetallic, enclosed and gasketed construction; a CID101 corrosion inhibitor device is also included.
- Solid state battery charger will accept 120, 220, and 277 VAC, 50/60 Hz.
- A time delay is standard; time delay is preset at factory for 5 minute delay but can be field set for 5 seconds or 15 minutes, thus allowing HID type lamps time to restrike and reach desired illumination levels.
- "Push-to-Test" button and "Main Power On" pilot light are conveniently located on side of system.
- Sealed, lead calcium battery(ies); one battery supplies 28 watts of power (two batteries 56 watts) for 1½ hrs.
- Luminaire heads constructed of rugged Noryl® thermoplastic material with nylon and plastic coated hardware.
- Cover has six captive stainless steel screws; factory installed ¾" conduit hub opening is standard, located on top of system.
- Remote luminaire head assemblies (one or two) are available for mounting of luminaire heads away from main power supply system.

Temperature Performance

Data: (based on 40°C ambient)

Cat. #	Class I, Division 2
N2LPS (all)	T4A
N2RF (all)	T5

(NOTE: Ambient temperature at which the Light-Pak system is rated is 0°C (32°F) to 40°C (104°F). Lower ambient temperatures will reduce battery capacity.)

National Electrical Code and Life Safety Code are registered trademarks of the National Fire Protection Association, Inc.

Noryl is a registered trademark of General Electric Company.



Standard Materials:

- Power supply and remote luminaire enclosures – Krydon® fiberglass-reinforced polyester
- Luminaire heads – Noryl® thermoplastic
- Exterior hardware – Nylon, plastic coated, and stainless steel
- Cover gasket – Hypalon® synthetic rubber

Electrical Ratings:

- Power supply –
Input: 120, 220, or 277 VAC, 50 or 60 Hz; 25 watts max.
Output: 6 VDC;
N2LPS6222, N2CPS6220 – 28 watts for 1½ Hrs.
N2LPS6422, N2LPS6420 – 56 watts for 1½ Hrs.
- Luminaires – Voltage: 6 VDC; Lamp type: 8 watt, tungsten halogen PAR36 sealed beam (General Electric #H7551)

Certifications and Compliances:

- NEC – Class I, Division 2, Groups B,C,D
- UL Standards: 924 (Emergency Lighting and Power Equipment); 844 (Electric Luminaires Hazardous Locations)
- Life Safety Code NFPA101® – Section 5-9 (Emergency Lighting)
- Wet Locations Suitability

Unit Net Weights:

- N2LPS6222 – 16 lbs.
- N2LPS6422 – 21 lbs.
- N2LPS6220 – 12 lbs.
- N2LPS6420 – 17 lbs.
- N2RF621 – 6 lbs.
- N2RF622 – 8 lbs.

Ordering Information:

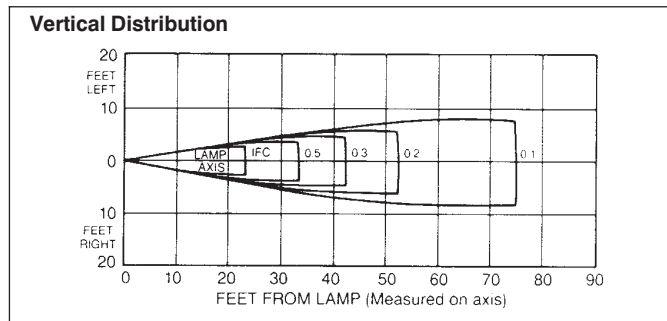
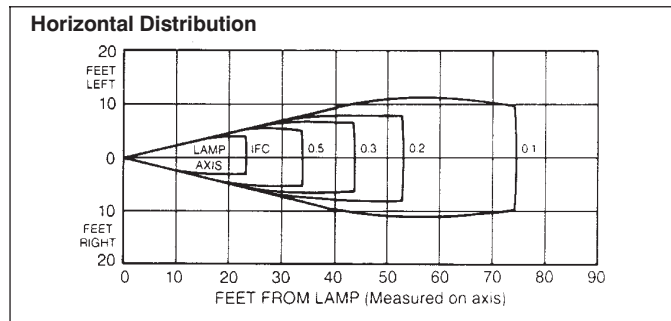
Description	Cat. #
28 watt, 6 volt output power supply with two 8 watt tungsten halogen luminaires	N2LPS6222
56 watt, 6 volt output power supply with two 8 watt tungsten halogen luminaires	N2LPS6422
28 watt, 6 volt output power supply only (less luminaire heads)	N2LPS6220
56 watt, 6 volt output power supply only (less luminaire heads)	N2LPS6420
Remote luminaire assembly with one 8 watt luminaire head	N2RF621
Remote luminaire assembly with two 8 watt luminaire heads	N2RF622
Remote luminaire assembly with one 12 watt 6 volt lamp for mounting in Class 1, Division 1, Group C and D areas	EVLA126
Power supply with two 8 watt tungsten halogen luminaires and single face exit sign. Exit sign operates in emergency mode only.	N2LPS6422-EXS
Power supply with two 8 watt tungsten halogen luminaires and double face exit sign. Exit sign operates in emergency mode only.	N2LRS6422-EXD

Option:

Description	Suffix to be Added to Cat. #
N2LPS6422 with exit sign EXS or EXD that operates in both normal and emergency mode.	S840

Photometric Data:

Isofootcandle Chart



Wire Sizing for Remote Installation:

For Copper Wire –

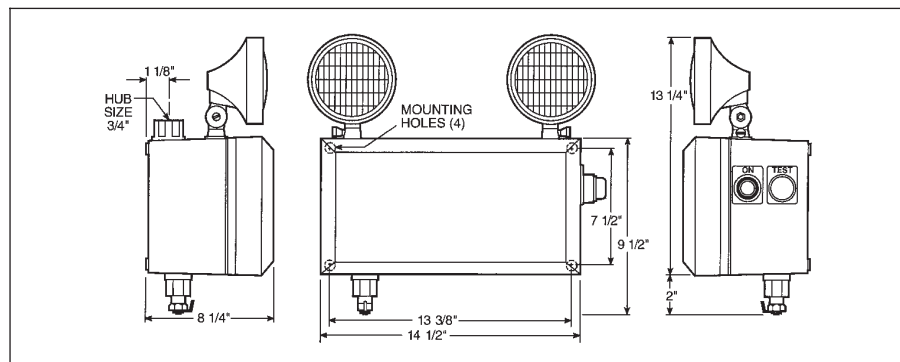
Running Distance* (ft.) Between Power Supply and Remote Luminaire

Wire Size	8	16	24	32
16 AWG	26	13	6	3
14 AWG	42	21	10	5
12 AWG	66	33	16	8

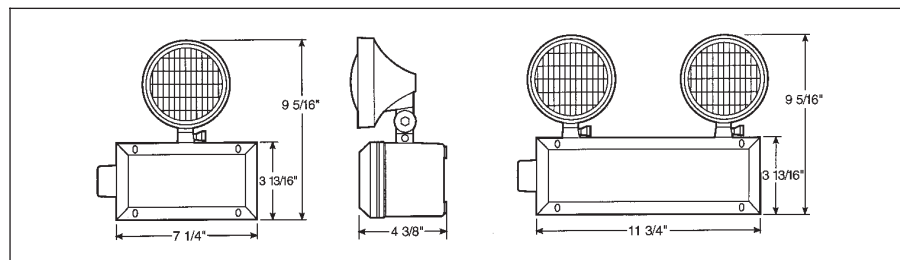
Wire Size	8	16	24	32
10 AWG	106	53	26	13
8 AWG	168	84	42	21
6 AWG	270	135	67	33

* Maximum distance to limit line voltage drop to 5%.

Dimensions (N2LPS):



Dimensions – Remote Luminaires (N2RF621 – N2RF622)



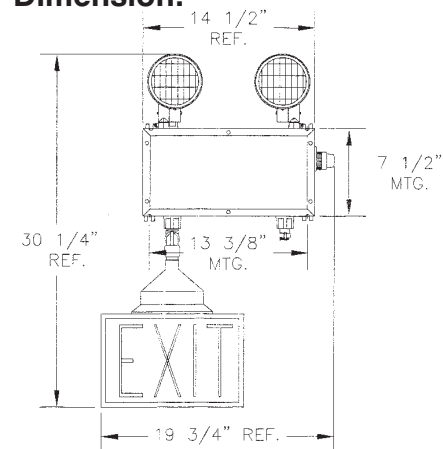
Weights:

Description	Weight
N2LPS6222 (28 watt system)	16 lbs.
N2LPS6422 (56 watt system)	21 lbs.

Weights:

Description	Weight
N2RF621 (8 watt)	6 lbs.
N2RF622 (16 watt)	8 lbs.

Dimension:



CPMVFB Emergency Compact Fluorescent

Continuous Operation
Champ-Pak™ Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence *
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

Application:

- where emergency lighting is required to permit workers in industrial areas to safely encounter their surroundings during power failures
- where emergency egress lighting is required, such as: catwalks, walkways, tunnels, doorways, stairs, stairwells, ramps and aisles
- indoor and outdoor wall mounting or vertical surface mounting where minimal luminaire depth is required in:
 - Manufacturing plants and heavy industrial facilities
 - Industrial process facilities such as refineries, chemical, petrochemical, pharmaceutical and platforms
 - Waste or sewage treatments plants
 - Offshore, dockside and harbor installations
- For security and safety lighting in industrial facilities for lighting of loading docks, tunnels and stairways
- For marine, wet location, hosedown and corrosive environments

Features & Benefits:

- Unique compact shallow-profile design mounts virtually anywhere
- Side hinged cover with two screw closing for easy installation and maintenance
- Gray Corro-free™ epoxy powder coat two-piece housing provides superior corrosion resistance
- Unique stainless steel wire guard accessory attaches without any additional hardware for easy installation and maintenance
- Glass refractor provides uniform light distribution to eliminate glare
- Silicon gaskets make luminaire suitable for NEMA 4X, Marine environments
- High power factor ballasts (+90%) are standard, which allow more luminaires per circuit

Standard Materials:

- Luminaire housing and door frame assembly - copper-free aluminum
- External hardware - stainless steel
- Lens - heat and impact-resistant refractor style glass
- Gaskets - silicon rubber
- Reflector - aluminum light sheet
- Wire guard - stainless steel

Standard Finishes:

- Aluminum - Corro-free™ epoxy powder coat
- Stainless steel - natural

* Consult Cooper Crouse-Hinds

Certifications and Compliances:

- NEC and CEC:
 - Class I, Division 2, Groups A, B, C, D
 - Class II, Class III & Simultaneous Presence (Class I Division 2 and Class II)
 - Class I Zone 2
- IEC:
 - Zone 2 Ex nR IIC
- UL Standards
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15



About the battery:

- Bodine fluorescent battery pack ballasts are UL Component Recognized
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case
- 90 minute illumination time
- 10-year life expectancy
- 2-year full warranty
- During auxiliary use 1 lamp has continuous operation
- A red indicator light indicates the battery is charging
- Wiring instructions for a "Push-to-Test" button is supplied with the fixture

Electrical Rating Ranges:

- 52 watts
- 120-277V, 50-60Hz
- 120V, 60Hz
- 347V, 60Hz

Options:

- Restricted Breathing Construction
 - Class I Division 2 & Zone 2 Suitability
 - Cooler Operating Temperatures (T-numbers)
- Certified for IEC Zone 2 (Suffix S826TB)
 - Furnished with
 - Terminal Block
 - Crimp Terminals
 - Dedicated voltage ballasts (no MT, DT or TT)
- Factory Assembled with Lamp installed
- Fused - protects ballast and capacitors against abnormal line conditions
 - (Not for use in Canada)
 - (Not for Marine use)

Suffix to be added
to Cat. #
S826

S826TB

FA
S658†

Accessories:

Stainless Steel Wire Guard

Cat. #
P55

† When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

CPMVFB Emergency Compact Fluorescent

Continuous Operation
Champ-Pak™ Luminaires

Ordering Information
Dimensions & Weights

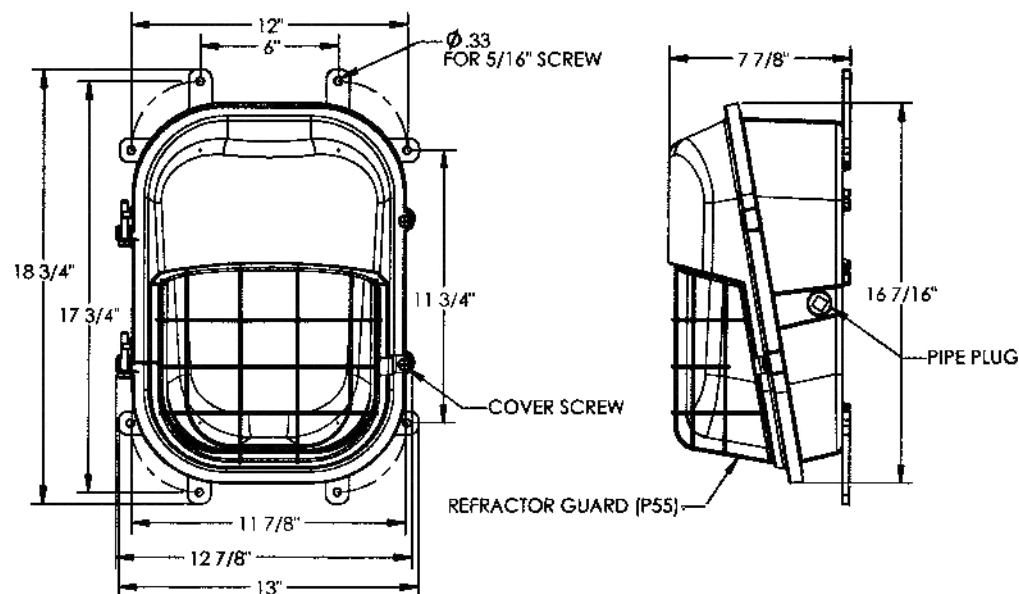
10L

Ordering Information:

Hub Size	Lamp Watts	Catalog Number for use with ANSI Lamps
3/4NPT	26	CPMVFB2W026

	Standard Voltage Ballasts		
	NEC/UL	CEC/CSA (cUL)	
Voltage	120-277V 50-60Hz	120V/60Hz	347V 60Hz
Suffix	/UNV	/120CAN	/347

Dimensions (Inches):



Net Weight:

Luminaire Less Guard
P55 Guard

18.6 Lbs.
0.5 Lbs.

10L
Emergency
Lighting

DMVFB Emergency Compact Fluorescent

Continuous Operation
Champ® Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div. 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)

- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

Application:

DMVF series Champ lighting luminaires are used:

- where emergency lighting is required to permit workers in industrial areas to safely encounter their surroundings during power failures.
- Where emergency egress lighting is required, such as: catwalks, walkways, tunnels, doorways, stairs, stairwells, ramps, and aisles.
- in areas made hazardous by abnormal conditions resulting in the presence of flammable vapors or gases.
- in areas made hazardous by the presence of combustible dusts.
- where combustible dusts and flammable vapors are present simultaneously.
- in marine applications where water spray and corrosive atmospheres are considerations.
- on installations where vibration and rough usage are problems.
- where a cool, efficient light source is required.
- in areas that require lamps to reach full illumination immediately.
- in refineries, chemical and petrochemical facilities, grain processing, handling or storage facilities, manufacturing plants waste water treatment plants sewage treatment plants, oil terminals, food processing facilities, breweries, and any other manufacturing or processing facility where safe, reliable, hazardous area fluorescent or auxiliary lighting is needed.

Standard Features:

- Housings made of die-cast copper-free aluminum (less than 0.4 of 1% copper) for strength and resistance to corrosion.
- Mounting modules equipped with integral hub set screws for vibration resistance (ceiling, pendant, and quad mounts).
- Hubs are provided with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Epoxy powder finish and stainless steel external hardware for resistance to corrosion.
- Long-life gaskets which provide seals between mounting module, housing, and optical assembly.
- Grounding wire for safety.
- Cool operating design.
- Optional stainless steel open bottom guard permits direct access to the globe for easy relamping.
- Battery pack ballast for emergency lighting.

Energy Savings

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.

About the battery: (DMVFB Units)

- Bodine fluorescent battery pack ballasts are UL Component Recognized.
- Sealed, maintenance-free, high-temperature nickel-cadmium
- Solid state chargers are sealed inside the ballast case.
- 90 minute illumination time
- 10-year life expectancy
- 2-year full warranty
- During auxiliary use 1 lamp has continuous operation
- A red indicator light indicates the battery is charging.
- Wiring instructions for a "Push-to-Test" button is supplied with the luminaire.

Standard Materials:

- Ballast housings and mountings – copper-free aluminum (less than 0.4 of 1%).
- Exterior hardware and guards – stainless steel.
- Reflectors – Krydon® fiberglass-reinforced polyester material.
- Globe – heat and impact resistant internally fluted glass.

Standard Finishes:

- Aluminum – gray epoxy powder coat.
- Krydon material – high reflectance white.
- Stainless steel – natural.

Electrical Rating Ranges:

- 52 and 64 watts
- 120-277V, 50-60 Hz
- 347V, 60 Hz

Certifications and Compliances:

- NEC/CEC:
 - Class I, Division 2, Groups A, B, C, D
 - Class II, Class III & Simultaneous Presence (Class I Division 2 and Class II)
 - Class I Zone 2 Emergency Lighting
- IEC
 - Zone 2 Ex nR IIC
- UL Standards
 - 844, 2279 Hazardous (Classified) Locations
 - 1598 Luminaires
 - 1598A Marine Locations
 - 924 Emergency Lighting
- CSA Standards
 - C22.2 No. 137
- IEC Standards
 - 60079-15



Options:

Description

- Restricted Breathing Construction
 - Class I Division 2 & Zone 2 Suitability
 - Cooler Operating Temperatures (T-Numbers)
- Certified for IEC Zone 2 (Suffix S826TB)
 - Furnished with Terminal Block Crimp Terminals

Suffix to be added to Cat. No.

S826

S826TB

- Emergency Operation only

Consult Crouse-Hinds

- Factory Assembled with lamps installed for additional labor savings add suffix **FA**.
- Fused – to protect ballast against abnormal line conditions (not for use in Canada) (not for Marine use) add suffix **S658.***
- Lamps supplied with luminaire . . . add suffix **S714**.
- Top hat with stainless steel threaded insert to attach ballast housing . . . add suffix **S806**.
- TEFLON® coating on globe for increased shatter protection add suffix **S808**.

Accessories:

- (Order separately)
- Dome Cat. # RD739
- 30° Angle Cat. # RA739

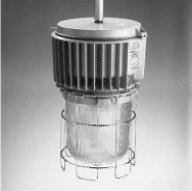
* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

DMVFB Emergency Compact Fluorescent

Continuous Operation Champ® Series Luminaires

- Cl. I, Div. 2, Groups A, B, C, D
- Restricted Breathing Cl. I, Div 2 & Zone 2 (Suffix S826)
- Certified for IEC Zone 2 (Suffix S826TB)
- Cl. II Groups E, F, G, Cl. III & Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

10L

DMVFB Series Fluorescent with Battery Back-Up with G303 Globe and P33 Guard			
Mounting Style	Hub Size	Lamp Watts	Cat. No.
	Pendant Mount	3/4	52
		1	DMVFB2A052GP
		3/4	64
		1	DMVFB3A052GP
	Flexible Pendant Mount	3/4	52
		1	DMVFB2HA052GP
		3/4	64
		1	DMVFB3HA052GP
	Ceiling Mount Thru-Feed	3/4	52
		1	DMVFB2C052GP
		3/4	64
		1	DMVFB3C052GP
	Wall Mount Thru-Feed	3/4	52
		1	DMVFB2TW052GP
		3/4	64
		1	DMVFB3TW052GP
	Quad-Mount Pendant, Adjustable Thru-Feed, 25° Angle, 12-1/2° Angle	3/4	52
		1	DMVFB25Q052GP
		3/4	64
		1	DMVFB25Q064GP
	Stanchion Mount 25° Angle	1-1/2	52
		1-1/2	64
		1-1/2	DMVFBJ052GP
		1-1/2	DMVFBJ064GP
	Stanchion Mount Straight	1-1/2	52
		1-1/2	64
		1-1/2	DMVFBP052GP
		1-1/2	DMVFBP064GP

Note: For technical information on family trees, temperature performance data, dimensions, weights, and photometrics, refer to DMVF Series in Section 6L.

NOTES:
1. Catalog numbers are basic numbers. **Voltage must be specified.**

Standard Voltage Ballasts

Voltage Suffix	NEC/UL	CEC/CSA (cUL)	
	120-277V 50-60Hz /UNV	120V/60Hz /120CAN	347V 60Hz /347

EVLPFB Emergency Compact Fluorescent

Continuous Operation Low Profile Luminaires

- Cl. I, Div. 1, Groups B (GB Suffix), C, D
- Cl. I, Zone 1, Groups IIB + H2 (GB suffix), IIB, IIA
- Cl. II, Div. 1, Groups E, F, G; Class III, Simultaneous Presence

- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

Application:

Cooper Crouse-Hinds Low Profile Hazard*Gard® luminaires are used in:

- areas that require lamps to reach full lumination immediately.
- where emergency lighting is required to permit workers in industrial areas to safely encounter their surroundings during power failures.
- where emergency lighting is required such as: catwalks, walkways, tunnels, doorways, stairs, stairwells, ramps and aisles.
- areas where flammable or explosive vapors or gases are present
- hazardous areas, both indoors and outdoors, where long life and low maintenance costs are desired
- petroleum refineries, chemical, petrochemical and pharmaceutical plants, oil terminals, gas plants and other heavy process industry facilities
- waste treatment facilities
- drilling platforms and other coastal and offshore hazardous areas

Features - Benefits:

- Small compact size
- Two start Acme threaded construction
- Easier assembly, installation and maintenance
- Light weight copper-free aluminum housing with powdered epoxy finish
- All exterior hardware is corrosion-resistant stainless steel
- Four mounting arrangements pendant, ceiling, wall bracket and stanchion
- Integral ballast
- High power factor (90%+) ballasts
- Uses same mounting modules as the standard Hazard*Gard®
- Internally fluted glass globes
- Krydon® construction dome and angle reflectors – won't rust, corrode, dent, chip or peel
- Now available in components – luminaire body, mounting module, guard, reflectors
- Three wire construction
- For energy conservation, luminaires can be switched off without affecting the emergency operation feature

Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester

Energy Saving:

- Less wattage used with compact fluorescent lamps compared to equivalent incandescent lamps providing the same light output.



Standard Materials:

- Mounting modules, cover, ballast housing, globe holder – copper free aluminum
- Globe – heat and impact resistant glass
- Exterior hardware – stainless steel
- Reflectors (dome & angle) – Krydon™ fiberglass-reinforced polyester

Standard Finishes:

- Copper-free aluminum – *Corro-free™*
- powdered epoxy
- Krydon – white
- Stainless steel guard

Ratings (Electrical/Size):

Sources/wattage:

- Fluorescent continuous operation
- Emergency Lighting 52W (2-26W lamps) and 64W (2-32W lamps) Compact fluorescent

Voltages:

- Fluorescent Emergency Lighting
- 120-277V, 50-60 Hz
- 120V, 60 Hz
- 347V 60Hz

Conduit entries:

- 3/4", 1" NPT – pendant, wall bracket, ceiling
- 1/4" NPT – stanchion

Options:

Description	Suffix to be added to Cat. #
Group B suitability	GB
Fused (not for use in Canada) (not for Marine use)	S658*
Factory assembled with lamps	FA
Emergency Operation only	Consult Cooper Crouse-Hinds

Accessories:

Description	Cat. #
Dome reflector	RD739
Angle reflector	RA739

About the Battery

- Bodine fluorescent battery pack ballasts are UL Component Recognized.
- Sealed, maintenance-free, high-temperature nickel-cadmium.
- Solid state chargers are sealed inside the ballast case.
- 90 minute illumination time.
- 10-year life expectancy
- 2-year warranty.
- During emergency use, 1 lamp has continuous operation.
- A red indicator light indicates the battery is charging.
- Wiring instructions for a "Push-to-Test" button is supplied with the fixture.

* When ordering fuses for luminaires, option S658, you must specify the operating voltage. S658 cannot be ordered with /MT in the catalog number.

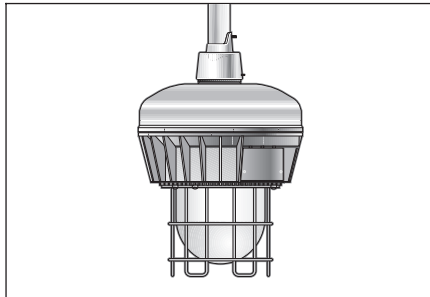
EVL PFB Emergency Compact Fluorescent

Continuous Operation
Low Profile Luminaires

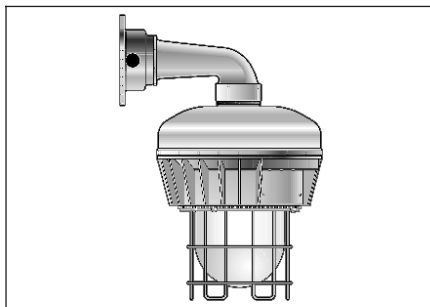
- Cl. I, Div. Groups B (GB suffix), C, D
- Cl. I, Zone 1, Groups IIB + H2 (with Suffix GB), IIB, IIA
- Cl. II, Div 1, Groups E, F, G; Class III, Simultaneous Presence
- Marine & Wet Locations
- 3, 3R, 4, 4X; IP66
- Emergency Lighting

10L

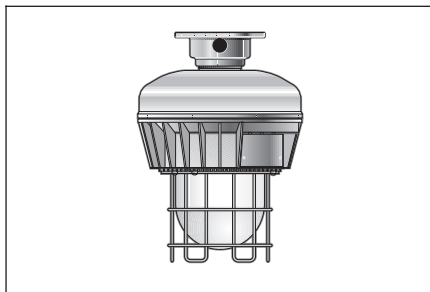
Ordering Information



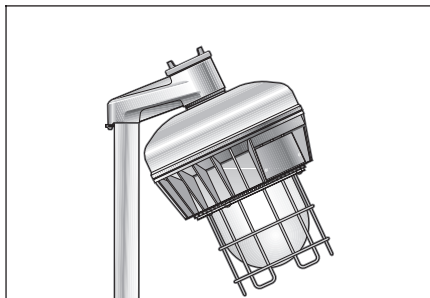
Pendant Mount



†Wall Bracket Mount



†Ceiling Mount



Stanchion Mount

†Ceiling and bracket mounts have 4 hubs: 3 are plugged.

		Pendant	Wall Bracket†	Ceiling†	Stanchion	Luminaire Body Less Mounting Module & Guard
Watt	Hub Size	With Guard Catalog #	With Guard Catalog #	With Guard Catalog #	With Guard Catalog #	Catalog #
Fluorescent with Emergency Ballast – High Power Factor Ballast (Min. P.F. 90%)						
52W	3/4	EVL PFB A02521	EVL PFB BX02521	EVL PFB CX02521		EVL PFB 0520
	1	EVL PFB A03521	EVL PFB BX03521	EVL PFB CX03521		
	1 1/4				EVL PFB J04521	
64W	3/4	EVL PFB A02641	EVL PFB BX02641	EVL PFB CX02641		EVL PFB 0640
	1	EVL PFB A03641	EVL PFB BX03641	EVL PFB CX03641		
	1 1/4				EVL PFB J04641	

Complete Catalog Numbers as follows:

1.	Standard Voltage Ballasts		
	NEC/UL	CEC/CSA (cUL)	
	Voltage Suffix	120-277V 50-60Hz /UNV	120V/60Hz /120CAN 347V 60Hz /347

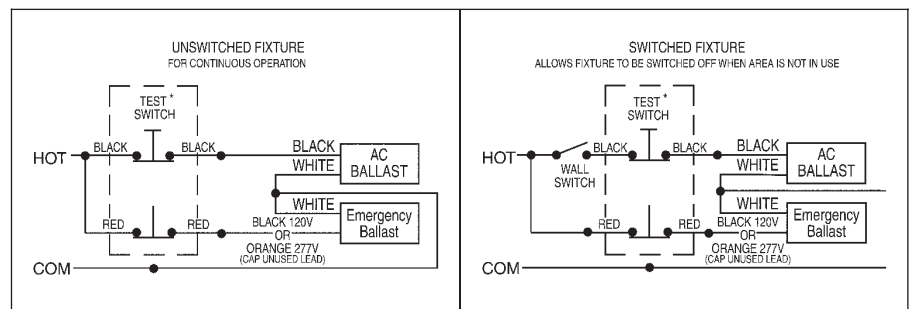
Example: **EVL PFB 02521/UNV**

2. Other Voltages - Consult Cooper Crouse-Hinds

Note: For technical information on family trees, temperature performance data, dimensions, weights, and photometrics, refer to DMVF Series in Section 5L.

EVFPFB Fluorescent Emergency Lighting

- Three wire construction, for switching purposes, is standard on Fluorescent Emergency Lighting.
- For energy conservation, luminaires can be switched off without affecting the emergency operation feature.



* Test Switch is remote mounted.
Use Cooper Crouse-Hinds EDSC218 (Not furnished).

Notes Page

[illegible]

“Steady On” Beacons, “Rotating” Beacons and “Flashing” Strobe Lights

Luminaires for Hazardous and
Non-Hazardous Locations

Description	Page No.
Application	940
VF Beacons Fluorescent “Steady On”	941
EX Fire Alarm Strobe Light	942, 944, 949
EX Strobe Light	943, 944, 949
EX Steady-on Beacon	945, 946, 949
EX Rotating Beacon	947, 948, 949
VDAS Strobe Lights	950

Application:

- for use in hazardous and non-hazardous areas (as shown in the quick selector chart shown below).
- to supplement audible signals, especially in high noise areas.
- as visual signals or warning lights.
- to identify the location of safety equipment such as emergency shower, eye wash stations, and emergency telephones, fire extinguishers and emergency stop switches.
- for status indication of machinery or processes.
- to indicate dangerous areas or areas requiring caution.
- to signal dangerous or hazardous conditions.

Considerations for Selection:**Environmental:**

- What is the hazardous area classification (NEC/CEC) of the location in which the luminaire will be installed?

Signaling Requirements:

- What will the visual signal be used for (Communicating, alerting, warning)?

Physical Arrangements:

- Type of luminaire mounting needed.

Quick Selector Chart:

Series	Hazardous Area Suitability	Lamp Watts	Volts	No. of Lamps
VF - “Steady On” Beacons	CL. I, Div 2, Groups A, B, C, D CL. I, Zone 2, Group IIC Wet Locations - 3, 3R	(2) 9W	120V 60 Hz.	2
EX Strobes, Steady-On Beacons, & Rotating Beacons	CL. I, Div. I, Groups C,D CL. I, Zone 1 & 2, Group IIB CL. II, Div. I, Groups E,F,G Wet Locations - 4X, Marine	Xenon Strobe Halogen Beacon	120 VAC 24 VDC 12-48 VDC 24-28 VDC	
VDAS Strobes	CL. I, Div 2, Groups A, B, C, D CL. I, Zone 2, Group IIC CL. II, Div 2, Groups F, G; Cl. III Wet Locations - 3, 3R, 4, 4X	Xenon Strobe	120V 60 Hz 240V 60 Hz 12-24VDC	1

Warning and Visual Indication Colors Available	Typical Uses
Green	Emergency Shower or Eye Wash Station
Blue	Emergency Telephones
Red	Danger, Equipment Operating
Yellow	Caution
Clear	Equipment end of cycle

VF "Steady On" Beacon

Compact Fluorescent Warning and Visual Indication Light

- Cl. I, Div. 2, Groups A, B, C, D
- Cl. I, Zone 2, Groups IIC
- Wet Locations
- 3, 3R
- Green - Safety Shower
- Blue - Emergency Telephones
- Red - Danger
- Amber - Warning
- Visual Signal

11L

Application:

VF series "Steady On" fluorescent beacons are used indoors or outdoors:

- where the energy efficiency and long life of compact fluorescent lamps are desired
- for continuous signaling requirements.
- where a continuous "Steady-On" fluorescent light signal is required
- where ambient noise makes audible signals difficult to hear.
- as visual signals or warning lights on loading docks; at obstructions, exits or entrances.
- for identifying the location of safety equipment such as safety showers or emergency telephones.
- for call signals.
- for status indication or area lighting on offshore rigs, mines, refineries etc.
- in locations which are hazardous due to the presence of flammable vapors or gases and where dampness or corrosion are present.
- to identify a potentially dangerous obstacle.
- as a continuous source to warn or communicate.

Typical Applications are:

- Green - Identify safety shower locations
- Blue - Identify emergency telephones
- Amber - Caution signal
- Red - Danger signal
- Red & Amber - Emergency situations
- Blue & Red - Security or malfunctioning equipment.
- Green & Clear - Equipment end of cycle.

Features:

- Extremely energy efficient, only 18 watt (2-9 watt compact fluorescent lamps)
- Packs considerable punch for ample visibility even in harsh environments.
- Compact size and light weight allow adaptation and easy installation in many industrial applications
- Cast copper-free aluminum (less than 0.4 of 1% copper) construction and epoxy powder finish provide excellent resistance to corrosion
- Variety of mounting arrangements to suit any lighting layout - pendant, ceiling, wall bracket, angle stanchion.
- Glass globes are internally fluted and stippled to enhance visibility. Exteriors are smooth to shed dust
- Grounding wire for safety

Standard Materials:

- Bodies and guards - copper-free aluminum (less than 0.4 of 1%)
- Globes - glass

Standard Finishes:

- Copper-free aluminum - powder epoxy finish

Electrical Ratings:

- Input voltage - 120 VAC, 60 hertz
- Wattages: 18W (Two 9W lamps)



Options:

Description	Suffix added to Cat. No.
• 250 volt Nameplate for export applications	/250

Weights:

Luminaire Type	2-Lamp Luminaire With Globe & Guard (lbs.)
VFA	5
VFHF	5 1/4
VFHBF	7 1/2

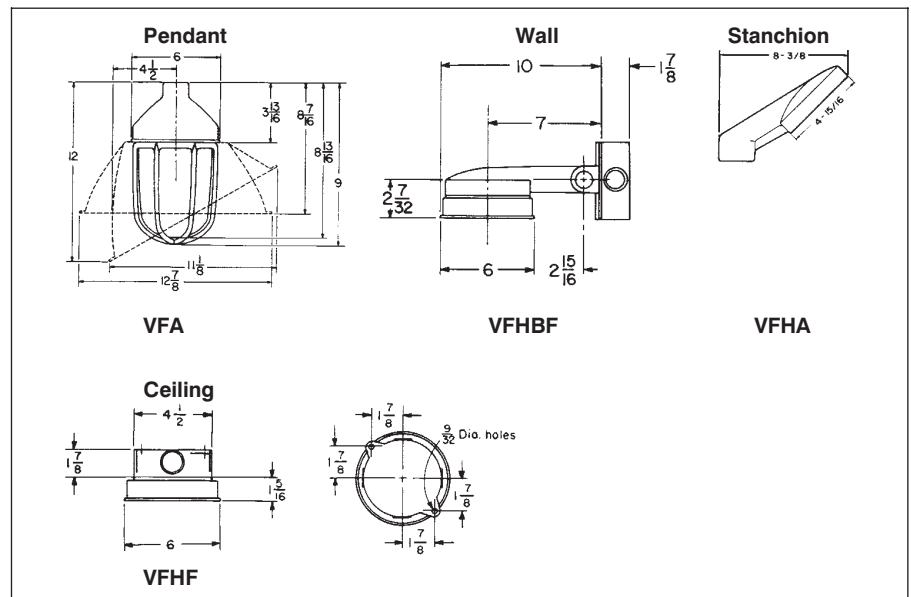
Temperature Performance Data:

Style 1 & 2 Lamp	Class I Div. 2	Max. Ambient	Supply Wire °C	Minimum Operating
9W	T3B	40°C	75°C	-4°C (25°F)

Certifications and Compliances:

- NEC and CEC:
- Class I, Division 2, Groups A, B, C, D
 - Class I, Zone 2
 - UL Standards 844
 - 1598 Luminaires
 - CSA standards c22.2 No. 137

Dimensions



Ordering Information:

Style	Catalog Number - by Globe Color				
	Red	Amber	Green	Blue	Clear
Pendant	VFA222GRP	VFA222GAP	VFA222GGP	VFA222GBP	VFA222GP
Wall	VFHBF222GRP	VFHBF222GAP	VFHBF222GGP	VFHBF222GBP	VFHBF222GP
Ceiling	VFHF222GRP	VFHF222GAP	VFHF222GGP	VFHF222GBP	VFHF222GP
Stanchion	VFHA422GRP	VFHA422GAP	VFHA422GGP	VFHA422GBP	VFHA422GP

11L

Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Fire Alarm Strobe Light



Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 1971 Listed
NEMA 4X watertight, IP 66



The **Hazard•Gard™ EXFASC Series** is a visual fire alarm signaling device for hazardous areas. The EXFASC Series strobes are UL 1971 Listed for indoor signaling applications for the hearing impaired in non-sleeping areas. They are also UL listed for Type 3R, 4X installations. The strobes are available for pendant, wall and ceiling mounts.

The **EXFASC Series Fire Alarm Explosionproof Strobe** contains a supervisory diode for use in fire alarm applications. Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe light and prevents it from lighting. When a fire-initiating device such as a smoke alarm is activated, the diode's polarity is reversed through a fire alarm panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Visual fire alarm signaling device for hazardous areas

Typical Industries

- Energy exploration
- Utilities
- Wastewater treatment plants
- Pulp & paper plants
- Petrochemical plants
- Petroleum refineries
- Oil rigs

Key Features and Benefits

- Meets NFPA requirements for fire safety warning devices.
- State of the art electronic design (full wave rectified design).
 - Low current draw is efficient.
 - 24VDC regulated full wave rectified
 - Limited in-rush current favorable to other fire alarm system components.
 - Proven, reliable circuitry designed specifically for use with fire alarm control panels.
- Available in pendant, wall and ceiling mount.
- Strobe light produces 65 flashes per minute.
- Factory sealed — no external seals required.
- Quick connect — Strobe fixture threads onto mounting module for easy installation.
- Small compact size — ceiling mount is 13¼-inch long.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL 1638 and 1203 Listed
- UL 1971 Listed for indoor visual signaling for the hearing impaired in non-sleeping areas
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 16-33VDC
- Operating Current: 1.08 - 0.83 amps
- Peak Candlepower: 800,000

Hub Size

- 3/4-inch NPT pendant, ceiling and wall mount

Ordering Information

STEP 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
FIRE ALARM RATED EXPLOSIONPROOF STROBES			
EXFASC301/16 33	24VDC regulated full wave rectified	Clear	3R, 4X

Temperature Performance Data

See page 944.

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	3/4"	Pendant
EV22 & EV87	3/4"	Wall
EV22	3/4"	Ceiling
EVMJ4	1 1/4"	Stanchion

Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Strobe Light

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed (120VAC and 24VDC only)
NEMA 4X watertight, IP 66

11L



Cooper Crouse-Hinds Hazard•Gard **EXS** and **EXDS** Series Explosionproof Strobe Lights are designed for installation indoors and outdoors in locations which are hazardous due to the presence of flammable vapors or gases, ignitable dusts or ignitable fibers and flyings. The units are UL listed for Type 3R and 4X installations. The 120V and 24VDC models are Marine Rated. The strobes are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDS** Series is diode polarized for use in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe and prevents it from lighting. When an initiating device such as a smoke detector is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Condition signaling
- Security alert
- In areas where audible signals cannot be heard
- Equipment obstruction warning
- Emergency evacuation signaling

Typical Industries

- Utility gas plants
- Wastewater treatment plants
- Mining
- Petroleum refineries
- Chemical & petrochemical
- Pulp & paper

Key Features and Benefits

- Strong strobe signal that produces 65 flashes per minute.
- Compact design will not obstruct in low ceiling or small areas. Ceiling mount is only 13¾-inch long.
- Quick connect — Strobe fixture threads onto mounting module for easy installation.
- Factory sealed — No external seals required.
- Available in pendant, wall, stanchion and ceiling mount.
- Available in six different globe colors — clear, red, blue, amber, green and magenta.
- Silicone gasket seals out dirt and moisture.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120VAC and 24VDC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120VAC (EXS), 12–48VDC (EXSNM) and 24VDC nominal, voltage operating range is 16–33VDC (EXDS)
- Operating Current: 0.10 amps at 120VAC
1.2–3.8 amps at 12–48VDC
0.8 amps at 24VDC
- Peak Candlepower: 800,000

Hub Size

- 3/4-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

11L
Beacons
and Strobes

11L

Hazard●Gard EX Series Visual Signaling Devices

Explosionproof Strobe Light



Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed (120VAC and 24VDC only)
NEMA 4X watertight, IP 66

Ordering Information

STEP 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STROBES			
EXS301A/120	120VAC	Amber	3R, 4X, Marine
EXS301B/120	120VAC	Blue	3R, 4X, Marine
EXS301C/120	120VAC	Clear	3R, 4X, Marine
EXS301G/120	120VAC	Green	3R, 4X, Marine
EXS301M/120	120VAC	Magenta	3R, 4X, Marine
EXS301R/120	120VAC	Red	3R, 4X, Marine
EXSNM301A/12 48	12-48VDC	Amber	3R, 4X
EXSNM301B/12 48	12-48VDC	Blue	3R, 4X
EXSNM301C/12 48	12-48VDC	Clear	3R, 4X
EXSNM301G/12 48	12-48VDC	Green	3R, 4X
EXSNM301M/12 48	12-48VDC	Magenta	3R, 4X
EXSNM301R/12 48	12-48VDC	Red	3R, 4X
DIODE POLARIZED EXPLOSIONPROOF STROBES			
EXDS301A/24	24VDC	Amber	3R, 4X, Marine
EXDS301B/24	24VDC	Blue	3R, 4X, Marine
EXDS301C/24	24VDC	Clear	3R, 4X, Marine
EXDS301G/24	24VDC	Green	3R, 4X, Marine
EXDS301M/24	24VDC	Magenta	3R, 4X, Marine
EXDS301R/24	24VDC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	3/4"	Pendant
EV22 & EV87	3/4"	Wall
EV22	3/4"	Ceiling
EVMJ4	1 1/4"	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXFASC Series Fire Alarm Voltage 24VDC Regulated Full Wave Rectified (Operating Range 16-33VDC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)
EXS Series Strobe Light Voltage 120VAC (Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXSNM Series Strobe Light Voltage 12-48 VDC (Not Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDS Series Strobe Light-Diode Polarized Voltage 24 VDC (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)

Beacons
11L and Strobes

Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Steady-On Beacons

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

11L



Cooper Crouse-Hinds Hazard•Gard **EXSO and EXDSO (Diode Polarized) Series Explosionproof Steady On Beacons** are designed for installation in hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

The units are UL listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Exit or entrance lights
- Obstacle warning
- For identifying the location of safety equipment such as showers or emergency telephones
- Continuous source to communicate

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Key Features and Benefits

- Powerful halogen light source for clear visual indication.
- Available in six different globe colors — amber, blue, clear, green, magenta and red.
- Factory sealed — no external seals required.
- Quick connect — Steady-on beacon fixture threads onto mounting module for easy installation.
- Small compact size — ceiling mount is 13³/₄-inch long.
- Available in pendant, wall, stanchion and ceiling mount.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120VAC and 24–28VDC
- Operating Current: 0.35 amps at 120VAC (EXSO)
0.8 amps at 24–28VDC (EXDSO, diode polarized)
- Peak Candlepower: 3328

Hub Size

- 3/4-inch NPT pendant, ceiling and wall mount
- 1¹/₄-inch NPT stanchion mount

11L Beacons
and Strobes

11L

Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Steady-On Beacons



Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

Ordering Information

STEP 1 Order Steady-On Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STEADY-ON BEACONS			
EXSO301A/120	120VAC	Amber	3R, 4X, Marine
EXSO301B/120	120VAC	Blue	3R, 4X, Marine
EXSO301C/120	120VAC	Clear	3R, 4X, Marine
EXSO301G/120	120VAC	Green	3R, 4X, Marine
EXSO301M/120	120VAC	Magenta	3R, 4X, Marine
EXSO301R/120	120VAC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF STEADY-ON BEACONS			
EXDSO301A/24 28	24–28VDC	Amber	3R, 4X, Marine
EXDSO301B/24 28	24–28VDC	Blue	3R, 4X, Marine
EXDSO301C/24 28	24–28VDC	Clear	3R, 4X, Marine
EXDSO301G/24 28	24–28VDC	Green	3R, 4X, Marine
EXDSO301M/24 28	24–28VDC	Magenta	3R, 4X, Marine
EXDSO301R/24 28	24–28VDC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	3/4"	Pendant
EV22 & EV87	3/4"	Wall
EV22	3/4"	Ceiling
EVMJ4	1 1/4"	Stanchion

Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXSO Series Steady-On Beacon Voltage 120VAC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T5(100°C) T5(100°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDSO Series Steady-On Beacon — Diode Polarized Voltage 24-28 VDC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)

Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Rotating Beacons

Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

11L



Cooper Crouse-Hinds Hazard•Gard **EXR Series Explosionproof Rotating Beacons** are designed for installation in hazardous locations, such as manufacturing plants, heavy industrial facilities, refineries, chemical, petrochemical, pharmaceutical and off-shore drilling platforms.

The units are UL listed for Type 3R, 4X and marine installations. The rotating beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDR Series Explosionproof Rotating Beacon** is diode polarized for use in standard 24–28VDC electrical circuits or in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation in an electrically supervised circuit, the diode is reversed biased, meaning it blocks voltage from being applied to the rotating beacon and prevents it from lighting. When a warning detecting device is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allows voltage to the device and activates the rotating beacon.

Primary Applications

- Security alert
- Obstacle warning
- Areas under construction or off limits
- Equipment obstruction warning
- Status indication of a process
- Supplement audible signaling

Typical Industries

- Utility gas plants
- Wastewater treatment plants
- Chemical plants
- Pharmaceutical plants
- Refineries
- Mining

Key Features and Benefits

- Powerful halogen rotating beacon emits bright light to provide critical visual warning.
- Available in pendant, wall, stanchion and ceiling mount.
- Available in six different globe colors — amber, blue, clear, green, magenta and red.
- Beacon produces 75 rotations per minute.
- Factory sealed — No external seals required.
- Quick connect — Strobe fixture threads onto mounting module for easy installation.

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class II, Division 1, Groups E, F & G
- Class I, Zone 1 & 2, Group IIB
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard — Copper-free aluminum
- Globe — Heat and impact-resistant glass
- Gaskets — Silicone
- External hardware — Stainless steel
- Internal components — Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120VAC (EXR) and 24–28VDC (EXDR)
- Operating Current: 0.382 amps at 120VAC
0.8 amps at 24–28VDC
- Peak Candlepower: 3328 (EXR)
2838 (EXDR)

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

11L
Beacons
and Strobes

11L

Hazard•Gard EX Series Visual Signaling Devices

Explosionproof Rotating Beacons



Class I, Division 1, Groups C & D
Class I, Zone 1 & 2, Group IIB
Class II, Division 1, Groups E, F, G • Class III
UL 1638, 1203 and 844 Listed
1598A Marine Listed
NEMA 4X watertight, IP 66

Ordering Information

STEP 1 Order Rotating Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF ROTATING BEACONS			
EXR301A/120	120VAC	Amber	3R, 4X, Marine
EXR301B/120	120VAC	Blue	3R, 4X, Marine
EXR301C/120	120VAC	Clear	3R, 4X, Marine
EXR301G/120	120VAC	Green	3R, 4X, Marine
EXR301M/120	120VAC	Magenta	3R, 4X, Marine
EXR301R/120	120VAC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF ROTATING BEACONS			
EXDR301A/24 28	24-28VDC	Amber	3R, 4X, Marine
EXDR301B/24 28	24-28VDC	Blue	3R, 4X, Marine
EXDR301C/24 28	24-28VDC	Clear	3R, 4X, Marine
EXDR301G/24 28	24-28VDC	Green	3R, 4X, Marine
EXDR301M/24 28	24-28VDC	Magenta	3R, 4X, Marine
EXDR301R/24 28	24-28VDC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	3/4"	Pendant
EV22 & EV87	3/4"	Wall
EV22	3/4"	Ceiling
EVMJ4	1 1/4"	Stanchion

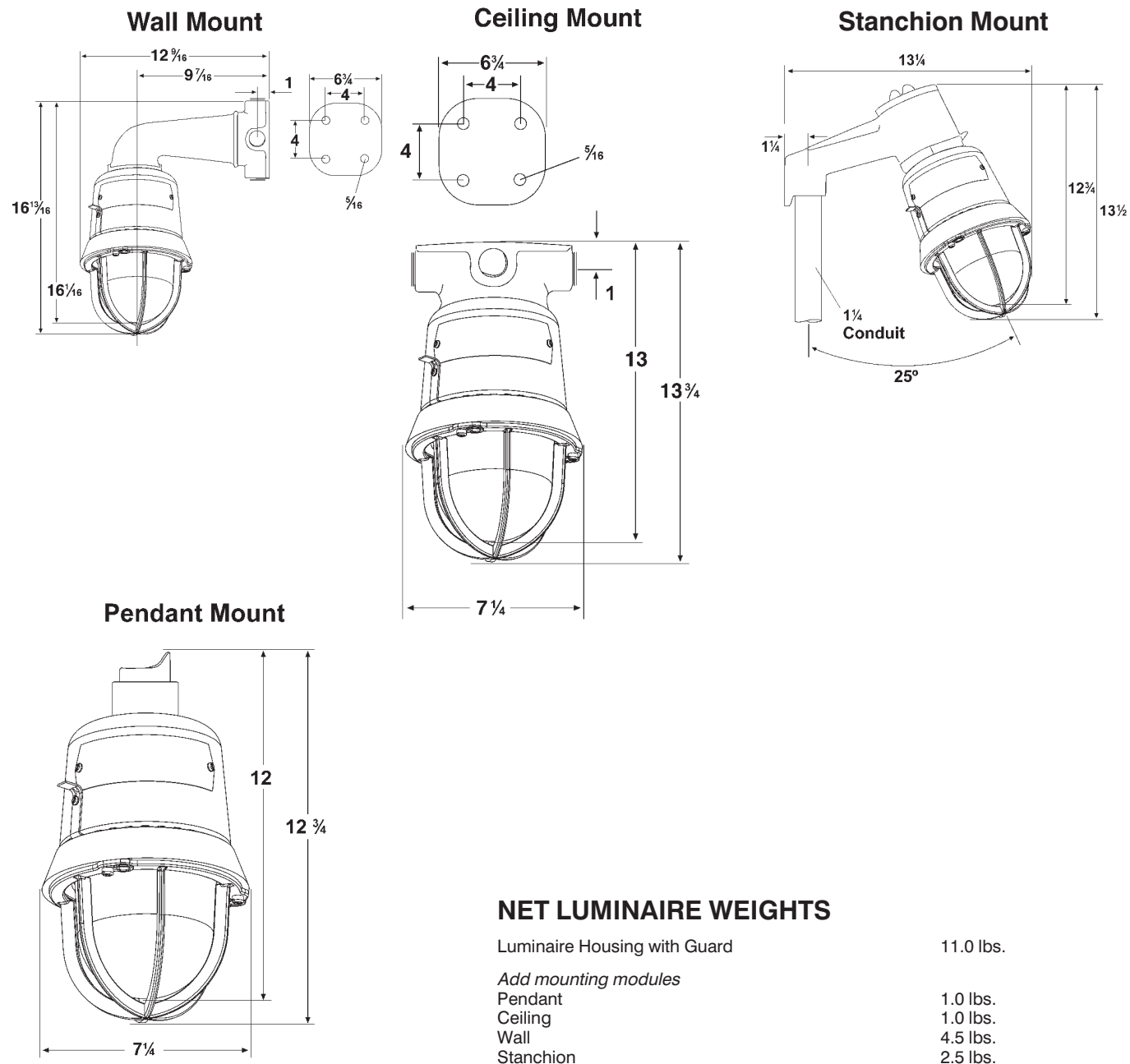
Temperature Performance Data

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXR Series Rotating Beacon Voltage 120VAC	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
	55°C	90°C	T5(100°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T5(100°C)	T4(135°C)	T4(135°C)
EXDR Series Rotating Beacon — Diode Polarized Voltage 24-28 VDC	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
	55°C	90°C	T6(85°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T6(85°C)	T4(135°C)	T4(135°C)

Hazard•Gard EX Series Visual Signaling Devices

Dimensions & Weights

11L



11L Beacons
and Strobes

11L VDAS Strobe Lights

Warning and Visual Indication

- Cl. I, Div. 2, Groups A, B, C, D
- Cl. I, Zone 2, Group IIC
- Cl. II, Div 2, Groups F, G; Cl. III

- Wet Locations
- 3, 3R, 4, 4X

Application:

VDAS strobe lights are used:

- in areas with high noise levels
- to visually indicate warnings or hazards

Features:

- Reliable solid state components.
- Compact enclosure design provides 60 high intensity flashes per minute.
- Choice of globe colors to meet various requirements.
- Gasketed to seal out dirt and liquids.
- Designed for globe up or globe down applications.
- Easy to install.
- Lightweight corrosion-resistant copper-free aluminum construction.
- Conduit locking hub for increased safety and security.

Standard Materials:

- Body – copper-free aluminum
- Globe – LEXAN® fresnel lens

Standard Finishes:

- Body – gray epoxy

Size Range:

- 3/4" conduit

Certifications and Compliances:

- NEC and CEC:
 - Class I, Division 2, Groups A, B, C, D
 - Class I, Zone 2, IIC
- UL Standards
 - 844
 - 1598 Luminaires
- CSA Standards
 - C22.2 No. 137

Electrical Ratings:

- 120, 240 VAC 50/60 Hz
- 12, 24 VDC

Photometric Data, Clear Globe

- Peak flash – 3.45 million candlepower
- Effective candlepower (light intensity if light is burning steadily) – 201 ECP

Photometric Data:

Globe Color	Output	Intensity
Clear.....	201	ECP
Red.....	46	ECP
Amber.....	152	ECP
Blue.....	38	ECP
Green.....	38	ECP

Operating Current:

Voltage	Operating Current
120 VAC	.3A
240 VAC	.15A
12 VDC	.9A
24 VDC	.45A



CSA Enclosure 3, 4, 5 Replacement Parts

Electronic Strobe Subassembly (includes flash tube):

120 VAC.....	CHTFI-120H
240 VAC.....	CHTFI-240H
12 VDC.....	CHTFI-012
24 VDC.....	CHTFI-024

Flash Tube..... RSTC

Globe Assembly

Clear.....	VDAG/C
Red.....	VDAG/R
Green.....	VDAG/G
Amber.....	VDAG/A
Blue.....	VDAG/B

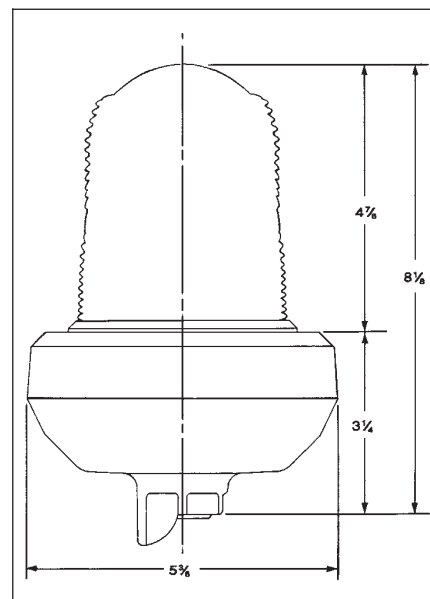
Ordering Information

Globe Color	Pendant Hub Size	Cat. # 120 VAC	Cat. # 240 VAC	Cat. # 12 VDC	Cat. # 24 VDC
Red	3/4"	VDAS/R	VDAS/R/240	VDAS/R/012	VDAS/R/024
Blue	3/4"	VDAS/B	VDAS/B/240	VDAS/B/012	VDAS/B/024
Amber	3/4"	VDAS/A	VDAS/A/240	VDAS/A/012	VDAS/A/024
Green	3/4"	VDAS/G	VDAS/G/240	VDAS/G/012	VDAS/G/024
Clear	3/4"	VDAS/C	VDAS/C/240	VDAS/C/012	VDAS/C/024

Temperature Performance Data:

Ambient °C	Class I Div 2	Class II Div 2, Class III
40°	T3B	T3B
55°	T3A	---
65°	T3	---

Dimensions



Description	Page No.
Application/Selection	952
Gauge Light	958
Tank Light V160 EVA160	953, 954
Task Light EVTL1B50 EVTL1L50	955-957

Tank, Task and Gauge Hazardous and Non-Hazardous Locations Application and Selection

Application:

Specialty lighting luminaires are used:

- for various task lighting requirements in locations that are hazardous (classified) due to the presence of combustible dusts or easily ignitable fibers and flyings
- in areas where conventional lighting is not acceptable due to size and/or location
- in locations where an adequate light source is necessary for tank, instrument, and gauge applications
- in manufacturing plants, refineries, pharmaceutical, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, grain processing and handling facilities and other heavy industrial applications

Considerations for Selection:

Environmental:

- What is the hazardous area classification (NEC)/(CEC) of the location in which the luminaire will be installed?

Lighting levels required:

- What wattage luminaire(s) will provide the desired light level (See lighting Selector Guide, pages 665 through 689, to determine number and location of fixture required).

Physical Arrangement:

- Type of fixture mounting needed.

Product Selection:

- EV Tank Lights are suitable for use in Class I, Groups C, D hazardous (classified) locations. Tank lights are used to light the inside of tanks, vats, process vessels, etc.
- EVTL Explosionproof Task Lights are suitable for use in Class I, Group B, C, D and Class II, Groups E, F, G hazardous (classified) locations. EVTL Lights are ideal for applications in which water spray and corrosive atmospheres are considerations.
- ELG gauge lights are suitable for use in Class I, Groups C, D hazardous (classified) locations. The light is used to illuminate liquid level gauges and to direct the light over the length of the column.

Application:

The incandescent V observation luminaire is used:

- in tanks or kettles where food is processed
- to light the inside of tanks for observation of the contents through a window

Features:

- Watertight
- Supported by a mounting ring which contains holes for riveting when placed around a hole in the tank. It can also be welded or brazed to the tank.
- Heavy heat and impact-resistant glass globe eliminates breakage and resultant contamination of food from glass particles
- Relamping is easily accomplished by removal of the two thumb-screws which fasten the body to the mounting ring
- The flexible cord or cable should be connected by an EC flexible coupling or CG Series connector

Standard Materials:

- Mounting ring – silicon bronze
- Fixture body – *Feraloy*® iron alloy
- Globe – heat-resisting glass

Standard Finishes:

- Feraloy* – electrogalvanized and aluminum acrylic paint
- Bronze – natural

Size Ranges:

- Up to 100 watt, A-21 lamp

Certifications and Compliances:

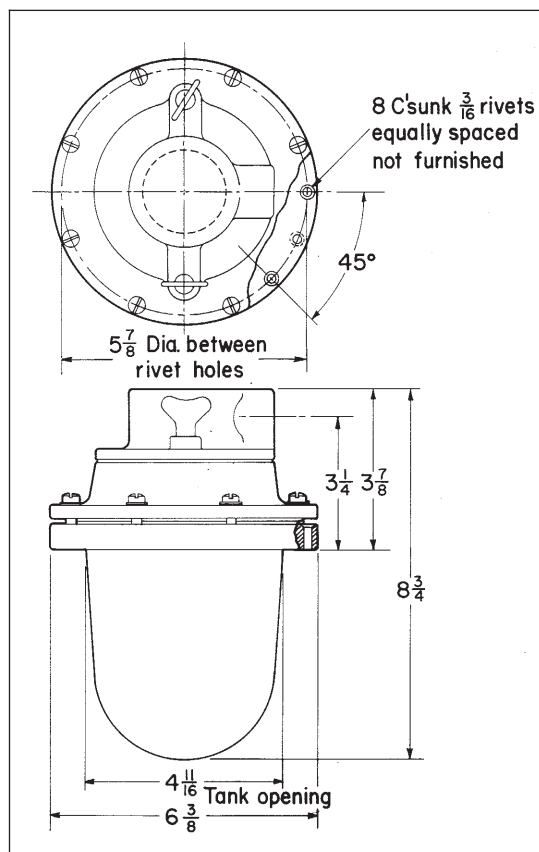
- UL Standard: 1571
- CSA Standard: C22.2



Furnished with EV10 Globe, and C166 Medium Base Lamp Receptacle

Hub Lamp Size	Size	Cat. #
1/2	50, 60, 75 or 100W, A-21	V160

Dimensions



12L EV Tank Luminaires

Cl. I, Div. 1 & 2, Groups C, D
Cl. I, Zone I & 2 IIB
Cl. II, Div. 1, Groups E, F, G – EVO only

Application:

EV tank light luminaires are used:

- to light inside of tanks, vats, process vessels, etc.
- in chemical plants, petrochemical plants and petroleum process industries
- suspended over tank porthole by EC flexible hanger (EVO style)
- mounted directly in tank wall (EVA)

Features:

- High light output
- Compact design

EVA160:

- Furnished with tank ring having eight $\frac{3}{16}$ " holes for riveting to tank
- Can be brazed if desired
- Luminaire ring is attached to the tank ring by eight 1/4-20 Allen Head cap screws
- Luminaire attached to luminaire ring by four wing screws
- EC flexible luminaire support should be used so relamping can be accomplished without disturbing the globe

Standard Materials:

- Bodies – EVA: Receptacle housing and intermediate ring – *Feraloy*® iron alloy. Tank ring – silicon bronze; EVO: copper-free aluminum
- Globes: EVA – glass, heat and impact resistant; EVO – glass, heat strengthened plate glass

Standard Finishes:

- *Feraloy* iron alloy – cadmium electrogalvanized and aluminum acrylic paint; copper-free aluminum – aluminum acrylic paint; silicon bronze – natural

Size Ranges:

- $\frac{1}{2}$ " and $\frac{3}{4}$ " hubs

Capacity Ranges:

- EVO – 75 watt, reflector spot max.
- EVA – 100 watt, A-21 max.

Certifications and Compliances:

- NEC:
Class I, Division 1 and 2, Groups C, D – EVO and EVA
Class II, Division 1, Groups E, F, G – EVO only
- UL Standard: 844

Temperature Performance

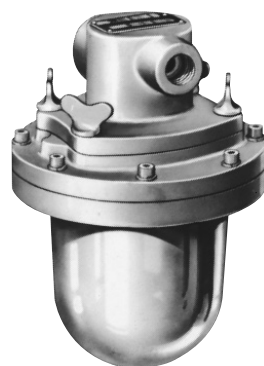
Data: (based on 40°C Ambient)

	Class I Groups C, D	Class II Groups E, F, G	Supply Wire (°C)
EVO2376	T3C	T3C	75
EVA160	T3C*	—	75

*All mounting positions



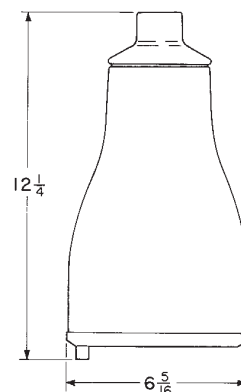
EVO2376



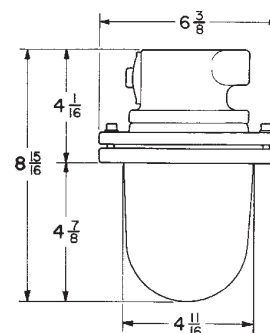
EVA160

Dimensions

EVO2376

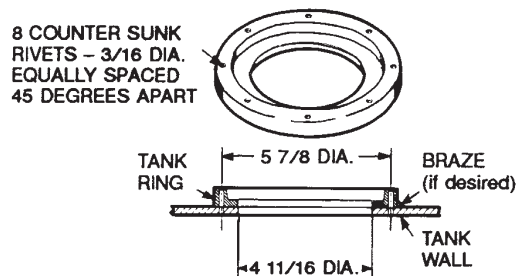


EVA160



Watts	Lamp (not furnished)	Hub Size	Cat. #
75	75R 30/SP reflector spot (medium base)	$\frac{1}{2}$ & $\frac{3}{4}$	EVO2376
100, A-21	Medium base	$\frac{1}{2}$	EVA160

Tank Ring Mounting (EVA160)



EVTL Explosionproof Task Light

Class I Groups B, C, D
Class I Zone I, IIB + H₂
Class II Groups E, F, G
Class III Simultaneous Service

Wet Locations
Marine Locations
NEMA 3, 3R, 4, 4X

12L

Application

EVTL task light luminaires are used:

- For various task lighting requirements in locations that are hazardous (classified) due to the presence of flammable gases or vapors, combustible dusts or easily ignitable fibers & flyings.
- in marine applications where water spray and corrosive atmospheres are considerations.
- in areas where conventional lighting is not acceptable due to size and/or location.
- in locations where an adequate light source is necessary for tank, instrument, and gauge applications.
- in porthole or sightglass applications where a spotlight is required for visibility inside tanks, vats and process vessels.
- in manufacturing plants, refineries, pharmaceutical, chemical, petrochemical, and other industrial process facilities, waste or sewage treatment facilities, grain processing and handling facilities and other heavy industrial applications.

Standard Materials:

- Housing—Copper-free aluminum
- 3/4" NPT hub and plug—Aluminum
- Mounting bracket(s) and External hardware—Stainless Steel
- Gasket—Silicone rubber
- Lens—Heat and impact resistant clear glass

Standard Finishes:

- Aluminum housing (exterior)—Corro-free epoxy powder coat
- Stainless Steel—Natural

Ratings (Electrical/Size)

Source/Wattage (Medium Base Lamps)

- 50PAR20 type—50W 120V halogen parabolic reflector. Lamp life 2000-2500 hrs.
- 130V lamps available to extend lamp life to 5000+ hrs.

Voltage

- 120V 60 Hz

Hub Size

- (1) 1/2" NPT
- For through feed, use EVTL-TF1

Certifications and Compliances:

• NEC/CEC

- Class I Division 1 & 2 Groups B, C, D
- Class II Group E, F, G
- Class III
- Class I Zone 1 & 2 Group IIB + H₂
- Wet locations
- Marine locations
- NEMA 4X

• NEC

- Simultaneous Presence

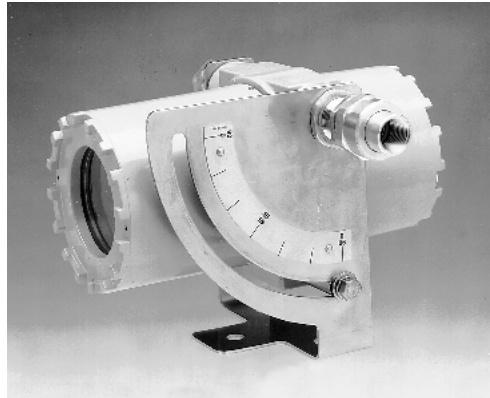
UL Standards

844—Hazardous (Divisions Classified) Locations
1571—Ordinary and Wet Locations, Marine
Outside Type

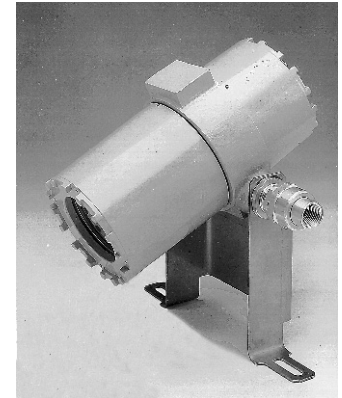
CSA Standards

C22.2 No. 137

Note: Install luminaire within aiming ranges shown on nameplate (See Dimensions)



EVTL1B50



EVTL1L50

Key Features

Class I, II, III, Simultaneous Presence

Class I Group B standard

Wet and Marine (NEMA 4X) Suitability

55° ambient suitability

Cast copper-free aluminum housing with Corro-free™ epoxy powder coat finish.

Stainless steel mounting brackets and hardware.

Two mounting styles bracket and leg

- Bracket (Universal)
- Leg (Site Glass)

Uses standard 50 watt PAR 20 medium base 120V lamps

Uses 50PAR20 130V lamps for added lamp life

50PAR20 lamps available in both flood and spot light patterns

Easy access interior

Seal within 5 ft. (not 18") of luminaire

Benefits

Suitable for most hazardous (classified) areas

Suitable for areas containing hydrogen

Perfect for hose down applications

Addresses higher ambients typical of industrial plants.

Superior corrosion resistance

Superior corrosion resistance

Maximize mounting flexibility

Ceiling, Wall or Base mounting

Site Glass mounting

Improved light output, economical, long life 2000-2500 hour light source

Increase lamp life to 5000+ hours while maintaining 76% lumen output

Vary the illumination characteristics by simply changing lamps

Reduced maintenance and lamp replacement time

Provides greater flexibility in seal location

Ordering Information:

Luminaire Cat. #	Conduit Entry	Mounting Style	Wattage
EVTL1B50	1/2"	Bracket (Universal)	50
EVTL1L50	1/2"	Leg (Site Glass)	50

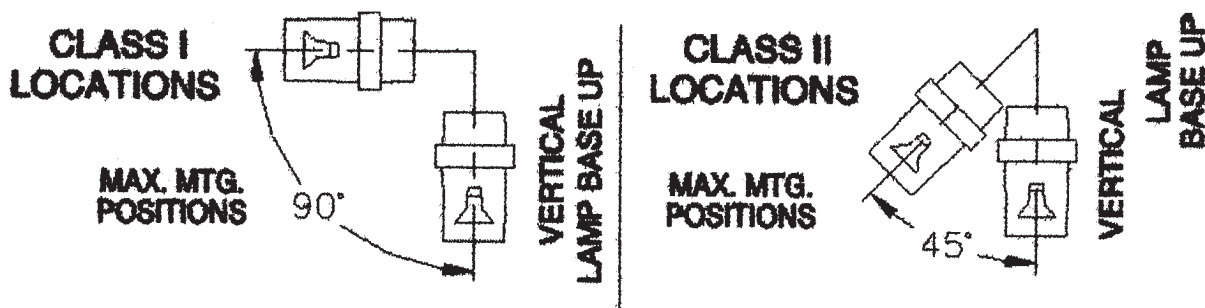
Temperature Performance Data:

Catalog Number	Maximum Ambient °C	Class I, Div. 1, B, C, D Class II, Div. 1, E, F, G Class III Simultaneous Presence	
		Class I, Zone 1, IIB + H ₂	Supply Wire °C
EVTL1B50	40	T3B	85
EVTL1L50	40	T3B	85

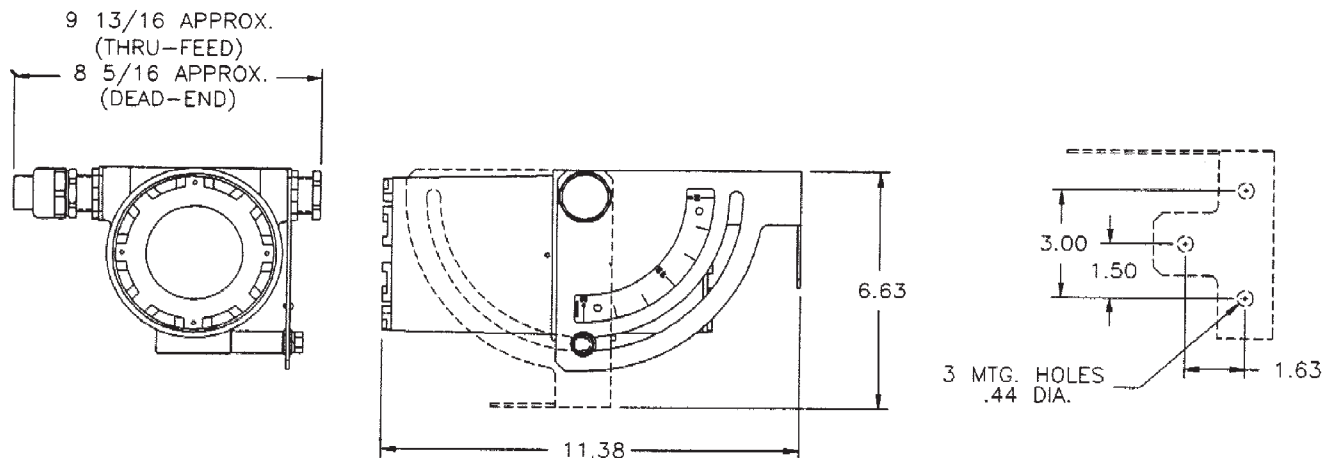
12L EVTL Explosionproof Task Light

Dimensions and Weights

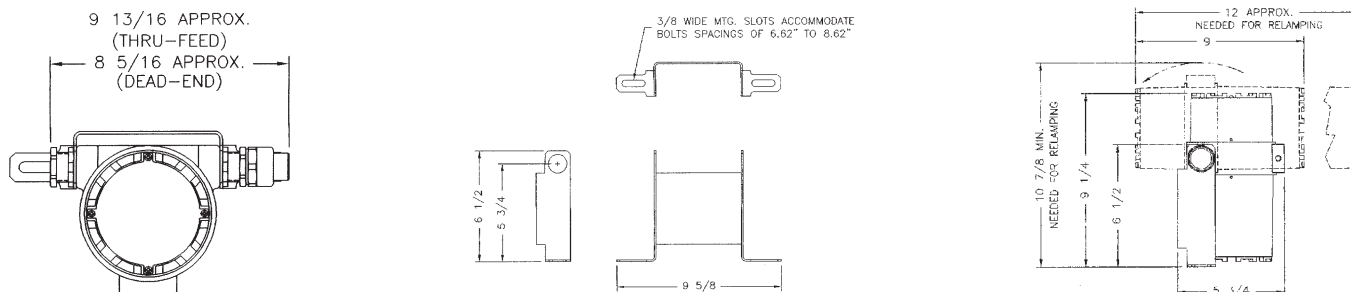
Aiming Range



Dimensions: Bracket Mount



Dimensions: Leg Mount



Specialty Lighting
12L

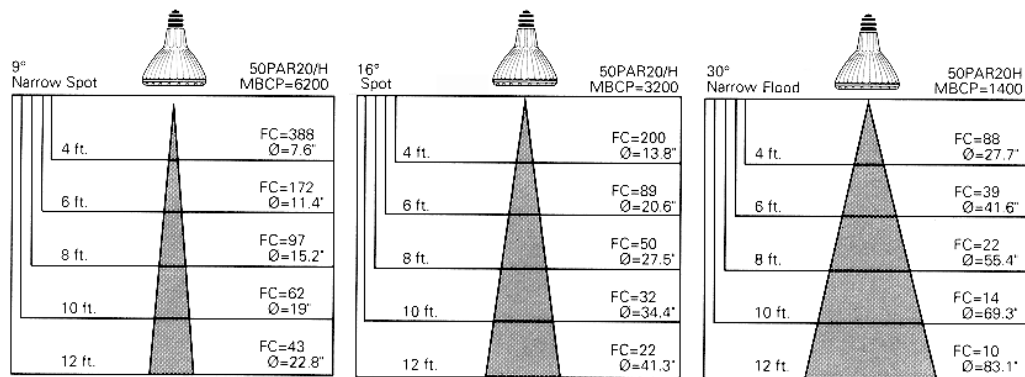
Net Luminaire Weights (lbs)

Luminaire Catalog Weight (lbs.)

EVTL1B50 7

EVTL1L50 7

EVTL-TF1 1/2



MBCP = Maximum Beam Candlepower Ø = Diameter of beam spread in inches FC = Footcandles measured at 0°

Lamp Light Distribution – (Philips lamp data shown. Similar for other manufacturers)

Data shown is for 120 volt lamps

For 130 volt lamps adjust data using a .76 multiplier

12L ELG Gauge Luminaires

Cl. I, Div. 1 & 2, Groups C, D
Cl. 1, Zone 1 & 2 IIB
Explosionproof

Application:

ELG Gauge lights are used:

- in hazardous areas to illuminate liquid level gauges over entire length of gauge
- clamped to **rear** of liquid level gauge and conduit is attached to the ELG hubs. Light is reflected by Lucite reflector along the entire length of the gauge. Liquid level shows on front of gauge. All light is concentrated on liquid column – no spill light.

Features:

- Even illumination over entire length of gauge
- Variety of sizes to fit many gauges
- Several lights can be used in tandem to illuminate long gauge

Standard Materials:

- Body – copper-free aluminum
- Reflectors – plexiglass

Standard Finishes:

- Body – electrogalvanized and aluminum acrylic paint

Size Ranges:

- 1" conduit through feed

Capacity Ranges:

- 120V medium screw base "A19" style incandescent lamp 58W maximum
- 25 watt – medium base – 1000 hour life
- 52 watt – medium base – 2500 hour life
- 58 watt – medium base – 3000 hour life

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 and 2, Groups C, D

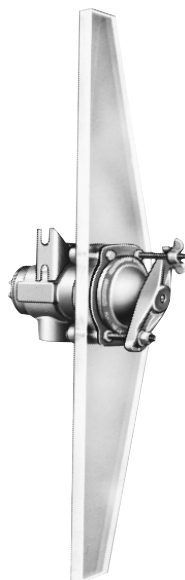
Temperature Performance

Data: (based on 40°C ambient)

58 Watt – T4A
Maximum

Options:

Description	Suffix to be Added to Cat. No.
• Group B suitability	GB



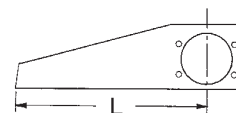
ELG329 with LE49 reflector

Ordering Information:

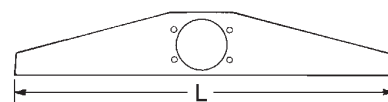
Description	Catalog No.	Length (L) (inches)
Gauge Light (less reflector)	ELG329	—
Reflector – Short style	LE34 LE35	4½ 5½
Reflector – Long style	LE46 LE47 LE48 LE49 LE410 LE412 LE413	13 15 17 19¾ 22 25¼ 26¾

Dimensions

Plexiglass reflectors Short style



Long style



Suggested Lamps (Lamps not furnished)

Manufacturer	Catalog Number			Volts
	25 Watt	52 Watt	58 Watt	
General Electric	25A	60A/52WMP/98		120
Osram/Sylvania	25A	60A/52/SS/XL	58A19/62	120
Philips	25A	60A-52A/99/EW		120

Plugs & Receptacles

Section P



The Plugs and Receptacles Section of the Cooper Crouse-Hinds Product Catalog contains complete technical information on the Cooper Crouse-Hinds line of these products.

In addition to product listings and features, the section contains information on interchangeability of plugs and receptacles, the different grounding methods incorporated in the construction of the units, and separate sections devoted to receptacles interlocked with switches and/or circuit breakers.

The product lines featured are *Arktime*® and ARK-trol plugs and receptacles and Cable-Gard™ cord and cable reels.

Arktime Series

Metallic and non-metallic *Arktime* series units are available for use in hazardous and non-hazardous areas for general purpose, heavy-duty applications in power circuits. All units through 200 ampere rating offer circuit breaking capability under load; some units are offered with interlocking mechanism with switch and/or circuit breaker, where dead front receptacles are desired, 400 ampere units are for service disconnect use only and are not for current interrupting.

An interchangeability table on page 961 graphically shows interchangeability between products in the complete line of pin and sleeve type plugs and receptacles. Full electrical rating details are shown in the interchangeability charts at the beginning of each section in the Plugs and Receptacles Section of this catalog.

ARK-trol Series

Units are available for use in hazardous and non-hazardous areas for special purpose application in power and/or control circuits where environmental factors are important or a wide range of contacts, sizes and configurations is required.

Cable-Gard Series

Electric cord and cable reels are used extensively in modern factories for "managing" all loose extension cables to ensure safety, increase efficiency, and extend cable and portable equipment life. Electric reels automatically transmit electric current (power or control) from a stationary position to a moving consumer of current.

Considerations for Selection

The considerations in the selection of plugs and receptacles are the electrical ratings desired and the physical location of the units. This information, together with the product features, construction details, and customer benefits, is shown on the individual pages in selecting the proper plugs and receptacles, other factors in addition to the electrical ratings and the physical aspects regarding location of the application (e.g., hazardous areas) should be considered. Principally, these factors are: interchangeability of plug and receptacle, interlocking and grounding.

Grounding

Cooper Crouse-Hinds utilizes two methods for completing the grounding circuit in plugs and receptacles.

Style 1:

A Style 1 plug is one in which the grounding conductor in the flexible cable is bonded to the plug sleeve by a pressure connector. A Style 1 receptacle is one which is grounded by virtue of the fact that it is an integral part of a grounded conduit system. On insertion, the plug sleeve makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.

Style 2:

A Style 2 plug is one in which the grounding conductor in the flexible cable is bonded to the extra (grounding) pole and sleeve by a pressure connector. A Style 2 receptacle is one in which the extra (grounding) pole is electrically connected to the equipment grounding conductor and the receptacle housing which itself is grounded by virtue of the fact that it is an integral part of a grounded conduit system. In a Style 2 receptacle, the grounding connection is made before line and load poles engage, and is broken after line and load poles disengage. Furthermore, upon insertion, the plug sleeve of metal shelled units makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.

This method is used on plugs and receptacles for hazardous areas, on configured *Arktime* and on all *Arktime* products made of *Krydon*® material.

It meets the National Electrical Code/ Canadian Electrical Code requirements for this equipment. The *Arktime* line offers a choice of both methods; other plugs and receptacles are offered in one of the two styles (details are given on the individual pages). Details on construction and diagrams of both methods are found in Section 1P, pages 966 and 967.

Interlocked Units

Where added safety is desired and for units of higher ratings, Sections 3P and 4P detail receptacles with interlocked switches and/or circuit breakers. The ability to break the load before removal of the plug, circuit protection and disconnect capability are the prime benefits to be derived from equipment shown in those sections.

Interchangeability Between Cooper Crouse-Hinds Product Families

A unique capability exists throughout much of the Cooper Crouse-Hinds plug and receptacle line that enables a variety of receptacles to be used with the same plug—*provided the electrical rating and style of plug and receptacle are the same* (see Interchangeability Table on next page).

Where a common wiring system is in use, it is possible to use the same standard plug with a number of different receptacle assemblies located in different areas where each receptacle is selected to meet the physical or environmental requirement of the specific area. For example, a process industry facility could include Class I, Groups C and D areas and Class II, Group G areas as well as nonhazardous areas. A portable device suitable for use in the hazardous areas could be equipped with an *APJ Arktime* plug or *NPJ Arktime* plug made of *Krydon*® material and be used in all areas of the plant. The receptacle installation could include AR or NR units in the nonhazardous areas; DR receptacles or DBR interlocked receptacles in the Class II, Groups F and G areas and FSQ or EPC interlocked receptacles in the Class I, Groups C and D areas—all of which will accept the same APJ or NPJ plug.

CPH Plugs can also be used with any receptacle which accepts a standard APJ or NPJ *Arktime* plug of the same ampere rating, style, and number of poles. This feature permits the use of a portable device, suitable for hazardous locations, in all areas of a plant, but prevents the use of an "ordinary locations" device in the hazardous areas. The following table is a summary of possible combinations. Full details describing the possibilities for interchanging plugs and receptacles are given in this section of the Cooper Crouse-Hinds Product Catalog.

Plugs and Receptacles

P

Interchangeability Table

Cooper Crouse-Hinds Heavy Duty Receptacles and Connectors†		Cooper Crouse-Hinds Pin and Sleeve Design Plugs†								
										
Cat. Pg.		APJ	AP	BHP	BP	FP CPH	CPP	DP	NPJ	SP
Delayed Action for Hazardous Areas										
CPS	1002						•			
CES/CESD	1011					•				
Non-Interlocked For Non-Hazardous Areas										
APR	966	•	•			•	•		•	
AR	966	•	•			•	•		•	
CPR	1006						•			
NR	983	•				•	•		•	
NPR	983	•				•	•		•	
Interlocked for Hazardous Areas										
BHR	1049			•						•
DBR	1061	•				•			•	
EBBR	1053	•				•			•	
EPC	1056	•				•		•	•	
EPCB	1059	•				•			•	
FSQ230	1042				•					
FSQ232	1042					•				
FSQC	1042	•				•			•	
SRD	1051			•						•
W2SR	1048	•				•			•	
Interlocked for Non-Hazardous Areas										
CSR	1024	•				•			•	
DBR	1030	•				•			•	
NBR	1034	•				•			•	
NSR	1032	•				•			•	
SRG	1028			•						•
WSR	1018	•				•			•	
WSQC	1037	•				•			•	
WSRD	1018	•				•			•	
WSRD SS	1020	•				•			•	
WSRDW	1018	•				•			•	

• Plugs mate with indicated receptacles.

† Consult individual catalog pages for complete listing of Cooper Crouse-Hinds plugs, receptacles and connectors

P Plugs and Receptacles

Table of Contents

Section 1P Industrial Heavy Duty Plugs and Receptacles

(for use in non-hazardous areas)

Receptacles	Plugs
AR	AP, APJ, CPH, CPP, NPJ
APR	AP, APJ, APQ, CPH, CPP, NPJ, NPQ
NR	APJ, CPH, CPP, NPJ
NPR	APJ, CPH, CPP, NPJ, NPQ

Section 2P Industrial Heavy Duty Plugs and Receptacles

(for use in hazardous areas)

Receptacles	Plugs
CES, CESD	CPH
CPR*	CPP
CPS	APJ, NPJ
DR	APJ, NPJ
ENR	ENP

Section 3P Interlocked Heavy Duty Plugs and Receptacles

(for use in non-hazardous areas)

Receptacles	Plugs
CSR	APJ, NPJ
DBR	APJ, CPH, NPJ
SRG	SP, BHP
NBR	APJ, CPH, NPJ
WSR, WSRD	APJ, CPH, NPJ
NSR	APJ, CPH, NPJ
DSR	APJ, CPH, NPJ
WSQC	APJ, CPH, NPJ

Section 4P Interlocked Heavy Duty Plugs and Receptacles

(for use in hazardous areas)

Receptacles	Plugs
BHR	BHP, SP
DBR	APJ, CPH, NPJ
EPC	APJ, DP, CPH, NPJ
EBBR	APJ, CPH, NPJ
EPCB	APJ, CPH, NPJ
FSQ	APJ, BP, CPH, NPJ
SRD	SP, BHP
DSR	APJ, CPH, NPJ
W2SR	APJ, CPH, NPJ

Section 5P

IEC309	Pin & Sleeve
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Section 6P Wiring Devices with Covers

(for use in non-hazardous areas)

WLRS/WLRD Covers
GFCI Covers

Section 7P Industrial Cord and Cable Reels

Cable-Gard™ Series
W14
W16
W19
Static Discharge Reels

Section 8P Special Purpose Plugs and Receptacles

(for use in non-hazardous areas)

Ark-trol® Series
RPC
RPE

Section 9P Special Purpose Plugs and Receptacles

(for use in hazardous areas)

Ark-trol Series
RPX

* Do not use in hazardous areas

Description	Page No.
Application/Selection	964, 965
Arktite® Series	
Technical Data	966-969
Aluminum AR/APJ Style	
20A	970
30A	972, 973
60A	974, 975
100A	976, 977
200A	978-980
400A	981, 982
Configured Arktite® ARC/APJC Style	
Technical Data	986, 987
30, 60, 100A	988, 989
Back Boxes	990, 993
Krydon® NR/NPJ Style	
Technical Data	983
30, 60, 100A	984, 985
Flanged Panel Mount	994, 995
Motor Plugs	996, 997

Application:

- Distribution of secondary electrical power
- Provide quick disconnect from power source

Considerations for Selection:**Electrical System:**

- Amperage and voltage required for application

Wiring system and number of conductors required. See page 969 for contact sizes.

Compatibility with System:

- Need for interchangeability with plugs in existing system and within parts of new system. Grounding styles. Two styles utilized. See page 967 for complete description to determine which is suitable for needs.

Mounting Arrangement:

- Three types of mounting available – surface, flush and panel

Application:

- Fixed receptacle for power outlet; cable connectors for portable cable extensions

Other Considerations:

- Wire sizes and recess dimensions available. See page 969 for complete details. National Electrical Code, UL, NEMA, Canadian Electrical Code, CSA compliances
- Environment – need for operation in harsh, dirty or corrosive conditions.

Options:

- Special polarity arrangements available as well as special back boxes and hub arrangements. See listing pages for details.

Quick Selector Chart

Electrical Characteristics							
Receptacle Series	Receptacle Type	Amperage (Range)	Volts (Max.)	No. of Poles (Range)	Grounding Style†	Mounting	Mating Plug
APR	Portable cable	20, 30, 60, 100, 200, 400	600VAC 250VDC	2-5	1-2		APJ, NPJ, APQ, AP
APRC	Portable cable	30, 60, 100	600VAC 250VDC	3-5	2		APJC, APQC
AR	Fixed	20, 30, 60, 100, 200, 400	600VAC 250VDC	2-5	1-2	Back box (surface)	APJ, NPJ, AP
ARC	Fixed	30, 60, 100	600VAC 250VDC	3-5	2	Back box (surface)	APJC
AR	Fixed	30, 60, 100, 200	600VAC 250VDC	2-4	1-2	Panel mtg. (semi-flush)	APJ, NPJ, AP
NPR	Portable cable	30, 60, 100	600VAC 250VDC	3-4	2		NPQ, APJ, NPJ (fixed)
NR	Fixed	30, 60, 100	600VAC 250VDC	3-4	2	Back box (surface)	APJ, NPJ

† See page 967 for detailed explanation.

Industrial Heavy Duty Interchangeability Chart

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same**. The following table is a summary of possible combinations.

Plugs Shown in Section 1P	Can be Used with These Receptacle Series	Listed in Section	Plugs & Receptacle Electrical Rating
APJ, NPJ*	DR	2P	30, 60 amp. 2-wire, 2-pole 3-wire, 3-pole 4-wire, 4-pole 2-wire, 3-pole 3-wire, 4-pole
	DBR	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
	FSQ	4P	30 amp. 2-wire, 3-pole 3-wire, 4-pole
	EPC, EPCB, EBBR	4P	30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole
	NBR, NSR	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
	WSR	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
	WSRD	3P	60 amp. 3-wire, 3-pole 3-wire, 4-pole
CPH	AR, NR*, NPR*	1P	30 and 60 amp. 2-wire, 3-pole
	DR, CES, CESD	2P	
	FSQ, EPC, EPCB, DBR	4P	
	DBR, NBR, NSR, WSR, WSRD	3P	30 and 60 amp. 3-wire, 4-pole

* NPJ, NR and NPR available in 2-wire, 3-pole and 3-wire, 4-pole electrical ratings only.

Industrial Heavy Duty Non-Hazardous Areas

Application:

Arktite circuit breaking plugs and receptacles are used:

- to supply power to portable electrically operated devices such as motor-generator sets, compressors, heating and cooling units, welders, conveyors, lighting systems and similar equipment
- where temporary power is needed, such as at trailers, building units, heavy machinery and similar equipment
- wherever electrical loads must be quickly disconnected from power source
- in a typical installation, where a large machine utilizes a number of electrical motor drives and for ease of adjustment, removal, maintenance and replacement, each motor is connected by portable cord and Arktite receptacles rather than permanently wired
- in areas where dust, dirt, moisture and corrosion are a problem
- indoors and outdoors in non-hazardous areas of chemical plants, process industry facilities, meat packing plants, manufacturing plants and similar industrial locations

Features:

- Circuit breaking: Plugs through 200 ampere rating may be disconnected under load; 400 ampere units are for service disconnect use only.
- Receptacles accept only plugs of the same amperage rating, style and number of poles, making it impossible to mismatch, and provides for positive polarization.
- Extra wide electrical spacing allows for maximum safety.
- Insulator materials are the result of intensive testing. Selection has been made based on highest dielectric strength, maximum mechanical and impact resistance, lowest moisture absorption and highest arc tracking resistance.
- A variety of installations is possible due to the availability of several types of back boxes.
- Designed to withstand rough usage and the effects of adverse environments.
- Reversible interiors, 30, 60 and 100 ampere (except 30 and 60 ampere, 5-pole) Arktite plug and receptacle interiors are interchangeable using a screwdriver. This makes it possible to feed a normally deenergized receptacle from an energized plug with usual Arktite safety; no energized contacts are exposed.
- Additional features are indicated in the view at right:
 - 1 Grounding contact in Style 2 is bonded to the receptacle housing.
 - 2 Easily wired interior assemblies in receptacles and plugs. See table on page 938 for type of contacts in units.
 - 3 Arktite Style 2, illustrated here, has an extra grounding contact which forms a parallel circuit with the circuit formed by the plug sleeve and receptacle detent spring, and assures continuity of the grounding

safety circuit under severe service. Grounding contact is no longer than the others, so grounding circuit is made first and broken last.

4 The arc formed by pulling the plug is instantly snuffed in the deep, confined insulated arcing chamber while the plug contact is still a considerable distance inside. The arc cannot travel over to the other side of the circuit or to the housing.

5 Detent spring forms a grounding path from plug sleeve to receptacle housing. Arktite plugs and receptacles are made in two styles. With either style, the portable appliance is grounded before it is energized and remains grounded until after it is deenergized. (Arktite Style 1, not

illustrated here, is for conditions where it is desired to use the contact of the plug sleeve with the detent spring to complete the grounding safety circuit. The extra grounding conductor in the portable cable is connected to the plug sleeve by a pressure connector.)

6 Each plug contact fits closely the opening of its individual arcing chamber.

7 Grounding contact is bonded to the plug sleeve. Grounding contact is keyed to its proper location to prevent mispolarization.

8 Arktite connectors' gasketing system provides unsurpassed watertight integrity.

9 All-aluminum UNI-SHELL™ threaded construction provides added strength to withstand extreme physical abuse.

NEW!
NEMA 4
Rating

Arktite Style 2
60 ampere

NEW!
Smaller
Cable
Range

10 Arktite's TRI-LOCK™ cable grip has three clamps that tighten around the cable to securely lock it in place, even when subjected to extreme flexing and jerking.

11 The unique SURE-SEAL™ cable gland provides a complete environmental seal by distributing pressure equally around the circumference of the cable.

12 Wrenching surfaces make Arktite connector quick and easy to assemble.

Arktite® Heavy Duty Circuit Breaking Plugs and Receptacles

Industrial Heavy Duty Non-Hazardous Areas

NEMA 4 Watertight

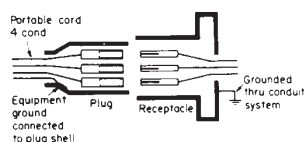
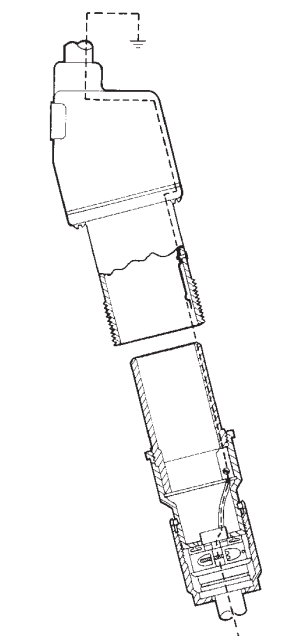
1P

Grounding: Style 1 vs. Style 2

Cooper Crouse-Hinds Arktite devices utilize two methods, or styles, for completing the grounding circuit in plugs and receptacles. NEC reference 250.138 (A) & (B).

Style 1 – Metallic

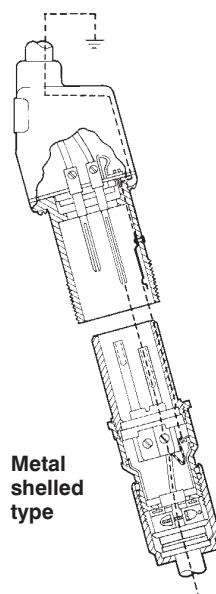
A Style 1 plug is one in which the grounding conductor in the flexible cable is bonded to the plug sleeve by a pressure connector. A Style 1 receptacle is one which is grounded by virtue of the fact that it is an integral part of a grounded conduit system. On insertion, the plug sleeve makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.



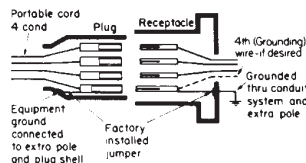
Style 1
Ground conductor
attaches to shell.

STYLE 2 – Metallic

A Style 2 metallic housing plug is one in which the grounding conductor in the flexible cable is bonded to the extra (grounding) pole and metal plug sleeve by a pressure connector. A Style 2 metallic housing receptacle is one in which the extra (grounding) pole is electrically connected to the equipment grounding conductor and the metal receptacle housing which itself is grounded by virtue of the fact that it is an integral part of a grounded conduit system. In Style 2, non-metallic housing plugs and receptacles, the extra pole is used for grounding since the housings are non-conductive.



**Metal
shelled
type**

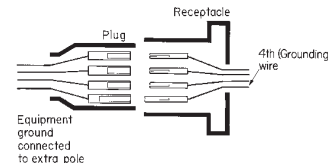
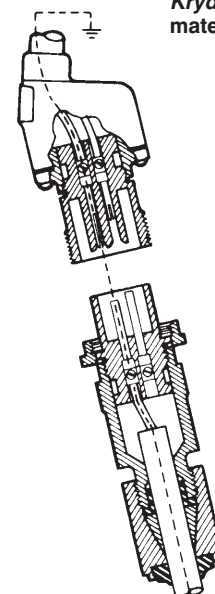


Style 2
Ground conductor
attaches to contact,
which is bonded to shell.

Style 2 – Non-Metallic

In a Style 2 receptacle, the grounding connection is made before line and load poles engage, and is broken after the line load poles disengage. Furthermore, upon insertion, the plug sleeve of metal shelled units, makes contact with detent springs of the grounded receptacle housing before line and load poles engage, and on withdrawal, remains in contact until after line and load poles disengage. Therefore, exposed metal parts of the portable equipment or plug are suitably grounded.

**Made of
non-metallic
Krydon
material**



Arktite® Heavy Duty Circuit Breaking Plugs and Receptacles

Industrial Heavy Duty Non-Hazardous Areas

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Suffix to be

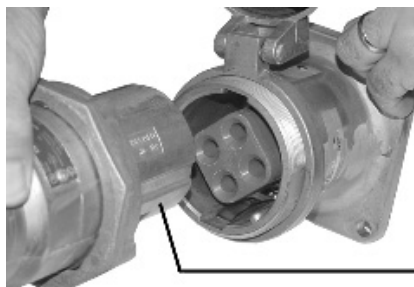
Added to

Cat. # Description

- S22. Reversed contacts. Receptacle assembled with plug interior (exposed contacts), plug assembled with receptacle interior (recessed contacts). For applications where plug is energized to feed normally de-energized receptacle. Available on 30 through 400 ampere units
NOTE: 30 (2, 3, 4-pole), 60 and 100 ampere interiors can be interchanged in the field using a screwdriver. Factory conversion is required for 200 and 400 ampere products.
- S4. Special polarity. For use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages and/or frequencies. Prevents insertion of a plug in a receptacle with different electrical rating. Available on 20 through 400 ampere units as follows:
Receptacle interior rotated 22½ degrees to right and plug changed to match (See photo to right)



Arktite receptacles have a cast raised rib located inside the receptacle sleeve. The location of the rib is in a specific relationship to the receptacle insulator that houses the contacts.



The mating plug has a cast groove located on the outside of the plug sleeve. This groove lines up with the raised rib.

Standard Materials:

- Metallic receptacle housings, plug and cord connector bodies – high impact strength copper-free aluminum
- Nonmetallic receptacles, plugs and cord connectors – *Krydon*® fiberglass-reinforced polyester material
- Back boxes: 20, 30, 60, 100 and 200 ampere – cast aluminum; 400 ampere – *Feraloy*® iron alloy
- Insulation (metallic products): (2-, 3-, and 4-pole) 30, 60, 100, 200, 400 ampere – fiberglass-reinforced polyester; 20, 30 ampere (5-pole) – melamine
- Contacts: pressure, solder, binding screw – brass; crimp/solder – leaded red brass; 20, 30, 60, 100 ampere – tellurium copper; 200, 400 ampere

Standard Finishes:

- *Feraloy*—electrogalvanized and aluminum acrylic paint
- Aluminum – natural
- *Krydon* fiberglass-reinforced polyester material – grey
- Fiberglass-reinforced polyester insulation – (red)
- Melamine – natural (brown)
- Brass – natural
- Leaded red brass – electro-tin-plate

§ 400A rated units are for service disconnect use only.

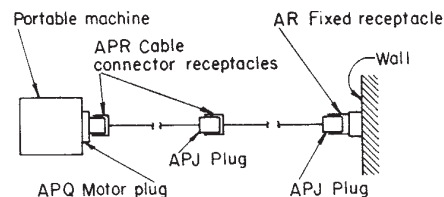
Accessories:

Accessories include a variety of angle adapters, panel adapters and back boxes for *Arktite* receptacles, listed on pages 990-993. Included throughout 1P are wire mesh cable grips and protective caps for *Arktite* plugs.

Certifications and Compliances:

- UL Standards: 1682, 514; 1010 (APJ and NPJ plugs only)
- CSA Standard: C22.2 No. 182.1

Typical installation



Arktite® Heavy Duty Circuit Breaking® Plugs and Receptacles

Industrial Heavy Duty Non-Hazardous Areas

NEMA 4 Watertight

1P

Arktite Horsepower Ratings

• Locked-Rotor Interrupting

Electrical System	Ampere Rating Plug and Receptacle	Motor Horsepower†			
		120 Volts	240 Volts	480 Volts	600 Volts
Single-phase	30	2	3	7.5	10
	60	5	10	25	20
	100	10	20		
	200	15	40		
Three-phase	30	3	5	10	10
	60	10	20	40	50
	100	15	30	40	25
	200	30	60	25	15

• Emergency Interrupting

Electrical System	Ampere Rating Plug and Receptacle	H.P. Rating			
		120 Volts	240 Volts	480 Volts	600 Volts
Single-phase	30	2	3	10	10
	60	5	10	25	20
	100	7.5	20	30	30
	200	15	40	40	40
Three-phase	30	3	7.5	15	20
	60	10	20	40	50
	100	10	30	40	40
	200	20	60	50	50

Wire Sizes:

The table below lists the diameter of the wire recess in *Arktite* plug and receptacle contacts so that maximum size of bare conductor can be figured. Range of wire sizes shown in table is intended only as a guide. Depending on type of wire used (building wire, flexible or extra flexible cable) and its construction (number and size of strands), bare copper diameters vary widely.

Diameter of Wire Recess in Plug and Receptacle Contacts

Ampere Rating	Contact Type	Diameter of Recess	Wire Size‡	
			Building	Extra Flex
20	Binding Screw	N/A	#14-#12	#14-#12
30 (2, 3, & 4-pole)	Pressure	.281	#10-#6	#10-#8
30 (2, 3, & 4-pole)	Crimp/Solder	.180	#10-#8**	#10-#8
30 (5-pole)	Solder	.188	#12-#6	#12-#8
60 (2, 3, 4 & 5-pole)	Pressure	.312	#6-#4	#8-#4
60 (3 & 4-pole)	Crimp/Solder	.277	#6-#4**	#8-#4
100 (2, 3 & 4-pole)	Pressure	.390	#4-#1	#4-#2
100 (3 & 4-pole)	Crimp/Solder	.390	#2-#1**	#2-#2
200 (Std. 3 & 4-pole)	Crimp/Solder	.56	#1-4/0	#1-3/0
200 (Lg. 3 & 4-pole)	Crimp/Solder	.75	4/0-250MCM	3/0-250MCM
400 (Std. 3 & 4-pole)	Crimp/Solder	.84	250-500MCM	250-400MCM
400 (Lg. 3 & 4-pole)	Crimp/Solder	1.25	500-1000MCM	400-750MCM

** Smaller sizes may be used with well reducers – information on request.

† Horsepower ratings are based on Cooper Crouse-Hinds testing in which locked-rotor currents were interrupted by withdrawing the plug from the receptacle. It is highly recommended, however, that such use be limited to emergency conditions only; and that a horsepower rated switch be used for motor disconnect.

‡ Do not use wire size smaller than minimum size recommended.

§ 400A rated units are for service disconnect use only.

Notes Page

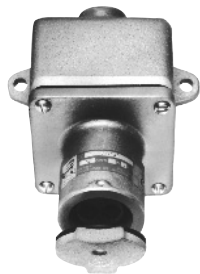
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Arktite® Heavy Duty Circuit Breaking Receptacles, Plugs and Connectors

20 A, 600 VAC/250 VDC, 50**-400 hertz

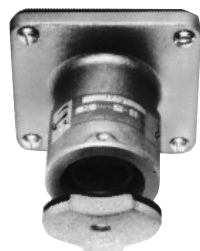
NEMA 4 Watertight

1P



Receptacle with Back Box

Config.	Hub Size	Descrip.	Cat No. #
2W 2P	1/2	Spring Door	ARE2211
	1/2	Threaded Cap	ARE2271
2W 2P	3/4	Spring Door	ARE2212
	3/4	Threaded Cap	ARE2272



Receptacle

Config.	Descrip.	Cat No. #
2W 2P	Spring Door	AR221
	Threaded Cap	AR227



Plug

Config.	Cable Dia.	Descrip.	Cat No. #
2W 2P	.250-.500	Fastening Ring	APJ2271
	.250-.500	W/O Fastening Ring	APJ2251
2W 2P	.500-.875	Fastening Ring	APJ2273
	.500-.875	W/O Fastening Ring	APJ2253

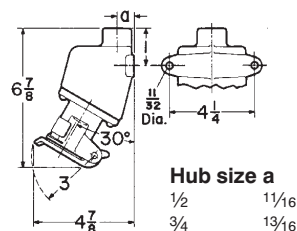


Connector

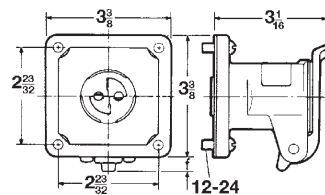
Config.	Cable Dia.	Descrip.	Cat No. #
2W 2P	.250-.500	Connector	APR2251
	.500-.850	Connector	APR2253

Dimensions

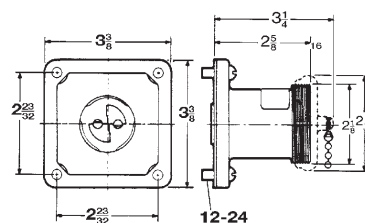
ARE Assembly



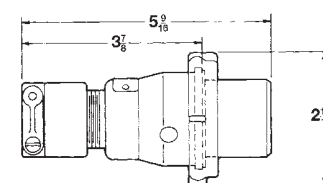
AR Receptacle - Spring Door



AR Receptacle - Open and with cap



APJ Plug



NOTE: For listing of additional back boxes, see pages 999 and 991.

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

1P

Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

30 A, 600 VAC/250 VDC, 50**-400 hertz

NEMA 4 Watertight

Receptacle Assembly



Receptacle



Mating Plug



Mating Connector



With ARE Back Boxes Style 1

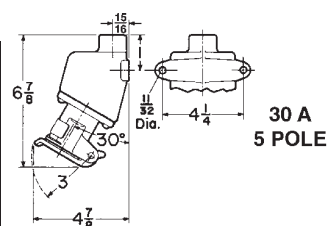
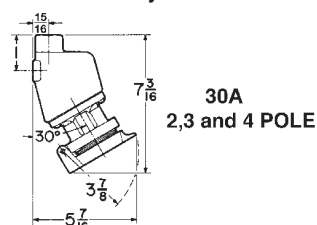
Description	Hub Size	Spring Door Cat. #	Spring Door Cat. #	Threaded Cap Only Cat. #	Mating APJ Plugs† Style 1 Cat. #	Cable Dia.	Mating APR Connectors Style 1 Cat. #	Cable Dia.
2-wire, } 2-pole }	1/2 3/4	ARE3211 ARE3212	AR321	AR327	APJ3275	0.39 to 1.20	APR3255	0.39 to 1.20
3-wire, } 3-pole }	3/4 1	ARE3312 ARE3313	AR331	AR337	APJ3375	0.39 to 1.20	APR3355	0.39 to 1.20
4-wire, } 4-pole }	3/4 1	ARE3412 ARE3413	AR341	AR347	APJ3475	0.39 to 1.20	APR3455	0.87 to 1.02
5-wire, } 5-pole }	1	ARE3513	AR351		APJ3573	.500 to .875	APR3553	.500 to .875

Style 2

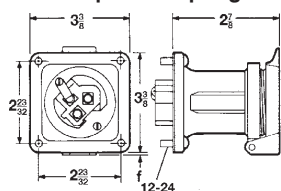
Description	Hub Size	Spring Door Cat. #	Spring Door Cat. #	Threaded Cap Only Cat. #	Mating APJ Plugs† Style 2 Cat. #	Cable Dia.	Mating APR Connectors Style 2 Cat. #	Cable Dia.
2-wire, } 3-pole }	3/4 1	ARE3322 ARE3323	AR332	AR338	APJ3575	.875 to 1.375	APR3555	.875 to 1.375
3-wire, } 4-pole }	3/4 1	ARE3422 ARE3423	AR342	AR348	APJ3485	0.39 to 1.20	APR3465	0.39 to 1.20
4-wire, } 5-pole }	1	ARE3523	AR352		APJ3583 APJ3585	.500 to .875 .875 to 1.375	APR3563 APR3565	.500 to .875 .875 to 1.375

Dimensions

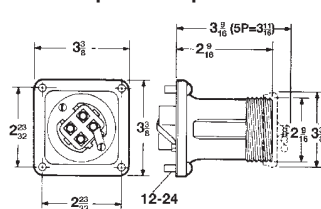
ARE Assembly



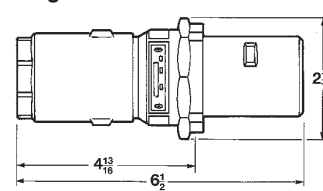
AR Receptacle - Spring Door



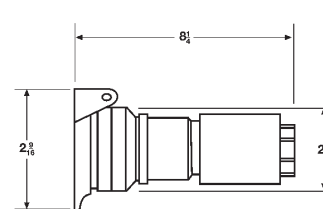
AR Receptacle - Open and with cap



Plug



Connector



** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

NEMA 4 Watertight

1P

30 A, 600 VAC/250 VDC, 50**-400 hertz

Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:

- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Config.

Cat No.

2P & 3P & 4P	CPK13
5P	CPK32

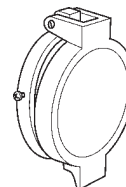
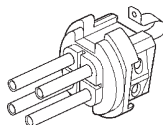
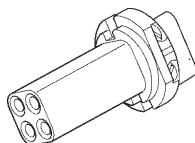
Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Replacement Parts:



Config.	Receptacle Interior	Plug Interior	Spring Door	Screw Cap
2W 2P	ATP275	ATP270	QE50	QE13
2W 3P	ATP278	ATP273		
3W 3P	ATP276	ATP271		
3W 4P	ATP279	ATP274		
4W 4P	ATP277	ATP272		
4W 5P	ATP125	ATP109	N/A	N/A
5W 5P	ATP94	ATP73		

Replacement Pin & Sleeve Contacts:

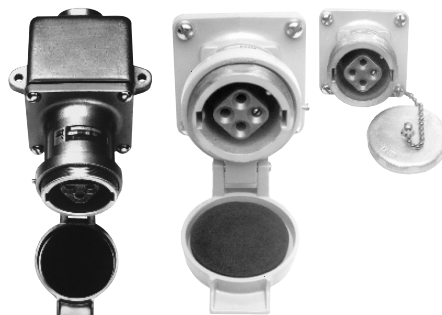
Description	Recep	Plug
Available as a kit only. 5 phase contacts & 1 ground contact included	AR30CONKIT	AP30CONKIT

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Receptacle Assembly



Receptacle



Mating Plug



Mating Connector

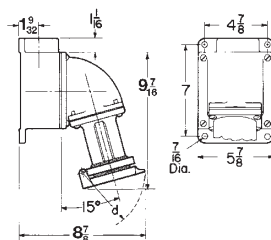
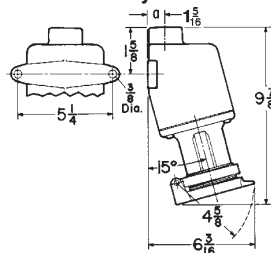


Style 1

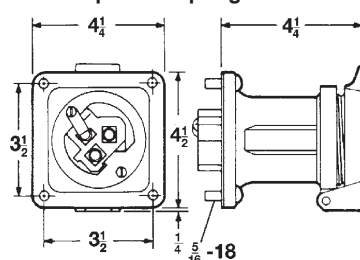
Description	Hub Size	With AJ Back Boxes and Angle Adapters Spring Door Cat. # Threaded Cap Only Cat. #	with ARE Back Boxes Spring Door Cat. #	Receptacle Housing Only Spring Door Cat. # Threaded Cap Only Cat. #	Cable Dia.	Cat. #	Cat. #
2-wire, 2-pole }	1 1 1/4	AREA6213 AREA6214	ARE6213 ARE6214	AR621 AR627	0.50 to 1.45	APJ6275	APR6255
3-wire, 3-pole }	1 1 1/4	AREA6313 AREA6314	ARE6313 ARE6314	AR631 AR637	0.50 to 1.45	APJ6375	APR6355
4-wire, 4-pole }	1 1/4 1 1/2	AREA6414 AREA6415	ARE6414 ARE6415	AR641	0.50 to 1.45	APJ6475	APR6455
5-wire, 5-pole }	1 1/4 1 1/2	AREA6574 AREA6575		AR657	0.50 to 1.45	APJ6575	
Style 2							
2-wire, 3-pole }	1 1 1/4	AREA6323 AREA6324	ARE6323 ARE6324	AR632 AR638	0.50 to 1.45	APJ6385	APR6365
3-wire, 4-pole }	1 1/4 1 1/2	AREA6424 AREA6425	ARE6424 ARE6425	AR642 AR648	0.50 to 1.45	APJ6485	APR6465
4-wire, 5-pole }	1 1/4 1 1/2	AREA6584 AREA6585		AR658	0.75 to 1.45	APJ6585	APR6585 APR6567

Dimensions

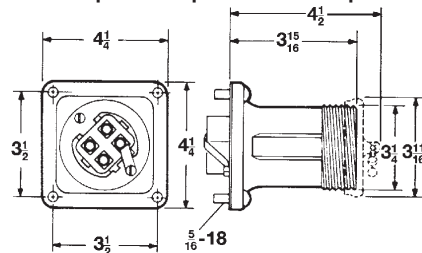
ARE Assembly



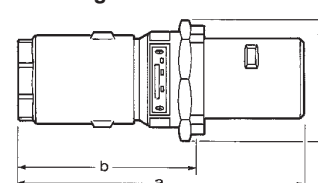
AR Receptacle - Spring Door



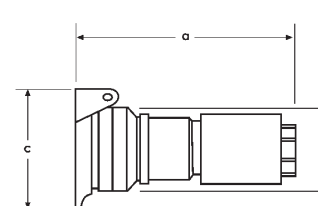
AR Receptacle - Open and with cap



APJ Plug



APR Connector



Config	Plug			Connector		
	a	b	c	a	b	c
2P or 3P	8 1/2	5 3/4	3 5/8	6 1/2	3 5/8	2 15/16
4P	8 1/2	5 13/16	3 3/4	8 1/4	3 5/8	2 15/16
5P	9	6 3/16	4 7/16	8 1/4	3 5/8	3 1/4

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

60 A, 600 VAC/250 VDC, 50**-400 hertz

NEMA 4 Watertight

1P

Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:

- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Standard Materials:

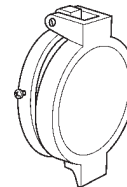
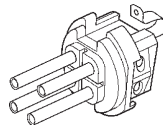
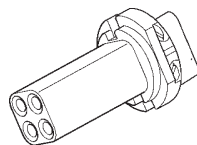
- Copper-free aluminum

Standard Finishes:

- Natural

Config.	Cat No. #
2P & 3P	CPK32
4P	CPK34

Replacement Parts:



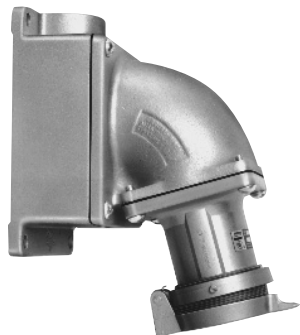
Config.	Receptacle Interior	Plug Interior	Spring Door	Screw Cap
2W 2P	ATP295	ATP290	QE51	QE32
2W 3P	ATP298	ATP293		
3W 3P	ATP296	ATP291		
3W 4P	ATP299	ATP294	QE52	AR:11393B
4W 4P	ATP297	ATP292		
4W 5P	ATP385	ATP387	N/A	
5W 5P	ATP384	ATP386	N/A	

Replacement Pin & Sleeve Contacts:

Description	Recep	Plug
Available as a kit only. 5 phase contacts & 1 ground contact included	AR60CONKIT	AP60CONKIT

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Receptacle Assembly



Receptacle



Mating Plug



Mating Connector



Style 1

Description	Hub Size	Spring Door Cat. #	Spring Door Cat. #	Threaded Cap Only Cat. #	Cable Dia.	Cat. #	Cat. #
2-wire, 2-pole }	1¼ 1½	AREA10214 AREA10215	AR1021	AR1027	0.875 to 1.70	APJ10277	APR10257
3-wire, 3-pole }	1¼ 1½	AREA10314 AREA10315	AR1031	AR1037	0.875 to 1.70	APJ10377	APR10357
4-wire, 4-pole }	1½ 2	AREA10415 AREA10416	AR1041	AR1047	0.875 to 1.70	APJ10477	APR10457

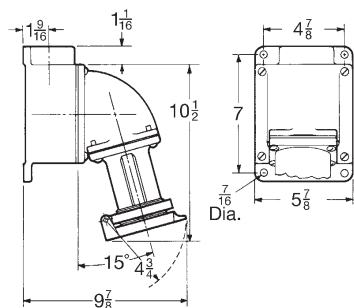
Style 2

Description	Hub Size	Spring Door Cat. #	Spring Door Cat. #	Threaded Cap Only Cat. #	Cable Dia.	Cat. #	Cat. #
2-wire, 3-pole }	1¼ 1½	AREA10324 AREA10325	AR1032	AR1038	0.875 to 1.70	APJ10387	APR10367
3-wire, 4-pole }	1½ 2	AREA10425 AREA10426	AR1042	AR1048	0.875 to 1.70	APJ10487	APR10467

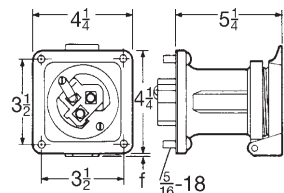
Receptacle Housings Only

Dimensions

ARE Assembly



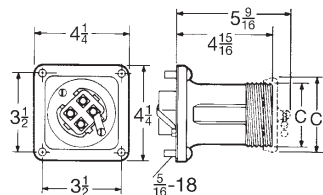
AR Receptacle - Spring Door



No. Poles
2 or 3
4

f
9/32
13/32

AR Receptacle - Open and with cap

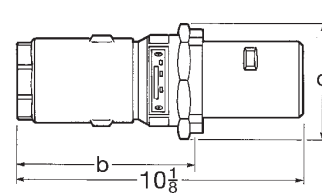


No. Poles
2 or 3
4
2 or 3
4

Housing
open
open
with cap
with cap

c
3 3/16
3 7/16
3 11/16
3 7/8

APJ Plug

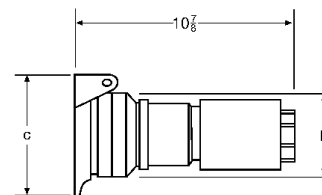


No. Poles
3
4

b
6 9/16
6 5/8

c
3 3/4
4 1/8

APR Connector



No. Poles
3
4

b
3 3/8
3 1/2

c
3 3/16
3 7/16

Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies and Housings

100 A, 600 VAC/250 VDC, 50**-400 hertz

NEMA 4 Watertight
Dimensions Pages 947, 961, 964-966

1P

Plug Closure Caps:

Application:

CPK caps for *Arktite* plugs are used:

- where portable equipment is on a standby basis and plugs are not in use
- to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
- with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Config.	Cat No. #
2P & 3P	CPK62
4P	CPK64

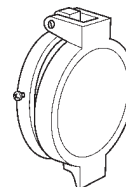
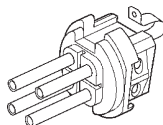
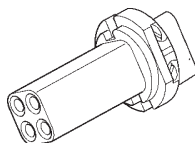
Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Replacement Parts:



Config.	Receptacle Interior	Plug Interior	Spring Door	Screw Cap
2W 2P	ATP315	ATP310	QE53	QE62
2W 3P	ATP318	ATP313		
3W 3P	ATP316	ATP311		
3W 4P	ATP319	ATP314	QE54	QE64
4W 4P	ATP317	ATP312		
4W 5P	N/A	N/A	N/A	N/A
5W 5P	N/A	N/A		

Replacement Pin & Sleeve Contacts:

Description	Recep	Plug
Available as a kit only. 5 phase contacts & 1 ground contact included	AR100CONKIT	AP100CONKIT

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

See pages 966–969 for general Application, Features, Grounding, Standard Materials, Standard Finishes, Options, Accessories, Compliances, Electrical Rating Ranges, and Wire Sizes.

Features:

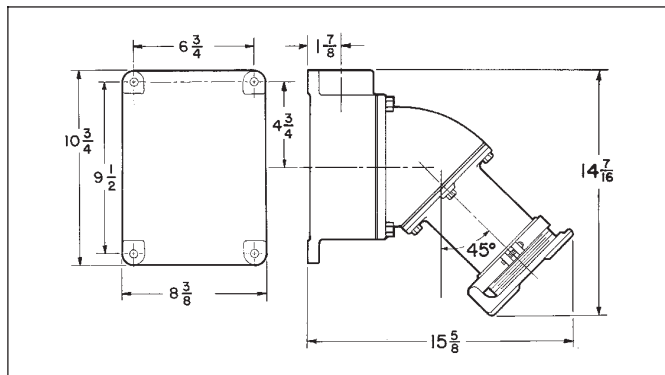
- Grounding contact wire terminators will accommodate ground wire of same size as phase wire.
- Spring band contact design provides multiple points of electrical contact. Improves electrical reliability and significantly reduces effort required for insertion and withdrawal
- Crimp/solder type contacts are standard
- Large wire wells are available for "extra flexible" wire
- Larger wire well size connectors will interchange with connectors of other wire well size of same amperage and contact configuration.
- Self-closing spring doors on receptacles and cord connectors provide environmental sealing
- Threaded nuts provide positive plug retention
- Two piece plug and cord connector design provide easy installation

NOTES:

1. For listing of additional back boxes, see page 991.
2. S22 suffix for reverse interiors is available from factory only. Field conversion cannot be done.
3. Replacement interiors for standard units vs. S22 units vary in length. Specify the unit type when ordering parts.

Dimensions

AREA Assembly



Plug Closure Caps:

Application:

- CPK caps for Arktite plugs are used:
- where portable equipment is on a standby basis and plugs are not in use
 - to effectively protect insulation and contacts from excessive moisture, dirt, dust and corrosion
 - with 30, 60, 100 and 200 ampere plugs with fastening ring and standard 200 ampere plugs for the clamp door housing



Config.	Cat No. #
3P	CPK102
4P	CPK104

Standard Materials:

- Copper-free aluminum

Standard Finishes:

- Natural

Wire Mesh Grips:

Application:

- Wire mesh grips are used:
- to provide secure cable termination
 - to extend cable life
 - with 20, 200 and 400 ampere plugs



Features:

- Eliminate sharp radius of cable bend at the point where cable enters plug, thereby reducing cable failure
- Absorb longitudinal stresses placed on the point of termination caused by pulling the cable
- Gripping action increases in direct proportion to amount of tension applied to cable

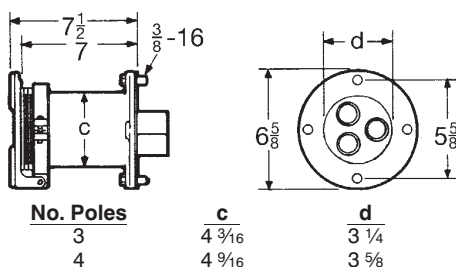
Standard Material & Finishes:

- Stainless steel wire braid – Natural

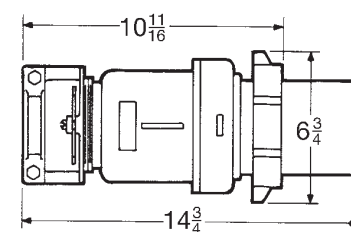
Ordering Information:

Plug Cable Range	Grip Range	Nominal Grip Length – Inches	Grip Cat. #
1.375 to 1.875	1.375 to 1.625	8	K163
	1.625 to 1.875	11	K188
1.875 to 2.500	1.875 to 2.000	10	K200
	2.000 to 2.250	11 3/4	K225

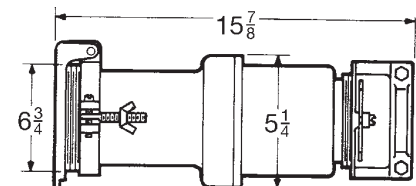
AR Receptacle



AP Plug



APR Connector



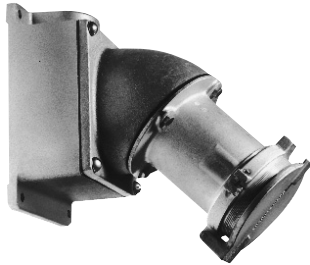
Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies

200 A, 600 VAC/250 VDC, 50**-400 hertz

Weatherproof

1P

Receptacle Assembly



With AJ Back Boxes
and Angle Adapters

Receptacle



Receptacle Housings
only

Mating Plug



Mating Connector



Style 1 – Wire Well Takes .56" Maximum Conductor Size

Description	Hub Size	Spring Door Cover Cat. #	Spring Door Cat. #	Cable Dia.	Plug Cat. #	Connector Cat. #
3-wire, 3-pole	1½	AREA20315	AR2031	0.875 to 1.375	AP20355	APR20315
	2	AREA20316		1.375 to 1.875	AP20357	APR20317
	2½	AREA20317		1.875 to 2.500	AP20358	APR20318
4-wire, 4-pole	2	AREA20416	AR2041	0.875 to 1.375	AP20455	APR20415
	2½	AREA20417		1.375 to 1.875	AP20457	APR20417
				1.875 to 2.500	AP20458	APR20418

Style 1 – Wire Well Takes .75" Maximum Conductor Size

3-wire, 3-pole	1½	AREA203125	AR20312	1.375 to 1.875 1.875 to 2.500	AP203511 AP203512	APR203111 APR203112
	2	AREA203126				
	2½	AREA203127				
4-wire, 4-pole	2	AREA204126	AR20412	1.375 to 1.875 1.875 to 2.500 2.500 to 3.000	AP204511 AP204512 AP204513	APR204111 APR204112 APR204113
	2½	AREA204127				

Style 2 – Wire Well Takes .56" Maximum Conductor Size

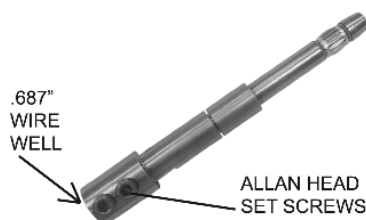
2-wire, 3-pole	1½	AREA20325	AR2032	0.875 to 1.375 1.375 to 1.875 1.875 to 2.500	AP20365 AP20367 AP20368	APR20325 APR20327 APR20328
	2	AREA20326				
	2½	AREA20327				
3-wire, 4-pole	1½	AREA20425	AR2042	0.875 to 1.375 1.375 to 1.875 1.875 to 2.500	AP20465 AP20467 AP20468	APR20425 APR20427 APR20428
	2	AREA20426				
	2½	AREA20427				

Style 2 – Wire Well Takes .75" Maximum Conductor Size

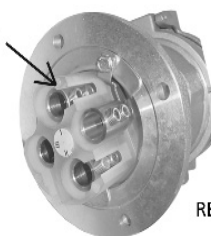
2-wire, 3-pole	1½	AREA203225	AR20322	0.875 to 1.375 1.375 to 1.875 1.875 to 2.500	AP203610 AP203611 AP203612	APR203210 APR203211 APR203212
	2	AREA203226				
	2½	AREA203227				
3-wire, 4-pole	1½	AREA204225	AR20422	1.375 to 1.875 1.875 to 2.500	AP204611 AP204612	APR204211 APR204212
	2	AREA204226				
	2½	AREA204227				

Option:

- Mechanical lug wire conductor terminations. Add "L" to catalog prefix i.e. : ARL2042



EASY ACCESS
TERMINALS



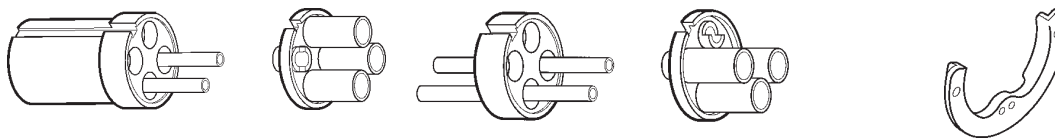
REAR VIEW

Arktite® Heavy Duty Circuit Breaking Receptacle Assemblies

Weatherproof

200 A, 600 VAC/250 VDC, 50**-400 hertz

200A Replacement Parts

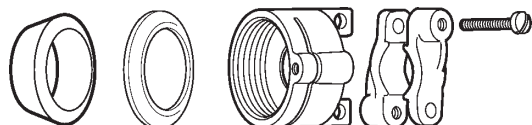


200A Standard and S4

	Receptacle Interior		Plug Interior		Brass Retaining Shoe	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well	.56 wire well	.75 wire well
2W 3P	ATP401	ATP402	ATP433	ATP434	0490335	0490335
3W 3P	ATP397	ATP398	ATP429	ATP430	0490327	0490328
3W 4P	ATP403	ATP404	ATP435	ATP436	0490337	0490337
4W 4P	ATP399	ATP400	ATP431	ATP432	0490331	0490332

200A ST22 and S4 S22

	Receptacle Interior		Plug Interior		Brass Retaining Shoe	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well	.56 wire well	.75 wire well
2W 3P	ATP417	ATP418	ATP449	ATP450	0490335	0490335
3W 3P	ATP413	ATP414	ATP445	ATP446	0490327	0490328
3W 4P	ATP419	ATP420	ATP451	ATP452	0490337	0490337
4W 4P	ATP415	ATP416	ATP447	ATP448	0490331	0490332



Cord Grip Assembly

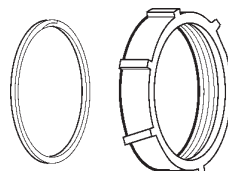
Cord Diameter Range

.875 - 1.375

1.375 - 1.875

1.875 - 2.500

AP2 KIT1 M80
AP2 KIT2 M80
AP2 KIT3 M80



Plug Clamp Nut

2W 3P

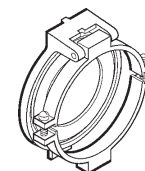
3W 3P

AP:0401965

2W 3P

3W 3P

AP:0401964



Rec Spring Door

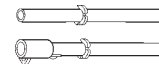
AR:0401502-2

AR:0401502-1

Replacement Pin & Sleeve Contacts

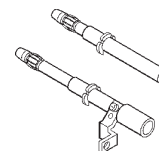
200A Standard & S4

	Receptacle		Plug	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well
Phase Contact	0490339	0490340	0490319	0490320
Ground Contact	0490343	0490344	0490323	0490324



200A S22 & S4 S22

	Receptacle		Plug	
	.56 wire well	.75 wire well	.56 wire well	.75 wire well
Phase Contact	0490351	0490352	0490355T	0490356
Ground Contact	0490347	0490348	0490359	0490360



Arktite® Heavy Duty Receptacle Assemblies

400 A, 600 VAC/250 VDC, 50-400 hertz

Weatherproof

1P

Features:

- Grounding contact wire terminators will accommodate ground wire of same size as phase wire
- Spring band contact design provides multiple points of electrical contact. Improves electrical reliability and significantly reduces effort required for insertion and withdrawal
- Crimp/solder type contacts are standard.
- Large wire wells are available for "extra flexible" wire
- Larger wire well connectors will interchange with connectors of other wire well size, of same amperage and contact configuration.
- Self-closing spring doors on receptacles and cord connectors provide environmental sealing
- Threaded nuts provide positive plug retention
- Two piece plug and cord connector design provide easy installation
- For disconnect use only – not for current interrupting

NOTES:

1. For listing of additional back boxes, see page 991. Illustration shows 3 blank plates and 1 hub plate.
2. S22 suffix for reverse interiors is available from factory only. Field conversion cannot be done.
3. Replacement interiors for standard units vs. S22 units vary in length. Specify the unit type when ordering parts.

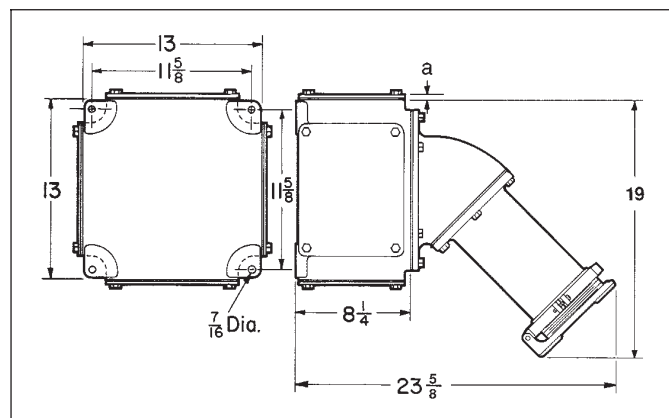
Dimensions

AREX Assemblies

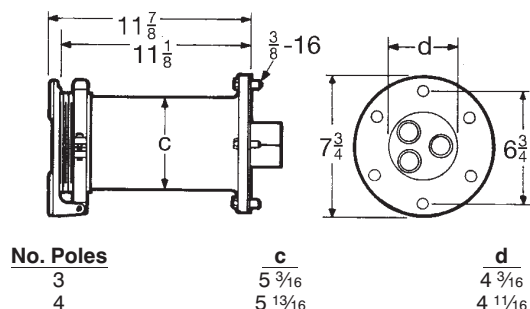
Description	a
1. The first step in the process of creating a new product is to identify a market need.	
2. Once a market need is identified, the next step is to develop a prototype.	
3. The prototype is then tested to determine if it meets the market need.	
4. If the prototype is successful, the next step is to create a business plan.	
5. The business plan is then used to secure funding for the new product.	
6. Once funding is secured, the next step is to manufacture the product.	
7. The product is then distributed to the market.	
8. The final step in the process is to monitor the product's performance.	

**With blank
hub plate** 5/16

**With hub
plate max.** 4⁵/₈



AR Receptacles



Wire Mesh Grips



Application:

Wire mesh grips are used:

- to provide secure cable termination
- to extend cable life
- **with 20, 200 and 400 ampere plugs**

Features:

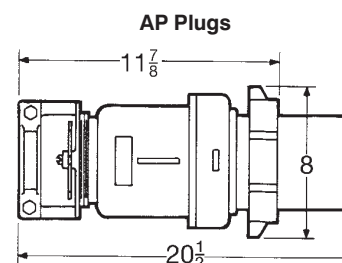
- Eliminate sharp radius of cable bend at the point where cable enters plug, thereby reducing cable failure
- Absorb longitudinal stresses placed on the point of termination caused by pulling the cable
- Gripping action increases in direct proportion to amount of tension applied to cable

Standard Material & Finishes:

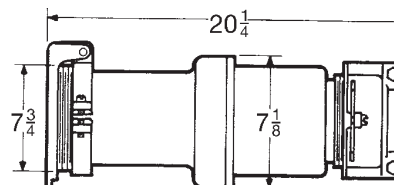
- Stainless steel wire braid – Natural

Ordering Information:

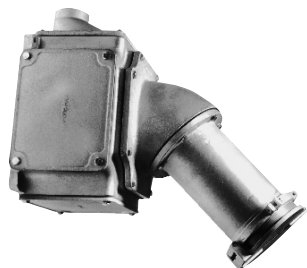
Plug Cable Range	Grip Range	Nominal Grip Length – Inches	Grip Cat. #
1.375 to 1.875	1.375 to 1.625	8	K163
	1.625 to 1.875	11	K188
1.875 to 2.500	1.875 to 2.000	10	K200
	2.000 to 2.250	11¾	K225



APR Connectors



Receptacle Assembly



Receptacle



Mating Plug



Mating Connector



With AJ Back Boxes†
and Angle Adapters

Receptacle Housings
only

Style 1 – Wire Well Takes .84" Maximum Conductor Size

Description	Hub Size	Spring Door Cover Cat. #	Spring Door Cat. #	Cable Dia.	Plug Cat. #	Connector Cat. #
3-wire, 3-pole	2½ 3	AREX40317 AREX40318	AR4031	1.375 to 1.875 1.875 to 2.500	AP40357 AP40358	APR40317 APR40318
4-wire, 4-pole	2½ 3	AREX40417 AREX40418	AR4041	1.375 to 1.875 1.875 to 2.500	AP40457 AP40458	APR40417 APR40418

Style 1 – Wire Well Takes 1.25" Maximum Conductor Size

3-wire, 3-pole	3 3½ 4	AREX403128 AREX403129 AREX4031210	AR40312	2.500 to 3.000 3.000 to 3.800	AP403510 AP403512	APR403110 APR403112
4-wire, 4-pole	4 5	AREX4041210 AREX4041212	AR40412	2.500 to 3.000 3.000 to 3.800	AP404510 AP404512	APR404110 APR404112

Style 2 – Wire Well Takes .84" Maximum Conductor Size

2-wire, 3-pole	2 2½ 3	AREX40326 AREX40327 AREX40328	AR4032	1.375 to 1.875 1.875 to 2.500	AP40367 AP40368	APR40327 APR40328
3-wire, 4-pole	2½ 3	AREX40427 AREX40428	AR4042	1.375 to 1.875 1.875 to 2.500	AP40467 AP40468	APR40427 APR40428

Style 2 – Wire Well Takes 1.25" Maximum Conductor Size

2-wire, 3-pole	3 3½ 4	AREX403228 AREX403229 AREX4032210	AR40322	2.500 to 3.000 3.000 to 3.500	AP403610 AP403612	APR403210 APR403212
3-wire, 4-pole	4 5	AREX4042210 AREX4042212	AR40422	2.500 to 3.000 3.000 to 3.500	AP404610 AP404612	APR404210 APR404212

† Furnished with cable grip and neoprene bushing.

‡ Hub plates and blank plates may be interchanged to permit conduit feed from bottom or sides.

Made of Krydon® Material, 600 VAC/250 VDC, 50-400 hertz;

Watertight§
Corrosion-Resistant
NEMA 4X
Dimensions Pg. 984

1P

Application:

Arktite circuit breaking plugs, receptacles, cord connectors and motor plugs are used:

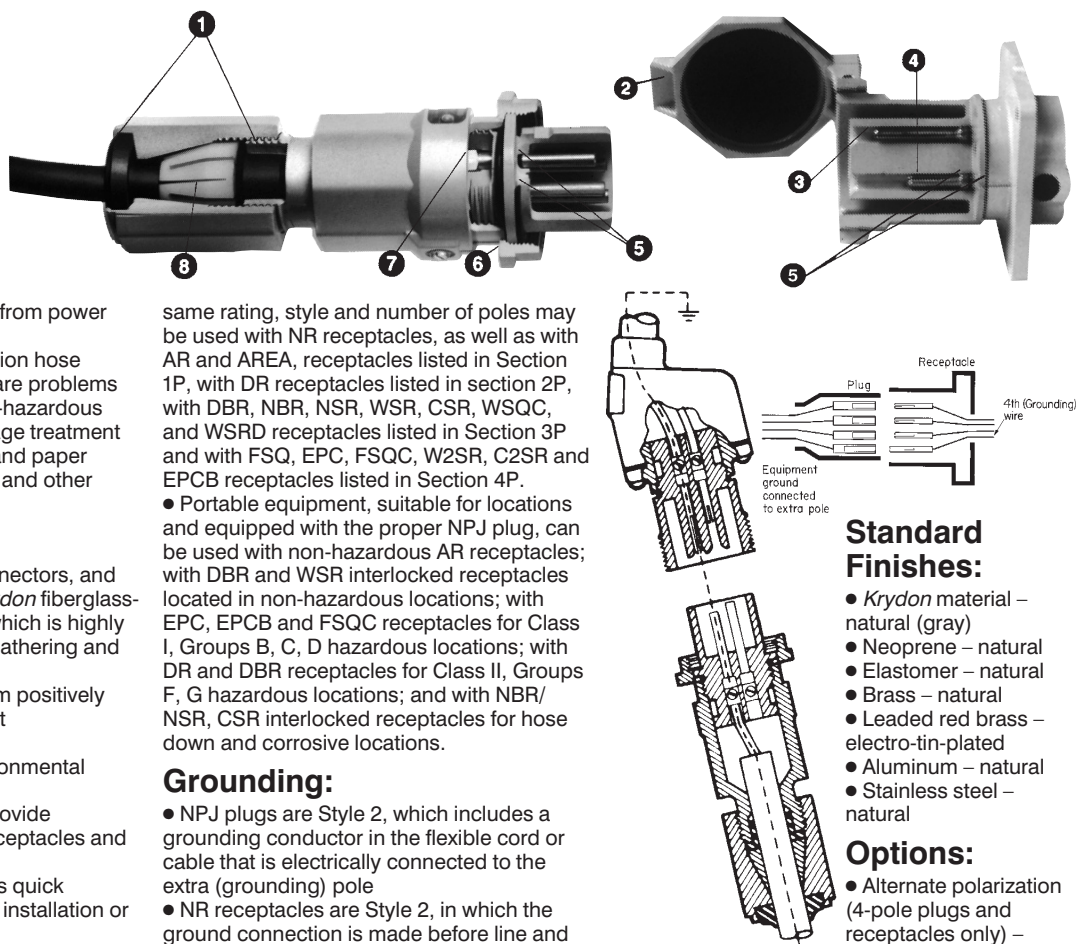
- to supply power to portable electrical devices such as welders, motors, pumps, conveyors and other similar equipment
- where electrical loads must be quickly disconnected from power sources
- in areas where severe corrosion, moisture, dirt and dust are problems
- indoors and outdoors in non-hazardous areas of chemical plants, sewage treatment facilities, cement plants, pulp and paper plants, food processing plants and other similar industries

Features:

- Plugs, receptacles, cord connectors, and motor plugs are molded of *Krydon* fiberglass-reinforced polyester material which is highly resistant to corrosion, heat, weathering and physical abuse
- ① 2-stage cord sealing system positively grips cord and protects against environmental contaminants
- ② Spring door provides environmental protection of receptacle
- Elastomeric snap-on caps provide environmental protection of receptacles and cord connectors
- Threaded construction allows quick assembly and disassembly for installation or maintenance
- ③ Grounding contact circuit is made first and broken last
- ④ Contact design provides multiple points of electrical contact for full-load circuit breaking capability
- Total interchangeability with all existing *Arkite* products for comparable ratings and configurations
- ⑤ Unique environmental sealing system includes o-ring gaskets on all contacts and between housing parts for NEMA 4 integrity
- ⑥ Threaded clamping ring provides plug retention
- ⑦ Pressure contact wire terminals are standard. Crimp/solder terminals are optional
- NPQ motor plugs and NPR cable connectors offer reversed interior capability
- ⑧ Unique cord and cable gripping system provides positive strain relief

Interchangeability of Plugs With Other Non-Hazardous and Hazardous Location Receptacles:

- Plugs listed for use with NRE/NREA assemblies are standard NPJ *Arktite* plugs. Other standard APJ and CPH plugs of the



Standard Finishes:

- Krydon material – natural (gray)
- Neoprene – natural
- Elastomer – natural
- Brass – natural
- Lead red brass – electro-tin-plated
- Aluminum – natural
- Stainless steel – natural

Options:

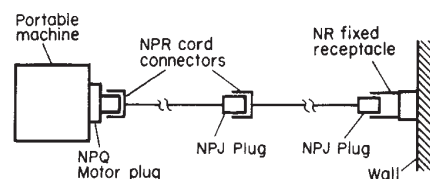
- Alternate polarization (4-pole plugs and receptacles only) – receptacle interior rotated 22½ degrees to right and plug changed to match – add suffix S4 to Cat. No.

**Style 2 –
Typical 3-wire,
4-pole plug
and receptacle**

- Crimp/solder terminals – add suffix T to Cat. No.
- *Corro-free*TM epoxy powder coat on back boxes and angle adapters – information on request

Certifications and Compliances:

- UL Standard: 1682
- UL 1010 hazardous locations (NPJ plug only)
- Wet and damp locations, watertight
- CSA Standard C22.2 No. 182.1



● 1P Heavy Duty Plugs and Receptacles

1P

Non-Metallic Arktime® Heavy Duty Circuit Breaking Motor Plugs, Plugs & Cord Connectors

Made of Krydon® Material, 30 A, 60 A and 100 A
600 VAC/250 VDC, 50**–400 hertz

Watertight§
Corrosion-Resistant
NEMA 4X

Receptacle Assembly



NREA



NRE

Receptacle



Mating Plugs



Mating Connectors



Motor Plugs



Amps	Description	Hub Size	Snap-on Cap/ Spring Door Cat. # ①	Snap-on Cap/ Spring Door Cat. # ①	Cord Dia.	Plug Cat. #	Cord Connector Cat. #	Motor Plug Cat. #
30	2-wire, 3-pole	¾ 1	NRE3322 NRE3323	NR332	0.55–0.70 0.70–0.85	NPJ3383 NPJ3384	NPR3363 NPR3364	NPQ338
	3-wire, 4-pole	¾ 1	NRE3422 NRE3423	NR342	0.55–0.70 0.70–0.85	NPJ3483 NPJ3484	NPR3463 NPR3464	NPQ348
60	2-wire, 3-pole	1 1¼	NRE6323 NRE6324	NR632	0.75–1.07 1.07–1.35	NPJ6384 NPJ6385	NPR6364 NPR6365	NPQ638
	3-wire, 4-pole	1¼ 1½	NRE6424 NRE6425	NR642	0.75–1.07 1.07–1.35	NPJ6484 NPJ6485	NPR6464 NPR6465	NPQ648
100	2-wire, 3-pole	1¼ 1½	NREA10324‡ NREA10325‡	NR1032	0.93–1.21 1.21–1.50	NPJ10386 NPJ10387	NPR10366 NPR10367	NPQ1038
	3-wire, 4-pole	1½ 2	NREA10425‡ NREA10426‡	NR1042	0.93–1.21 1.21–1.50	NPJ10486 NPJ10487	NPR10466 NPR10467	NPQ1048

① Krydon Arktime Receptacles are supplied with both a spring door and snap-on cap.

§ Wet and damp locations when used with spring door or snap-on cap, watertight when used with QE threaded cap.

‡ AJ back boxes are square, making it possible to install with hub in several positions.

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Non-Metallic Arktite® Heavy Duty Circuit Breaking Motor Plugs, Plugs & Cord Connectors

Dimensions

1P

Made of Krydon® Material, 30 A, 60 A and 100 A
600 VAC/250 VDC, 50**–400 hertz

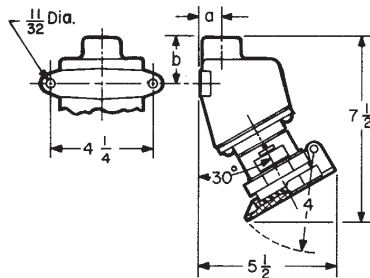


Fig. 1 –
30 A Receptacle Assemblies

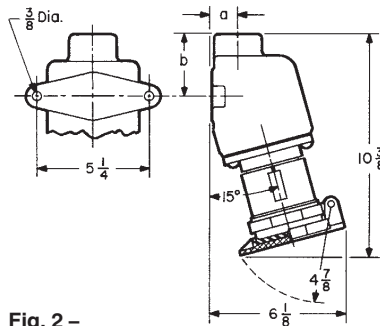


Fig. 2 –
60 A Receptacle Assemblies

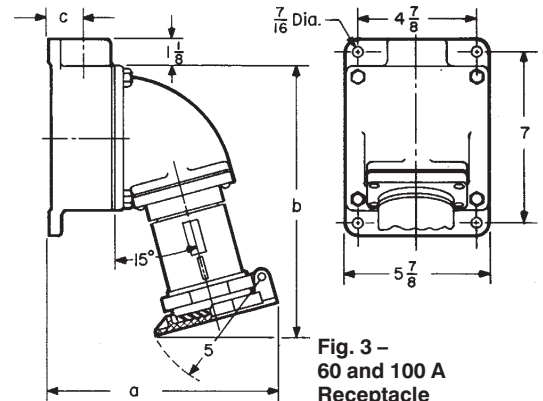


Fig. 3 –
60 and 100 A
Receptacle
Assemblies

NRE 30 and 60 A Assemblies – Fig. 1 NREA 60 and 100 A Assemblies – Fig. 3

Hub Size	Dimension a		Dimension b		Dim.	60 A Hub Size		100 A Hub Size
	30 A	60 A	30 A	60 A		1, 1 1/4, 1 1/2	1 1/4, 1 1/2	2
3/4	13/16		1 7/8		a	9	9 1/4	9 13/16
1	15/16	15/16	2	2 9/16	b	11	12	12
1 1/4		13/16		2 5/8	c	1 15/16	1 9/16	1 9/16
1 1/2		1 5/16		2 11/16				

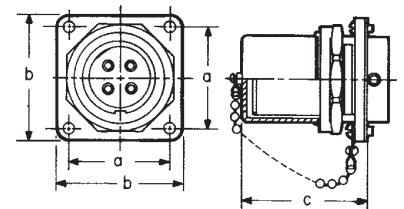


Fig. 6 – NPQ Motor Plugs

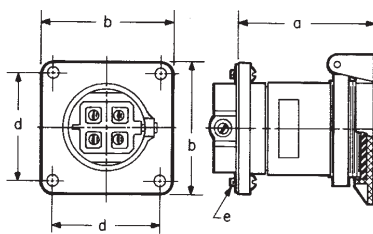


Fig. 4 –
Spring Door Housings

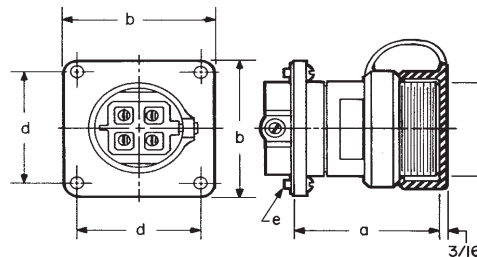


Fig. 5 –
Housings with Cap

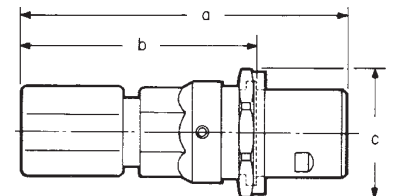


Fig. 7 – NPJ Plugs

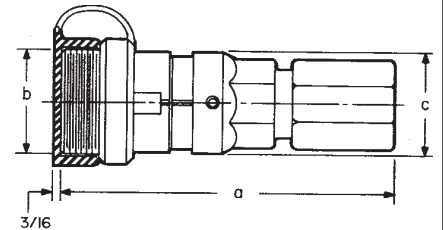


Fig. 8 – NPR Cord Connectors

Amps	No. Poles	Housing	a	b	c	d	e
30	3 or 4	Spring Door	3 1/4	3 3/8	—	2 3/4	12-24
	3 or 4	Open	2 13/16	3 3/8	2 9/16	2 3/4	12-24
60	3	Spring Door	4 1/2	4 1/4	—	3 1/2	5/16-18
	4	Spring Door	4 1/2	4 1/4	—	3 1/2	5/16-18
	3	Open	4 1/16	4 1/4	2 15/16	3 1/2	5/16-18
	4	Open	4 1/16	4 1/4	3 1/4	3 1/2	5/16-18
100	3	Spring Door	5 3/4	4 1/4	—	3 1/2	5/16-18
	4	Spring Door	5 3/4	4 1/4	—	3 1/2	5/16-18
	3	Open	5 5/16	4 1/4	3 3/16	3 1/2	5/16-18
	4	Open	5 5/16	4 1/4	3 7/16	3 1/2	5/16-18

Amps/Poles	a	b	c
NPQ Motor Plugs – Fig. 6			
30/3 or 4	2 3/4	3 3/8	2 15/16
60/3 or 4	3 1/2	4 1/4	4 5/16
100/3 or 4	3 1/2	4 1/4	5 7/16
NPJ Plugs – Fig. 7			
30/3 or 4	8 1/2	7	3 3/16
60/3	9 1/2	6 13/16	3 5/8
60/4	9 1/2	6 13/16	4
100/3	11 1/4	7 3/4	4
100/4	11 1/4	7 3/4	4 1/4
NPR Cord Connectors – Fig. 8			
30/3 or 4	8 7/8	2 9/16	2 5/8
60/3	9 9/4	2 15/16	2 15/16
60/4	9 9/4	3 1/4	2 15/16
100/3	11 1/2	3 3/16	3 5/16
100/4	11 1/2	3 7/16	3 5/16

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Heavy-Duty and Voltage Polarized

Configured Arktite® Power Connectors offer the heavy-duty metal construction of our standard Arktite line, *plus* voltage configuration. This combination is the ultimate in pin and sleeve connector reliability and safety. The new Configured Arktite Connector series incorporates a unique voltage polarization system that insures that only receptacles and plugs rated for the same voltage can be physically connected. This assures a safe and correct electrical connection every time. Compliance with the National Electrical Code® article 210-7 requirement for non-interchangeability of receptacles and plugs on the same premises with different voltages is now easier than ever. Equipment damage due to the misapplication of the wrong voltage using these connectors when properly installed can be virtually eliminated.

This new connector series is not intermateable with our standard line of Arktite power connectors, but it utilizes many of the same time-tested construction features that have been the proven standard of excellence in the electrical industry for years. Configured Arktite Power Connectors are available in 4 or 5 pole (includes ground contact) versions for 30, 60, or 100 amp requirements. Every plug and receptacle is marked numerically and color coded for the specific voltage making it simple and easy to determine the proper plug and receptacle combination. A larger ground contact and unique keying system insures that only the connectors of the same voltage

will intermate. Five distinct configurations are available covering the most common voltages in industry.

Configured Arktite Power Connectors are designed for rugged use in the most abusive applications. The unique gasketing system provides a sure seal even in the most adverse environments. They also feature the Cooper Crouse-Hinds patented TRI-LOCK™ cable grip that securely locks the cable in place even when subjected to extreme flexing and jerking. The larger ground contact makes first, breaks last, and is bonded to the metal housing

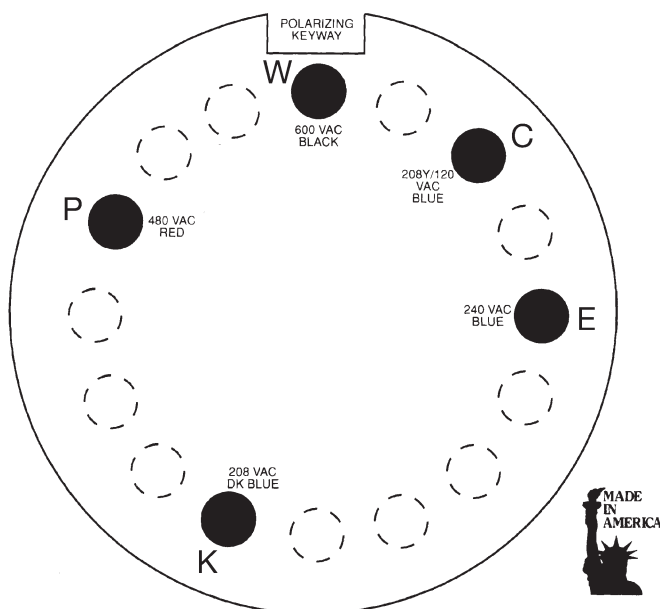
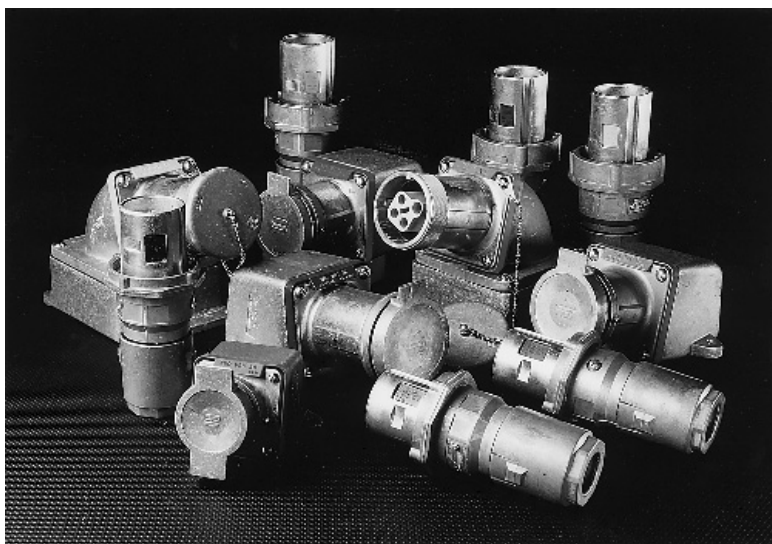
to insure all metal parts are properly grounded. The power contacts are specially designed and located in arc quenching chambers to allow these connectors to be safely disconnected under load. Cooper Crouse-Hinds Configured Arktite Power Connectors are designed in compliance with the latest UL, CSA and NEMA standard.

Applications:

- Configured Arktite voltage polarized circuit breaking plugs and receptacles are used:
- to supply power to portable electrically operated devices such as motor-generator sets, compressors, heating and cooling units, welders, conveyors, lighting systems, and similar equipment.
 - where temporary power is needed, such as at trailers, building units, heavy machinery, and similar equipment.
 - wherever electrical loads must be quickly disconnected from a power source.
 - in areas where dust, dirt, moisture, and corrosion are a problem.
 - indoors and outdoors in non-hazardous areas of chemical plants, process industry facilities, meat packing plants, manufacturing plants, and similar industrial locations.

Accessories:

Accessories include a variety of angle adapters, panel adapters, and back boxes for Configured Arktite receptacles. They include protective caps for Configured Arktite plugs and receptacles.



Face View of Receptacle

Footnote: ● indicates ground contact position.
○ indicates position not used.

Configured Arktite® Heavy Duty Power Connectors

Rainproof
30 to 100 A
600 VAC/250 VDC
60-400 hertz

1P

Voltage/Color Configurations

A 16 position 'face' is used to illustrate the grounding contact location for receptacles. To identify the system voltage, identify the housing color and position of the receptacle grounding contact or marking on the polarizer.

Standard Materials:

- Metallic receptacle housings, plug, and connector bodies – high impact strength copper-free aluminum
- Back boxes – cast aluminum
- Insulators: 3, 4, and 5 pole – fiberglass-reinforced polyester
- Contacts: Pressure screw type – brass
- Polarizers – PBT polyester

Standard Finishes:

- Aluminum – natural
- Fiberglass-reinforced polyester insulator – gray
- Brass – natural

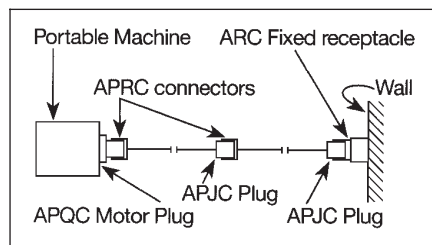
Certifications and Compliances:

- UL Standards: 1682 and 1686
- CSA Standard: C22.2 No. 182.1

Electrical Rating Ranges:

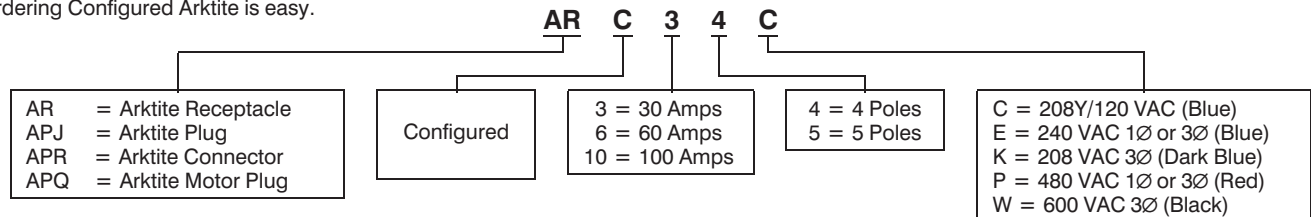
- Voltage – 600 VAC; 60 to 400 hertz; 250 VDC
- Amperes – 30, 60, and 100
- Horsepower Rating – same as standard product. See page 969.

Typical Installation:



Catalog Numbering System:

Ordering Configured Arktite is easy.



Features

Grounding contact is bonded to the receptacle housing.

Each plug contact closely fits the opening of its individual arcing chamber.

Large ground contact is keyed by location to prevent mispolarization.

Simple and easy color, part number, and voltage identification

Wrenching surfaces make Configured Arktite connector quick and easy to assemble.

Simple and easy color, part number, and voltage identification

The arc formed by pulling the plug is instantly snuffed in the deep, confined insulated arcing chamber while the plug contact is still a considerable distance inside. The arc cannot travel over to the other side of the circuit or to the housing.

Easily wired interior assemblies in receptacles and plugs.

Grounding contact is bonded to the plug sleeve.

Configured Arktite connectors' gasketing system provides unsurpassed watertight integrity.

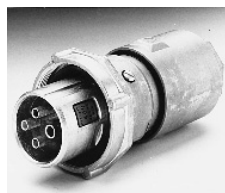
All-aluminum UNI-SHELL™ threaded construction provides added strength to withstand extreme physical abuse.

Configured Arktite's TRI-LOCK™ cable grip has three clamps that tighten around the cable to securely lock it in place, even when subjected to extreme flexing and jerking.

The unique SURE-SEAL™ cable gland provides a complete environmental seal by distributing pressure equally around the circumference of the cable. One size accommodates the complete range of cable diameters.

30 Amp Plugs, Receptacles, Connectors, Motor Plugs

Heavy-Duty
Voltage Polarized
Circuit Breaking
NEMA 3R
Rainproof
UL/CSA

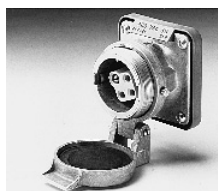
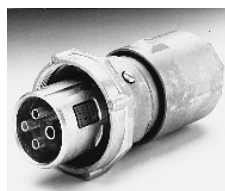


Amps	Poles	Volt Rating	Color	Plug Cat. No.	Receptacle w/Spring Door* Cat. No.
30	4	208 VAC 3Ø	Dark Blue	APJC34K	ARC34K
30	4	240 VAC 3Ø	Blue	APJC34E	ARC34E
30	4	480 VAC 3Ø	Red	APJC34P	ARC34P
30	4	600 VAC 3Ø	Black	APJC34W	ARC34W
30	5	208Y/120 VAC	Blue	APJC35C	ARC35C

Back Box Ordering Information – See pages 990 and 991.

60 Amp Plugs, Receptacles, Connectors, Motor Plugs

Heavy-Duty
Voltage Polarized
Circuit Breaking
NEMA 3R
Rainproof
UL/CSA



Amps	Poles	Volt Rating	Color	Plug Cat. No.	Receptacle w/Spring Door* Cat. No.
60	4	480 VAC 3Ø	Red	APJC64P	ARC64P
60	4	600 VAC 3Ø	Black	APJC64W	ARC64W
60	5	208Y/120 VAC	Blue	APJC65C	ARC65C

Back Box Ordering Information – See pages 990 and 991.

♦ Configured Interlocks are available. – See page 1027.



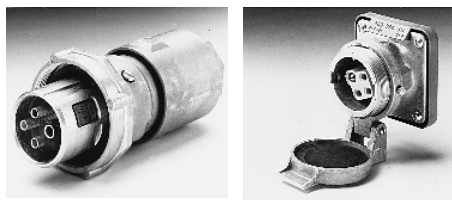
Configured Arktite® Heavy Duty Power Connectors ♦

Rainproof
100 A
600 VAC/250 VDC
60-400 hertz

1P

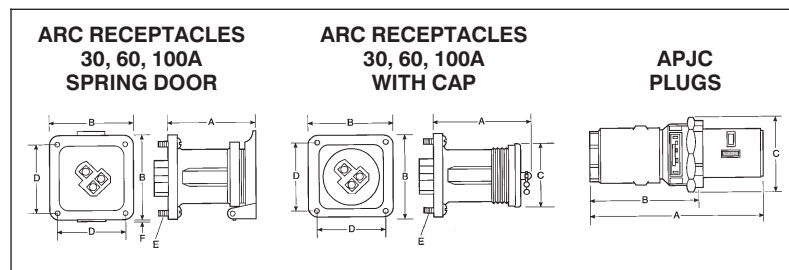
100 Amp Plugs, Receptacles, Connectors, Motor Plugs

Heavy-Duty
Voltage Polarized
Circuit Breaking
NEMA 3R
Rainproof
UL/CSA



Amps	Poles	Volt Rating	Color	Plug Cat. No.	Receptacle w/Spring Door* Cat. No.
100	4	208 VAC 3Ø	Dark Blue	APJC104K	ARC104K
100	4	240 VAC 3Ø	Blue	APJC104E	ARC104E
100	4	480 VAC 3Ø	Red	APJC104P	ARC104P
100	4	600 VAC 3Ø	Black	APJC104W	ARC104W
100	5	208Y/120 VAC	Blue	APJC105C	ARC105C

Dimensions



ARC Receptacles

Amps	Housing	A	B	C	D	E	F
30	Spring door	2 ⁷ / ₈	3 ³ / ₈		2 ²³ / ₃₂	12-24	3/4
30	w/cap	3 ³ / ₁₆	3 ³ / ₈	3	2 ²³ / ₃₂	12-24	
60	Spring door	4 ¹ / ₄	4 ¹ / ₄		3 ¹ / ₂	5/16-18	9/32
60	w/cap	4 ¹ / ₂	4 ¹ / ₄	3 ¹¹ / ₁₆	3 ¹ / ₂	5/16-18	
100	Spring door	5 ¹ / ₄	4 ¹ / ₄		3 ¹ / ₂	5/16-18	1 ³ / ₃₂
100	w/cap	5 ⁹ / ₁₆	4 ¹ / ₄	3 ⁷ / ₈	3 ¹ / ₂	5/16-18	

APJC Plugs

Amps	A	B	C
30	6 ¹ / ₂	4 ¹³ / ₁₆	2 ¹⁵ / ₁₆
60	8 ¹ / ₂	5 ¹³ / ₁₆	3 ³ / ₄
100	10 ¹ / ₈	6 ⁵ / ₈	4 ¹ / ₈

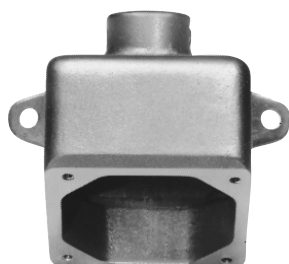
♦ Configured Interlocks are available. – See page 1027.



1P Heavy Duty Plugs and Receptacles

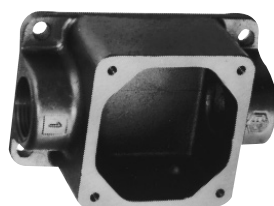
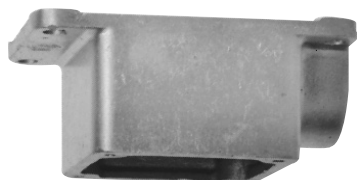
AR Back Boxes and Accessories for 20, 30, & 60 A Receptacle Housings

Dimensions Pages 992 and 993



ARE

Hub Size	20/30 A Cat. #	60 A Cat. #
1/2	ARE13	
3/4	ARE23	
1	ARE33	ARE36
1 1/4		ARE46
1 1/2		ARE56



ARRC

Hub Size	20/30 A Cat. #	60 A Cat. #
1/2	ARRC13	
3/4	ARRC23	
1	ARRC33	ARRC36
1 1/4		ARRC46
1 1/2		ARRC56



For ARRH and ARRC back boxes



For steel panel or cabinet

AR 15° Angle Adapter

Mounts On	Takes AR Receptacle Housings	Cat. #
ARRH and ARRC back boxes	20 and 30 amp.	AR30
ARRH and ARRC back boxes	60 amp.	AR60
Steel panel or cabinet	60 and 100 amp.	AR610

ARRH

Hub Size	20/30 A Cat. #	60 A Cat. #
1/2	ARRH13	
3/4	ARRH23	
1	ARRH33	ARRH36
1 1/4		ARRH46
1 1/2		ARRH56



ARD

Hub Size	20/30 A Cat. #	60 A Cat. #
1/2	ARD13	
3/4	ARD23	
1	ARD33	ARD36
1 1/4		ARD46
1 1/2		ARD56

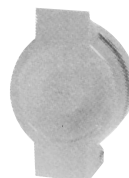


ARJ

Hub Size	20/30 A Cat. #	60 A Cat. #
1/2	ARJ13	
3/4	ARJ23	
1	ARJ33	ARJ36
1 1/4		ARJ46
1 1/2		ARJ56

ARJG

Hub Size	20/30 A Cat. #	60 A Cat. #
1/2	ARJG13	
3/4	ARJG23	
1	ARJG33	ARJG36
1 1/4		ARJG46
1 1/2		ARJG56



Spring Door Assembly

Used With	Cat. #
30 amp, 2, 3 & 4-pole	QE50
60 amp, 2 & 3-pole	QE51
60 amp, 4-pole	QE52
100 amp, 2 & 3-pole	QE53
100 amp, 4-pole	QE54



Cap and Chain

Used With	Cat. #
30 amp, 2, 3 & 4-pole	QE13
60 amp, 2 & 3-pole	QE32
60 amp, 4-pole	QE34
100 amp, 2 & 3-pole	QE62
100 amp, 4-pole	QE64

AJ and AJC Back Boxes with Angle Adapters for 60, 100, 200 & 400 A Receptacle Housings AJX Assemblies and Component Parts For 200 and 400 A Receptacle Housings

Dimensions Pages 992 and 993

1P



AJ Back Box with 60/100 A Angle Adapter



AJ Back Box with 200/400 A Angle Adapter



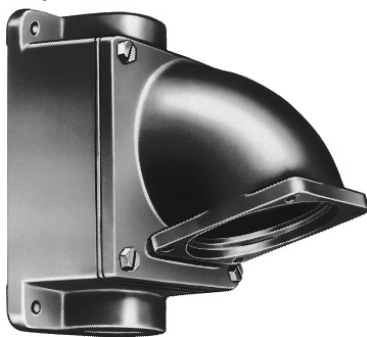
AJX Assemblies

**Back Box with Angle Adapter,
3 Blank Plates and 1 Hub Plate**

Hub Size	400 A Cat. #
2	AJX69
2½	AJX79
3	AJX89
3½	AJX929
4	AJX9210
5	AJX9212

AJX Component Parts

For use in making up assemblies with arrangements of hub plates (4 required) other than those listed.



AJC Back Box with 60/100 A AJA Angle Adapter



AJC Back Box with 200 A Angle Adapter

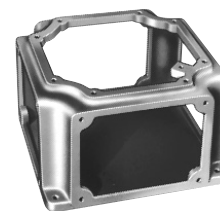
AJ and AJC Back Boxes[†]

HUB SIZE	TYPE	60 & 100A		200A		400A	
		BOX ONLY	BOX & ADAPTER ASSEMBLY	BOX ONLY	BOX & ADAPTER ASSEMBLY	BOX ONLY	BOX & ADAPTER ASSEMBLY
1"	ONE HUB	AJ56*	AJ37				
	FEED THRU	AJC56*	AJC37				
1¼"	ONE HUB	AJ56*	AJ47				
	FEED THRU	AJC56*	AJC47				
1½"	ONE HUB	AJ56	AJ57	AJ71*	AJ58		
	FEED THRU	AJC56	AJC57				
2"	ONE HUB	AJ66	AJ67	AJ71*	AJ68	AJ82*	AJ69
	FEED THRU	AJC66	AJC67				
2½"	ONE HUB			AJ71	AJ78	AJ82*	AJ79
	FEED THRU			AJC71	AJC78		
3"	ONE HUB					AJ82	AJ89
	FEED THRU						
ANGLE ADAPTER		AJA6		AJA1		AJA2	

*REDUCER SUPPLIED WITH ASSEMBLY

[†] AJ and AJC back boxes are square, making it possible to install with hub in several positions.

[‡] Use AJ69, AJ79 or AJ89 for cables up to 2 – #350MCM, 3 – #300MCM or 4 – #250MCM. For larger cables, use AJX69, etc., listed under assemblies.



Back Box

**400 A
Cat. #**
AJX99



Angle Adapter

**400 A
Cat. #**
AJ245



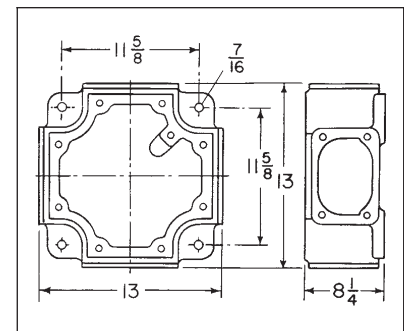
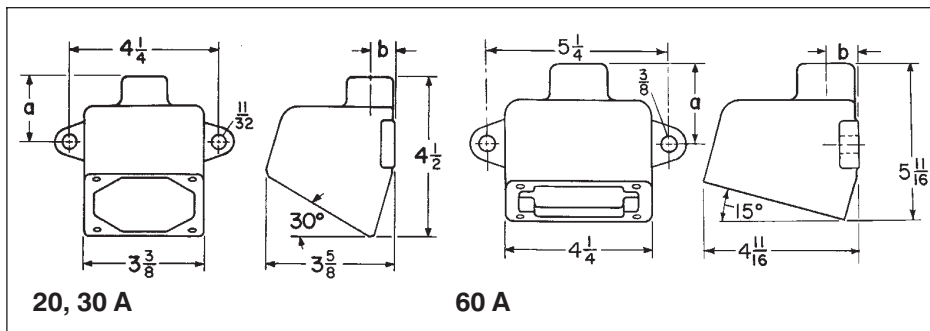
Hub Plate

Hub Size	400 A Cat. #
2	YYP96
2½	YYP97
3	YYP98
3½	YYP99
4	YYP910
5	YYP9012

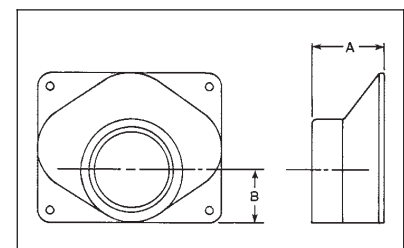


Blank Plate

400 A Cat. #
YYP900



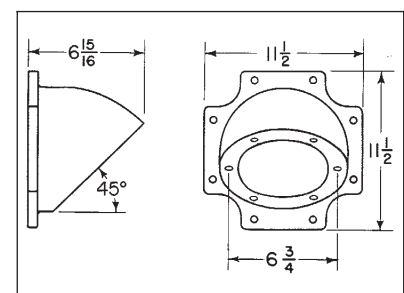
AJX Back Body
400 Amperes



Hub Plate

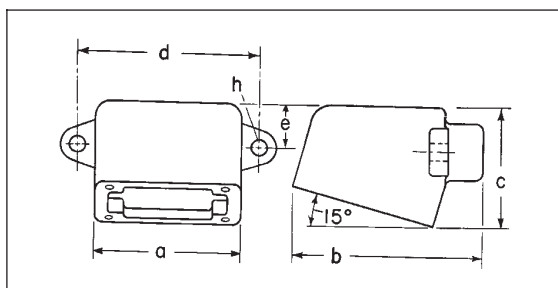
	Hub Size	"A"	"B"
YYP96	2	3 3/4	1 11/16
YYP97	2 1/2	3 7/8	2 5/16
YYP98	3	3 7/8	2 5/16
YYP99	3 1/2	3 7/8	2 9/16
YYP910	4	3 7/8	2 13/16
YYP9012	5	4 5/8	3 7/16

AJ Angle Adapter



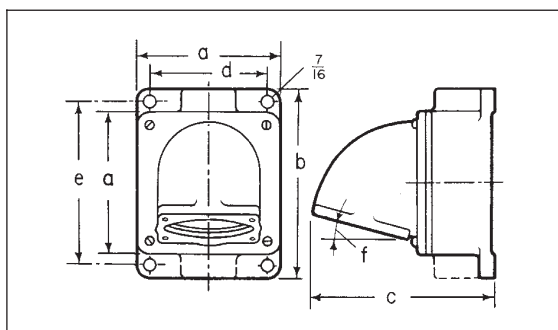
ARE

Cat. #	Rating	Size	a	b
13	20, 30A	1/2	1 27/32	1 1/16
23	20, 30A	3/4	1 27/32	1 3/16
33	20, 30A	1	1 31/32	1 5/16
36	60 A	1	2 9/16	1 5/16
46	60 A	1 1/4	2 5/8	1 3/16
56	60 A	1 1/2	2 11/16	1 5/16



ARJG

Cat. #	Rating	Size	a	b	c	d	e	h Dia.
13	20, 30A	1/2	3 3/8	4 15/32	2 3/4	4 1/4	1 3/8	1 1/32
23	20, 30A	3/4	3 3/8	4 15/32	2 3/4	4 1/4	1 3/8	1 1/32
33	20, 30A	1	3 3/8	4 19/32	2 3/4	4 1/4	1 3/8	1 1/32
36	60 A	1	4 1/4	5 5/8	4 11/16	5 1/4	1 5/8	3/8
46	60 A	1 1/4	4 1/4	5 11/16	4 11/16	5 1/4	1 5/8	3/8
56	60 A	1 1/2	4 1/4	5 3/4	4 11/16	5 1/4	1 5/8	3/8

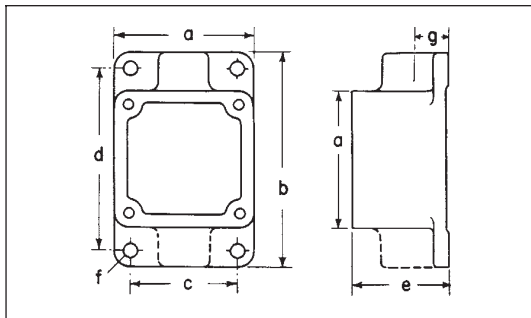


AJ and AJC

With 60, 100, 200 and 400 Ampere Angle Adapters

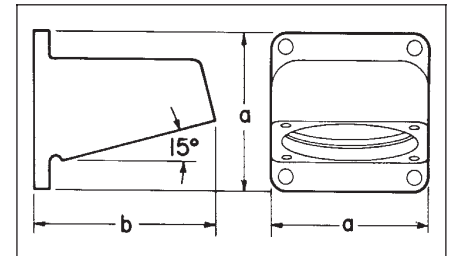
Cat. #	Rating	Size	a	b	c	d	e	f
37, 47, 57	60, 100 A	1, 1 1/4, 1 1/2	5 7/8	8	7 7/16	4 7/8	7	15°
67	60, 100A	2	5 7/8	8	8	4 7/8	7	15°
58, 68, 78	200 A	1 1/2, 2, 2 1/2	8	10 3/4	9 7/8	6 3/4	9 1/2	45°
69, 79, 89	400 A	2, 2 1/2, 3	9	11 5/8	11 13/16	7 3/4	10 3/8	45°

Dimensions



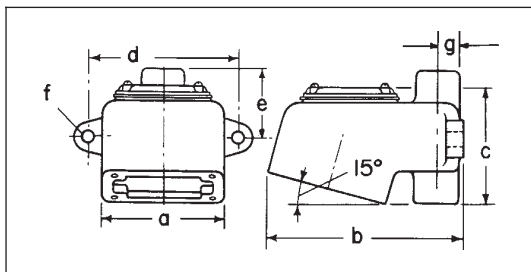
ARRC and ARRH

Cat. #	Rating	Size	a	b	c	d	e	f Dia.	g
13	20/30 A	1/2	3 3/8	5 5/16	2 5/8	4 9/16	2 1/4	1 1/32	1 1/16
23	20/30 A	3/4	3 3/8	5 5/16	2 5/8	4 9/16	2 1/4	1 1/32	1 3/16
33	20/30 A	1	3 3/8	5 5/16	2 5/8	4 9/16	2 1/4	1 1/32	1 5/16
36	60 A	1	4 1/4	6 1/2	3 1/2	5 3/4	3 1/8	7/16	1 3/8
46	60 A	1 1/4	4 1/4	6 1/2	3 1/2	5 3/4	3 1/8	7/16	1 3/8
56	60 A	1 1/2	4 1/4	6 1/2	3 1/2	5 3/4	3 1/8	7/16	1 3/8



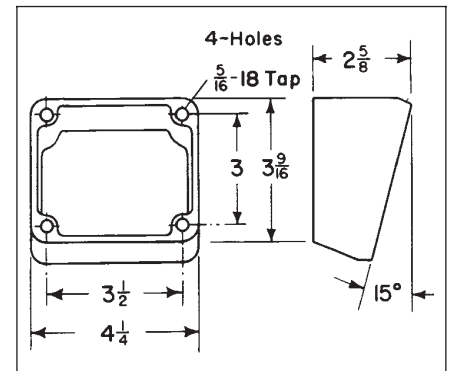
AR30 and AR60 Angle Adapters

Cat. #	Rating	a	b
AR30	20/30 A	3 3/8	4 1/8
AR60	60 A	4 1/4	4 15/16

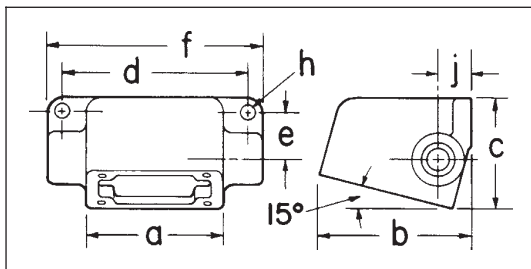


ARD

Cat. #	Rating	Size	a	b	c	d	e	f Dia.	g
13	20/30 A	1/2	3 3/8	5 5/16	3 23/32	4 1/4	1 27/32	1 1/32	1 1/16
23	20/30 A	3/4	3 3/8	5 5/16	3 23/32	4 1/4	1 27/32	1 1/32	1 3/16
33	20/30 A	1	3 3/8	5 5/16	3 23/32	4 1/4	1 27/32	1 1/32	1 5/16
36	60 A	1	4 1/4	7 1/16	5 3/4	5 1/8	2 3/4	3/8	1 5/16
46	60 A	1 1/4	4 1/4	7 1/16	5 3/4	5 1/8	2 3/4	3/8	1 5/16
56	60 A	1 1/2	4 1/4	7 1/16	5 3/4	5 1/8	2 3/4	3/8	1 5/16



AR610 Angle Adapter



ARJ

Cat. #	Rating	Size	a	b	c	d	e	f	h Dia.	j
13	20/30 A	1/2	3 3/8	3 3/8	2 3/4	4 5/8	1 7/32	5 5/16	1 1/32	1 5/16
23	20/30 A	3/4	3 3/8	3 3/8	2 3/4	4 5/8	1 7/32	5 5/16	1 1/32	1 5/16
33	20/30 A	1	3 3/8	3 3/8	2 3/4	4 5/8	1 7/32	5 5/16	1 1/32	1 5/16
36	60 A	1	4 1/4	4 11/16	4 11/16	5	1 23/32	6 3/8	3/8	1 5/16
46	60 A	1 1/4	4 1/4	4 11/16	4 11/16	5	1 23/32	6 3/8	3/8	1 5/16
56	60 A	1 1/2	4 1/4	4 11/16	4 11/16	5	1 23/32	6 3/8	3/8	1 5/16

AR Arktite® Circuit Breaking Round Flange Receptacle Housings for Panel Mounting

Application:

AR round flange receptacle housings are designed specifically for semi-flush mounting in sheet metal panels or cabinets.

Features:

- Back boxes are not needed for these receptacle assemblies.
- Where wiring behind a panel is exposed and subject to either mechanical injury or contact by personnel, suitable shields or guards should be provided.

Standard Materials:

- Receptacle housings – copper-free aluminum
- Plug exteriors – copper-free aluminum
- Insulation: 30, 60, 100, 200 ampere – fiberglass-reinforced polyester
- Pressure and solder contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

Available with these assemblies are:

- Reversed interiors (add suffix S22 to Cat. No.)
 - Special polarity (add suffix S4 to Cat. No.)
- See page 968 for details.

Certifications and Complies:

- UL Standard: 1682

NOTE: For general information on application, features and grounding, see pages 966 to 969.



AR Receptacle housings with round flange and threaded cap



APJ Plugs with cable grip, Neoprene bushing and fastening ring



AP Plugs with cable grip, Neoprene bushing and fastening ring

AR Arktite® Circuit Breaking Round Flange Receptacle Housings for Panel Mounting With Threaded Cap

Weatherproof

1P

30/60/100/200 A, 600 VAC/250 VDC, AP and APJ Plugs

Amps	Style†	Description	Recept. Cat. #	Cable Dia.	Plug Cat. #
30	1	3-wire, 3-pole } *	AR6337	0.60 to 1.20	APJ3375
		4-wire, 4-pole } *	AR6347	0.60 to 1.20	APJ3475
	2	3-wire, 4-pole } *	AR6348	0.60 to 1.20	APJ3485
60	1	3-wire, 3-pole } *	AR6637	0.75 to 1.45	APJ6375
		4-wire, 4-pole } *	AR6647	0.75 to 1.45	APJ6475
	2	3-wire, 4-pole } *	AR6648	0.75 to 1.45	APJ6485
100	1	3-wire, 3-pole } *	AR61037	1.00 to 1.70	APJ10377
		4-wire, 4-pole } *	AR61047	1.00 to 1.70	APJ10477
	2	3-wire, 4-pole } *	AR61048	1.00 to 1.70	APJ10487
200	1	3-wire, 3-pole } *	AR62031 ♦	.875 to 1.375	AP20355
				1.875 to 2.500	AP20358
	2	2-wire, 3-pole } *	AR62032 ♦	.875 to 1.375	AP20365
				1.875 to 2.500	AP20368

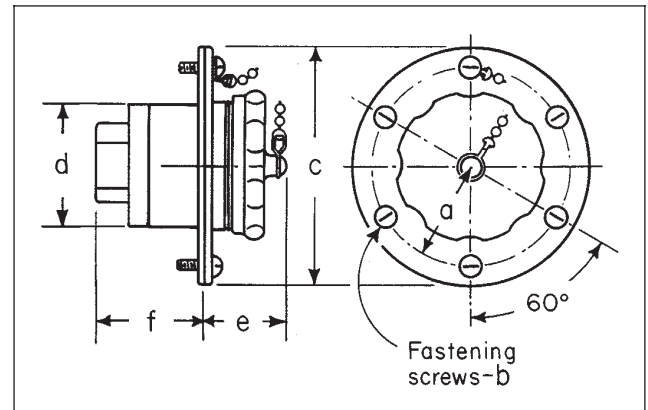
† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell.

♦ 200 ampere size is provided with clamp cover.

* Pressure connectors are standard. Crimp/solder type terminators are optionally available for 2, 3 and 4-pole 30 ampere, 3 and 4-pole 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example:

APJ3375-T (Plug) AR6337-T (Receptacle)

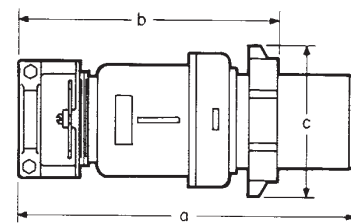
Dimensions



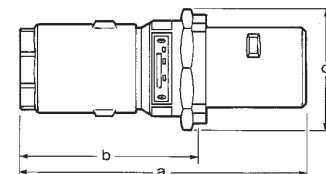
AR Round Flange Receptacles

Description	a	b	c	d	e	f
30 amp. 2, 3, 4-pole	2	12-24	4¾	27/16	15/8	2¼
60 amp. 2, 3-pole	2	12-24	4¾	213/16	17/8	33/8
60 amp. 4-pole	2	12-24	4¾	31/8	17/8	33/8
100 amp. 2, 3-pole	2	12-24	4¾	31/16	17/8	49/16
100 amp. 4-pole	2	12-24	4¾	35/16	17/8	49/16
200 amp. 3-pole	33/8	3/8-16	7¾	43/16	27/8	51/8

AP 200A Plugs



APJ 30, 60 and 100A Plugs



Amps	No. Poles	a	b	c
30	2, 3 or 4	6½	413/16	215/16
60	2 or 3	8½	5¾	35/8
60	4	8½	513/16	3¾
100	2 or 3	101/8	69/16	3¾
100	4	101/8	65/8	41/8
200	3	14¾	1011/16	6¾

† These dimensions are approximate and vary with cable size.

APJ Plugs, APR Cable Connector Receptacles

30/60/100 A, 250 VDC/600 VAC, 50**-400 hertz

Application:

APQ motor plugs are used:

- on portable electric equipment

Features:

- Eliminates problem of storing and protecting a long length of portable cord and plug on portable device
- Connection to fixed receptacle used as power source is made with cord sets which may be hung on wall, out of the way
- Cord sets are made up using an APR receptacle at one end and an APJ plug at the other
- Cord sets may be used singly or connected together to provide longer lengths when needed
- With spare cord sets on hand, portable equipment may be kept in service while normal cord replacement is being made
- Where design of portable equipment permits, APQ motor plugs can be attached directly to a sheet metal panel or cabinet
- May be mounted on AR and AJ back boxes for conduit connection
- See typical installation diagram on page 997

Standard Materials:

- Motor plugs: mounting plate – *Feraloy*®, Iron Alloy; protective sleeve – copper-free aluminum
- Plug and receptacle exteriors – copper-free aluminum
- Back boxes – copper-free aluminum
- Insulation – fiberglass-reinforced polyester
- Pressure and solder contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

Available with these assemblies:

- Special polarity (add suffix S4 to Cat. No.)
- See page 968 for details.

Certifications and Compliances:

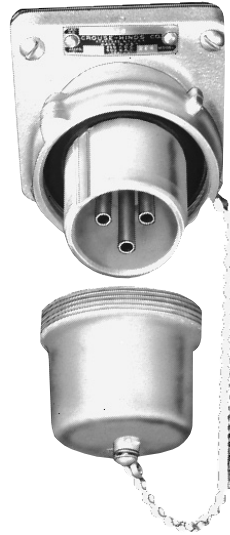
- UL Standards: 514, 1682
 - CSA Standard C22.2 No. 182.1
- NOTE: For general information on application, features and grounding, refer to pages 966 to 969.

† Style 1 – Grounded through shell.

Style 2 – Grounded through extra pole and shell.

* Pressure connectors are standard. Crimp/solder terminators are optionally available for 2, 3 and 4 pole 30 ampere, 3 and 4-pole 60 and 100 ampere. For details, see page 969. To specify, add the suffix "T" to the catalog number. For example: APR3355-T (Connector) APJ3375-T (Plug)

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.



APQ Motor plugs with square flange, gaskets, fastening ring, and exposed contacts.



APR Cable connector receptacles with cable grip, Neoprene bushing, and protected contacts.



APJ Plugs with cable grip, Neoprene bushing, exposed contacts, and fastening ring.

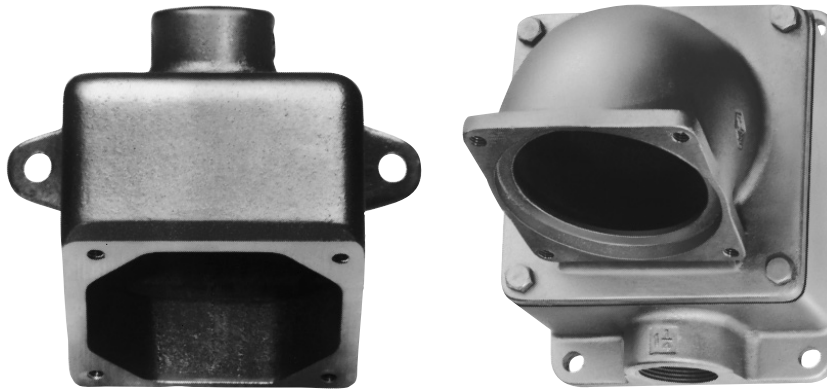
Amps	Style†	Description	Plug Cat. #	Cable Dia.	Cable Connector Receptacle Cat. #	Motor Plug Cat. #
30	1	2-wire, 2-pole	* APJ3275	0.60 to 0.88	APR3253	APQ327
		2-wire, 2-pole		0.87 to 1.02	APR3255	
		3-wire, 3-pole	* APJ3375	0.60 to 0.88	APR3353	APQ337
		3-wire, 3-pole		0.87 to 1.02	APR3355	
	2	4-wire, 4-pole	* APJ3475	0.60 to 0.88	APR3453	APQ347
		4-wire, 4-pole		0.87 to 1.02	APR3455	
60	1	2-wire, 2-pole	* APJ3385	0.60 to 0.88	APR3363	APQ338
		2-wire, 2-pole		0.87 to 1.02	APR3365	
		3-wire, 3-pole	* APJ3485	0.60 to 0.88	APR3463	APQ348
		3-wire, 3-pole		0.87 to 1.02	APR3465	
	2	2-wire, 2-pole	* APJ6275	0.75 to 0.88	APR6253	APQ627
		2-wire, 2-pole		0.87 to 1.37	APR6255	
100	1	3-wire, 3-pole	* APJ6375	0.75 to 0.88	APR6353	APQ637
		3-wire, 3-pole		0.87 to 1.37	APT6355	
		4-wire, 4-pole	* APJ6475	0.75 to 0.88	APR6453	APQ647
		4-wire, 4-pole		0.87 to 1.37	APR6455	
	2	2-wire, 3-pole	* APJ6385	0.75 to 0.88	APR6363	APQ638
		2-wire, 3-pole		0.87 to 1.37	APR6365	
	1	3-wire, 4-pole	* APJ6485	0.75 to 0.88	APR6463	APQ648
		3-wire, 4-pole		0.87 to 1.37	APR6465	
	2	2-wire, 2-pole	* APJ10277	1.00 to 1.38	APR10255	APQ1027
		2-wire, 2-pole		1.37 to 1.50	APR10257	
	1	3-wire, 3-pole	* APJ10377	1.00 to 1.38	APR10355	APQ1037
		3-wire, 3-pole		1.37 to 1.50	APR10357	
	1	4-wire, 4-pole	* APJ10477	1.00 to 1.38	APR10455	APQ1047
		4-wire, 4-pole		1.37 to 1.50	APR10457	
	2	2-wire, 3-pole	* APJ10387	1.00 to 1.38	APR10365	APQ1038
		2-wire, 3-pole		1.37 to 1.50	APR10367	
	2	3-wire, 4-pole	* APJ10487	1.00 to 1.38	APR10465	APQ1048
		3-wire, 4-pole		1.37 to 1.50	APR10467	

Typical Back Boxes

Weatherproof

1P

For APQ Arktime® Circuit Breaking Motor Plugs



Typical back boxes used with APQ motor plugs

ARE

For APQ 30 Amp.

Hub Size	Cat. #
1/2	ARE13
3/4	ARE23
1	ARE33

For APQ 60 Amp.

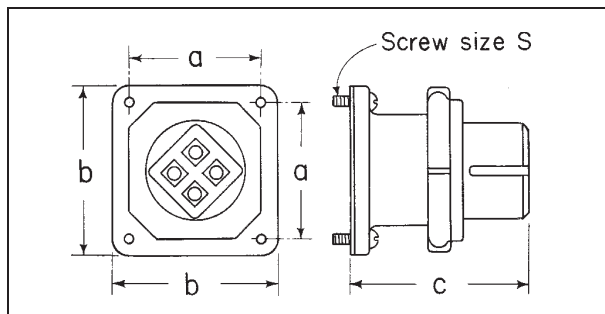
Hub Size	Cat. #
1	ARE36
1 1/4	ARE46
1 1/2	ARE56

AJ

For APQ 60 and 100 Amp.

Hub Size	Cat. #
1	AJ37
1 1/4	AJ47
1 1/2	AJ57
2	AJ67

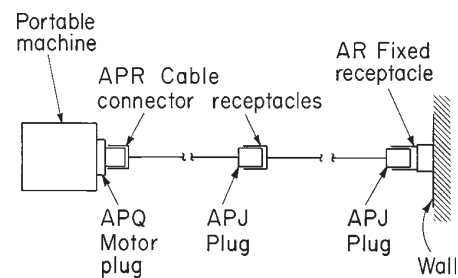
Dimensions



APQ Motor Plugs

Amps.	a	b	c	s
30	2 3/4	3 3/8	3 5/8	12-24
60	3 1/2	4 1/4	4 7/8	5/16-18
100	3 1/2	4 1/4	6 1/8	5/16-18
(2 & 3-pole)				
100	3 1/2	4 1/4	6 7/16	5/16-18
(4-pole)				

Typical installation



For additional back box listings, see pages 990 and 991. For back box dimensions, see pages 992 and 993.

Notes Page

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Description	Page No.
Application/Selection	1000, 1001
Arktite® Delayed Action Circuit Breaking	
Technical Data	1002, 1003
20 & 30A CPS Receptacle	1004, 1005
20 & 30A CPP Plug	1004, 1005
20A CPR Connector	1006
NEMA Interlocked/Circuit Breaking	
Technical Data	1007
15 & 20A Receptacles & Plugs	1008, 1009
GFCI	1010
Delayed Action/Circuit Breaking	
Technical Data	1011, 1012
7 thru 60A CES/CESD Receptacles	1013
CPH Plugs	1013

Plugs and Receptacles For Industrial Heavy Duty Hazardous Area Use

Application and Selection

Application:

- To connect portable or movable electrical equipment, such as motors, motor-generator sets, tools, light systems.

Considerations for Selection:

Environmental:

- The environment of the enclosure location in terms of NEC/CEC compliance.
- Material and construction to withstand rough usage and atmospheric conditions.

Electrical:†

- Sufficient current carrying capacity to meet load requirements.
- Compatibility with electrical system (new or existing installation).
- Interchangeability of plugs with other hazardous and non-hazardous area receptacles.

See "Quick Selector" below and "Interchangeability Chart" on page 1001 for guidance.

Options:

Special polarity arrangements available as options, as well as special back boxes and hub arrangements for some series. See listing pages for details.

Quick Selector Chart

Receptacle Series	NEC Compliances	Electrical Rating†		Mating Plug
		Poles	Amps & Volts	
CES, CESD	Cl. I, Division 1 and 2, Groups C,D	2-wire, 3-pole 3-wire, 4-pole	30A, 120-240VAC 7A, 460VAC① 60A, 115-230VAC 30A, 460VAC①	CPH
CPR	Non-Hazardous	2-wire, 3-pole	20A, 125-250VAC 20A, 18VDC	CPP
CPS	Cl. I, Division 1 and 2, Groups C,D	2-wire, 3-pole	20A, 125-250VAC 20A, 18VDC 30A, 125-250VAC 7A, 480VAC①	CPP
DR	Cl. II, Division 1 and 2, Groups F,G	3-wire, 4-pole	30A, 125-250VAC 7A, 460VAC①	CPP
		2-wire, 2-pole	30A, 480VAC	APJ, NPJ*
		2-wire, 3-pole		
		3-wire, 3-pole		
		3-wire, 4-pole		
		4-wire, 4-pole		
ENR	Cl. II, Division 1 and 2, Groups F,G	2-wire, 3-pole 3-wire, 3-pole 3-wire, 4-pole 4-wire, 4-pole	60A, 480VAC	APJ, NPJ*
	Cl. I, Division 1 and 2, Groups C,D	2-wire, 3-pole 3-wire, 4-pole	60A, 480VAC	APJ, NPJ*
	Cl. I, Division 1 and 2, Groups B,C,D Cl. II, Division 1 and 2, Groups F,G Cl. III	NEMA 5 & 6 Config.	20A, 125VAC 20A, 250VAC	ENP

WARNING: CPR *Arktite*® cable connectors are for use in non-hazardous areas only.

† If higher ratings are needed, refer to receptacles interlocked with safety switches and circuit breakers in Section 4P.

* NPJ plug is available in 2-wire, 3-pole and 3-wire, 4-pole ratings.

① CSA certified units are rated at 600 VAC.

Plugs and Receptacles For Industrial Heavy Duty Hazardous Area Use

2P

Interchangeability Chart

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same**. The following table is a summary of possible combinations.

Plugs Shown in Section 2P	Can be Used with these Receptacle Series	Listed in Section	Plug & Receptacle Electrical Rating
APJ	AR, NR, NPR	1P	30 and 60 amp.
	DR	2P	2-wire, 3-pole
	FSQ, EPC, EPCB, EBBR	4P	3-wire, 4-pole
	DBR, WSR, NSR, NBR	3P, 4P	30 and 60 amp. 3-wire, 4-pole
CPH	AR, NR, NPR	1P	30 and 60 amp.
	DR	2P	2-wire, 3-pole
	FSQ, EPC, EPCB, EBBR	4P	3-wire, 4-pole
	DBR, WSR, NBR, NSR	3P, 4P	30 and 60 amp. 3-wire, 4-pole
CPP	AR, NR, NPR	1P	30 amp. 2-wire, 3-pole
	DBR, WSR, NBR, NSR	3P, 4P	3-wire, 4-pole 30 amp. 3-wire, 4-pole

Application:

CPS receptacles, angle and straight types, and CPP plugs are used:

- with portable electrically operated devices such as motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in locations which are hazardous due to the presence of flammable vapors or gases
- in damp or corrosive locations
- in petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist

Features:

- The delayed action feature permits the plug to be used as an emergency push-pull switch
- CPS receptacles are equipped with a rotating mechanism which prevents complete withdrawal of the CPP plug in one continuous movement. Details of operation are illustrated and explained below



Fig. 1

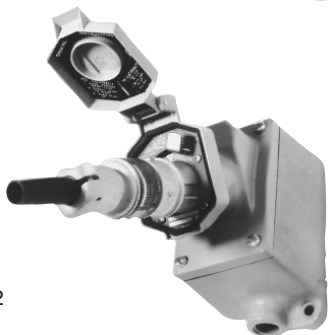


Fig. 2



Fig. 3

Figure 1 shows a CPS angle type receptacle assembly with CPP plug fully engaged.

Figure 2 shows the plug withdrawn until it is stopped by the delayed action mechanism. In this position the circuit has been broken and the arc has been snuffed in the contact chambers. To completely withdraw the plug as shown in **Figure 3**, the delayed action release lever must be rotated counterclockwise. The time required to actuate the mechanism permits dissipation of the arc-generated heat before contacts and arcing chambers are opened to the atmosphere. When inserting the plug, the reverse procedure is followed.

- CPS receptacles are factory sealed to simplify installation and wiring – external seals are not required
- Series 152 receptacles have top hinged cover design, with 45° downward angled receptacle housing, to provide superior environmental protection from accumulations of dust, snow, ice, and water
- Back boxes used for angle type receptacles are standard EDS bodies. Assemblies are listed with single and two gang bodies and dead end or through feed hubs – ½" to 1" sizes
- Back boxes used for straight type receptacles are available with a variety of hub arrangements in ½" and ¾" sizes
- **All receptacles and 30 ampere plugs are provided with pressure terminals for ease of field wiring. 20 ampere plugs have solder terminals.**

Grounding:

- NEC Article 501 and CEC Part 1 Section 18 requires that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord
- CPS receptacles and CPP plugs are provided with an extra grounding pole
- In plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the grounding pole. In the receptacle, grounding is accomplished through the conduit system

Interchangeability of Plugs with Non-Hazardous Location Receptacles:

- 30 ampere CPP plugs can also be used with standard 30 ampere AR Arktite receptacles of the same style and number of poles, thus permitting portable devices suitable for use in hazardous locations to be connected to receptacles in both hazardous and non-hazardous areas

NOTE: Equipment to be used in hazardous areas must be suitable for use in the specific hazardous location.

Standard Materials:

- Receptacle housings – die cast copper-free aluminum
- EDS Back boxes – *Feraloy*® iron alloy (U.S.)/Copper-free aluminum (Canada)
- Other back boxes – *Feraloy* iron alloy
- Plug exteriors – copper-free aluminum or Krydon® fiberglass-reinforced polyester material. See listings
- Insulation – all receptacles and plugs – Krydon fiberglass-reinforced polyester material
- Pressure or solder contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – aluminum acrylic paint.
- *Feraloy* – electrogalvanized and aluminum lacquer
- Fiberglass-reinforced polyester – natural (red, white)
- Brass – natural
- Leaded red brass – electro-tin-plate

Electrical Rating Ranges:

- Angle type – 20 and 30 amperes; 125 and 250 VAC
- Straight type – 20 amperes; 125 and 250 VAC

Certifications and Compliances:

- NEC/CEC: Class I, Division 1 and 2, Groups C,D
- UL Standard: 1010
- CSA Standard C22.2 No. 30

Arktite® Circuit Breaking CPS Receptacles and CPP Plugs

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations

2P

**Delayed Action
Factory Sealed**

Options:

- Material: copper-free aluminum, natural finish, is available on certain back boxes. See listings. Add suffix SA to Cat. No.

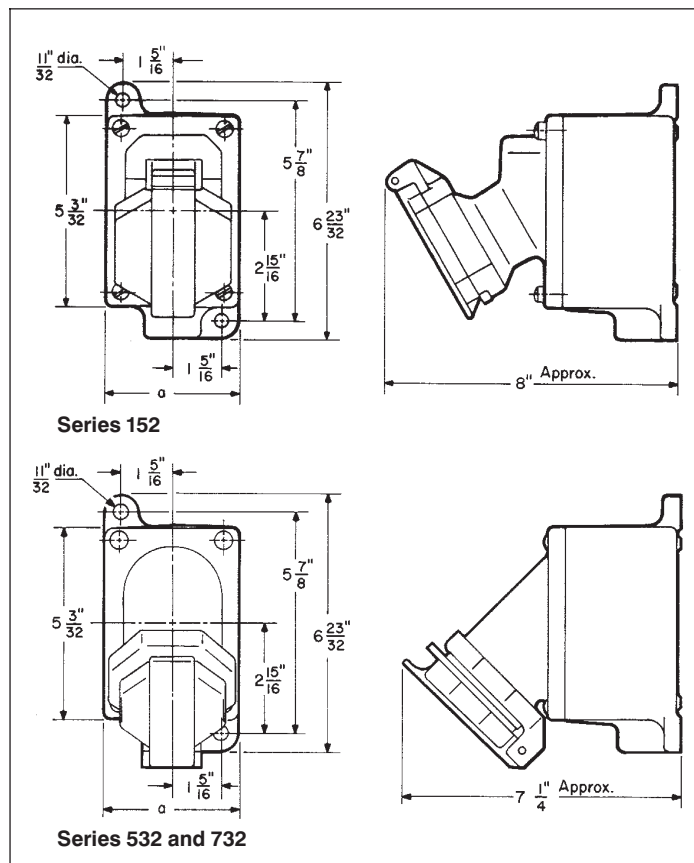
* The following special options are available from factory by adding suffix to Cat. No.

**Suffix to be
Added to
Cat. #**

Description

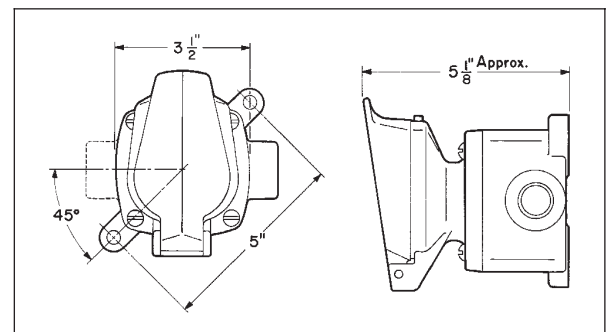
Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match. 30 ampere units only S4
Combination of receptacles and EFS/EFD or EDS series devices, such as pilot lights, switches, push button stations, etc., can be furnished using three, four and five gang bodies Specify
Hub arrangements other than those listed can be supplied Specify

Dimensions

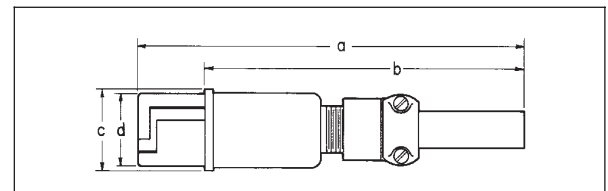


Angle type receptacles

a = 3½ for single gang
7¾ for two gang



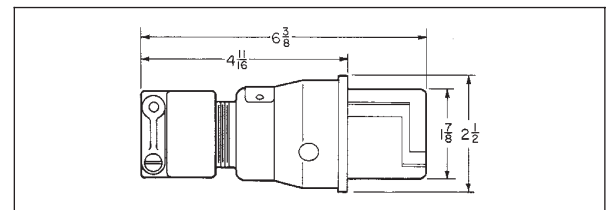
Straight type receptacles



20 Ampere plugs

Cat. #	a†	b†	C	d
CPP516	8¾	6⅞	1¾	1⅞
CPP512	7	5½	1¾	1⅞

† These dimensions are approximate and vary with cable size.



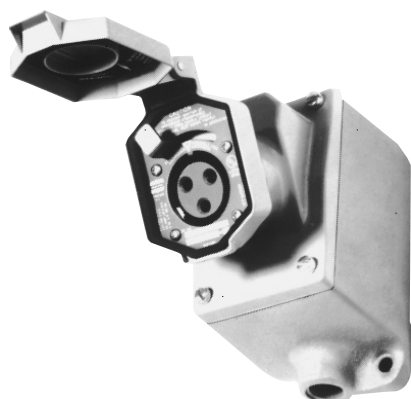
30 Ampere plugs

2P

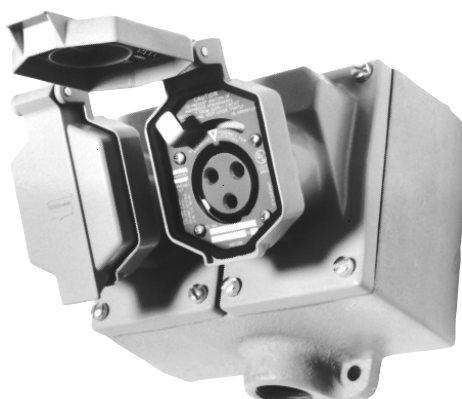
Arktite® Circuit Breaking CPS Receptacles and CPP Plugs

Delayed Action
Factory Sealed

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations



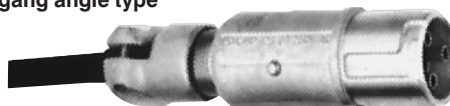
CPS152 - Single gang angle type



CPS152 - Two gang angle type



CPS152R - Receptacle unit only



CPP plugs with
mechanical cable grip and Neoprene bushing

Style 2 - Grounded through extra pole and shell

Rating	Description	Hub Size	Single Gang Receptacle Assembly Cat. #	Two Gang Receptacle Assembly Cat. #	Cable Dia.	Plug With Aluminum Handles Cat. #	Plug With High Impact Molded Composition Handle Cat. #	Receptacle Unit only Cat. #
20A, 1 HP, 125-250VAC, 60 hertz, 20A, 18VDC	2-wire, 3-pole	Dead End	1/2 CPS152-101*	CPS152-102*	† .312 to .625	CPP516 ♦	CPP512 ♦	CPS152R
			3/4 CPS152-201*	CPS152-202*				
			1 CPS152-301*	CPS152-302*				
	Through Feed	1/2	CPS152-111*	CPS152-112*				
		3/4	CPS152-211*	CPS152-212*				
		1	CPS152-311*	CPS152-312*				
30A, 1 1/2 HP, 125-250VAC, 60 hertz, 7A, 1/2 HP, 480VAC①, 60 hertz	2-wire, 3-pole	Dead End	1/2 CPS532-101	CPS532-102	† .375 to .875	CPP4553		CPS532R
			3/4 CPS532-201	CPS532-202				
			1 CPS532-301	CPS532-302				
	Through Feed	1/2	CPS532-111	CPS532-112				
		3/4	CPS532-211	CPS532-212				
		1	CPS532-311	CPS532-312				
30A, 3 HP, 125-250VAC, 60 hertz, 7A, 1 HP, 480VAC①, 60 hertz	3-wire, 4-pole	Dead End	1/2 CPS732-101	CPS732-102	† .375 to .875	CPP4752		CPS732R
			3/4 CPS732-201	CPS732-202				
			1 CPS732-301	CPS732-302				
	Through Feed	1/2	CPS732-111	CPS732-112				
		3/4	CPS732-211	CPS732-212				
		1	CPS732-311	CPS732-312				

* Back boxes are available in copper-free aluminum. To order, add suffix SA to the Cat. No.
① CSA certified units are rated at 600 VAC at 7A.

† Receptacles will take any of the plugs grouped in the bracket opposite the receptacle listings.

♦ 20 amp plugs are furnished with solder terminations at standard, ground contacts have pressure terminations.

Arktite® Circuit Breaking CPS Receptacles and CPP Plugs

Delayed Action
Factory Sealed

Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations

2P



CPS straight type
shown with plug

Style 2 – Grounded through extra pole and shell
2-wire, 3-pole
20A, 1HP, 125-250VAC, 60-400 hertz, 20A, 18VDC



CPS Dead End

Hub Size	Assembly Cat. #	Body Cat. #
1/2	CPS14-120	CPS120
3/4	CPS14-20	CPS20



CPS Through Feed

Hub Size	Assembly Cat. #	Body Cat. #
1/2	CPS14-121	CPS121
3/4	CPS14-21	CPS21



CPS Receptacle Unit With Spring Door

Cat. # CPS14R



With aluminum handle



With high impact molded
composition handle

CPP Plugs

With Mechanical
Cable Grip and
Neoprene Bushing

Cable Dia.	Aluminum Cat. #	Composition Cat. #
.312 to .625	CPP516	CPP512

Arktite® CPR Cable Connector Receptacles

Delayed Action Circuit Breaking

Application:

CPR *Arktite* delayed action cable connector receptacles are used in **non-hazardous areas only***:

- to make up adapter sets for connecting portable devices having CPP plugs to receptacles in non-hazardous areas. This is accomplished by equipping one end of the length of cable with the CPR receptacle and the other with a plug to mate with the receptacle in the non-hazardous area.
- to make up extension cords using the CPR receptacle at one end and a CPP plug at the other



Features:

- Spring door housing with the same delayed action rotating mechanism provided in CPS receptacles listed on pages 1002 through 1005
- Pressure terminals are furnished for ease of wiring
- Gland nut with mechanical cable grip and bushing for effective strain relief

Standard Materials:

- Housing – copper-free aluminum
- Insulation – fiberglass-reinforced polyester
- Contacts – brass

Standard Finishes:

- Copper-free aluminum – natural
- Fiberglass-reinforced polyester – natural (red)
- Brass – natural

**Style 2 – Grounded through extra pole and shell.
For use with CPP516 and CPP512 series plugs
listed on page 1005.**

Description	Rating	Cable Dia.	Cat. #
2-wire, 3-pole	20A, 1HP, 125-250VAC, 60 hertz 20A, 18 VDC	.375 to .625	CPR154

* CSA certified unit suitable for Class I Groups C and D (not available in USA).

ENR Dead Front Interlocked Circuit Breaking Receptacles

ENP Plugs General Purpose
Ark•Gard® 2; Factory Sealed

Cl. I, Div. 1 & 2, Groups B†,C,D
Cl. II, Div. 1 & 2, Groups F,G
Cl. III
NEMA 3,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

2P

Application:

ENR receptacles and ENP plugs are used:

- with portable electrical equipment such as compressors, tools, lighting systems, and similar devices
- in areas made hazardous by the presence of flammable vapors and gases or combustible dusts
- wherever portable electrical equipment is likely to be transferred from hazardous to nonhazardous areas
- in damp and corrosive areas
- when power requirements do not exceed 20 amperes
- where general purpose application is required

Features:

- Ark•Gard 2 receptacle incorporates three spring-loaded slide keys that prevent the receptacle face plate from being rotated until the ENP plug is fully inserted into the receptacle. To make the connection, the ENP plug is fully inserted; and the receptacle face moved inward by pushing the plug forward (Fig. 1). The plug is then rotated, (Fig. 2), closing the circuit. As rotation begins, the plug becomes locked in the receptacle and cannot be accidentally disengaged. In making or breaking the circuit, any resulting electrical arc is confined in the factory-sealed chamber.
- Factory-sealed chamber encloses the potential arcing components between two explosion-proof threaded joints. These threads are specially coated to guarantee freedom of movement, which ensures on-off action. No additional seals are required.
- One piece molded gasket seals cover plate and ENP plug when plug is inserted, providing full environmental protection at the receptacle face.
- Top-hinged cover design with 45° downward angle provides superior protection in damp, wet, and dirty locations.
- Molded-in contact design provides superior interior contact reliability.
- ENP plugs can be used in nonhazardous areas with standard U-ground NEMA/EEMAC configuration 5 and 6 receptacles, eliminating the need for two separately equipped portable units of the same type. The ENR receptacle will not accept standard NEMA/EEMAC configuration plugs.
- ENP plug handle body is designed with an internal cord strain relief mechanism and a cable sealing grommet which will accept various cable diameters.
- Field assembly is accomplished with standard tools.
- Use standard EDS back boxes.

† Single gang receptacles purchased as a complete assembly with EDS back box are suitable for Class I, Group B usage. Two gang receptacles can be modified for Class I, Group B usage. Add the letter B to Cat. No. Example: ENRB22201. Seals must be installed within 1½" of each conduit opening. Receptacle units only (ie. ENR5201) are not suitable for Class I, Group B.



Figure 1

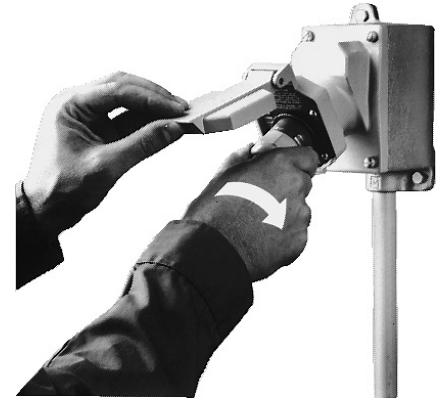


Figure 2

Grounding:

- NEC Article 501 and CEC Section 18 requires that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord. ENR receptacles and ENP plugs are provided with an extra grounding pole.

Standard Materials:

- Receptacle housing, spring door and plug body – die cast copper-free aluminum
- Interiors: receptacle – Krydon® fiberglass-reinforced polyester material; plugs – nylon 100
- Contacts: receptacle blade – brass; receptacle switch – silver; plug – brass
- Receptacle cover hinge pin and spring – stainless steel
- Receptacle gasket – neoprene
- Plug bushing – neoprene

Standard Finishes:

- Copper-free aluminum – aluminum acrylic paint
- Brass – natural

Electrical Rating Ranges:

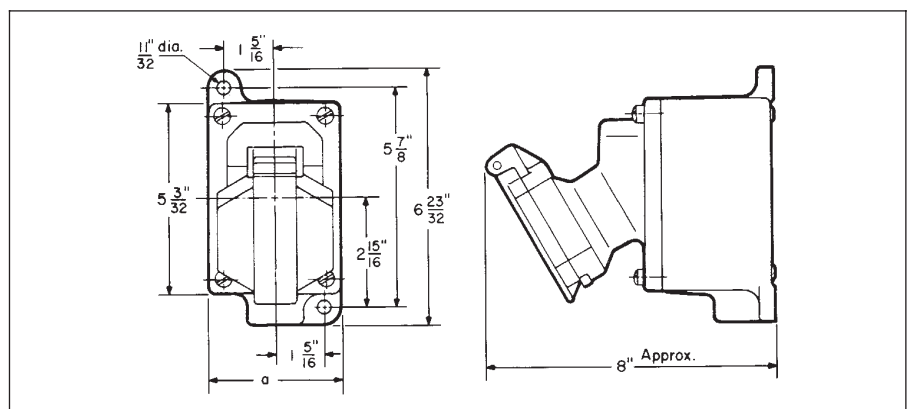
- Receptacles – 20 amperes; 125 vac and 250 vac, 50-400 hertz
- Plugs – 15 amperes; 125 vac and 250 vac, 50-400 hertz
20 amperes; 125 vac and 250 vac, 50-400 hertz

Certifications and Compliances:

- NEC:
Class I, Division 1 and 2, Groups B†,C,D
Class II, Division 1 and 2, Groups F,G
Class III
- ANSI/UL Standard 1010
- NEMA/EEMAC 3,7BCD,9FG
- CEC:
Class I, Division 1 and 2, Groups B, C, D
Class II, Division 1 and 2, Group G
Class III

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

Dimensions



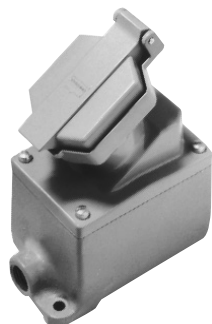
a=3½ for single gang; 7¼ for two gang.

2P

ENR Dead Front Interlocked Circuit Breaking Receptacles

ENP Plugs General Purpose (For US NEC Applications); ArkGard® 2; Factory Sealed

Cl. I, Div. 1 & 2, Groups B*,C,D Explosionproof
Cl. II, Div. 1 & 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,7BCD,9FG,12 Dust-Ignitionproof



ENR single gang dead end assembly



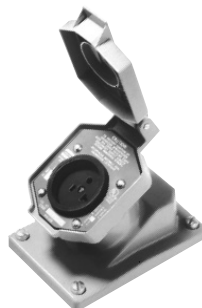
ENR single gang dead end assembly with spring door open



ENR two gang dead end assembly



ENR two gang dead end assembly with one spring door open



ENR receptacle only, with spring door open



ENP plug

Receptacle Rating	Description	Hub Size	Single Gang Receptacle Assembly Cat. # ‡	Two Gang Receptacle Assembly Cat. # ‡	Receptacle Unit Only Cat. #	NEMA Config.	15 Amp Plug Cat. #	NEMA Config.	20 Amp Plug Cat. #	NEMA Config.
20 amp, 125 volt	Dead End	1/2	ENR11201	ENR12201	ENR5201		ENP5151		ENP5201	
		3/4	ENR21201	ENR22201						
		1	ENR31201	ENR32201						
	Through Feed	1/2	ENRC11201	ENRC12201						
		3/4	ENRC21201	ENRC22201						
		1	ENRC31201	ENRC32201						
20 amp, 250 volt	Dead End	1/2	ENR11202	ENR12202	ENR6202		ENP6152		ENP6202	
		3/4	ENR21202	ENR22202						
		1	ENR31202	ENR32202						
	Through Feed	1/2	ENRC11202	ENRC12202						
		3/4	ENRC21202	ENRC22202						
		1	ENRC31202	ENRC32202						

* Single gang receptacles purchased as a complete assembly with EDS back box are suitable for Class I, Group B usage. Two gang receptacles can be modified for Class I, Group B usage. Add the letter B to Cat. No. Example: ENRB22201. Seals must be installed within 1 1/2" of each conduit opening. Receptacle units only (ie. ENR5201) are not suitable for Class I, Group B.

‡ With Feraloy® Iron Alloy EDS, EDSC back boxes.

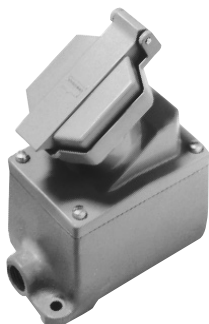
ENR Dead Front Interlocked Circuit Breaking Receptacles

ENP Plugs; General Purpose (For CEC Applications) Ark-Gard® 2; Factory Sealed

Cl. I, Div. 1 & 2, Groups B*,C,D
Cl. II, Div. 1 & 2, Group G
Cl. III
EFC 3,7BCD,9G,12

Explosionproof
Raintight
Wet Locations
Dust-Ignitionproof

2P



ENR single gang dead end assembly



ENR single gang dead end assembly with spring door open



ENR two gang dead end assembly



ENR two gang dead end assembly with one spring door open

Receptacle Rating	Description	Hub Size	Single Gang Receptacle Assembly Cat. # ‡	Two Gang Receptacle Assembly Cat. # ‡	Receptacle Unit Only Cat. #	EEMAC Config.	Plug Cat. #	EEMAC Config.
15 amp, 125 volt	Dead End	1/2	ENR11151	ENR12151	ENR5151		ENP5151	
		3/4	ENR21151	ENR22151				
		1	ENR31151	ENR32151				
	Through Feed	1/2	ENRC11151	ENRC12151				
		3/4	ENRC21151	ENRC22151				
		1	ENRC31151	ENRC32151				
15 amp, 250 volt	Dead End	1/2	ENR11152	ENR12152	ENR6152		ENP6152	
		3/4	ENR21152	ENR22152				
		1	ENR31152	ENR32152				
	Through Feed	1/2	ENRC11152	ENRC12152				
		3/4	ENRC21152	ENRC22152				
		1	ENRC31152	ENRC32152				
20 amp, 125 volt	Dead End	1/2	ENR11201	ENR12201	ENR5201		ENP5201	
		3/4	ENR21201	ENR22201				
		1	ENR31201	ENR32201				
	Through Feed	1/2	ENRC11201	ENRC12201				
		3/4	ENRC21201	ENRC22201				
		1	ENRC31201	ENRC32201				
20 amp, 250 volt	Dead End	1/2	ENR11202	ENR12202	ENR6202		ENP6202	
		3/4	ENR21202	ENR22202				
		1	ENR31202	ENR32202				
	Through Feed	1/2	ENRC11202	ENRC12202				
		3/4	ENRC21202	ENRC22202				
		1	ENRC31202	ENRC32202				

* Single gang receptacle units can be modified for Class 1, Group B usage. Add suffix B to the Cat. No. Example: ENRB11201. Seals must be installed immediately adjacent to each conduit opening.

‡ 15A With Copper-free aluminum EDS, EDSC back boxes.
20A with Feraloy® iron alloy EDS, EDSC back boxes

Application:

GFS ground fault circuit interrupters are used:

- with portable electrical equipment such as tools, lighting systems, compressors and similar devices for personnel protection
- in areas made hazardous by the presence of flammable vapors, gases or combustible dusts
- in branch circuits of 15 to 20 amperes at 125 volts AC
- in conjunction with ENR or CPS152 receptacles

Features:

- Factory sealed chamber encloses the ground fault interrupter (GFCI) and its potentially arcing components in an enclosure with explosion-proof ground joints. No additional sealing is required when proper body is used.
- GFCI protects personnel against possible injury due to unwanted ground faults; meets requirements for personnel protection as defined in the *National Electrical Code*®.
- GFCI is feed-through type to serve several receptacles.
- Decentralized GFCI protection on branch circuits permits immediate identification of circuit where a ground fault is occurring; does not interrupt power on total branch circuit if tripped or when periodically tested; significantly reduces incidence of nuisance tripping; provides for use of 125 VAC portable lighting even when working on metal floors or catwalks.
- Field installation is accomplished with standard tools.
- Can be installed on any Cooper Crouse-Hinds single or multiple gang EDS or EDCS device box.

Standard Materials:

- Cover – sand cast copper-free aluminum
- Sealing well – die cast copper-free aluminum
- Pushbuttons and guards – stainless steel
- Shaft seals – neoprene
- Interior – body – polycarbonate; contacts – brass

Standard Finishes:

- Copper-free aluminum – aluminum lacquer
- Stainless steel – natural
- Polycarbonate – natural (ivory)
- Brass – natural

Electrical Rating Ranges:

- 20 amperes
- 125 VAC
- 5 milliampere trip setting
- Class A per ANSI/UL943

Certifications and Compliances:

- NEC/CEC:
Class I, Division 1 and 2, Groups C,D
Class II, Division 1, Groups E,F,G
Class II, Division 2, Groups F,G
Class III
- ANSI/UL Standard: 943, 1203
- NEMA/EEMAC 7CD, 9EFG, 12
- CSA Standard C22.2 No. 30, 144



Ordering Information

Amps	Description	Cat. #
20	Factory-sealed ground fault circuit interrupter – 5 milliamperes trip	GFS-1

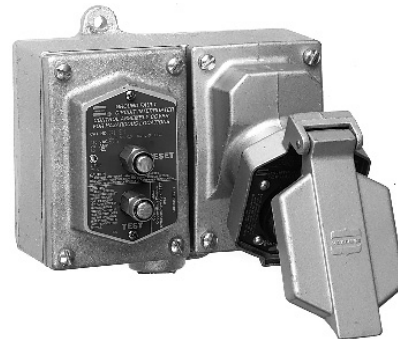
Application Recommendations:

GFS-1 can be installed in an EDS back box (pg. 397) for point-of-use protection or for protection of downstream receptacles.



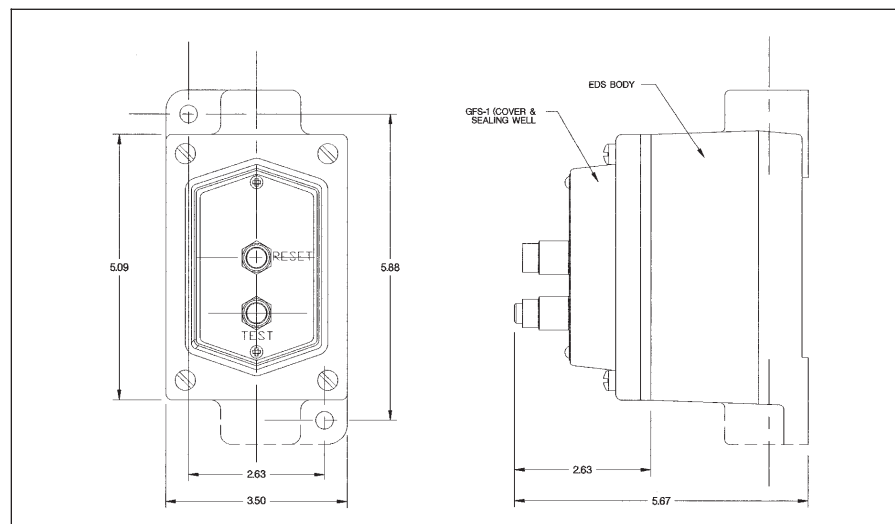
GFS-1 with
EDS271 back
box

GFS-1 can be used with ENR or CPS receptacles and EDS back box for circuit interrupter protection of portable equipment.



GFS-1 with EDS172 back box and
ENR5201 receptacle

Dimensions



CES and CESD Arktite Receptacles

Delayed Action
Circuit Breaking
CPH Plugs

CESD – Cl. I, Div. 1 & 2, Group D*
CES – Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed

2P

Application:

CES and CESD receptacles with CPH plugs are used:

- with portable electrically operated devices such as motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in locations which are hazardous due to the presence of flammable vapors or gases
- in damp or corrosive locations
- at petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist

Features:

- CES and CESD receptacles are equipped with a delayed action rotating sleeve which prevents complete withdrawal of the CPH plug in one continuous movement
- The delayed action feature permits the plug to be used as an emergency push-pull switch
- Details of operation are illustrated and described below:



Fig. 1

Fig. 2

Figure 1 above shows a CES receptacle assembly with CPH plug fully engaged. Figure 2 shows the plug withdrawn until it is stopped by the delayed action sleeve. In this position the circuit has been broken and the arc has been snuffed in the contact chambers.

Figure 3 shows the delayed action receptacle sleeve rotated approximately 45° to allow withdrawal of plug from receptacle.



Fig. 3

Fig. 4

Figure 4 shows the plug completely withdrawn. To accomplish this, the delayed action sleeve must be rotated counterclockwise. The time required to actuate the mechanism permits dissipation of the arc-generated heat before contacts and arcing chambers are opened to the atmosphere.

When inserting the plug, the reverse procedure is followed.

- Receptacles are factory sealed to simplify installation and wiring. External seals are not required
- The 30 ampere receptacles are provided with pressure terminals for field connection. The 60 ampere receptacles have flexible leads. Plugs are equipped with solder terminals.
- Two arrangements are provided for the 3/4" and 1 1/4" conduit hubs, as shown in the listings and dimensions on page 1012.

Grounding:

- NEC article 501 and CEC Part 1 Section 18 require that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord.

Options:

- The following special options are available from factory by adding suffix to Cat. No.:

Description

Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:

Receptacle interior rotated 22½ degrees clockwise when viewed from face and plug changed to match

- CES and CESD receptacles and CPH plugs are provided with an extra grounding pole for attachment of the grounding wire. In the plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the ground pole. In the receptacles, grounding is accomplished through the conduit system.

Interchangeability of Plugs with Non-Hazardous Location Receptacles:

- CPH plugs can also be used with standard AR and NR receptacles of the same ampere rating, style and number of poles, thus permitting portable devices which are suitable for use in hazardous locations to be connected to receptacles in both hazardous and non-hazardous areas
- Portable devices for non-hazardous areas equipped with APJ and NPJ Arktite plugs *cannot* be used with CES and CESD receptacles

Standard Materials:

- Back boxes – Feraloy® iron alloy
- Receptacle housings – 30 ampere – copper-free aluminum; 60 ampere – Feraloy® iron alloy
- Plug bodies – copper-free aluminum
- Insulation – Krydon® fiberglass – reinforced polyester
- Contacts – brass or hard-drawn copper

Standard Finishes:

- Feraloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Krydon material – red
- Brass and copper – natural

Electrical Rating Ranges:

- 30 and 60 amperes

Certifications and Compliances:

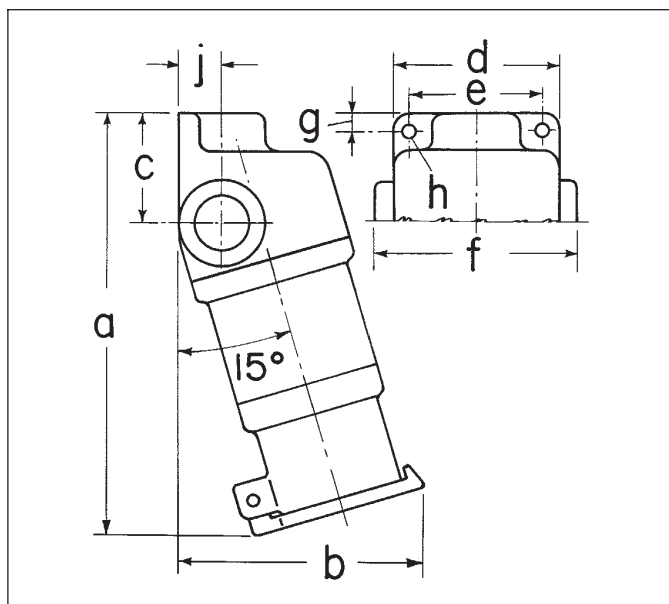
- NEC/CEC:
 - CES – Class I, Division 1 and 2, Groups C,D;
 - CESD – Class I, Division 1 and 2, Group D*
- ANSI/UL Standard: 1010
- CSA Standard C22.2 No. 182.1

* For U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.

CES and CESD Arktype Receptacles

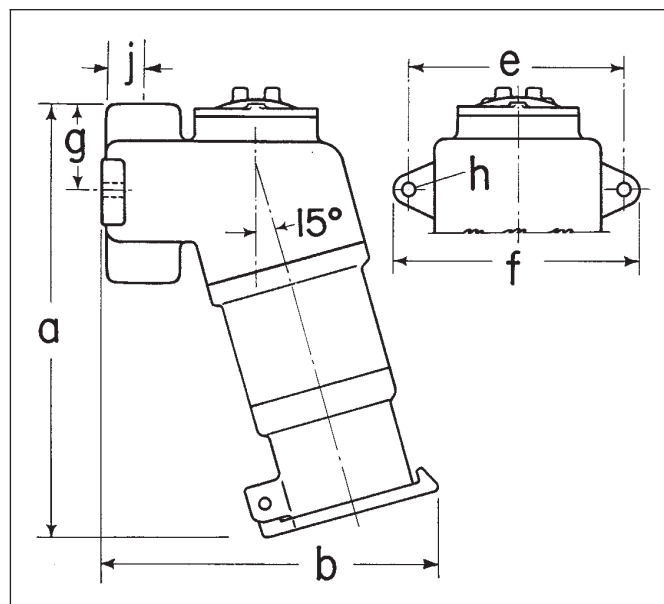
Circuit Breaking
Delayed Action, CPH Plugs
Dimensions

CESD – Cl. I, Div. 1 and 2, Group D*
CES – Cl. I, Div. 1 and 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed



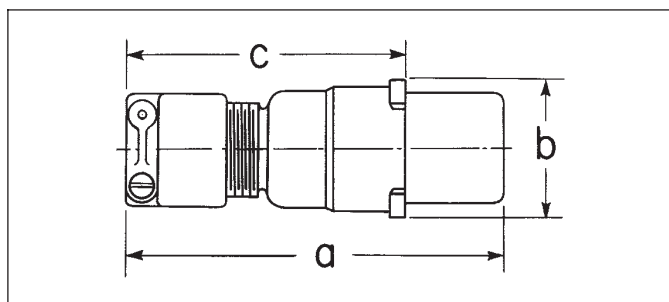
CES

Cat. #	a	b	c	d	e	f	g	h	j
CES2213									
CES2214	7 ⁷ / ₁₆	4 ⁵ / ₈	2 ³ / ₁₆	3 ³ / ₈	2 ³ / ₄	4 ¹ / ₈	5 ¹ / ₁₆	1 ¹ / ₃₂	7 ⁷ / ₈
CES4233									
CES4234	12	7	2 ⁷ / ₈	5 ¹ / ₄	4 ³ / ₈	6 ¹ / ₈	7 ¹ / ₁₆	1 ³ / ₃₂	1 ¹ / ₈



CESD

Cat. #	a	b	e	f	g	h	j
CESD2213							
CESD2214	7 ⁵ / ₈	6 ³ / ₈	4 ¹ / ₄	5	1 ⁷ / ₈	1 ¹ / ₃₂	1 ³ / ₁₆
CESD4233							
CESD4234	13 ¹ / ₂	9 ⁵ / ₈	6 ¹ / ₄	7 ¹ / ₄	3	1 ³ / ₃₂	1 ³ / ₁₆



CPH

Cat. #	a	b	c
CPH7713	6	2 ³ / ₈	4 ⁵ / ₁₆
CPH7913	6 ⁷ / ₁₆	2 ³ / ₈	4 ³ / ₄
CPH7714	6	2 ³ / ₈	4 ⁵ / ₁₆
CPH7914	6 ⁷ / ₁₆	2 ³ / ₈	4 ³ / ₄
CPH7733	7 ³ / ₄	2 ³ / ₄	5
CPH7933	8 ¹ / ₈	2 ³ / ₄	5 ³ / ₈
CPH7734	7 ³ / ₄	3 ¹ / ₁₆	5
CPH7934	8 ¹ / ₈	3 ¹ / ₁₆	5 ³ / ₈

* In U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.

CES and CESD Arktite® Receptacles

Delayed Action
Circuit Breaking
CPH Plugs

CESD – Cl. I, Div. 1 & 2, Group D*
CES – Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed

2P



CES Receptacles with three hubs – one on each side and one at top – and two pipe plugs with CPH plug fully engaged



CESD Receptacles with vertical through feed hubs and one pipe plug. Removable threaded cover at top to facilitate pulling wires

CES/CESD Receptacles

Hub Size	Circuit	Phase	Max. HP	Max. Amps	Volts at 60 Cycles AC	CES Cat. #	CESD Cat. #
3/4	2-wire, 3-pole	1	1/2 1 1/2	7 30	480① 120 to 240	CES2213	CESD2213
3/4	3-wire, 4-pole	3	1 3	7 30	480① 120 to 240	CES2214	CESD2214
1 1/4	2-wire, 3-pole	1	3	30 60	480① 120 to 240	CES4233	CESD4233
1 1/4	3-wire, 4-pole	3	5	30 60	480① 120 to 240	CES4234	CESD4234



CPH Plugs with mechanical cable grip and Neoprene bushing

CPH Plugs

Circuit	Phases	Max. HP	Max. Amps	Volts at 60 Cycles AC
2-wire, 3-pole	1	1/2 1 1/2	7 30	480① 120 to 240
3-wire, 4-pole	3	1 3	7 30	480① 120 to 240
2-wire, 3-pole	1	3	30 60	480① 120 to 240
3-wire, 4-pole	3	5	30 60	480① 120 to 240

CABLE DIA.

.375 to .875	.500 to .875	.875 to 1.375
CPH7713		CPH7913
CPH7714		CPH7914
	CPH7733	CPH7933
	CPH7734	CPH7934

* In U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.
① CSA certified units are rated at 600 volts.

Notes Page

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Plugs and Receptacles Industrial Heavy Duty Interlocked Non-Hazardous

3P

Description	Page No.
Application/Selection	1016, 1017
Interlocked Receptacle with –	
Disconnect Switch	
WSR 30, 60, 100A Aluminum	1018, 1019
WSRD 30, 60, 100A Sheet Metal	1018, 1019
WSRDW 30, 60, 100A Viewing Window	1018, 1019
WSRD SM S901 Stainless Steel	1020-1022
DSR 30, 60, 100A Aluminum	1036
Arktite Welder Series Interlocked Power Module	1027
Rotary Switch	
CSR 30 & 60A Non-metallic NEMA 4X	1024-1026
SRG/SP 30, 60 & 100A	1028, 1029
WSQC 30 & 60A Aluminum	1037
Circuit Breaker	
DBR 30, 60 & 100A Aluminum	1030, 1031
Watertight Krydon® NEMAX 4X	
NSR 30, 60 & 100A Switch	1032, 1033
NBR 30, 60 & 100A Breaker	1034, 1035

Application:

- Where extra protection is a requirement. Interlocked units provide dead front receptacles; connection cannot be made or broken when unit is under load
- In areas where dirt, moisture, and corrosion are a problem; to supply power for portable electrical equipment and provide safe disconnect means and short circuit protection

Considerations for Selection:

Environmental:

- The environment of the enclosure location in terms of NEMA/EEMAC type required
- Material and construction to withstand rough usage and corrosive atmospheric conditions

Electrical:

- Sufficient current carrying capacity to meet load requirements
- Compatibility with electrical system (new or existing installations)

- Interchangeability of plugs with hazardous and non-hazardous area receptacles

Function:

- Switch vs. circuit breaker
- See "Quick Selector Chart" below and "Interchangeability Chart" on page 1017 for guidance.

Options:

Special polarity and conduit arrangements are available to meet specific needs. See individual listing pages for details.

Quick Selector Chart

Series	Receptacle Interlocked With	NEMA/EEMAC Rating	Mating Plug	Electrical Characteristics	
CSR	Disconnect switch	3,4X,12	APJ/NPJ	Circuit breaker: 30, 60 amp 600VAC Fusible or non-fusible	Receptacle: 30, 60 amp 600VAC 3-wire, 4-pole
DBR	Circuit breaker	3,9F,G,12 NEC: Cl. II, Division 1 and 2, Groups F,G Cl. III CEC: Cl. II, Division 1 and 2, Group G Cl. III	APJ/NPJ	Circuit breaker: 100 amp. frame size 250VDC/600VAC	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
DSR	Disconnect switch	3,12	APJ	Switch: 60 and 100 amp 250VDC/600VAC 3-pole Fusible or non-fusible	Receptacle: 60 and 100 amp. 250VDC/600VAC 3-wire, 4-pole
NBR	Circuit breaker	3,12	APJ/NPJ	Circuit breaker: 100 amp. frame size 250VDC/600VAC 3-pole	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
NSR	Disconnect switch	3,12	APJ/NPJ	Switch: 30, 60, 100 amp. 250VDC/240VAC 600VAC 3-pole Fusible or non-fusible	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
SRG	Rotary switch		SP	Switch: 30, 60, 100 amp. 480VAC	Receptacle: 30, 60, 100 amp. 480VAC 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole
WSR	Disconnect switch	3,4,12	APJ/NPJ	Switch: 30, 60, 100 amp. 250VDC/240VAC 600VAC 3-pole Fusible or non-fusible	Receptacle: 30, 60, 100 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole
WSRD	Disconnect switch	12	APJ/NPJ	Switch: 60 amp. 250VDC/240VAC 600VAC 3-pole Fusible or non-fusible	Receptacle: 60 amp. 250VDC/600VAC 3-wire, 3-pole 3-wire, 4-pole

Plugs and Receptacles

3P

Industrial Heavy Duty Interlocked Interchangeability Chart

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same**. The following table is a summary of possible combinations.

Plugs Shown in Section 3P	Can be Used with these Receptacle Series	Listed in Section	Plug & Receptacle Electrical Rating
AP	AR	1P	200 and 400 amp. 3-wire, 4-pole
APJ/NPJ	AR	1P	30, 60, 100 amp.
	DR	2P	3-wire, 3-pole
	DBR, EBBR	4P	3-wire, 4-pole
	FSQ, EPC, EPCB	4P	
SP	BHR	4P	30, 60, 100 amp.
			2-wire, 3-pole
			3-wire, 4-pole
			4-wire, 5-pole

WSR, WSRD, WSRDW Interlocked Arktite® Receptacles with Enclosed Disconnect Switches

30,60,100A
NEMA 3,3R,4,4X,12
Raintight
Watertight
Corrosion-Resistant



WSR
Aluminum
NEMA 3R,12



WSRD
Sheet Metal
NEMA 3R,12



WSRDW
Sheet Metal
Viewing Window
NEMA 3R,12

Application:

- The WSR and WSRD disconnect switches are used as a service outlet for portable or fixed electrical equipment – generators, compressors, welders, etc.
- They are designed for use in non-hazardous areas where dust, moisture and corrosion may be a problem.
- Designed for flush or surface mounting.
- A fusible type switch, when used, also provides short circuit protection.

Features:

WSR and WSRD:

- Switches are NEMA type HD heavy duty **3-pole**, with visible blades; a quick make-and-break mechanism with reinforced, positive pressure type blade and jaw construction. Fusible types have fuse clips with steel reinforcing springs of positive pressure type. Pressure connectors are used for wire connectors.
- For maximum safety, the spring door receptacle at the bottom of the unit is mechanically interlocked with the switch operating mechanism. The switch *cannot be closed* until the plug is fully inserted and the plug *cannot be withdrawn or inserted* unless the switch is open. With the switch open, *accidental plug withdrawal is prevented* by the interlock mechanism. Withdrawal can only be accomplished by activation of the interlock release lever located on the receptacle.
- Enclosures are compact and rectangular in shape with a gasketed, hinged door.
- Enclosure, handle and other exterior parts are corrosion resistant.

- The switch enclosure covers are interlocked with the body and operating mechanism and cannot be opened when the plug is engaged and the switch is closed ("ON"). When the switch *is open*, the switch *cannot be put* in a closed ("ON") position with the door open.

WSR:

- Mounting lugs may be rotated 90° or moved to the vertical centerline portion for pole mounting.
- Side hinged covers are retained in a closed position by compression spring draw-pull catches, which permit the opening or closing of the cover without tools.
- The switch operating handle may be padlocked in the "ON" or "OFF" position, thereby preventing unauthorized operation of the switch and/or opening of the enclosure. Up to three padlocks may be used. In addition, a unique hinge arrangement has been devised to allow the door of the unit to be padlocked. This feature allows operation while preventing unqualified or unauthorized entry.

Standard Materials:

WSR and WSRD:

- Receptacle housings and plug exteriors – copper-free aluminum
 - Insulation (plug and receptacle) – fiberglass-reinforced polyester
 - Pressure contacts – brass
 - Crimp/solder contacts – leaded red brass
- WSR:
- Enclosure – copper-free aluminum
 - Operating handle – copper-free aluminum
 - Other exterior parts – stainless steel
- WSRD:
- Enclosure – sheet steel
 - Operating handle – sheet steel
 - Other exterior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – WSR enclosure, plug exteriors – natural
- Leaded red brass – electro-tin-plate
- Brass – natural
- Sheet steel – baked grey enamel
- Fiberglass-reinforced polyester – natural (red)

Electrical Rating Ranges:

- 3 and 4 pole; fusible or non-fusible; 240 vac, 250 vdc; 600 vac
- 30, 60, 100 amperes
- 7½ to 75 HP

Certifications and Complies:

WSR:

- NEMA 3R, 4, 12 (enclosure)
- UL Standard 98

WSRD:

- NEMA 3R, 12
- UL Standard 98

Options:

- Interiors rotated 22½° to the right (viewed from face) – add suffix S4 to Cat. No.
- Auxiliary switch, 600 vac-dc heavy duty push button station rating, can be supplied, and its contacts will close after safety switch contacts open and close before safety switch opens..... S483

◆◆ Pressure connectors are supplied as standard. To specify crimp/solder type terminations, add the suffix "T" to the catalog number. For example: APJ3375-T (Plug)

WSR, WSRD, WSRDW Interlocked Arktime® Receptacles with Enclosed Disconnect Switches

APJ/NPJ Plugs

30,60,100A
NEMA 3,3R,4,4X,12
Raintight
Watertight
Corrosion-Resistant

3P



			WSR				WSRD†® For viewing window see note 2		
			240VAC 600VAC 250VDC Cat. #	Max. HP Rating 240VAC	Max. HP Rating 480VAC	Max. HP Rating 600VAC	600VAC 250VDC Cat. #	Max.① HP Rating 480VAC	Max.① HP Rating 600VAC
System	Amps	Conduit Opening Size§							
3-Wire, 3-Pole Style 1, Fusible	30	1	WSR3351*	7½	15	20	WSRD3351*	15	20
	60	1¼	WSR6351*	15	30	50	WSRD6351*	30	50
	100	1½	WSR10351*	30	60	75	WSRD10351*	60	75
3-Wire, 4-Pole Style 2, Fusible	30	1	WSR3352*	7½	15	20	WSRD3352*✓	15	20
	60	1¼	WSR6352*✓	15	30	50	WSRD6352*✓	30	50
	100	1½	WSR10352*	30	60	75	WSRD10352*✓	60	75
3-Wire, 3-Pole Style 1, Non- Fusible	30	1	WSR33541	7½	15	20	WSRD33541	15	20
	60	1¼	WSR63541	15	30	50	WSRD63541✓	30	50
	100	1½	WSR103541	30	60	75	WSRD103541	60	75
3-Wire, 4-Pole Style 2, Non- Fusible	30	1	WSR33542	7½	15	20	WSRD33542	15	20
	60	1¼	WSR63542✓	15	30	50	WSRD63542✓	30	50
	100	1½	WSR103542	30	60	75	WSRD103542	60	75

APJ/NPJ Plugs

Amps	Max. Volts	Outside Dia. of Cable, Flexible Conduit or Armored Cable	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
30	250 DC	0.60 to 1.20	APJ3375	APJ3485✓
	600 AC	0.55 to .070		NPJ3483✓
		0.70 to 0.85		NPJ3484✓
60	250 DC	0.75 to 1.45	APJ6375✓	APJ6485✓
	600 AC	0.75 to 1.07		NPJ6484✓
		1.07 to 1.35		NPJ6485✓
100	250 DC	1.00 to 1.70	APJ10377	APJ10487✓
	600 AC	0.93 to 1.21		NPJ10486✓
		1.21 to 1.50		NPJ10487✓

* Arranged for NEC Class H fuses. May be field converted to NEC Class J fuses.

§ Furnished with reducer which may be removed to obtain one size larger opening. Locknut and bushing used must meet NEC requirements. (WSR only).

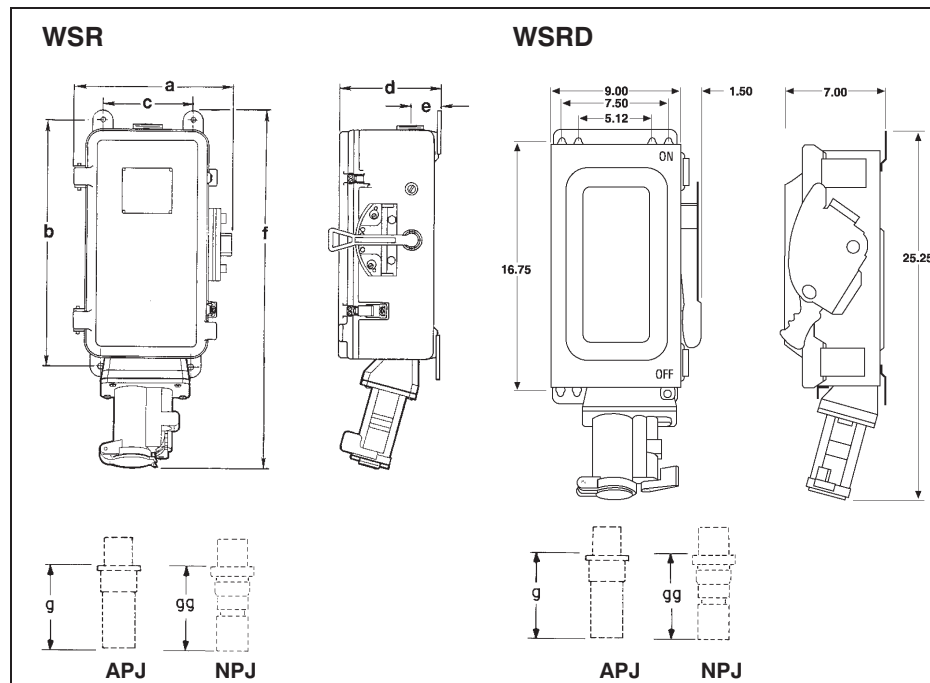
† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 966.

‡ Conduit entrances not furnished.

① Ratings of unfused and fusible switches with time delay fuses.

② Viewing window – add “W” to prefix, i.e.: WSRDW6352.

Dimensions



WSR

Amps.	30	60	100
a	11¾	11¾	14⅞
b	20⅛	20⅛	26⅝
c	6⅞	6⅞	9⅞
d	7¼	7¼	8¼
e	2⅞	2⅞	2⅞
f	27⅞	28⅞	35⅞
g	4¾	5¼	7¼
gg	7	6⅞	7¾
Mtg. Holes	⅜	⅜	7/16

WSRD

60 Amps.	
g	5⅞
gg	6⅞
Mtg. Holes	5/16

Dim. “g” and “gg” are exposed portion of plug when engaged with receptacle.

✓ – available with Lightning Service™ delivery. See Section G for complete details.

3P

Arktite® WSRD SMS901 Stainless Steel Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant



WSRD SMS901 SERIES STAINLESS STEEL ARKTITE® INTERLOCKED RECEPTACLES

Cooper Crouse-Hinds Arktite Stainless Steel Interlocks prevent engagement and disengagement of the plug under load, providing safe portable connections and extended product life.

Available in 30-100 Amp in both fused and nonfused versions, the Stainless Steel Interlock is rated Enclosure Type 4X watertight and features an optional viewing window.

Arktite stainless steel interlocked receptacles:

- supply power to portable or fixed electrical equipment such as welders, compressors, conveyors, portable tools, lighting systems and similar equipment.
- are used in damp or corrosive locations.
- are ideal for use in wet locations & hosedown areas.



Optional window allows viewing of both visible blade and indicating type fuses

Durable enclosure design features a gasket flange with continuously welded seams that stays in place when cover is opened

Corro-Free™ epoxy powder coat for even greater outdoor weatherability

Locking ring on the APJ/NPJ Arktite plug threads onto the receptacle, providing positive, worry free power engagement and a watertight environmental seal

Threaded front cap ensures watertight rating white plug is not engaged

Field proven direct drive interlock provides positive locking action every time

ADDITIONAL FEATURES AND BENEFITS

- Heavy duty Arktite receptacle is compatible with existing Cooper Crouse-Hinds Arktite plugs of same rating and configuration.
- Self-wiping, naval brass contacts in receptacle assure reliable performance and long dependable life
- Stainless steel interior hardware.
- Ground bar supplied as standard and connected to 4th wire in receptacle.
- UL and cUL Listed

ORDERING INFORMATION (3 Pole, 4 Wire - 600 VAC)

Amps	Catalog Number	Description	Weight lbs.	Cooper Crouse-Hinds Mating Arktite Plug Catalog Numbers
30	WSRDW3352SMS901	Fused w/Window	24	APJ3485 & NPJ3485
30	WSRD33542SMS901	Non-Fused	22	APJ3485 & NPJ3485
30	WSRDW33542SMS901	Non-Fused w/Window	22	APJ3485 & NPJ3485
60	WSRDW6352SMS901	Fused w/Window	30	APJ6485 & NPJ6485
60	WSRD63542SMS901	Non-Fused	29	APJ6485 & NPJ6485
60	WSRDW63542SMS901	Non-Fused w/Window	29	APJ6485 & NPJ6485
100	WSRDW10352SMS901	Fused w/Window	36	APJ10487 & NPJ10487
100	WSRD103542SMS901	Non-Fused	35	APJ10487 & NPJ10487
100	WSRDW103542SMS901	Non-Fused w/Window	35	APJ10487 & NPJ10487

Interlocked
Plugs and
Receptacles



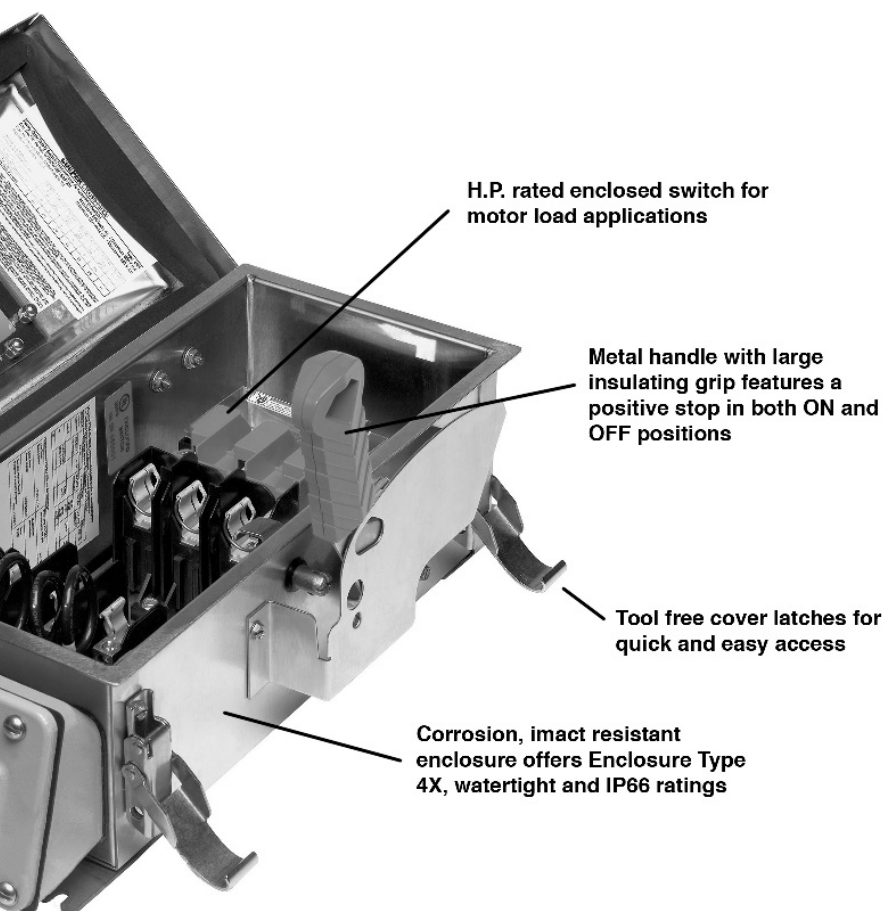
Arktite® WSRD SM S901 Stainless Steel Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant

3P

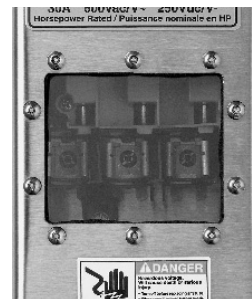


H.P. rated enclosed switch for motor load applications

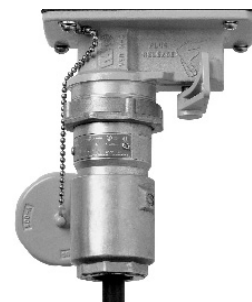
Metal handle with large insulating grip features a positive stop in both ON and OFF positions

Tool free cover latches for quick and easy access

Corrosion, impact resistant enclosure offers Enclosure Type 4X, watertight and IP66 ratings



Optional window allows viewing of both visible blade and indicating type fuses.



Plug locks into receptacle, providing positive, worry-free power engagement as well as watertight protection



Complies with OSHA lockout/tagout requirements



Heavy-duty, epoxy coated cast aluminum receptacle with stainless steel interlocking mechanism for superior durability and corrosion resistance.

CERTIFICATIONS AND COMPLIANCES

- UL Listed - (UL Standards 508, 1682)
- cUL Listed (Certified by UL to CSA Standards C22.2 Nos. 14, 182.1)
- Enclosure Type 3, 4, 4X, 12
- IP66 Enclosure

STANDARD MATERIALS

- Enclosure - Type 304 stainless steel
- Hardware - stainless steel
- Receptacle Housing - aluminum
- Power Contacts - naval brass
- Interlock Mechanism - stainless steel

STANDARD FINISHES

- Stainless Steel - natural
- Aluminum - Corro-free[®] epoxy powder
- Brass - natural

OPTIONS

- | Description | Suffix to be added to Cat. # |
|--|------------------------------|
| • Factory Installed Auxiliary Contacts | S483 |
| • Rotated Interior (22 1/2 degrees to right) | S4 |

3P

Arktite® WSRD SM S901 Stainless Steel Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant

HORSEPOWER RATINGS

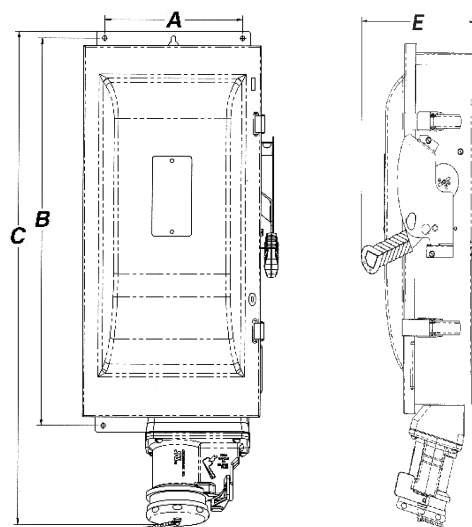
Cooper Crouse-Hinds Catalog Number	Amps	Fusing	240 VAC (1 PH)	240 VAC (3 PH)	480 VAC (1 PH)	480 VAC (3 PH)	600 VAC (1 PH)	600 VAC (3 PH)	250 VDC
WSRD33542SMS901	30	Non-Fused	5	10	7.5	20	10	30	5
WSRDW33542SMS901	30	Non-Fused	5	10	7.5	20	10	30	5
WSRDW3352SMS901	30	Fused	1.5 (3)	3 (7.5)	3 (7.5)	5 (15)	3 (10)	7.5 (20)	5
WSRD63542SMS901	60	Non-Fused	10	20	20	50	25	60	10
WSRDW63542SMS901	60	Non-Fused	10	20	20	50	25	60	10
WSRDW6352SMS901	60	Fused	3 (10)	7.5 (15)	5 (20)	15 (30)	10 (25)	15 (50)	10
WSRD103542SMS901	100	Non-Fused	15	40	30	75	40	100	20
WSRDW103542SMS901	100	Non-Fused	15	40	30	75	40	100	20
WSRDW10352SMS901	100	Fused	7.5 (15)	15 (30)	10 (30)	25 (60)	15 (40)	30 (75)	20

NOTE:

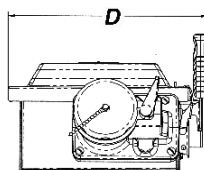
Values for Non-Fused units are maximum horsepower.

Values for Fused units are standard horsepower with standard fuse and (maximum horsepower with time delay).

DIMENSIONS (Inches)



Amps	A	B	C	D	E
30	5.47	16.49	23.49	9.00	8.61
60	7.99	18.49	25.49	11.52	8.61
100	8.47	24.18	31.18	12.00	8.61



Notes Page

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3P

Arktite® CSR Series Nonmetallic Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant



CSR SERIES COMPACT INTERLOCKED ARKTITE® RECEPTACLES

Cooper Crouse-Hinds interlocked receptacles prevent engagement and disengagement of the plug under load, providing safe portable connections and extended product life.

Arktite compact interlocked receptacles are used:

- to supply power to portable or fixed electrical equipment such as welders, compressors, conveyors, portable tools, lighting systems and similar equipment.
- in damp or corrosive locations.
- in wet locations.
- in hosedown areas.

Threaded front cap ensures watertight rating while plug is not engaged

Locking ring on the APJ/NPJ Arktite plug threads onto the receptacle, providing positive, worry free power engagement and a watertight environmental seal

Field proven direct drive interlock provides positive locking action every time

Corro-free™ epoxy powder coated receptacle for even greater outdoor weatherability

Self-wiping, naval brass contacts in receptacle assure reliable performance and long dependable life

Innovative cover break line provides easy wiring access

Large rotary handle is easy to operate even with gloved hands

Corrosion, impact resistant enclosure offers Enclosure Type 4X, watertight, IP66 rating

ADDITIONAL FEATURES AND BENEFITS

- Enclosure Type 4X, Watertight, IP66.
- Compact enclosure is designed to fit into the web of an I-beam.
- Heavy duty Arktite® receptacle is compatible with existing Cooper Crouse-Hinds Arktite® plugs of same rating and configuration.
- Bussmann® CubeFuse™ with Indicator – the world's first "finger-safe" industrial power fuse.
- Front mounted handle permits the interlocked receptacles to be easily mounted side by side or in tight spots.
- Molded-in-place mounting feet require only four screws to mount the entire unit.
- UL and cUL Listed

ORDERING INFORMATION (600 VAC)

Amps	Configuration	Hub Size	Fusing	Catalog Number	Mating Catalog Number
30	3W, 4P	1"	Fused	CSR3352	APJ3485/NPJ3484
30	3W, 4P	1"	Non-Fused	CSR33542	APJ3485/NPJ3484
60	3W, 4P	1 1/4"	Fused	CSR6352	APJ6485/NPJ6484
60	3W, 4P	1 1/4"	Non-Fused	CSR63542	APJ6485/NPJ6484



Interlocked
Plugs and
Receptacles



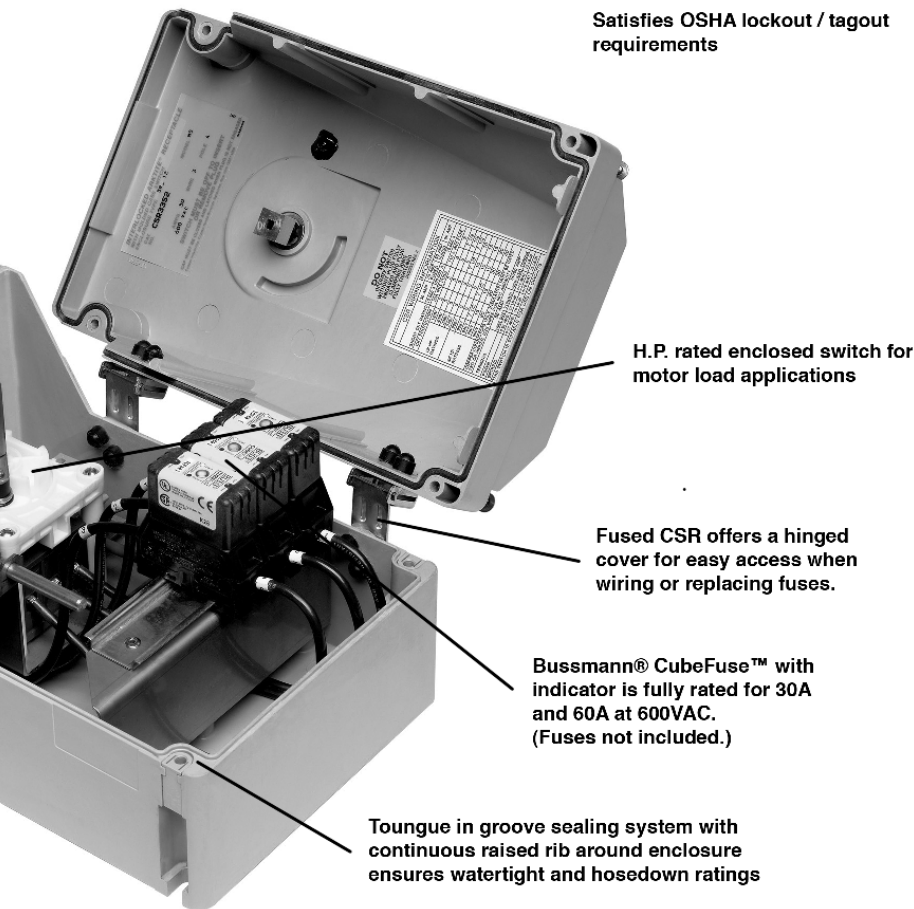
Arktite® CSR Series Nonmetallic Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant

3P



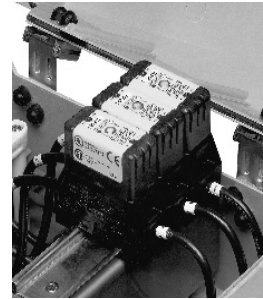
Satisfies OSHA lockout / tagout requirements

H.P. rated enclosed switch for motor load applications

Fused CSR offers a hinged cover for easy access when wiring or replacing fuses.

Bussmann® CubeFuse™ with indicator is fully rated for 30A and 60A at 600VAC. (Fuses not included.)

Tongue in groove sealing system with continuous raised rib around enclosure ensures watertight and hosedown ratings



Fully rated for 30A and 60A at 600 VAC. For use with Bussmann CubeFuse. Fuses not included.



Plug locks into receptacle, providing positive, worry-free power engagement as well as watertight protection



Complies with OSHA lockout/tagout requirements

CERTIFICATIONS AND COMPLIANCES

- UL Listed – (UL Standards 508, 1682)
- cUL Listed (Certified by UL to CSA Standards C22.2 Nos. 14, 182.1)
- Enclosure Type 3, 4, 4X, 12
- IP66 Enclosure

STANDARD MATERIALS

- Enclosure - fiber reinforced polyester
- Hardware - stainless steel
- Receptacle Housing - aluminum
- Power Contacts - naval brass
- Interlock Mechanism - stainless steel

STANDARD FINISHES

- Aluminum - Corro-free™ epoxy powder
- Brass - natural
- Stainless Steel - natural

OPTIONS

Description

- Factory Installed Auxiliary Contacts S483
- Rotated Interior (22 ½ degrees to right) S4

Suffix to be added to Cat. #

HORSEPOWER RATINGS

	250 VAC	480 VAC	600 VAC
30 A	10 HP	20 HP	25 HP
60 A	20 HP	40 HP	40 HP



Heavy-duty, epoxy coated cast aluminum receptacle with stainless steel interlocking mechanism for superior durability and corrosion resistance.

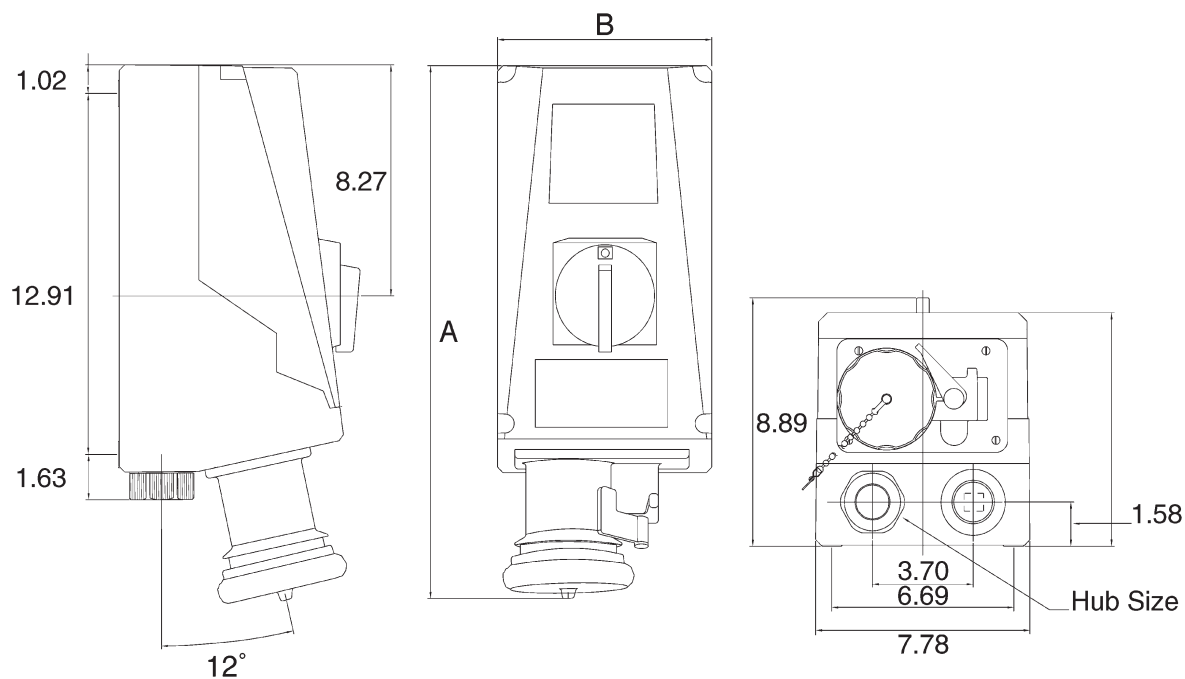
3P

Arktite® CSR Series Nonmetallic Interlocked Receptacles

Fused and Non-Fused

30, 60 and 100 Amp
Enclosure Type 3,4,4X,12
IP66
UL and cUL Listed

Watertight
Corrosion-Resistant



Amps	Style	Dimension A	Dimension B	Hub Size
30	Fused	18.26	8.00	1"
30	Non-Fused	18.26	7.87	1"
60	Fused	19.26	8.00	1 1/4"
60	Non-Fused	19.26	7.87	1 1/4"

Arktite Welder Series

Interlocked Power Modules

UL/cUL Listed

3P



Cooper Crouse-Hinds Interlocked Power Modules are ideal for the harsh, heavy duty environments of welding applications. The Welder Series Power Module is a unique patented design that employs a mechanical interlock linkage system that interfaces with the power receptacle and the built in circuit breaker. It is ideal for protecting the safety of your personnel and your valuable welding equipment.

APPLICATIONS

- Ship building yards
- Ports
- Offshore platform fabrication yards
- Test stations at remote sites
- Military heavy equipment manufacturing

FEATURES & BENEFITS

- Mechanically interlocked to prevent insertion or withdrawal of plug under load
- Circuit breaker protected
- Stainless steel and die cast construction provides durability and corrosion resistance
- Flanged design for easy panel mounting and flexibility of Power Stand design
- Arktite® receptacle accepts existing Cooper Crouse-Hinds Arktite die cast and Krydon® plugs of the same rating and configuration

CERTIFICATIONS & COMPLIANCES

- UL/cUL Listed Module
- UL 498 Listed
- CSA Certified Molded Case Circuit Breaker

STANDARD MATERIALS & FINISHES

- Frame, On/Off Rod, Interlock Mechanism, Fasteners - Stainless steel
- Receptacle Housing - Die cast aluminum or Krydon
- Power Contacts - Naval brass
- Receptacle Insulator - Krydon



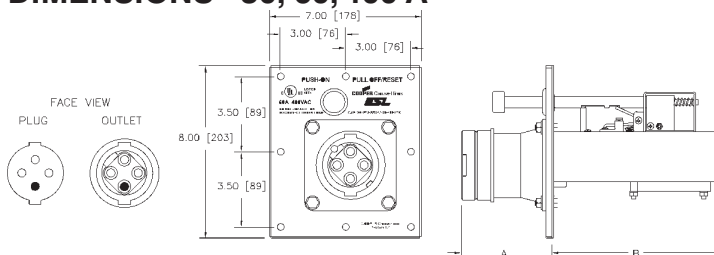
ORDERING INFORMATION

3 Wire 4 Pole 480 VAC 22K AIC Rating*

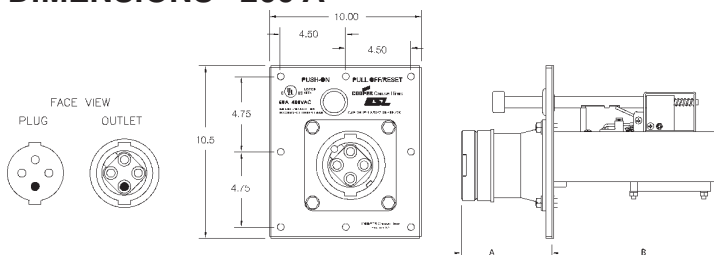
Amps	Receptacle	Catalog Number	Dimension	
			A	B
30	Die cast	M4IPM AR342 3048022K	2.8	8.00
30 (configured)	Die cast	M4IPM ARC34P 3048022K	2.8	8.00
30	Krydon	M4IPM NR342 3048022K	3.1	8.00
60	Die cast	M4IPM AR642 6048022K	4.3	8.00
60 (configured)	Die cast	M4IPM ARC64P 6048022K	4.3	8.00
60	Krydon	M4IPM NR642 6048022K	4.5	8.00
100	Die cast	M4IPM AR1042 10048022K	5.3	8.00
100 (configured)	Die cast	M4IPM ARC104P 10048022K	5.3	8.00
100	Krydon	M4IPM NR1042 10048022K	5.6	8.00
200	Die cast	M4IPM AR2042 20048022K	7.3	10.0

65K AIC rating available, substitute 65K for 22K in catalog number

DIMENSIONS - 30, 60, 100 A



DIMENSIONS - 200 A



3P
Interlocked
Plugs and
Receptacles

For Panel and Cabinet Mounting

Application:

SRG dead front interlocked receptacles and switches and SP plugs are used:

- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, conveyors, and similar equipment
- in areas where dust, dirt, moisture and corrosion are a problem
- mounted on sheet metal panels or cabinets and installed indoors or outdoors in non-hazardous areas of chemical plants, process industry facilities, manufacturing plants, and similar industrial locations

Features:

- The receptacle assembly contains a built-in rotary switch which is automatically operated when the plug is inserted and withdrawn. The switch, capable of making and breaking the circuit at full rated load, is operated by a helical blade in the center of the plug
- Plug and receptacle contacts cannot be made or broken under load. When the plug is inserted, the plug and receptacle contacts engage before the switch closes. When the plug is withdrawn, the switch opens before the plug and receptacle contacts disengage. This sequence of operation provides a dead front receptacle with the maximum of safety
- Operation is simple, safe and fast. In the event of difficulty with the portable device, it can be quickly and completely disconnected by a straight pull on the plug, since there are no separate interlock devices or operating handles to actuate
- There is a distinct physical polarization of plug and receptacle in every rating, thereby assuring positive engagement without mismatching
- Receptacles are furnished with flexible leads for splicing to the circuit wires
- Although intended primarily for mounting on sheet metal panels or cabinets, a back box for conduit connection is listed for the 30 and 60 ampere units

Grounding:

- Both receptacles and plugs are provided with an extra grounding pole. In plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is also provided between plug and receptacle housings and the grounding pole.

Standard Materials:

- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation – high impact glass filled phenolic
- Contacts – brass

Standard Finishes:

- Copper-free aluminum – natural
- Phenolic – natural (black)
- Brass – silver plated

Options:

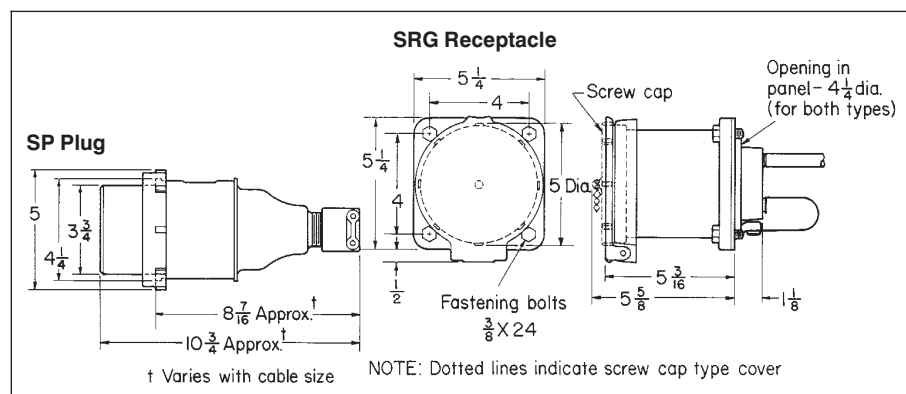
- Special polarity – where two or more receptacles of the same ampere rating and number of poles are to be installed in the same area for use on different voltages, alternate polarizations can be furnished. Detailed information on request.

Electrical Rating Ranges:

- 30, 60 and 100 amperes, 480 vac



Dimensions



SRG Dead Front Interlocked Receptacles and Switches SP Plugs

For Panel and Cabinet Mounting

30/60/100A
480VAC
50**-400 hertz
Weather Resistant

3P



Rating	Description	Receptacle with Spring Door	Plug with Cable Grip and Neoprene Bushing		Receptacle with Threaded Cap	Plug with Fastening Ring Cable Grip and Neoprene Bushing	
		Cat. #	Cable Dia.	Cat. #	Cat. #	Cable Dia.	Cat. #
30 amp.	2-wire, 3-pole	SRG332N	.500 to .875	SP3363N	SRG338N	.500 to .875	SP3383N
			.875 to 1.375	SP3365N		.875 to 1.375	SP3385N
	3-wire, 4-pole	SRG342D	.500 to .875	SP3463D	SRG348D	.500 to .875	SP3483D
			.875 to 1.375	SP3465D		.875 to 1.375	SP3485D
	4-wire, 5-pole	SRG352-NW	.500 to .875	SP3563-NW	SRG358-NW	.500 to .875	SP3583-NW
60 amp.			.875 to 1.375	SP3565-NW		.875 to 1.375	SP3585-NW
	2-wire, 3-pole	SRG632N	.500 to .875	SP6363N	SRG638N	.500 to .875	SP6383N
			.875 to 1.375	SP6365N		.875 to 1.375	SP6385N
	3-wire, 4-pole	SRG642D	.500 to .875	SP6463D	SRG648D	.500 to .875	SP6483D
			.875 to 1.375	SP6465D		.875 to 1.375	SP6485D
100 amp.	4-wire, 5-pole	SRG652-NW	.875 to 1.375	SP6565-NW	SRG658-NW	.875 to 1.375	SP6585-NW
			1.375 to 1.875	SP6567-NW		1.375 to 1.875	SP6587-NW
	2-wire, 3-pole	SRG1032N	.875 to 1.375	SP10365N	SRG1038N	.875 to 1.375	SP10385N
			1.375 to 1.875	SP10367N		1.375 to 1.875	SP10387N
	3-wire, 4-pole	SRG1042D	.875 to 1.375	SP10465D	SRG1048D	.875 to 1.375	SP10485D
			1.375 to 1.875	SP10467D		1.375 to 1.875	SP10487D
	4-wire, 5-pole	SRG1052-NW	.875 to 1.375	SP10565-NW	SRG1058-NW	.875 to 1.375	SP10585-NW
			1.375 to 1.875	SP10567-NW		1.375 to 1.875	SP10587-NW

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Back Box For 30 and 60 amp. SRG receptacles

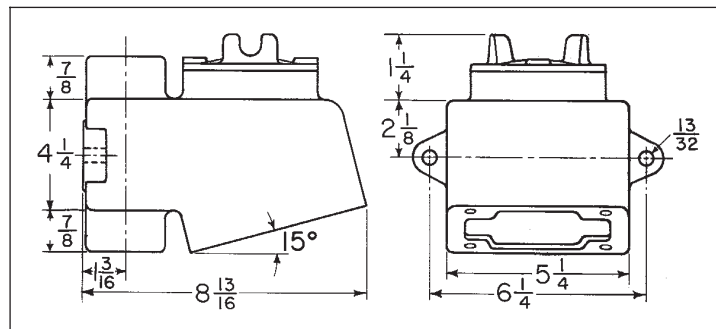
Furnished with vertical through feed hubs, 1 1/4" size, and threaded cover at top for wiring access.

Cat. #
CESD42



Back box For 30 and 60 Amp SRG Receptacles.

Dimensions



3P
Interlocked
Plugs and
Receptacles

3P

DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs ♦ ♦

Cl. II, Div 1 and 2, Groups F,G
Cl. III
NEMA/IEC 3,9FG,12
Dust-Ignitionproof
Raintight

Application:

DBR interlocked *Arktite* receptacles with enclosed circuit breakers and APJ/NPJ *Arktite* plugs are used:

- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, conveyors, and similar equipment
- in locations where hazardous dusts are present, as in grain processing and handling plants, chemical plants and certain food processing industries
- indoors or outdoors in damp, wet or corrosive locations

Features:

- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection.
- Enclosures are compact and rectangular in shape permitting close spacing.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the circuit breaker operating mechanism. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open.
- Operating handles can be padlocked in either "ON" or "OFF" positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the "ON" position.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a threaded-in bushing. The size furnished is 1½", and removing the bushing permits the use of a 2" conduit.

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with DBR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with DBR receptacles, as well as with DR receptacles listed in Section 2P and with EBBR, EPC and EPCB receptacles listed in Section 4P.
- As a result, portable equipment suitable for the locations and equipped with the proper plug can be used with AR receptacles for non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I hazardous locations, and with DR and DBR interlocked receptacles for Class II hazardous locations.

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation: plugs and receptacles – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – plug exterior, enclosure and receptacle housing – natural
- Stainless steel – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

The following special options are available by adding suffix to Cat. No.

**Suffix to be
Added to
Cat. #**

Description

Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages.

Available as follows:

- Receptacle interior rotated 22½ degrees clockwise when viewed from receptacle face and plug changed to match S4
 - Breather (drain furnished as standard) S219
- Conduit arrangements other than standard can be supplied. Details on request

Certifications and Complies:

- NEC: Class II, Division 1 and 2, Groups F,G Class III
- NEMA/IEC: 3,9FG,12
- UL Standard: 698, 1010
- CEC: Class II, Division 1 and 2, Group G Class III
- Encl.: 3,5

Electrical Rating Ranges:

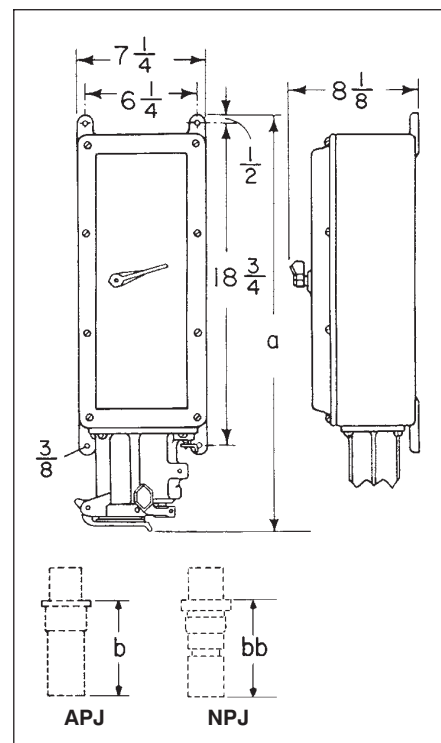
- Receptacle ratings: 30, 60 and 100 amperes
- Circuit breakers – 100 ampere frame size

Amps	a	b	bb
30	21¾	41¾	7
60	22¾	51¾	61¾
100	23½	6¾	7¾

Dim. "b" and "bb" are exposed portion of plug when engaged with receptacle.



Dimensions



DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

Cl. II, Div 1 and 2, Groups F,G
Cl. III
NEMA/IEC 3,9FG,12
Dust-Ignitionproof
Raintight

3P

100 Ampere Frame Size with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Receptacle With Spring Door Housing†	Circuit Breaker Rating	Enclosure		Without Circuit Breaker Cat. #	With Circuit Breaker Cat. # Westinghouse "FDB"
		Hub Size	Ckt. Bkr. Amps		
30 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	20	DBR53731	DBR53731-WT20-3
			30		DBR53731-WT30-3
			40		DBR53731-WT40-3*
			50		DBR53731-WT50-3*
30 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	20	DBR53732	DBR53732-WT20-2
			30		DBR53732-WT30-2
			40		DBR53732-WT40-2*
			50		DBR53732-WT50-2*
30 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	20	DBR53742	DBR53742-WT20-3
			30		DBR53742-WT30-3
			40		DBR53742-WT40-3*
			50		DBR53742-WT50-3*
60 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	50	DBR56731	DBR56731-WT50-3
			60		DBR56731-WT60-3
			70		DBR56731-WT70-3*
			90		DBR56731-WT90-3*
60 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	100	DBR56732	DBR56731-WT100-3*
			50		DBR56732-WT50-2
			60		DBR56732-WT60-2
			70		DBR56732-WT70-2*
60 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	90	DBR56742	DBR56732-WT90-2*
			100		DBR56732-WT100-2*
			50		DBR56742-WT50-3
			60		DBR56742-WT60-3
100 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	70	DBR51731	DBR56742-WT70-3*
			90		DBR56742-WT90-3*
			100		DBR56742-WT100-3*
			60		DBR51731-WT60-3
100 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	70	DBR51732	DBR51731-WT70-3
			90		DBR51731-WT90-3
			100		DBR51731-WT100-3
			60		DBR51732-WT60-2
100 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	70	DBR51742	DBR51732-WT70-2
			90		DBR51732-WT90-2
			100		DBR51732-WT100-2
			60		DBR51742-WT60-3
			70		DBR51742-WT70-3
			90		DBR51742-WT90-3
			100		DBR51742-WT100-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

◆ ◆ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example: APJ3375-T (Plug)

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

‡ For circuit breaker Cat. No. refer to Section 6C, Table 9, List FDB. For detailed information on circuit breaker selection, see Section 6C.

APJ/NPJ Arktite Plugs ◆ ◆ 600VAC/250VDC with Cable Grip and Neoprene Bushing



APJ Plug



NPJ Plug

Amps	Cable O.D. Range	Style 1†	Style 2†
		3-wire, 3-pole Cat. #	2-wire, 3-pole Cat. #
30	0.60 to 1.20	APJ3375	APJ3385 NPJ3383 NPJ3384
	0.55 to 0.70		
	0.70 to 0.85		
60	0.75 to 1.45	APJ6375	APJ6385 NPJ6384 NPJ6385
	0.75 to 1.07		
	1.07 to 1.35		
100	1.00 to 1.70	APJ10377	APJ10387 NPJ10386 NPJ10387
	0.93 to 1.21		
	1.21 to 1.50		

3P
Interlocked
Plugs and
Receptacles

NSR Arktite® Interlocked Receptacles With Enclosed Disconnect Switches

APJ/NPJ Arktite Plugs

NEMA 3,3R,4*,4X*,12
Watertight
Corrosion-Resistant

Application:

NSR *Arktite* interlocked receptacles with enclosed disconnect switches are used:

- to provide a power disconnect for fixed or portable electrical equipment such as welders, generators and compressors where the switch will be subject to frequent operation
- to provide short circuit protection when a fusible switch is needed
- in non-hazardous indoor or outdoor areas where corrosion, dust, hosedown and moisture may be a problem such as in offshore and marine locations, pulp and paper mills, chemical plants, sewage treatment plants and food processing facilities

Features:

- Enclosures are made of *Krydon*® high-impact strength fiberglass-reinforced polyester material having excellent resistance to corrosion and heat
- Switches are NEMA type HD heavy duty 3-pole, enclosed blade; a quick make-and-break mechanism with reinforced, positive pressure type blade and jaw construction. Fusible switches have fuse clips with steel reinforcing springs
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the switch operating mechanism. The switch cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the switch is open
- Switch enclosure access door is mechanically interlocked with switch and cannot be opened unless switch operator is in "OFF" position
- Enclosure has hinged access door for easy wiring and maintenance. Three screws, located behind access door in door frame, prevent disassembly when door is locked
- A *Krydon* material hub (not mounted) is supplied with each enclosure as follows:

Rating	Hub Size	Cat. No.
30A	¾	NHUB2
60A	1¼	NHUB4
100A	2	NHUB6

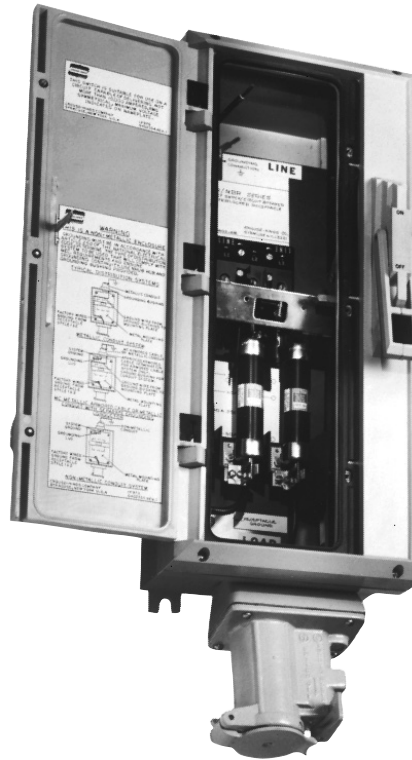
For alternate hub sizes, refer to catalog page 658.

- Receptacle has self-closing spring door assembly to provide environmental protection
- Mounting feet may be rotated 90° to horizontal or vertical mounting positions
- Switch operating handle may be padlocked in the "OFF" position, preventing unauthorized operation of the switch

Interchangeability of Plugs With Other Non-Hazardous and Hazardous Location Receptacles:

- Plugs listed for use with NSR assemblies are standard *Arktite* APJ/NPJ plugs. Other

*30 & 60A style 2 only



standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with NSR receptacles, as well as with DR receptacles listed in Section 2P, and with EBBR, EPC and EPCB receptacles listed in Section 4P

- Portable equipment, suitable for the locations and equipped with the proper plug, can be used with non-hazardous rated AR receptacles, DBR and WSR interlocked receptacles located in non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I, Groups B, C, D hazardous locations, with DR and DBR interlocked receptacles for Class II, Groups F, G hazardous locations, and with NBR/NSR interlocked receptacles for wet and corrosive locations

Standard Materials:

- Receptacle housings – copper-free aluminum
- Insulators (plug and receptacle) – *Krydon* material
- Crimp/solder contacts – leaded red brass
- Enclosure and operating handle – *Krydon* fiberglass-reinforced polyester material
- Other exterior parts – stainless steel

Standard Finishes:

- Copper-free aluminum – baked-on powder epoxy
- Stainless steel – natural
- Leaded red brass – electro-tin-plated
- Enclosure – natural (gray)
- Insulator (plug and receptacle) – natural (red)

Options:

- Special polarity – for use where two or more receptacles for the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Receptacle interior rotated 22½ degrees to right (viewed from face) and matching plug – add suffix S4 to Cat. No.
- Hubs for other conduit sizes can be supplied. See listing on page 655.

Certifications and Compliances:

- NEMA 3, 3R, 4*, 4X*, 12
- ANSI/UL standard 489
- UL standard 1682
- CSA

NSR Arktime® Interlocked Receptacles with Enclosed Disconnect Switches

APJ/NPJ Arktime Plugs♦♦

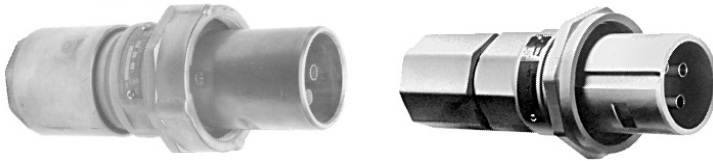
240 and 600 VAC
250 VDC
NEMA 3,3R,4,4X,12
Watertight
Corrosion-Resistant

3P

		240VAC/250VDC				600VAC/250VDC			
Amps	Conduit Opening Size§	Style 1†	Style 2†	AC	DC	Style 1†	Style 2†	AC	DC
		3-wire, 3-pole Cat. #	3-wire, 4-pole Cat. #	HP Rating	HP Rating	3-wire, 3-pole Cat. #	3-wire, 4-pole Cat. #	HP Rating	HP Rating
FUSIBLE									
30	¾	NSR331**	NSR332**	3	5	NSR3351*	NSR3352*	7½	5
60	1¼	NSR631**	NSR632**	5	10	NSR6351*	NSR6352*	20	10
100	2	NSR1031**	NSR1032**	10	20	NSR10351*	NSR10352*	30	20
NON-FUSIBLE									
30	¾	NSR3341	NSR3342	7½	5	NSR33541	NSR33542	20	5
60	1¼	NSR6341	NSR6342	20	10	NSR63541	NSR63542	50	10
100	2	NSR10341	NSR10342	30	20	NSR103541	NSR103542	75	20

APJ/NPJ PLUGS

600VAC/250VDC, with Cable Grip and Neoprene Bushing



Amps	Cable O.D. Range	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
30	0.60 to 1.20 0.55 to 0.70 0.70 to 0.85	APJ3375	APJ3485 NPJ3483 NPJ3484
60	0.75 to 1.45 0.75 to 1.07 1.07 to 1.35	APJ6375	APJ6485 NPJ6484 NPJ6485
100	1.00 to 1.70 0.93 to 1.21 1.21 to 1.50	APJ10377	APJ10487 NPJ10486 NPJ10487

* Arranged for NEC Class H fuses. May be field converted to NEC Class J fuses.

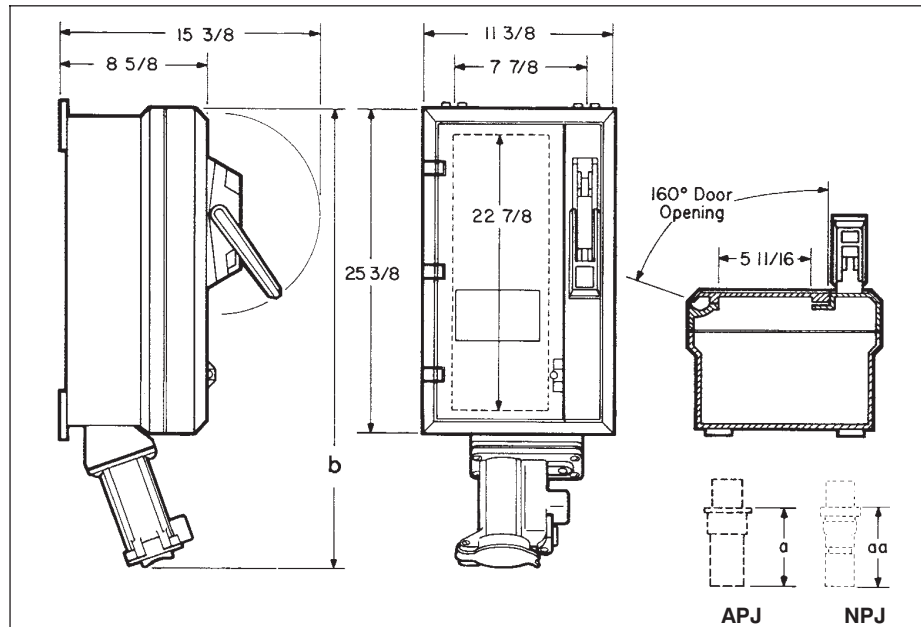
** Fuse clips accommodate NEC Class H fuses. For NEC Class J fuses, use 600V switches.

♦♦ Pressure connectors are supplied as standard. To specify crimp/solder type terminators add the suffix "T" to the catalog number. For example: APJ3375-T (Plug)

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

§ For alternate hub sizes, refer to catalog page 658.

Dimensions



Amps	b	a	aa
30	31⅜	4⅜	7
60	33	5⅜	6⅜
100	33¾	6⅝	7¾

Dim. "a" and "aa" are exposed portion of plug when engaged with receptacle.

NBR Arktite® Interlocked Receptacles with Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs

NEMA 3, 3R, 4*, 4X*, 12
Watertight
Corrosion-Resistant

Application:

NBR *Arktite* interlocked receptacles with enclosed circuit breakers are used:

- to supply power and provide short circuit protection, thermal overload protection, and a disconnect means for portable electrical equipment such as motor generator sets, compressors, conveyors, and other similar equipment
- in locations where corrosion is present such as in offshore and marine locations, pulp and paper mills, chemical plants, food processing, and sewage treatment plants
- indoors and outdoors in damp, wet or hosedown locations

Features:

- Enclosures are made of *Krydon*® high-impact strength fiberglass-reinforced polyester material having excellent resistance to corrosion and heat
- Receptacles are mechanically interlocked with circuit breakers which provide a disconnect means, short circuit protection, and thermal time delay overload protection
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the circuit breaker operating mechanism. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open
- Enclosure has hinged access door for easy wiring and maintenance. Three screws, hidden behind access door in door frame, prevent disassembly when door is locked
- Enclosure access door is mechanically interlocked with operating handle and cannot be opened unless operating handle operator is in "OFF" position
- A *Krydon* material hub (not mounted) is supplied with each enclosure as follows:

Rating	Hub Size	Cat. #
30A	¾	NHUB2
60A	1¼	NHUB4
100A	2	NHUB6

For alternate hub sizes, refer to catalog page 658.

- Receptacle has self-closing spring door assembly to provide environmental protection
- Operating handle can be padlocked in "OFF" position. Breaker is trip-free of handle and will open under short circuit or overload when handle is in the "ON" position
- Provided with top and bottom mounting feet which may be rotated 90° to vertical or horizontal mounting positions

*30 & 60A style 2 only

Interchangeability of Plugs With Other Non-Hazardous And Hazardous Location Receptacles:

- Plugs listed for use with NBR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with NBR receptacles, as well as with DR receptacles listed in Section 2P, and with EBBR, EPC and EPCB receptacles listed in Section 4P
- Portable equipment, suitable for the locations and equipped with the proper plug, can be used with non-hazardous rated AR receptacles, DBR and WSR interlocked receptacles located in non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I, Groups B, C, D hazardous locations, with DR and DBR interlocked receptacles for Class II, Groups F, G hazardous locations, and with NBR/NSR interlocked receptacles for wet and corrosive locations

Standard Materials:

- Enclosure, covers and operating handles – *Krydon* fiberglass reinforced polyester material
- Operating shafts – stainless steel
- Receptacle housings – copper-free aluminum
- Receptacle insulators – *Krydon* material
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – baked on powder epoxy
- Stainless steel – natural
- Enclosure – natural
- Receptacle insulators – natural (red)
- Brass – natural
- Leaded red brass – electro-tin-plated

Certifications and Complies:

- NEMA 3, 3R, 4*, 4X*, 12
- ANSI/UL Standard 489
- UL Standard 1682
- CSA

Electrical Rating Ranges:

- Receptacles – 30, 60 and 100 amperes
- Circuit Breakers – 100 ampere frame size

NOTE: For additional dimensional data, see page 655, enclosure catalog number NCB1024.



Options:

- Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed on the same premises for use of different voltages. Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match – add suffix S4 to Cat. No.
- Hubs for other conduit sizes can be supplied. See listing on page 658.

NBR Arktite® Interlocked Receptacles with Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs♦♦

3-Pole, 600 VAC

NEMA 3,3R,4,4X,12
Watertight
Corrosion-Resistant

3P

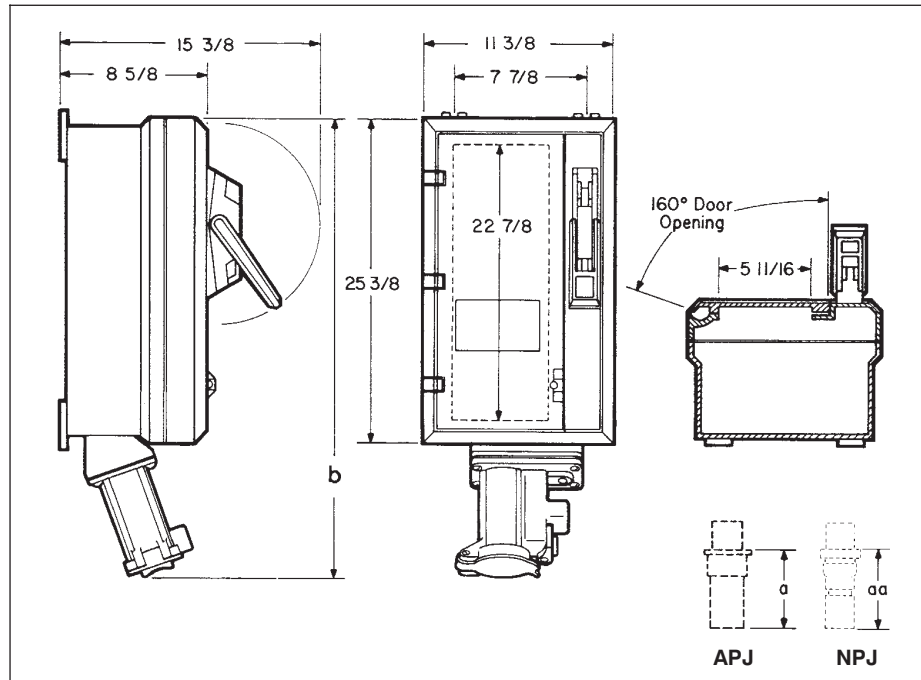
100 Ampere Frame Size with Non-Interchangeable Trip‡§

Receptacle With Spring Door Housing	Enclosure		Without Circuit Breaker Cat. #	With Cutler-Hammer Circuit Breaker Cat. #
	Hub Size	Ckt. Brkr. Amps		
STYLE 1†				
30 amp., 3-wire, 3-pole	¾	20	NBR53731	NBR53731-WT20-3
		30		NBR53731-WT30-3
		40		NBR53731-WT40-3*
		50		NBR53731-WT50-3*
60 amp., 3-wire, 3-pole	1¼	50	NBR56731	NBR56731-WT50-3
		60		NBR56731-WT60-3
		70		NBR56731-WT70-3*
		90		NBR56731-WT90-3*
		100		NBR56731-WT100-3*
100 amp., 3-wire, 3-pole	2	60	NBR51731	NBR51731-WT60-3
		70		NBR51731-WT70-3
		90		NBR51731-WT90-3
		100		NBR51731-WT100-3

STYLE 2†

30 amp., 3-wire, 4-pole	¾	20	NBR53742	NBR53742-WT20-3
		30		NBR53742-WT30-3
		40		NBR53742-WT40-3*
		50		NBR53742-WT50-3*
60-amp., 3-wire, 4-pole	1¼	50	NBR56742	NBR56742-WT50-3
		60		NBR56742-WT60-3
		70		NBR56742-WT70-3*
		90		NBR56742-WT90-3*
100 amp., 3-wire, 4-pole	2	100	NBR51742	NBR56742-WT100-3*
		60		NBR51742-WT60-3
		70		NBR51742-WT70-3
		90		NBR51742-WT90-3
		100		NBR51742-WT100-3

Dimensions



APJ/NPJ Plugs 600 VAC With Cable Grip and Neoprene Bushing



APJ



NPJ

Amps	Cable O.D. Range	Style 1† 3-wire, 3-pole Cat. #	Style 2† 3-wire, 4-pole Cat. #
30	0.60 to 1.20	APJ3375	APJ3485
	0.55 to 0.70		NPJ3483
	0.70 to 0.85		NPJ3484
60	0.75 to 1.45	APJ6375	APJ6485
	0.75 to 1.07		NPJ6484
	1.07 to 1.35		NPJ6485
100	1.00 to 1.70	APJ10377	APJ10487
	0.93 to 1.21		NPJ10486
	1.21 to 1.50		NPJ10487

Dim. "a" and "aa" are exposed portion of plug when engaged with receptacle.

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

♦ ♦ Pressure connectors are standard. Crimp solder type terminators are optionally available for 3 and 4-pole 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example: APJ3375-T (Plug).

§ Also available with interchangeable trip breakers. Specify on order.

† Style 1 – Grounded through shell. Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

‡ For circuit breaker Cat. No. refer to Section 6C, Table 9, List FDB. For detailed information on circuit breaker selection, see Section 6C.

3P
Interlocked
Plugs and
Receptacles

Application:

- The DSR disconnect switches are used as a service outlet for portable or fixed electrical equipment – generators, compressors, welders, etc.
- They are designed for use in hazardous and non-hazardous areas where dust, moisture and corrosion may be a problem.
- Designed for surface mounting.
- A fusible type switch, when used, also provides short circuit protection.

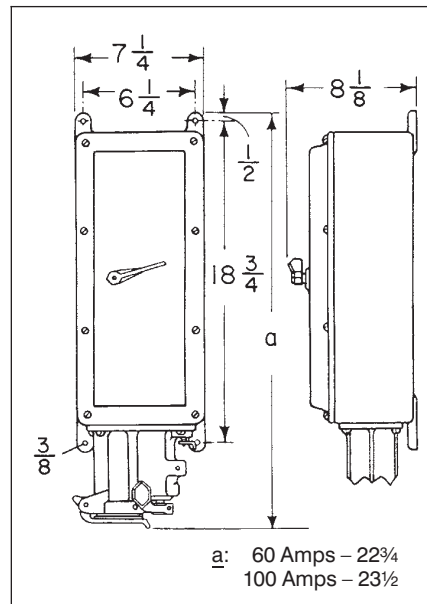
Features:

- Switches
- Type DS disconnect is a compact load break switch using the De-ion arc quenching principle and quick make-quick break over center toggle mechanism. It has visible contacts, is CSA listed up to 75 hp., and is available either as a fusible or non-fusible switch.
- Enclosures are compact and rectangular in shape permitting close spacing with a gasketing cover.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the switch operating mechanism. The switch cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the switch is open.
- Operating handles can be padlocked in either "ON" or "OFF" positions.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a thread-in bushing. The size furnished is 1½", and removing the bushing permits the use of a 2" conduit.

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum.
- Operating shafts – stainless steel.
- Receptacle housings and plug exteriors – copper-free aluminum.
- Insulation: plugs and receptacles – fiberglass-reinforced polyester.
- Contacts – brass.

Dimensions



Standard Finishes:

- Copper-free aluminum – natural.
- Stainless steel – natural.
- Brass – Bright Dip.
- Fiberglass-reinforced polyester – natural (red).

Electrical Rating Ranges:

- 3-Wire, 4-Pole: Fusible or non-fusible:
240 VAC 250 vdc: 600 vac
60, 100 amperes
- 15 to 75 HP

Certifications and Compliances:

- NEC/CEC: Class II, Division 1 and 2, Group G
Class III
- CSA Encl. 3,5
- NEMA: 3,12



Options:

The following special options are available by adding suffix to Cat. No.

Description

- Special polarity for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:
- Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match S4
 - Breather (drain furnished as standard) S219
 - Conduit arrangements other than standard can be supplied Details on request.

Ordering Information:

System	Amps	Conduit Opening Sizes	Max. HP Rating 240VAC	Max. HP Rating 600VAC	Interlocks		Mating Arktime® Plugs	
					DSR 240VAC 250VDC Cat. #	600VAC 250VDC Cat. #	Dia. Outside of Cable Flexible Conduit or Armored Cable	Style 2 3-wire 4-pole Cat. #
3-Wire, 4-Pole	60	1½	15	50	DSR632**	DSR6352*	.75 to 1.45	APJ6485
Style 2, Fusible	100	1½	30	75		DSR10352*	1.00 to 1.70	APJ10487
3-Wire, 4-Pole	60	1½	15	50	DSR6342	DSR63542	.75 to 1.45	APJ6485
Style 2, Non-Fusible	100	1½	30	75	DSR10342	DSR103542	1.00 to 1.70	APJ10487

* Arranged for Class J fuses.

** Arranged for Class H fuses.

WSQC Interlocked Arktite® Receptacles with Enclosed Switches

30 & 60A
600 VAC
NEMA 3R,12

Raintight
Dust Tight

3P

APJ Plugs

Application:

WSQC dead front interlocked receptacles with APJ, NPJ, BP or FP plugs are used:

- to supply power to portable electrical equipment such as hand lamps, lighting systems, power tools, conveyors, welders, compressors, etc.
- in damp, wet or corrosive locations
- indoors or outdoors in non-hazardous areas
- in locations where mounting area is confined and compact equipment is required

Features:

- NEMA 3R, 12
- Rainproof, dust tight
- Available in 30 & 60 amps
- Horsepower rated switch
- Smallest footprint for interlocked receptacles
- Padlockable in OFF position; meets OSHA lockout/tagout requirements
- Compatible with Arktite™ APJ aluminum and NPJ Krydon™ material non-metallic plugs

Standard Materials:

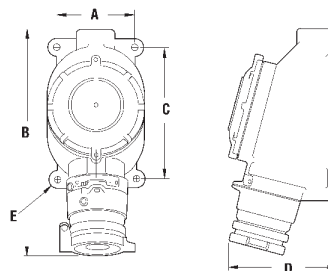
- Enclosure – copper-free aluminum
- Cover & spring door – copper-free aluminum
- Insulator – Krydon™ material
- Contacts – brass
- Cover Gasket – Neoprene

Certifications & Compliances:

- NEMA 3R, 12
- CSA Standard C22.2 No. 14, 182.1
- UL and cUL Listed



Dimensions (In Inches)



Amps	A	B	C	D	E
30A	3 $\frac{1}{8}$	9 $\frac{3}{4}$	—	5 $\frac{3}{4}$	$\frac{3}{8}$
60A	5	14 $\frac{7}{16}$	8 $\frac{1}{2}$	7	1 $\frac{3}{32}$

Horsepower Ratings

Amps	Single Phase				Three Phase			
	120V	240V	480V	600V	120V	240V	480V	600V
30A	2	5	7 $\frac{1}{2}$	7 $\frac{1}{2}$	3	7 $\frac{1}{2}$	15	15
60A		10	25	30		10	25	30

Ordering Information

Amps	Hub	Config.	Catalog No.
30A	$\frac{3}{4}$ "	2W3P	WSQC2330
	1"	2W3P	WSQC3330
	$\frac{3}{4}$ "	3W4P	WSQC2340
	1"	3W4P	WSQC3340
60A	1 $\frac{1}{2}$ "	2W3P	WSQC5630
	1 $\frac{1}{2}$ "	3W4P	WSQC5640

OPTIONS:

- Interior rotated 22 $\frac{1}{2}$ ° to the right (viewed from face) – add suffix to Cat. # – S4, ex: WSQC5640 S4

3P
Interlocked
Plugs and
Receptacles

Notes Page

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Plugs and Receptacles Industrial Heavy Duty Interlocked Hazardous

4P

Description	Page No.
Application/Selection	1040, 1041
Interlocked Receptacle with –	
H.P. Rated Switch	
Technical Data	1042
FSQC 30A & 60A / APJ Plugs	1043
FSQC 100A / APJ Plugs	1044
FSQ 30A 230 Series / BP Plugs	1045
FSQ 30A 232 Series / FP Plugs	1046
DSR 60A & 100A	1047
W2SR 30A, 60A & 100A	1048
Factory Sealed Switch	
BHR 30A, 60A & 100A / BHP Plugs	1049, 1050
SRD 30A & 60A / SP Plugs	1051, 1052
Circuit Breaker	
EBBR 30A, 60A, 100A	1053-1055
EPC, 30A, 60A, 100A, 200A	1056-1058
EPCB 30A, 60A, 100A	1059, 1060
DBR 30A, 60A, 100A	1061, 1062

Industrial Heavy Duty Interlocked Application and Selection Hazardous

Application

- Where extra protection is a requirement. Interlocked units provide dead front receptacles; connection cannot be made or broken when unit is under load.
- In areas made hazardous by flammable vapors, gases or dusts; to supply power for portable electrical equipment and provide safe disconnect means and short circuit protection.

Considerations for Selection:

Environmental:

- The environment of the enclosure location in terms of NEC/CEC compliance and NEMA/EEMAC type required.
- Material and construction to withstand rough usage and atmospheric conditions.

Electrical:

- Sufficient current carrying capacity to meet load requirements.
- Compatibility with electrical system (new or existing installation).

- Interchangeability of plugs with other hazardous and non-hazardous area receptacles.

Function:

- Switch vs. circuit breaker

Options:

Special polarity arrangements, material options, accessories, and optional arrangements of enclosure interiors are available to meet specific application needs. See listing pages for details.

Quick Selector Chart

Series	NEC/CEC & NEMA/EEMAC Compliances	Receptacles Interlocked With	Page	Mating Plugs	Electrical Rating
BHR	Class I, Division 1 and 2, Groups B,C,D Class II, Division 1 and 2, Groups F,G Class III NEMA: 3,4,7BCD,9FG,12	Factory Sealed Switch	1049 1050	BHP	30, 60, 100 amp. 480VAC 2-wire, 3-pole 3-wire, 4-pole 4-wire, 5-pole
DBR	NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA/EFC: 3,9FG,12 CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,5	Circuit breaker	1061 1062	APJ/NPJ	Circuit breaker: 100 amp. frame size 250VDC/600VAC Receptacle: 30, 60, 100 amp. 2-wire, 3-pole 3-wire, 3-pole 3-wire, 4-pole
DSR	Class II, Division 1 and 2, Group G Class III, Encl. 3,5 NEMA: 3,9G,12	Switch	1047	APJ/NPJ	Switch: 60 and 100 amp. 600VAC/250VDC Fusible or non-fusible Receptacle: 60 and 100 amp. 3-wire, 4-pole
EBBR	Class I, Division 1 and 2, Groups B,C,D Class II, Division 1 and 2, Groups F,G Class III NEMA 3,3R,7BCD,9FG,12	Circuit breaker	1053 1054 1055	APJ/NPJ	Receptacle: 30, 60, 100 amp. 3-wire, 4-pole
EPC	NEC: Class I, Division 1 and 2, Groups C,D NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA: 3,7CD,9FG,12 CEC: Class I, Division 1 and 2, Groups C,D CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,4	Circuit breaker	1056 1057 1058	APJ/NPJ	Circuit breaker: 100 amp. frame size 480VAC/250VDC Receptacle: 30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole
EPC	Class I, Division 1 and 2, Group D Class II, Division 1 and 2, Groups F,G Class III NEMA: 3,7D,9FG,12	Circuit breaker	1057 1058	DP	Circuit breaker: 225 amp. frame size 600VAC/250VDC Receptacle: 200 amp. 3-wire, 4-pole
EPCB	NEC: Class I, Division 1 and 2, Groups B,C,D NEC: Class II, Division 1 and 2, Groups F,G NEC: Class III NEMA: 3,7BCD,9FG,12 CEC: Class I, Division 1 and 2, Groups B,C,D CEC: Class II, Division 1 and 2, Group G CEC: Class III Encl. 3,4	Circuit breaker	1059 1060	APJ/NPJ	Circuit breaker: 100 amp. frame size 600VAC/250VDC Receptacle: 30, 60, 100 amp. 2-wire, 3-pole 3-wire, 4-pole

Plugs and Receptacles

4P

Industrial Heavy Duty Interlocked Quick Selector and Interchangeability Chart Hazardous

Quick Selector Chart

Series	NEC/CEC & NEMA/EEMAC Compliances	Receptacles Interlocked With	Page	Mating Plugs	Electrical Rating
FSQ	NEC: Class I, Division 1 and 2, Groups B,C,D	Switch	1043	APJ/NPJ	30A 250V/20A 600VAC
	NEC: Class II, Division 1 and 2, Groups F,G				2-wire, 3-pole
	NEC: Class III				3-wire, 4-pole
	NEMA: 3,7BCD,9FG,12		1044		60A & 100A
W2SR	CEC: Class I, Division 1 and 2, Groups B,C,D	Rotary Switch	1045	BP	2-wire, 3-pole
	CEC: Class II, Division 1 and 2, Group G		1046	FP	2-wire, 3-pole
	CEC: Class III				3-wire, 4-pole
	Encl. 3,5				
W2SR	NEC/CEC: Class I, Division 2, Groups B,C,&D	Rotary Switch	1048	APJ/NPJ	30A,60A,100A
	NEC: Class I, Zone 2, Group IIB + Hydrogen				3-wire, 3-pole
	NEMA 3R				3-wire, 4-pole
SRD	Class I, Division 1 and 2, Group D	Factory Sealed Switch	1051	5P	30 & 60 amp. 480VAC
	Class II, Division 1 and 2, Groups F,G		1052		2-wire, 3-pole
	Class III				3-wire, 4-pole
	NEMA: 3,7D,9FG,12				4-wire, 5-pole

Interchangeability Chart

Many of the plugs listed in this section can be used interchangeably with receptacles from other sections, both in hazardous and non-hazardous areas, **provided electrical rating and style of plug and receptacle are the same**. The following table is a summary of possible combinations.

Plugs Shown in Section 4P	Can be Used with These Receptacle Series	Listed in Section	Plug & Receptacle Electrical Rating
APJ/NPJ	AR, NR	1P	30, 60, 100 amp.
	DR	2P	2-wire, 3-pole
	FSQ, EPC, EPCB, DBR, EBBR, C2SR, FSQC, C2SR, DSR,	4P	3-wire, 4-pole
	DBR, NBR, NSR, W2SR, WSR, CSR, WSRD, WSRDW, WSQC, DSR, WSRDCHS901	3P	30, 60, 100 amp. 3-wire, 3-pole 3-wire, 4-pole
BHP	SRG	3P	30, 60, 100 amp.
	SRD	4P	2-wire, 3-pole
	BHR	4P	3-wire, 4-pole 4-wire, 5-pole
SP	SRG	3P	30, 60 amp.
	BHR	4P	2-wire, 3-pole
	SRD	4P	3-wire, 4-pole 4-wire, 5-pole

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

4P
Interlocked
Plugs and
Receptacles

Application:

FSQ dead front interlocked receptacles and switches with APJ/NPJ, BP and FP plugs are used:

- to supply power to portable electrical equipment such as hand lamps, lighting systems, power tools, conveyors and similar equipment.
- in areas which are hazardous due to the presence of flammable vapors or gases and combustible dusts.
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants and facilities for processing and handling grain, flour and starch.

Features:

- FSQ dead front interlocked receptacles and switches, as shown in the listings, are available with four different types of receptacles, each of which is positively polarized to prevent mismating. With this choice of receptacle types, power outlets for several different voltages can be installed in the same area with assurance that portable equipment cannot be connected to a receptacle of improper voltage.
- All FSQ assemblies have the same outstanding safety features. The plug must be fully inserted in the receptacle and rotated clockwise to operate the enclosed switch, closing the circuit to the receptacle. The plug cannot be withdrawn until it is rotated counter-clockwise and the switch opened. Plug and receptacle contacts cannot be made or broken under load and when plug and receptacle are not engaged, receptacle is dead front.
- An added safety feature is provided by the cover screw. The cover cannot be removed when the switch is closed and with the cover removed and cover screw in place, the switch cannot be operated by the plug.

Grounding:

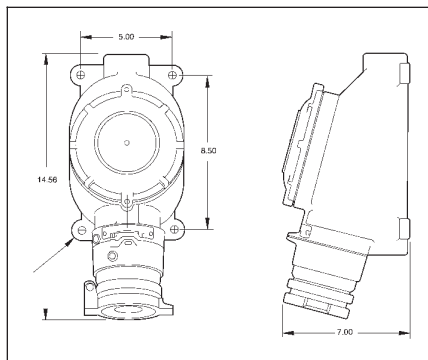
- NEC Article 501 and CEC Part 1 Section 18 requires that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous areas be grounded through an extra conductor in the portable cord.
- All FSQ receptacles and matching plugs are provided with an extra grounding pole. In the plugs, provision is made for attachment of the grounding wire. In addition, direct connection is provided between plug and receptacle housings and the grounding pole. If a separate grounding wire is not installed in the receptacle, grounding is accomplished through the conduit system.

Certifications and Compliances:

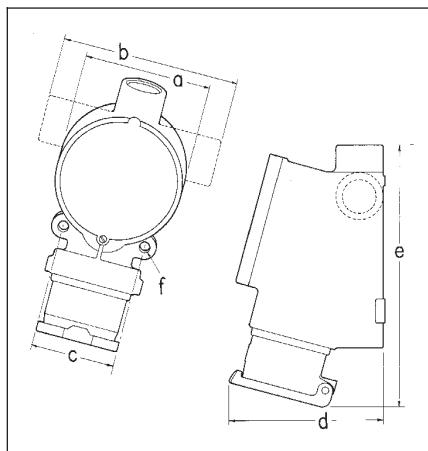
- NEC: Class I, Division 1 and 2, Groups B*,C,D
Class II, Division 1 and 2, Groups F,G
Class III
- NEMA: 3,7B*CD,9FG,12
- ANSI/UL Standard: 1010
- CEC: Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1 and 2, Group G
Class III
- Encl. 3,5
- CSA Standard: C22.2 No. 30

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

Dimensions:



FSQC5630, 5640



Cat. #	Page	Maximum Dimensions					
		a	b	c	d	e	f
FSQC2320, 3320	4P-3	4¾		3⅞	5¾	9¾	¾
FSQC2430, 3430							
FSQC2390, 3390	4P-4	4¾	6⅝	3⅞	5¾	10¼	¾
FSQ230, 330 Series							
FSQ232, 332 Series	4P-5	4¾	6⅝	3⅞	5½	9½	¾
FSQ233, 333 Series							



Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for FSQC receptacles on 1043 are standard APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with FSQC receptacles as well as with DR, DBR, EBBR, EPC and EPCB receptacles listed in Section 2P and 4P.
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR series receptacles for non-hazardous areas, EBBR, EPC, EPCB, and FSQC receptacles for Class I hazardous locations; DR and DBR receptacles for Class II hazardous locations.

FSQC Arktite® Dead Front Interlocked Receptacles and Switches

APJ/NPJ Arktite Plugs

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

4P

Applications:

- FSQC dead front switched interlock receptacles are used:
- to supply power to portable electrical equipment such as hand lamps, lighting systems, power tools, conveyors, welders and similar equipment.
 - in areas which are hazardous due to the presence of flammable vapors or gases and combustible dusts.
 - in damp, wet or corrosive locations.
 - indoors or outdoors at petroleum refineries, chemical and petrochemical plants and facilities for processing and handling grain, flour and starch.

Product Features:

- Compatible with Arktite® APJ aluminum and NPJ Krydon® plugs
- Switch cannot be turned "ON" until plug is fully inserted and rotated.
- Plug cannot be withdrawn under load
- Cover cannot be removed when switch is "ON"
- Satisfies OSHA lockout tagout requirement.
- Smallest mounting footprint for interlocks

Materials:

- Enclosure – Feraloy® iron alloy or copper-free aluminum
- Cover and spring door – copper-free aluminum
- Insulator – Krydon®
- Contacts – brass

Certifications and Compliances:

- NEMA 3, 7BCD, 9FG, 12
- NEC/CEC: Class I, Division 1 & 2, Groups B, C & D
Class I, Zone 1, Group IIB+Hydrogen
Class II, Division 1 & 2, Groups F, G
Class III
- ANSI/UL Standards 1010 UL Listed
- CSA Standard C22.2 No. 30 cUL Listed & C22.2 No. 159

Options:

Description	Suffix
Special polarity, receptacle interior rotated 22½°	S4
Copper-free aluminum enclosure – 60A only	SA



FSQC Receptacles With Spring Door (Through Feed Hubs)

Horsepower Rating:

Amps	Single Phase			
	120V	240V	480V	600V
30A	2	5	7½	7½
60A	—	10	25	30

Amps	120V	Three Phase		600V
		240V	480V	
30A	3	7½	15	15
60A	—	10	25	30

Ordering Information:

Amps	Hub	Config.	Description	Catalog Number	Matching Plug
30A	¾"	2W3P	2 Pole Switch	FSQC2320	APJ3385
		3W4P	3 Pole Switch	FSQC2430	APJ3485
	1"	2W3P	2 Pole Switch	FSQC3320	APJ3385
		3W4P	3 Pole Switch	FSQC3430	APJ3485
60A	1½"	2W3P	2 Pole Switch	FSQC5630	APJ6385
		3W4P	3 Pole Switch	FSQC5640	APJ6485

FSQC for Use with Magnetic Motor Starters or Contactors

FSQC units listed below operate in the same way as standard units but are intended *only for use with magnetic motor starters or contactors*. (Wiring diagram 1)

Receptacles have leads for splicing to conductors from the load side of contactor. The switch actuated by the plug is wired into the starter or contactor coil circuit and controls only this circuit. The starter or contactor is energized only when the plug is fully inserted and rotated to close the switch. Since the plug is inserted or withdrawn only when the switch is open, the circuit cannot be made or broken under the load.

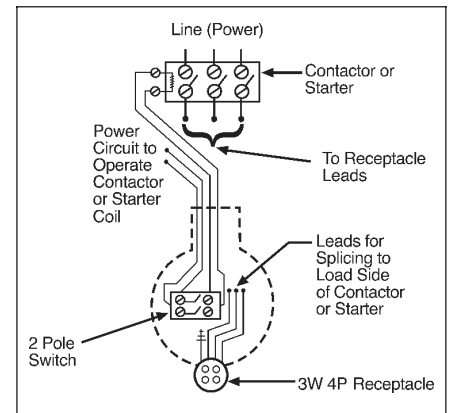
Plugs used are standard APJ units and special polarity units listed are recommended where interchange with devices for other wiring systems is possible.

FSQC Receptacles With Spring Door (Through Feed Hubs)

30 Amperes, 250 VAC or VDC; 20 Amperes, 600 VAC

No. of Poles	Hub Size	Receptacle Cat. #	Cable Dia.	Plug Cat. #
3-wire 4-pole	¾"	FSQC2390	0.60 to 1.20	APJ3485
	¾"	FSQC2390-S4		APJ3485-S4
	1"	FSQC3390	0.55 to 0.70	NPJ3483
	1"	FSQC3390-S4	0.70 to 0.85	NPJ3483-S4
				NPJ3484
				NPJ3484-S4

APJ/NPJ Plugs



Wiring Diagram 1
(FSQC2390 and 3390 only)

4P
Interlocked
Plugs and
Receptacles

Applications:

- to supply power to portable or fixed electrical equipment such as welders, pumps, motors, machine tools, conveyors, oil rigs, mixers grain elevators, petroleum refineries, chemical and petrochemical plants
- in hazardous areas containing flammable vapors or gases and combustible dusts
- in damp, wet or hosedown environments
- in highly corrosive locations

Features:

- NEMA Type 4 watertight
- suitable for Group B
- compact housing
- simple operation
- compatible with Arktite® APJ aluminium and NPJ Krydon® plugs
- H.P.-rated enclosed switch
- 4 mounting feet can be rotated for flexibility in positioning to surface
- wiring channel provided under switch for easy wire routing to terminals
- dual botton-feed hubs and one top hub for convenient feed-through installation
- bread-loose fork lugs case in place for easy removal of cover

Safety First:

- power cannot be turned "on" until plug is fully inserted and Uni-Loc collar is rotated
- when Uni-Loc collar is in "on" position, plug is locked in place to prevent disengagement under load
- cover cannot be removed while switch is "on"
- Cover-Loc™ design prevents switch from being turned "on" while cover is removed
- Uni-Loc collar aligns with lug on housing to permit OSHA lockout/tagout in the "off" position

Materials:

- body—copper-free aluminum
- cover—copper-free aluminum
- locking collar—Feraloy® iron alloy
- insulator—Krydon® material
- contacts—brass

Certifications and Compliances:

- NEMA 3, 3R, 4, 4X*, 7BCD, 12
- Class I, Divisions 1 & 2, Groups B,C & D
- Class I, Zone 1, Group IIB + H₂
- Class II, Divisions 1 & 2, Groups F & G
- Class III
- ANSI/UL Standards 1010 & 98 UL Listed
- cUL Listed, CSA Standard C22.2 No. 30, C22.2 No. 159

* NEMA 4X when ordered with suffix S752

Electrical Rating:

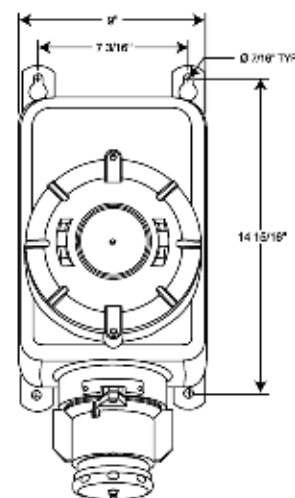
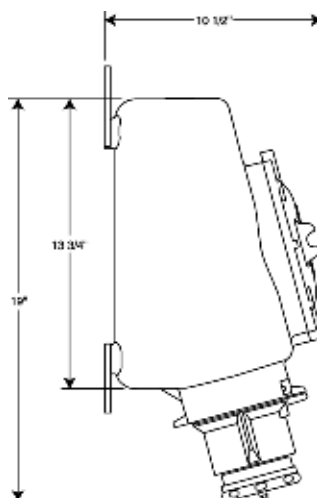
100A, 600VAC

Ordering Information:

Rating	Config.	Hub Size	H.P. Rating	Cat. #
100A, 600VAC	3W4P	2"	50 H.P.	FSQC61040
			@600V, 480V	

Options:

Special polarity—receptacle interior rotated 22½° to right. Add suffix S4
 (example: FSQC61040 S4)
 NEMA 4X—epoxy powder coated.
 Add suffix S752
 (example: FSQC61040 S752)
 Auxiliary contact. Add suffix S483
 Breather/Drain S756V



FSQ Dead Front Interlocked Receptacles and Switches

BP Plugs

Cl. I, Div. 1 and 2, Groups B*,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

4P

Note:

- For information on application, features, groundings and compliances, see page 1042.
- Available with 3/4" and 1" hubs in various arrangements, as shown in the listings.

Standard Materials:

- Switch enclosure and receptacle housing – *Feraloy*® iron alloy
- Threaded cover and spring door – copper-free aluminum
- Plug exteriors; handle body – copper-free aluminum
- Protective sleeve – steel
- Insulation (plug and receptacle) – Krydon® fiberglass reinforced polyester
- Contacts – brass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Steel – zinc electroplate with chromate finish
- Brass – natural
- Krydon, fiberglass reinforced polyester – natural (red)



FSQ Receptacles With Spring Door

30 Amperes, 250 VAC or VDC; 20 Amperes, 600 VAC; 2 HP, 120-600 VAC

No. of Poles	Hub Size	Hub Arrangement	Cat. #	Hub Arrangement	Cat. #
2-wire, 3 pole (2-pole switch)	3/4"		FSQC230 FSQC330		FSQD230 FSQD330
	1"		FSQA230 FSQA330		FSQX230 FSQX330

BP Plugs With Cable Grip and Neoprene Bushing

Cable Dia.	Cat. #
.375 to .500	BP49
.500 to .625	BP59
.625 to .750	BP69
.750 to .875	BP79

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

FSQ Dead Front Interlocked Receptacles and Switches

FP Plugs

Cl. I, Div. 1 and 2, Groups B*,C,D
 Cl. II, Div. 1 and 2, Groups F,G
 Cl. III
 NEMA/IEC 3,7B*CD,9FG,12
 Explosionproof

Dust-Ignitionproof
 Raintight
 Wet Locations

Note:

- For information on application, features, groundings and compliances, see page 1042.
- Available with 3/4" and 1" hubs in various arrangements, as shown in the listings.

Standard Materials:

- Switch enclosures and receptacle housings – *Feraloy*® iron alloy
- Threaded covers – copper-free aluminum
- Plug exteriors – FP323 and FP334 – copper-free aluminum
- Insulation: receptacles – Krydon® fiberglass reinforced polyester; FP323 and FP334 plugs – Krydon® fiberglass reinforced polyester
- Contacts – brass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Krydon-fiberglass reinforced polyester – natural (red)
- Brass – natural

Options:

- Addition of cap and chain (copper-free aluminum, natural finish) to FSQ assemblies with threaded housing protects interior when plug is not in use. Add suffix S1 to Cat. No.

* Class I, Group B:

FSQ units listed below are also available modified for Class I, Group B (NEMA 7B) usage. Add suffix GB to the Cat. No.
 Example: FSQC232-GB. Seals must be installed within 1 1/2" of each conduit opening.



FSQ Receptacles With Threaded Housing

30 Amperes, 250 VAC or VDC; 20 Amperes, 600 VAC; 2 HP, 120-600 VAC

No. of Poles	Hub Size	Switch	Hub Arrangement	Cat. #	Hub Arrangement	Cat. #
2-wire	3/4	2-pole		FSQC232		FSQD232
3-pole	1			FSQC332		FSQD332
2-wire	3/4	2-pole		FSQA232		FSQX232
3-pole	1			FSQA332		FSQX332

30 Amperes, 240 VAC; 20 Amperes, 600 VAC; 2 HP, 120-600 VAC

3-wire	3/4	3-pole		FSQC233		FSQD233
4-pole	1			FSQC333		FSQD333
3-wire	3/4	3-pole		FSQA233		FSQX233
4-pole	1			FSQA333		FSQX333

FP Plugs With Cable Grip and Neoprene Bushing

No. of Poles	Cable Dia.	Cat. #
2-wire,		
3-pole	.500 to .875	FP323
3-wire,		
4-pole	.500 to .875	FP334

DSR Interlocked Arktite® Receptacle with Enclosed Disconnect Switches

Cl. II, Div. 1 and 2, Group G
Cl. III
NEMA: 3,9G,12
Encl. 3,5
Dust-Ignitionproof

Raintight

4P

Application:

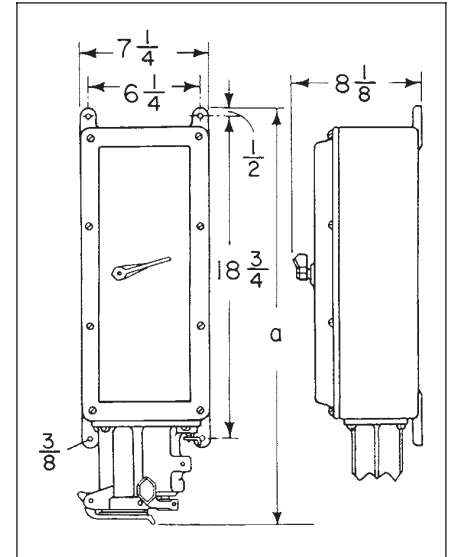
- The DSR disconnect switches are used as a service outlet for portable or fixed electrical equipment – generators, compressors, welders, etc.
- They are designed for use in hazardous and non-hazardous areas where dust, moisture and corrosion may be a problem.
- Designed for surface mounting.
- A fusible type switch, when used, also provides short circuit protection.

Features:

- Switches
- Type DS disconnect is a compact load break switch using the De-ion arc quenching principle and quick make-break over center toggle mechanism. It has visible contacts, is CSA listed up to 30 hp., and is available either as a fusible or non-fusible switch.
- Enclosures are compact and rectangular in shape permitting close spacing with a gasketing cover.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the switch operating mechanism. The switch cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the switch is open.
- Operating handles can be padlocked in either "ON" or "OFF" positions.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a thread-in bushing. The size furnished is 1½", and removing the bushing permits the use of a 2" conduit.



Dimensions:



Options:

The following special options are available by adding suffix to Cat. No.

Description

Special polarity for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:

- Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match **S4**
- Breather (drain furnished as standard) **S219**
- Conduit arrangements other than standard can be supplied **Details on request.**

Certifications and Compliances:

- NEC/CEC: Class II, Division 1 and 2, Group G Class III
- Encl. 3,5
- NEMA 3,9G,12

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum.
- Operating shafts – stainless steel.
- Receptacle housings and plug exteriors – copper-free aluminum.
- Insulation: plugs and receptacles – fiberglass-reinforced polyester.
- Contacts – brass.

Standard Finishes:

- Copper-free aluminum – natural.
- Stainless steel – natural.
- Brass – Bright Dip.
- Fiberglass-reinforced polyester – natural (red).

Electrical Rating Ranges:

- 3-Wire, 4-Pole:
Fusible or non-fusible:
240VAC 250vdc: 600 vac
60, 100 amperes
- 15 to 75 hp

Ordering Information:

System	Amps	Conduit Opening Sizes	Max. HP Rating 240VAC	Max. HP Rating 600VAC	DSR 240VAC 250VDC Cat. #	600VAC 250VDC Cat. #
3-Wire, 4-Pole	60	1½	15	50	DSR632**	DSR6352*
Style 2, Fusible	100	1½	30	75		DSR10352*
3-Wire, 4-Pole	60	1½	15	50	DSR6342	DSR63542
Style 2, Non-Fusible	100	1½	30	75	DSR10342	DSR103542

* Arranged for Class J fuses.

** Arranged for Class H fuses.

4P W2SR Metallic Interlocked Arktime® Receptacles

Division 2

W2SR Interlocked Arktime® Receptacles

Product Features:

- NEMA 3R
- Rainproof locations
- Available in 30, 60 & 100 amps
- RSWP factory-sealed explosionproof switch
- No external seals required
- Hinged door mechanically interlocked with operating handle
- Operating handle meets OSHA lockout/tagout requirements
- Compatible with Arktime® APJ aluminum and NPJ Krydon® material non-metallic plugs

Materials:

- Enclosure – copper-free aluminum
- Operating handle – copper-free aluminum
- Other exterior parts – stainless steel
- Receptacle housings – copper-free aluminum
- Insulator — Krydon® material
- Crimp/solder contacts – leaded red brass
- Pressure contacts – brass

Certifications and Compliances:

- NEMA 3R
- NEC/CEC: Class I, Division 2, Groups B, C & D
- NEC: Class I, Zone 2, Group IIB+Hydrogen
- UL Standards 508, 1604, 1682 UL Listed
- CSA Standard C22.2 No. 182.1 & No. 213 cUL Listed



Horsepower Ratings:

Amps	Single Phase		120V	Three Phase		
	120V	240V		240V	480V	600V
30A	2	3	3	7½	15	20
60A	3	7½	7½	15	30	40
100A	5	10	10	20	40	60

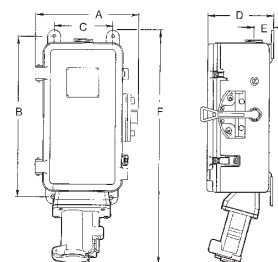
Ordering Information:

Amps	Hub	Config.	Catalog No.
30A	1"	3W3P	W2SR33541
		3W4P	W2SR33542
60A	1¼"	3W3P	W2SR63541
		3W4P	W2SR63542
100A	1½"	3W3P	W2SR103541
		3W4P	W2SR103542

OPTIONS – The following options are available from the factory by adding suffix to the catalog number:

1) Receptacle interior rotated 22½° S4

Dimensions: (In Inches)



	30 Amps	60 Amps	100 Amps
A	11¼	11¼	14⅞
B	20⅞	20⅞	26⅞
C	6⅞	6⅞	9⅞
D	7¼	7¼	8¼
E	2⅞	2⅞	2⅞
F	27⅞	28⅞	35⅞
Mtg. Holes	⅜	⅜	⅞

BHR Dead Front Interlocked Receptacles with Factory Sealed Switch

BHP Plugs

Cl. I, Div. 1 and 2, Groups B,C,D Dust-Ignitionproof
Cl. II, Div. 1 and 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,4,7BCD,9FG,12
Explosionproof

4P

Application:

BHR dead front interlocked receptacles and switches with BHP plugs are used:

- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, lighting systems, conveyors, and similar equipment
- primarily in areas which are hazardous due to the presence of hydrogen or gases, or vapors of equivalent hazard such as manufactured gas
- in damp, wet, or corrosive locations
- indoors or outdoors in hydrogen areas of process industries, missile bases where hydrogen fuel is used, and gas manufacturing plants

Features:

- BHR receptacles feature a built-in rotary switch which is operated automatically when the plug is inserted and withdrawn. The switch, capable of making and breaking the circuit at full rated load, is operated by a helical blade in the center of the plug
- The plug and receptacle contacts cannot be made or broken under load. When the plug is inserted, the plug and receptacle contacts engage before the switch closes. When the plug is withdrawn, the switch opens before the plug and receptacle contacts disengage. This sequence of operation provides maximum safety in a dead front receptacle. Arcing is isolated in a flame and dust-tight chamber
- Operation is simple, safe and positive. To disconnect the portable device, the plug fastening ring is unscrewed and the plug simply pulled straight out. No separate interlock device or operating handle need be actuated
- Positive engagement without mismatching is assured by a distinct physical polarization of the plug and receptacle in every rating
- Plugs are furnished with pressure terminations. Receptacles are furnished with flexible leads for splicing to the supply conductors. A large threaded cover provides access to the wiring compartment
- As shown in the listings, assemblies are available for top, bottom or through feed conduit arrangements in 3/4" to 2" sizes

Grounding:

- BHR receptacles and BHP plugs are provided with an extra grounding pole. In plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between the plug and receptacle housings and the grounding pole. In the receptacle, grounding is accomplished through the conduit system

Standard Materials:

- Receptacle housings – copper-free aluminum
- Seals – malleable iron
- Plug exteriors – copper-free aluminum
- Insulation – high impact glass filled phenolic
- Contacts – brass

Standard Finishes:

- Copper-free aluminum – natural
- Malleable iron – electrogalvanized and aluminum lacquer
- Phenolic – natural (black)
- Brass – silver plated

Options:

- Special polarity – where two or more receptacles of the same ampere rating and number of poles are to be installed in the same areas for use on different voltages, alternate polarizations can be furnished. Details on request

Electrical Rating Ranges:

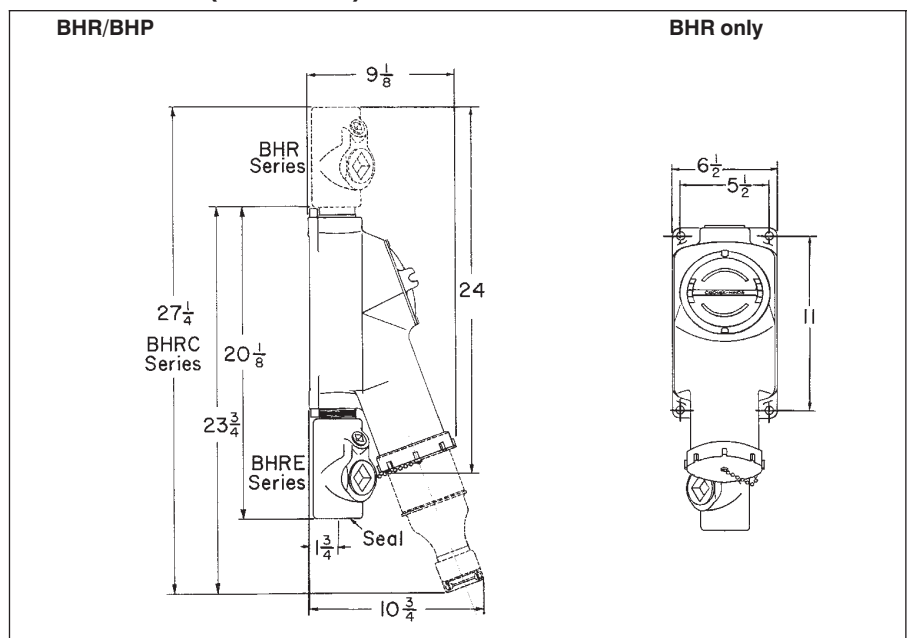
- 30, 60 and 100 amperes, 480vac

Certifications and Compliances:

- Class I, Division 1 and 2, Groups B,C,D
- Class II, Division 1 and 2, Groups F,G
- Class III
- NEMA: 3,4,7BCD,9FG,12
- ANSI/UL Standard: 1010

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts

Dimensions: (in inches)



BHR/BHP in use



BHR/BHP Separated showing helical driver

4P
Interlocked
Plugs and
Receptacles

BHR Dead Front Interlocked Receptacles with Factory Sealed Switch

BHP Plugs

480 VAC, 60-400 hertz

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA 3,4,7BCD,9FG,12

Explosionproof
Dust-Ignitionproof
Raintight
Wet Locations

RECEPTACLE

Receptacles are supplied ready to install with a threaded cap. Through feed hubs are standard. Sealing fittings, nipples and closure plugs ordered separately depending on application. Receptacles can be configured for Top Feed, Bottom feed or Through feed. Order required parts in catalog section 6C.

AMPS	CONFIG.	HUB SIZE	CATALOG #
30	2 wire 3 pole	¾	BHRC3382N
	2 wire 3 pole	1	BHRC3383N
	3 wire 4 pole	¾	BHRC3482D
	3 wire 4 pole	1	BHRC3483D
	4 wire 5 pole	1	BHRC3583NW
	4 wire 5 pole	1 ¼	BHRC3584NW
60	2 wire 3 pole	1 ¼	BHRC6384N
	2 wire 3 pole	1 ½	BHRC6385N
	3 wire 4 pole	1 ¼	BHRC6484D
	3 wire 4 pole	1 ½	BHRC6485D
	4 wire 5 pole	1 ¼	BHRC6584NW
	4 wire 5 pole	1 ½	BHRC6585NW
100	2 wire 3 pole	1 ¼	BHRC10384N
	2 wire 3 pole	1 ½	BHRC10385N
	3 wire 4 pole	1 ½	BHRC10485D
	3 wire 4 pole	2	BHRC10486D
	4 wire 5 pole	1 ½	BHRC10585NW
	4 wire 5 pole	2	BHRC10586NW



PLUGS

Plugs mate to BHR receptacles. Plugs are supplied with threaded locking ring that threads onto receptacle housing for secure connection and environmental seal. Mechanical external cord grip and neoprene bushing provided for secure cord retention and environmental seal.

AMPS	CONFIG.	CABLE DIA.	CATALOG #
30	2 wire 3 pole	.500 - .875	BHP3383N
	2 wire 3 pole	.875 - 1.375	BHP3385N
	3 wire 4 pole	.500 - .875	BHP3483D
	3 wire 4 pole	.875 - 1.375	BHP3485D
	4 wire 5 pole	.500 - .875	BHP3583NW
	4 wire 5 pole	.875 - 1.375	BHP3585NW
60	2 wire 3 pole	.500 - .875	BHP6383N
	2 wire 3 pole	.875 - 1.375	BHP6385N
	3 wire 4 pole	.500 - .875	BHP6483D
	3 wire 4 pole	.875 - 1.375	BHP6485D
	4 wire 5 pole	.875 - 1.375	BHP6585NW
	4 wire 5 pole	1.375 - 1.875	BHP6587NW
100	2 wire 3 pole	.875 - 1.375	BHP10385N
	2 wire 3 pole	1.375 - 1.875	BHP10387N
	3 wire 4 pole	.875 - 1.375	BHP10485D
	3 wire 4 pole	1.375 - 1.875	BHP10487D
	4 wire 5 pole	.875 - 1.375	BHP10585NW
	4 wire 5 pole	1.375 - 1.875	BHP10587NW



Dead Front Interlocked Receptacles with Factory Sealed Switch

SP Plugs
480 VAC, 60-400 hertz

Cl. I, Div. 1 and 2, Group D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA 3,7D,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

4P

Application:

SRD dead front interlocked receptacles, switches, and SP plugs are used:

- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, lighting systems, conveyors and similar equipment
- in areas which are hazardous due to the presence of flammable vapors or gases and combustible dusts
- in damp, wet or corrosive locations
- indoors or outdoors at petroleum refineries, chemical and petrochemical plants, as well as facilities for processing and handling grain, flour and starch

Features:

- SRD receptacles feature a built-in rotary switch that operates automatically when the plug is inserted and withdrawn. The switch, capable of making and breaking the circuit at full rated load, is operated by a helical blade in the center of the plug.
- The plug and receptacle contacts cannot be made or broken under load. When the plug is inserted, the plug and receptacle contacts engage before the switch closes. When the plug is withdrawn, the switch opens before the plug and receptacle contacts disengage. This sequence of operation provides the maximum safety of a dead front receptacle. Arcing is isolated in a flame and dust-tight chamber.
- Operation is simple, safe and positive. To disconnect the portable device, the plug is simply pulled straight out. No separate interlock device or operating handle need be actuated.
- Positive engagement without mismating is assured by a distinct physical polarization of plug and receptacle in every rating.
- Plugs are furnished with pressure terminations. Receptacles are furnished with flexible leads for splicing to the supply conductors. A threaded cover at the top provides access to the wiring compartment.
- Back box is provided with 1¼" vertical through feed hubs.

Grounding:

- SRD receptacles and SP plugs are provided with an extra grounding pole. In plugs, provision is made for attachment of a grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the grounding pole. In the receptacle, grounding is accomplished through the conduit system.

Standard Materials:

- Back box – *Feraloy*® iron alloy
- Threaded cover – copper-free aluminum
- Receptacle housings and plug exteriors – copper-free aluminum

- Insulation – high impact glass filled phenolic
- Contacts – brass

Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Phenolic – natural (black)
- Brass – silver plated

Options:

- Special polarity – where two or more receptacles of the same ampere rating and number of poles are to be installed in the same area for use on different voltages, alternate polarizations can be furnished. Details on request.

Electrical Rating Ranges:

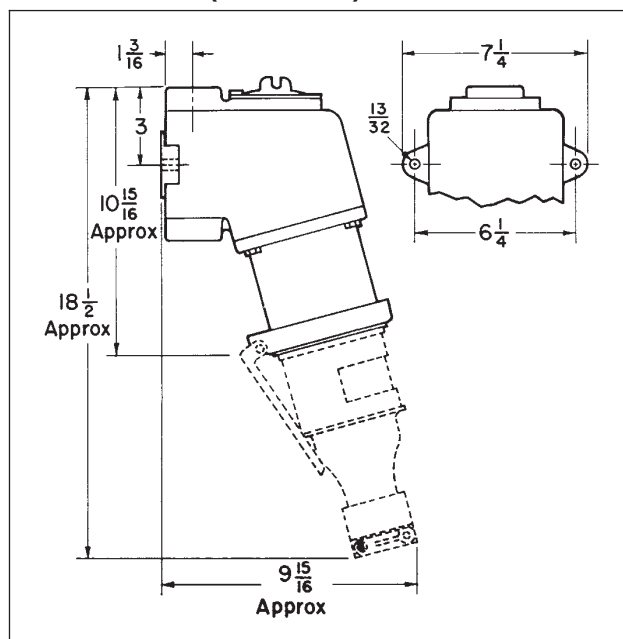
- 30 and 60 amperes, 480vac

Certifications and Compliances:

- NEC: Class I, Division 1 and 2, Group D
Class II, Division 1 and 2, Groups F,G
Class III
- NEMA 3,7D,9FG,12
- ANSI/UL Standard: 1010

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

Dimensions: (in inches)



4P
Interlocked
Plugs and
Receptacles

4P

SRD Dead Front Interlocked Receptacles with Factory Sealed Switch

SP Plugs
480 VAC, 60-400 hertz

Cl. I, Div. 1 and 2, Group D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA 3,7D,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations



SRD Receptacle with spring door



SP Plug



SRD Receptacle with threaded cap



SP Plug with fastening ring

Back Box – 1¼" Vertical Through Feed Hubs

Rating	Description	With Spring Door	With Cable Grip and Neoprene Bushing		With Threaded Cap	With Cable Grip and Neoprene Bushing	
		Cat. #	Cable Dia.	Cat. #	Cat. #	Cable Dia.	Cat. #
30 amp.	2-wire, 3-pole	SRD3324N	[.500 to .875 .875 to 1.375]	SP3363N SP3365N	SRD3384N	[.500 to .875 .875 to 1.375]	SP3383N SP3385N
	3-wire, 4-pole	SRD3424D	[.500 to .875 .875 to 1.375]	SP3463D SP3465D	SRD3484D	[.500 to .875 .875 to 1.375]	SP3483D SP3485D
	4-wire, 5-pole	SRD3524-NW	[.500 to .875 .875 to 1.375]	SP3563-NW SP3565-NW	SRD3584-NW	[.500 to .875 .875 to 1.375]	SP3583-NW SP3585-NW
60 amp.	2-wire, 3-pole	SRD6324N	[.500 to .875 .875 to 1.375]	SP6363N SP6365N	SRD6384N	[.500 to .875 .875 to 1.375]	SP6383N SP6385N
	3-wire, 4-pole	SRD6424D	[.500 to .875 .875 to 1.375]	SP6463D SP6465D	SRD6484D	[.500 to .875 .875 to 1.375]	SP6483D SP6485D
	4-wire, 5-pole	SRD6524-NW	[.875 to 1.375 1.375 to 1.875]	SP6565-NW SP6567-NW	SRD6584-NW	[.875 to 1.375 1.375 to 1.875]	SP6585-NW SP6587-NW

EBBR Series Interlocked Arktite® Receptacles with Circuit Breakers

30, 60, 100 Amp Interlocked Receptacles

Cl. I, Div. 1 and 2, Groups B,C,D Dust-Ignitionproof
Cl. II, Div. 1 and 2, Groups F*,G Raintight
Cl. III Wet Locations
NEMA 3,3R,7BCD,9FG,12
Explosionproof

4P

Application:

EBBR interlocked receptacles with circuit breakers are used:

- As a service outlet for portable equipment – indoors or outdoors – in damp, wet, corrosive locations, without the need for a protective shelter.
- In areas which are hazardous due to flammable vapors, gases or combustible dust, e.g., refineries, chemical plants, and other processing and handling facilities of a hazardous nature.
- In areas where frequent washdowns are necessary or where heavy rain or water spray is prevalent.

Features:

- Rugged, corrosion resistant, cast copper-free aluminum construction.
- Accepts compatible Arktite plug of same rating and configuration.
- Mechanical interlock mechanism for dead front construction.
- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection.
- A spring door receptacle, located at the bottom of the unit, is mechanically interlocked with the circuit breaker operating mechanism for safe and dependable operation.
- Plug and receptacle contacts cannot be made or broken under load. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is de-energized.
- Operating handles can be padlocked in either "ON" or "OFF" positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the "ON" position.
- Component operating handles located through the right side wall of the body permits visual confirmation of correct component assembly and operation.
- Total compliance to the wiring and room requirements of the National Electrical Code®.
- Semi-clamshell enclosure design, with an external machined flat joint flamepath between body and cover makes interior components easily accessible.
- Minimum enclosure-to-enclosure spacing with little interference between the opened cover and an adjacent enclosure.
- Copper-free aluminum hinges allow the cover to swing well out of the way.
- Stainless steel, quick release, captive, hex head cover bolts. Stainless steel springs provide clear indication cover bolts are fully retracted from body.
- Versatile, internal operating mechanisms allow for field adjustment to accommodate popular manufacturers' breakers.



- Simple, straightforward installation of breaker on pre-drilled mounting plate within enclosure.
- Neoprene cover gasket permanently attached to the cover seals out moisture.
- Bodies have top drilled and tapped entrance for power conduit (1½") plus one at the top and one at the bottom for a breather and drain (½"). Breather and drain entrances are plugged.
- Tap-on mounting feet.

Certifications and Compliances:

- NEC:
Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1 and 2, Groups F*,G
Class III
- NEMA: 3, 3R, 7BCD, 9FG, 12
- UL Standard: 1203

Grounding:

EBBR interlocked receptacles and matching plugs are provided with an extra grounding pole for attaching a grounding wire. In addition, direct connection is provided between receptacle and metallic plug and the grounding pole. If a compatible non-metallic plug made of Krydon® fiberglass-reinforced polyester material is used, grounding is accomplished through the extra grounding pole only. If a separate grounding wire is not installed in the enclosure, grounding is accomplished through the conduit system.

Standard Materials:

- Body, cover, and receptacle – copper-free aluminum
- Contact insulator (receptacles and plugs) – fiberglass-reinforced polyester
- Receptacle contacts – leaded red brass
- Pressure contacts (plugs) – brass
- Operating handle – copper-free aluminum
- Operating shafts and bushings – stainless steel
- Interior parts – heavy gauge sheet steel, zinc plated
- Cover bolts, washer and retractile springs – stainless steel

Standard Finishes:

- Copper-free aluminum – natural
- Fiberglass-reinforced polyester – natural (red)
- Brass – natural
- Leaded red brass – electro-tin-plated
- Stainless steel – natural

Electrical Rating Ranges:

- Circuit breakers – 20-100 amps
- Receptacles – 30, 60, 100 amp
- 3 wire, 4 pole configuration

Options:

The following options are available from the factory by adding suffix to the catalog number.
Receptacle interior rotated 22½° to right (viewed from face) and plug changed to match. . S4
Breather (ECD13) at top,
Drain (ECD11) at bottom S198V
Group B Breather and Drain . . . S756V
External Powder Epoxy Finish . . S752

* Caution: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

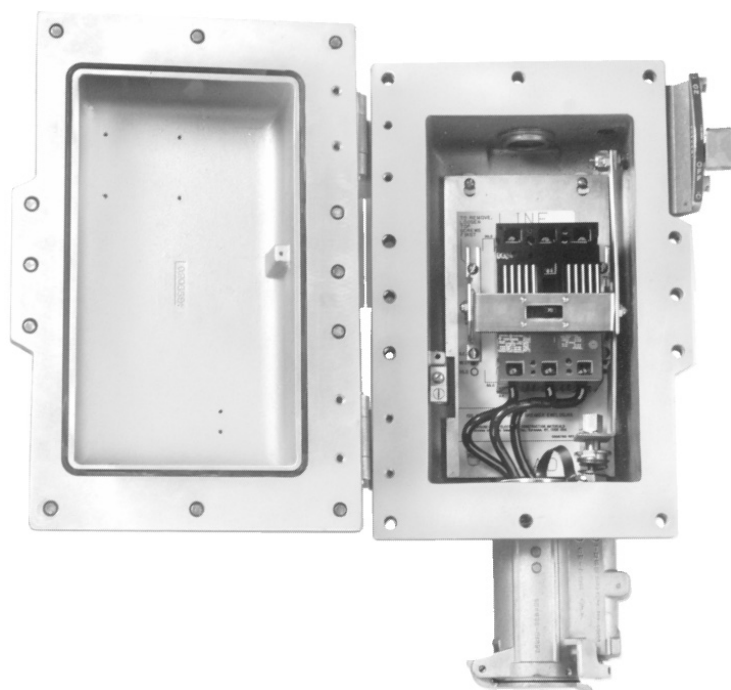
Interlocked
Plugs and
Receptacles
4P

EBBR Series Interlocked Arktite® Receptacles with Circuit Breakers

30, 60, 100 Amp Interlocked Receptacles

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F†,G
Cl. III
NEMA 3,3R,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations



Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with EBBR receptacles are standard Arktite APJ/NPJ plugs. Standard APJ/NPJ and also CPH plugs of the same rating, style and number of poles may be used with EBBR receptacles, as well as with DR receptacles listed in Section 2P and DBR, EPC and EPCB receptacles listed in Section 4P of the catalog.
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR/NR series receptacles for non-hazardous locations; EBBR, EPC and EPCB receptacles for Class I and II hazardous locations; and DR and DBR receptacles for Class II hazardous locations.

Complete EBBR receptacle with circuit breaker installed.

Ordering Information

Receptacle With Spring Door Housing	Hub Size	Circuit Breaker		Without Circuit Breaker Cat. #	w/Cutler-Hammer Breaker	w/G.E. Breaker	w/Square D Breaker
		Rating	Amps				
30 Amp	1½	3-pole	20	EBBRA304	EBBRA304-WT20-3	EBBRA304-TT20-3	EBBRA304-DT20-3
3-wire		480VAC+	30	EBBRA304	EBBRA304-WT30-3	EBBRA304-TT30-3	EBBRA304-DT30-3
4-pole		or	40	EBBRA304	EBBRA304-WT40-3*	EBBRA304-TT40-3*	EBBRA304-DT40-3*
Style 2		250VDC	50	EBBRA304	EBBRA304-WT50-3*	EBBRA304-TT50-3*	EBBRA304-DT50-3*
60 Amp	1½	3-pole	50	EBBRA604	EBBRA604-WT50-3	EBBRA604-TT50-3	EBBRA604-DT50-3
3-wire		480VAC+	60	EBBRA604	EBBRA604-WT60-3	EBBRA604-TT60-3	EBBRA604-DT60-3
4-pole		or	70	EBBRA604	EBBRA604-WT70-3*	EBBRA604-TT70-3*	EBBRA604-DT70-3*
Style 2		250VDC	90	EBBRB604	EBBRB604-WT90-3*	EBBRB604-TT90-3*	EBBRB604-DT90-3*
			100	EBBRB604	EBBRB604-WT100-3*	EBBRB604-TT100-3*	EBBRB604-DT100-3*
100 Amp	1½	3-pole	50	EBBRA104	EBBRA104-WT50-3	EBBRA104-TT50-3	EBBRA104-DT50-3
3-wire		480VAC+	60	EBBRA104	EBBRA104-WT60-3	EBBRA104-TT60-3	EBBRA104-DT60-3
4-pole		or	70	EBBRA104	EBBRA104-WT70-3	EBBRA104-TT70-3	EBBRA104-DT70-3
Style 2		250VDC	90	EBBRB104	EBBRB104-WT90-3	EBBRB104-TT90-3	EBBRB104-DT90-3
			100	EBBRB104	EBBRB104-WT100-3	EBBRB104-TT100-3	EBBRB104-DT100-3

+ Enclosures with 600 Volt circuit breakers are available. Add suffix "FDB" Ex: EBBRA304 – WT20FDB-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

† Caution: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II Group F locations that contain electrically conductive dusts.

EBBR Series Interlocked Arktime® Receptacles with Circuit Breakers

30, 60, 100 Amp Interlocked Receptacles

Cl. I, Div. 1 and 2, Groups B,C,D Dust-Ignitionproof
Cl. II, Div. 1 and 2, Groups F,G Raintight
Cl. III Wet Locations
NEMA 3,3R,7BCD,9FG,12
Explosionproof

4P

APJ and NPJ Arktime Plugs



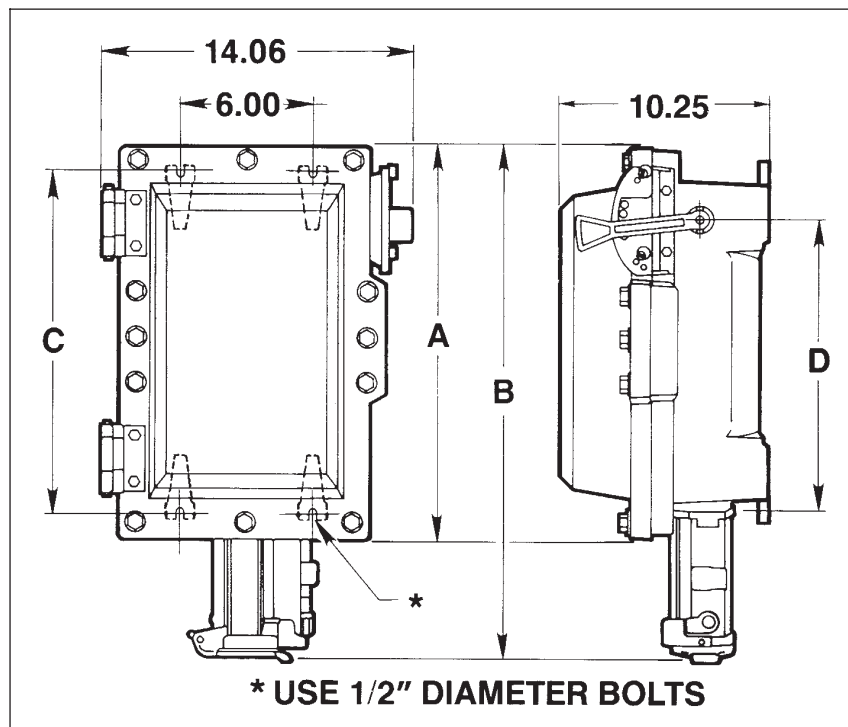
Aluminum APJ series



Krydon® material NPJ series
(non-metallic)

Both APJ and NPJ series plugs may be used with EBBR series interlocked receptacles.

Dimensions



3-wire, 4-pole Cat. No.

Amps	Cable O.D. Range	Aluminum	Krydon material
30	0.60 to 1.20	APJ3485	
	0.55 to 0.70		NPJ3483
	0.70 to 0.85		NPJ3484
60	0.75 to 1.45	APJ6485	
	0.75 to 1.07		NPJ6484
	1.07 to 1.35		NPJ6485
100	1.00 to 1.70	APJ10487	
	0.93 to 1.21		NPJ10486
	1.21 to 1.50		NPJ10487

Amps	EBBRA				EBBRB			
	A	B	C	D	A	B	C	D
30	19.40	22.85	17.25	14.50				
60	19.40	23.95	17.25	14.50	26.90	31.45	24.75	22.00
100	19.40	24.70	17.25	14.50	26.90	32.20	24.75	22.00

EPC Circuit Breakers and Enclosures with Interlocked Arktite® Receptacles

APJ/NPJ♦♦ and DP Arktite Plugs

Cl. I, Div. 1 and 2, Groups C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7CD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

Application:

- The EPC interlock receptacle is designed for use as a service outlet for portable equipment
- It is designed for use in damp, wet and corrosive locations, indoors or outdoors, in areas which are hazardous due to flammable vapors, gases or combustible dust. For example; refineries, chemical plants, and other processing and handling facilities of a hazardous nature

Features:

- Mechanical interlock mechanism for dead front construction
- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection
- A spring door receptacle, located at bottom of 30, 60 and 100 ampere units and at front of 200 ampere units, is mechanically interlocked with the circuit breaker operating mechanism for maximum safety
- Plug and receptacle contacts cannot be made or broken under load. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open
- Operating handles can be padlocked in either "ON" or "OFF" positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the "ON" position
- Quick installation and leveling is provided by the three-point mounting arrangement which has one keyhole slot at top and two open slots at bottom
- Bodies have four taper-tapped conduit hubs with integral bushings. Two are located at top and two directly below. Sizes are as shown in the listings.

Grounding:

- EPC interlocked receptacles and matching plugs are provided with an extra grounding pole for attaching a grounding wire. In addition, direct connection is provided between plug and receptacle and the grounding pole. If a separate grounding wire is not installed in the enclosure, grounding is accomplished through the conduit system.

Standard Materials:

- Bodies, covers and receptacle housings – copper-free aluminum
- Operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel
- Insulation (receptacles and plugs) – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – electrogalvanized with chromate finish
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

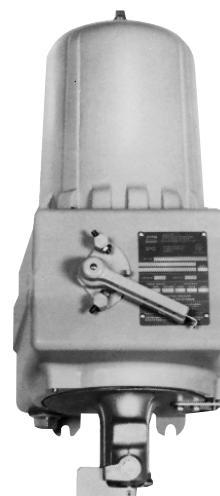
Electrical Rating Ranges:

- Receptacle ratings: 30, 60, 100 and 200 amperes
- Circuit breakers: 100 and 225 ampere frame sizes

Certifications and Compliances:

- NEC: Class I, Division 1 and 2, Groups C,D
Class II, Division 1 and 2, Groups F,G
Class III
- NEMA: 3,7CD,9FG,12
- ANSI/UL Standard: 1010
- CEC: Class I, Division 1 and 2, Groups C,D
Class II, Division 1 and 2, Group G
Class III
Encl., 3,4

30, 60 and
100-ampere
size EPC



200-ampere
size EPC

Options:

The following special options are available by adding suffix to Cat. No.

Description

Special polarity – used where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available on 30, 60 and 100 ampere units as follows:	
• Receptacle interior rotated 22½ degrees clockwise when viewed from face of receptacle and plug changed to match	S4
Side bosses drilled and tapped same size as standard hubs, 30, 60 and 100 ampere units only.	S366
Back boss drilled and tapped same size as standard hubs, 30, 60 and 100 ampere units only.	S367
Breather and drain (Class I, Class II).	S198V
Breather and drain (Class I only).	S454V

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts

♦ ♦ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 2, 3 and 4-pole 30 ampere, 3 and 4-pole 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example: APJ3365-T (Plug)

Suffix to be
Added to Encl.
Cat. #

EPC Circuit Breakers and Enclosures with Interlocked Arktite® Receptacles

Cl. I, Div. 1 and 2, Groups C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/IEC 3,7CD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

4P

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

● Plugs listed for use with 30, 60 and 100 ampere EPC assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ and CPH plugs of the same rating, style and number of poles may be used with EPC receptacles, as well as with DR receptacles listed in Section 2P and DBR, EBBR and EPCB receptacles listed elsewhere in this section.

● As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR/NR series receptacles for non-hazardous locations: EBBR, EPC and EPCB receptacles for Class I hazardous locations; DR and DBR receptacles for Class II hazardous locations.

CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

100 Ampere Frame Size Thermal-Magnetic Circuit Breaker with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Circuit Breaker			Enclosure					
Receptacle with Spring Door Housing	Rating		Section 6C	Hub Size	Ckt. Bkr. Amps	Without Circuit Breaker Cat. #	With Circuit Breaker	
			Table				Cutler-Hammer “EHD” Cat. #	General Electric “TED” Cat. #
30 amp. 2-wire, 3-pole, Style 2	2-pole, 480VAC‡ or 250VDC	600VAC	8	1¼	20 30 40* 50*	EPC43032	EPC43032-WT20-2 EPC43032-WT30-2 EPC43032-WT40-2 EPC43032-WT50-2	EPC43032-TT20-2 EPC43032-TT30-2 EPC43032-TT40-2 EPC43032-TT50-2
30 amp. 3-wire, 4-pole, Style 2	3-pole, 480VAC‡ or 250VDC	600VAC	8	1¼	20 30 40* 50*	EPC43042	EPC43042-WT20-3 EPC43042-WT30-3 EPC43042-WT40-3 EPC43042-WT50-3	EPC43042-TT20-3 EPC43042-TT30-3 EPC43042-TT40-3 EPC43042-TT50-3
60 amp. 2-wire, 3-pole, Style 2	2-pole, 480VAC‡ or 250VDC	600VAC	8	1¼ 2	50 60 70* 90* 100*	EPC46032 EPC66032	EPC46032-WT50-2 EPC66032-WT60-2 EPC66032-WT70-2 EPC66032-WT90-2 EPC66032-WT100-2	EPC46032-TT50-2 EPC66032-TT60-2 EPC66032-TT70-2 EPC66032-TT90-2 EPC66032-TT100-2
60 amp. 3-wire, 4-pole, Style 2	3-pole, 480VAC‡ or 250VDC	600VAC	8	1¼ 2	50 60 70* 90* 100*	EPC46042 EPC66042	EPC46042-WT50-3 EPC66042-WT60-3 EPC66042-WT70-3 EPC66042-WT90-3 EPC66042-WT100-3	EPC46042-TT50-3 EPC66042-TT60-3 EPC66042-TT70-3 EPC66042-TT90-3 EPC66042-TT100-3
100 amp. 2-wire, 3-pole, Style 2	2-pole, 480VAC‡ or 250VDC	600VAC	8	2	60 70 90 100	EPC61032	EPC61032-WT60-2 EPC61032-WT70-2 EPC61032-WT90-2 EPC61032-WT100-2	EPC61032-TT60-2 EPC61032-TT70-2 EPC61032-TT90-2 EPC61032-TT100-2
100 amp. 3-wire, 4-pole, Style 2	3-pole, 480VAC‡ or 250VDC	600VAC	8	2	60 70 90 100	EPC61042	EPC61042-WT60-3 EPC61042-WT70-3 EPC61042-WT90-3 EPC61042-WT100-3	EPC61042-TT60-3 EPC61042-TT70-3 EPC61042-TT90-3 EPC61042-TT100-3

225 Ampere Frame Size Circuit Breaker with Interchangeable Thermal Magnetic Trip†

Circuit Breaker				Enclosure				
Receptacle with Spring Door Housing		Section 6C		Hub Size	Ckt. Bkr. Amps	Without Circuit Breaker Cat. #	With Circuit Breaker	
		Table	List				Cutler-Hammer “KB” Cat. #	General Electric “TFK” Cat. #
200 amp.	3-pole,	11	12W	3	125	EPC604-2042	EPC604-2042-WT125-3	EPC605-2042-TT125-3
3-wire,	600VAC				150		EPC604-2042-WT150-3	EPC605-2042-TT150-3
4-pole,	or				175		EPC604-2042-WT175-3	EPC605-2042-TT175-3
Style 2	250VDC				200		EPC604-2042-WT200-3	EPC605-2042-TT200-3
					225*		EPC604-2042-WT225-3	EPC605-2042-TT225-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

† 200 ampere units are suitable for Class I, Group D (NEMA 7D).

‡ Enclosures with 600 volt circuit breakers from U.S.A. are available. Information on request.

CSA Certified units are supplied with 600VAC FDB frame circuit breakers.

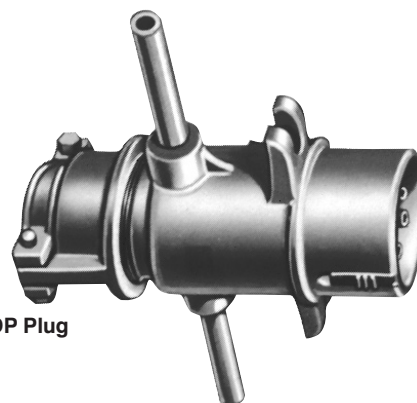
4P
Interlocked
Plugs and
Receptacles

4P

APJ/NPJ♦♦ and DP Arktime® Plugs with Cable Grip and Neoprene Bushing

Cl. I, Div. 1 and 2, Groups C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/IEC 3,7CD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations



APJ Plug

NPJ Plug

DP Plug

APJ/NPJ and DP Arktime Plugs

600VAC/250VDC with Cable Grip and Neoprene Bushing – Style 2

Amps	Cable O.D. Range	2-wire, 3-pole Cat. #	3-wire, 4-pole Cat. #
30	0.60 to 1.20	APJ3385	APJ3485
	0.55 to 0.70	NPJ3383	NPJ3483
	0.70 to 0.85	NPJ3384	NPJ3484
60	0.75 to 1.45	APJ6385	APJ6485
	0.75 to 1.07	NPJ6384	NPJ6484
	1.07 to 1.35	NPJ6385	NPJ6485
100	1.00 to 1.70	APJ10387	APJ10487
	0.93 to 1.21	NPJ10386	NPJ10486
	1.21 to 1.50	NPJ10387	NPJ10487
200	1.875 to 2.50		DP20468

Solder Only
.56 Wire Well

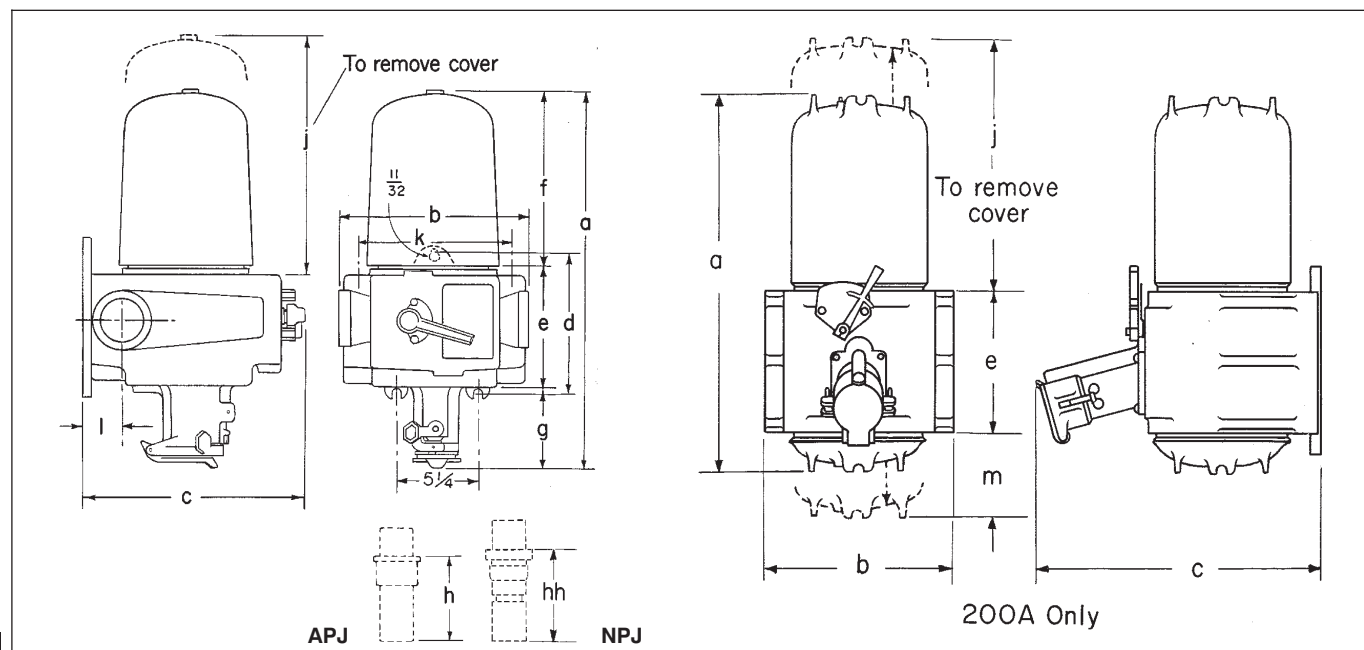
♦♦ Pressure connectors are supplied as standard. To specify crimp/solder type terminations add the suffix "T" to the catalog number. For example: APJ3385-T (Plug).

DP Wire Size

Building
#1 – 4/0

Extra Flex
#1 – 3/0

Dimensions



Interlocked
Plugs and
Receptacles
4P

Recept.	Breaker	a	b	c	d	e	f	g	h	hh	j	k	l	m
30 Amp.	20-50 Amp.	24	10 ⁵ / ₁₆	14 ³ / ₁₆	9 ³ / ₁₆	7 ¹¹ / ₁₆	11 ³ / ₄	4 ⁹ / ₁₆	4 ¹³ / ₁₆	7	20 ³ / ₄	7 ³ / ₈	1 ¹ / ₁₆	
60 Amp.	50 Amp.	24 ¹ / ₂	10 ⁵ / ₁₆	14 ³ / ₁₆	9 ³ / ₁₆	7 ¹¹ / ₁₆	11 ³ / ₄	5 ¹ / ₁₆	5 ¹³ / ₁₆	6 ¹³ / ₁₆	20 ³ / ₄	7 ³ / ₈	2 ¹ / ₁₆	
60 Amp.	70-100 Amp.	24 ¹ / ₂	12 ¹³ / ₁₆	14 ³ / ₁₆	9 ³ / ₁₆	7 ¹¹ / ₁₆	11 ³ / ₄	5 ¹ / ₁₆	5 ¹³ / ₁₆	6 ¹³ / ₁₆	20 ³ / ₄	9 ¹ / ₄	2 ⁵ / ₈	
100 Amp.	70-100 Amp.	25 ¹ / ₄	12 ¹³ / ₁₆	14 ³ / ₁₆	9 ³ / ₁₆	7 ¹¹ / ₁₆	11 ³ / ₄	5 ¹³ / ₁₆	6 ⁵ / ₈	7 ³ / ₄	20 ³ / ₄	9 ¹ / ₄	2 ⁵ / ₈	
200 Amp.	125-225 Amp.	36	18	27		13 ¹ / ₂					34 ¹ / ₄			5 ¹ / ₂

Dim. "h" and "hh" are exposed portion of plug when engaged with receptacle.

EPCB Circuit Breakers and Enclosures with Interlocked Arktime® Receptacles

APJ/NPJ Arktime Plugs ♦♦

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

4P

Application:

- The EPCB interlock receptacle is designed for use as a service outlet for portable equipment. The circuit breaker provides overcurrent and short circuit protection
- It has a mechanical interlock mechanism for dead front construction and no load make or break feature
- It is designed for use in damp, wet and corrosive locations, indoors or outdoor, in areas which are hazardous due to flammable vapors, gases or combustible dust. For example; refineries, chemical plants, and other processing and handling facilities of a hazardous nature

Features:

- Spring door receptacle located at the bottom is mechanically interlocked with the circuit breaker operating mechanism for maximum safety. Plug and receptacle contacts cannot be made or broken under load. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open
- Operating handles can be padlocked in either "ON" or "OFF" positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the "ON" position
- Quick installation and leveling is provided by the three-point mounting arrangement having one keyhole slot at top and two open slots at bottom
- Bodies have four 1¼" taper tapped conduit hubs with integral bushings. Two are located at top and two directly below
- When installing, seals suitable for Class I, Group B hazardous areas must be located within 1½" of each conduit opening

Grounding:

- EPCB interlocked receptacles and matching plugs are provided with an extra grounding pole for attaching a grounding wire. In addition, direct connection is provided between plug and receptacle and the grounding pole. If a separate grounding wire is not installed in the enclosure, grounding is accomplished through the conduit system

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with EPCB assemblies are standard *Arktime* APJ/NPJ plugs. Other standard APJ and CPH plugs of the same rating, style and number of poles may be used with EPCB receptacles as well as DR receptacles listed in Section 2P and DBR and EPC receptacles listed elsewhere in this section
- As a result, portable equipment suitable for the location and equipped with the proper plug can be used with AR/NR series receptacles for non-hazardous locations; EBBR, EPC and EPCB receptacles for Class I hazardous locations; DR and DBR receptacles for Class II hazardous locations

Standard Materials:

- Bodies, covers and receptacle housings – copper-free aluminum
- Operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Interior parts – sheet steel
- Insulation – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – natural
- Stainless steel – natural
- Sheet steel – zinc electroplate with chromate finish
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Electrical Rating Ranges:

- Receptacle ratings: 30, 60 and 100 amperes
- Circuit breakers: 100 ampere frame size

Options:

The following special options are available by adding suffix to Cat. No.:

Description

Special polarity. For use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows:

Receptacle interior rotated 22½ degrees to right (viewed from face) and plug changed to match

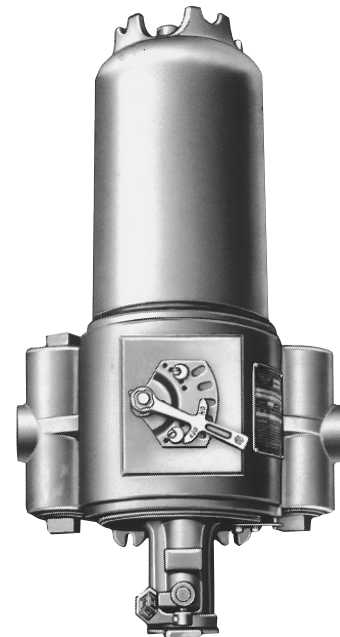
Side bosses drilled and tapped same size as standard hubs

Back boss drilled and tapped same size as standard hubs

S4 S366 S367

♦♦ Pressure connectors are supplied as standard.

To specify crimp/solder type terminations add the suffix "T" to the catalog number. For example: APJ3365-T (Plug)



Certifications and Compliances:

- NEC: Class I, Division 1 and 2, Groups B,C,D
Class II; Division 1 and 2, Groups F,G
Class III
- NEMA: 3,7BCD,9FG,12
- ANSI/UL Standard: 1010
- CEC: Class I, Division 1 and 2, Groups B,C,D
Class II, Division 1 and 2, Group G
Class III
- Encl.: 3,4

Suffix to be
Added to Encl.
Cat. #

4P
Interlocked
Plugs and
Receptacles

4P

EPCB Circuit Breakers and Enclosures with Interlocked Arktite® Receptacles

APJ/NPJ Arktite Plugs ♦♦

Cl. I, Div. 1 and 2, Groups B,C,D
Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EFC 3,7BCD,9FG,12
Explosionproof

Dust-Ignitionproof
Raintight
Wet Locations

100 Ampere Frame Size Thermal-Magnetic Circuit Breaker with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Circuit Breaker		Enclosure with Circuit Breaker			
Receptacle with Spring Door Housing	Rating	Hub Size	Ckt. Bkr. Amps	Cutler-Hammer	General Electric
30 amp. 2-wire, 3-pole, Style 2	2-pole, 600VAC or 250VDC	1 1/4	20	EPCB43632-WT20HFD-2	EPCB43632-TT20TED-2
			30	EPCB43632-WT30HFD-2	EPCB43632-TT30TED-2
			40*	EPCB43632-WT40HFD-2	EPCB43632-TT40TED-2
			50*	EPCB43632-WT50HFD-2	EPCB43632-TT50TED-2
30 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	1 1/4	20	EPCB43642-WT20HFD-3	EPCB43642-TT20TED-3
			30	EPCB43642-WT30HFD-3	EPCB43642-TT30TED-3
			40*	EPCB43642-WT40HFD-3	EPCB43642-TT40TED-3
			50*	EPCB43642-WT50HFD-3	EPCB43642-TT50TED-3
60 amp. 2-wire, 3-pole, Style 2	2-pole, 600VAC or 250VDC	1 1/4	50	EPCB46632-WT50HFD-2	EPCB46632-TT50TED-2
			60*	EPCB46632-WT60HFD-2	EPCB46632-TT60TED-2
			70*	EPCB46632-WT70HFD-2	EPCB46632-TT70TED-2
			90*	EPCB46632-WT90HFD-2	EPCB46632-TT90TED-2
			100*	EPCB46632-WT100HFD-2	EPCB46632-TT100TED-2
60 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	1 1/4	50	EPCB46642-WT50HFD-3	EPCB46642-TT50TED-3
			60*	EPCB46642-WT60HFD-3	EPCB46642-TT60TED-3
			70*	EPCB46642-WT70HFD-3	EPCB46642-TT70TED-3
			90*	EPCB46642-WT90HFD-3	EPCB46642-TT90TED-3
			100*	EPCB46642-WT100HFD-3	EPCB46642-TT100TED-3
100 amp. 2-wire, 3-pole, Style 2	2-pole, 600VAC or 250VDC	1 1/4	70	EPCB41632-WT70HFD-2	EPCB41632-TT70TED-2
			90	EPCB41632-WT90HFD-2	EPCB41632-TT90TED-2
			100	EPCB41632-WT100HFD-2	EPCB41632-TT100TED-2
100 amp. 3-wire, 4-pole, Style 2	3-pole, 600VAC or 250VDC	1 1/4	70†	EPCB41642-WT70HFD-3	EPCB41642-TT70TED-3
			90†	EPCB41642-WT90HFD-3	EPCB41642-TT90TED-3
			100†	EPCB41642-WT100HFD-3	EPCB41642-TT100TED-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

† For detailed information on circuit breaker selection see Section 6C.

♦♦ Pressure connectors are supplied as standard.
To specify crimp/solder type terminators add the suffix "T" to the catalog number.
For example: APJ3385-T (Plug)

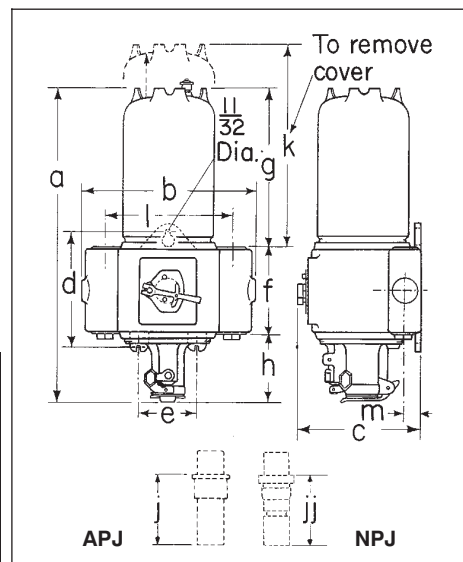


APJ Plug



NPJ Plug

Dimensions



APJ/NPJ Arktite Plugs 600VAC/250VDC with Cable Grip and Neoprene Bushing – Style 2

Amps	Cable O.D. Range	2-wire, 3-pole Cat. #	3-wire, 4-pole Cat. #
30	0.60 to 1.20	APJ3385	APJ3485
	0.55 to 0.70	NPJ3383	NPJ3483
	0.70 to 0.85	NPJ3384	NPJ3484
60	0.75 to 1.45	APJ6385	APJ6485
	0.75 to 1.07	NPJ6384	NPJ6484
	1.07 to 1.35	NPJ6385	NPJ6485
100	1.00 to 1.70	APJ10387	APJ10487
	0.93 to 1.21	NPJ10386	NPJ10486
	1.21 to 1.50	NPJ10387	NPJ10487

Receptacle	a	b	c	d	e	f	g	h	i	j	k	l	m
30 Amp.	26 1/4	11 5/16	11 3/4	8 5/8	5	7 3/4	13 9/16	4 13/16	7	24 3/4	8 3/16	1 5/8	
60 Amp.	26 3/4	11 5/16	11 3/4	8 5/8	5	7 3/4	13 9/16	5 1/16	5 13/16	6 13/16	24 3/4	8 3/16	1 5/8
100 Amp.	27 1/2	11 5/16	11 3/4	8 5/8	5	7 3/4	13 9/16	6 3/16	6 5/8	7 3/4	24 3/4	8 3/16	1 5/8

Dim "j" and "jj" are exposed portion of plug when engaged with receptacle.

DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

APJ/NPJ Arktite Plugs ♦ ♦

Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,9FG,12
Dust-Ignitionproof
Raintight

4P

Application:

DBR interlocked *Arktite* receptacles with enclosed circuit breakers and APJ/NPJ *Arktite* plugs are used:

- to supply power to portable electrical equipment such as motor-generator sets, compressors, heating and cooling units, conveyors, and similar equipment
- in locations where hazardous dusts are present, as in grain processing and handling plants, chemical plants and certain food processing industries
- indoors or outdoors in damp, wet or corrosive locations

Features:

- Receptacles are mechanically interlocked with circuit breakers to provide disconnect means, short circuit protection and thermal time delay overload protection.
- Enclosures are compact and rectangular in shape permitting close spacing.
- For maximum safety, the spring door receptacle at the bottom is mechanically interlocked with the circuit breaker operating mechanism. The circuit breaker cannot be closed until the plug is fully inserted and the plug cannot be withdrawn unless the breaker is open.
- Operating handles can be padlocked in either "ON" or "OFF" positions. Breakers are trip-free of the handles and will open under short circuit or overload even if the handle is locked in the "ON" position.
- Enclosure is provided with a drilled and tapped conduit opening at top center, equipped with a threaded-in bushing. The size furnished is 1½", and removing the bushing permits the use of a 2" conduit.

Interchangeability of Plugs with Other Hazardous and Non-Hazardous Location Receptacles:

- Plugs listed for use with DBR assemblies are standard *Arktite* APJ/NPJ plugs. Other standard APJ/NPJ and CPH plugs of the same rating, style and number of poles may be used with DBR receptacles, as well as with DR receptacles listed in Section 2P and with EBBR, EPC and EPCB receptacles listed in Section 4P.
- As a result, portable equipment suitable for the locations and equipped with the proper plug can be used with AR receptacles for non-hazardous locations, with EBBR, EPC and EPCB receptacles for Class I hazardous locations, and with DR and DBR interlocked receptacles for Class II hazardous locations.

Standard Materials:

- Bodies, covers and operating handles – copper-free aluminum
- Operating shafts – stainless steel
- Receptacle housings and plug exteriors – copper-free aluminum
- Insulation: plugs and receptacles – fiberglass-reinforced polyester
- Pressure contacts – brass
- Crimp/solder contacts – leaded red brass

Standard Finishes:

- Copper-free aluminum – plug exterior, enclosure and receptacle housing – natural
- Stainless steel – natural
- Brass – natural
- Fiberglass-reinforced polyester – natural (red)
- Leaded red brass – electro-tin-plate

Options:

The following special options are available by adding suffix to Cat. No.

Suffix to be Added to Cat. #

Description

Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages.

Available as follows:

- Receptacle interior rotated 22½ degrees clockwise when viewed from receptacle face and plug changed to match S4
 - Breather (drain furnished as standard) S219
- Conduit arrangements other than standard can be supplied. Details on request

Certifications and Compliances:

- NEC: Class II, Division 1 and 2, Groups F,G Class III
- NEMA/EEMAC: 3, 9FG, 12
- UL Standard: 698, 1010
- CEC: Class II, Division 1 and 2, Group G Class III
- Encl.: 3,5

Electrical Rating Ranges:

- Receptacle ratings: 30, 60 and 100 amperes
- Circuit breakers – 100 ampere frame size

Amps	a	b	bb
30	21¾	6½	7
60	22¾	8½	613/16
100	23½	10½	7¾

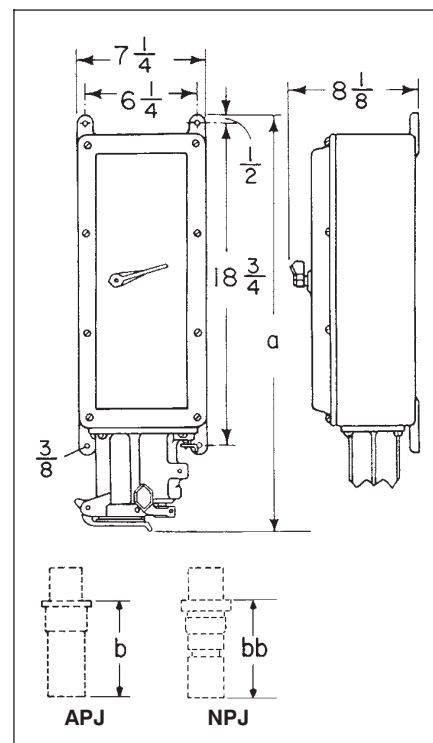
Dim. "b" and "bb" are exposed portion of plug when engaged with receptacle.



CAUTION: To reduce the risk of ignition of hazardous atmospheres, do not use plugs or receptacles in Class II, Group F locations that contain electrically conductive dusts.

♦ ♦ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole, 30, 60 and 100 ampere. For details, see table on page 969. To specify, add the suffix "T" to the catalog number. For example: AP3375-T (Plug)

Dimensions:



4P
Interlocked
Plugs and
Receptacles

DBR Interlocked Arktite® Receptacles With Enclosed Circuit Breakers

Cl. II, Div. 1 and 2, Groups F,G
Cl. III
NEMA/EEMAC 3,9FG,12
Dust-Ignitionproof
Raintight

100 Ampere Frame Size with Non-Interchangeable Thermal Trip and Non-Adjustable Magnetic Trip

Receptacle With Spring Door Housing†	Circuit Breaker Rating	Enclosure		Without Circuit Breaker Cat. #	With Circuit Breaker Cat. # Cutler-Hammer "FDB"
		Hub Size	Ckt. Bkr. Amps		
30 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	20	DBR53731	DBR53731-WT20-3
			30		DBR53731-WT30-3
			40		DBR53731-WT40-3*
			50		DBR53731-WT50-3*
30 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	20	DBR53732	DBR53732-WT20-2
			30		DBR53732-WT30-2
			40		DBR53732-WT40-2*
			50		DBR53732-WT50-2*
30 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	20	DBR53742	DBR53742-WT20-3
			30		DBR53742-WT30-3
			40		DBR53742-WT40-3*
			50		DBR53742-WT50-3*
60 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	50	DBR56731	DBR56731-WT50-3
			60		DBR56731-WT60-3
			70		DBR56731-WT70-3*
			90		DBR56731-WT90-3*
			100		DBR56731-WT100-3*
60 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	50	DBR56732	DBR56732-WT50-2
			60		DBR56732-WT60-2
			70		DBR56732-WT70-2*
			90		DBR56732-WT90-2*
			100		DBR56732-WT100-2*
60 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	50	DBR56742	DBR56742-WT50-3
			60		DBR56742-WT60-3
			70		DBR56742-WT70-3*
			90		DBR56742-WT90-3*
			100		DBR56742-WT100-3*
100 amp., 3-wire, 3-pole, Style 1	3-pole 600VAC	1½	60	DBR51731	DBR51731-WT60-3
			70		DBR51731-WT70-3
			90		DBR51731-WT90-3
			100		DBR51731-WT100-3
100 amp., 2-wire, 3-pole, Style 2	2-pole 600VAC or 250VDC	1½	60	DBR51732	DBR51732-WT60-2
			70		DBR51732-WT70-2
			90		DBR51732-WT90-2
			100		DBR51732-WT100-2
100 amp., 3-wire, 4-pole, Style 2	3-pole 600VAC	1½	60	DBR51742	DBR51742-WT60-3
			70		DBR51742-WT70-3
			90		DBR51742-WT90-3
			100		DBR51742-WT100-3

* Circuit breaker trip rating may exceed receptacle rating for welding equipment applications only, as higher trip rating may not protect wiring.

◆◆ Pressure connectors are standard. Crimp/solder type terminators are optionally available for 3 and 4-pole 30, 60 and 100 ampere. For details, see table on page 969.

To specify, add the suffix "T" to the catalog number. For example: APJ3375-T (Plug)

† Style 1 – Grounded through shell.

Style 2 – Grounded through extra pole and shell. For a detailed description of these grounding methods, see page 967.

‡ For circuit breaker Cat. No. refer to Section 6C, Table 9, List FDB. For detailed information on circuit breaker selection, see Section 6C.

APJ/NPJ Arktite Plugs 600VAC/250VDC with Cable Grip and Neoprene Bushing



APJ Plug



NPJ Plug

Amps	Cable O.D. Range	Style 1†	Style 2†
		3-wire, 3-pole Cat. #	2-wire, 3-pole Cat. #
30	0.60 to 1.20	APJ3375	APJ3385
	0.55 to 0.70		NPJ3383
	0.70 to 0.85		NPJ3384
60	0.75 to 1.45	APJ6375	APJ6385
	0.75 to 1.07		NPJ6384
	1.07 to 1.35		NPJ6385
100	1.00 to 1.70	APJ10377	APJ10387
	0.93 to 1.21		NPJ10386
	1.21 to 1.50		NPJ10387
			3-wire, 4-pole Cat. #
			APJ3485
			NPJ3483
			NPJ3484
			APJ6485
			NPJ6484
			NPJ6485
			APJ10487
			NPJ10486
			NPJ10487

Description	Page No.
Non-Hazardous Plugs, Receptacles, Interlocks	
Applications, Technical Data	1064-1067
Ordering Information	1068, 1069
Hazardous Plugs, Interlocks	
Applications, Technical Data	1070, 1071
Ordering Information	1072, 1073
Back Boxes, Accessories, Tech Data	1074, 1075
Angled Back Box Adapters	1076
Adapter Plates	1077



Applications

- wet location & hosedown areas
- damp or corrosive locations
- food processing, wastewater, shipyard, marina, restaurant, construction site, HVAC and convention centers

Features

- voltage configured, color coded
- watertight
- impact and corrosion resistant
- receptacles mount to Cooper Crouse-Hinds back boxes
- innovative finger lock keeps cord grip secured
- positive grommet seal system at cord entry
- funneled wire pockets
- lockout/tagout
- high grade brass contacts
- VØ insulating material
- multi-lam sleeve bands

Standard Materials

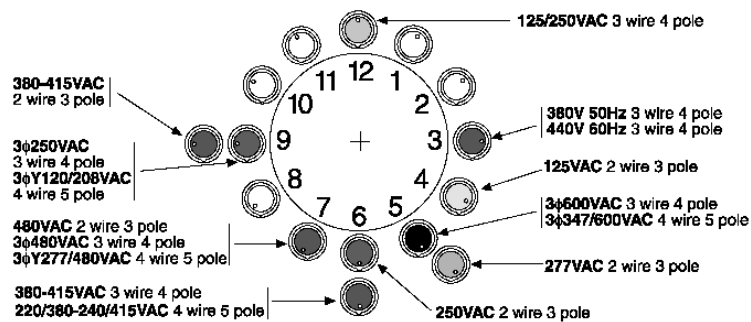
- receptacle housing: RIP, nylon, VØ
- contact carrier: fiber-reinforced thermoplastic, VØ
- pins & sleeves: brass
- multi-lam bands: copper beryllium
- assembly screws: stainless steel
- plug: type ½ nylon, VØ
- receptacle hinge pin: stainless steel
- gaskets: silicon

Certifications & Compliances

- listed UL 498, 1682 & 1686
- CSA C22.2 no. 182.1
- IEC 309-1 & 309-2
- NEMA 4X
- IEC IP66

Making a connection is easy

A clock face is used to represent the grounding contact position for all female connectors and receptacles. With the keyway at the bottom, the female grounding contact will appear to one of the twelve hour positions. To identify the system voltage, identify the housing color and hour location of the connector or receptacle grounding contact.



Ordering is easy

We've made our catalog number ordering system as easy to use as our products! Simply follow the six-part "code":

CH Prefix	4 1st digit	20 2nd-4th digit	R 1st letter	7 Last digit	W Last letter
CH = Cooper Crouse-Hinds	3 = 3 pole 4 = 4 pole 5 = 5 pole	16 = 16 Amp 20 = 20 Amp 30 = 30 Amp 32 = 32 Amp 60 = 60 Amp 63 = 63 Amp 100 = 100 Amp 125 = 125 Amp	P = Plug C = Connector R = Receptacle B = Inlet MI = Mechanical Interlock	Clock position of female grounding contact	W = Watertight

IEC 309 Pin & Sleeve Plugs & Receptacles

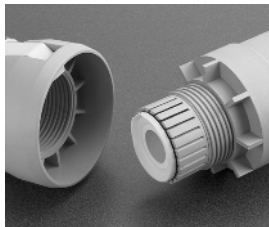
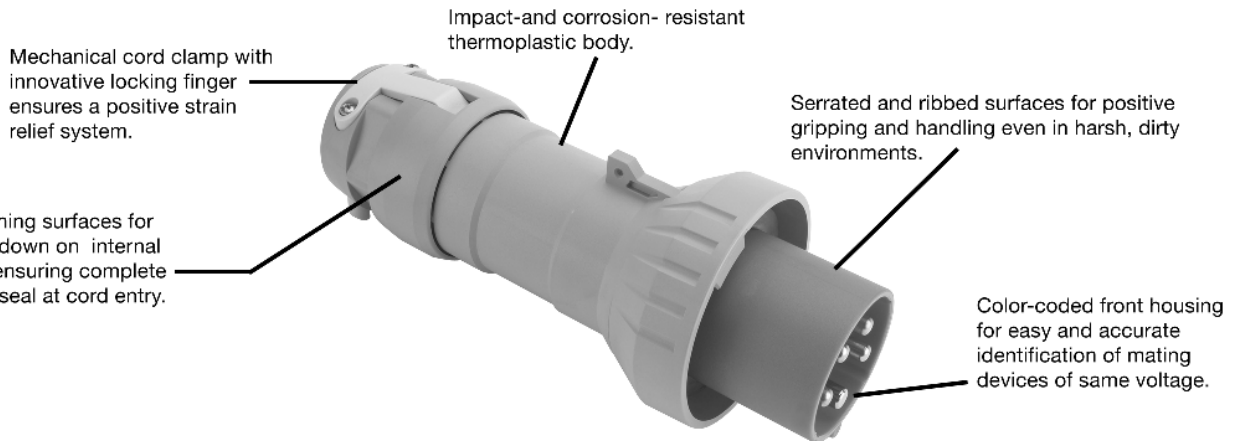
20, 30, 60 & 100A - Series 2

16, 32, 63 & 125A - Series 1

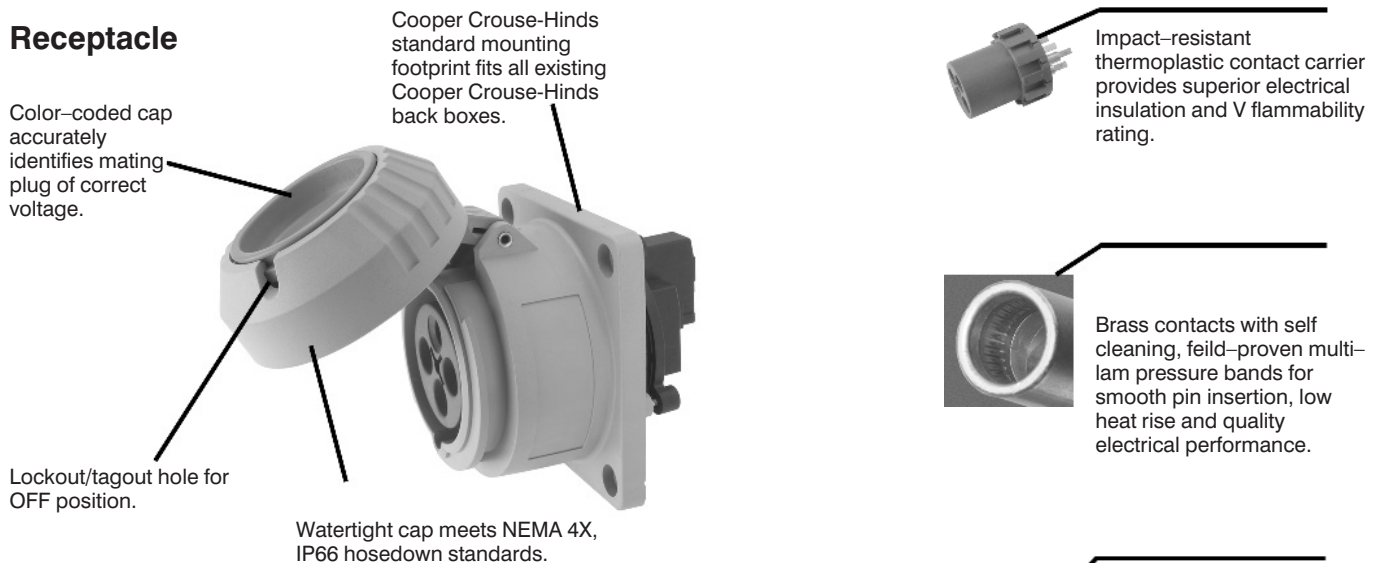
NEMA 4X
IP 66
Watertight

5P

Plug



Receptacle



Applications

- to supply power to portable or fixed electrical equipment such as welders, motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in damp or corrosive locations
- in wet locations
- in hosedown areas
- for short-circuit protection when ordered with optional fusing

Features

- Mechanically interlocked, dead-front receptacle – plug cannot be engaged or disengaged under load
- Enclosure has continuous form-in-place gasket
- meets OSHA's lockout/tagout requirements – can be padlocked in "OFF" position
- industrial switch is horsepower-rated for motor load applications
- available with optional fusing for short-circuit protection

Certifications & Compliances

- UL Standards 508, 1682
- CSA Standard C22.2 Nos. 14, 182.1
- Enclosure type: 3, 4X, 12
- IP66

Standard Materials

- enclosure: fiber-reinforced polyester
- external hardware: stainless steel
- contacts: brass
- contact carrier: fiber-reinforced thermoplastic

Horsepower ratings

Amps	Description	Three Phase		
		250VAC	480VAC	600VAC
20A	Unfused	7.5	15	20
30A	Unfused	10	20	25
	Fused*	10	20	25
60A	Unfused	20	40	40
	Fused*	20	40	50
100A	Unfused	25	50	40

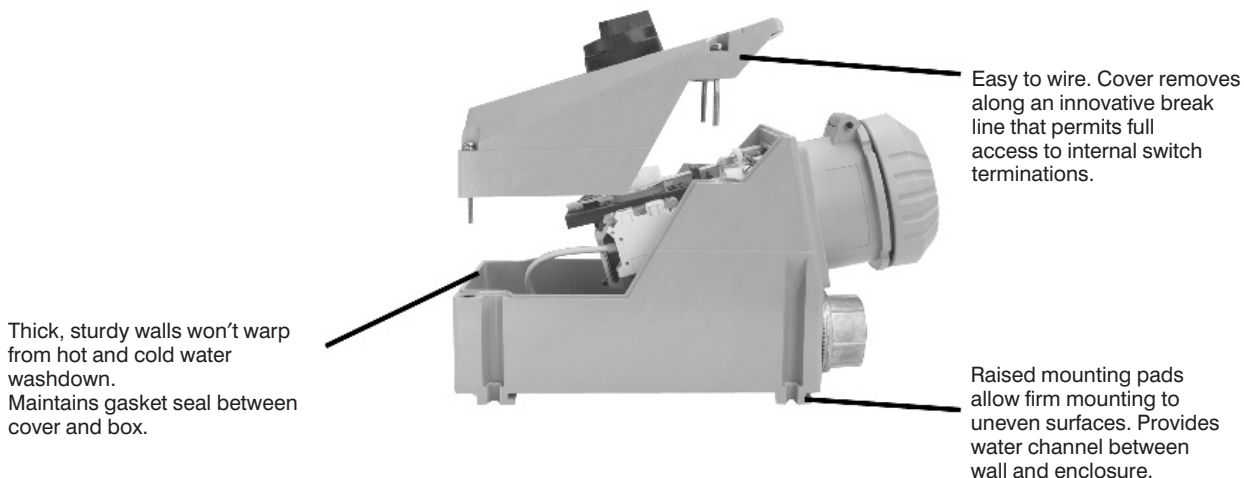
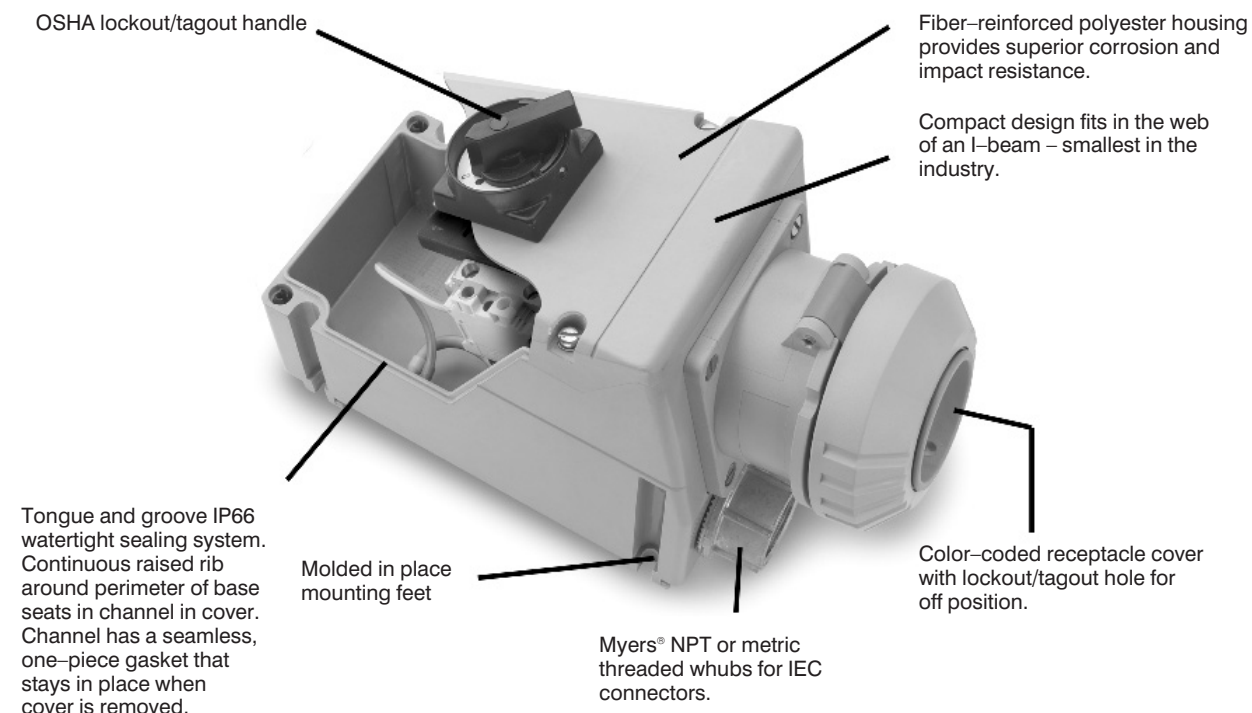
* See bulletin #4671

IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

20 & 30A - North America Ratings Series 2
16 & 32A - International Ratings Series 1

NEMA 4X
IP 66
Watertight

5P



Options

- Auxiliary contacts for PLC or pilot light applications—add suffix [S483]

5P

IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

20 & 30A - North America Ratings Series 2
16 & 32A - International Ratings Series 1

NEMA 4X
IP 66
Watertight

Ordering Information:

					Watertight Devices				
Amps	Wires and Poles	CONFIGURATION		Voltage					
		Recept./Conn.	Plug/Inlet		RECEPTACLE	PLUG	CONNECTOR	INLET	INTERLOCK UNFUSED
16A	2W3P			110-120	CH316R4W	CH316P4W	CH316C4W	CH316B4W	CH316MI4W*
	2W3P			220-240	CH316R6W	CH316P6W	CH316C6W	CH316B6W	CH316MI6W*
	3W4P			380-415	CH416R6W	CH416P6W	CH416C6W	CH416B6W	CH416MI6W
	4W5P			220\380 240\415	CH516R6W	CH516P6W	CH516C6W	N/A	CH516MI6W*
20A	2W3P			125	CH320R4W	CH320P4W	CH320C4W	CH320B4W	CH320MI4W*
	2W3P			250	CH320R6W	CH320P6W	CH320C6W	CH320B6W	CH320MI6W*
	2W3P			480	CH320R7W	CH320P7W	CH320C7W	CH320B7W	CH320MI7W*
	3W4P			125\250	CH420R12W	CH420P12W	CH420C12W	CH420B12W	CH420MI12W
	3W4P			3Ø250	CH420R9W	CH420P9W	CH420C9W	CH420B9W	CH420MI9W
	3W4P			3Ø480	CH420R7W	CH420P7W	CH420C7W	CH420B7W	CH420MI7W
	3W4P			3Ø600	CH420R5W	CH420P5W	CH420C5W	CH420B5W	CH420MI5W
	4W5P			3ØY120\208	CH520R9W	CH520P9W	CH520C9W	N/A	CH520MI9W*
	4W5P			3ØY277\480	CH520R7W	CH520P7W	CH520C7W	N/A	CH520MI7W*
	4W5P			3ØY347\600	CH520R5W	CH520P5W	CH520C5W	N/A	CH520MI5W*
	2W3P			125	CH330R4W	CH330P4W	CH330C4W	CH330B4W	CH330MI4W
	2W3P			250	CH330R6W	CH330P6W	CH330C6W	CH330B6W	CH330MI6W
30A	2W3P			480	CH330R7W	CH330P7W	CH330C7W	CH330B7W	CH330MI7W
	3W4P			3Ø250	CH430R9W	CH430P9W	CH430C9W	CH430B9W	CH430MI9W
	3W4P			3Ø480	CH430R7W	CH430P7W	CH430C7W	CH430B7W	CH430MI7W
	3W4P			3Ø600	CH430R5W	CH430P5W	CH430C5W	CH430B5W	CH430MI5W
	4W5P			3ØY120\208	CH530R9W	CH530P9W	CH530C9W	N/A	CH530MI9W
	4W5P			3ØY277\480	CH530R7W	CH530P7W	CH530C7W	N/A	CH530MI7W
	4W5P			3ØY347\600	CH530R5W	CH530P5W	CH530C5W	N/A	CH530MI6W
	2W3P			110-120	CH332R4W	CH332P4W	CH332C4W	CH332B4W	CH332MI4W
	2W3P			220-240	CH332R6W	CH332P6W	CH332C6W	CH332B6W	CH332MI6W
	3W4P			380-415	CH432R6W	CH432P6W	CH432C6W	CH432B6W	CH432MI6W
	4W5P			220\380	CH532R6W	CH532P6W	CH532C6W		CH532MI6W

* Alternate Switch Design. Does not have a switch handle. Switch is activated by inserting plug: rotating plug to turn switch 'ON'.

IEC 309 Pin & Sleeve Mechanical Interlocks Nonhazardous

NEMA 4X
IP 66
Watertight

5P

20 & 30A - North America Ratings Series 2
16 & 32A - International Ratings Series 1

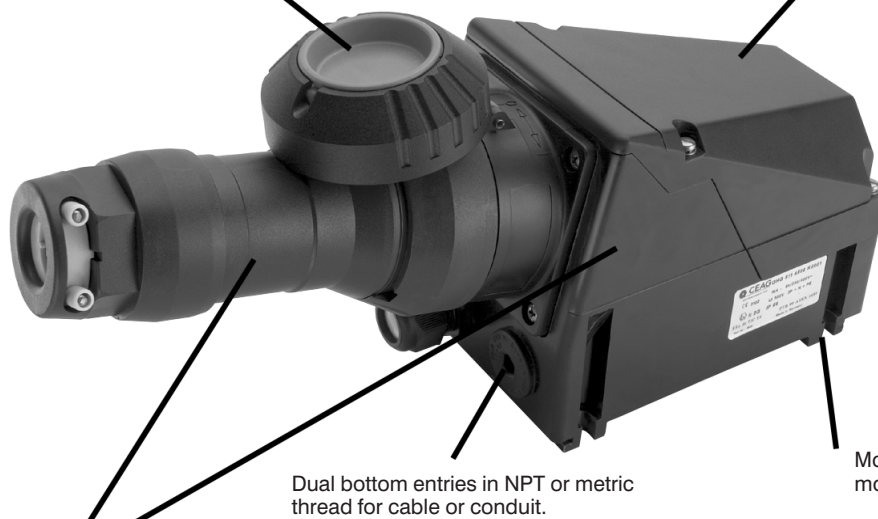
Ordering Information:

				Watertight Devices					
									
Amps	Wires and Poles	CONFIGURATION Recept./Conn. Plug/Inlet	Voltage	RECEPTACLE	PLUG	CONNECTOR	INLET	INTERLOCK UNFUSED	
60A	2W3P			125	CH360R4W	CH360P4W	CH360C4W	CH360B4W	CH360MI4W
	2W3P			250	CH360R6W	CH360P6W	CH360C6W	CH360B6W	CH360MI6W
	2W3P			480	CH360R7W	CH360P7W	CH360C7W	CH360B7W	CH360MI7W
	3W4P			125\250	CH460R12W	CH460P12W	CH460C12W	CH460B12W	CH460MI12W
	3W4P			3Ø250	CH460R9W	CH460P9W	CH460C9W	CH460B9W	CH460MI9W
	3W4P			3Ø480	CH460R7W	CH460P7W	CH460C7W	CH460B7W	CH460MI7W
	3W4P			3Ø600	CH460R5W	CH460P5W	CH460C5W	CH460B5W	CH460MI5W
	4W5P			3ØY120\208	CH560R9W	CH560P9W	CH560C9W	CH560B9W	CH560MI9W
	4W5P			3ØY277\480	CH560R7W	CH560P7W	CH560C7W	CH560B7W	CH560MI7W
63A	2W3P			220-240	CH363R6W	CH363P6W	CH363C6W	CH363B6W	CH363MI6W
	3W4P			380-415	CH463R6W	CH463P6W	CH463C6W	CH463B6W	CH463MI6W
	4W5P			220\380 240\415	CH563R6W	CH563P6W	CH563C6W	CH563B6W	CH563MI6W
	4W5P			3ØY347\600	CH560R5W	CH560P5W	CH560C5W	CH560B5W	CH560MI5W
100A	2W3P			125	CH3100R4W	CH3100P4W	CH3100C4W	CH3100B4W	CH3100MI4W
	2W3P			250	CH3100R6W	CH3100P6W	CH3100C6W	CH3100B6W	CH3100MI6W
	2W3P			480	CH3100R7W	CH3100P7W	CH3100C7W	CH3100B7W	CH3100MI7W
	3W4P			125\250	CH4100R12W	CH4100P12W	CH4100C12W	CH4100B12W	CH4100MI12W
	3W4P			3Ø250	CH4100R9W	CH4100P9W	CH4100C9W	CH4100B9W	CH4100MI9W
	3W4P			3Ø480	CH4100R7W	CH4100P7W	CH4100C7W	CH4100B7W	CH4100MI7W
	3W4P			3Ø600	CH4100R5W	CH4100P5W	CH4100C5W	CH4100B5W	CH4100MI5W
	4W5P			3ØY120\208	CH5100R9W	CH5100P9W	CH5100C9W	CH5100B9W	CH5100MI9W
	4W5P			3ØY277\480	CH5100R7W	CH5100P7W	CH5100C7W	CH5100B7W	CH5100MI7W
	4W5P			3ØY347\600	CH5100R5W	CH5100P5W	CH5100C5W	CH5100B5W	CH5100MI5W
125A	2W3P			220-240	CH3125R6W	CH3125P6W	CH3125C6W	CH3125B6W	CH3125MI6W
	3W4P			380-415	CH4125R6W	CH4125P6W	CH4125C6W	CH4125B6W	CH4125MI6W
	4W5P			220\380 240\415	CH5125R6W	CH5125P6W	CH5125C6W	CH5125B6W	CH5125MI6W

5P IEC 309 Pins, Receptacles, Interlocks

Color-coded receptacle cover and plug.

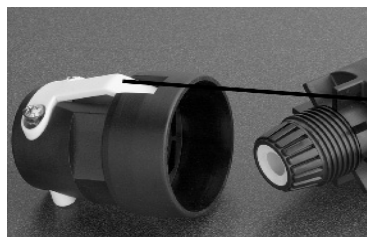
Rainshedding watertight profile.



Fiber-reinforced nylon type 12 impact – and corrosion-resistant enclosure and plug.

Dual bottom entries in NPT or metric thread for cable or conduit.

Molded in place mounting feet.

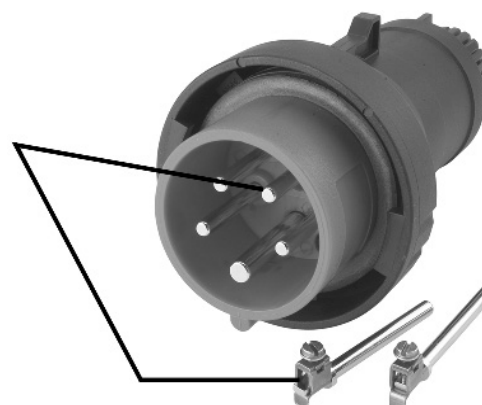


Locking finger seats into web pockets securing back cap in place even under heavy usage and vibration.

HEAVY DUTY STRAIN RELIEF

Offering superior pullout protection and significantly reducing the occurrence of seal failure, our external strain relief system absorbs all tensile and torsional forces. In addition, an extremely long and dependable inside seal provides added protection.

Nickel-plated brass contacts offer long life-corrosion protection. Compression lugs provide reliable mechanical wire termination.



Brass contacts with field-proven, self-cleaning multi-lam pressure bands for smooth plug insertion, low heat rise and uniform electrical contact.



Easy to wire. Cover removes along an innovative break line that permits full access to internal switch terminations.



Factory sealed switch provides Zone 1 & 2, Div. 2 explosion protection. Receptacle is dead-front until plug is fully engaged and rotated to activate switch. Plug cannot be removed under load. Switch is horsepower, and AIC-rated.

Applications

IEC 309 explosion protected devices are used:

- to supply power to portable or fixed electrical equipment
- where hazardous gases may be present
- in damp or wet locations
- where impact and corrosion resistance are required
- where compact equipment is required in tight spaces

Features

- mechanically interlocked plug and receptacle—plug cannot be engaged or disengaged under load
- simple “insert plug and twist” design to activate internal switch
- self cleaning multi-lam contacts provide reliable power connection
- compact size, easy to handle and install
- OSHA lockout/tagout
- dual bottom entry zone 1 Myers® hubs
- full wiring access, saves time and money
- VØ rated materials

Standard Materials

- enclosure: type 12 nylon
- plug body: fiber-reinforced nylon
- hardware: stainless steel
- contacts: brass

Certifications

- AEx de IIc T6
- Class I, Zone I, Div. 2, Groups A, B, C & D
- EEx ed IIc T6
- (EX LOGO) II 2G/D
- UL, cUL*
- PTB 99 ATEX 1039
- IP66, NEMA 4X
- CE
- VDE

* 20A, 30A, 60A, 100A Pin Configuration to IEC 309-1/2 Series 2 - U.L. Listed
16A, 32A, 63A, 125A Pin Configuration to IEC 309-1/2 Series 1 - Not U.L. Listed

Ordering Information:

Amps	Cable Gland	Myers Hub	Wires and Poles	CONFIGURATION		Voltage		
				Recept./Conn.	Plug/Inlet		INTERLOCK RECEPTACLE	PLUG
16A	M20		2W3P			110-120	GHG 511 4304 R3001	GHG 511 7304 R0001
	M20		2W3P			220-240	GHG 511 4306 R3001	GHG511 7306 R0001
	M25		3W4P			220-240	GHG 511 4409 R3001	GHG 511 7409 R0001
	M25		3W4P			380.415	GHG 511 4406 R3001	GHG 511 7406 R0001
	M25		3W4P			500	GHG 511 4407 R3001	GHG 511 7407 R0001
	M25		3W4P			690	GHG 511 4405 R3001	GHG 511 7405 R0001
	W25		4W5P			380-415	GHG 511 4506 R3001	GHG 511 7506 R0001
20A		1/2	2W3P			125	GHG 511 4304 L3001	GHG 511 7304 L0001
		1/2	2W3P			250	GHG 511 4306 L3001	GHG 511 7306 L0001
		3/4	3W4P			3Ø250	GHG 511 4409 L3001	GHG 511 7409 L0001
		3/4	3W4P			3Ø480	GHG 511 4407 L3001	GHG 511 7407 L0001
		3/4	3W4P			3Ø600	GHG 511 4405 L3001	GHG 511 7405 L0001
30A		1	3W4P			3Ø250	GHG 512 4409 L3001	GHG 512 7409 L0001
		1	3W4P			3Ø480	GHG 512 4407 L3001	GHG 512 7407 L0001
		1	3W4P			3Ø600	GHG 512 4405 L3001	GHG 512 7405 L0001
32A	M32		3W4P			220-240	GHG 512 4409 R3001	GHG 512 7409 R0001
	M32		3W4P			380-415	GHG 512 4406 R3001	GHG 512 7406 R0001
	M32		3W4P			500	GHG 512 4407 R3001	GHG 512 7407 R0001
	M32		3W4P			690	GHG 512 4405 R3001	GHG 512 7405 R0001
	M32		4W5P			380-415	GHG 512 4506 R3001	GHG 512 7506 R0001
60A		1 1/4	3W4P			3Ø250	GHG 514 4409 L3001	GHG 514 7409 L0001
		1 1/4	3W4P			3Ø480	GHG 514 4407 L3001	GHG 514 7407 L0001
		1 1/4	3W4P			3Ø600	GHG 514 4405 L3001	GHG 514 7405 L0001

IEC 309 Hazardous Area Plugs & Interlocks

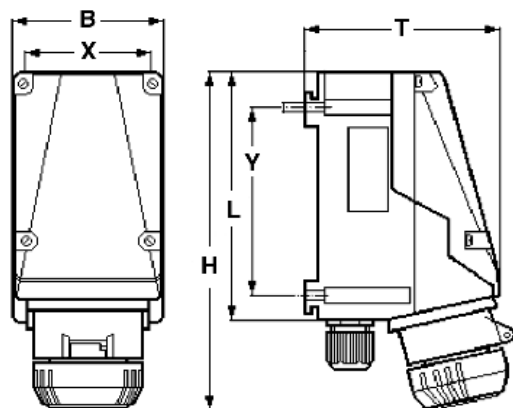
Class I, Zone 1 & 2, Div. 2,
NEMA 4X, IP66

5P

Ordering Information:

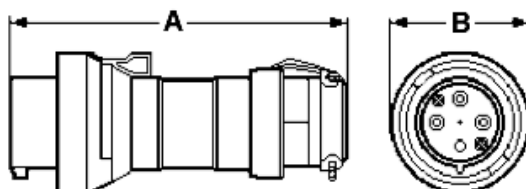
Amps	Cable Gland	Myers Hub	Wires and Poles	CONFIGURATION		Voltage		
				Recept./Conn.	Plug/Inlet			
63A	M40		3W4P			220-240	GHG 514 4409 R3001	GHG 514 7409 R0001
	M40		3W4P			380-415	GHG 514 4506 R3001	GHG 514 7406 R0001
	M40		3W4P			500	GHG 514 4407 R3001	GHG 514 7407 R0001
	M40		3W4P			690	GHG 514 4405 R3001	GHG 514 7405 R0001
	M40		4W5P			380-415	GHG 514 4506 R3001	GHG 514 7506 R0001
100A		1 1/2	3W4P			125\250	GHG 515 4412 L3001	GHG 515 7412 L0001
		1 1/2	3W4P			3Ø250	GHG 515 4409 L3001	GHG 515 7409 L0001
		1 1/2	3W4P			3Ø480	GHG 515 4407 L3001	GHG 515 7407 L0001
		1 1/2	3W4P			3Ø600	GHG 515 4405 L3001	GHG 515 7405 L0001
		1 1/2	4W5P			690	GHG 515 4506 L3001	GHG 515 7506 L0001
125A	M63		3W4P			220-240	GHG 515 4409 R3001	GHG 515 7409 R0001
	M63		3W4P			380-415	GHG 515 4406 R3001	GHG 515 7406 R0001
	M63		3W4P			500	GHG 515 4407 R3001	GHG 515 7407 R0001
	M63		3W4P			690	GHG 515 4405 R3001	GHG 515 7405 R0001
	M63		4W5P			380-415	GHG 515 4506 R3001	GHG 515 7506 R0001

Dimensional Data (inches)

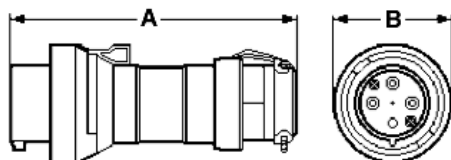


	20\16A		30\32A	60\63A	100\125A
	3P	4\5P	4\5P	4\5P	
B	3.5	4.3	4.7	7.9	8.9
X	3.15	3.94	4.33	7.09	8.10
T	4.8	5.8	6.6	8.9	10.0
Y	4.53	5.31	6.70	10.87	11.90
L	6.1	6.9	8.1	14.6	13.3
H	8.8	9.3	11.5	18.7	21.1

	20\16A		30\32A	60\63A	100\125A
	3P	4P 5P	4\5P	4\5P	
A	6.7	7.4 7.4	9.8	10.7	12.32
B	2.8	3.0 3.3	3.9	4.3	5.16
CORD DIA. RANGE (in.)	.515-.827		.515-1.102	.630-1.378	.827-2.28

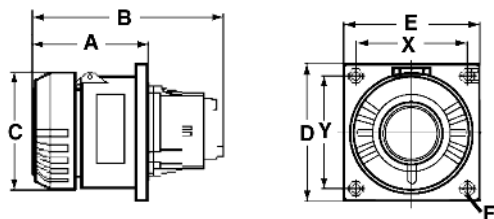


Plug Dimensions



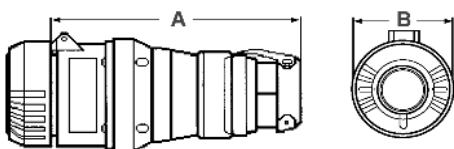
Amps	A	B	CORD RANGE		
			3 Pole	4 Pole	5 Pole
20\16A	7.37	3.00	.315-.748	.315-.748	.472-.827
30\32a	7.37	3.00	.314-.748	.315-.748	.472-.827
60\63a	10.71	4.33	.630-1.378	.630-1.378	.827-1.378
100\125A	12.32	5.16	.827-1.89	.827-2.28	1.22-2.28

Receptacle Dimensions



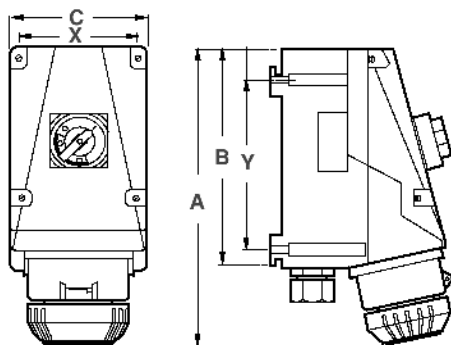
Amps	A	B	C	D	E	F DIA.	MTC. DIMS.	
							X	Y
20\16A	2.95	4.37	3.31	3.38	3.38	.236	2.74	2.74
30\32A	3.35	4.92	3.74	3.38	3.38	.236	2.74	2.74
60\63A	4.57	6.18	4.61	4.13	4.13	.236	3.50	3.50
100\125A	4.81	6.56	4.80	5.12	5.32	.250	4.09	4.09

Connector Dimensions



Amps	A	B	CORD RANGE		
			3 Pole	4 Pole	5 Pole
20\16A	8.58	3.38	.315-.748	.315-.827	.472-.827
30\32A	10.40	3.82	.315-.748	.315-.827	.472-.827
60\63A	12.52	4.61	.630-1.378	.630-1.378	.827-1.378
100\125A	13.40	5.32	.827-1.89	.827-2.28	1.22-2.28

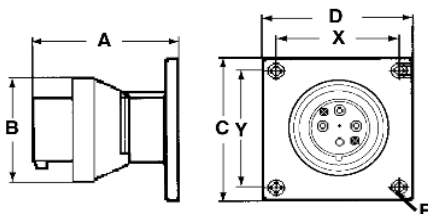
Interlock Dimensions



Amps	A	B	C	X	Y	20, 30 60, 100A	16, 32 63, 125A
						HUB	CABLE GLAND
*20\16A	8.8	6.7	3.5	3.7	4.5	1/2	M20
20\16A	9.3	6.9	4.3	3.9	5.3	3/4	M25
30\32A	11.2	8.07	4.7	4.3	6.7	1	M32
60\63A	18.7	12.3	7.9	7.1	10.9	1 1/4	M40
100\125A	21.1	13.3	8.9	8.1	11.9	1 1/2	M63

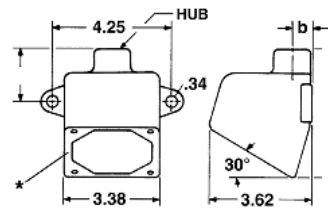
*3 Pole Only

Inlet Dimensions



Amps	A	B	C	D	F DIA.	MTC. DIMS.	
						X	Y
20\16A	3.27	3.02	3.38	3.38	.236	2.74	2.74
30\32A	4.26	3.75	3.38	3.38	.236	2.74	2.74
60\63A	5.44	4.34	4.13	4.13	.236	3.50	3.50
100\125A	5.48	5.20	5.12	5.32	0.25	4.09	4.09

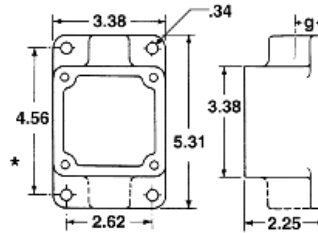
Back Box Dimensions



Cat. No.	HUB	A	B
ARE13	1/2	1.84	.69
ARE23	3/4	1.84	.81
ARE33	1	1.97	.94

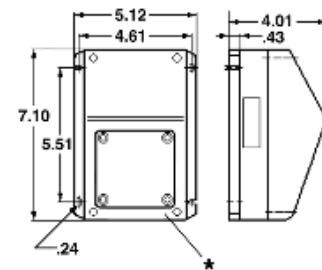
* Footprint: 2.74 x 2.74

16, 20, 30, & 32A Cast ALUMINUM



Cat. No.	HUB	HUB CONFIG.	G
ARRH13	1/2	Dead End	.69
ARRH23	3/4	Dead End	.81
ARRH33	1	Dead End	.94
ARRC13	1/2	Feed Thru	.69
ARRC23	3/4	Feed Thru	.81
ARRD33	1	Feed Thru	.94

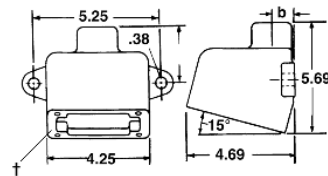
* Footprint: 2.74 x 2.74



Cat. No.
CHBB2

* Footprint: 2.74 x 2.74
(Not U.L. Listed)

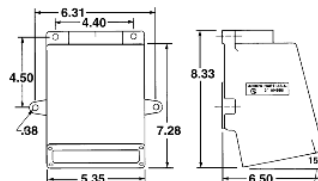
60A & 63A Cast Aluminum



Cat. No.	HUB	A	B
ARE36	1	2.56	.69
ARE46	1 1/4	2.62	1.19
ARE56	1 1/2	2.69	1.31

† Footprint: 5.4 x 2.74

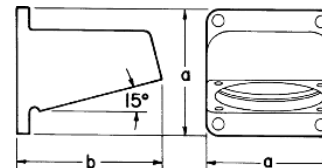
100A & 125A Cast Aluminum



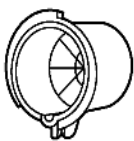
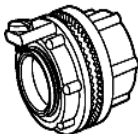
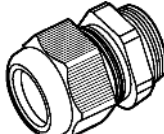
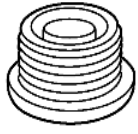
Cat. No.
CHBB1

‡ Footprint: 4.09 x 4.09

Aluminum Fits ARRH and ARRC 30A Angle Adaptor Cast



Cat. No.	A	B
AR30	3.38	4.12

					
		Plug Closure Cap	Enclosure Myers Hub	Enclosure Cable Gland	Enclosure Closure Plug
20/16A	3 pole	CHCC320	STM1	CHCG20	CHCP20
	4 pole	CHCC420	STM2	CHCG25	CHCP25
	5 pole	CHCC520			
30/32A	3 pole	CHCC3430	STM3	CHCG40	CHCG40
	4 pole				
	5 pole	CHCC530			
60/63A	3 pole	CHCC60	STM4	CHCG50	CHCP50
	4 pole				
	5 pole				
100/125A	3 pole	CHCC100	STM5	CHCG63	CHCP63
	4 pole				
	5 pole				

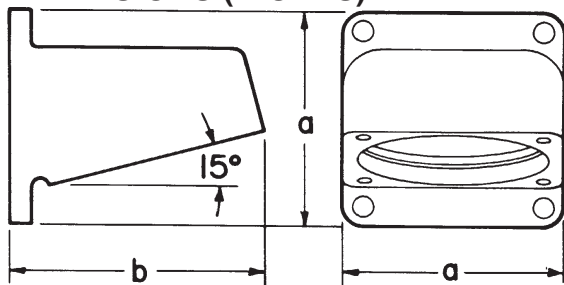


**New Angled Adapters
install directly onto
existing Cooper
Crouse-Hinds Back
Boxes!**

FEATURES:

- Square footprint on adapter allows back box conduit openings to be positioned vertically or horizontally.
- 15° angle eliminates cord stress on attached plug.
- Heavy-duty cast aluminum back boxes are ideal for abusive environments.
- Epoxy powder coat finish available for additional corrosion resistance.
- Stainless steel hardware.
- Quick and easy to install.
- Neoprene gasket provided between adapter and back box for additional weather resistance

DIMENSIONS (INCHES):



Catalog Number	A	B	Receptacle/Inlet Footprint
AR30	3.4	3.9	2.74 x 2.74
AR601	4.3	4.9	3.03 x 3.34
AR100	5.9	6.2	4.09 x 4.09

Cooper Crouse-Hinds Angled Back Box Adapters install IEC 309 receptacles or inlets to existing back boxes at a 15° angle, eliminating plug cord stress and maximizing wiring capacity.

Designed with a square footprint, the angled back box adapter allows the conduit openings to be positioned vertically or horizontally.



20/30 Amp



60 Amp



100 Amp

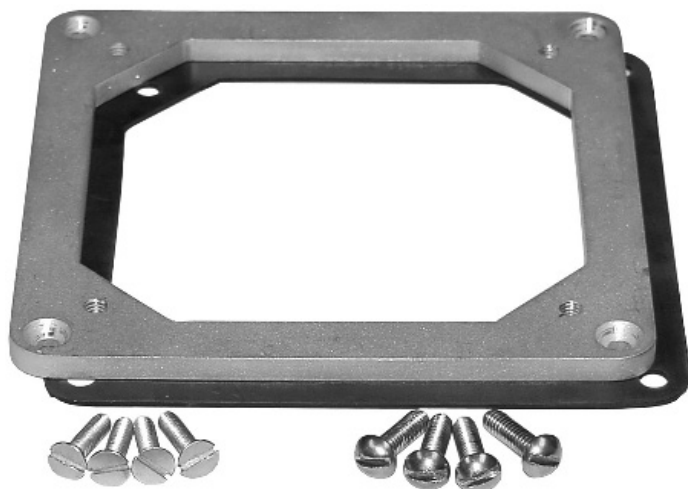
ORDERING INFORMATION:

Rating of Receptacle or Inlet	Angled Adapter Catalog Number	Mating Square Back Box Catalog Numbers
20A	AR30	ARRH/ARRC 13, 23, 33
30A	AR30	ARRH/ARRC 13, 23, 33
60A	AR601	ARRH/ARRC 36, 46, 56
100A	AR100	AJ/AJC 46, 56

Adapters Plates

For 20, 30, 60 & 100 Amp
IEC 309 Receptacles and Inlets

5P



Cooper Crouse-Hinds H-Series Adapter Plates permit a Cooper Crouse-Hinds IEC 309 receptacle or inlet to be mounted to a Hubbell® back box.



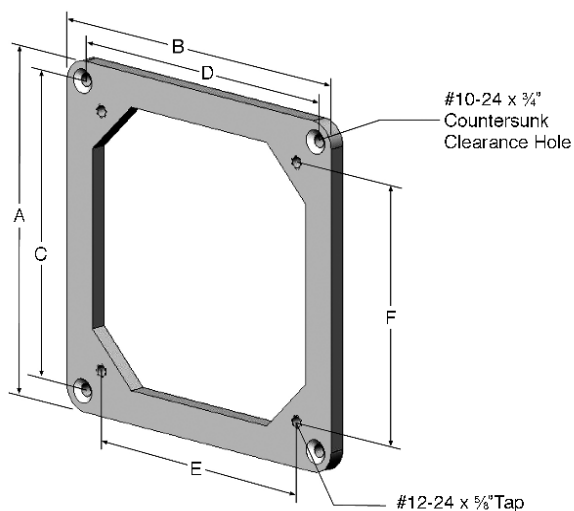
FEATURES:

- Heavy-duty aluminum plate fits directly to the Hubbell footprint.
- Adapter plate is engineered to be used with the gasket that is provided with the Cooper Crouse-Hinds receptacle or inlet.
- Provided gasket maintains watertight integrity between adapter plate and Hubbell box.
- Stainless steel hardware provided for attaching adapter plate to back box and receptacle or inlet to adapter plate.
- Corrosion resistant
- Quick and easy to install

ORDERING INFORMATION:

Rating of Cooper Crouse-Hinds Receptacle or Inlet	Catalog Number of Hubbell Back Box	Adapter Plate Catalog Number
20A/30A	BB201W/BB301W	CHAP30H
60A	BB601W/BB602W	CHAP60H
100A	BB1001W/BB1002W	CHAP100H

DIMENSIONS (INCHES):



	Overall Size		Hubbell Footprint		Cooper Crouse-Hinds Footprint	
	A	B	C	D	E	F
CHAP30H	4.03	3.78	3.13	3.13	2.74	2.74
CHAP60H	4.53	4.53	3.88	3.88	3.03	3.35
CHAP100H	5.53	5.53	4.88	4.88	4.09	4.09

Notes Page

[illegible]

Description	Page No.
Wet Location Covers	
Applications/Features	1080
Ordering Information	1081

For NEMA Configuration Receptacle Interiors
For FS and FD Cast Device Boxes
Flush Device Boxes

Application:

WLRS, WLRD and WLGf series covers are suitable for use in wet and damp locations.

WLGf is suitable for damp and wet locations only when cover is closed.

WLRS and WLRD series wiring device covers are designed to meet the total NEC code requirements for wet locations – Article 410-57:

“A receptacle installed outdoors where exposed to weather or in other wet locations shall be in a weatherproof enclosure, the integrity of which is not affected when the receptacle is in use (attachment plug cap inserted).”

Use WLRS, WLRD and WLGf:

- wherever portable equipment is required
- as general purpose utility receptacle covers
- for industrial, commercial or residential use
- in areas where electrical requirements do not exceed medium duty ratings
- to mount FS and FD single-gang or multi-gang boxes having individual cover openings (see Sect. 3F for listings)
- to mount on most flush device boxes (see Accessories)

Features:**WLRS, WLRD and WLGf covers:**

- self closing spring door assures protection of wiring device at all times, in wet and damp locations
- one piece EPDM gasket provides environmental protection of wiring device at all times
- Specially formulated elastomeric gasketing material offers excellent resistance to ozone, weather and temperature extremes of -50°F to 260°F
- die cast, copper-free aluminum construction with aluminum lacquer finish provides maximum corrosion resistance
- positive ground path ensured for all exposed metal parts

NEMA configuration receptacle interiors:

- comply with NEMA Standards WD-1 and WD-5
- grounded through an extra contact in all types except 3-phase applications; self grounded in duplex configurations
- back and side wired
- offered in single and duplex configurations for use with standard plugs
- specification grade

Standard Materials:

- WLRS, WLRD and WLGf face plate and cover – die cast copper-free aluminum
- Cover hinge spring – stainless steel
- Cover screws – corrosion resistant metal
- Gasket – WLRS and WLRD – ethylene propylene rubber (EPDM)
- Gasket – WLGf – neoprene

Standard Finishes:

- Copper-free aluminum

Electrical Rating Ranges:

- 15 amperes; 125, 250, or 277 volts
- 20 and 30 amperes; 125, 250, 277, 480, 600, 125/250, 208/120, 480/277 or 600/347 volts

Accessories:

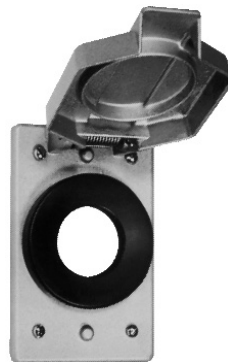
Flush mounting adapter – WLRA-1 required for mounting on device boxes (not required with WLGf)

Certifications and Compliances:

- ANSI/UL Standard 514A
- NEC code 410-57
- NEMA Standards WD-1, 1983 (Straight Blade) and WD-5, 1982 (Locking Type)

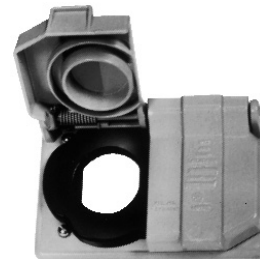


Typical installation

Spring Door Covers – with Gasket*

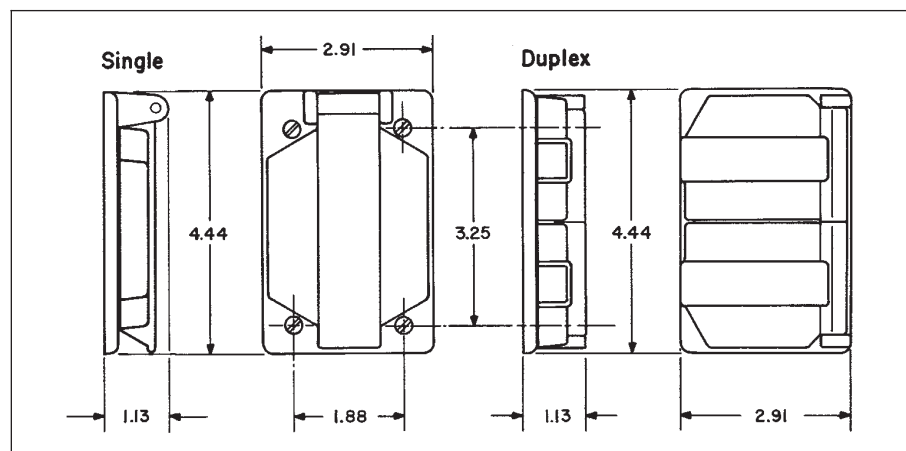
Description
Cat. #

Single cover
WLRS-1 and WLRD-2



Duplex cover
WLRD-1

* Patent Number 4,058,358

Dimensions

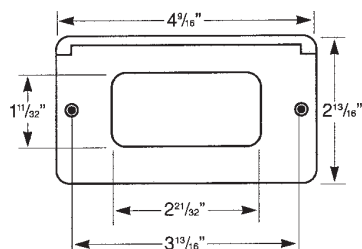
Covers with and without NEMA Configuration Receptacles

Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #†	Type	Volts	NEMA Configuration	Complete Cover with Receptacle Assy. Cat. #	Spring Door Cover & Gasket Only Cat. #†	
Single Device					Duplex Device					
For Non-Locking Blade Plugs										
2-Pole 3-Wire Grounding 15 Amp	125V	 5-15R	WLRS-5-15	WLRS-1	2-Pole 3-Wire Grounding 15 Amp	125V	 5-15R	WLRD-5-15	WLRD-1	
	250V	 6-15R	WLRS-6-15	WLRS-1		250V	 6-15R	WLRD-6-15	WLRD-1	
2-Pole 3-Wire Grounding 20 Amp	125V	 5-20R	WLRS-5-20	WLRS-1	2-Pole 3-Wire Grounding 20 Amp	125V	 5-20R	WLRD-5-20	WLRD-1	
	250V	 6-20R	WLRS-6-20	WLRS-1		250V	 6-20R	WLRD-6-20	WLRD-1	
For Locking Blade Plugs										
2-Pole 3-Wire Grounding 15 Amp	125V	 L5-15R	WLRS-L5-15	WLRS-1	2-Pole 3-Wire Grounding 15 Amp	125V	 L5-15R	WLRD-L5-15	WLRD-1	
	250V	 L6-15R	WLRS-L6-15	WLRS-1						
2-Pole 3-Wire Grounding 20 Amp	125V	 L5-20R	WLRS-L5-20	WLRS-2						
	250V	 L6-20R	WLRS-L6-20	WLRS-2						

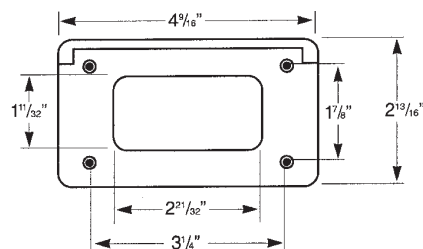
Wet Location Covers for GFCI Duplex Receptacles



WLGf – For Flush Device Boxes



WLGf-FS – For FS and FD Cast Device Boxes



† Must be used with a wet locations rated wiring device.

Notes Page

[illegible]

Description	Page No.
Static Discharge Reels	1085
Cable Reels	
Application	1086
Technical Data	1087
Lifting/Stretching Reels	1088
Retrieve Reels	1089

Notes Page

[illegible]

Application:

Static discharge reels are used for grounding portable machines and equipment in hazardous areas, such as fuel-transfer trucks, grain elevators, dockside-loading facilities and barges. When properly clamped to ground the static discharge reel safely dissipates static electrical buildup and reduces the chance of sparking and the potential for explosion.

Features:

- Automatic rewinding
- Rugged steel construction
- Compact enclosed design
- Positive ratchet lock
- Lock on/lock off switch
- Steel cable installed
- 100 amp universal jaw-type grounding clamp
- Safety orange polyester baked-on finish



SDR-50

Standard Materials:

- Housing – steel construction

Standard Finishes:

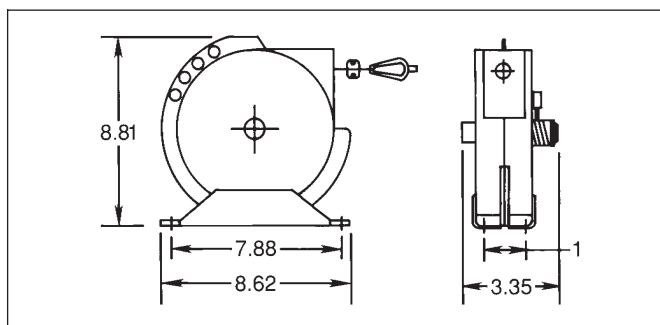
- Housing – Orange polyester; baked on finish

Ordering Information:

Cable Length (Feet)	Description	Weight Complete lbs.	(Kg)	Catalog Number
50	Single 7 x 30 steel*	12	(5.4)	SDR-50
50	35' plus 2 x 15' for Y (steel*)	13	(5.9)	SDR-50Y
50	Nylon covered cable*	12	(5.4)	SDR-50N

* Static discharge reels are supplied complete with 3/32" steel aircraft cable. DC resistance is approximately one ohm per 50 ft. of steel cable.

Dimensions



Application:

Cable-Gard cable reels are designed for the constant, predictable pull of a machine and are designed for reliable operation in many applications. Typical uses include travelling cars, mobile hoists and various objects being lifted under power such as lifting magnets on cranes.

Features:

- Unitized slip ring assembly transfers current from stationary to rotary. Brushes are an integral part of the slip ring assembly.
- Safe to change spring motor that is sized per application, clock type spring with window shade type action. Sealed in disposable housing, spring is never exposed to unravel and possibly harm.
- Watertight cable entrance terminates cord to reel spool with positive grip, watertight seal.
- Large junction box with 3/4" NPT conduit entrance may be positioned in choice of four directions.
- Multi-position roller guide is adjustable to 4 different positions. Allows easy adaptation of reel to positioning requirements of the application and controlled uniform retraction of cable onto spool. Roller guides are optional; consult factory.
- Baked-on powder epoxy finish provides tightly bonded, homogenous shield to abrasion and corrosion.
- Ratchet lock is provided for window shade type action. May be easily disengaged in field for constant tension applications.

Standard Materials:

- Frame, spool – steel

Standard Finishes:

- Baked on powder epoxy – orange

Options:

- Ball stop – keeps cable from rewinding out of reach in hand-pull applications.

Cable Range O.D. Min./Max.	Suffix to be added to Cat. No.
.38 – .50	– C1
.50 – .75	– C2
.75 – 1.00	– C3

Ball stop may be ordered separately; use suffix number as catalog number.

- Pivot base – Pivot base allows 340° rotation of reel. Required for applications demanding reel self-alignment to direction of the cable run.

Suffix to be
added to Cat. No.

– S

To order separately:

Series	Pivot Base Cat. No.
W14	PB14
W16	PB16
W19	PB19

- Reel supplied less cable

Suffix to be
added to Cat. No.

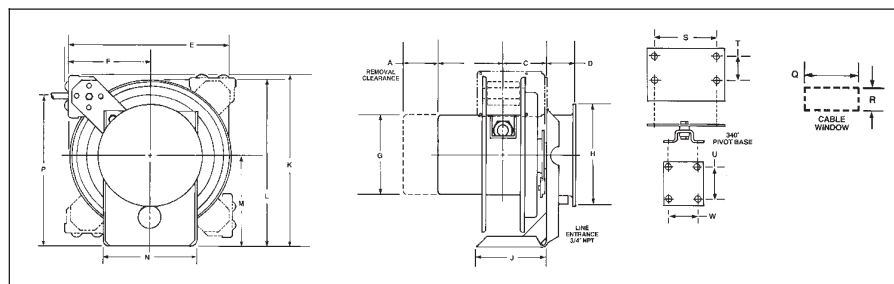
– NC

**Certifications and
Compliances:**

- ANSI/UL 355
- CSA C22.2
- NEMA 3, 3R

Electrical Ranges:

- 600 VAC (cable reel)
- Cord: #16 - #10, Type "SO", #8, Type "W", or Type "G" (see listings).

Dimensional Data:**Dimensions in inches****Frame**

Size	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
W14	3.75	2.75	13.75	8.25	7.00	9.25	6.12	16.25	15.00	8.12	8.00	14.25	2.50	1.25
W16	5.50	2.75	15.75	9.31	7.00	9.25	7.94	18.25	17.00	9.12	8.50	16.25	3.00	1.25
W19	5.75	2.75	19.00	10.00	10.50	9.25	7.00	20.50	20.25	10.75	11.00	18.50	3.50	1.25

Slip Ring Housing Dimensions:**W14**

Poles/Amps	A	B
1-4; 30 Amps	4.50	5.69
5-8; 30 Amps	6.00	7.19
9-12; 30 Amps	7.50	8.69
1-4; 55 Amps	6.00	7.19

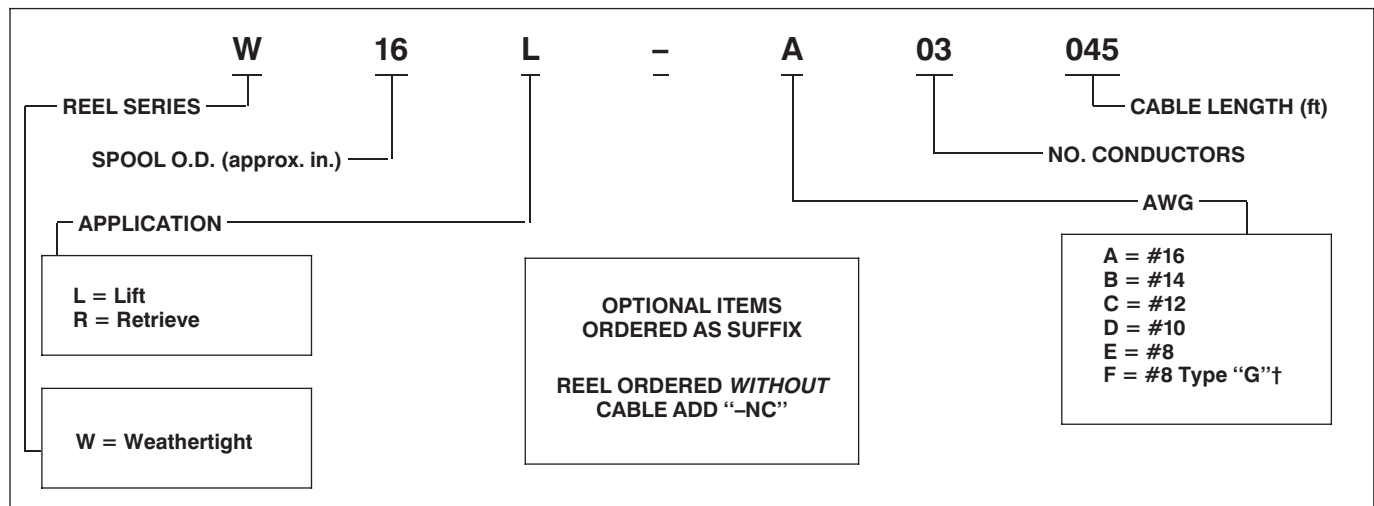
W16

Poles/Amps	A	B
1-4; 30 Amps	4.50	5.94
5-8; 30 Amps	6.00	7.44
9-12; 30 Amps	7.50	8.94
1-4; 54 Amps	6.00	7.44

W19

Poles/Amps	A	B
1-4; 30 Amps	3.25	5.44
5-8; 30 Amps	4.50	6.69
9-12; 30 Amps	6.00	8.19
1-4; 55 Amps	4.50	6.69

Catalog Numbering System



† Type "G" cable is supplied with a ground conductor.

Reel Selection Process

Determine:

1. CABLE SIZE AND NO. OF CONDUCTORS

Be sure to choose cable that will adequately handle the current load (include ground when stating number of conductors). If the desired cable is not listed, consult factory.

2. CABLE LENGTH

Reels in this brochure will handle up to 150 feet of cable. Decide how far your equipment will travel from the reel and choose the appropriate column. The amount of cable needed to install the cable on the reel has been included. However, you must add:

- 1) the amount of cable needed for HOOK-UP to your equipment, and
- 2) Cable SAG ALLOWANCE if "STRETCH" applications (see footnote *). Round up to the nearest footage on the selection chart.

CABLE LENGTH NEEDED = EQUIPMENT TRAVEL DISTANCE PLUS HOOK-UP PLUS SAG ALLOWANCE. (Sag allowance needed for "stretch" applications only.)

3. TYPE OF CABLE

This is important as stranding and construction vary. Cable-Gard reels are provided with cable as listed in the electrical ranges listing on page 1086.

4. APPLICATION

Retrieving, Horizontal

REEL MOVES WITH MACHINE



Retrieving, Vertical

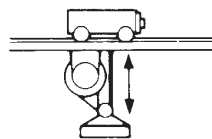
MACHINE MOVES UP AND DOWN



A horizontal retrieve application is identified when the reel is mounted on the moving equipment. The reel pays out and picks up the cable from a tray or other support.

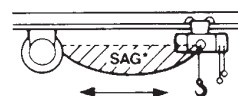
This application requires the reel to wind and unwind the cable but not lift or support the cable. A typical example is where the reel is mounted to the ground and the cable is attached to an elevating machine. In some cases the cable is anchored above and the reel rides up and down on an elevating machine.

Lifting, Vertical

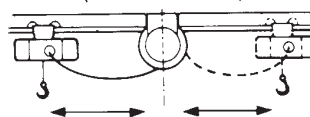


Stretching*, Horizontal

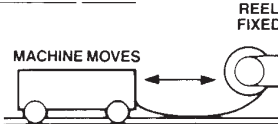
END MOUNTING



CENTER MOUNTING
(Remove Cable Guide)



Dragging Cable



Any application where cable is simply hoisted vertically with the reel lifting only the weight of the cable. Special considerations must be given to any weight added to the end of the cable such as a push-button station. Listed spring tension is not designed to accommodate added weight. Consult the manufacturer for a specific recommendation.

In addition to being capable of lifting cables vertically, all reels listed will stretch cables horizontally as shown. When stretching horizontally (unsupported, except at the reel and the moving current consumer) the sag or droop of the cable may be important. Spring tension on these reels is designed to provide for 8 - 10% sag at the midpoint of travel when fully extended. Stronger tension could be a problem for light, free moving loads which tend to be pulled toward the reel. The cable weight alone can pull a light load.

CENTER MOUNTING (cable guide is removed) can save over the cost of end mounting. For example, a machine traveling 50 ft. can be serviced by a center-mounted reel equipped with 25 ft. of cable. A comparable end-mounted reel would require the full 50 ft. of cable.

Drag applications refer to a reel mounted in a fixed (non-moving) position and the cable terminated on a moving machine. As the machine moves, the cable is pulled off of the reel and "dragged" over the surface. This is **NOT** a recommended application because of abuse to the cable resulting in shortened life.

*** Sag allowance must be considered when figuring cable length for STRETCH applications. Add 1 ft. of cable for each 50 ft. of working cable calculated for your application. (Working cable excludes hook-up length.)**

Reels for Lifting/Stretching

EXAMPLE: A hoist is to travel 52 feet along an I-beam – this is a STRETCH application. Required cable is 4 Conductor/No. 14. Hook-up is 2 feet.

The following EXAMPLES appear in bold type in the selection charts.

1. If the reel *must* be END MOUNTED, the required cable length would be 52 feet, plus 2 feet for the hook-up plus 2 feet for sag consideration*. Round up to 60 feet per the available footage in the chart below. The correct model to choose would be **W16L-B04060**.

2. If the reel may be CENTER MOUNTED, only half as much cable is required – it will be used in both directions. Half of the required length would be 26 feet, plus 2 feet for the hook-up plus 1 foot for sag consideration for a total of 29 feet. Round up to 30 feet and choose model **W14L-B04030**. A savings will be realized because less cable was used and, thus, a smaller reel was required.

Selection Chart

Wire Size	No. of Cond.	20 Feet	30 Feet	40 Feet	50 Feet	60 Feet	70 Feet
16	3	W14L-A03020	W14L-A03030	W14L-A03040	W16L-A03050	W16L-A03060	W19L-A03070
	4	W14L-A04020	W14L-A04030	W14L-A04040	W16L-A04050	W16L-A04060	W19L-A04070
	6	W14L-A06020	W14L-A06030	W14L-A06040	W14L-A06050	W16L-A06060	W19L-A06070
	8	W16L-A08020	W16L-A08030	W16L-A08040	W16L-A08050	W16L-A08060	W19L-A08070
	10	W16L-A10020	W16L-A10030	W16L-A10040	W16L-A10050	W19L-A10060	W19L-A10070
	12	W16L-A12020	W16L-A12030	W16L-A12040	W16L-A12050	W19L-A12060	W19L-A12070
14	3	W14L-B03020	W14L-B03030	W14L-B03040	W14L-B03050	W16L-B03060	W16L-B03070
	4	W14L-B04020	W14L-B04030	W14L-B04040	W14L-B04050	W16L-B04060	W16L-B04070
	6	W14L-B06020	W14L-B06030	W16L-B06040	W16L-B06050	W16L-B06060	W19L-B06070
	8	W14L-B08020	W16L-B08030	W16L-B08040	W16L-B08050	W19L-B08060	W19L-B08070
	10	W14L-B10020	W16L-B10030	W19L-B10040			
	12	W16L-B12020	W16L-B12030	W19L-B12040			
12	3	W14L-C03020	W14L-C03030	W14L-C03040	W14L-C03050	W16L-C03060	W19L-C03070
	4	W14L-C04020	W14L-C04030	W14L-C04040	W16L-C04050	W16L-C04060	W19L-C04070
	6	W14L-C06020	W16L-C06030	W16L-C06040	W19L-C06050	W19L-C06060	
	8	W14L-C08020	W16L-C08030	W19L-C08040			
10	3	W14L-D03020	W14L-D03030	W14L-D03040	W16L-D03050	W16L-D03060	W19L-D03070
	4	W14L-D04020	W14L-D04030	W16L-D04040	W16L-D04050	W19L-D04060	W19L-D04070
	6	W16L-D06020					
8	2	W14L-E02020	W16L-E02030	W16L-E02040	W19L-E02050		
	3	W16L-E03020	W16L-E03030	W19L-E03040			
	3†	W14L-F03020	W16L-F03030	W19L-F03040			
	4	W16L-E04020	W16L-E04030	W19L-E04040			

* Sag allowance *must* be considered when figuring cable length for STRETCH applications. Add 1 foot of cable for each 50 feet of working cable calculated for your application. (Working cable excludes hook-up length.)

† Type "G" cable.

Reels for Retrieving

EXAMPLE: A moving car is to travel 55 feet. Required cable is 4 Conductor/No. 10. Extra cables needed to hook up to the car is 2 feet.

The following **EXAMPLES** appear in bold type in the selection charts.

1. If the reel *must* be END MOUNTED, the required cable length would be 55 feet, plus 2 feet for the hook-up. Round up to 60 feet per the available footage in the chart below. The correct model to choose would be **W19R-D04060**.

2. If the reel may be CENTER MOUNTED, only half as much cable is required – it will be used in both directions. Half of the required length would be 27.5 feet, plus 2 feet for the hook-up for a total of 29.5 feet. Round up to 30 feet and choose model **W14R-D04030**. A savings will be realized because less cable was used and, thus, a smaller reel was required.

Selection Chart

Wire Size	No. of Cond.	20 Feet	30 Feet	40 Feet	50 Feet	60 Feet	70 Feet
16	3	W14R-A03020	W14R-A03030	W14R-A03040	W16R-A03050	W16R-A03060	W19R-A03070
	4	W14R-A04020	W14R-A04030	W14R-A04040	W16R-A04050	W16R-A04060	W19R-A04070
	6	W14R-A06020	W14R-A06030	W14R-A06040	W14R-A06050	W16R-A06060	W19R-A06070
	8	W14R-A08020	W14R-A08030	W16R-A08040	W16R-A08050	W16R-A08060	W19R-A08070
	10	W14R-A10020	W14R-A10030	W16R-A10040	W16R-A10050	W19R-A10060	W19R-A10070
	12	W14R-A12020	W14R-A12030	W16R-A12040	W16R-A12050	W19R-A12060	W19R-A12070
14	3	W14R-B03020	W14R-B03030	W14R-B03040	W14R-B03050	W16R-B03060	W19R-B03070
	4	W14R-B04020	W14R-B04030	W14R-B04040	W14R-B04050	W16R-B04060	W19R-B04070
	6	W14R-B06020	W14R-B06030	W16R-B06040	W16R-B06050	W16R-B06060	W19R-B06070
	8	W14R-B08020	W16R-B08030	W16R-B08040	W19R-B08050	W19R-B08060	W19R-B08070
	10	W14R-B10020	W16R-B10030	W19R-B10040			
	12	W16R-B12020	W16R-B12030	W19R-B12040			
12	3	W14R-C03020	W14R-C03030	W14R-C03040	W14R-C03050	W16R-C03060	W16R-C03070
	4	W14R-C04020	W14R-C04030	W14R-C04040	W16R-C04050	W16R-C04060	W19R-C04070
	6	W14R-C06020	W16R-C06030	W16R-C06040	W19R-C06050	W19R-C06060	W19R-06070
	8	W14R-C08020	W16R-C08030	W19R-C08040			
	10						
	12						
10	3	W14R-D03020	W14R-D03030	W14R-D03040	W16R-D03050	W16R-D03060	W16R-D03070
	4	W14R-D04020	W14R-D04030	W16R-D04040	W16R-D04050	W19R-D04060	W19R-D04070
	6	W14R-D06020	W19R-D06030	W19R-D06040			
	8	W19R-D08020	W19R-D08030				
8	2	W14R-E02020	W16R-E02030	W16R-E02040	W19R-E02050	W20AR-E02060	
	3	W14R-E03020	W16R-E03030	W19R-E03040			
	3†	W14R-F03020	W16R-F03030	W19R-F03040			
	4	W16R-E04020	W16R-E04030	W19R-E04040			

† Type "G" cable.

Notes Page

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Description	Page No.
Application/Selection	1092
Circuit Breaking Power Connectors – Arktrol®	
RPC Series	
Accessories	1106
Adapters and Back Boxes	1107
Dimensions	1108, 1109
General Information	1093-1094
Listings	1096-1103
Control Circuit and Power Connectors – Arktrol®	
RPE Series	
Accessories	1106
Adapters and Back Boxes	1107
Dimensions	1108, 1109
General Information	1093-1095
Listings	1104, 1105

Application:

Special purpose plugs and receptacles listed in this section are for use in non-hazardous areas, where environmental or application considerations require non-standard plugs and receptacles. Included in this section are ARK-trol® plugs and receptacles (RPC and RPE).

ARK-trol Plugs and Receptacles (RPC and RPE)

- Are used with a wide range of equipment requiring a variety of contact configurations under conditions of hard usage and exposure to rigorous environments.

- Two basic types: RPC – circuit breaking power connectors; RPE – control circuit, power and welding connectors.

RPC – A variety of configurations (with a maximum of five-poles) are available for one and three-phase circuits. Electrical range is 30, 60, 100, 200 amperes at a maximum of 600 vac.

RPE – A wider range of configurations are available. Range of amperages available up to 500 amperes at a maximum of 600 vac. Both types are available (either as standard or as option) with solder well terminals for high reliability, or crimp or pressure terminals for ease of installation. Listings on pages 1096 to 1105, show complete assemblies with mating plugs and components. For information on features, options, components and complete assemblies, see pages 1093 to 1095.

RPC Circuit Breaking Power Connectors RPE Control Circuit and Power Connectors

Application:

ARK-trol RPC circuit breaking power connectors and RPE control circuit power connectors are used:

- with a wide variety of portable electrical equipment
- for connection of devices ranging from simple lighting units, power tools, and similar portables requiring only a power supply circuit, to sophisticated control and instrumentation assemblies requiring disconnect
- under conditions of hard usage and where exposed to dust, dirt, water, corrosion and chemical attack, providing high reliability and trouble-free service
- indoors or outdoors in non-hazardous areas of petroleum refineries, chemical and petrochemical plants, manufacturing plants, military installations and similar locations
- on machine tools and similar equipment

Features:

- All ARK-trol connectors have the same properties, characteristics and environmental capabilities outlined under "Compliances."

Construction:

- All ARK-trol plug, receptacle and cord connector shell parts are of high-strength impact extruded aluminum, hard coated with a high density anodize finish. The resultant assemblies are light weight, extremely strong, free from surface defects and flaws, and with superior resistance to abrasion, corrosion and chemical attack.
- "Tri-Disc" insert assemblies consist of two rigid insulators with a silicone rubber wafer between to provide a cushioning action against mechanical damage and to effect a positive seal against penetration by water, moisture, dust, gas and other undesirable matter. Assembly of the inserts compresses the silicone wafer to seal against the inner wall of the plug or receptacle shell, and around each individual contact.
- ARK-trol insulating material is of high dielectric and mechanical strength with low moisture absorption and excellent resistance to arc tracking. Socket contacts are each enclosed in a separate chamber in the silo insulator. Arcs formed while making or breaking a circuit are quickly snuffed out in the chambers.
- Contacts are removable and, for ease of installation, are snapped into the insert assemblies after wire termination. Termination methods employed are solder, crimp and pressure. Solder well contacts are standard and are furnished unless otherwise specified. Crimp contacts are available in all sizes and configurations. Pressure contacts, due to increased terminal area, are available only in certain assemblies as shown in the listings.

- For cable strain relief and watertight seal, plugs and cord connector receptacles are provided with gland nut and tapered Neoprene bushing.

Positive Polarization:

- Polarization of ARK-trol connectors is such that plugs and receptacles cannot be mated incorrectly.
- Insert assemblies must be correctly aligned and will fit plug and receptacle shells in one position only, because of a raised key on the inner wall of the shells.
- Seven keys on the inner wall of the receptacle and seven mating keyways on the outer diameter of the plug shell are spaced so that the plug and receptacle can be mated in one position only. One key and one keyway are larger than the other six as a guide to rapid connection, easily performed under adverse field conditions – even in total darkness.

Interchangeability:

- Shell components and insert assemblies in each diameter are interchangeable. Both male and female basic shells will accept either pin or socket inserts. This feature permits the use of both plug and receptacle in either an energized or de-energized condition.

Grounding:

- Grounded connectors have pin and socket contacts with integral grounding straps which press against the inner wall of plug, receptacle and cord connector shells, effectively bonding the shells to the grounding contacts.
- Grounding socket contacts are longer than current carrying contacts to make first and break last, assuring a positive ground before circuits are energized and after circuits are de-energized.

Standard Materials:

- Back boxes and adapters – copper-free aluminum
- Plug, receptacle and cord connector shells – impact extruded aluminum
- Insulation – diallyl phthalate (DAP)
- Insulation – fiberglass-reinforced polyester material
- Sealing wafer – silicone rubber
- Contacts – hard drawn copper

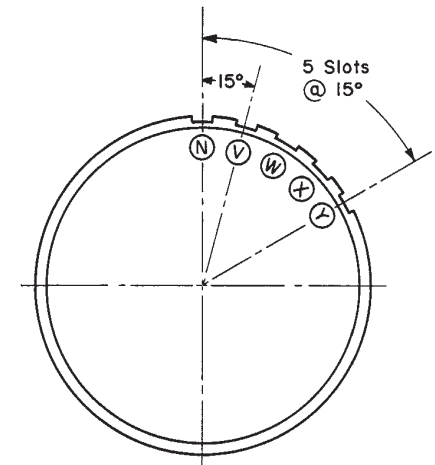
Standard Finishes:

- Copper-free aluminum – natural
- Impact extruded aluminum – hard coat anodized
- Diallyl phthalate – natural (blue)
- Fiberglass-reinforced polyester material – natural (red)
- Silicone – natural (grey)
- Copper – silver plated

Options:

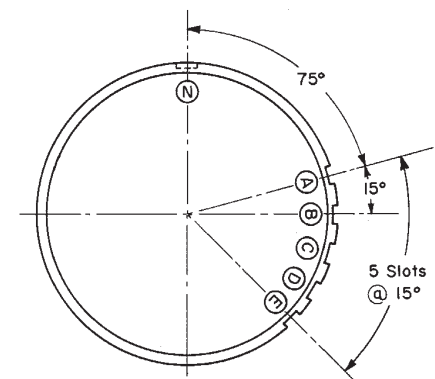
- Alternate polarities – ungrounded connectors. Standard polarity is position "N" shown below. Alternate positions "V", "W", "X" or "Y" can be furnished. To order, substitute for the letter "N" in the listed Cat. No., the letter for the desired polarization.

Example: RPC217-127-SO1N-ARE23 with polarity "X" becomes RCP217-127-SO1X-ARE23.



- Alternate polarities – grounded connectors. Standard polarity is position "A" shown below. Alternate positions "B", "C", "D" or "E" can be furnished. To order, substitute for the letter "A" in the listed Cat. No., the letter for the desired polarization.

Example: RPC217-127-SO2A-ARE23 with polarity "D" becomes RCP217-127-SO2D-ARE23.



RPC Circuit Breaking Power Connectors

RPE Control Circuit and Power Connectors

Options (continued):

• Crimp type contacts – available on all assemblies with solder well contacts. To order, add letter “T” to Cat. No., immediately following polarity letter.

Examples: RPC217-127-S01N-ARE23 and RPC217-127-S02A-ARE23 except with crimp contacts would be ordered as RPC217-127-S01NT-ARE23 and RPC217-127-S02AT-ARE23 respectively.

• Alternate cable strain relief methods for plugs and connectors:

Stainless steel wire mesh cord grip. To order, add letter “K” to first section of Cat. No.

Example: RPC117-150-P01N with wire mesh grip would be ordered as RPK117-150-P01N.



Adapter for use with liquid tight/rigid conduit. To order, add letters “LT” to first section of catalog number.

Example: RPC117-150-P01N with liquid tight/conduit adapter would be ordered as RPLT117-150-P01N.

Electrical Rating Ranges:

- Voltage – 250, 480 and 600vac
- Frequency – 50** to 400 hertz
- See listings for specific ratings.

Ampere Ratings:

- Ratings given in the table at right are applicable to RPC circuit breaking power connectors and RPE control connectors, as indicated.
- RPC connectors are capable of making or breaking circuits at the full rated load indicated in the table on the listing pages.
- Contact assemblies of RPE connectors have the current carrying capabilities shown in the table, as defined by applicable military specifications (MS) and NEC requirements, for circuits not made or broken under load. It should be noted that these non-interrupting ampere ratings exceed the NEC rating of the corresponding wire size.

Contact Size AWG	RPC Circuit Breaking Connectors NEC Rating	RPE Connectors	
		Non-Interrupting Ampere Rating	
		MS(AN)	NEC
#16		22	16
#12	20A	41	30
#10	30A	57	40
#4	60A	135	90
1/0	100A	250	160
4/0	200A	335	225

Certifications and Compliances:

• Properties

Industrial use

Driptight

Weather resistant

(weatherproof)

Watertight

Dust tight

Chemical resistance

Pressure

• Compliance with Military Specifications

Environment

Corrosion resistance

Temperature

Air leakage

Dust resistance

Shock resistance

Vibration

Humidity & moisture

ANSI/UL Standard

Characteristics

excludes dust, lint, fibers and flying, oil seepage and coolant seepage – meets J.I.C. Standard

excludes falling moisture or dirt – materials unaffected by condensation

performs normally in outdoor areas

excludes water by hose spray or stream

excludes dust, but performs normally if dust is accidentally enclosed during disconnect

high resistant to alkalis, strong caustics, acids, petroleum base and organic solvents

300 psi external – 200 psi internal

Performance Data

salt spray 300 days. MIL-STD-810E

–80°F to 275°F, meeting requirements of MIL-STD-810E

exceeds Class E specification MIL-STD-810E

exceeds requirements of MIL-STD-810E

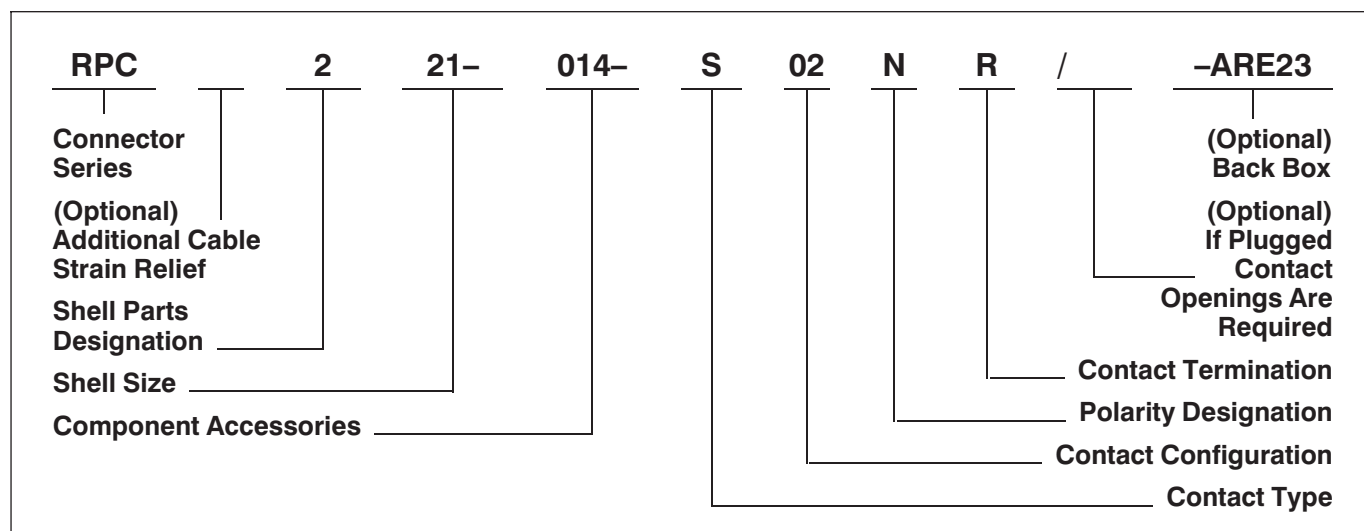
50G exceeds MIL-STD-810E

exceeds 20G, method II, MIL-STD-810E

exceeds Class E specification MIL-STD-810E

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** For use on system less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.



CONNECTOR SERIES

RPC – circuit breaking
 RPE – for disconnect use only
 RPX – hazardous (gasoline or equivalent hazards, see Section 9P)

ADDITIONAL CABLE STRAIN RELIEF (Optional)

K = Wire mesh cord grip
 LT = Liquidtight/conduit connection

SHELL PARTS DESIGNATION

0 = No shell part required
 1 = Plug shell
 2 = Receptacle
 3 = Cord connector
 4 = Connector handle body only
 5 = Plug shell (long)
 6 = Receptacle (long)
 7 = Cord connector (long)

SHELL SIZE

Inside Diameter measured in X/16" (017, 021, 033, 041, i.e., 017 shell size = 17/16")

COMPONENT ACCESSORIES

This code indicates the combination of shell parts to fit your application; e.g., 014 = square flanged receptacle with insert retaining nut and dust cap; 150 = plug handle body, bushing, and clamping nut for cable with a diameter of .250 to .625.

CONTACT TYPE

P = Pin (male)
 S = Socket (female)

CONTACT CONFIGURATION

This assigned code indicates the actual configuration of the contacts (pin and socket) in the insert assembly for a particular shell size. This is based upon electrical ratings (amperage and voltage) and the number of contacts required. It does **not** indicate the number of contacts in the configuration.

POLARITY DESIGNATION

N = Standard position – ungrounded
 V, W, X or Y = Alternate positions – (ungrounded)
 A = Standard position – grounded
 B, C, D or E = Alternate positions – (grounded)

CONTACT TERMINATION

Blank = Solder well (standard unless noted)
 R = Pressure (See complete ordering information that follows for availability)
 T = Crimp (available in all configurations)

PLUGGED CONTACT OPENINGS (Optional)

This option allows greater flexibility, allowing for unique wiring requirements. The number following the slash indicates the total number of *contacts* that will be supplied (including ground contact, if applicable); all other openings in the insert assembly will be plugged.

BACK BOXES (Optional)

See page 1107 for back box information.

ARK-trol Electrical Connectors

RPC Circuit Breaking Power Connectors With Solder Well Terminals ①

Raintight



	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ②, ③	Motor Plug with Dust Cap Cat. #
20 AMPS							
Grounded	4w, 5p	480	#12	017	3/4 1	RPC217-014-S09A-ARE23 RPC217-014-S09A-ARE33	RPC117-157-P09A
Ungrounded	5w, 5p	480	#12	017	3/4 1	RPC217-014-S08N-ARE23 RPC217-014-S08N-ARE33	RPC117-157-P08N
30 AMPS							
Grounded	2w, 3p	480	#10	017	3/4 1	RPC217-014-S02A-ARE23 RPC217-014-S02A-ARE33	RPC117-157-P02A
	3w, 4p	480	#10	017	3/4 1	RPC217-014-S04A-ARE23 RPC217-014-S04A-ARE33	RPC117-157-P04A
	4w, 5p	480	#10	021	3/4 1	RPC221-014-S17A-ARE23 RPC221-014-S17A-ARE33	RPC121-157-P17A
Ungrounded	3w, 3p	480	#10	017	3/4 1	RPC217-014-S01N-ARE23 RPC217-014-S01N-ARE33	RPC117-157-P01N
	4w, 4p	480	#10	017	3/4 1	RPC217-014-S03N-ARE23 RPC217-014-S03N-ARE33	RPC117-157-P03N
	5w, 5p	480	#10	021	3/4 1	RPC221-014-S16N-ARE23 RPC221-014-S16N-ARE33	RPC121-157-P16N
60 AMPS							
Grounded	3w, 4p	600	#4	033	1 1/4 1 1/2	RPC233-014-S08A-ARE46 RPC233-014-S08A-ARE56	RPC133-157-P08A
	4w, 5p	480	#4	033	1 1/4 1 1/2	RPC233-014-S09A-ARE46 RPC233-014-S09A-ARE56	RPC133-157-P09A
Ungrounded	4w, 4p	600	#4	033	1 1/4 1 1/2	RPC233-014-S05N-ARE46 RPC233-014-S05N-ARE56	RPC133-157-P05N
	5w, 5p	480	#4	033	1 1/4 1 1/2	RPC233-014-S06N-ARE46 RPC233-014-S06N-ARE56	RPC133-157-P06N

RPC Circuit Breaking Power Connectors With Solder Well Terminals ①



Cable Diameter Range	Cord Connector Cat. # ④	Plug Cat. # ④
.250 to .625	RPC317-160-S09A	RPC117-150-P09A
.625 to .875	RPC317-161-S09A	RPC117-151-P09A
.250 to .625	RPC317-160-S08N	RPC117-150-P08N
.625 to .875	RPC317-161-S08N	RPC117-151-P08N
.250 to .625	RPC317-160-S02A	RPC117-150-P02A
.625 to .875	RPC317-161-S02A	RPC117-151-P02A
.250 to .625	RPC317-160-S04A	RPC117-150-P04A
.625 to .875	RPC317-161-S04A	RPC117-151-P04A
.625 to 1.000	RPC321-161-S17A	RPC121-151-P17A
1.000 to 1.187	RPC321-395-S17A	RPC121-387-P17A
.250 to .625	RPC317-160-S01N	RPC117-150-P01N
.625 to .875	RPC317-161-S01N	RPC117-151-P01N
.250 to .625	RPC317-160-S03N	RPC117-150-P03N
.625 to .875	RPC317-161-S03N	RPC117-151-P03N
.625 to 1.000	RPC321-161-S16N	RPC121-151-P16N
1.000 to 1.187	RPC321-395-S16N	RPC121-387-P16N
.875 to 1.375	RPC333-163-S08A	RPC133-153-P08A
1.375 to 1.625	RPC333-396-S08A	RPC133-388-P08A
1.625 to 1.875	RPC333-397-S08A	RPC133-389-P08A
.875 to 1.375	RPC333-163-S09A	RPC133-153-P09A
1.375 to 1.625	RPC333-396-S09A	RPC133-388-P09A
1.625 to 1.875	RPC333-397-S09A	RPC133-389-P09A
.875 to 1.375	RPC333-163-S05N	RPC133-153-P05N
1.375 to 1.625	RPC333-396-S05N	RPC133-388-P05N
1.625 to 1.875	RPC333-397-S05N	RPC133-389-P05N
.875 to 1.375	RPC333-163-S06N	RPC133-153-P06N
1.375 to 1.625	RPC333-396-S06N	RPC133-388-P06N
1.625 to 1.875	RPC333-397-S06N	RPC133-389-P06N

FOOTNOTES:

- ① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPC217-014-S09AT-ARE23.
- ② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC217-127-S09A-ARE23.
- ③ For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC217-014-S09A.
- ④ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to first section of catalog number. Example: RPCLT317-160-S09A.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter “K” to first section of catalog number. Example: RPCK317-160-S09A.

NOTE: RPC with pressure terminals are shown on pages 1100 through 1103.



	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ②, ③	Motor Plug Cat. #
100 AMPS							
Grounded	4w, 5p	600	1/8	041	1 1/2 2	RPC641-014-S04A-AJ57 RPC641-014-S04A-AJ67	RPC541-157-P04A
Ungrounded	5w, 5p	600	1/8	041	1 1/2 2	RPC641-014-S02N-AJ57 RPC641-014-S02N-AJ67	RPC541-157-P02N
200 AMPS							
Grounded	3w, 4p	480	1/8	041	2 2 1/2	RPC641-014-S10A-AJ68 RPC641-014-S10A-AJ78	RPC541-157-P10A

RPC Circuit Breaking Power Connectors With Solder Well Terminals ①



**Cable
Diameter Range**

**Cord
Connector
Cat. # ④**

**Plug
Cat. # ④**

1.375 to 1.875	RPC741-164-S04A	RPC541-154-P04A
1.875 to 2.062	RPC741-398-S04A	RPC541-390-P04A
2.062 to 2.250	RPC741-399-S04A	RPC541-391-P04A
1.375 to 1.875	RPC741-164-S02N	RPC541-154-P02N
1.875 to 2.062	RPC741-398-S02N	RPC541-390-P02N
2.062 to 2.250	RPC741-399-S02N	RPC541-391-P02N
1.375 to 1.875	RPC741-164-S10A	RPC541-154-P10A
1.875 to 2.062	RPC741-398-S10A	RPC541-390-P10A
2.062 to 2.250	RPC741-399-S10A	RPC541-391-P10A

NOTE: RPC with pressure terminals are shown on pages 1100 through 1103.

FOOTNOTES:

- ① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPC217-014-S09AT-ARE23.
- ② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC217-127-S09A-ARE23.
- ③ For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC217-014-S09A.
- ④ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to first section of catalog number. Example: RPCLT317-160-S09A.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter “K” to first section of catalog number. Example: RPCK317-160-S09A.

ARK-trol Electrical Connectors

RPC Circuit Breaking Power Connectors With Pressure Terminals

Raintight



	Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ①, ②	Motor Plug Cat. #
30 AMPS							
Grounded	2w, 3p	600	#10	021	¾ 1	RPC221-014-S04AR-ARE23 RPC221-014-S04AR-ARE33	RPC121-157-P04AR
Ungrounded	3w, 3p	600	#10	021	¾ 1	RPC221-014-S02NR-ARE23 RPC221-014-S02NR-ARE33	RPC121-157-P02NR
60 AMPS							
Grounded	3w, 4p	600	#4	033	1¼ 1½	RPC233-014-S08AR-ARE46 RPC233-014-S08AR-ARE56	RPC133-157-P08AR
	4w, 5p	480	#4	033	1¼ 1½	RPC233-014-S09AR-ARE46 RPC233-014-S09AR-ARE56	RPC133-157-P09AR
Ungrounded	4w, 4p	600	#4	033	1¼ 1½	RPC233-014-S05NR-ARE46 RPC233-014-S05NR-ARE56	RPC133-157-P05NR
	5w, 5p	480	#4	033	1¼ 1½	RPC233-014-S06NR-ARE46 RPC233-014-S06NR-ARE56	RPC133-157-P06NR

† For alternate polarizations, see "Options" on page 1093.

RPC Circuit Breaking Power Connectors With Pressure Terminals



Cable Diameter Range	Cord Connector Cat. # ③	Plug Cat. # ③
.250 to .625 .625 to 1.000	RPC321-160-S04AR RPC321-161-S04AR	RPC121-150-P04AR RPC121-151-P04AR
.250 to .625 .625 to 1.000	RPC321-160-S02NR RPC321-161-S02NR	RPC121-150-P02NR RPC121-151-P02NR
.875 to 1.375 1.375 to 1.625 1.625 to 1.875	RPC333-163-S08AR RPC333-396-S08AR RPC333-397-S08AR	RPC133-153-P08AR RPC133-388-P08AR RPC133-389-P08AR
.875 to 1.375 1.375 to 1.625 1.625 to 1.875	RPC333-163-S09AR RPC333-396-S09AR RPC333-397-S09AR	RPC133-153-P09AR RPC133-388-P09AR RPC133-389-P09AR
.875 to 1.375 1.375 to 1.625 1.625 to 1.875	RPC333-163-S05NR RPC333-396-S05NR RPC333-397-S05NR	RPC133-153-P05NR RPC133-388-P05NR RPC133-389-P05NR
.875 to 1.375 1.375 to 1.625 1.625 to 1.875	RPC333-163-S06NR RPC333-396-S06NR RPC333-397-S06NR	RPC133-153-P06NR RPC133-388-P06NR RPC133-389-P06NR

FOOTNOTES:

- ① For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC221-127-S04AR-ARE23.
- ② For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC221-014-S04AR.
- ③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to first section of catalog number. Example: RPCLT321-160-S04AR.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter “K” to first section of catalog number. Example: RPCK321-160-S04AR.



		Circuit Description	Volts (VAC)	Contact Size	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ①, ②	Motor Plug Cat. #
100 AMPS								
Grounded		4w, 5p	600	1/2	041	1 1/2 2	RPC641-014-S04AR-AJ57 RPC641-014-S04AR-AJ67	RPC541-157-P04AR
Ungrounded		5w, 5p	600	1/2	041	1 1/2 2	RPC641-014-S02NR-AJ57 RPC641-014-S02NR-AJ67	RPC541-157-P02NR

† For alternate polarizations, see "Options" on page 1093.

ARK-trol Electrical Connectors

RPC Circuit Breaking Power Connectors With Pressure Terminals

Raintight

8P



Cable Diameter Range	Cord Connector Cat. # ③	Plug Cat. # ③
1.375 to 1.875	RPC741-164-S04AR	RPC541-154-P04AR
1.875 to 2.062	RPC741-398-S04AR	RPC541-390-P04AR
2.062 to 2.250	RPC741-399-S04AR	RPC541-391-P04AR
1.375 to 1.875	RPC741-164-S02NR	RPC541-154-P02NR
1.875 to 2.062	RPC741-398-S02NR	RPC541-390-P02NR
2.062 to 2.250	RPC741-399-S02NR	RPC541-391-P02NR

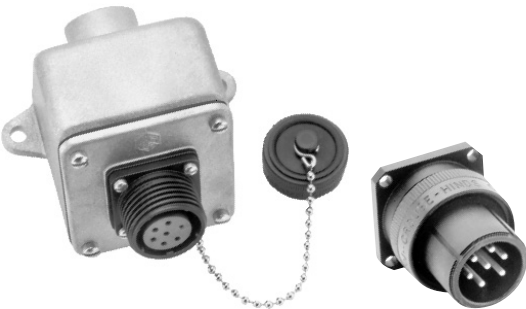
FOOTNOTES:

- ① For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPC221-127-S04AR-ARE23.
- ② For square flanged receptacle with dust cap for panel mounting, delete the last digits of the catalog number specifying the backbox. Example: RPC221-014-S04AR.
- ③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to first section of catalog number. Example: RPCLT321-160-S04AR.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter “K” to first section of catalog number. Example: RPCK321-160-S04AR.



	Circuit Description	Contact Size	Amps	Volts (VAC)	Shell Size	Hub Size	Square Flanged Receptacle, Dust Cap and Back Box Cat. # (For Surface Mounting) ②, ③	Motor Plug Cat. #
POWER	1w, 1p	500 MCM	500	600	033	1½ 2	RPE633-014-S24N-AJ57 RPE633-014-S24N-AJ67	RPE533-157-P24N
CONTROL	6w, 7p	#12	20	480	017	¾ 1	RPE217-014-S06A-ARE23 RPE217-014-S06A-ARE33	RPE117-157-P06A
	7w, 7p	#12	20	480	017	¾ 1	RPE217-014-S05N-ARE23 RPE217-014-S05N-ARE33	RPE117-157-P05N
	12w, 12p	#16	16	250	017	¾ 1	RPE217-014-S07N-ARE23 RPE217-014-S07N-ARE33	RPE117-157-P07N
	18w, 19p	#12	20	250	021	¾ 1	RPE221-014-S08A-ARE23 RPE221-014-S08A-ARE33	RPE121-157-P08A
	19w, 19p	#12	20	250	021	¾ 1	RPE221-014-S09N-ARE23 RPE221-014-S09N-ARE33	RPE121-157-P09N
	38w, 39p	#12	20	250	033	1¼ 1½	RPE233-014-S19A-ARE46 RPE233-014-S19A-ARE56	RPE133-157-P19A
	39w, 39p	#12	20	250	033	1¼ 1½	RPE233-014-S17N-ARE46 RPE233-014-S17N-ARE56	RPE133-157-P17N

RPE Control Circuit and Power Connectors With Solder Well Terminals



Cable Diameter Range	Cord Connector Cat. # ④	Plug Cat. # ④
1.375 to 1.625	RPE733-396-S24N	RPE533-388-P24N
1.625 to 1.875	RPE733-397-S24N	RPE533-389-P24N
.250 to .625	RPE317-160-S06A	RPE117-150-P06A
.625 to .875	RPE317-161-S06A	RPE117-151-P06A
.250 to .625	RPE317-160-S05N	RPE117-150-P05N
.625 to .875	RPE317-161-S05N	RPE117-151-P05N
.250 to .625	RPE317-160-S07N	RPE117-150-P07N
.625 to .875	RPE317-161-S07N	RPE117-151-P07N
.625 to 1.000	RPE321-161-S08A	RPE121-151-P08A
1.000 to 1.187	RPE321-395-S08A	RPE121-387-P08A
.625 to 1.000	RPE321-161-S09N	RPE121-151-P09N
1.000 to 1.187	RPE321-395-S09N	RPE121-387-P09N
.875 to 1.375	RPE333-163-S19A	RPE133-153-P19A
1.375 to 1.625	RPE333-396-S19A	RPE133-388-P19A
.875 to 1.375	RPE333-163-S17N	RPE133-153-P17N
1.375 to 1.625	RPE333-396-S17N	RPE133-388-P17N

FOOTNOTES:

- ① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPE633-014-S24NT-AJ57.
- ② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 014 to 127. Example: RPE633-127-S24N-AJ57.
- ③ For square flanged receptacle with dust cap for panel mounting, delete the last three digits of the catalog number specifying the backbox. Example: RPE633-014-S24N.
- ④ For plugs and cord connectors:
LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to the first section of the catalog number. Example: RPELT733-396-S24N.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter “K” to first section of the catalog number. Example: RPEK733-396-S24N.



FOR #16 THROUGH #10 CONTACTS:

The RPE017-440 crimping tool has been designed to crimp a wide range of solid and stranded type conductors. The crimping head is adjusted and sealed at the factory. The tool automatically crimps and gauges all size contacts without readjustment.



CONTACT REMOVAL TOOLS:

The contact removal tool extracts the contact from the insert assembly without complete disassembly of the connector.

RPE017-402T for use with #16 contacts.
RPE017-403T for use with #12 contacts.
RPE017-404T for use with #10 contacts.

DUST CAPS: For Receptacles For RPC or RPE Series



Dust Cap w/Eyelet for
Receptacle Cat. #
RPE017-009
RPE021-009
RPE033-009
RPE041-009

Back Boxes and Adapters

8P

For Mounting RPC and RPE Square Flanged Receptacles



FS Back box



ARE Back box



AJ Back box

Back Boxes FS and FSC

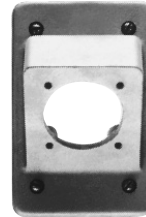
Hub Size	FS† Cat. #	FSC† Cat. #
1/2	FS1-SA	FSC1-SA
3/4	FS2-SA	FSC2-SA
1	FS3-SA	FSC3-SA

ARE‡

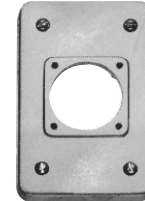
Hub Size	Cat. #	Rating
1/2	ARE13	30A
3/4	ARE23	
1	ARE33	
1	ARE36	60A
1 1/4	ARE46	
1 1/2	ARE56	

AJ‡

Hub Size	Cat. #	Rating
1	AJ37	60A and 100A
1 1/4	AJ47	
1 1/2	AJ57	
2	AJ67	
1 1/2	AJ58	200A
2	AJ68	
2 1/2	AJ78	



45° Angle adapter



Flat adapter

Adapters

Shell Sizes of Square Flanged Receptacles

45° Angle		Flat	
017 Cat. #	021 Cat. #	017 Cat. #	021 Cat. #
RPE017-156	RPE021-156	RPE017-141	RPE021-142

Shell Sizes of Square Flanged Receptacles

Flat			
017 Cat. #	021 Cat. #	033 Cat. #	041 Cat. #
RPE017-143	RPE021-144		
		RPE033-145	RPE041-146

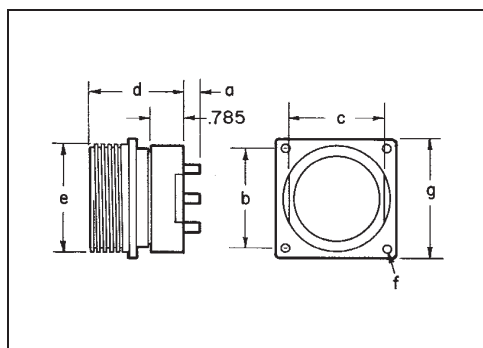
Shell Sizes of Square Flanged Receptacles

Flat	
033 Cat. #	041 Cat. #
RPE033-145	RPE041-146
	RPE041-147

† Any of the FS or FD single gang, two gang tandem or multiple gang boxes with individual cover openings may be used with these adapters. For listings, dimensions and other details refer to Section 3F.

‡ Other AR and AJ back boxes may be used with these adapters. For listings, dimensions and other details refer to Section 1P.

RPC Circuit Breaking Power Connectors
RPE Control Circuit and Power Connectors
Dimensions



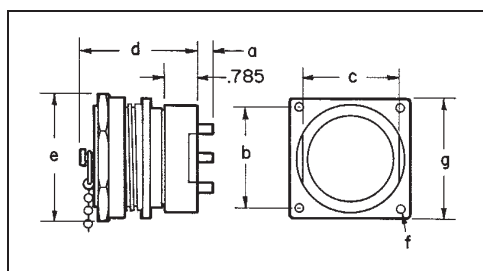
Square Flanged Receptacle

Shell Type and Size

	b	c	d	e	f	g
217	1.375	1.317	2.165	1.562	.190	1.750
221	1.750	1.692	2.165	2.000	.190	2.250
233	2.375	2.317	2.165	2.625	.214	2.875
241	2.813	2.817	2.165	3.187	.250	3.438
633	2.375	2.317	2.915	2.625	.214	2.875
641	2.813	2.817	2.915	3.187	.250	3.438

Contact for AWG Wire

a	
.1875	#16, #12, #10
.250	#4
.375	1/2
.500	3/4

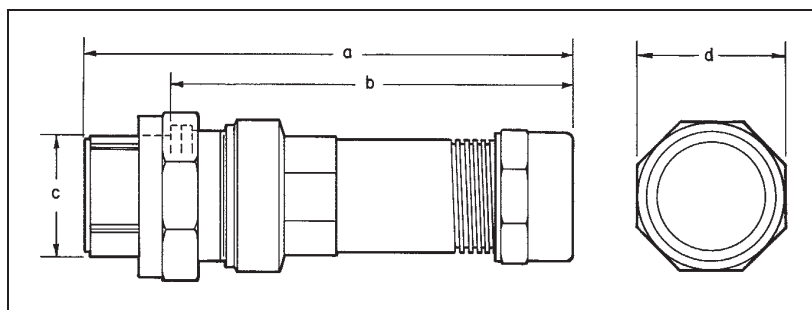


Square Flanged Receptacle with Dust Cap

Shell Type and Size

	b	c	d	e	f	g
217	1.375	1.317	2.812	1.927	.190	1.750
221	1.750	1.692	2.812	2.468	.190	2.250
233	2.375	2.317	2.812	3.145	.214	2.875
241	2.813	2.817	2.812	3.754	.250	3.438
633	2.375	2.317	3.552	3.145	.214	2.875
641	2.813	2.817	3.552	3.754	.250	3.438

NOTE: Dimension a – same as above



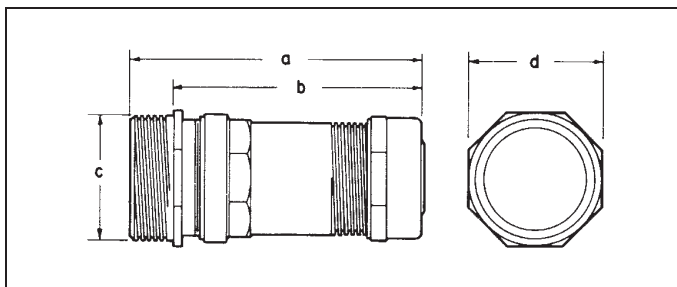
Plug

Shell Type and Size

	a†	b†	c	d
117	5.033	4.133	1.270	1.921
121	5.090	4.190	1.675	2.468
133	6.093	5.193	2.295	3.140
141	6.653	5.753	2.800	3.750
533	6.843	5.193	2.295	3.140
541	7.403	5.753	2.800	3.750

† These dimensions are approximate and vary with cable size.

RPC Circuit Breaking Power Connectors RPE Control Circuit and Power Connectors Dimensions

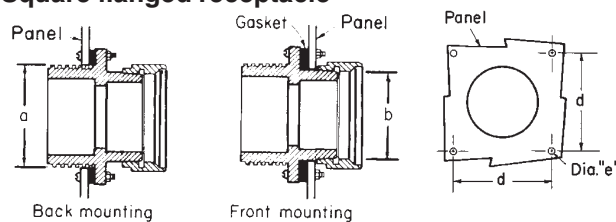


Cord Connector Receptacle

Shell Type
and Size

	a†	b†	c	d
317	5.033	4.116	1.562	1.812
321	5.090	4.173	1.885	2.300
333	6.093	5.176	2.625	3.140
341	6.653	5.736	3.187	3.730
733	6.843	5.176	2.625	3.140
741	7.403	5.736	3.187	3.730

Square flanged receptacle

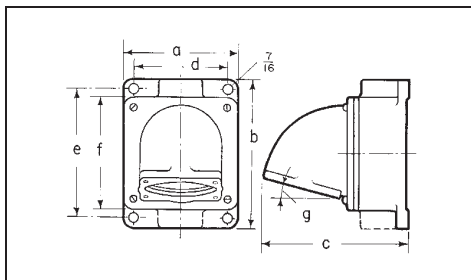


Panel Mounting Methods

Shell Size	Back Mounting			Front Mounting		
	a	d	e	b	d	e
017	1 ¹⁹ / ₃₂	1 ³ / ₈	3 ¹ / ₁₆	1 ¹⁷ / ₃₂	1 ³ / ₈	3 ¹ / ₁₆
021	2 ¹ / ₃₂	1 ³ / ₄	3 ¹ / ₁₆	1 ³¹ / ₃₂	1 ³ / ₄	3 ¹ / ₁₆
033	2 ²¹ / ₃₂	2 ³ / ₈	7 ¹ / ₃₂	2 ²¹ / ₃₂	2 ³ / ₈	-7 ¹ / ₃₂
041	3 ⁷ / ₃₂	2 ¹³ / ₁₆	1 ¹ / ₄	3 ⁵ / ₃₂	2 ¹³ / ₁₆	1 ¹ / ₄

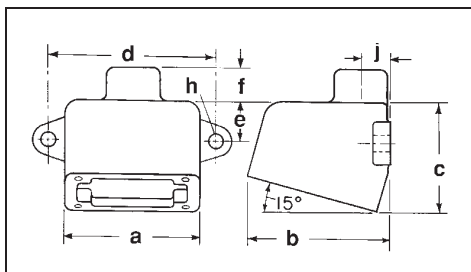
AJ Back Boxes

Form	Size	a	b	c	d	e	f	g
C & D	3/4, 1, 1 1/4, 1 1/2	5 7/8	8	7 7/16	4 7/8	7	5 7/8	15°
C & D	2	5 7/8	8	8	4 7/8	7	5 7/8	15°
E	1 1/2, 2, 2 1/2	8	10 3/4	9 7/8	6 3/4	9 1/2	8	45°



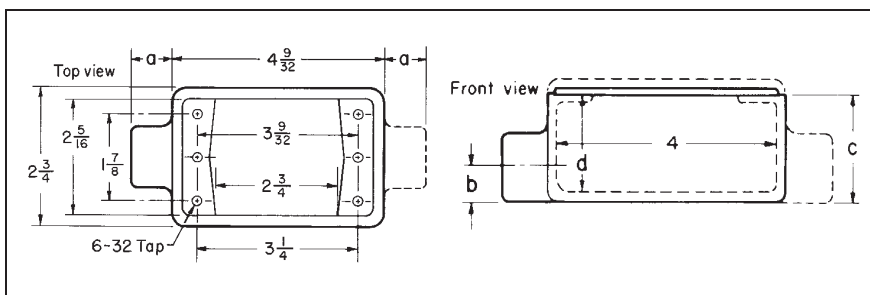
ARE Back Boxes

Form	Size	a	b	c	d	e	f	h dia.
B	1/2	3 3/8	3 3/8	2 3/4	4 1/4	1	2 7/32	1 1/32
B	3/4	3 3/8	3 3/8	2 3/4	4 1/4	1	2 7/32	1 1/32
B	1	3 3/8	3 3/8	2 3/4	4 1/4	1	3 1/32	1 1/32
C	1	4 1/4	4 11/16	4 11/16	5 1/4	1 5/8	1 5/16	3/8
C	1 1/4	4 1/4	4 11/16	4 11/16	5 1/4	1 5/8	1	3/8
C	1 1/2	4 1/4	4 11/16	4 11/16	5 1/4	1 5/8	1 1/16	3/8



FS/FSC Boxes

Series	Hub Size	a	b	c	d
FS	1/2	7/8	5/8	1 7/8	1 11/16
	3/4	7/8	3/4	1 7/8	1 11/16
	1	1	7/8	1 7/8	1 11/16



† These dimensions are approximate and vary with cable size.

Notes Page

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Special Purpose Ark-trol® Plugs and Receptacles Hazardous

9P

Description	Page No.
Application/Selection	1113
Delayed Action RPX “Time-Slot” Series	1114-1118

Notes Page

[illegible]

Ark-trol® Electrical Connectors

RPX “Time Slot” Delayed Action Connectors

Hazardous Locations

Cl. I, Div. 1 & 2, Group D*
Explosionproof
Raintight
Dimensions Page 1118

9P

Application:

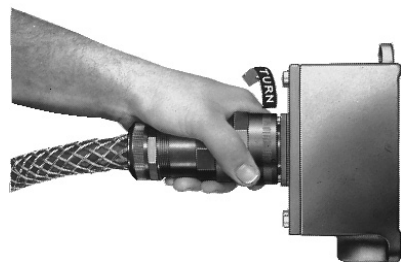
RPX “Time-Slot” delayed action connectors are used:

- in areas which are hazardous due to the presence of gasoline or gases or vapors of equivalent hazard (comparable to NEC Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-STD-810E
- for connection of devices ranging from simple lighting units, power tools and similar portables requiring only a power circuit to sophisticated control and instrumentation assemblies requiring disconnect

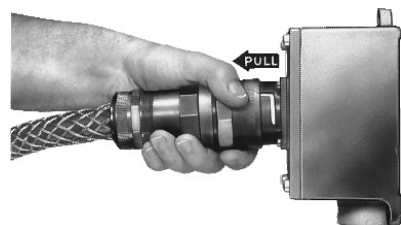
Features:

The same basic features, described in detail in Section 8P for RPC and RPE connectors, apply to RPX connectors as well and include the following:

- High-strength impact extruded aluminum shell parts
- “Tri-Disc” insert assemblies
- Contacts snap in after termination
- Positive polarization
- Interchangeability of inserts in each shell size
- Grounding contacts, where used, make first and break last
- The RPX “Time-Slot” delayed action feature prevents complete withdrawal of the plug in one continuous movement, eliminating the possibility of a circuit-breaking arc occurring in a hazardous area. Details of operation are shown in the illustrations below.



A. Turn plug clamping nut counterclockwise 45° to unlock plug.

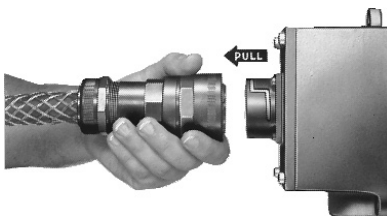


B. Pull to disengage pin and socket contacts, breaking circuit while contacts are still inside the receptacle. Any resulting electrical arc is quenched within the receptacle sockets.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-STD-810E.



C. Turn plug clamping nut an additional 45° counterclockwise to the release position, thereby effecting delayed action.



D. Disengage plug and receptacle.

Standard Materials:

- Back boxes and adapters – *Feraloy*® iron alloy
- Plug, receptacle and cord connector shells – impact extruded aluminum
- Insulation – diallyl phthalate (DAP)
- Sealing wafer – silicone rubber
- Contacts – hard drawn copper

Standard Finishes:

- *Feraloy* – zinc electroplate and aluminum acrylic paint
- Impact extruded aluminum – hard coat anodized
- Diallylphthalate – natural (blue)
- Silicone rubber – natural (grey)

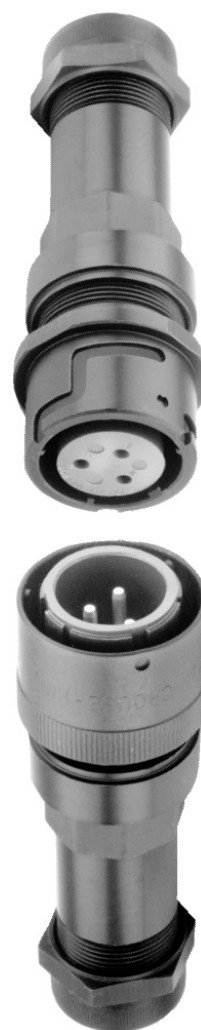
Options:

The following options available for RPC and RPE connectors are also applicable to RPX connectors. For complete details see Section 8P pages 1093 to 1094.

- Alternate polarities – ungrounded and grounded connectors
- Crimp type contacts
- Wire mesh cord grip

Electrical Rating Ranges:

- 10, 20, 30 and 60 amperes
- 50** to 400 hertz
- 250, 480 and 600vac
- See listings for specific ratings



Certifications and Compliances:

- RPX delayed action connectors have the same physical properties, characteristics and environmental capabilities of RPC and RPE connectors listed in Section 8P. For detailed information on these properties, refer to page 1094 of Section 8P.
- In addition to these properties, the “Time-Slot” delayed action feature permits disconnect under full rated load with no possibility of an exposed arc, thus meeting the stringent requirements of Military Specifications MIL-STD-810E

** For use on systems less than 60 hertz the receptacles, plugs and connectors are for disconnect use only.

Special Purpose
9P
Plugs/
Receptacles

Special Purpose†; ARK-trol Electrical Connectors

RPX “Time-Slot” Delayed Action Connectors
With Solder Well Terminals ①, Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
Explosionproof
Raintight
Dimensions Page 1118



**Square Flanged Receptacle,
Dust Cap and Back Box
Cat. No. (For Surface Mounting) ②**

	Circuit Description	Contact Size	Amps	Volts (VAC)	Shell Size	Hub Size	
POWER 20 AMPS	Grounded	#12	20	480	017	¾ 1	RPX217-914-S09A-EDSC271
							RPX217-914-S09A-EDSC371
	Ungrounded	#12	20	480	017	¾ 1	RPX217-914-S08N-EDSC271
							RPX217-914-S08N-EDSC371
30 AMPS	Grounded	#10	30	480	017	¾ 1	RPX217-914-S02A-EDSC271
							RPX217-914-S02A-EDSC371
		#10	30	480	017	¾ 1	RPX217-914-S04A-EDSC271
	Ungrounded	#10	30	480	021	¾ 1	RPX221-914-S17A-EDSC271
							RPX221-914-S17A-EDSC371
		#10	30	480	017	¾ 1	RPX217-914-S01N-EDSC271
							RPX217-914-S01N-EDSC371
		#10	30	480	017	¾ 1	RPX217-914-S03N-EDSC271
							RPX217-914-S03N-EDSC371
		#10	30	480	021	¾ 1	RPX221-914-S16N-EDSC271
							RPX221-914-S16N-EDSC371

† For alternate polarizations, see “Options” on page 1113.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

Special Purpose[†]; ARK-trol Electrical Connectors

RPX “Time-Slot” Delayed Action Connectors With Solder Well Terminals

Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
Explosionproof
Raintight
Dimensions Page 1118

9P



Cable Diameter Range	Cord Connector Cat. No. ③	Plug Cat. No. ③
.250 to .625	RPX317-160-S09A	RPX117-150-P09A
.625 to .875	RPX317-161-S09A	RPX117-151-P09A
.250 to .625	RPX317-160-S08N	RPX117-150-P08N
.625 to .875	RPX317-161-S08N	RPX117-151-P08N
.250 to .625	RPX317-160-S02A	RPX117-150-P02A
.625 to .875	RPX317-161-S02A	RPX117-151-P02A
.250 to .625	RPX317-160-S04A	RPX117-150-P04A
.625 to .875	RPX317-161-S04A	RPX117-151-P04A
.625 to 1.000	RPX321-161-S17A	RPX121-151-P17A
1.000 to 1.187	RPX321-395-S17A	RPX121-387-P17A
.250 to .625	RPX317-160-S01N	RPX117-150-P01N
.625 to .875	RPX317-161-S01N	RPX117-151-P01N
.250 to .625	RPX317-160-S03N	RPX117-150-P03N
.625 to .875	RPX317-161-S03N	RPX117-151-P03N
.625 to 1.000	RPX321-161-S16N	RPX121-151-P16N
1.000 to 1.187	RPX321-395-S16N	RPX121-387-P16N

FOOTNOTES:

① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPX217-914-S09AT-EDSC271.

② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 914 to 913. Example: RPX217-913-S09A-EDSC271.

③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to first section of catalog number. Example: RPXLT317-160-S09A.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

● Stainless steel wire mesh grip – To order, add letter “K” to first section of catalog number. Example: RPXK317-160-S09A.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

Special Purpose†; ARK-trol Electrical Connectors
RPX “Time-Slot” Delayed Action Connectors With Solder
Well Terminals ①
Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
 Explosionproof
 Raintight
 Dimensions Page 1118



**Square Flanged Receptacle,
 Dust Cap and Back Box
 Cat. No. (For Surface
 Mounting) ②**

	Circuit Description	Contact Size	Amps	Volts (VAC)	Shell Size	Hub Size	
60 AMPS Grounded	3w, 4p	#4	60	600	033	1¼	RPX233-914-S08A-CES42
	4w, 5p	#4	60	480	033	1¼	RPX233-914-S09A-CES42
	Ungrounded						
	4w, 4p	#4	60	600	033	1¼	RPX233-914-S05N-CES42
	5w, 5p	#4	60	480	033	1¼	RPX233-914-S06N-CES42
CONTROL	6w, 7p	#12	20	480	017	¾ 1	RPX217-914-S06A-EDSC271 RPX217-914-S06A-EDSC371
	7w, 7p	#12	20	480	017	¾ 1	RPX217-914-S05N-EDSC271 RPX217-914-S05N-EDSC371
	18w, 19p	#12	20	250	021	¾ 1	RPX221-914-S08A-EDSC271 RPX221-914-S08A-EDSC371
	19w, 19p	#12	20	250	021	¾ 1	RPX221-914-S09N-EDSC271 RPX221-914-S09N-EDSC371
	38w, 39p	#12	20	250	033	1¼	RPX233-914-S19A-CES42
	39w, 39p	#12	20	250	033	1¼	RPX233-914-S17N-CES42

† For alternate polarizations, see “Options” on page 1113.

* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

Special Purpose[†]; ARK-trol Electrical Connectors

RPX “Time-Slot” Delayed Action Connectors With Solder Well Terminals

Hazardous Areas*

Cl. I, Div. 1 & 2, Group D*
Explosionproof
Raintight
Dimensions page 1118

9P



Cable Diameter Range	Cord Connector Cat. No. ③	Plug Cat. No. ③
.875 to 1.375	RPX333-163-S08A	RPX133-153-P08A
1.375 to 1.625	RPX333-396-S08A	RPX133-388-P08A
1.625 to 1.875	RPX333-397-S08A	RPX133-389-P08A
.875 to 1.375	RPX333-163-S09A	RPX133-153-P09A
1.375 to 1.625	RPX333-396-S09A	RPX133-388-P09A
1.625 to 1.875	RPX333-397-S09A	RPX133-389-P09A
.875 to 1.375	RPX333-163-S05N	RPX133-153-P05N
1.375 to 1.625	RPX333-396-S05N	RPX133-388-P05N
1.625 to 1.875	RPX333-397-S05N	RPX133-389-P05N
.875 to 1.375	RPX333-163-S06N	RPX133-153-P06N
1.375 to 1.625	RPX333-396-S06N	RPX133-388-P06N
1.625 to 1.875	RPX333-397-S06N	RPX133-389-P06N
.250 to .625	RPX317-160-S06A	RPX117-150-P06A
.625 to .875	RPX317-161-S06A	RPX117-151-P06A
.250 to .625	RPX317-160-S05N	RPX117-150-P05N
.625 to .875	RPX317-161-S05N	RPX117-151-P05N
.625 to 1.000	RPX321-161-S08A	RPX121-151-P08A
1.000 to 1.187	RPX321-395-S08A	RPX121-387-P08A
.625 to 1.000	RPX321-161-S09N	RPX121-151-P09N
1.000 to 1.187	RPX321-395-S09N	RPX121-387-P09N
.875 to 1.375	RPX333-163-S19A	RPX133-153-P19A
1.375 to 1.625	RPX333-396-S19A	RPX133-388-P19A
.875 to 1.375	RPX333-163-S17N	RPX133-153-P17N
1.375 to 1.625	RPX333-396-S17N	RPX133-388-P17N

FOOTNOTES:

- ① Solder well terminals provided as standard. Crimp contacts are optionally available, add suffix T to catalog number. Example: RPX217-914-S09AT-EDSC271.
- ② For square flanged receptacle *without* dust cap, change the middle three digits of the catalog number from 914 to 913. Example: RPX217-913-S09A-EDSC271.
- ③ For plugs and cord connectors:

LIQUIDTIGHT/CONDUIT ADAPTER – To order with adapter, add letters “LT” to first section of catalog number. Example: RPXLT317-160-S09A.

ADDITIONAL CABLE STRAIN RELIEF OPTIONS –

- Stainless steel wire mesh grip – To order, add letter “K” to first section of catalog number. Example: RPXK317-160-S09A.

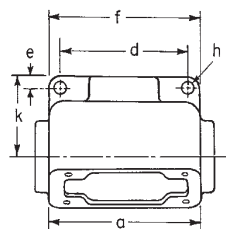
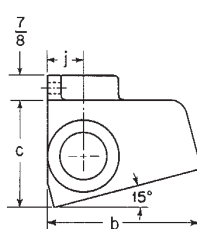
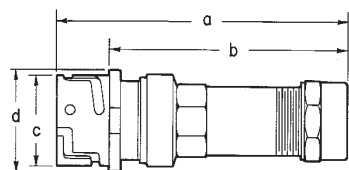
* RPX series are suitable for hazardous areas due to the presence of gasoline or other gases or vapors of equivalent hazard (comparable to N.E.C. Class I, Group D), where construction and test procedures are required to meet applicable sections of MIL-E-5272C and MIL-E-4970A.

RPX "Time-Slot" Delayed Action Connectors

Dimensions

RPX Cord Connector Receptacle

CES42 ♦



Cord Connector Receptacle

CES42 ♦

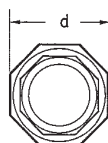
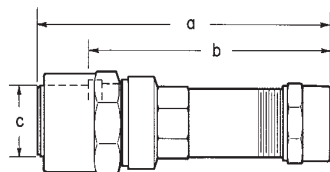
Shell

Type and Size

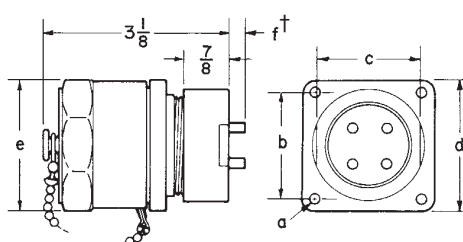
	a‡	b‡	c	d
317	5.033	4.116	1.560	1.812
321	5.090	4.173	2.000	2.300
333	6.093	5.176	2.625	3.140

Size	a	b	c	d	e	f	h dia.	j	k
1 1/4	5 1/4	5 1/4	3 11/16	4 3/8	7/16	5 1/4	7/16	1 1/8	2 7/8

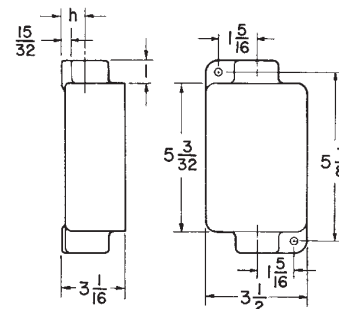
RPX Plug



RPX Connectors Square Flanged Receptacle with Dust Cap



Back Boxes



RPX Plug

Shell

Type and Size

	a‡	b‡	c	d
117	5.033	4.133	1.270	1.921
121	5.090	4.190	1.675	2.468
133	6.093	5.193	2.295	3.140

RPX Connectors Square Flanged Receptacle with Dust Cap

Shell

Type and Size

	a	b	c	d
217	.190	1.375	1.317	1.750
221	.190	1.750	1.692	2.250
233	.214	2.375	2.317	2.875

Back Boxes

Cat. No.	h	l
EDSC271	7/8	1 3/16
EDSC371	1	1 5/16

† Dimension "f"; 0.1875 for #16, #12 and #10 contacts
0.250 for #4 contacts

‡ These dimensions are approximate and vary with cable size.

♦ CES42 takes 60 ampere receptacle housings.

Why Cooper Crouse-Hinds?

- The broadest line of harsh and hazardous signaling, alarm and communication products available in both IEC and NEC designs and certifications.
- A new line of hazardous area call points (fire alarm or emergency notification devices) provides you a unique product offering unequalled by any other manufacturer of hazardous location signaling products.
- Worldwide listings with UL, cUL, ATEX, GOST, CSA and CQST (Chinese) approvals provide customer solutions that the competition can't match.
- Superior enclosure materials providing unmatched ingress protection and corrosion resistance from the harshest conditions.
- A unique signaling product offering integral visual and audible signaling capability pre-wired for simultaneous output activation.
- A new line of heat detectors for early indication of potential processing problems.

Applications Include:



Petrochemical Facilities



Manufacturing Areas



Waste Water Treatment



Food Processing Facilities



Paper and Pulp Operations



Pharmaceutical Manufacturing

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A Guide To The Use Of Electrical Equipment In Potentially Explosive Atmospheres

Introduction

Potentially explosive atmospheres exist where there is a risk of explosion due to mixtures of gas/air, vapor/air, dust/air or other flammable combinations. In such areas there is a necessity to eliminate sources of ignition such as sparks, hot surfaces or static electricity which may ignite these mixtures. Where electrical equipment has to be used in these areas it must be so designed and constructed as to not create sources of ignition capable of igniting these mixtures. Before electrical equipment can be used in a potentially explosive atmosphere, a representative sample has to be fully tested and certified by an independent authority such as Baseefa 2001 in Europe or UL in the U.S.A.

This information is intended as a guide only and further expert guidance should be sought before placing into service, maintaining or repairing any item of equipment in a potentially explosive atmosphere.

Where comparisons are shown between, for example, European and North American practice this may be an approximation and individual standards/codes of practice should be consulted for precise details.

Area Classification

Plants are divided into Zones (European and IEC method) or Divisions (North American method) according to the likelihood of a potentially explosive atmosphere being present.

Note: North American legislation now allows Zones to be used to classify areas, where this practice is used it follows the IEC Zone method.

European & IEC Classification	Definition of zone or division	North American Classification
Zone 0 (gases) Zone 20 (dusts)	An area in which an explosive mixture is continuously present or present for long periods	Class I, Division 1 (gases) Class II, Division 1 (dusts)
Zone 1 (gases) Zone 21 (dusts)	An area in which an explosive mixture is likely to occur in normal operation	Class I, Division 1 (gases) Class II, Division 1 (dusts)
Zone 2 (gases) Zone 22 (dusts)	An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time	Class I, Division 2 (gases) Class II, Division 2 (dusts) Class III, Division 1 (fibers) Class III, Division 2 (fibers)

Gas Groups (plus dusts and fibers)

There are two main gas groups, Group I—Mining only and Group II—Surface Industries. These categories are used in European and I.E.C. groupings.

Group I is concerned only with underground mining where methane and coal dust are present.

Group II gases occurring in surface industries, are sub-grouped according to their volatility. This enables electrical equipment to be designed to less onerous tolerances if it is to be used with the least volatile gases.

Typical gas/material	European/I.E.C. Gas Group	North American Gas Group
Methane	I	-
Acetylene	IIC	A
Hydrogen	IIC	B
Ethylene	IIB	C
Propane	IIA	D
Metal dust	-	E
Coal dust	-	F
Grain dust	-	G

Temperature

Hot surfaces can ignite explosive atmospheres. To guard against this, all electrical equipment intended for use in a potentially explosive atmosphere is classified according to the maximum surface temperature it will reach in service. This temperature is normally based on a surrounding ambient temperature of 40 degrees Centigrade (102 degrees Fahrenheit). This temperature can then be compared to the ignition temperature of the gas(es) which may come into contact with the equipment and a judgement reached as to the suitability of the equipment to be used in that area.

Temperature Classification		Maximum Surface Temperature
European/I.E.C.	North American	
T1	T1	450° C
T2	T2 T2A T2B T2C T2D	300° C 280° C 260° C 230° C 215° C
T3	T3 T3A T3B T3C	200° C 180° C 165° C 160° C
T4	T4 T4A	135° C 120° C
T5	T5	100° C
T6	T6	85° C

e.g. Butane has an ignition temperature of 365 degrees Centigrade, equipment used in the vicinity of this gas would need a T rating of T2 or better.

Types of Electrical Equipment Suitable for use in Potentially Explosive Atmospheres			
Different techniques are used to prevent electrical equipment from igniting explosive atmospheres. There are restrictions on where these different types of equipment can be used as follows:	European Area of use Designation Standard	IEC Area of use Designation Standard	NEC Area of use Designation Standard
Flameproof Enclosure —An enclosure used to house electrical equipment, which when subjected to an internal explosion will not ignite a surrounding explosive atmosphere.	Zones 1 & 2 EExd EN60079-1	Zones 1 & 2 Exd IEC60079-1	Class I Divisions 1 & 2 — UL1203
Intrinsic Safety —A technique whereby electrical energy is limited such that any sparks or heat generated by electrical equipment is sufficiently low as to not ignite an explosive atmosphere.	Zones 0, 1 & 2 EExi EN50020	Zones 1 & 2 Exi IEC60079-11	Class I Divisions 1 & 2 — UL913
Increased Safety —This equipment is so designed as to eliminate sparks and hot surfaces capable of igniting an explosive atmosphere.	Zones 1 & 2 EExe EN60079-7	Zones 1 & 2 Exi IEC60079-7	— — —
Purged and Pressurized —Electrical equipment is housed in an enclosure which is initially purged to remove any explosive mixture, then pressurised to prevent ingress of the surrounding atmosphere prior to energization.	Zones 1 & 2 EExp EN50016	Zones 1 & 2 Exp IEC60079-2	Class I Divisions 1 & 2 — NFPA496
Encapsulation —A method of exclusion of the explosive atmosphere by fully encapsulating the electrical components in an approved material.	Zones 1 & 2 EExm EN60079-18	Zones 1 & 2 Exm IEC60079-18	— — —
Oil Immersion —The electrical components are immersed in oil, thus excluding the explosive atmosphere from any sparks or hot surfaces.	Zones 1 & 2 EExo EN50015	Zones 1 & 2 Exo IEC60079-6	Class I Division 2 — UL698
Powder Filling —Equipment is surrounded with a fine powder, such as quartz, which does not allow the surrounding atmosphere to come into contact with any sparks or hot surfaces.	Zones 1 & 2 EExq EN50017	Zones 1 & 2 Exq IEC60079-5	— — —
Non-sparking —Sparking contacts are sealed against ingress of the surrounding atmosphere, hot surfaces are eliminated.	Zone 2 EExn EN60079-15	Zone 2 Exn IEC60079-15	— — —

Selection, installation and maintenance of electrical equipment intended for use in potentially explosive atmospheres.

International and national standard requirements for the safe use of electrical equipment in potentially explosive atmospheres as follows:

	International	Europe	U.S.A.
General Recommendations	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Classification of Hazardous Areas	IEC60079-10	EN60079-10	N.E.C. Chapter 5
Inspection and Maintenance of Electrical Equipment	IEC60079-17	EN60079-17	–
Requirements for Flameproof Enclosures	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Intrinsically Safe Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Increased Safety Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Purged and Pressurized Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Non-Sparking Equipment	IEC60079-14	EN60079-14	–

Cooper Crouse-Hinds advises that all Explosionproof electrical equipment is maintained, by suitably trained personnel, in accordance with the Manufacturers' recommendations.

Any spare parts used should be purchased from the original Manufacturer and repairs should be carried out by the Manufacturer or under his supervision, in order that the item remains in conformance with the certification documents.

The Certification Process

All electrical equipment, intended for use in a potentially explosive atmosphere, should be certified as suitable for such use.

The methods of obtaining certification differ in detail, see below, between each certifying body or group of bodies (e.g. CENELEC). Basically this process consists of supplying a representative sample of the equipment along with a set of drawings to a recognised test/certification body e.g. Baseefa 2001 who in turn test the equipment against a recognised Standard e.g. EN60079-14 and issues a Certificate. The user of the equipment can then refer to this Certificate to enable him to safely put the item into service in a zone appropriate to the Certification.

European Practice

ALL EQUIPMENT, BOTH ELECTRICAL AND MECHANICAL, INTENDED TO BE PUT INTO SERVICE WITHIN THE EEC HAS TO BE CERTIFIED IN ACCORDANCE WITH THE ATEX DIRECTIVE.

It should be noted also that **MECHANICAL** equipment is covered by the ATEX Directive so for the first time items such as gearboxes will have to carry ATEX certification.

The equipment coding signifying compliance with ATEX is as follows:



II2G i.e.



– Explosionproof in accordance with ATEX.

II – Group II surface industries.

2 – category 2 equipment (suitable for use in Zone 1) note: Category 1 is suitable for Zone 0.
Category 3 is suitable for Zone 2.

G – suitable for atmospheres containing gas (D is suitable for atmospheres containing dusts).

Equipment will be CE marked when certified to ATEX.

North American Practice

Sample equipment and supporting documentation are submitted to the appropriate authority e.g. U.L., F.M., C.S.A.

The equipment is tested in accordance with relevant standards for explosion protection and also for general electrical requirements e.g. light fittings.

After successful testing, a listing is issued allowing the manufacturer to place the product on the market.

The product is marked with the certification details such as the gas groups A,B,C,D and the area of use e.g. Class I, Division 1.

Applicable UL, cUL, ULC, CSA Certifications

UL1638 Visual Signaling Appliances—Private-mode emergency and general utility signaling.

ULC S526-02—Visual signal devices for fire alarm systems.

UL1971—Listed for signaling devices for the hearing impaired.

ULC S526-02—Visual signal devices for fire alarm systems

UL38—Manual signaling boxes for fire alarm systems.

Similar to CAN/ULC S58-M91—Standard for manual pull stations for fire alarm systems

UL464—Audible signal appliances.

ULC S525-99—Audible signal devices for fire alarm systems

UL11604—Electric equipment for use in Class II, Division 2, and Class III, hazardous locations.

UL844—Electric lighting fixtures for use in hazardous locations.

CSA C22.2 No. 137-M1981—Electric Luminaires for use in hazardous locations

UL1203—Explosionproof and dust ignitionproof electrical equipment for use in hazardous locations.

CSA C22.2 No. 30-M1986—Explosionproof enclosures for use in Class I Locations.

CSA C22.2 No. 25-1966—Explosionproof enclosures for use in Class II Groups E, F and G hazardous locations.

UL1598A—Supplemental requirements for luminaires for installation on marine vessels.

Refer to Transport Canada Technical Publication TP127E-Ships Electrical Standards.

Worldwide Certification

Most countries outside Europe or North America use the IEC Standards as a basis for their own national standards.

The Russian Federation certifies equipment to GOST 'R' standards, these closely follow CENELEC practice.

In Russia, certain products used in fire alarm systems may be required to carry the Russian fire approval (VNIPO). Note that not all Cooper Crouse-Hinds products that have been certified to GOST 'R' are VNIPO approved. Check specification on technical data sheets before ordering.

Kazakhstan has a certification process (GOST 'K') where approval is normally based on compliance with CENELEC standards.

Certification in China is based on compliance with international standards such as CENELEC or UL, or their own CQST standard.

There is a scheme in place which will, when fully adopted, allow for internationally recognized certification to become a reality, this is the IEC EX SCHEME. This uses the IEC standards and IEC recognised test and certification bodies to issue mutually recognised test reports and certificates. The scheme is in its infancy and its level of success cannot yet be measured.

Ingress Protection

2 digits are used to denote the level of ingress protection that a piece of apparatus enjoys:

IP 			
	Solids		Liquids
0	No protection.	0	No protection.
1	Protected against solid objects up to 50mm, e.g. hands.	1	Protected against vertically falling drops of water.
2	Protected against solid objects up to 12mm, e.g. fingers.	2	Protected against water spray up to 15 degrees from vertical.
3	Protected against solid objects up to 2.5mm, e.g. tools.	3	Protected against water spray up to 60 degrees from vertical.
4	Protected against solid objects over 1mm, e.g. wires.	4	Protected against water sprays from all directions.
5	Protected against dusts. (No harmful deposits).	5	Protected against water jets from all directions.
6	Totally protected against dust.	6	Protected against strong water jets from all directions, e.g. Offshore.
		7	Protected against immersion between 15cm and 1m in depth.
		8	Protected against long immersion under pressure.

NEMA Standards

North American practice is to use NEMA standards to describe ingress protection, i.e.:

NEMA 3	is similar to	IP 54
NEMA 4	is similar to	IP 55
NEMA 4X	is similar to	IP 56
NEMA 6	is similar to	IP 67

Manual Call Points



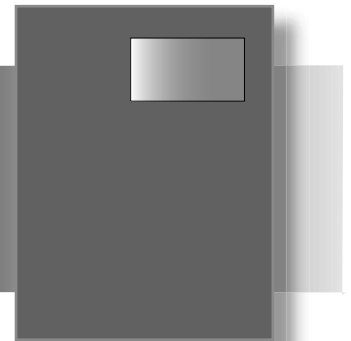
BG & SM87 BG
Call Points

Heat Detectors



HD1 Series
Heat Detectors

Hazardous Location Input Field Devices



**Fire Alarm
Panel**



(For illustration purposes only,
not available from this catalog)

Smoke Detector

**Strobe Warning
Lights**



XB15 & XB16 Strobe Lights

**Rotating
Beacons**



EXS0301

**Combination
Units**



Horn/Strobe Unit

**Remote Speaker/
Amplifier**



Explosionproof ETH Series

Hazardous Location Output Field Devices



DB3 Horn

Speakers



EXFASC Series

Fire Alarms



SM87 SL

Status Lights



XB12

Strobe Lights



Class I, Div. 2, Zone 2
Touch-safe coated glass for
finger activation.



Class I, Div. 2, Zone 2
Push to activate.



Class I, Div. 1
Push to activate.
Key switch to reset.

These manual fire alarm call points have been designed for use in hazardous locations and harsh environmental conditions. They offer:

- The broadest range of hazardous location manual fire alarm activation devices in the industry.
- The compact design, activation choices such as pushbutton or breakglass, housing color choices and comprehensive worldwide certifications make this product family a project closer.
- Flexibility as all units accept metric cable or NPT conduit entries, and each unit can be custom designed for a specific fire alarm or emergency activation requirements.

Primary Applications

- Fire alarm activation
- Emergency evacuation
- Process shut-down

Industries

- Liquid natural gas terminals
- Energy exploration
- Chemical
- Refinery
- Power generation

Key Features & Benefits

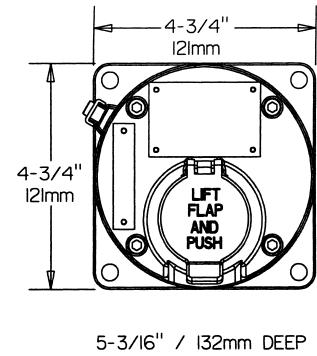
- In-line and end-of-line resistors fitted for use in fire activation circuits
- Optional LED to indicate operation
- Plastic break glass element available—easy activation yet safe to touch
- Corrosion resistant GRP—ideal for Marine applications
- Retained stainless steel cover screws—won't corrode and never lose screws
- Optional lift flap for protection

SM87PBL

Push Button Fire Alarm Call Point—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Marine Grade Alloy Stainless Steel (ATEX only)
Entries	Up to 4 x 1/2" or 3/4" NPT
Weight	5.5lb/2.5kg
Options: Body color, certification	



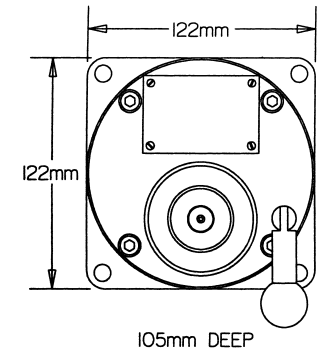
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, CSA, Class I, Div 1, Groups C & D, Zone 1	36200102	SM87PBLAUL3T3B3NNR	Explosion protected, 2 x 1/2" NPT entries, duty label "Fire—Press Here," single push button switch—latching, marine grade alloy, red finish

SM87BG

Break Glass Call Point—Explosionproof



Certification	ATEX GOST 'R' & 'K', Chinese
Intrinsically Safe Flameproof	ATEX Ex II 1G, EExia IIC T4 ATEX Ex II 2G, EExd IIC T6
Certified Ambient Temperature	-55°C to +70°C -20°C to +55°C (LED)
Ingress Protection	IP66 & 67
Material	Stainless Steel or Alloy
Entries	Up to 4 x 20mm or 25mm
Weight	3.8kg (Steel) 2.5kg (Alloy)
Options: Body color, 3 & 4 pole changeover switch, certification	



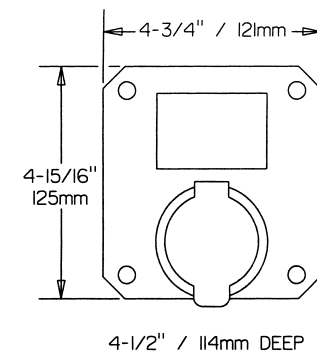
Certification	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 2GD	16200174	SM87BGLAD1B1NNR	Break glass call point, Ex II 2GD, EExd IIC T6, IP 66 & 67, 1 x M20 bottom entries, duty label, "Fire Breakglass," alloy material, red finish

PB

Push Button Fire Alarm Call Point—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2
Certified Ambient Temperature	-13°F to +158°F -25°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 4 x 1/2" NPT, M20
Weight	2.6lb/1.2kg
Options: Body color, certification	



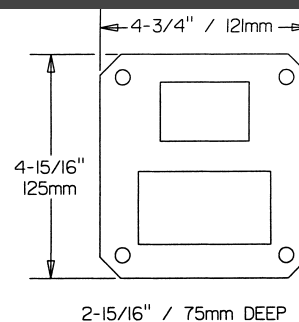
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, Class I, Div 2, Groups A, B, C, D, Zone 1 & 2	869105	PBUL4C6C0DSN7R	Explosion protected, 2 x 1/2" NPT bottom entries, no duty label, DC, single push button switch latching, painted red GRP
ATEX Ex II 2GD	800010	PBEB4B6B0DSN6R	Explosion protected, Ex II 2GD, EExe, IIC, T6, Zone 1 & 2, 2 x M20 entries, DC, single switch, red finish

BG

Break Glass Fire Alarm Call Point—Hazardous Locations



Certification UL Listed for:	ⒶTEX Class I, Div 2, Groups A,B,C,D Class I, Zone 2
Certified Ambient Temperature	-13°F to +131°F -25°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 4 x ½" NPT, M20
Weight	2.6lb/1.2kg



Options: Body color, certification, lift flap, LED, tag & duty label, series and EOL resistor

Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups A, B, C, D, Zone 2	Haz. Loc.	869101	BGUL4C6C1DSN7R	Explosion protected, 2 x ½" NPT bottom entries, single break glass switch latching, painted red GRP finish
ATEX Ex II 1GD	Intrinsically Safe	800002	BGIB4B6B1DSN6R	Explosion protected, Zone 0, 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, single switch, red finish
ATEX Ex II 2GD	Increased Safety	800003	BGEB4B6B1DSN6R	Explosion protected Ex II 2GD, EExed, IIC, T6, Zone 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish
IP66 & 67	Waterproof	800001	BGWN4B6B1ASN6R	Dust-tight and weatherproof, Uncertified AC, 2 x M20 bottom entries, single break glass switch latching, red finish

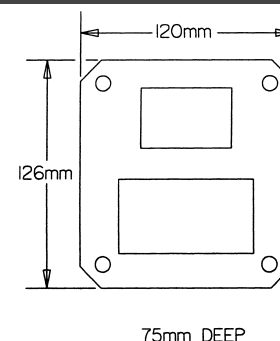
BG2

Break Glass Call Point—Hazardous Locations



Certification Intrinsically Safe Increased Safety	ⒶTEX ATEX Ex II 1GD, EExia IIC T4 ATEX Ex II 2GD, EExed(m) IIC T4 (T6)
Certified Ambient Temperature	-40°C to +55°C (EExia) -20°C to +50°C (EExed)
Ingress Protection	IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	1.2kg

Options: Lift flap



Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 1GD	Intrinsically Safe	800005	BG2INN1N	Explosion protected, Zone 0, 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish
Increased Safety	Increased Safety	800004	BG2EDC1N	Explosion protected, Zone 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish

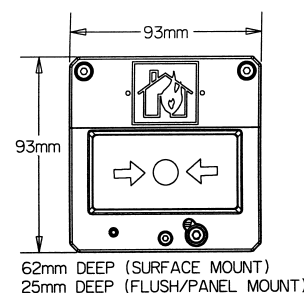
BG3

Break Glass Call Point—Explosionproof & Weatherproof



Certification Intrinsically Safe	ⒶTEX, Chinese ATEX Ex II 1G, EExia IIC T4
Certified Ambient Temperature	-55°C to +55°C (EExia)
Ingress Protection	IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	0.5kg

Options: Body color, lift flap

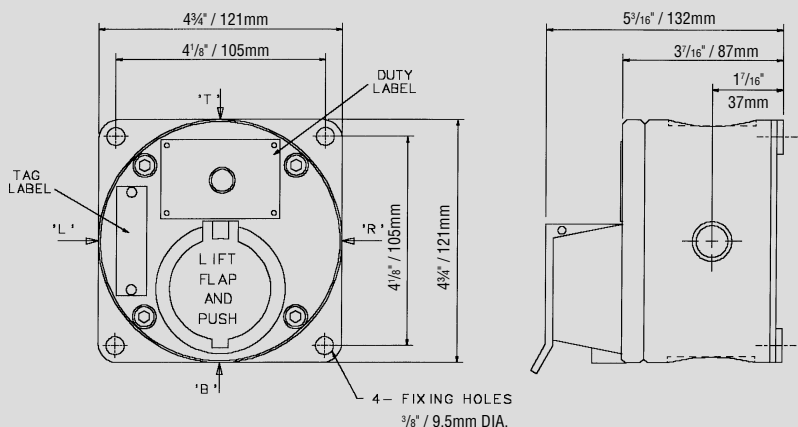


Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 1G	Intrinsically Safe	800007	BG3I1NBN	Explosion protected, Zone 0 / 1 & 2 DC, standard models are surface mount version, have 2 x M20 bottom entries, single break glass switch latching, duty label "Burning House," red GRP finish
IP66 & 67	Weatherproof	800006	BG3W1NBN	Uncertified, Dust-tight & weatherproof, 24V DC, Single break glass switch latching, duty label "Burning House," red GRP finish

MEDC Series Fire Alarm or Emergency Call Points—Hazardous Locations, Weatherproof, Marine

SM87PBL Unit

ALL DIMENSIONS IN INCHES AND MILLIMETERS



Specification—SM87PBL Unit

Certification: UL Listed: Class I, Div 1 Groups C & D and Class I, Zone 1. Listing No: E186629.
CSA Certification:
 I.S. Version—Class I, Groups A, B, C, D.
 Exd Class I, Div 2 ½ Group D.
 Enclosure type 4, Cert. No. 79120.
ATEX approved:
 EN50014, EN50018.
 Cert. No. Baseefa 03ATEX0075.

Voltage:	24V AC/DC
Rating:	2 amp.
Switches:	2 pole c/o, wired to terminals.
Terminals:	Will accept up to 14AWG cable.
Entries:	Up to 4 x ½" or ¾" NPT, 20mm, 25mm
Optional Indicator:	A red high intensity LED can be fitted for alarm indication.
Material:	LM 25 TF Marine Grade Alloy or Grade 316 ANCHB stainless steel
Weight:	5.5 lb/2.5kg (approx.).
Finish:	Epoxy paint finish as standard or to customer's specification.
Certified Temperature	EExd/Exi: -55°C to 70°C -20°C to +55°C (LED version only). UL: -67°F to +158°F (-55°C to +70°C). -4°F to +131°F (-20°C to +55°C) LED version only. CSA: -58°F to +131°F (-50°C to +55°C) (Exd). -58°F to +104°F (-50°C to +40°C) (Exi).
Ingress Protection:	NEMA 4X and 6, IP66 & 67. SM87 PB IP68 (40m for 8 hours).
Addressable:	Consult MEDC for specification.
Resistor Values:	470R minimum (DC & I.S. units only).

Field Installed Duty Labels

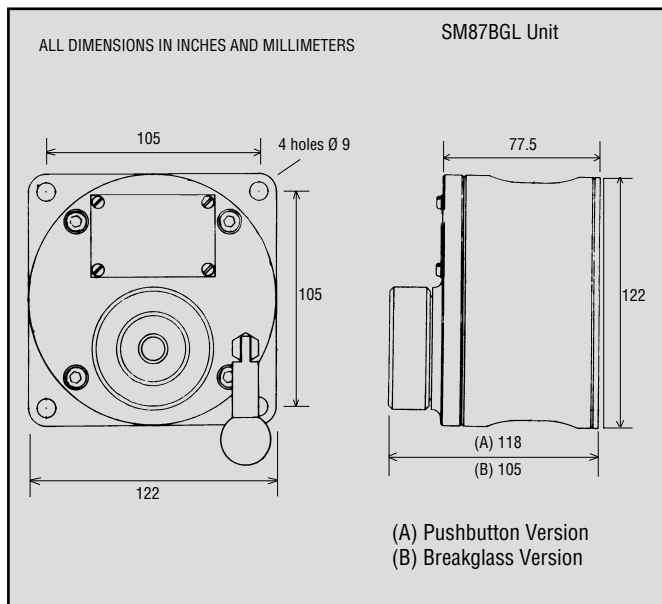
Use with SM87 Call Points:	Duty Label	Ordering Code
SM87PBL/SM87BGL	Blank	869530
SM87PBL/SM87BGL	FIRE	869526
SM87PBL/SM87BGL	Emergency Shut Down	869532
SM87PBL/SM87BGL	Suppression Release	869534

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Model	Material	Certification	Entries	Duty Label	Tag Label	Features	Finish																																												
SM87	PBL				N	N	N																																													
		<table border="1"> <thead> <tr> <th>*Material</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Stainless Steel</td> <td>S</td> </tr> <tr> <td>Alloy</td> <td>A</td> </tr> </tbody> </table> *UL version only available in Alloy.	*Material	Code	Stainless Steel	S	Alloy	A																																												
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MEDC Series Fire Alarm or Emergency Call Points—Hazardous Locations, Weatherproof, Marine



Both the EExIICT4 units and the EExdIIC6 units have the same external appearance. Also the internal components are identical throughout the range. Each unit can be wired for either NO, NC or CO contacts to customer specification.

Field Installed Duty Labels

Use with SM87 Call Points:	Duty Label	Ordering Code
SM87PBL/SM87BGL	Blank	869530
SM87PBL/SM87BGL	FIRE	869526
SM87PBL/SM87BGL	Emergency Shut Down	869532
SM87PBL/SM87BGL	Suppression Release	869534

Specification—SM87BGL Unit

Breakglass unit, latching	Type SM87BGL
Lift flap, Breakglass, latching	Type SM87LBGL
Voltage:	EExd 24V AC/DC EExia 28V.
Rating:	2 amp.
Switches:	2 pole c/o, wired to terminals. Optional up to 4 pole.
Terminals:	Will accept up to 2.5mm ² cable.
Entries:	Up to 4 x 20mm or 25mm ISO EExd/EExia.
Optional Indicator:	A red high intensity LED can be fitted for alarm indication.
Material:	Grade 316 ANC4B Stainless Steel or LM 25 TF Marine Grade Alloy.
Weight:	3.8 kg. steel (approx.) or 2.5 kg. alloy (approx.).
Finish:	Epoxy paint finish as standard or to customer's specification.
Certification:	CENELEC EN 50014, EN50018 (for Exd) and EN50020 (for Exi). EExIICT T4 Cert No. Baseefa 02 ATEX 0152X. EExdIIC T5/T6 Cert No. Baseefa 03 ATEX 0075. CSA Certification: Class I Groups A-D I.S. version (SM87 PBI only). Class I, Div 1 & 2, Group D (Exd – SM87 PB & SM87 BG). GOST 'R' Certification: 1Exib IIC T4, 1Exd IIC T4* GOST 'K' Certification: Exib IIC T4.* Chinese Certification: CQST – Exia IIC T4, Exd IIC T5/T6.* *Available upon request

Certified	EExd/Exi* –55°C to +70°C.
Temperature:	–20°C to +55°C (LED version only). CSA –50°C to +55°C (Exd), –50°C to +40°C (Exi). *Note: includes ATEX, GOST & Chinese versions.
Ingress	IP66 and IP67.
Protection:	SM87 PB IP68 (40m for 8 hours).
Resistor Values:	470R minimum (DC & I.S. units only).

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Model	Material	Certification	Entries	Duty Label	Tag Label	Features	Finish
SM87	BGL				N	N	N	

Material	Code
Stainless Steel	S
Alloy	A

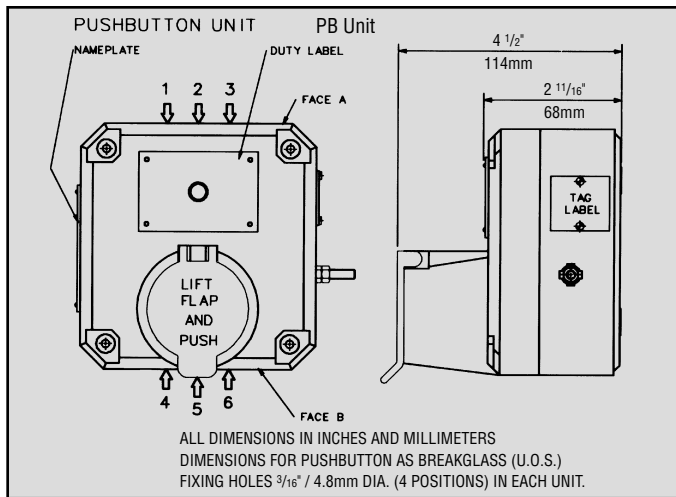
Certification	Code
EExdIIC6	D
CSA	C

Entries	Code
20mm Left/Right	1L1R
20mm Top/Bottom	1T1B
20mm Bottom	1B
25mm Left/Right	2L2R
25mm Top/Bottom	2T2B
25mm Bottom	2B
½" NPT Left/Right	3L3R
½" NPT Top/Bottom	3T3B
½" NPT Bottom	3B
¾" NPT Left/Right	4L4R
¾" NPT Top/Bottom	4T4B
¾" NPT Bottom	4B

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/Black Stripes	X

Note: the units can be internally wired to suit customers' specifications. Please discuss your requirements with us.

MEDC Series Fire Alarm or Emergency Call Points—Hazardous Locations, Weatherproof, Marine

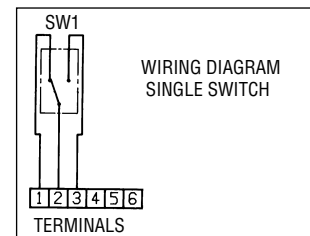


Field Installed Duty Labels

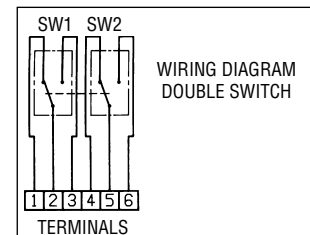
Use with PB Call Points:	Duty Label	Ordering Code
PB	Blank	869530
PB	FIRE	869526
PB	Emergency Shut Down	869532
PB	Suppression Release	869534

Specification—PB Unit

Certification:	UL Listed — Hazardous locations: Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2. UL Listing No. E186629. Ordinary locations: Fire Alarm Boxes. UL Listing No. S8117. CSA Certified to C22.2 (PB only), Nos. 0-M, 0.4M, 14-M, 25,30-M, 94, 142-M 1987, 157M 1987, 157-92, Enclosure Type 4, 4A, Class I, Groups A, B, C, D, Cert. No. 79120. ATEX Approved: EN50014, EN50018, EN50019, EN50028. Cert. No. BAS02ATEX2105X (BG & PB), EExed II C T6 (switch only), EExedm IIC T4 (other versions).
Voltage:	Up to 240V.
Certified Temperature:	BGUL: -13°F to +131°F (-25°C to +55°C); PBUL: -13°F to +131°F (-25°C to +55°C). PB (CSA): -58°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	7 x 14 AWG standard.
Switch Rating (1 or 2 changeover switches fitted):	Max Rating 240VAC, 3A.
Cable Entries:	Up to 4 entries 1/2" NPT or 20mm.
Weight:	2.6 lb/1.2kg (Varies with model & entries).
Material:	Glass reinforced polyester.
Finish:	Red epoxy painted finish as standard or to Customer's specification.
Resistors:	Various configurations available on versions up to 24V, 470R minimum.
LED Indication:	A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V.
Labeling:	PB & BG Duty label — worded to Client's requirements. Riveted on. PB & BG Tag label — worded to Client's requirements. Screwed on.



Basic single changeover switch wiring diagram



Basic double changeover switch wiring diagram

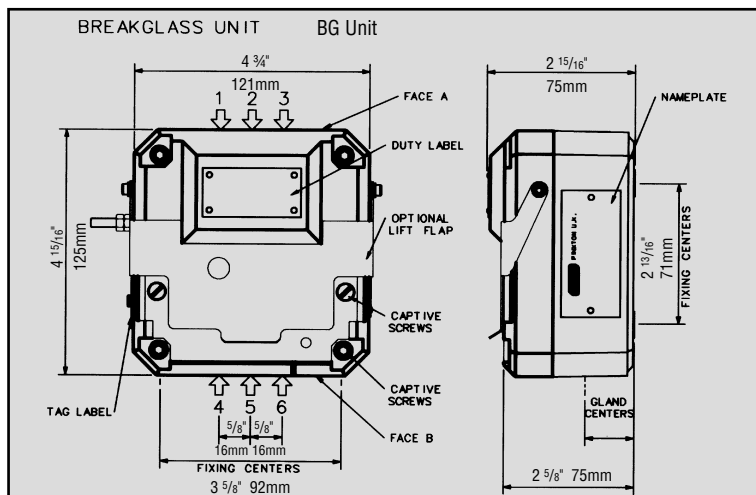
For versions containing inline and end of line resistors, please specify your requirements.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Entries	Labels	Switches	Features	Terminals	Finish
PB			N	DS	N	7	

Certification	Code	Entries	Code	Switches	Code	Finish	Code
ATEX/CENELEC – EExe	EB	1 Bottom M20	5B	DC double change over	DD	Red (Standard)	R
ATEX/CENELEC – EExi	IB	2 Bottom M20	4B 6B	AC single change over	AS	Natural Black	N
CSA – Exi (PBI only)	IC	1 Top, 1 Bottom M20	2B 5B	AC double change over	AD	Blue	B
UL – Class I, Div. 2	UL	1 Bottom 1/2" NPT	5C			Yellow	Y
		2 Bottom 1/2" NPT	4C 6C			Gray	G
		1 Top, 1 Bottom 1/2" NPT	2C 5C				
		16 mm	*A				
		20 mm	*B				
		1/2" NPT	*C				
		*Prefix entry size (see diagram above) with entry position code e.g. 1A, 2A.					
		UL & CSA Versions only available with 1/2" NPT entries					

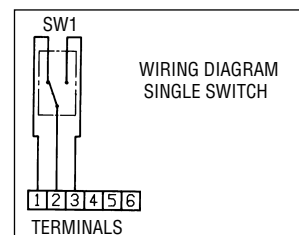


Field Installed Duty Labels

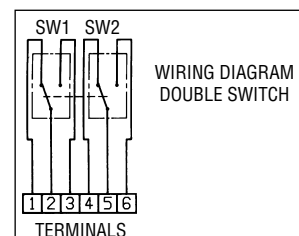
Use with BG Call Points:	Duty Label	Ordering Code
BG	Blank	869531
BG	FIRE	869525
BG	Emergency Shut Down	869533
BG	Suppression Release	869535

Specification—BG Unit

Certification:	UL Listed — Hazardous locations: Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2. UL Listing No. E186629. Ordinary locations: Fire Alarm Boxes. UL Listing No. S8117. CSA Certified to C22.2 (PB only), Nos. 0-M, 0.4M, 14-M, 25,30-M, 94, 142-M 1987, 157M 1987, 157-92, Enclosure Type 4, 4A, Class I, Groups A, B, C, D, Cert. No. 79120. ATEX Approved: EN50014, EN50018, EN50019, EN50028. Cert. No. BAS02ATEX2105X (BG & PB), EExed II C T6 (switch only), EExedm IIC T4 (other versions).
Voltage:	Up to 240V.
Certified Temperature:	BGUL: -13°F to +131°F (-25°C to +55°C); PBUL: -13°F to +131°F (-25°C to +55°C). PB (CSA): -58°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	7 x 14 AWG standard.
Switch Rating (1 or 2 changeover switches fitted):	Max Rating 240VAC, 3A.
Cable Entries:	Up to 4 entries 1/2" NPT or 20mm.
Weight:	2.6 lb/1.2kg (Varies with model & entries).
Material:	Glass reinforced polyester.
Finish:	Red epoxy painted finish as standard or to Customer's specification.
Resistors:	Various configurations available on versions up to 24V, 470R minimum.
LED Indication:	A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V.
Labelling:	BG Glass label — reads either (1) Fire Break glass — press here. (2) Break glass — press here. (3) Worded to Client's requirements. PB & BG Duty label — worded to Client's requirements. Riveted on. PB & BG Tag label — worded to Client's requirements. Screwed on.



Basic single changeover switch wiring diagram



Basic double changeover switch wiring diagram

For versions containing inline and end of line resistors, please specify your requirements.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Entries	Labels	Switches	Features	Terminals	Finish
BG				DS	N	7	

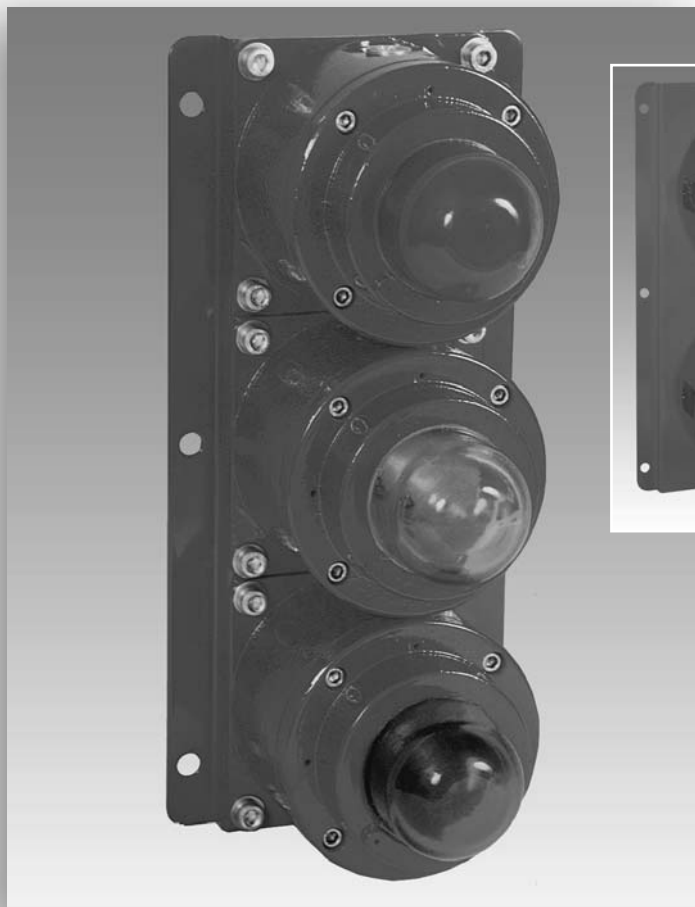
Certification	Code
ATEX/CENELEC – EExe	EB
ATEX/CENELEC – EExi	IB
CSA – Exi (PBI only)	IC
UL – Class I, Div. 2	UL

Entries	Code
1 Bottom M20	5B
2 Bottom M20	4B 6B
1 Top, 1 Bottom M20	2B 5B
1 Bottom 1/2" NPT	5C
2 Bottom 1/2" NPT	4C 6C
1 Top, 1 Bottom 1/2" NPT	2C 5C
16 mm	*A
20 mm	*B
1/2" NPT	*C
*Prefix entry size (see diagram above) with entry position code e.g. 1A, 2A.	
UL & CSA Versions only available with 1/2" NPT entries	

Labels	Code
Glass Label (1)	1
"Fire Break Glass—Press Here"	
Glass Label (2)	2
"Break Glass—Press Here"	

Switches	Code
DC double change over	DD
AC single change over	AS
AC double change over	AD

Finish	Code
Red (Standard)	R
Natural Black	N
Blue	B
Yellow	Y
Gray	G



SM87 SL



XB12 SL

Note: Units shown are for representation only. Other variations are available.

The most rugged and reliable status lights for harsh and hazardous applications.

Available as Xenon, incandescent and fluorescent beacons/strobes.

The SM87 SL range is manufactured in marine grade alloy and the XB12 SL in corrosion-free GRP to provide a wide range of status lights to suit your requirements.

All units can be supplied as 1, 2, 3, 4 or 5 stacks.

Primary Applications

- Process status
- Messaging
- Alert or emergency condition indication

Industries

- Offshore & onshore
- Energy exploration & transmission
- Refining
- Chemical & petrochemical
- Pharmaceutical

Certifications & Compliances

- UL Listed for USA and Canada*
 - Class I, Div. 1 & 2, Groups C & D
 - Class I, Zone 1, AExd IIB T6
- CSA certified*
- ATEX approved
- Xenon, fluorescent, incandescent*
- NEMA 4X & 6, IP66 & 67
- Certified temperature -67°F to +131°F*
-55°C to +55°C

Key Features & Benefits

- 4-wire monitored connection for supervisory circuits*
- Marine grade alloy or GRP
- Pre-wired to customer's requirements

*Depending on model

SM87 SL

Xenon, Incandescent & Fluorescent Status Lights—Explosionproof



Certification
UL Listed for:

ATEX
Class I, Div 1, Groups C & D,
Class I, Zone 1, AExd IIB T4

Certified Ambient Temperature

-67 °F to +158 °F
-55°C to +70°C

Ingress Protection

NEMA 4X & 6
IP66 & 67

Material

Alloy

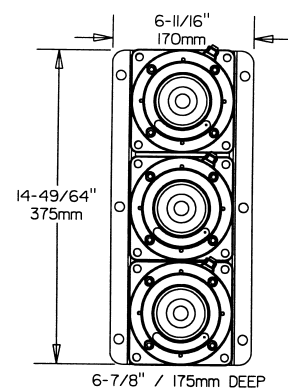
Entries

Up to 1 x ½" NPT

Max. No. of Ways

4

Options: Body & lens color, certification, voltages
24–48V DC, 110–254V AC



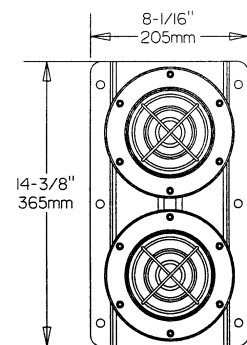
Certification	Voltage	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200043	SM87SL3	Explosion protected, three stack , one ½" NPT entry on bottom, no lens guards, xenon strobe with red, green, and clear lens
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200055	SM87SL2	Xenon status lamp, two stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200056	SM87SL2	Incandescent status lamp, two stack 40 watt beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200057	SM87SL2	Fluorescent status lamp, two stack 5 watt beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200058	SM87SL2	Xenon status lamp, two stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200059	SM87SL3	Xenon status lamp, three stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24VDC	26200060	SM87SL3	Incandescent status lamp, three stack 40 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200061	SM87SL3	Fluorescent status lamp, three stack 5 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200062	SM87SL3	Xenon status lamp, three stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200066	SM87SL3	Incandescent status lamp, three stack 40 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	220V AC	26200063	SM87SL3	Fluorescent status lamp, three stack 5 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection

XB11 SLUL

Xenon Strobe & Incandescent Status Lights—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	1 x ½" NPT
Max. No. of Ways	5
Options: Body & lens color, tag & duty labels	



7-9/16" / 192mm DEEP

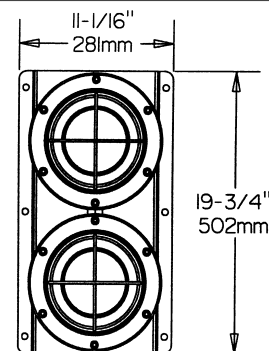
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	42500005	XB11ULSL3	Explosion protected, 3 stack, one ½" NPT entry on bottom, 24V DC, green incandescent on top, yellow xenon flashing in middle, red xenon flashing on bottom, no lens guards, red finish

XB12 SL/FB12 SL

Xenon Strobe & Incandescent Status Lights—Hazardous Locations



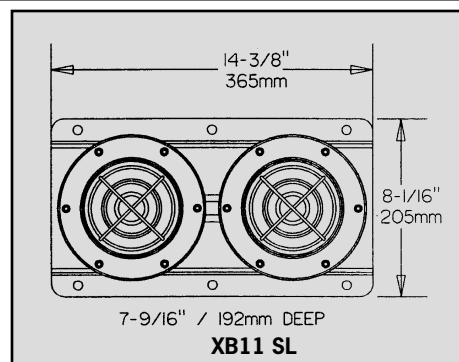
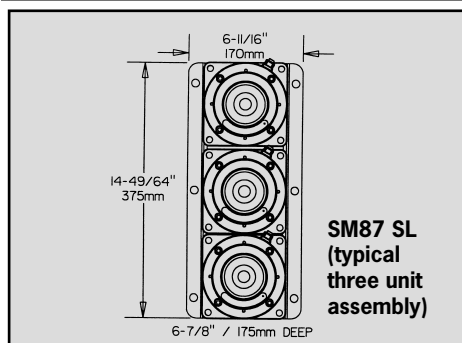
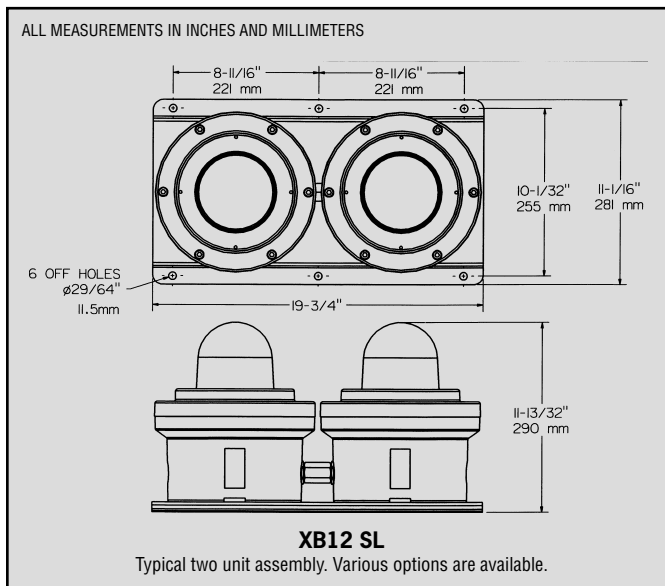
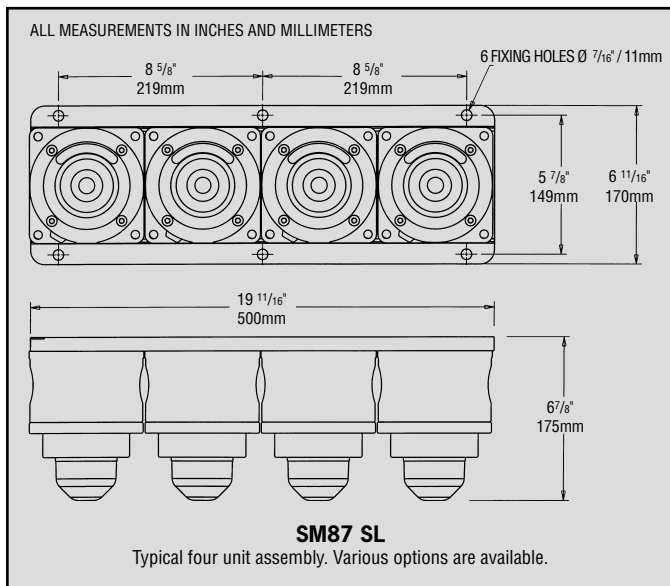
Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	1 x ½" NPT
Max. No. of Ways	5
Options: Body & lens color, certification, voltages 24V DC, 110–254V AC	



11-13/32" / 290mm DEEP

Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	42600001	XB12ULSL3	110V AC, explosion protected, three stack , one ½" NPT entries, red xenon flashing on top, amber xenon flashing in middle, clear xenon flashing on bottom; no lens guards, red finish
UL Listed, Class I, Div 2, Groups C & D	42600007	XB12ULSL2	24V DC xenon status lamp, two stack 21 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600008	FB12ULSL2	24V DC incandescent status lamp, two stack 60W beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600009	XB12ULSL3	24V DC xenon status lamp, three stack 21 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600010	FB12ULSL3	24V DC incandescent status lamp, three stack 60W beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection

MEDC Series Status Lights—Explosionproof, Weatherproof



Specification—SM87SL Unit and XB12SL Unit

Lamp Types	SM87 SL	XB12 SL
	Xenon 5 joules maximum. Fluorescent 10W or 5W. Incandescent 40W maximum.	Xenon 21 joules. Incandescent 60W.
Voltage Frequency	50 Hz as standard. 60 Hz available if required.	
Xenon Voltages	24, 48V DC 110, 120, 240, 254V AC (see SM87 HXB data sheet for further information)	24V DC, 110V, 240V AC (see XB12 data sheet for further information)
Incandescent Voltages	12, 24, 48V DC, 110, 220, 240, 254V AC (see SM87 LU3 data sheet for further information)	120V AC (see FB12 data sheet for further information)
Fluorescent Voltages	12, 24, 48V, 220, 240, 254V AC (see SM87 LU1 data sheet for further information)	—
Lamp Colors	Red, Amber, Yellow, Green, Blue or Clear.	
Certification	UL Listed for USA and Canada Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T6. Listing No. E187894. CSA Certified: Class I, Div 1 & 2, Group D. Cert. No. 96406. ATEX Approved: EExd IIC T4 (incandescent), EExd IIC T6 (Fluorescent & Xenon). Cert. No. Baseefa 03ATEX0222X, CENELEC EN50014, EN50018.	UL Listed for USA and Canada Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4/T5. Listing No. E187894. ATEX Approved: EExd IIB T4/T5. Cert. No. 99 ATEX 2196 CENELEC EN50014 and EN50018.
Terminals	Will accept up to 14AWG cable.	Will accept up to 6 off 10AWG cable.
Wiring	Standard configuration of internal wiring is to common the negative/neutral connections. If individually wired lamps are required, please state requirements.	
Entries	Up to $3 \times \frac{1}{2}"$ or $\frac{3}{4}"$ NPT.	$1 \times \frac{1}{2}"$ NPT.
Enclosure	LM 25TF Marine Grade Alloy.	GRP.
Lens	Glass	
Finish	Epoxy paint as standard or to customer's specification.	Natural Black or Epoxy paint to customer's specification.
Ingress Protection	NEMA 4X and 6, IP66 & 67.	
Ambient Temp.	-13°F to 131°F (-25°C to $+55^{\circ}\text{C}$) – Class I, Div 1. -67°F to $+131^{\circ}\text{F}$ (-55°C to $+55^{\circ}\text{C}$) – Class I, Zone 1.	-67°F to $+158^{\circ}\text{F}$ (-55°C to $+70^{\circ}\text{C}$).

Note: XB11 SLUL also available.

Hazard•Gard™ Series MEDC® Series



XB12

EXS301
Strobe Light



XB11

EXS0301
Steady-on
Indicating Light



EXR301
Rotating Beacon



XB16



XB15

Cooper Crouse-Hinds and MEDC provides a complete line of Strobe Lights and rotating beacons for harsh and hazardous visual indications.

- Products that meet world-wide standards such as UL, cUL, CSA, ATEX and GOST, and all Class, Division & Zone area classifications
- Products designed for both conduit wiring and/or cable connection, NPT or metric
- Complete line of strobe light output intensities, strobe light colors and operating voltages
- Units designed for use in fire alarm circuits meeting National Fire Protection Agency requirements for visual signaling for the hearing impaired

What Types of Signals are Available?

1. *Strobe Lights* — Used for signaling or warning of various conditions. Emits a powerful blast of bright light.
2. *Rotating Beacons* — Used to signal over a large area when the light must be seen from a long distance.
3. *Steady-on Beacons* — Typically used as a continuous source to warn, communicate or draw attention to an area, machine or process.

4. *Stack Lights* — Used for multiple indication in one signaling device. Compact and versatile, the three-color (red, amber and green) is most popular.

Lens Color and Their Applications

Most Cooper Crouse-Hinds strobes, steady and flashing beacons come in six lens colors: amber, blue, clear, green, magenta and red. Cooper Crouse-Hinds LED signals come in amber, blue, green, red and, in some cases, white. The following are examples of how various lens colors are used in industrial and commercial signaling environments:

Amber — Denotes caution.

Blue — Used for safety and security.

Clear (or White) & Green — Used to indicate normal run operation.

Clear for Fire Alarm Applications — Used to indicate a fire emergency.

Magenta — Used for radiation alarms.

Red — Denotes emergency or warning.



These listed strobes have been designed for use in potentially explosive atmospheres and harsh environmental conditions. The enclosures are suitable for use offshore or onshore, where a lightweight product combined with corrosion resistance is required.

The housing is manufactured from a U.V. stable, glass reinforced polyester, with the lens manufactured from a U.V. stable polycarbonate. Stainless steel screws are used ensuring a totally corrosion-free product.

The strobes contain supervisory diode and four wire leads for fire alarm applications. This strobe is also available UL 1971 (ADA) Listed for hearing impaired applications.

Units can be painted to customer specification and supplied with identification labels.

Primary Applications

- Condition signaling
- Security alert
- Equipment obstruction warning
- Emergency evacuation signaling

Typical Industries

- Utility gas plants
- Wastewater treatment plants
- Mining
- Petroleum refineries
- Chemical & petrochemical
- Pulp & paper

Certifications & Compliances

- UL Listed for USA and Canada
 - Hazardous locations for USA and Canada Class I, Div. 2, Groups A, B, C & D*
UL 1971 compliant version available¹
 - Ordinary locations: Visual Signal Device
- NEMA 4X and 6, IP66 & 67
- Certified temperature -67°F to +158°F
-55°C to +70°C

Key Features & Benefits

- Pipe mount with ½" NPT entry
- Corrosion resistant GRP enclosure
- XB16 580,000 peak candlepower
XB15 520,000 peak candlepower
- Polycarbonate lens, various colors available¹
- 4 wire diode monitored board
- Optional relay initiate
- Optional lens guard

*Conforms to UL regulated voltage

¹UL 1971 version available with clear lens only (XB16 only)

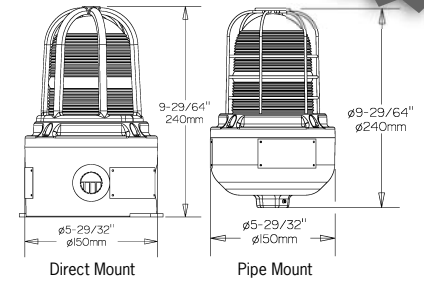
XB15

15 Joule Flashing Xenon—Hazardous & Ordinary Locations

New!



Certification UL Listed for:	cULus ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2, AExd IIC T5/T6
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 1/2" NPT or 3 x 3/4" NPT
Weight	6–8lb/2.6–3.6kg
Options: Body & lens color, voltages 12–48V DC, 110–254V AC	



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869400	XB15UL12006RWBNN	15 joules, direct mount w/backstrap , 2 x 3/4" NPT side entries, wire guard, 60 flashes per minute, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869401	XB15UL12006AWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869402	XB15UL12006RWPNN	15 joules, pipe mount , 1 x 3/4" NPT entry, wire guard, 60 flashes per minute, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869403	XB15UL12006AWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Clear	27600042	XB15UL02406CWBNN	15 joule beacon, 60 flashes per minute, wire guard, backstrap , 2 x 3/4" NPT entries, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	27600043	XB15UL02406GWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	869393	XB15UL02406BWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869398	XB15UL02406RWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869399	XB15UL02406AWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Clear	27600047	XB15UL02406CWPNN	15 joule beacon, 60 flashes per minute, wire guard, pipe mounting , 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	27600048	XB15UL02406GWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	869394	XB15UL02406BWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869396	XB15UL02406RWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869397	XB15UL02406AWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	27600052	XB15UL12006CWBNN	15 joule beacon, 60 flashes per minute, wire guard, backstrap , 2 x 3/4" NPT entries, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	27600053	XB15UL12006GWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869405	XB15UL12006BWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	27600057	XB15UL12006CWPNN	15 joule beacon, 60 flashes per minute, wire guard, pipe mounting , 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	27600058	XB15UL12006GWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869404	XB15UL12006BWPNN	

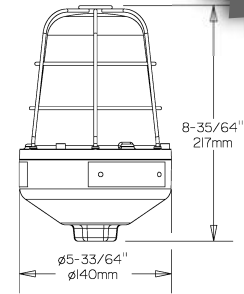
XB16 UL

10 Joule Flashing Xenon—Hazardous & Ordinary Locations



Certification UL Listed for:	cUL ^{us} UL 1971 compliant Class I, Div 2, Groups A, B, C, D
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Standard 1 x 3/4" NPT
Weight	2.2lb/1kg

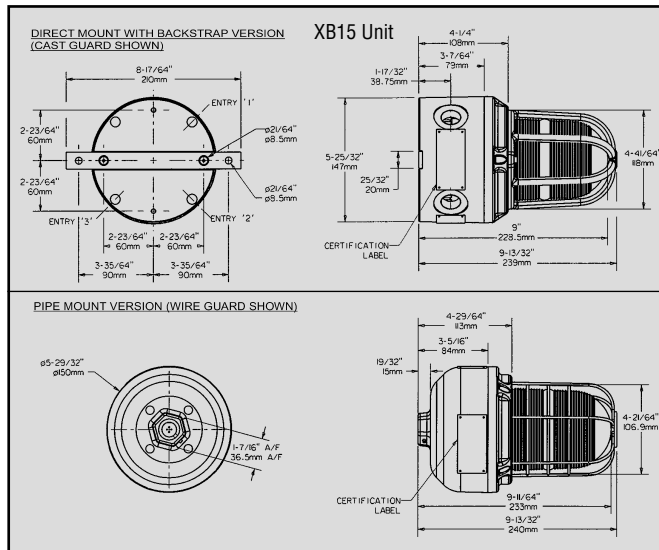
Options: Body & lens color, lens guard,
voltages 12–48V DC, 110–254V AC



New!

Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
UL 1971 compliant	24V DC	Clear	29600023	XB16US02460CYNN	UL 1971 Listed for Signaling devices for the hearing impaired. Suitable for fire alarm indication. 10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869406	XB16UL12060BYNN	10 joules, 60 flashes per minute, 1 x 3/4" NPT entry, 240 Cd, lens guard, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869407	XB16UL12060RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869408	XB16UL12060AYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	29600013	XB16UL12060CYNN	10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	29600014	XB16UL12060GYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	29600011	XB16UL12060BYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	29600003	XB16UL12060RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	29600004	XB16UL12060AYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	29600016	XB16UL02460GYNN	10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	29600017	XB16UL02460BYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869410	XB16UL02460RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869411	XB16UL02460AYNN	

MEDC Series Strobe Warning Light—Hazardous Locations, Weatherproof



Specification—XB15 Unit

Certification: UL Listed for USA and Canada:
 – Hazardous locations
 Class I, Div 2, groups A, B, C & D
 Class I, Zone 1, AExd IIC T5/T6
 UL listing No. E187894.
 – Ordinary locations: Visual Signal Device
 UL listing No. S8128
 CENELEC/ATEX approved.
 CENELEC EN50014 & EN50018
 ATEX Cert. No. Baseefa 04ATEX0009X.

Material: Body: Glass reinforced polyester.
 Lens: Glass.
 Backstrap: stainless steel 316.
 Wire Guard (optional): Stainless steel wire.
 Cast Guard (optional): Aluminium LM25M.

Finish: Natural black or epoxy painted to customer specification.

Voltage: 24, 48V DC
 110, 120, 230, 240, 254V AC

Tube Energy: 15 joules.

Tube Life: >1 x 10⁶ flashes.

Flash Rate: 60, 80, 120 fpm.

Certified -67°F to +131°F (-55°C to +55°C) T6.

Temperature: -67°F to +158°F (-55°C to +70°C) T5.

Weight: Pipe mount: 5¼lb/2.6kg; Direct mount: 6½lb/3.0kg.

Ingress Protection: NEMA 4X & 6, IP66 & IP67.

Entries: Supplied as 2 x ¾" NPT (direct mount) or ¾" (pipe mount) as standard.
 Other options available:
 Up to 3 x ½" NPT or 3 x ¾" NPT (direct mount);
 ½" NPT (pipe mount) — contact sales office to order.

Terminals: Direct mount: 12 x 14AWG.
 Pipe mount: 8 x 14AWG.

Relay Initiate: Available on all units — suitable for 24V DC supplies only.

Labels: Tag/Duty label option.

Electrical Ratings:

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	.78	.67	0.4	0.4	0.2	0.2	0.17
Current (A) at 80 fpm	.99	.73	0.4	0.4	0.2	0.2	0.17
Current (A) at 120 fpm	.99	.73	0.4	0.4	0.2	0.2	0.17
Effective Candlepower	330 (Effective candlepower is the intensity that would appear to an observer if the light was burning steadily)						
Peak Candlepower	520,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)						

Multiplying Factor for Colored Lenses:

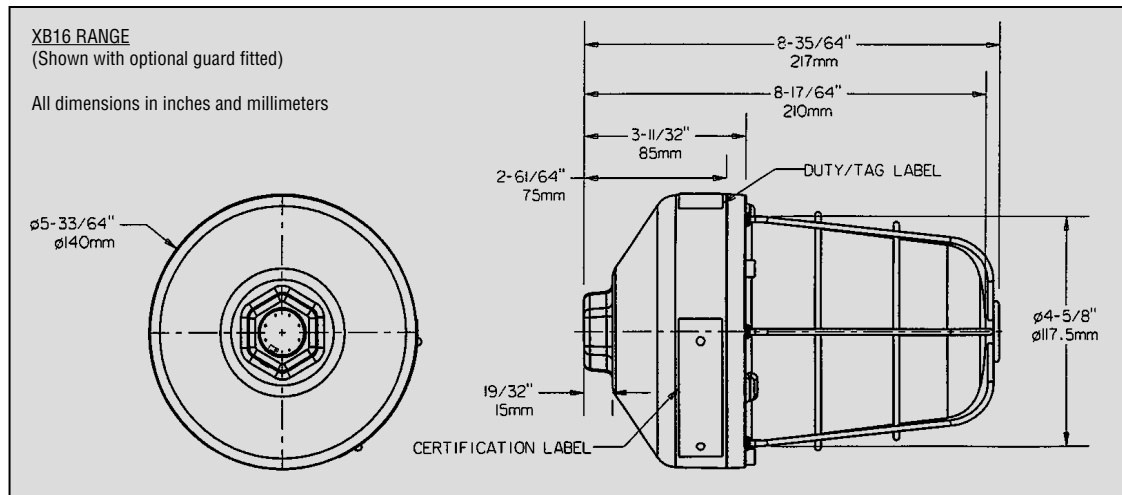
Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.86

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Voltage	Lens Flashrate	Lens Color	Unit Guard	Fixing	Unit Options	Finish																																																		
XB15			06				N	N																																																		
<table border="1"> <thead> <tr> <th>Certification</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>ATEX</td> <td>B</td> </tr> <tr> <td>UL</td> <td>UL</td> </tr> </tbody> </table>		Certification	Code	ATEX	B	UL	UL	<table border="1"> <thead> <tr> <th>Voltage</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>24V DC</td> <td>024</td> </tr> <tr> <td>110V AC</td> <td>110</td> </tr> <tr> <td>120V AC</td> <td>120</td> </tr> <tr> <td>240V AC</td> <td>240</td> </tr> </tbody> </table>	Voltage	Code	24V DC	024	110V AC	110	120V AC	120	240V AC	240	<table border="1"> <thead> <tr> <th>Guard</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>N</td> </tr> <tr> <td>Cast</td> <td>C</td> </tr> <tr> <td>Wire</td> <td>W</td> </tr> </tbody> </table>		Guard	Code	None	N	Cast	C	Wire	W	<table border="1"> <thead> <tr> <th>Lens Flashrate</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>08</td> <td>80 fpm</td> </tr> <tr> <td>12</td> <td>120 fpm</td> </tr> </tbody> </table>		Lens Flashrate	Code	08	80 fpm	12	120 fpm	<table border="1"> <thead> <tr> <th>Color</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>R</td> </tr> <tr> <td>Blue</td> <td>B</td> </tr> <tr> <td>Green</td> <td>G</td> </tr> <tr> <td>Amber</td> <td>A</td> </tr> <tr> <td>Yellow</td> <td>Y</td> </tr> <tr> <td>Clear</td> <td>C</td> </tr> </tbody> </table>	Color	Code	Red	R	Blue	B	Green	G	Amber	A	Yellow	Y	Clear	C	<table border="1"> <thead> <tr> <th>Unit Fixing</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Pipe mount</td> <td>P*</td> </tr> <tr> <td>Direct w/backstrap</td> <td>B</td> </tr> </tbody> </table> *Not available on ATEX version.	Unit Fixing	Code	Pipe mount	P*	Direct w/backstrap	B
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MEDC Series Strobe Warning Light—Hazardous Locations, Weatherproof



Specification—XB16UL Unit

Certification:	UL Listed for USA and Canada: – Hazardous locations for USA and Canada Class I, Div 2, groups A, B, C & D. UL listing No. E251185. – Ordinary locations: Visual Signal Device: UL1638. UL listing No. E251185. – Hazardous locations for hearing impaired: UL1971. UL listing No. E251185.
Material:	Body: Glass reinforced polyester. Lens: U.V. stable polycarbonate. Lens screws: stainless steel 316.
Finish:	Natural black or painted to customer specification.
Voltage:	24, 48V DC 110, 120, 230, 240, 254V AC Conforms to UL regulated voltage output (12V DC, 24V DC, 120V AC, 240V AC).
Certified Temperature:	-67°F to +158°F (-55°C to +70°C)
Tube Energy:	10 joules.
Tube life:	>1 x 10 ⁶ flashes.
Weight:	2.2lb/1.0kg.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Entries:	Standard 1 x 1/2" NPT pipe mount.
Terminals:	8 x 14AWG.
Labels:	Tag/Duty label option.

Electrical Ratings:

For Hazardous Locations and Ordinary Locations (UL1638) Units

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Current (A) at 80 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Current (A) at 120 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Effective intensity (Cd): 240 at 80 f.p.m.							
Peak candlepower: 580,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)							

For UL1971 Units Only

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Current (A) at 80 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Current (A) at 120 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Effective intensity (Cd): 240 at 80 f.p.m.							
Peak candlepower: 580,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)							
Note: on UL1971 units, max. current rating is based on in-rush current. This is why the current ratings are not proportional as with other beacons/strobes.							
UL 1971 On-axis output: 15 Cd.							

Note: 24V DC units are certified for use in regulated 24V DC supplies (16–33V AC)
110/120V DC units are certified for use on regulated 120V AC supplies (96–132V AC)
230/240V DC units are certified for use on regulated 240V AC supplies (192–264V AC)

Multiplying factor for colored lenses:

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.86

Relay Initiate: 24V DC relay initiate only. Relay Initiate: 24V DC relay initiate only.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Voltage	Flashrate	Lens Color	Guard	Options	Unit Finish
XB16	UL		60			N	N

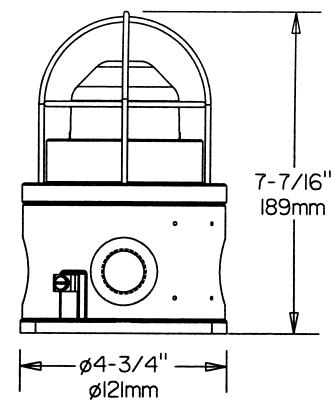
Certification	Code	Voltage	Code	Lens Flashrate	Code	Color	Code	Guard	Code
UL	UL	12V DC	012	80	80 fpm	Red	R	Yes	Y
		24V DC	024	120	120 fpm	Blue	B	None	N
		110V AC	110			Green	G		
		120V AC	120			Amber	A		
		240V AC	240			Yellow	Y		
						Clear	C		

SM87 HXB

5 Joule Xenon Strobe—Explosionproof



Certification UL Listed for:	cULus ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 2 x 1/2" or 3/4" NPT, M20, M25
Weight	4.4lb/2.0kg approx
Options: Body & lens color, certification, lens guard, voltages 24–48V DC, 110–254V AC	



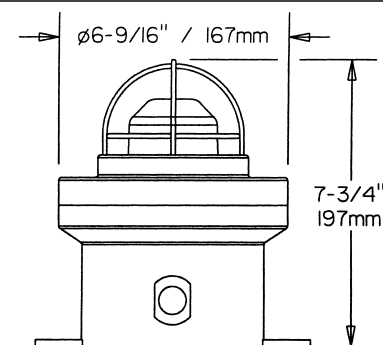
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX EX II 2GD	24V DC	Red	813005	SM87HXBAB024RN1R1LNNR	5 joules, 2 x M20 Entries, 29Cd, EExd IIC
ATEX EX II 2GD	24V DC	Amber	813006	SM87HXBAB024AN1R1LNNR	
ATEX EX II 2GD	240V AC	Red	813007	SM87HXBAB240RN1R1LNNR	7 joules, 2 x M20 Entries, 39Cd, EExd IIC
ATEX EX II 2GD	240V AC	Amber	813008	SM87HXBAB240AN1R1LNNR	
ATEX EX II 2GD	24V DC	Red LED	813009	SM87LEDA024RN1R1LNNR	192Cd, 2 x M20 Entries, EExd IIC
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red	869161	SM87HXBAUL024RN3R3LNNR	Standard models are in alloy, red body color, no tag or duty labels, 2 x 1/2" NPT entries, 29Cd, 60 flashes per minute
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Amber	869162	SM87HXBAUL024AN3R3LNNR	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Red	869165	SM87HXBAUL110RN3R3LNNR	Standard models are in alloy, red body color, no tag or duty labels, 2 x 1/2" NPT entries, 32Cd, AExd IIB, 60 flashes per minute
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Amber	869166	SM87HXBAUL110AN3R3LNNR	

XB11

5 Joule Xenon Strobe—Hazardous Locations

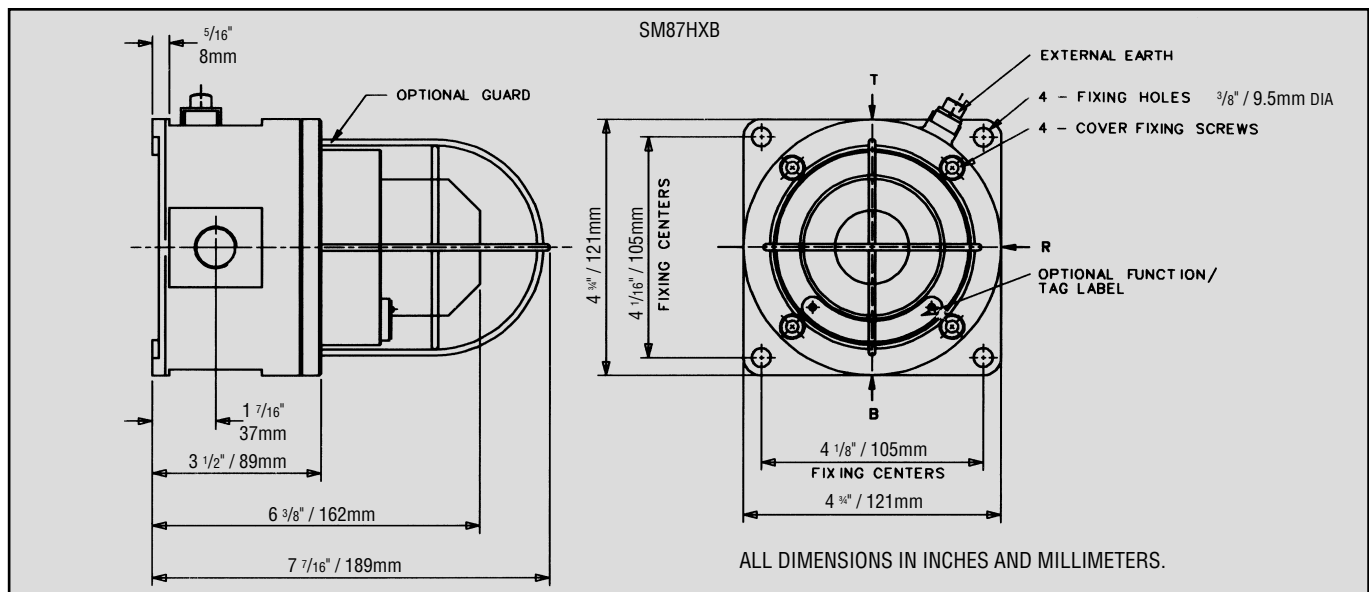


Certification UL Listed for:	cULus ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T5
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	2 x 1/2" NPT, 20mm
Weight	2.6lb/1.2kg
Options: Body & lens color, voltages 24V DC, 110–254V AC	



Certification	Voltage	Body Color	Lens	Ordering Code	Catalog #	Standard Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Red	869171	XB11UL02406RNBNNNR	No tag or duty labels, 2 x 1/2" NPT entries, 60 flashes per minute
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Amber	869172	XB11UL02406ANBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Natural Black	Clear	869173	XB11UL02406CNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Clear	869174	XB11UL02406CNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red	Red	869175	XB11UL11006RNBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Red	811101	XB11B02406RNBNNNR	GRP, natural black body, no tag or duty labels, backstrap mounting, 2 x M20 entries, 60 flashes per minute
ATEX EX II 2GD	24V DC	Natural Black	Amber	811102	XB11B02406ANBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Red	811103	XB11B24006RNBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Amber	811104	XB11B24006ANBNNNR	

MEDC Series Strobe Lights—Medium Intensity



Specification—SM87HXB Unit

Certification:	UL Listed for USA and Canada for Class I, Div. 1. Groups C & D and Class I, Zone 1. Listing No. E187894. CSA Certification to C22.2, Nos. 0, 0.4, 0.5, 9, 30-M 1986, 94-M91, 137-M 1981, Class I, Div 1, Group 0, Enclosure ¾, Cert. No. 96406. ATEX approved: EN50014, EN50018, EN50019. Cert. No. Baseefa 03ATEX0222, EExd IIC T6.
Material:	LM25 TF Marine Grade Alloy. Lens: Toughened Glass.
Finish:	Epoxy paint finish as standard or to customer's specification.
Weight:	4.4lb/2.0kg. approx.
Certified Temperature:	Standard unit SM87 HXB: -67°F to +158°F, -55°C to +70°C. High temperature unit: -67°F to +185°F, -55°C to +85°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	4 off suitable for up to 14AWG conductor size.
Labels:	Duty & Tag Labels optional.
Entries:	Up to 4 off ½" or ¾" NPT.

Voltage	DC		AC 50/60 Hz			
	24	48	110	120	240	254
Tube Energy (joules)	5	5	6	7	7	8
Peak Current Consumption (mA)	320	170	250	275	135	150
Power Consumption (Watts)	7.2	7.6	25	27	27	35
Effective Intensity (Cd)	29	29	32	39	39	44
Peak Candle Power	22213	22213	25061	30187	30187	34174

Note: The above figures (Cd) are for a clear lens @ 1Hz flash rate.

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been independently verified.
A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model SM87HXB	Material 	Certification 	Voltage 	Lens/LED color 	Lens Guard 	Entries 	Tag/Duty Label N	Initiate Option N	Finish R
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Type	Code
Alloy	A
Stainless Steel	S*

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Certification	Code
ATEX	B
UL	UL
CSA	C
Only HXBS is available CSA certified.	

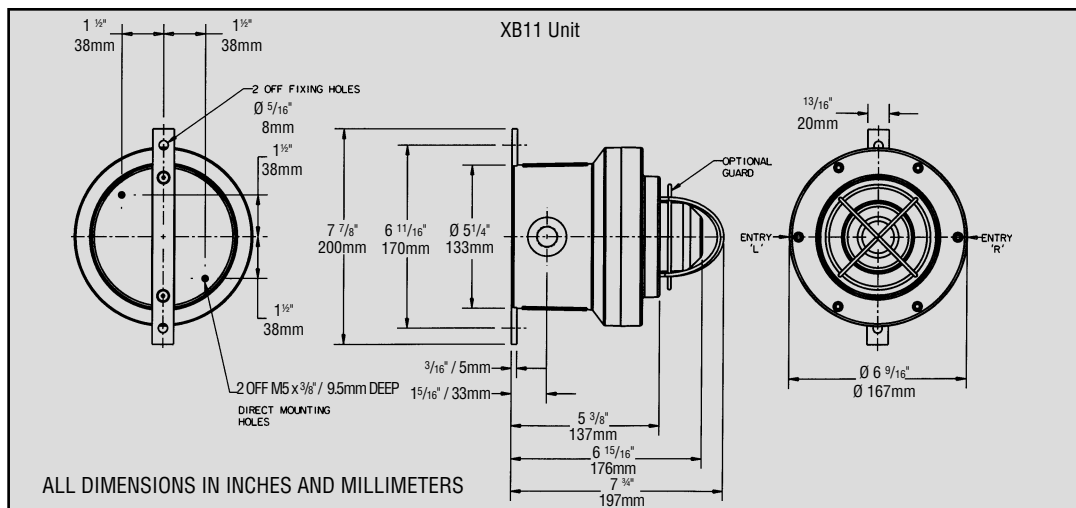
Voltage	Code
24V DC	024
110V AC	110
120V AC	120
220V AC	220
240V AC	240

Guard	Code
Yes	Y
No	N

Entries	Code
20mm Left/Right	1L1R
20mm Top/Bottom	1T1B
20mm Bottom	1B
25mm Left/Right	2L2R
25mm Top/Bottom	2T2B
25mm Bottom	2B
½" NPT Left/Right	3L3R
½" NPT Top/Bottom	3T3B
½" NPT Bottom	3B
¾" NPT Left/Right	4L4R
¾" NPT Top/Bottom	4T4B
¾" NPT Bottom	4B

*Not UL Listed

MEDC Series Strobe Lights—Medium Intensity



Specification—XB11 Unit

Certification: UL Listed for USA and Canada
 – Hazardous locations:
 Class I, Div. 2, Groups C & D
 Class I Zones 1 & 2, AExd IIB T5
 UL Listing No. E187894.
 – Ordinary locations: Visual-Signal Device
 UL Listing No. S8128.
ATEX approved: EExd IIB T5/T6.
 Cert. No. 99 ATEX 2195X.
 CENELEC EN50014 and EN50018.

Material: Body: Glass reinforced polyester.
 Lens: Glass
 Cover Screws + Backstrap: Stainless steel 316.

Finish: Natural black or painted to customer specification.

Weight: 5 1/2 lb/2.5kg.

Certified Temperature: -67°F to +158°F (-55°C to +70°C) hazardous locations.
 -67°F to +131°F (-55°C to +55°C) ordinary locations.

Ingress Protection: NEMA 4X and 6, IP66 & 67.

Terminals: 6 off suitable for up to 14 AWG conductor size.

Labels: Duty/Tag Label optional.

Entries: 2 x 1/2" NPT, 20mm

Strobe/Sounder Unit: The beacon may be combined with an MEDC sounder to create a visual/audible alarm.
 Contact MEDC for price and specification.

Voltage	DC		
	24	110	240
XB11 Tube Energy (joules)	5	5	5
Peak Current Consumption (mA)	320	100	60
Effective Intensity (Cd)	29	29	29
Peak Candle Power	22213	22213	22213
Power Consumption (Watts)	8	11	18
NOTE: The Cd figures are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been verified by BSI.
 A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model Type	Certification	Voltage	Flash Rate	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Options	Unit Finish
XB11			06			B	N	N	N	

Certification	Code
ATEX	B
UL	UL

Voltage	Code
24V DC	024
110V AC	110
240V AC	240
Other voltages available, please specify.	

Guard	Code
Yes	Y
No	N

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

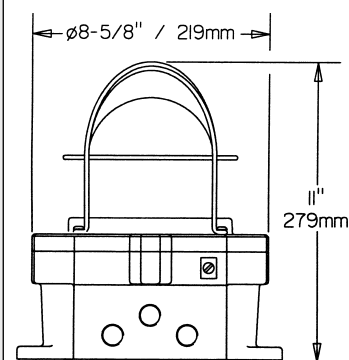
Finish	Code
Natural Black	N
Red	R

XB4

21 Joule Xenon Strobe—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4, T5
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x ½" or ¾" NPT, 20mm, 25mm
Weight	14.5lb/6.6kg
Options: Body & lens color, lens guard, certification, voltages 24V DC, 110V AC & 240V AC	



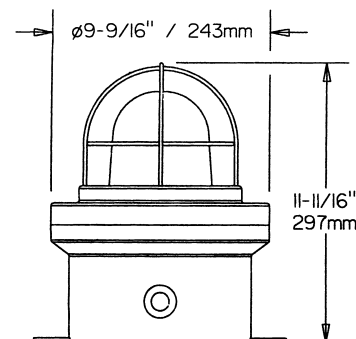
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved Ex II 2G	24V DC	Red	814001	XB4BB8D2B3B06ANORN1R	21 joules, 2 x M20 entries, 355Cd, 60 flashes per minute, no labels, red finish
ATEX Approved Ex II 2G	240V AC	Red	814002	XB4BH8D2B3B06ANORN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red	869121	XB4ULB8D2E3E06ANRN1R	Marine grade alloy, 2 x ¾" NPT entries, no lens guard, 60 flashes per minute, red finish
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Amber	869122	XB4ULB8D2E3E06ANAN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Red	869125	XB4ULE8D2E3E06ANRN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Amber	869126	XB4ULE8D2E3E06ANAN1R	

XB12

21 Joule Xenon Strobe—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, 20mm
Weight	15.5lb/7.0kg
Options: Body & lens color, lens guard, certification, voltages 24V DC, 110–254V AC	



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved Ex II 2G	24V DC	Red	812101	XB12B02406RNBNNNN	21 joules, 2 x M20 entries, 355Cd, 60 flashes per minute, no labels, black body
ATEX Approved Ex II 2G	24V DC	Amber	812102	XB12B02406ANBNNNN	
ATEX Approved Ex II 2G	240V AC	Red	812103	XB12B24006RNBNNNN	
ATEX Approved Ex II 2G	240V AC	Amber	812104	XB12B24006ANBNNNN	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	869181	XB12UL02406RNBNNNR	Red painted GRP, no tag or duty labels, 2 x ½" NPT, 60 flashes per minute, 355 Cd
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Amber	869182	XB12UL02406ANBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red	869185	XB12UL11006RNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Amber	869186	XB12UL11006ANBNNNR	

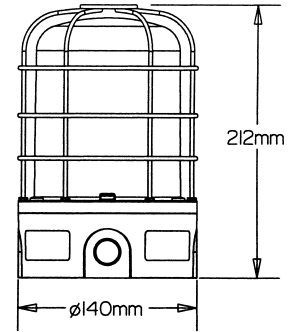
MEDC Series Strobe Lights—High Intensity for Outdoor Use

XB13

10 Joule Flashing Xenon—Weatherproof and Heavy Duty

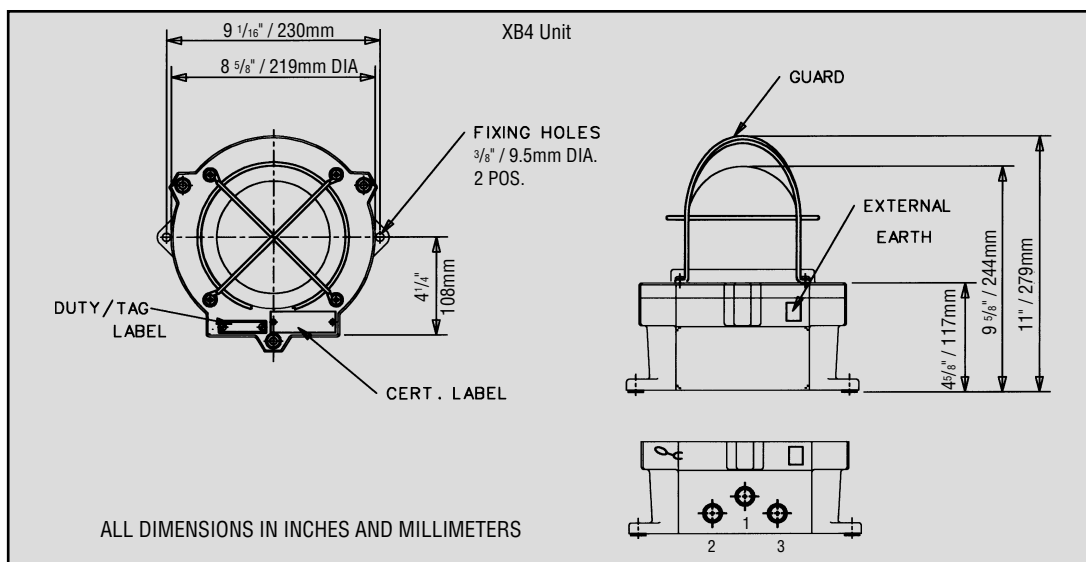


Certification UL Listed for:	Weatherproof IP66 & 67
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 20mm via knockouts
Weight	1.1kg
Options: Body & lens color, lens guard, voltages 12–24V DC, 115–230V AC	



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
Weatherproof, IP66 & 67	24V DC	Red	813101	XB13024RNNN	Dust-tight and weatherproof, uncertified, no tag or duty labels, 3 x 20mm entries via knockouts, 60 flashes per minute, dual and single flash modes, natural red GRP
Weatherproof, IP66 & 67	24V DC	Amber	813102	XB13024ANNN	
Weatherproof, IP66 & 67	230V AC	Red	813103	XB13230RNNN	
Weatherproof, IP66 & 67	230V AC	Amber	813104	XB13230ANNN	

MEDC Series Strobe Lights—High Intensity for Outdoor Use



Specification—XB4 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 1, Groups C & D Class I, Zone 1, AExd IIB T4. UL Listing No. E187894. – Ordinary locations: Visual-Signal Device. UL Listing No. S8128. ATEX approved: EExd IIC T5. Cert. No. Baseefa 02ATEX0224X.
Materials:	LM25TF Marine Grade Alloy body. Grade 316 ANC4B Stainless Steel body. Toughened Wellglass.
Finish:	Red epoxy paint finish as standard or to customer's specification.
Weight:	LM25: 14.5lb/6.6kg. Stainless Steel: Add 18.5lb/8.5kg.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	8 off suitable for up to 8 AWG conductor size.
Entries:	Up to 3 x 1/2" or 3/4" NPT, 20mm, 25mm

Voltage	DC	AC 50/60 Hz	
	24	110	240
Tube Energy (joules)	21	21	21
Peak Current Consumption (mA)	1400	350	185
Effective Intensity (Cd)	355	355	355
Peak Intensity (Cd)	123691	123691	123691

NOTE: The above figures (Cd) are for a clear lens @ 1Hz flash rate.

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor (Approximate)	0.15	0.12	0.51	0.49	0.86

The photometric data has been independently verified. A report is available if required.

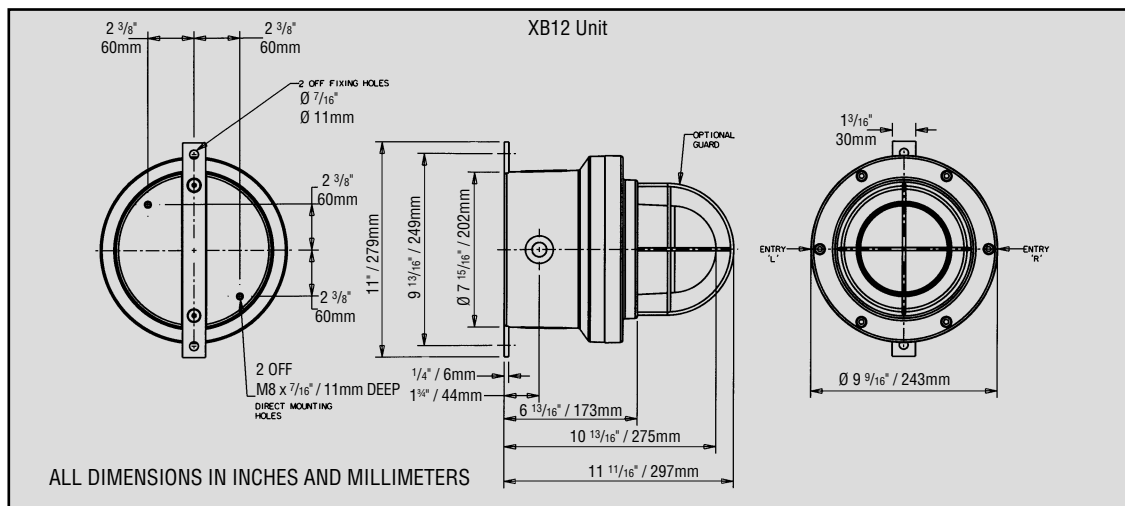
Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model Type	Certification	Voltage	Terminals	Cable Entries	Flash Rate	Initiate Options	Lens Guard	Lens Color	Tag/Duty Label	Material	Finish
XB4			8D		06	A			N		R

<table border="1"> <tr><th>Certification</th><th>Code</th></tr> <tr><td>ATEX</td><td>B</td></tr> <tr><td>UL</td><td>UL</td></tr> </table>	Certification	Code	ATEX	B	UL	UL	<table border="1"> <tr><th>Entries</th><th>Code</th></tr> <tr><td>1-M25 Entry</td><td>1C</td></tr> <tr><td>2-M25 Entries</td><td>2C3C</td></tr> <tr><td>1-3/4" NPT Entry</td><td>1E</td></tr> <tr><td>2-3/4" NPT Entry</td><td>2E3E</td></tr> <tr><td>1-20mm Entry</td><td>1B</td></tr> <tr><td>2-20mm Entries</td><td>2B3B</td></tr> <tr><td>1-1/2" NPT</td><td>1D</td></tr> <tr><td>2-1/2" NPT</td><td>2D3D</td></tr> </table>	Entries	Code	1-M25 Entry	1C	2-M25 Entries	2C3C	1-3/4" NPT Entry	1E	2-3/4" NPT Entry	2E3E	1-20mm Entry	1B	2-20mm Entries	2B3B	1-1/2" NPT	1D	2-1/2" NPT	2D3D	<table border="1"> <tr><th>Guard</th><th>Code</th></tr> <tr><td>Yes</td><td>Y</td></tr> <tr><td>No</td><td>N</td></tr> </table>	Guard	Code	Yes	Y	No	N	<table border="1"> <tr><th>Color</th><th>Code</th></tr> <tr><td>Red</td><td>R</td></tr> <tr><td>Blue</td><td>B</td></tr> <tr><td>Green</td><td>G</td></tr> <tr><td>Yellow</td><td>Y</td></tr> <tr><td>Amber</td><td>A</td></tr> <tr><td>Clear</td><td>C</td></tr> </table>	Color	Code	Red	R	Blue	B	Green	G	Yellow	Y	Amber	A	Clear	C	<table border="1"> <tr><th>Material</th><th>Code</th></tr> <tr><td>Alloy</td><td>1</td></tr> <tr><td>Stainless Steel</td><td>0</td></tr> </table>	Material	Code	Alloy	1	Stainless Steel	0
Certification	Code																																																					
ATEX	B																																																					
UL	UL																																																					
Entries	Code																																																					
1-M25 Entry	1C																																																					
2-M25 Entries	2C3C																																																					
1-3/4" NPT Entry	1E																																																					
2-3/4" NPT Entry	2E3E																																																					
1-20mm Entry	1B																																																					
2-20mm Entries	2B3B																																																					
1-1/2" NPT	1D																																																					
2-1/2" NPT	2D3D																																																					
Guard	Code																																																					
Yes	Y																																																					
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Color	Code																																																					
Red	R																																																					
Blue	B																																																					
Green	G																																																					
Yellow	Y																																																					
Amber	A																																																					
Clear	C																																																					
Material	Code																																																					
Alloy	1																																																					
Stainless Steel	0																																																					
<table border="1"> <tr><th>Voltage</th><th>Code</th></tr> <tr><td>24V DC</td><td>B</td></tr> <tr><td>110V AC</td><td>E</td></tr> <tr><td>240V AC</td><td>H</td></tr> </table>	Voltage	Code	24V DC	B	110V AC	E	240V AC	H																																														
Voltage	Code																																																					
24V DC	B																																																					
110V AC	E																																																					
240V AC	H																																																					

MEDC Series Strobe Lights—High Intensity for Outdoor Use



Specification—XB12

Certification:	UL Listed for USA and Canada
	– Hazardous locations:
	Class I, Div. 2, Groups C & D
	Class I, Zone 1 & 2, AExd IIB T4/T5
	UL Listing No. E187894.
	– Ordinary locations: Visual-Signal Device
	UL Listing No. S8128.
	ATEX approved: EExd IIB T4/T5.
	Cert. No. 99 ATEX 2196.
Material:	Body: Glass reinforced polyester.
	Lens: Toughened Glass
	Cover Screws + Backstrap: Stainless steel 316.
Finish:	Natural black or painted to customer specification.
Weight:	15½ lb/7.0kg.
Certified Temperature:	-67°F to +158°F (-55°C to +70°C) hazardous locations.
	-67°F to +131°F (-55°C to +55°C) ordinary locations.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Terminals:	6 off suitable for up to 10 AWG conductor size.
Labels:	Duty/Tag Label optional.
Entries:	2 x ½" NPT, 20mm

Voltage	DC	AC50/60 Hz	
	24	110	240
XB12 Tube Energy (joules)	21	21	21
Peak Current Consumption (mA)	1400	350	185
Effective Intensity (Cd)	355	355	355
Peak Intensity (Cd)	123691	123691	123691
Power Consumption (Watts)	33.6	38.5	44.4
NOTE: The Cd figures are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been verified by BSI.

A report is available if required.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model Type	Certification	Voltage	Flash Rate	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Options	Unit Finish
XB12			06			B	N	N	N	

Certification	Code
ATEX	B
UL	UL

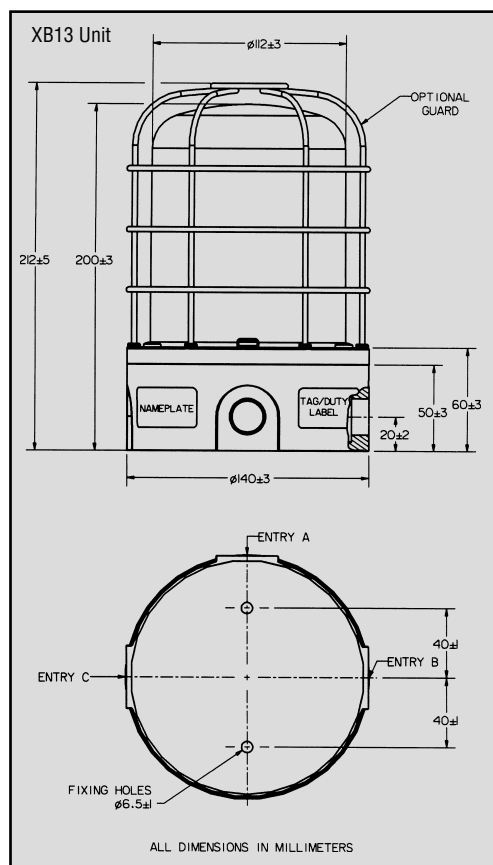
Voltage	Code
24V DC	024
110V AC	110
240V AC	240
Other voltages available, please specify.	

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Guard	Code
Yes	Y
No	N

Finish	Code
Natural Black	N
Red	R

MEDC Series Strobe Lights—High Intensity for Outdoor Use



Specification—XB13 Unit

Material:	UV stable glass reinforced polyester body. UV stable polycarbonate cover/lens. Retained stainless steel cover screws.
Finish:	Self colored red as standard or epoxy coated to customer's specification.
Tube Energy:	10 joules (second flash 7.5 joules).
Weight:	1.1kg,
Operating Temperature:	-55°C to +70°C.
Ingress Protection:	IP66 & IP67.
Tube Life:	>1 x 10 ⁶ flashes.
Voltage:	12V DC, 24V DC, 115V AC, 230V AC

Current Consumption:

Voltage	Current Consumption
12V DC	1.4A
24V DC	650mA
115V AC	180mA
230V AC	100mA

Tube Type:	Xenon discharge.
Lens Color:	Various colors available.
Terminals:	8 x 2.5mm ² .
Flash Rate:	1 flash per second.
Dual Flash Rate:	Time between dual flashes = 0.5 seconds. Charging time = 1 second. Cycle repeats every 1.5 seconds.
Labels:	Duty and tag labels available.
Cable Entries:	Up to 3 x M20 via knockouts.
Intensity:	Effective intensity 220 Cd. Peak intensity 75,000 Cd. (Figures are for clear lens at 1Hz flash rate).

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Voltage	Lens Color	Lens Guard	Options	Unit Finish is Red																												
XB13				N	N																												
	<table border="1"> <tr> <th>Voltage</th> <th>Code</th> </tr> <tr> <td>24V DC</td> <td>024</td> </tr> <tr> <td>115V AC</td> <td>115</td> </tr> <tr> <td>230V AC</td> <td>230</td> </tr> </table>	Voltage	Code	24V DC	024	115V AC	115	230V AC	230	<table border="1"> <tr> <th>Color</th> <th>Code</th> </tr> <tr> <td>Red</td> <td>R</td> </tr> <tr> <td>Blue</td> <td>B</td> </tr> <tr> <td>Green</td> <td>G</td> </tr> <tr> <td>Yellow</td> <td>Y</td> </tr> <tr> <td>Amber</td> <td>A</td> </tr> <tr> <td>Clear</td> <td>C</td> </tr> </table>	Color	Code	Red	R	Blue	B	Green	G	Yellow	Y	Amber	A	Clear	C	<table border="1"> <tr> <th>Guard</th> <th>Code</th> </tr> <tr> <td>Yes</td> <td>Y</td> </tr> <tr> <td>No</td> <td>N</td> </tr> </table>	Guard	Code	Yes	Y	No	N		
Voltage	Code																																
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Yes	Y																																
No	N																																

The Hazard•Gard Series is our new line of visual and audible signaling and communication products for industrial use. The Hazard•Gard Series of visual signals is available in Division 1, Zone 1 and Division 2, Zone 2 applications. This new visual product offering provides three methods of light generation for visual indication: Xenon strobe, rotating beacon and steady-on indicators. All models come in red, amber, green, blue, clear and magenta, and AC and DC voltage.

The Hazard•Gard Division 1, Zone 1 EX Series is a compact, rugged cast aluminum visual signaling device for use in explosionproof and corrosive applications. The Hazard•Gard delivers six color choices and a complete range of operating voltages for AC and DC circuits. The Hazard•Gard UL approved fire alarm strobe delivers the industry required 16–33VDC voltage for light output for Fire Alarm circuits. With powerful light output, compact design and Crouse-Hinds explosionproof integrity, the Hazard•Gard is applicable for safety, indication, evacuation, and security uses. All are marine rated and offer four mounting methods—pendant, ceiling, wall and stanchion.



Types of visual signals that are available:

1. **Rotating lights**—our line uses halogen lights for brightness in areas that have high ambient light levels or when the light must be seen from a long distance.
2. **Steady-on or flashing lights** using a halogen incandescent lamp or LED. Used as a continuous source to warn, communicate or draw attention to an area, machine or process.
3. **Strobe lights** use a strobe light (for more on strobe technology, see section “Strobe, Principle of Operation” below) for signaling or warning of various conditions. A strobe emits a powerful blast of bright light.


PRODUCT OVERVIEW—HAZARD•GARD EXPLOSIONPROOF VISUAL INDICATION:

Description	Catalog Reference	Operating Voltage	Operating Circuit
Fire Alarm Strobe	EXFASC301	16–33V DC	Fire alarm circuits and other applications requiring electrical supervision of signaling.
Strobe Light	EXS301	120VAC or 12–48V DC	Standard electrical circuits 12–48V DC either AC or DC operation.
Strobe Light Diode Polarized	EXDS301	24V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Strobe Light Non-Marine, Fused	EXSNM301	12–48V DC	Fused for use on standard electrical DC circuits.
Rotating Beacon	EXR301	120V AC	Standard electrical circuits, AC operation.
Rotating Beacon Diode Polarized	EXDR301	24–28V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Steady-On Beacon	EXSO301	120VAC or 24–28V DC	Standard electrical circuits either AC or DC operation.

All Hazard•Gard Series explosionproof visual signals are marine rated (except the EXSNM), NEMA 4X and offer 6 color choices of lens: Amber, Blue, Clear, Green, Magenta & Red.

For Class I areas, consider the following:

- Utility gas plants
- Petroleum refining production and dispensing locations
- Cleaning facilities
- Dip tanks containing combustibles or flammable liquids
- Plant facilities extracting solvents
- Inhalation anesthetics areas

For Class II areas, consider the following:

- Flour mills
- Feed mills
- Grain elevators and grain handling facilities
- Aluminum manufacturing and storage areas
- Magnesium manufacturing and storage areas
- Coal preparation and handling facilities
- Starch manufacturing and storage areas
- Confectionery plants
- Pulverized sugar and cocoa manufacturing and storage plants

For Class III areas, consider the following:

- Textile mills
- Woodworking plants & furniture manufacturers
- Cotton gins
- Cotton seed milling plants
- Flax plants
- Carpet manufacturers



STANDARD MATERIALS AND FINISHES:

Class I, Division 1, Zone 1 Visual Signaling Devices

- Bodies, mounting modules and guards are die cast copper free aluminum
- Globe is heat and impact resistant glass
- Gaskets—silicone
- Internal components are solid-state electronics in a moisture-resistant and heat-dissipating epoxy

RATINGS (ELECTRICAL/SIZE):

Division 1, Zone 1 Signaling Devices

Description	Catalog Reference	Operating Voltage	Amperage	Peak Candlepower
Fire Alarm Strobe	EXFASC301	16–33V DC	0.95–0.55 amps	800,000
Strobe Light	EXS301	120V AC or 12–48V DC	0.1 amps	800,000
Strobe Light Diode Polarized	EXDS301	24V DC	0.8 amps	800,000
Rotating Beacon	EXR301	120V AC	0.35 amps	3328
Rotating Beacon Diode Polarized	EXDR301	24–28V DC	0.8 amps	2838
Steady-On Indication	EXS0301	120V AC or 24–28V DC amps	0.35 amps 0.8 amps	3328

MOUNTING MODULE HUB SIZES:

Type	Conduit	Catalog Number	
Pendant	¾ inch 1 inch	EVMP2 EVMP3	
Ceiling (and for use with wall)	¾ inch 1 inch	EV22 EV33	
Wall bracket arm	¾ inch 1 inch	EV87 and EV22 EV87 and EV33	
Stanchion	1 ¼ inch	EVMJ4	

CERTIFICATIONS AND COMPLIANCES:**IEC/NEC/CEC**

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Groups E, F, & G
- Class III & Simultaneous Presence
- Wet locations
- Marine locations for the 151XST only
- NEMA/Type 4X, IP66
- UL listed: UL1638, UL 1203, UL844
- Fire Alarm Strobe (EXFASC) is UL 1971
- cUL Listed (Certified by UL to CSA Standards)

UL Standards

- 844 — Hazardous (Divisions Classified) Locations
- 1598 — Luminaires
- 1598A — Luminaires for Installation on Marine Vessels
- 1638 — Indicating Appliance Circuits
- 1971 — Indicating Appliance for Fire Alarm

CSA Standards

- C22.2 No. 137
- CAN/CSA-E79 Series

IEC Standards

- 6079-15



The **Hazard•Gard™ EXFASC Series** is a visual fire alarm signaling device for hazardous areas. The EXFASC Series strobes are UL 1971 Listed for indoor signaling applications for the hearing impaired in non-sleeping areas. They are also UL Listed for Type 3R, 4X installations. The strobes are available for pendant, wall and ceiling mounts.

The **EXFASC Series Fire Alarm Explosionproof Strobe** contains a supervisory diode for use in fire alarm applications. Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe light and prevents it from lighting. When a fire-initiating device such as a smoke alarm is activated, the diode's polarity is reversed through a fire alarm panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Visual fire alarm signaling device for hazardous areas

Typical Industries

- Energy exploration
- Utilities
- Wastewater treatment plants
- Pulp & paper plants
- Petrochemical plants
- Petroleum refineries
- Oil rigs

Key Features & Benefits

- Meets NFPA requirements for fire safety warning devices
- State of the art electronic design (full wave rectified design)
 - Low current draw is efficient
 - 24V DC regulated full wave rectified
 - Limited in-rush current favorable to other fire alarm system components
 - Proven, reliable circuitry designed specifically for use with fire alarm control panels
- Available in pendant, wall and ceiling mount
- Strobe light produces 65 flashes per minute
- Factory sealed—no external seals required
- Quick connect—Strobe fixture threads onto mounting module for easy installation
- Small compact size—ceiling mount is 13 ¾-inch long

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL 1638 and 1203 Listed
- UL 1971 Listed for indoor visual signaling for the hearing impaired in non-sleeping areas
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 16–33V DC
- Operating Current: 1.08–0.83 amps
- Peak Candlepower: 800,000

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount

ORDERING INFORMATION
STEP 1 Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
FIRE ALARM RATED EXPLOSIONPROOF STROBES			
EXFASC301/16 33	24V DC regulated full wave rectified	Clear	3R, 4X

STEP 2 Order Strobe Type

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1 ¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXFASC Series Fire Alarm Voltage 24VDC Regulated Full Wave Rectified (Operating Range 16-33V DC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)



The **Hazard-Gard EXS and EXDS Series Explosionproof Strobe Lights** are designed for installation indoors and outdoors in locations which are hazardous due to the presence of flammable vapors or gases, ignitable dusts or ignitable fibers and flyings. The units are UL Listed for Type 3R and 4X installations. The 120V and 24V DC models are **Marine Rated**. The strobes are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDS Series** is diode polarized for use in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe and prevents it from lighting. When an initiating device such as a smoke detector is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Condition signaling
- Equipment obstruction warning
- Security alert
- Emergency evacuation signaling
- In areas where audible signals cannot be heard

Typical Industries

- Utility gas plants
- Petroleum refineries
- Wastewater treatment plants
- Chemical & petrochemical
- Mining
- Pulp & paper

Key Features & Benefits

- Strong strobe signal that produces 65 flashes per minute.
- Compact design will not obstruct in low ceiling or small areas, ceiling mount is only 13¾-inch long
- Quick connect—Strobe fixture threads onto mounting module for easy installation
- Factory sealed—No external seals required
- Available in pendant, wall, stanchion and ceiling mount
- Available in six different globe colors—clear, red, blue, amber, green and magenta
- Silicone gasket seals out dirt and moisture

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120V AC and 24V DC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC (EXS), 12–48V DC (EXSNM) and 24V DC nominal, voltage operating range is 16–33V DC (EXDS)
- Operating Current: 0.10 amps at 120V AC
1.2–3.8 amps at 12–48V DC
0.8 amps at 24V DC
- Peak Candlepower: 800,000

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

ORDERING INFORMATION
STEP 1
Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STROBES			
EXS301A/120	120V AC	Amber	3R, 4X, Marine
EXS301B/120	120V AC	Blue	3R, 4X, Marine
EXS301C/120	120V AC	Clear	3R, 4X, Marine
EXS301G/120	120V AC	Green	3R, 4X, Marine
EXS301M/120	120V AC	Magenta	3R, 4X, Marine
EXS301R/120	120V AC	Red	3R, 4X, Marine
EXSNM301A/12 48	12-48V DC	Amber	3R, 4X
EXSNM301B/12 48	12-48V DC	Blue	3R, 4X
EXSNM301C/12 48	12-48V DC	Clear	3R, 4X
EXSNM301G/12 48	12-48V DC	Green	3R, 4X
EXSNM301M/12 48	12-48V DC	Magenta	3R, 4X
EXSNM301R/12 48	12-48V DC	Red	3R, 4X
DIODE POLARIZED EXPLOSIONPROOF STROBES			
EXDS301A/24	24V DC	Amber	3R, 4X, Marine
EXDS301B/24	24V DC	Blue	3R, 4X, Marine
EXDS301C/24	24V DC	Clear	3R, 4X, Marine
EXDS301G/24	24V DC	Green	3R, 4X, Marine
EXDS301M/24	24V DC	Magenta	3R, 4X, Marine
EXDS301R/24	24V DC	Red	3R, 4X, Marine

STEP 2
Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXFASC Series Fire Alarm Voltage 24V DC Regulated Full Wave Rectified (Operating Range 16-33V DC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)
EXS Series Strobe Light Voltage 120V AC (Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXSNM Series Strobe Light Voltage 12-48V DC (Not Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDS Series Strobe 40°C Light-Diode Polarized Voltage 24V DC (Marine Listed)	75°C 55°C	T6(85°C) 90°C	T4A(120°C) T5(100°C)	T4A(120°C) T4(135°C)	T4(135°C)

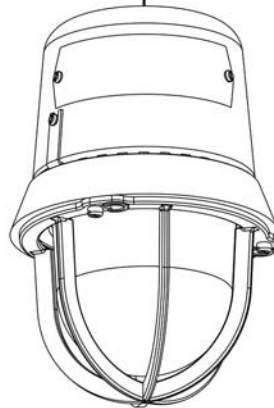
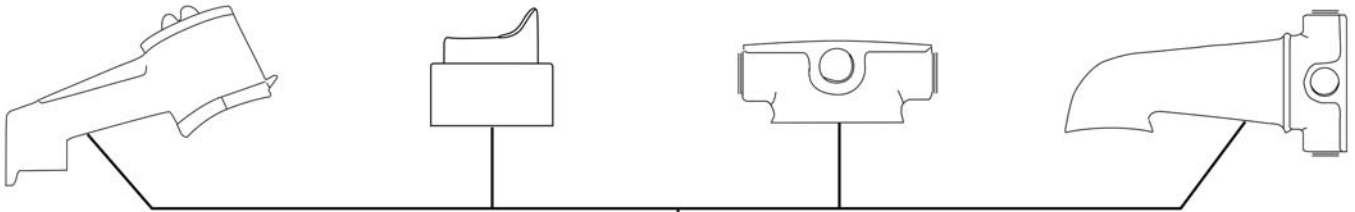
FAMILY TREE—EX STROBES, ROTATING AND STEADY-ON BEACONS

STANCHION
EVMJ4 1¼" HUB

PENDANT
EVMP2 ¾" HUB

CEILING
EV22 ¾" HUB

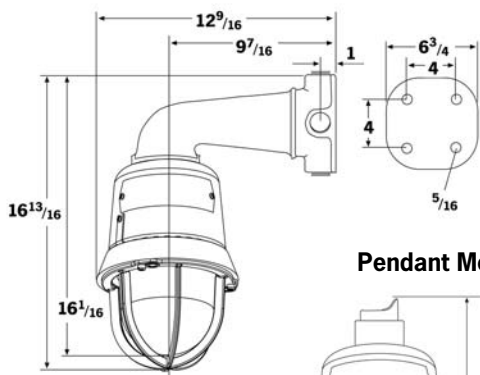
WALL
EV22 & EV87 ¾" HUB



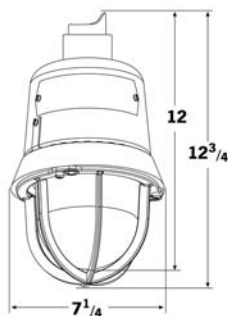
**HOUSING, GLOBE AND GUARD FOR
EX SERIES STROBE LIGHTS, ROTATING
BEACONS, AND STEADY-ON BEACONS**

DIMENSIONS—EX STROBES, ROTATING AND STEADY-ON BEACONS

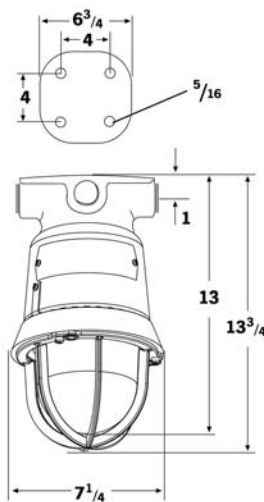
Wall Mount



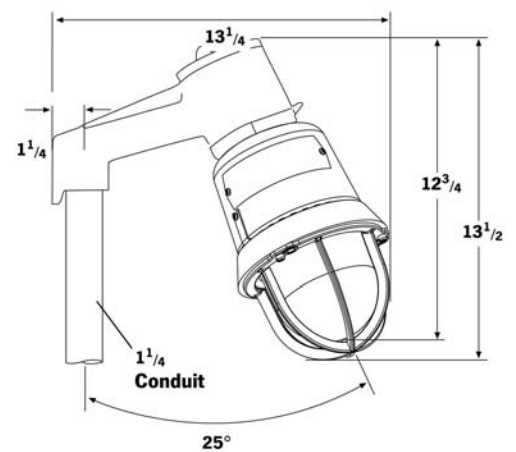
Pendant Mount



Ceiling Mount



Stanchion Mount



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard 11.0 lbs.

Add mounting modules

Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.



The **Hazard•Gard EXR Series Explosionproof Rotating Beacons** are designed for installation in hazardous locations, such as manufacturing plants, heavy industrial facilities, refineries, chemical, petrochemical, pharmaceutical and off-shore drilling platforms.

The units are UL Listed for Type 3R, 4X and marine installations. The rotating beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDR Series Explosionproof Rotating Beacon** is diode polarized for use in standard 24–28V DC electrical circuits or in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation in an electrically supervised circuit, the diode is reversed biased, meaning it blocks voltage from being applied to the rotating beacon and prevents it from lighting. When a warning detecting device is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allows voltage to the device and activates the rotating beacon.

Primary Applications

- Security alert
- Equipment obstruction warning
- Obstacle warning
- Status indication of a process
- Areas under construction
- Supplement audible signaling or off limits

Typical Industries

- Utility gas plants
- Pharmaceutical plants
- Wastewater treatment plants
- Refineries
- Chemical plants
- Mining

Key Features & Benefits

- Powerful halogen rotating beacon emits bright light to provide critical visual warning
- Available in pendant, wall, stanchion and ceiling mount
- Available in six different globe colors—amber, blue, clear, green, magenta and red
- Beacon produces 75 rotations per minute
- Factory sealed—No external seals required
- Quick connect—Strobe fixture threads onto mounting module for easy installation

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class II, Division 1, Groups E, F & G
- Class I, Zones 1 & 2, Group IIB
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC (EXR) and 24–28V DC (EXDR)
- Operating Current: 0.382 amps at 120V AC
0.8 amps at 24–28V DC
- Peak Candlepower: 3328 (EXR)
2838 (EXDR)

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

ORDERING INFORMATION
STEP 1 Order Rotating Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF ROTATING BEACONS			
EXR301A/120	120V AC	Amber	3R, 4X, Marine
EXR301B/120	120V AC	Blue	3R, 4X, Marine
EXR301C/120	120V AC	Clear	3R, 4X, Marine
EXR301G/120	120V AC	Green	3R, 4X, Marine
EXR301M/120	120V AC	Magenta	3R, 4X, Marine
EXR301R/120	120V AC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF ROTATING BEACONS			
EXDR301A/24 28	24–28V DC	Amber	3R, 4X, Marine
EXDR301B/24 28	24–28V DC	Blue	3R, 4X, Marine
EXDR301C/24 28	24–28V DC	Clear	3R, 4X, Marine
EXDR301G/24 28	24–28V DC	Green	3R, 4X, Marine
EXDR301M/24 28	24–28V DC	Magenta	3R, 4X, Marine
EXDR301R/24 28	24–28V DC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXR Series Rotating Beacon	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 120V AC	55°C	90°C	T5(100°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T5(100°C)	T4(135°C)	T4(135°C)
EXR Series Rotating Beacon—	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Diode Polarized	55°C	90°C	T6(85°C)	T4(135°C)	T4(135°C)
Voltage 24–28V DC	65°C	105°C	T6(85°C)	T4(135°C)	T4(135°C)

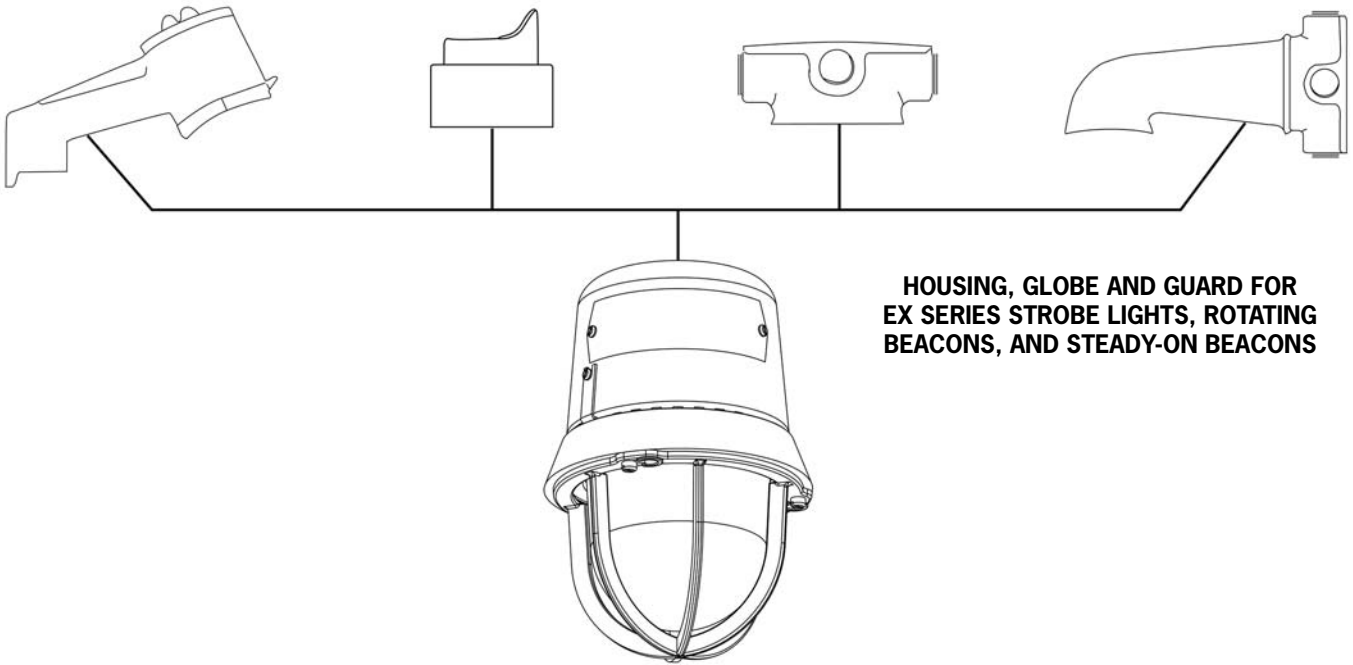
FAMILY TREE—EX STROBES, ROTATING AND STEADY-ON BEACONS

STANCHION
 EVMJ4 1 1/4" HUB

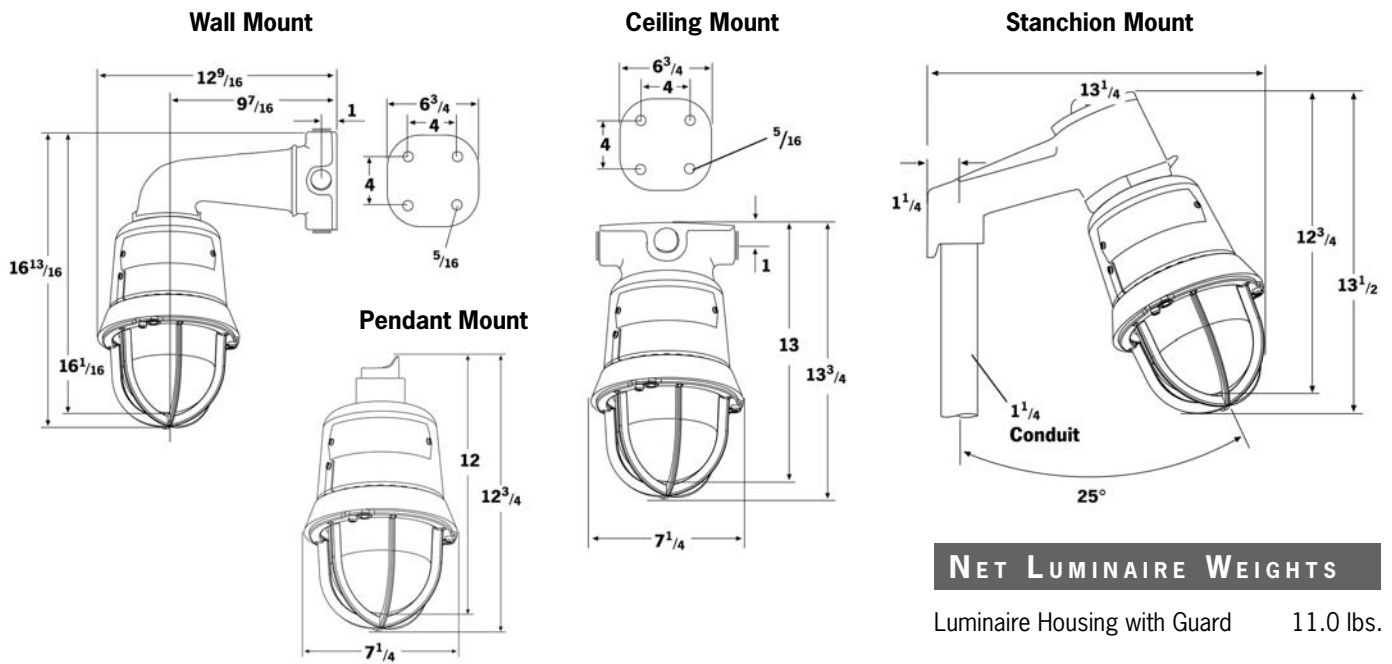
PENDANT
 EVMP2 3/4" HUB

CEILING
 EV22 3/4" HUB

WALL
 EV22 & EV87 3/4" HUB



DIMENSIONS—EX STROBES, ROTATING AND STEADY-ON BEACONS



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard 11.0 lbs.

Add mounting modules

Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.



**FB15 Pipe Mount
(with cast guard)**



EXSO Stanchion Mount



**FB15
Direct Mount
(with wire guard)**

The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in a variety of globe colors. Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants. The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Continuous source to communicate
- Obstacle warning
- Exit or entrance lights
- For identifying the location of safety equipment such as showers or emergency telephones

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Steady-on Beacons are designed for harsh & hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

- Broad range of light source options such as halogen, incandescent, compact & fluorescent for both indication and illumination
- Products designed for both conduit wiring and/or cable connection. NPT or metric entries meeting all installation needs



FB15 Pipe Mount
(with cast guard)



FB15
Direct Mount
(with wire guard)

The units are UL Listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Continuous source to communicate
- Obstacle warning
- Exit or entrance lights
- For identifying the location of safety equipment such as showers or emergency telephones

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

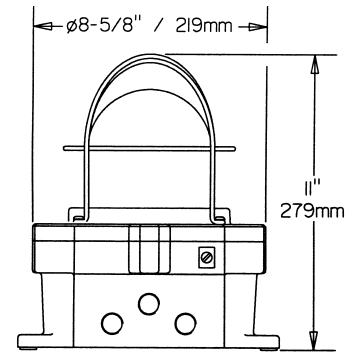
MEDC Series Steady-On Beacons

FB4

100 Watt Steady Incandescent Light—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x 1/2" or 2 x 3/4" NPT
Weight	13lb/6.4kg
Options: Body & lens color, lens guard, certification, voltage 120V AC only	



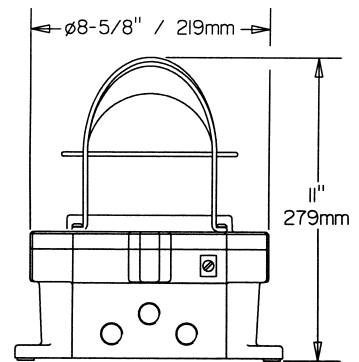
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	17800002	FB4EUL8U1N100B1N1G	Marine grade alloy, 120V AC, 100W bulb (not included), blue lens, lens guard, no labels, gray finish

FL4

13–39 Watt Steady Fluorescent Light—Explosionproof

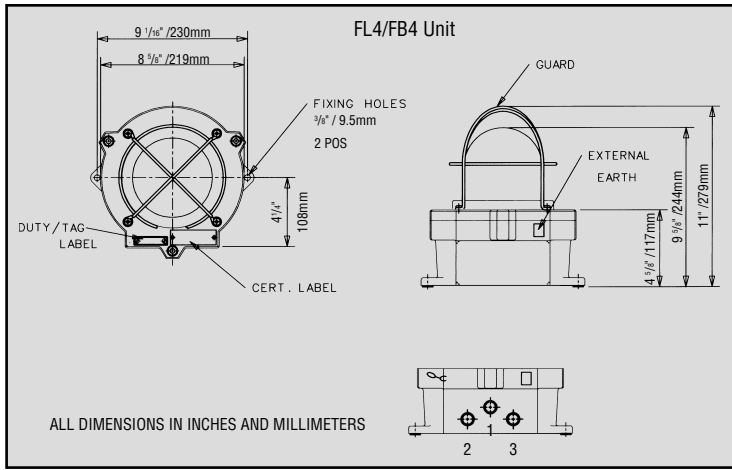


Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIC T5
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x 1/2" NPT or 2 x 3/4" NPT
Weight	14.5lb/6.6kg
Options: Body & lens color, lens guard, certification, voltages 24V DC, 120V, 240V AC	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	27800006	FL4BUL8U2M3M13R1N1RZ	Marine grade alloy, 24V DC, 2 x 1/2" NPT entries, 13W tube (not included), red lens, lens guard, red finish , one certified plug

MEDC Series Steady-On Beacons



Specification—FL4 and FB4 Units

Certification: UL Listed for USA and Canada
 – Hazardous locations:
 Class I, Div. 1, Groups C & D.
 Class I, Zone 1, AExd IIB T4/T5.
 UL Listing No. E187894.
 – Ordinary locations: Visual-Signal Device (FL4 only).
 UL Listing No. S8128.
ATEX approved: EExd IIC.
 Certificate No. Baseefa 02ATEX0224X.

Material: LM25TF Marine Grade Alloy body.
Grade 316 ANC48 Stainless Steel body.
Toughened Wellglass.

Models:	FL4: Up to 3 x 13 Watt PL compact fluorescent lamps. FB4: 100 watt GLS incandescent lamps. E27 holder as standard.
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Finish: Gray epoxy paint finish as standard or to customer's specification.

Voltage: FL4: 24V DC, 120V AC, 240V AC $\pm$ 10% 50/60hz.
FB4: 120V AC $\pm$ 10% 50/60hz.

Weight: FL4: 14–17lb/6.5–7.9kg (add 19lb/8.4kg for stainless steel).
FB4: 13lb/6.4 kg.

Certified	FL4: -4°F to +131°F (-20°C to + 55°C).
Temperature:	FB4: -67°F to +131°F (-55°C to + 55°C).

Ingress Protection: NEMA 4X & 6.
IP66 and IP67.

Lamps: Units are supplied without lamps.

Terminals: 8 off suitable for up to 8 AWG conductor size.

Entries: Up to 3 x ½" NPT or 2 x ¾" NPT.

FL4 LAMP DETAILS			
Unit Type	Lamp Type	Lamp Ref.	Holder Type
FL4 DC	Osram Dulux D/E 13W	DD/E 13/XX	G24q-1
	Philips PLC 13W	PLC 13 P4	G24q-1
FL4 AC	Osram Dulux D 13W	DD 13	G24d-1
	Philips PLC 13W	PLC 13	G24d-1
Osram Color XX = (21 = Cool white) (31 = Warm white) (41 = Interna)			

Temperature Ratings			
Type	Voltage/Wattage	T Class	Max. Amb.
FL4	DC units	T5	55°C
	AC units	T4	55°C
FB4	60W	T4	55°C
	100W	T3	55°C

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Voltage	Certification	Entries	Lamp Wattage	Lens Color	Guard	Options	Material	Finish																																																							
FL4 FB4							N		R																																																							
<table border="1"> <thead> <tr> <th>Voltage</th><th>Code</th></tr> </thead> <tbody> <tr> <td>24V DC</td><td>B</td></tr> <tr> <td>120V AC</td><td>E</td></tr> <tr> <td>240V AC</td><td>H</td></tr> </tbody> </table>		Voltage	Code	24V DC	B	120V AC	E	240V AC	H	<table border="1"> <thead> <tr> <th colspan="2">Certification Code</th></tr> </thead> <tbody> <tr> <td>ATEX</td><td>B8D</td></tr> <tr> <td>UL*</td><td>UL8U</td></tr> </tbody> </table> *UL (FB4)—only available 24VDC, 110VAC., NPT entries.	Certification Code		ATEX	B8D	UL*	UL8U	<table border="1"> <thead> <tr> <th>Entries</th><th>Code</th></tr> </thead> <tbody> <tr> <td>1 x 20mm</td><td>1B</td></tr> <tr> <td>2 x M20</td><td>2B3B</td></tr> <tr> <td>1 x M25</td><td>1C</td></tr> <tr> <td>2 x M25</td><td>2C3C</td></tr> <tr> <td>1 x 1/2" NPT</td><td>1M</td></tr> <tr> <td>2 x 1/2" NPT†</td><td>2M3M</td></tr> <tr> <td>1 x 3/4" NPT†</td><td>1N</td></tr> <tr> <td>2 x 3/4" NPT†</td><td>2N3N</td></tr> </tbody> </table> †UL Listed version only.	Entries	Code	1 x 20mm	1B	2 x M20	2B3B	1 x M25	1C	2 x M25	2C3C	1 x 1/2" NPT	1M	2 x 1/2" NPT†	2M3M	1 x 3/4" NPT†	1N	2 x 3/4" NPT†	2N3N	<table border="1"> <thead> <tr> <th>Color</th><th>Code</th></tr> </thead> <tbody> <tr> <td>Clear</td><td>C</td></tr> <tr> <td>Red</td><td>R</td></tr> <tr> <td>Blue</td><td>B</td></tr> <tr> <td>Green</td><td>G</td></tr> <tr> <td>Yellow</td><td>Y</td></tr> <tr> <td>Amber</td><td>A</td></tr> </tbody> </table>	Color	Code	Clear	C	Red	R	Blue	B	Green	G	Yellow	Y	Amber	A	<table border="1"> <thead> <tr> <th>Guard</th><th>Code</th></tr> </thead> <tbody> <tr> <td>None</td><td>0</td></tr> <tr> <td>Guard</td><td>1</td></tr> </tbody> </table>	Guard	Code	None	0	Guard	1	<table border="1"> <thead> <tr> <th>Material</th><th>Code</th></tr> </thead> <tbody> <tr> <td>Stainless Steel</td><td>0</td></tr> <tr> <td>Alloy</td><td>1</td></tr> </tbody> </table>	Material	Code	Stainless Steel	0	Alloy	1
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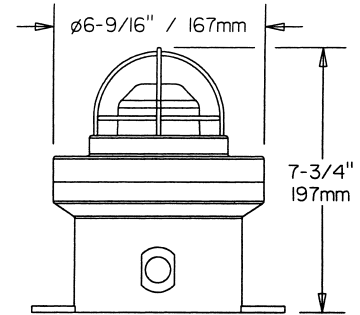
MEDC Series Steady-On Beacons

FB11 UL

10 Watt Steady Incandescent Light—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zone 1, AExd IIB T4/T5
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, M20
Weight	6.2lb/2.8kg
Options: Body & lens color, lens guard, certification, voltage 24, 48V DC, 110–120V AC	



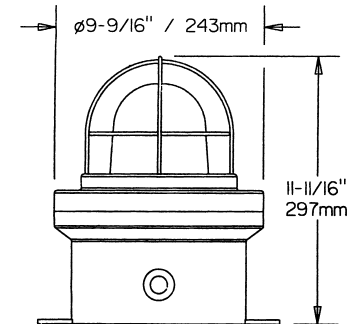
Certification	Ordering Code	Catalog #	Standard Product Configuration
ATEX	32500004	FB11B02410RNBNNN	24V DC, 10W bulb, red lens, mounting bracket, natural black finish
UL, cUL Listed, Class I, Div 2, Groups C & D	32500028	FB11UL02410GNBNNR	10W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32500029	FB11UL11010GNBNNR	10W incandescent beacon, 110V AC, green lens, no lens guard, 2 x ½ NPT, painted red enclosure

FB12 UL

60W/100W Steady Incandescent Light—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zone 1, AExd IIB T4/T5
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, M20
Weight	2.6lb/1.2kg
Options: Body & lens color, lens guard, certification, voltage 120V AC	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	326023	FB12UL12060CNBNNN	120V AC, 60W bulb, clear lens, mounting bracket, no labels, natural black finish
UL, cUL Listed, Class I, Div 2, Groups C & D	32600035	FB12UL12060GNBNNR	60W incandescent beacon, 120V AC, green lens, no lens guard, 2 x ½ NPT entries in a painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32600036	FB12UL02460GNBNNR	60W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32600037	FB12UL120100GNBNNR	100W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure

MEDC Series Steady-On Beacons

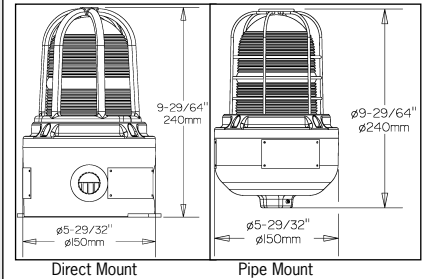
FB15

100W Steady Incandescent Light—Hazardous & Ordinary Locations



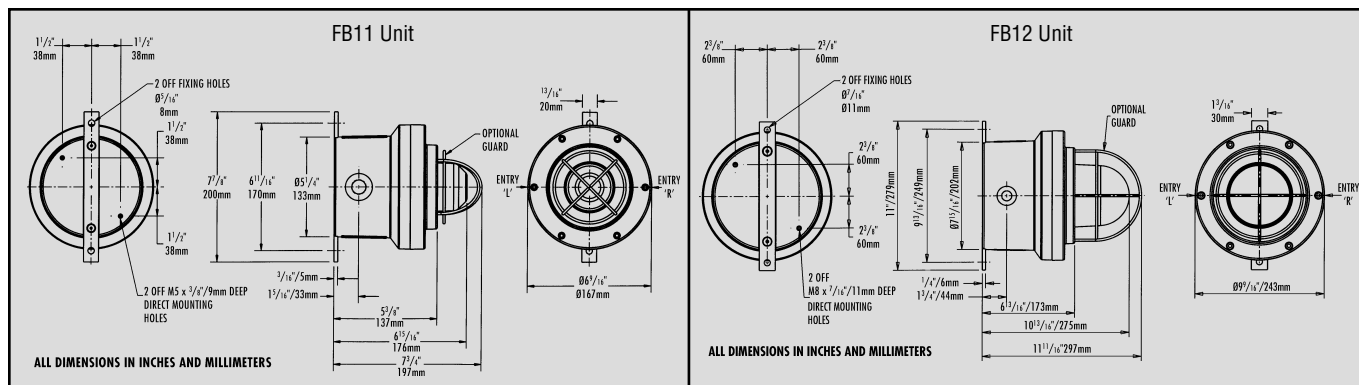
Certification UL Listed for:	cULus ATEX Class I, Div 2, Groups A, B, C, D Class I, Zone 1, AExd IIC T3/T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 1/2" NPT or 3 x 3/4" NPT
Weight	6–8lb/2.6–3.6kg

Options: Body & lens color, lens guard, lamp wattage, unit fixing, mounting method, voltages 12–48V DC, 110–254V AC



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600001	FB15UL120100GNANR	120V AC, 100W bulb, green lens, mounting bracket, no labels, red finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600020	FB15UL120100ANPNN	100W incandescent beacon, 120V AC, amber lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600021	FB15UL120100RNPNN	100W incandescent beacon, 120V AC, red lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600022	FB15UL120100GNPNN	100W incandescent beacon, 120V AC, green lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600023	FB15UL120100CNPNN	100W incandescent beacon, 120V AC, clear lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600024	FB15UL120100BNPNN	100W incandescent beacon, 120V AC, blue lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600025	FB15UL024100ANPNN	100W incandescent beacon, 24V DC, amber lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600026	FB15UL024100RNPNN	100W incandescent beacon, 24V DC, red lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600027	FB15UL024100GNPNN	100W incandescent beacon, 24V DC, green lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600028	FB15UL024100CNPNN	100W incandescent beacon, 24V DC, clear lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600029	FB15UL024100BNPNN	100W incandescent beacon, 24V DC, blue lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure

MEDC Series Steady-On Beacons



Specification—FB11 and FB12 Units

Models:	FB11 & FB12—Incandescent.
Certification:	UL Listed for USA and Canada. – Class I, Div 2, Groups C & D. – Class I, Zone 1, AExd IIB T4/T5. UL listing No. E187894. ATEX approved: CENELEC EN50014 and EN50018. FB11: Cert. No. 99 ATEX 2195X. FB12: Cert. No. 99 ATEX 2196.
Voltage:	FB11: 24, 48V DC 110, 220, 240, 250V AC FB12: 120V AC
Incandescent:	FB11: 10W incandescent fitted as standard. FB12: 60W or 100W incandescent fitted as standard.
Material:	Body: Glass reinforced polyester. Lens: Glass. Cover screws + backstrap: stainless steel 316.

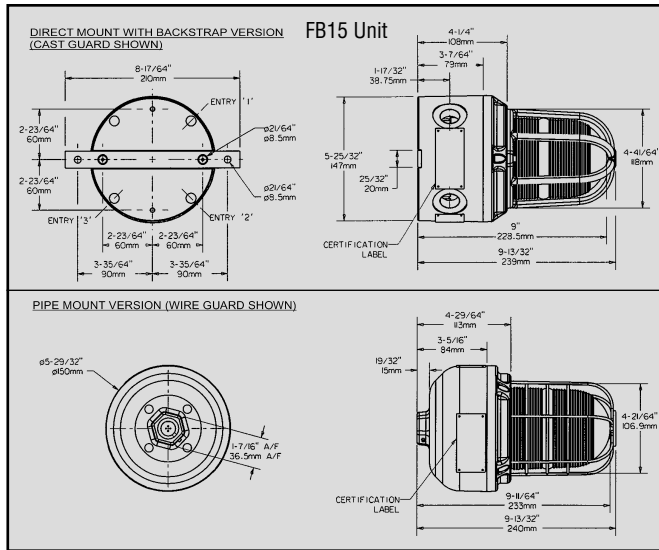
Finish:	Natural black or painted to customer specification.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Terminals:	FB11: 6 x 14 AWG. FB12: 6 x 10 AWG.
Labels:	Duty/Tag Label optional.
Entries:	2 x 1/2" NPT.
Certified Temperature:	FB11: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +104°F (-55°C to +40°C) T5. FB12: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +104°F (-55°C to +40°C) T5.
Weight:	FB11: 6.2lb / 2.8kg. FB12: 16.7lb / 7.6kg.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Certification	Voltage	Lamp Wattage	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Finish
FB11 FB12	Cert. ATEX UL Listed	Code B UL			N	B	N	N	
		Voltage Code 24V DC 024 110V AC 110 120V AC[†] 120 240V AC 240 Other voltages available, please specify. [†]FB12 UL Listed only	Lamp Wattage Code FB11 10W AC & DC (1 x 10W bulb) 10 FB12 60W AC & DC (1 x 60W bulb) 60 100W AC & DC (1 x 100W bulb) 100	Color Code Red R Blue B Green G Amber A Yellow Y Clear C				Finish Code Natural Black N Red R	

MEDC Series Steady-On Beacons



Electrical Ratings:

	DC			AC			
Voltage	24	48	110	120	230	240	254
Current (A)—60W lamp	2.5	1.25	0.55	0.50	0.26	0.25	0.24
Current (A) —100W lamp	4.2	2.1	0.91	0.83	0.43	0.42	0.39

Specification—FB15 Unit

Certification: UL Listed for USA and Canada:

- Hazardous locations
Class I, Div 2, groups A, B, C & D.
Class I, Zone 1, AExd IIC T3/T4.

UL listing No. E187894.

- Ordinary locations: Visual Signal Device.

UL listing No. S8128

CENELEC/ATEX approved.

CENELEC EN50014 & EN50018

ATEX Cert. No. Baseefa 04ATEX0009X.

Material:

Body: Glass reinforced polyester.

Lens: Glass.

Backstrap: stainless steel 316.

Wire Guard (optional): Stainless steel wire.

Cast Guard (optional): Aluminium LM25M.

Finish:

Natural black or epoxy painted to customer specification.

Voltage:

24, 48V DC

110, 120, 230, 240, 254V AC

Lamp Type:

60W or 100W GLS incandescent.

Lamp Holder:

E27 as standard..

Certified

60W: -67°F to +131°F (-55°C to +55°C) T4.

Temperature:

-67°F to +158°F (-55°C to +70°C) T3.

100W: -67°F to +104°F (-55°C to +40°C) T4.

Weight:

Pipe mount: 5¼lb/2.6kg; Direct mount: 6¼lb/3.0kg.

Ingress

NEMA 4X & 6, IP66 & IP67.

Protection:

Entries:

Supplied as 2 x M20, up to 3 x M20 or 3 x M25.

Supplied as 2 x ½" NPT (direct mount) or ¾" (pipe mount) as standard.

Other options available:

Up to 3 x ½" NPT or 3 x ¾" NPT (direct mount);

½" NPT (pipe mount)—contact sales office to order.

Terminals:

Direct mount: 12 x 14AWG.

Pipe mount: 8 x 14AWG.

Labels:

Tag/Duty label option.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box. Standard products available for immediate shipping—contact sales office for details.

Model	Certification	Voltage	Lamp Wattage	Lens Color	Unit Guard	Fixing	Unit Options	Finish
FB15							N	N

Certification	Code	Voltage	Code	Lamp Wattage	Code	Guard	Code
ATEX	B	24V DC	024	60	60	None	N
UL	UL	110V AC	110	100	100	Cast	C
		120V AC	120			Wire	W
		240V AC	240				

Color	Code	Unit Fixing	Code
Red	R	Pipe mount	P*
Blue	B	Direct w/backstrap	B
Green	G		
Amber	A		
Yellow	Y		
Clear	C		

* Not Available on ATEX version.

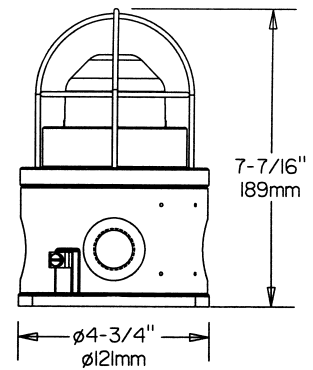
MEDC Series Steady-On Beacons

SM87 LU3

10 Watt Steady Incandescent Light—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	2 x 1/2" or 3/4" NPT, 20mm, 25mm
Weight	4.4lb/2.0kg
Options: Body & lens color, lens guard, certification, voltages 12–48V DC, 110V–254V AC	



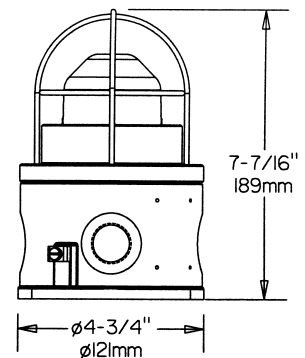
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	762311	SM87LU3AUL024RN3R3LNR	24V DC, red lens, 2 x 1/2" NPT entries, no labels, red finish
ATEX	46200122	SM87LU3AB024GN1T1BNR	EExd, IIC, T4/T6 incandescent beacon, 24V DC, green lens, no lens guard, 2 x M20 cable entries, painted red enclosure
UL, cUL Listed, Class I, Div 1, Groups C & D	46200096	SM87LU3AUL024GN3T3BNR	24V DC, green lens, 10W incandescent bulb, marine grade alloy, red finish

SM87 LU1

10 Watt Steady Fluorescent Light—Explosionproof

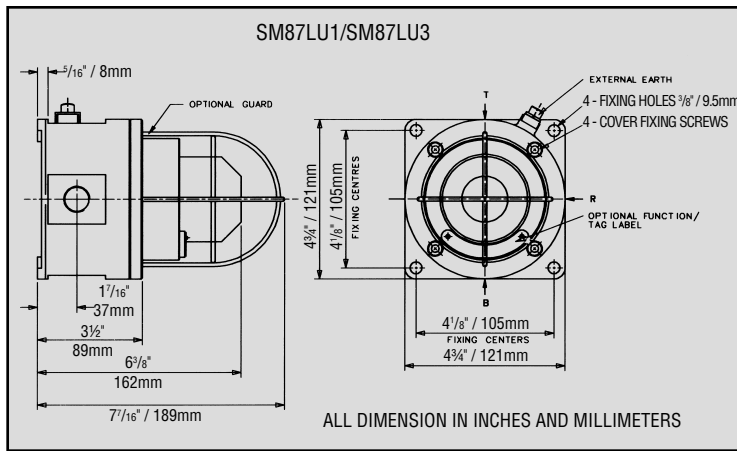


Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	2 x 1/2" or 3/4" NPT, 20mm, 25mm
Weight	4.4lb/2.0kg
Options: Body & lens color, lens guard, certification, voltages 12–48V DC, 120V–254V AC	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	46200054	SM87LU1AUL024RN4T4BNR	24V DC, red lens, 2 x 3/4" NPT entries, no labels, red finish
UL, cUL Listed, Class I, Div 1, Groups C & D	46200052	SM87LU1AUL024GN4T4BNR	24V DC, green lens, 10W fluorescent bulb, marine grade alloy, red finish
ATEX	46200121	SM87LU1AB024GN1T1BNR	EExd, IIC, T4/T6 fluorescent beacon, 24V DC, green lens, no lens guard, 2 x M20 cable entries, painted red enclosure

MEDC Series Steady-On Beacons



Specification—SM87LU1/SM87LU3 Units

Models:	SM87 LU1: Fluorescent. SM87 LU3: Incandescent.
Certification:	UL Listed for USA and Canada: Class I, Div 1, Groups C & D and Class I, Zone 1. Listing No: E187894. CSA Certified for Class I, Div 1 & 2, Group D. Certificate No. 96406. ATEX approved: EExd IIC T3-T6 (model dependent). Certificate No. 03ATEX0222X
Ingress Protection:	NEMA 4X and 6 IP66 & 67.
Material:	Marine Grade Aluminium Alloy LM25TF with glass lens.
Finish:	Epoxy paint finish as standard or to customer's specification.
Fluorescent:	10 Watt tube light output 600 Lumens (240V & 254V AC versions). 5 Watt tube max. light output 250 Lumens (DC versions).
Incandescent:	Single incandescent fitted as standard 10 watts. Others may be available, please contact MEDC with your requirements.
Weight:	4.4lb/2.0kg approx.
Certified Temperature:	SM87LU1/3 -67°F to +131°F -55°C to +55°C.
Voltage:	12, 24, 48V DC, 110V (LU3 only), 220V, 240V, 254V AC 50Hz as standard. 60Hz available if required.
Terminals:	SM87: 4 off for up to 14 AWG cable.
Entries:	SM87LU1 & 3: 2 x 1/2" or 3/4" NPT, 20mm, 25mm
Power Consumption:	LU1- 7 Watts for 12V DC, 24V DC, 48V DC, 220V AC 14 Watts for 240V AC, 15 Watts for 254V AC LU3- Single incandescent fitted as standard 10W. Other options are available—please contact MEDC with your requirements.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Model	Certification	Voltage	Lens Color	Lens Guard	Entries	Tag/Duty Label	Unit Finish
				N		N	R

Type	Code
Fluorescent (Alloy) [†]	SM87LU1A
Fluorescent (Stainless Steel)*	SM87LU1S
Incandescent (Alloy) [†]	SM87LU3A
Incandescent (Stainless Steel)*	SM87LU3S

*Not available UL Listed or GOST Certified.
† Not available CSA certified.

Voltage	Code
24V DC	024
110V AC	110
240V AC	240

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Entries	Code
M20 left, M20 bottom	1B1L
M20 bottom	1B
1/2" NPT left, 1/2" NPT bottom	3B3L
1/2" NPT Bottom	3B

Certification	Code
ATEX/CENELEC	B
UL Listed	UL
CSA Certified	C



The units are UL Listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Key Features & Benefits

- Powerful halogen light source for clear visual indication
- Available in six different globe colors—amber, blue, clear, green, magenta and red
- Factory sealed—no external seals required
- Quick connect—Steady-on beacon fixture threads onto mounting module for easy installation
- Small compact size—ceiling mount is 13¾-inch long
- Available in pendant, wall, stanchion and ceiling mount

Steady-on Beacons are designed for harsh & hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

- Broad range of light source options such as halogen, incandescent, compact & fluorescent for both indication and illumination
- Products designed for both conduit wiring and/or cable connection. NPT or metric entries meeting all installation needs
- Six light color options: Amber, Red, Green, Clear, Blue and Magenta for all signaling conditions

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120V AC and 24V DC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC and 24–28V DC
- Operating Current: 0.35 amps at 120V AC (EXSO)
0.8 amps at 24–28V DC (EXDSO, diode polarized)
- Peak Candlepower: 3328

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

ORDERING INFORMATION
STEP 1 Order Steady-On Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
Explosionproof STEADY-ON BEACONS			
EXSO301A/120	120V AC	Amber	3R, 4X, Marine
EXSO301B/120	120V AC	Blue	3R, 4X, Marine
EXSO301C/120	120V AC	Clear	3R, 4X, Marine
EXSO301G/120	120V AC	Green	3R, 4X, Marine
EXSO301M/120	120V AC	Magenta	3R, 4X, Marine
EXSO301R/120	120V AC	Red	3R, 4X, Marine
DIODE POLARIZED Explosionproof STEADY-ON BEACONS			
EXDSO301A/24 28	24–28V DC	Amber	3R, 4X, Marine
EXDSO301B/24 28	24–28V DC	Blue	3R, 4X, Marine
EXDSO301C/24 28	24–28V DC	Clear	3R, 4X, Marine
EXDSO301G/24 28	24–28V DC	Green	3R, 4X, Marine
EXDSO301M/24 28	24–28V DC	Magenta	3R, 4X, Marine
EXDSO301R/24 28	24–28V DC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

Description	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class II Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXSO Series Steady-On Beacon Voltage 120V AC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T5(100°C) T5(100°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDSO Series Steady-On Beacon—Diode Polarized Voltage 24–28V DC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)

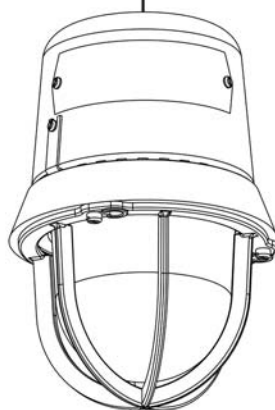
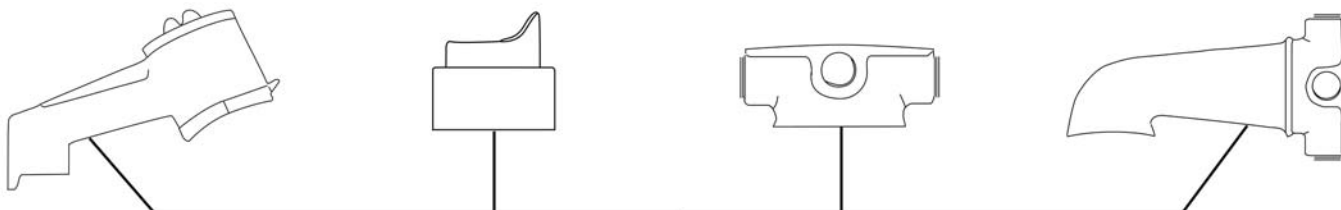
FAMILY TREE—EX STROBES, ROTATING AND STEADY-ON BEACONS

STANCHION
EVMJ4 1¼" HUB

PENDANT
EVMJ2 ¾" HUB

CEILING
EV22 ¾" HUB

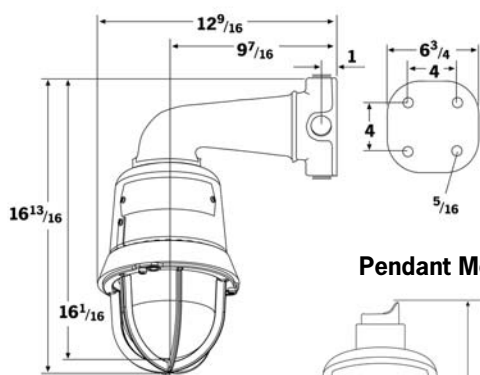
WALL
EV22 & EV87 ¾" HUB



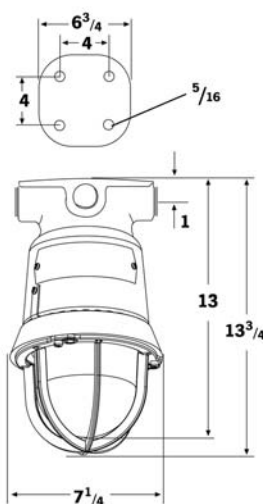
**HOUSING, GLOBE AND GUARD FOR
EX SERIES STROBE LIGHTS, ROTATING
BEACONS, AND STEADY-ON BEACONS**

DIMENSIONS—EX STROBES, ROTATING AND STEADY-ON BEACONS

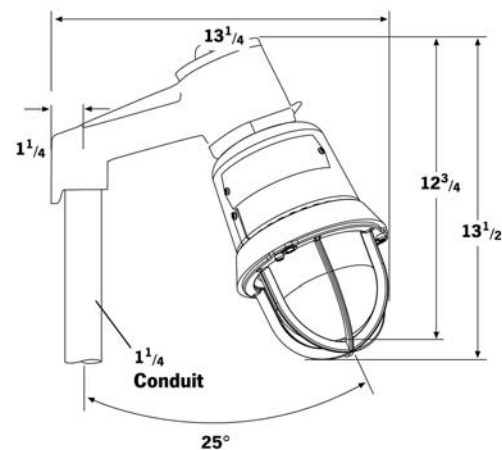
Wall Mount



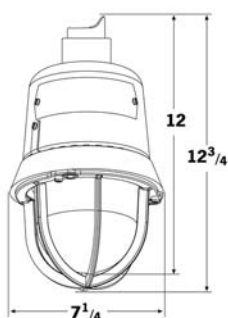
Ceiling Mount



Stanchion Mount



Pendant Mount



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard 11.0 lbs.

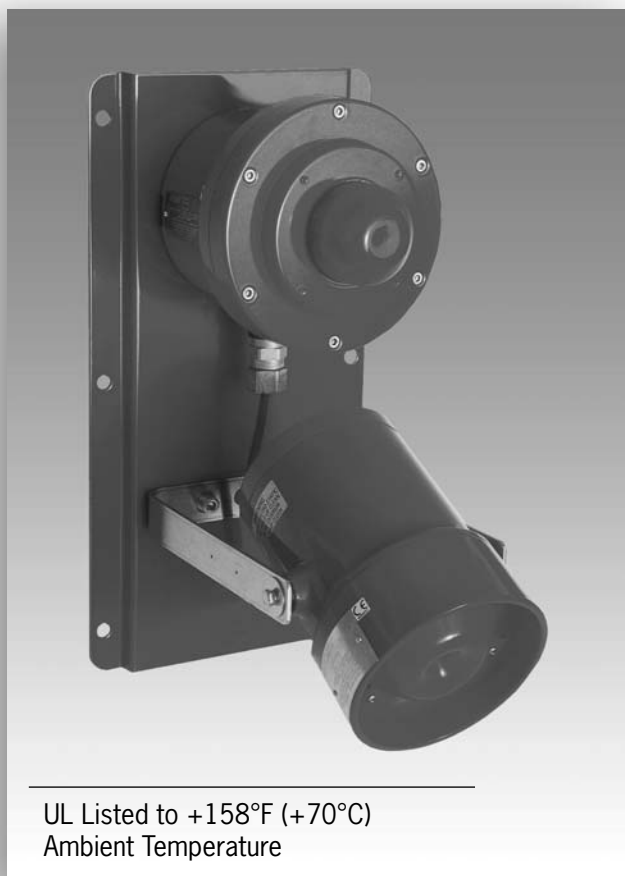
Add mounting modules

Pendant 1.0 lbs.

Ceiling 1.0 lbs.

Wall 4.5 lbs.

Stanchion 2.5 lbs.



UL Listed to +158°F (+70°C)
Ambient Temperature

Horn/Strobe Combination Unit

This range of light weight all GRP, explosionproof horns intended for use in potentially explosive atmospheres has been designed with high ingress protection to cope with the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries. The flamepaths, flare and the body, are manufactured completely from a UV stable glass reinforced polyester. Stainless steel screws and sinter are incorporated thus ensuring a corrosion free product. A tapered flamepath is used to overcome the problems of assembly of parallel spigot flamepaths.



Truly a unique product offering with integral visual and audible signaling devices pre-wired for simultaneous output activation.

- Suitable for Class I, Division 2 applications
- Strobe light and audible tone generator in one package
- Mounts with ease and facilitates quick field wiring
- UL, cUL, Ex and ATEX for worldwide acceptance

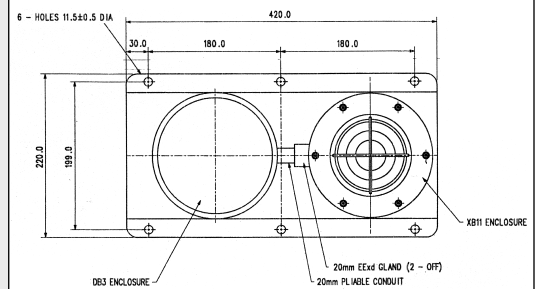
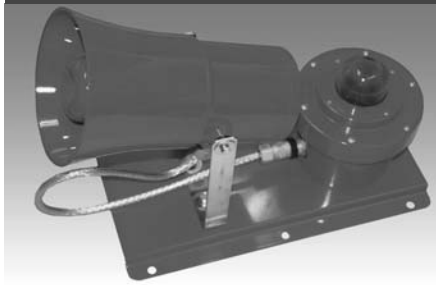
Certifications & Compliances

- UL Listed for USA and Canada
 - Hazardous locations:
 - Class I, Div. 2, Groups A, B, C & D
 - Class I, Zones 1 & 2, AExd IIC T4
 - Ordinary locations: Audible-Signal device
- ATEX approved
- NEMA 4X & 6, IP66 & 67
- Certified temperature -67°F to +158°F
-55°C to +70°C

Key Features & Benefits

- All GRP corrosion free
- Up to 108dBA output at 10 feet
- Integral volume control
- 27 tones, user selectable
- Horn/Strobe Combination Unit available

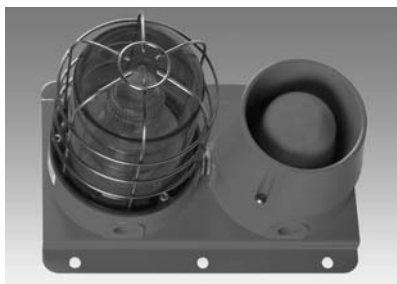
Visual & Audible Combination Units—Hazardous Locations, Weatherproof



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 2GD	24V DC	Red/Red	803130	DB3/XB11B24V RED/RED	DB3/XB11, EExd IIB T5, choice of 27 tones, 115dB(A) at 1m output, 29 Cd, no labels, 1 x M20 entry
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Natural Black	869200	DB3/XB11UL24V RED/NB	DB3/XB11, GRP material, NEMA 4X & 6, choice of 27 tones, 106dB(A) at 10 feet output, 29 Cd, no labels, 1 x ½" NPT entries
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Red	869205	DB3/XB11UL24V RED/RED	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red/Red	869210	DB3/XB11UL110V RED/RED	



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red/Red	62500182	DB1P/SM87HXBUL 24V RED/RED	24V DC, alloy sounder, interconnected to, painted red stainless steel baseplate, alloy 5 joule beacon
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Red	62500183	DB3/SM87HXBUL 24V RED/RED	GRP sounder interconnected to, painted red stainless steel baseplate, alloy 5 joule beacon



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
Ex II 2GD	24V DC	Red/Red	62500009	DB12/XB13 24V RED/RED	IP66 & 67 weatherproof only, 24V DC, GRP sounder interconnected to, on a painted red stainless steel baseplate, a IP66 & 67 weatherproof only, GRP 10 joule beacon



DB16

This range of loudspeakers, intended for use in potentially explosive gas and dust atmospheres, has a power rating of up to 30 Watts and is suitable for use in the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries. The flamepaths, flare and body, are manufactured from a UV stable glass reinforced polyester. Stainless steel screws and mounting stirrup are incorporated to ensure a corrosion-free product.

Primary Applications

- Plant-wide alarm notification
- Audible process alarms

Typical Industries

- Refineries
- Chemical plants
- Oil and gas exploration
- Marine terminals for transportation & storage

Loudspeakers and tone generators provide high decibel communication for messaging, alert and evacuation in harsh and hazardous locations.

- Metallic and non-metallic housings
- Explosionproof and Class I, Division 2 horns and speakers
- Mounting brackets that allow a full 180° swivel
- Products designed for both conduit wiring and/or cable connection (NPT or metric entries available)
- Selectable tones

Certifications & Compliances

- UL Listed for USA and Canada
 - Hazardous locations:
 - Class I, Div 2, Groups A, B, C, D*
 - Class I, Zone 1, AExde IIB/IIC T3/T4*
 - Ordinary locations: Signalling Speaker
- ATEX approved
- NEMA 4X & 6, IP66 and IP67
- Certified temperature -67°F to +104°F
-50°C to +40°C

Key Features & Benefits

- GRP corrosion-free flamepath
- Up to 112dBA at 30 Watts at 10 feet*
- Power tapings via integral transformer
- Ratcheted swivel mounting stirrup
- Stainless steel fixtures
- 100V line or 8 ohm versions available

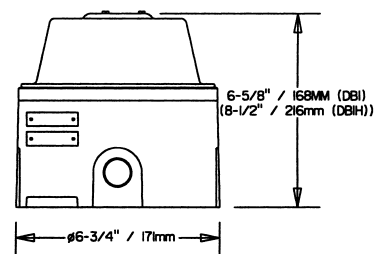
*Model dependent

DB1

103dB(A) @ 10ft Horn—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Temperature	-13°F to +158°F -25°C to +70°C
Ingress Protection	NEMA 4X IP66
Material	Alloy
Entries	Up to 3 x 1/2" or 3/4" NPT, 20mm, 25mm
Weight	7.7lb/3.5kg (model dependent)
No. of Tones	Multiple tones available
Options: Body color, certification, voltages 12–48V DC, 110V AC	



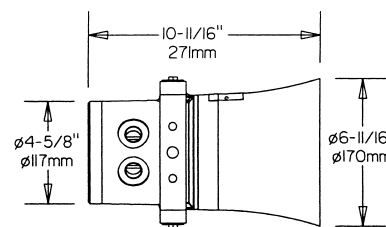
Certification	Output	Ordering Code	Catalog #	Standard Product Configuration
ATEX approved Ex II 2GD	103dB(A)	801001	DB1BA024A1A3NNNR	Choice of 6 tones, red finish
UL Listed, Class I, Div 2, Groups C & D	Up to 96dB(A) @ 10ft	869111	DB1PULA024D1D2NNNR	Two-stage alarms, with 26 tones, 24V DC, alloy, red body color, no tag or duty labels, 2 x 3/4" NPT entries
UL Listed, Class I, Div 2, Groups C & D	Up to 103dB(A) @ 10ft	869115	DB1HPULA024D1D2NNNR	
UL Listed, Class I, Div 2, Groups C & D	Up to 96dB(A) @ 10ft	17300108	DB1PULA110C1C3NNNR	Sounder, 110V AC, 2 x 1/2" NPT entries, red painted enclosure

DB3

108dB(A) @ 10ft Horn—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2, AExd IIC T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP65 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x 1/2" NPT, 20mm
Weight	13.2lb/6.0kg
No. of Tones	27 + 5 Programmable
Options: Body color, certification, voltages 12–48V DC, 110V–254V AC	



Certification	Body Color	Voltage	Type*	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	12–48V DC	Single Stage	869131	DB3UL048N2CNRZ	27 tones, no tag or duty labels, 108 dB(A) output, NEMA 4X & 6, 2 x 1/2" NPT entries with certified plug
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	12–48V DC	Two Stage	869132	DB3PUL048N2CNRZ	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	110V AC	Single Stage	869135	DB3UL110N2CNRZ	
ATEX Ex II 2GD	Natural Black	12–48V DC	Two Stage	803121	DB3PD048N2BNNZ	27 tones, no tag or duty labels, 2 x M20 entries with one certified plug fitted
ATEX Ex II 2GD	Natural Black	240V AC	Single Stage	803122	DB3D240N2BNNZ	
ATEX Ex II 2GD	Red	12–48V DC	Two Stage	803123	DB3PD048N2CNRZ	
ATEX Ex II 2GD	Red	240V AC	Single Stage	803124	DB3D240N2BNRZ	
ATEX Ex II 2GD	Red	12–48V DC	Single Stage	803125	DB3D048N2CNRZ	

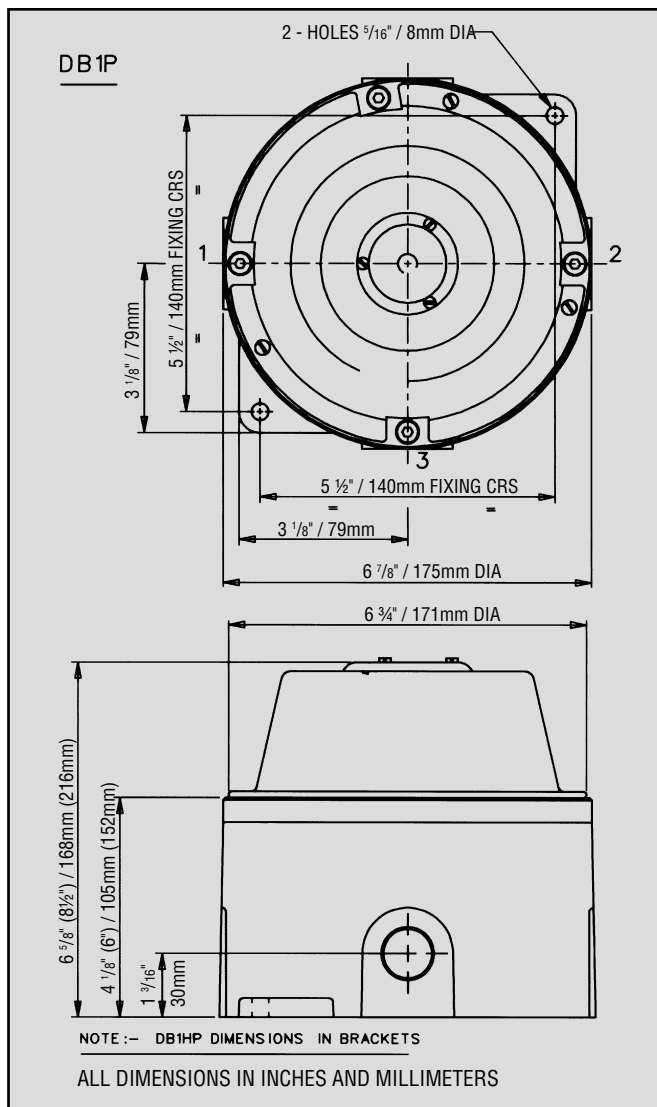
*Single Stage

4 wired diode monitored connection—on board diode allows unit to be operated in supervisory mode when monitoring line in reverse polarity.

*Two Stage

Switchable unit available in DC versions only either by:

- Reversing the polarity of the supply, or,
- By a 3 wire common +ve system, switching between the –ve lines.



Specification—DB1 Unit

Certification: UL Listed for Class I, Div. 1. Groups C & D and Class I, Zone 1.
UL Listing No. E187688.
ATEX Approved: EExd, IIB T3.
Cert. No. Baseefa 02ATEX0207 for DB1(P).
Cert. No. Baseefa 02ATEX0209 for DB1H(P).

Material: LM25 corrosion resistant alloy with stainless steel cover screws.
ABS flare.

Finish: Epoxy paint finish as standard or to customer's specification.

Max Sound Levels: DB1P=93±3dB(A) (86±3dB(A) for 12V DB1).
DB1HP=100 ± 3dB(A) @ 10 feet.
Note: Sound level is dependent upon the tone selection.

Weight: DB1P 7.7lb/3.5kg approx. DB1HP 12.3lb/5.6kg approx.

Certified -13°F to +158°F.

Temperature: -25°C to +70°C.

Ingress Protection: NEMA 4X, IP66.

Tone Selection: 27 user selectable tones.

Tone	Tone Frequency	Tone	Tone Frequency
1	Alt Tones 800/970 Hz at 1/4 sec.	15	554 Hz for 0.1S/440 Hz for 0.1S
2	Sweeping 800/970 Hz at 7 Hz	16	Int 660 Hz 150 mS on 150 mS off
3	Sweeping 800/970 Hz at 1 Hz	17	Int 660 Hz 1.8 sec. on 1.8 sec. off
4	Continuous at 2850 Hz	18	Int 660 Hz 6.5 sec. on 13 sec. off
5	Sweeping 2400-2850 Hz at 7 Hz	19	Continuous 660 Hz
6	Sweeping 2400-2850 Hz at 1 Hz	20	Alt 554/440 Hz at 1 Hz
7	Slow Whoop	21	Int 660 Hz at 7/8 Hz
8	Sweep 1200-500 Hz at 1 Hz	22	Int 2850 Hz 150 mS on 100 mS off
9	Alt Tones 2400/2850 Hz at 2 Hz	23	Sweep 800-970 Hz at 50 Hz
10	Int Tones of 970 Hz at 1 Hz	24	Sweep 2400-2850 Hz at 50 Hz
11	Alt Tones 800/970 Hz at 7/8 Hz	25	3x970 Hz pulses 0.5 off, 1.5 off
12	Int Tone at 2850 Hz at 1 Hz	26	3x2850z pulses 0.5 on/0.5 off, 1.5 off.
13	970 Hz at 1/4 sec. on 1 sec. off	27	Int 3100 Hz 0.3 sec. on 0.7 sec. off
14	Continuous at 970 Hz		

Single Stage

4 wired diode monitored connection—on board diode allows unit to be operated in supervisory mode when monitoring line in reverse polarity.

Two Stage

Switchable unit available in DC versions only either by:

- (i) Reversing the polarity of the supply, or,
- (ii) By a 3 wire common +ve system, switching between the -ve lines.

Current Consumption:

	DB1P	DB1HP
12V	125mA	900mA
24V	250mA	700mA
48V	250mA	—
110V	60mA	200mA

Labels: Duty and tag labels optional.

Entries: Up to 3 x 1/2" or 3/4" NPT.

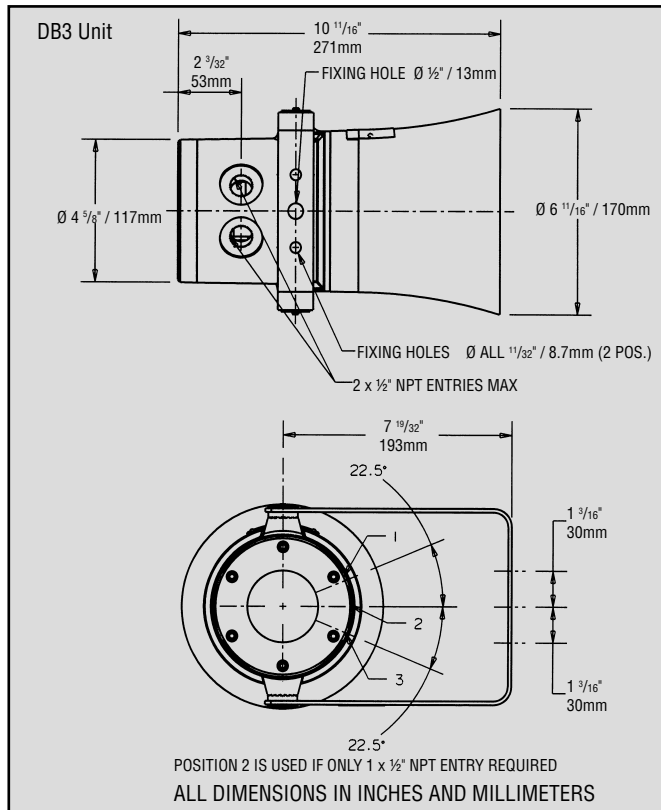
Terminals: Suitable to accept up to 12 AWG conductor size.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type	Certification	Material	Voltage	Cable Entries	Duty Labels	Tag Label	Features	Finish
DB1 DB1H DB1P DB1HP	Cert. Code ATEX/CENELEC B UL(DB1P & DB & IHP only) UL UL – available Alloy only. – 12V DC, 24V DC, 48V DC, 110V AC only	Material Code Stainless Steel S Alloy A	Voltage Code 12V DC 012 24V DC 024 110V AC 110 240V AC 240	Entries Code 1 x 20mm A3 1 x 25mm B3 1 x 1/2" NPT (UL only) C3 1 x 3/4" NPT (UL only) D3 2 x M20 A1A2 2 x M25 B1B2 2 x 1/2" NPT C1C2 2 x 3/4" NPT D1D2	N	N	N	R

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Terminals:	4 x 14 AWG (AC), 6 x 14 AWG (DC).
Mounting:	Stainless steel bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	UP TO 2 x 1/2" NPT.
Tone Selection:	27 user selectable tones available.
Horn/Strobe Unit:	The DB3 may be combined with an MEDC strobe to create a combined audio/visual alarm. Contact MEDC for price and specification.
Two Stage Unit: DB3P	Switchable between any two tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two -ve lines. Note: Two stage unit available in <u>DC</u> versions only.
3 & 4 Tone unit:	Remote 3 & 4 tone unit available—contact sales office for details.

Specification—DB3 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 2, Groups A, B, C, D. Class I, Zones 1 & 2, AExd IIC T4. UL Listing No. E203310. – Ordinary locations: Audible-Signal device. UL Listing No. S8116. ATEX approved: CENELEC EN50014, 18, 19. Cert. No. BAS00ATEX2097X, EExd IIC. Cert. No. BAS00ATEX2098X, EExde IIC. Zones 1 & 2.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Swivel bracket and captive cover screws in stainless steel.
Finish:	Body and horn, natural black or epoxy paint coated to client's color requirements.
Sound Output:	DB3 105 ±3dB(A) Typical at 10 feet (tone dependent).
Volume Control:	Integral volume control

*Nominal Output (dBA)	Input Current (mA)
83	50
95	100
98	150
101	200
102	250
104	300
105	350

*Output measured with 24V input voltage. Tone set to 970Hz continuous.

Weight:	13.2lb/6.0kg approx.																				
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.																				
Ingress Protection:	NEMA 4X & 6, IP66 & 67.																				
Voltage:	Up to 48V DC Up to 254V AC.																				
Current Consumption:	<table> <tr> <th>V</th><th>I</th></tr> <tr> <td>12V DC</td><td>760mA</td></tr> <tr> <td>24V DC</td><td>380mA</td></tr> <tr> <td>48V DC</td><td>190mA</td></tr> <tr> <td>110V AC</td><td>135mA</td></tr> <tr> <td>120V AC</td><td>124mA</td></tr> <tr> <td>220V AC</td><td>68mA</td></tr> <tr> <td>230V AC</td><td>65mA</td></tr> <tr> <td>240V AC</td><td>62mA</td></tr> <tr> <td>254V AC</td><td>59mA</td></tr> </table>	V	I	12V DC	760mA	24V DC	380mA	48V DC	190mA	110V AC	135mA	120V AC	124mA	220V AC	68mA	230V AC	65mA	240V AC	62mA	254V AC	59mA
V	I																				
12V DC	760mA																				
24V DC	380mA																				
48V DC	190mA																				
110V AC	135mA																				
120V AC	124mA																				
220V AC	68mA																				
230V AC	65mA																				
240V AC	62mA																				
254V AC	59mA																				

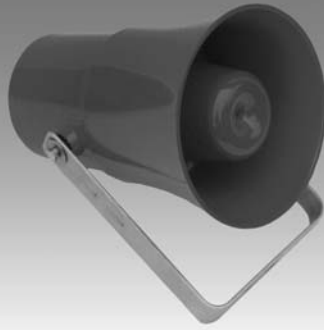
Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

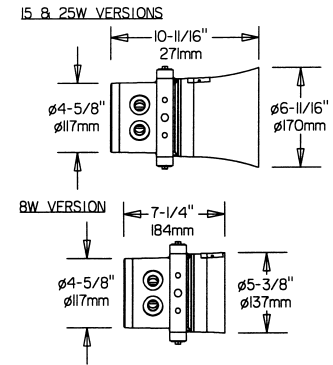
Unit Type	Certification	Voltage	Labels	Entries	Options	Color																																						
			N		N																																							
<table> <tr> <th>Type</th><th>Details</th></tr> <tr> <td>DB3</td><td>Standard unit</td></tr> <tr> <td>DB3P</td><td>Two stage (DC only)</td></tr> </table>	Type	Details	DB3	Standard unit	DB3P	Two stage (DC only)	<table> <tr> <th>Type</th><th>Code</th></tr> <tr> <td>EExd</td><td>D</td></tr> <tr> <td>UL Listed</td><td>UL</td></tr> </table>	Type	Code	EExd	D	UL Listed	UL	<table> <tr> <th>Voltage</th><th>Code</th></tr> <tr> <td>12V–48V DC</td><td>048</td></tr> <tr> <td>*110V AC</td><td>110</td></tr> <tr> <td>*120V AC</td><td>120</td></tr> <tr> <td>*240V AC</td><td>240</td></tr> <tr> <td>*DB3P not available in AC version.</td><td></td></tr> </table>	Voltage	Code	12V–48V DC	048	*110V AC	110	*120V AC	120	*240V AC	240	*DB3P not available in AC version.		<table> <tr> <th>Entries</th><th>Code</th></tr> <tr> <td>1 x 20 mm (EExd)</td><td>1B</td></tr> <tr> <td>2 x 20mm (EExd/EExde)</td><td>2B</td></tr> <tr> <td>1 x 1/2" NPT (UL only)</td><td>1C</td></tr> <tr> <td>2 x 1/2" NPT (UL only)</td><td>2C</td></tr> </table>	Entries	Code	1 x 20 mm (EExd)	1B	2 x 20mm (EExd/EExde)	2B	1 x 1/2" NPT (UL only)	1C	2 x 1/2" NPT (UL only)	2C	<table> <tr> <th>Finish</th><th>Code</th></tr> <tr> <td>Natural Black</td><td>N</td></tr> <tr> <td>Red</td><td>R</td></tr> </table>	Finish	Code	Natural Black	N	Red	R
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DB4

8-25 Watt Speaker—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zone 1, AExd IIC T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Output	97 dB(A) at 1W at 10 feet 109 dB(A) at 25W at 10 feet
Entries	Up to 2 x 1/2" NPT, 20mm
Weight	11lb/5.0kg
Options: Body color, transformer, certification, power 25W, 15W, 8W	



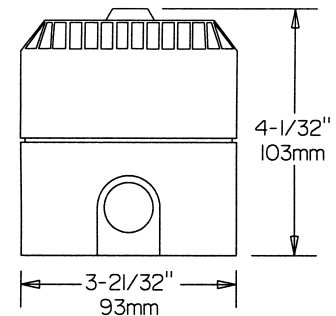
Certification	Power	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed Class I, Div 2, Groups A, B, C, D	25W	869142	DB425ULX(100)N2CNR	100V line transformer, no labels, 2 x 1/2" NPT entries, red finish
UL, cUL Listed Class I, Div 2, Groups A, B, C, D	25W	869144	DB425ULX(70)N2CNR	70V line transformer, no labels, 2 x 1/2" NPT entries, red finish
ATEX Approved ExII 1G	15W	804215	DB415DXN2BNZ	100V line transformer, no labels, 2 x M20, one certified plug, flameproof enclosure, natural black finish
ATEX Approved ExII 1G	25W	804225	DB425DXN2BNZ	

DB5

Up to 93dB(A) @ 10ft Horn—Intrinsically Safe



Certification FM Approved for:	ATEX Class I, Div 1 & 2, Groups A, B, C, D
Certified Temperature	-4°F to +131°F -20°C to +55°C
Ingress Protection	NEMA 4 IP65
Material	Corrosion-free ABS
Entries	Up to 2 x 13/16" via knockouts
Weight	0.7lb/0.3kg
No. of Tones	26
Options: Body color, certification, voltages 12V-240V DC	



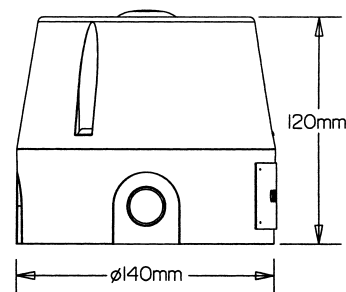
Certification	Voltage	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved ExII 1G	12V DC	805001	DB5B012NR	Intrinsically safe, up to 3 x M20 entries via knockouts, no labels, natural red finish
ATEX Approved ExII 1G	24V DC	805002	DB5B024NR	
FM Approved for Class I, Div 1 & 2, Groups A, B, C, D	24V DC	869150	DB5FM2NR	Intrinsically safe, 26 tones, 93 dB(A) output, natural red body color, no tag or duty labels, 2 x 13/16" entries via knockouts

DB12

110dB(A) Sounder—Weatherproof & Heavy Duty



Certification UL Listed for:	Weatherproof
Certified Temperature	-55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 20mm
Weight	1kg
No. of Tones	27 + 5 programmable
Options: Body color, voltages 12V & 24V DC	



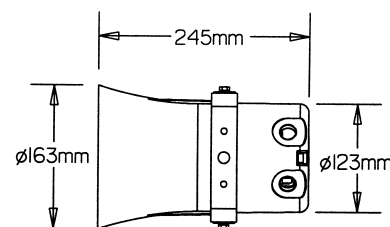
Certification	Voltage	Type	Ordering Code	Catalog #	Standard Product Configuration
CE Certification	115/230V AC	Single Stage	808003	DB12115NN	Weatherproof, dust-tight, no labels, choice of 27 tones, natural red finish, 3 x M20 knockouts
CE Certification	24V DC	Two Stage	869155	DB12P024NN	Weatherproof, choice of 27 tones, natural red finish, 3X M20 knockouts

DB15

110dB(A) Tone Generator—Weatherproof & Heavy Duty



Certification UL Listed for:	Weatherproof
Certified Temperature	-55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	2.6kg
No. of Tones	27 + 5 programmable
Options: Body color, two stage alarm (DB15P) version, earth continuity, EOL resistor, voltages 12–48V DC, 110–254V AC	



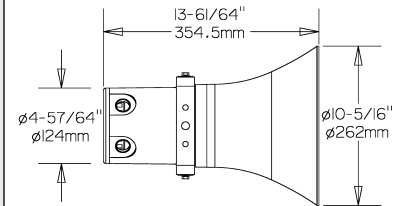
Certification	Voltage	Type	Ordering Code	Catalog #	Standard Product Configuration
CE Certification	12–48V DC	Two Stage	808110	DB15P048NN	Weatherproof, dust-tight, no labels, choice of 27 tones, painted gray finish
CE Certification	12–48V DC	Two Stage	808115	DB15P048NR	Weatherproof, dust-tight, no labels, choice of 27 tones, painted red finish
CE Certification	240V AC	Single Stage	808120	DB15240NN	Weatherproof, dust-tight, choice of 27 tones, natural gray finish
CE Certification	240V AC	Single Stage	808125	DB15240NR	Weatherproof, dust-tight, choice of 27 tones, painted red finish

DB16 UL

30 Watt Speaker — Hazardous & Ordinary Locations

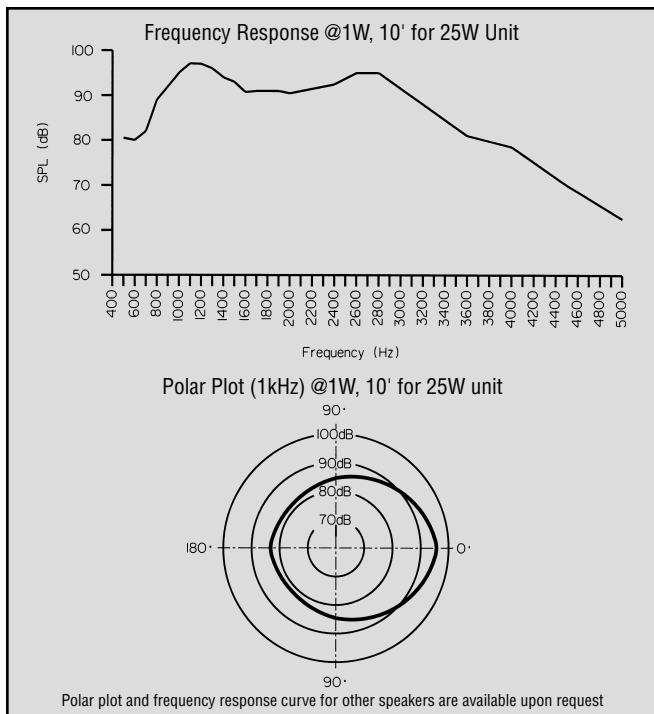
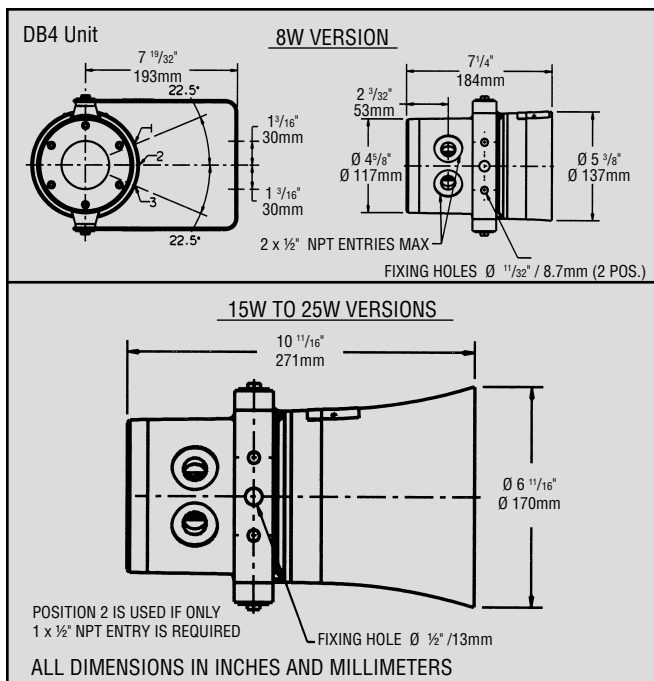


Certification UL Listed for:	 ATEX Class I, Div 2, Groups C & D/A,B,C,D Class I, Zone 1, AExde IIB T3/1IC T110°C
Certified Ambient Temperature	-61°F to +90°F -50°C to +40°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Output	Groups C & D: 100dB(A) at 1Watt at 10 ft. 112dB(A) at 30 Watts at 10 ft. Groups A, B, C, D: 3dB(A) less than C & D versions
Entries	Up to 2 x 1/2" NPT or 2 x 3/4" NPT, 20mm, 25mm
Weight	12.1lb/5.5kg
Tappings @ 30 Watts	30, 25, 12, 6, 4, 2
Options: Body color, transformer	



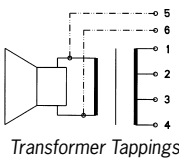
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	28600006	DB16UCXN2MPN	Unit suitable for gas Groups A, B, C, D, 70V line transformer, 2 x 1/2" NPT, one certified plug, natural black finish

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Specification—DB4 Unit

Rated Power:	8, 15 or 25 watts RMS continuous (at 77°F).
Certification:	UL Listed for USA and Canada — Class I, Div 2, Groups A, B, C, D. — Class I, Zone 1, AExd IIC T4. UL Listing No. E203310. ATEX approved: EN50014, 18, 19. Cert. No. BAS00ATEX2097X, EExd IIC T4/T5. Cert. No. BAS00ATEX2098X, EExDC IIC T4/T5. Zones 1 and 2. Not for use in atmospheres containing carbon disulphide.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Swivel bracket in stainless steel. Captive cover screws in stainless steel.
Finish:	Body and horn, natural black or epoxy paint coated to client's color requirements.
Output:	97 dB(A) at 1 watt at 10 feet. 109 dB(A) at 25 watts at 10 feet. Measured in accordance with IEC 268.
Weight:	11lb/5.0kg approx. dependent on model.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Frequency Range:	400Hz to 8kHz.
Voice Coil Impedance:	8 ohms.
Transformer:	Used to vary the rated power by selecting different tapings (see table below).



Transformer Tappings	Power		
	25W	15W	8W
1:2	25.0	15.0	8.0
2:3	12.5	7.5	4.0
3:4	6.0	5.0	2.0
1:3	4.0	4.0	1.5
2:4	2.0	2.0	0.7
1:4	1.0	0.8	0.4

- Transformer Options:
- i) Loop in/Loop out: (4 x 2) terminal tap change (8 terminals).
 - ii) Optional Tapping: 4 terminal tap change with 2 terminals (5 & 6) directly connected to driver (8 ohms).

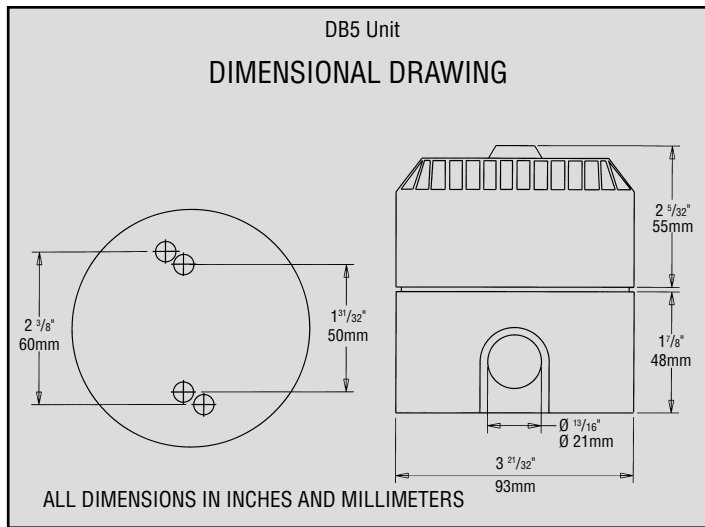
Other tapings & driver impedances available on request.

Terminals:	8 x 14AWG Other terminal arrangements available on request.
Mounting:	Bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	Up to 2 x 1/2" NPT.

Ordering Requirements

DB4	Max. Rated Power	Certification	Transformer	Labels	Entries	Color
				N		
Power	Code	Type	Code	Transformer	Code	Color
8 watt	8	EExd	D	Yes	1B	Natural Black
15 watt	15	UL listed	UL	None	2B	Red
25 watt	25			*Std 100V Other values available, specify voltage.	1C	
					2C	

To specify certified plug, suffix appropriate code with 'P'.
e.g. 2BP is 2 x M20 entries with one certified plug.



Specification—DB5 Unit

- Certification:**
1. FM approved for Class I, Div 1, Groups A, B, C, D. J.I. 3001835.
 2. CSA certified to C22.2 Nos. 0, 0.4, 0.5, 25, 30, 205, Class I, Groups A, B & D, Cert. No. 79122.
 3. ATEX approved, EN50014 and EN50020 & EN50284 EExia IICT4. 12/24V version Cert. No. BAS00ATEX 1259 (unit) and 01E2024 (system).
 4. HSE(M) to EN50014, EN50020 and EN50303. EExia 1 Cert. No. MECS01ATEX4260 (unit) and 94Y7095 (system).

Material: A.B.S. (Acrylonitrile Butadiene Styrene).

Finish: Available in Red as standard.

Certified Temperature: -4°F to +131°F.

-20°C to +55°C.

Weight: 0.7lb/0.3kg.

Entries: Up to 1 x 1 3/16" on each side via knockouts.

Terminals: 6 off suitable to accept up to 14 AWG.

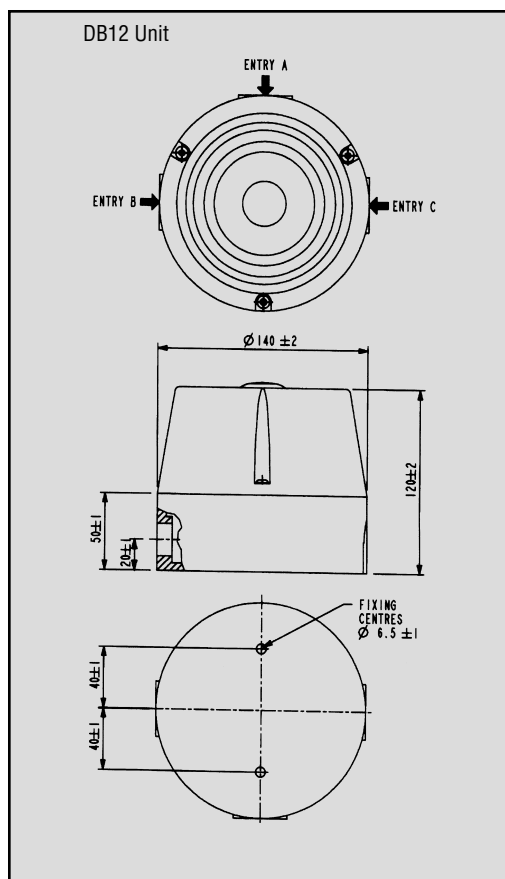
Sound Output: 90± 3dB(A) at 10 feet for 12V and 24V versions.
Typical max value only—variable with tone.

Current Consumption

24V model—14 mA max. nominal.

12V model—12 mA max. nominal.

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Specification—DB12 Unit

Material:	UV stable glass reinforced polyester. Retained stainless steel cover screws.
Finish:	Self colored red as standard or epoxy coated to customer's specification.
Sound Output:	107 ± 3 dB(A) at 1 meter. Typical value only—variable with tone.

Volume Control: Integral volume control.

*Nominal Output (dBa)	Input Current (mA)
92	60
100	70
104	80
109	90

*Output measured with 24V input voltage. Tone set to 2850Hz continuous.

Tone Selection:

Single Stage DB12: 27 user selectable tones.

Two stage Unit DB12P: Switchable between any two tones by either:

- Reversing the polarity of the supply, or
- by a 3 wire common +ve system, switching between the two -ve lines.

Note: Two stage unit available in DC versions only.

Weight: 1.0 kg. DC, 1.2kg AC

Operating Temperature: -55°C to $+70^{\circ}\text{C}$.

Ingress Protection: IP66 & IP67.

Voltage: DC: 12V, 24V AC: 115/230V.

Current Consumption:	24V operation 55mA–100mA.	115V operation 85mA–140mA.
	12V operation 55mA–90mA.	230V operation 45mA–60mA.

Terminals: 6 x 2.5mm².

Labels: Duty and tag labels available.

Cable Entries: Up to 3 x M20 via knockouts.

AFNOR NF S 32 001 compliant version available—contact sales office for details.

Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

Unit Type

Voltage

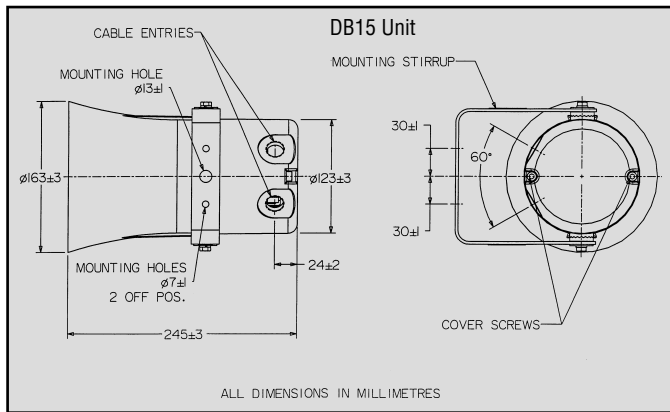
Labels

Color

Type	Details
DB12	Standard Unit
DB12P	Two Stage (DC only)

Voltage	Code
12V DC	012
24V DC	024
115/230V AC	115

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Specification—DB15 Unit

Material:	Body & horn in UV stable, glass reinforced polyester. Swivel bracket in stainless steel. Cover screws in stainless steel.
Finish:	Body and horn, natural gray to RAL 7035 or epoxy paint coated to client's color requirements.
Sound Output:	DB15 117dB(A) Maximum.
Volume Control:	Integral volume control

*Nominal Output (dBa)	Input Current (mA)
100	150
105	250
108	350
110	450
112	550

*Output measured with 24V input voltage. Tone set to 970Hz continuous.

Weight:	2.6kg approx. dependent on model.
Temperature Range:	–55°C to +70°C.
Ingress Protection:	IP66 and IP67.
Voltage:	Up to 48V DC Up to 254V AC
Current Consumption:	

V	I
12V DC	900mA
24V DC	600mA
48V DC	280mA
110V a.c	150mA
120V AC	175mA
220V AC	93mA
240V AC	86mA
254V AC	80mA

Terminals:	4 x 2.5mm ² (AC), 6 x 2.5mm ² (DC).
Earth Continuity:	Available.
Mounting:	Stainless steel bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	2 x M20 ISO.

Tone Selection

DB15:	27 user selectable tones available. Additional 5 tones may be programmed.
DB15P (Two stage unit):	Switchable between any two of the 27 tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two –ve lines. Note: Two stage unit available in <u>DC</u> versions (DB15P) only.

AFNOR NF S 32 001 compliant version available—contact sales office.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component in the appropriate box.

Unit Type

DB15
DB15P

Voltage

Voltage	Code
12V DC	012
24V–48V DC	048
*110V AC	110
*120V AC	120
*240V AC	240
*DB15P not available in AC version.	

Options

 N

Color

 N

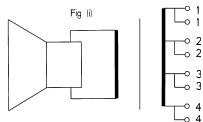
MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof

Specification—DB16 Unit

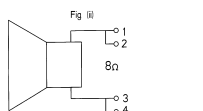
Rated Power:	30 Watts RMS continuous (at 77°F/25°C).
Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div 2, Groups C & D, Class I, Zone 1, AExde IIB T3 Class I, Div 2, Groups A, B, C, D, Class I, Zone 1, AExde IIC T110°C UL Listing No. E203310 – Ordinary locations: Signalling Speaker. UL Listing No. 58847 CENELEC EN50014, 18, 19. IIB Version: Cert. No. Baseefa04ATEX0166X ATEX Ex II 2G EExde IIB T3 (Tamb. -50°C to +40°C) IIC Version: Cert. No. Baseefa04ATEX0167X ATEX Ex II 2GD EExde IIC T110°C (Tamb. -50°C to +40°C) Zones 1 and 2.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Mounting stirrup and fixtures in stainless steel.
Finish:	All natural or body and horn can be painted to client's requirements.
Output:	Groups C & D Version: Maximum output at 1W at 10 feet is 100dBA Maximum output at 30W at 10 feet is 112dBA Groups A, B, C, D Version: Maximum output at 1W at 10 feet is 97dBA Maximum output at 30W at 10 feet is 109dBA
Weight:	12lb/5.5kg approx.
Certified Temperature:	-67°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Frequency Range:	370Hz to 8kHz.
Voice Coil Impedance:	8 ohms.
Transformer:	Used by combining the rated power tapplings below.

Transformer Tapping Options:

Transformer Tappings	Power (W)
1:2	30
2:3	25
3:4	12
1:3	6
2:4	4
1:4	2

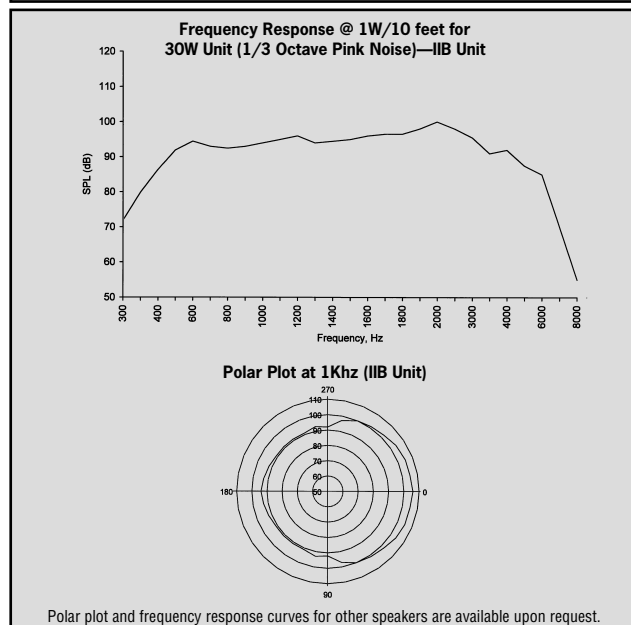
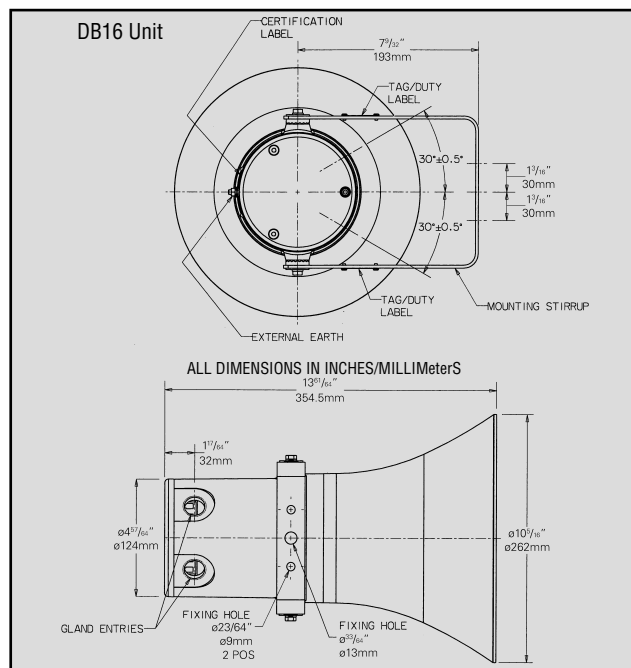


(i) Loop in/loop out (4 x 2) power tap change; 8 terminals



(ii) Loop in/loop out (2 x 2) 8 ohm; 4 terminals.

Terminals:	8 x 2.5mm ² .
Earth Continuity:	Available via optional earthing stud or by internal earth plate.
Mounting:	Via stirrup with ratchet facility.
Labels:	Optional stainless steel tag and duty labels.
Cable Entries:	Up to 2 x ½" NPT or 2 x ¾" NPT into termination chamber, 20mm, 25mm



Ordering Requirements

The following code is designed to help you in the selection of the correct unit. Build up the reference number by inserting the code for each feature into the appropriate box.

DB16	Certification	Transformer	Options	Entries	Finish																																				
	<table border="1"> <tr> <th>Certification</th> <th>Code</th> </tr> <tr> <td>UL (A, B, C, D)</td> <td>UC</td> </tr> <tr> <td>ATEX IIC</td> <td>BC</td> </tr> </table> Unit suitable for gas groups.	Certification	Code	UL (A, B, C, D)	UC	ATEX IIC	BC	<table border="1"> <tr> <th>Transformer</th> <th>Code</th> </tr> <tr> <td>Yes</td> <td>X*</td> </tr> <tr> <td>No</td> <td>N</td> </tr> </table> *Std 100V. Other voltages available, specify voltage.	Transformer	Code	Yes	X*	No	N	<table border="1"> <tr> <th>Option</th> <th>Code</th> </tr> <tr> <td>Natural Black</td> <td>N</td> </tr> <tr> <td>Red</td> <td>R</td> </tr> </table>	Option	Code	Natural Black	N	Red	R	<table border="1"> <tr> <th>Entries</th> <th>Code</th> </tr> <tr> <td>1 x M20</td> <td>1B</td> </tr> <tr> <td>2 x M20</td> <td>2B</td> </tr> <tr> <td>1 x M25</td> <td>1C</td> </tr> <tr> <td>2 x M25</td> <td>2C</td> </tr> <tr> <td>1 x ½" NPT</td> <td>1M</td> </tr> <tr> <td>2 x ½" NPT</td> <td>2M</td> </tr> <tr> <td>1 x ¾" NPT</td> <td>1N</td> </tr> <tr> <td>2 x ¾" NPT</td> <td>2N</td> </tr> </table> To specify certified plug, suffix appropriate code with 'P', e.g. 2BP is 2 x M20 entries with one certified plug.	Entries	Code	1 x M20	1B	2 x M20	2B	1 x M25	1C	2 x M25	2C	1 x ½" NPT	1M	2 x ½" NPT	2M	1 x ¾" NPT	1N	2 x ¾" NPT	2N	
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1 x ¾" NPT	1N																																								
2 x ¾" NPT	2N																																								

The Flex-Tone **ETH & ETHD** are heavy-duty, explosionproof tone-selectable signaling devices. Both are designed for Class I, Division 1, Groups B, C & D areas and are ideal for signaling warning or emergency conditions within process or manufacturing facilities.

The **Flex-Tone ETH tone-selectable signalers (ETH655 & ETH855)** are for use on standard electrical circuits and accept up to two contact closures providing two audible output signals selected from 55 tone choices. The ETHD855 tone-selectable signaler is used for applications (e.g., mining, tankers, laboratories) requiring electrical supervision of circuits.

The **Flex-Tone ETH remote speaker amplifier (ETH645 & ETH845)** is a speaker/amplifier for remote mounting and designed for use with the Flex-Tone (ETH640 & ETH840) Panel Control Signal Generator. The Control Panel Generator is mounted in a Division 2 area while the Flex-Tone ETH remote speaker amplifiers are remotely mounted in Division 1 areas. The ETH remote speaker amplifier (ETH645 & ETH845) operates from local available power sources. Because the Flex-Tone ETH remote speaker amplifier is available in multiple AC and DC voltages, your customer can mix and match speakers throughout their facility using available line power.

The **Flex-Tone Panel Control Signal Generator (ETH640 & ETH840)** controls a synchronous signaling sound to all ETH remote speaker amplifiers. It is ideal for applications where simultaneous signaling of a high decibel signal is needed. The Flex-Tone Panel Control Signal Generator generates 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24V DC or 120V AC external voltage source such as an output of a PLC.



PRODUCT BREAKDOWN — NEW AUDIBLE PRODUCTS, CLASS I DIVISION 1

Description	Catalog Reference	Operating Voltage	Operating Circuit
Flex-Tone heavy-duty tone-selectable signaling device	ETH655 & ETH855	24V DC, 36V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation.
Heavy-duty tone-selectable signaling device, diode polarized	ETHD855	20–31V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Flex-Tone Panel Control Signal Generator <i>Suitable for Div. 2 areas only</i>	ETH640 & ETH840	24V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation and communication to remote speaker amplifiers can be connected to a network by RS485 serial protocol.
Flex-Tone remotespeaker/ amplifier for use with Flex-Tone Panel Control Signal Generator	ETH645 & ETH845	24V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation.

APPLICATION — FLEX-TONE EXPLOSIONPROOF AUDIBLE SIGNALS ARE USED

Industries

- Offshore platforms and drilling rigs
- Refineries, chemical and petrochemical plants
- Pharmaceutical plants
- Food and Beverage plants
- Waste water and sewage treatment plants
- Pulp and paper mills

Uses

- Communication
- Security alert
- Safety signaling in industrial and process facilities
- Emergency evacuation signaling
- Messaging



**Explosionproof
Electronic Signal
Stand-Alone Unit**

Primary Applications

- For use where a high-decibel sound is required for alert or evacuation in hazardous locations

Key Features & Benefits

- Heavy duty zinc cast construction.
- 55 tone capacity—No additional tone modules needed
- Internal volume control with internal potentiometer.
- Corrosion-resistant heat-flowed epoxy finish
- Supplied with factory sealed ½-inch threaded fitting for quick installation
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket
- Mounts onto any surface using only three bolts
- 30-inch numbered wire leads

Cooper Crouse-Hinds **Flex-Tone Series Electronic Signals** are explosionproof, heavy-duty, tone-selectable signaling devices capable of producing volume-controlled, high-decibel tones. Certified for use in Class I, Division 1, Group B, C & D applications, the Flex-Tone Series is ideal for signaling warning or emergency conditions.

The **Flex-Tone ETH855** accepts up to two contact closures and delivers two audible output signals selected from 55 available tones. The two tones are selected by setting miniature switches within the unit. One of the tones can be assigned a priority status to override the other tone.

The **Flex-Tone ETHD855** is diode polarized for applications requiring electrical supervision of signaling circuit field wiring. The signal delivers one audible output signal selected from the 55 tones available.

Certifications & Compliances

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

Materials & Finishes

- Body—Heavy-duty zinc cast construction
- External hardware—Stainless steel Ratings
- 24V DC, 36V DC, 125V DC, 250V DC, 24V AC, 120V AC & 240V AC (ETH)
- 20–31V DC (ETHD)

Output Sound Pressure

- 109 decibel (dBA) output

ORDERING INFORMATION

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
Explosionproof, TWO OUTPUT			
ETH855/24	24V DC	0.061	0.470
ETH855/36	36V DC	0.077	0.600
ETH655/24	24V AC, 50/60Hz	0.250	1.320
ETH655/120	120V AC	0.088	0.260
ETH655/240	240V AC	0.091	0.190
ETH855/125	125V DC	0.031	0.130
ETH855/250	250V DC	0.019	0.070
DIODE POLARIZED, Explosionproof, SINGLE OUTPUT FOR FIRE ALARM APPLICATIONS			
Meets min. 75 dBA for fire alarm indication			
ETHD855/24	20–31V DC	0.061	0.400



**Explosionproof
Remote Speaker /
Amplifier**

Primary Applications

- For use where simultaneous signaling of a high-decibel sound is required for alert or evacuation in hazardous locations.

Key Features & Benefits

- Heavy duty zinc cast construction.
- Individual volume control.
- Corrosion-resistant heat-flowed epoxy finish.
- Supplied with factory sealed 1/2-inch threaded fitting for quick installation.
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
- Mounts onto any surface using only three bolts.
- 30-inch numbered wire leads.

Cooper Crouse-Hinds **Flex-Tone Series Explosionproof Remote Speaker/Amplifier** is designed for remote mounting in Division 1 areas where simultaneous high-decibel signaling is required.

Used in connection with the Panel Control Signal Generator, the **Flex-Tone ETH845** operates directly from local power sources, allowing remote speaker/amplifiers of different voltages to be connected within the same system. Available in both AC and DC voltages, the Flex-Tone 3 can be mixed and matched throughout an application using the available line power.

ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on the following page.

Certifications & Compliances

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

Materials & Finishes

- Body—Heavy-duty zinc cast construction
- External hardware—Stainless steel

Ratings

- 120V AC, 240V AC, 125V DC and 250V DC Output Sound Pressure
- 109 decibel (dBA) output

ORDERING INFORMATION

Catalog Number	Voltage	Signal OFF	Signal ON
		Standby Current (Amps)	Operating Current (Amps)
Explosionproof REMOTE SPEAKER/AMP			
ETH845/24	24V DC	0.061	0.470
ETH645/24	24V AC, 50/60Hz	0.250	1.320
ETH645/120	120V AC	0.088	0.260
ETH645/240	240V AC	0.091	0.190
ETH845/125	125V DC	0.031	0.130
ETH845/250	250V DC	0.091	0.070

* ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on the following page.

ETH845 Series Remote Speaker/Amplifiers **accept a 10V AC audio signal** from Flex-Tone Panel Control Signal Generator.



Cooper Crouse-Hind/MEDC **Flex-Tone Series Panel Control Signal Generator** controls and initiates a synchronous signaling sound from all Flex-Tone 3 remote Speaker/Amps installed in a system. The Panel Control Signal Generator is mounted in a Division 2 area, while controlling the Flex-Tone 3 Speaker/Amps that are remotely mounted in Division 1 areas.

The Panel Control Signal Generator produces 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24V DC or 120V AC external voltage source such as an output from a PLC.

Primary Applications

- Hazardous area applications calling for high-decibel output with simultaneous signal delivery over all speakers installed in a system
- Emergency warning systems, plant evacuation alarms, security intrusion alarms, process monitoring, shift start and dismissal horns, and paging signals

Key Features & Benefits

- 27 tone capability—No additional tone modules needed
- Centralized programmable tone selection
- PLC compatible
- System-wide priority tone
- 24V DC battery backup terminals
- Short circuit protected

Certifications and Compliances

- Class I, Division 2, Groups A, B, C & D
- Class II, Division 2, Groups F & G
- Class III
- UL 464 and 1604 Listed
- cUL C22.2 No. 205
- CE Marked—Cenelec LV & EMC Directives
- NEMA 3R, IP 44

Materials & Finishes

- Zinc-cast construction with an epoxy powder coat finish

Ratings

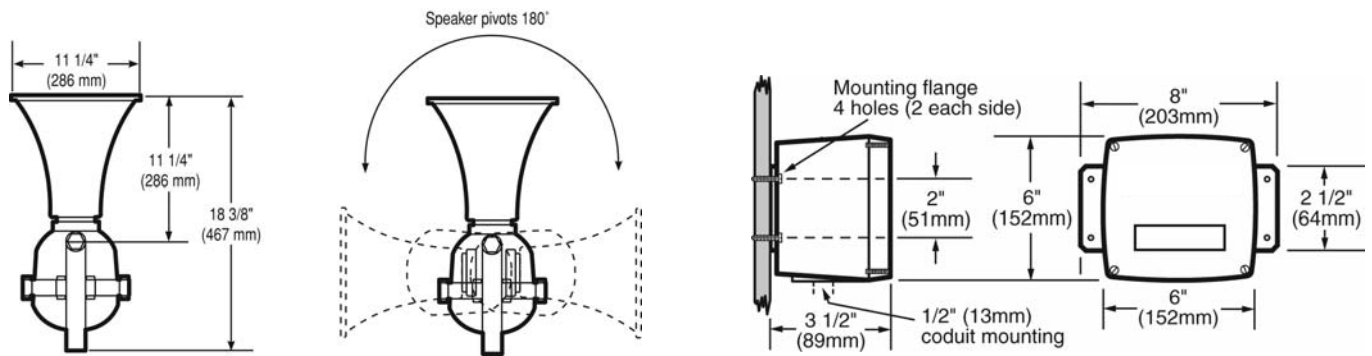
- See table below

ORDERING INFORMATION

Catalog Number	Voltage	Input Card Activation Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
PANEL CONTROL SIGNAL GENERATOR				
ETH840/24E74	24V DC	24V DC	0.10	0.74
ETH640/24E13	24V AC, 50/60Hz	24V DC	0.10	1.30
ETH640/120E36	120V AC, 50/60Hz	24V DC	0.10	0.36
ETH640/120M38	120V AC, 50/60Hz	120V AC	0.10	0.38
ETH640/120E32	120V AC, 50/60Hz	24V DC	0.10	0.32
ETH640/240E20	240V AC, 50/60Hz	24V DC	0.10	0.20
ETH840/125E21	125V DC	24V DC	0.10	0.21
ETH840/250E10	250V DC	24V DC	0.02	0.10
ETH640/120M31	120V AC, 50/60Hz	120V AC	0.10	0.31
ETH640/240M20	240V AC, 50/60Hz	120V AC	0.10	0.20
ETH840/125M20	125V DC	120V AC	0.10	0.20
ETH840/250M10	250V DC	120V AC	0.02	0.10
ETH640/120R31	120V AC, 50/60Hz	RS485	0.10	0.31
ETH640/240R20	240V AC, 50/60Hz	RS485	0.10	0.20
ETH840/125R20	125V DC	RS485	0.10	0.20
ETH840/250R10	250V DC	RS485	0.02	0.10

* Flex-Tone Panel Control Signal Generator must be used with Cooper Crouse-Hinds ETH845 Remote Speaker/Amps on page 77.

DIMENSIONS—FLEX-TONE SERIES AUDIBLE SIGNALING DEVICES





Now VNIPO Approved

EExd version (optional guard)



Now UL Listed

EExia/EEExm/UL versions (optional guard)

The MEDC heat detector has been designed for use in hazardous environments. These units are suitable for fire alarm and/or suppression systems in offshore and onshore applications including paint spray booths, flammable material stores, turbine rooms, extract ductwork and other hazardous areas throughout the oil & gas, petrochemical and process industries.

Comprising a Fenwal rate-compensated detector with all-stainless steel external construction, mounted to either a type SM87 marine grade alloy enclosure (EExd version) or JB10 corrosion-free GRP enclosure (EExia, EEExm/UL versions). The contact in the detector CLOSES at alarm temperature.

To select appropriate temperature setting see specification on reverse.

Primary Applications

- Compressor turbine/generator skids
- Switchgear or motor control status rooms
- Process tank areas or transmission lines

Typical Industries

- Power generation
- Nuclear plants
- Chemical processing
- Upstream/downstream oil & gas

Certifications & Compliances

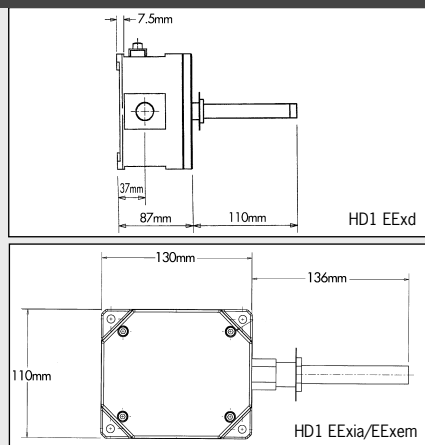
- Zone 0, Zone 1 and Zone 2
- EExia IIC T4/T6, EExd IIB T3/T6 or EEExm II T6
- ATEX approved – Ex II 1G (EExia)
– Ex II 2G (EExd/EEExm)
- BASEEFA certified
- UL listed for USA and Canada
– Class I, Div 2, Groups A, B, C, D
- GOST 'R' & 'K' certified
- Chinese (CQST) certified
- IP66 & IP67
- Certified temperature:
-20°C to +125°C (EExd)*
-20°C to +55°C (EEExm/UL)
-55°C to +55°C (EExia)
- Stainless steel probe
- Detector temperature settings:
60°C to 385°C, (140°F to 725°F)
- Marine grade Alloy or GRP enclosure
- Optional guard
*Model dependent

HD1

Heat Detector — Explosionproof & Intrinsically Safe



Certification	 	ATEX, GOST 'R' & 'K', Chinese
Flameproof		ATEX Ex II 2G, EExd IIB T6
Increased Safety		ATEX Ex II 2G, EExem II T6
Intrinsically Safe		ATEX Ex II 1G, EExia IIC T6
Certified Ambient Temperature		-20°C to +125°C EExd(T3)/ATEX/GOST 'R' -20°C to +55°C EExd(T6)/EExem -55°C to +55°C EExia
Ingress Protection		IP66 & 67
Material		Marine Grade Alloy (EExd) Corrosion-free GRP (EExia/EExem)
Temperature Settings		140°F to 725°F (60°C to 385°C)
Entries		2 x M20
Weight		1.1–2.0kg (model dependent)
Options: Enclosures, color, tag and duty labels, temperature setting		

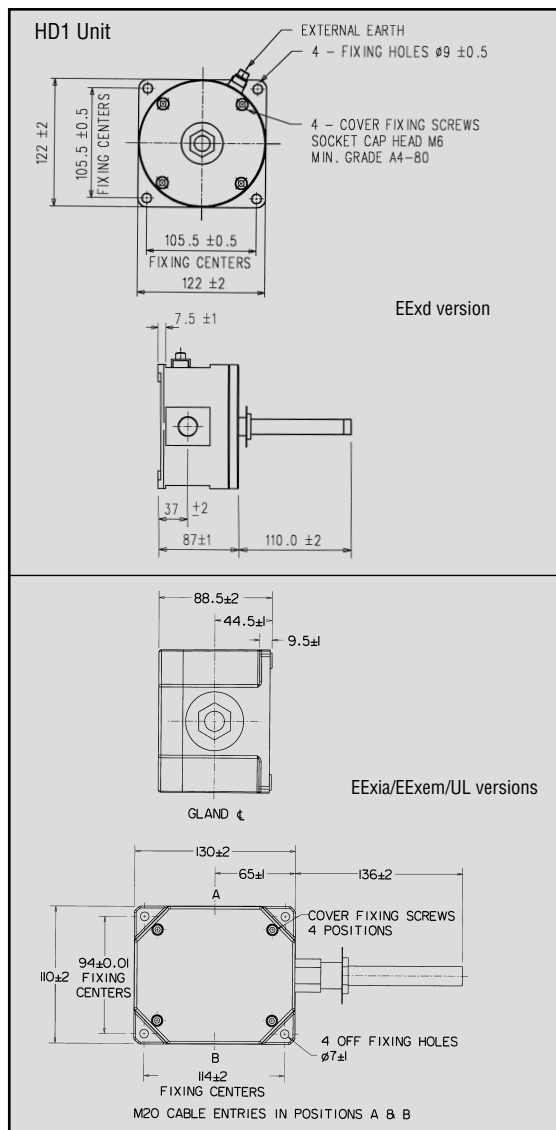


Compensated Heat Detector with Guard Fitted Natural Black Finish

To select appropriate temperature settings, choose detector at 56°C (100°F) above maximum ambient temperature.

Certification	Temperature Setting		Tolerance		Color Code	Ordering Code	Catalog #
	(°F)	(°C)	(°F)	(°C)	Detector Tip		
UL, cUL, Class I, Div 2, Groups A, B, C, D Class I, Zone 2, IIC	140	60	+7/-8	±4	Black	46500152	HD1ULE140GN
	160	71	+7/-8	±4	Black	46500153	HD1ULE160GN
	190	88	+7/-8	±4	White	46500154	HD1ULE190GN
	225	107	+7/-8	±4	White	46500155	HD1ULE225GN
	275	135	±10	±6	Blue	46500156	HD1ULE275GN
	325	163	±10	±6	Red	46500157	HD1ULE325GN
	360	182	±10	±6	Red	46500158	HD1ULE360GN
	450	232	±15	±8	Green	46500159	HD1ULE450GN

Certification	Standard Product Configuration	Ordering Code	Catalog #
ATEX EExd	140°F detector, marine grade alloy enclosure, painted gray	465607	HD1BD140NG
ATEX EExd	160°F detector, marine grade alloy enclosure, painted gray	465602	HD1BD160NG
ATEX EExd	190°F detector, marine grade alloy enclosure, painted gray	465603	HD1BD190NG
ATEX EExd	225°F detector, marine grade alloy enclosure, painted gray	465614	HD1BD225NG
ATEX EExd	275°F detector, marine grade alloy enclosure, painted gray	465609	HD1BD275NG
ATEX EExd	325°F detector, marine grade alloy enclosure, painted gray	465605	HD1BD325NG
ATEX EExd	360°F detector, marine grade alloy enclosure, painted gray	46500043	HD1BD360NG
ATEX EExd	450°F detector, marine grade alloy enclosure, painted gray	465601	HD1BD450NG
ATEX EExd	600°F detector, marine grade alloy enclosure, painted gray	46500045	HD1BD600NG
ATEX EExd	725°F detector, marine grade alloy enclosure, painted gray	46500104	HD1BD725NG
ATEX EEExem	140°F detector, GRP enclosure, natural black	46500026	HD1BE140NN
ATEX EEExem	160°F detector, GRP enclosure, natural black	465301	HD1BE160NN
ATEX EEExem	190°F detector, GRP enclosure, natural black	465305	HD1BE190NN
ATEX EEExem	225°F detector, GRP enclosure, natural black	465304	HD1BE225NN
ATEX EEExem	275°F detector, GRP enclosure, natural black	46500031	HD1BE275NN
ATEX EEExem	325°F detector, GRP enclosure, natural black	465306	HD1BE325NN
ATEX EEExem	360°F detector, GRP enclosure, natural black	46500072	HD1BE360NN
ATEX EEExem	450°F detector, GRP enclosure, natural black	465303	HD1BE450NN



Specification—HD1 Unit

Certification:	CENELEC EN50014, 19 & 28.																																																													
	EExd IIB T6 (T3 at +125°C), Cert.No. Baseefa 03ATEX0447.																																																													
Material:	EExia IIC T6 (T4 with diodes/resistors), Cert. No. Baseefa 03ATEX0427.																																																													
	EEExm II T6, Cert. No. Baseefa 03ATEX0428.																																																													
Finish:	UL listed for USA and Canada																																																													
	– Class I, Div 2, Groups A, B, C & D.																																																													
Weight:	UL Listing No. E252920,																																																													
	GOST 'R' & 'K' Certification: Exd, Exi & Exem versions.																																																													
Chinese Certification:	Russian Fire Alarm (VNIIP0) approved.																																																													
	CQST – Exd, Exi & Exem versions.																																																													
Enclosures:	316 stainless steel																																																													
	EEExd – LM25 marine grade alloy.																																																													
Optional Guard:	EEExia/EEExm/UL – GRP (anti-static).																																																													
	Stainless steel cover screws.																																																													
Finish:	316 stainless steel.																																																													
	Sand blasted.																																																													
Weight:	EEExd – Epoxy painted gray as standard or to customer's specification.																																																													
	EEExia/EEExm/UL – Self colored black or epoxy painted to customer's specification.																																																													
Certified:	EExd, 2kg.																																																													
	EEExia/EEExm/UL, 1.1kg.																																																													
Temperature:	–20°C to +125°C EExd (T3) ATEX & GOST 'R' only.																																																													
	–20°C to +55°C EExd (T6)/EEExm/UL, –55°C to +55°C EEExia.																																																													
Ingress Protection:	IP66 & IP67.																																																													
	The detector contact is normally open and CLOSES at alarm temperature.																																																													
Listed Temperature Settings:	To select appropriate temperature settings, choose detector at 56°C (100°F) above maximum ambient temperature.																																																													
	<table border="1"> <thead> <tr> <th colspan="2">Temperature Setting</th><th colspan="2">Tolerance</th><th rowspan="2">Color Code Detector Tip</th></tr> <tr> <th>(°F)</th><th>(°C)</th><th>(°F)</th><th>(°C)</th></tr> </thead> <tbody> <tr><td>140</td><td>60</td><td>+7/-8</td><td>±4</td><td>Black</td></tr> <tr><td>160</td><td>71</td><td>+7/-8</td><td>±4</td><td>Black</td></tr> <tr><td>190</td><td>88</td><td>+7/-8</td><td>±4</td><td>White</td></tr> <tr><td>225</td><td>107</td><td>+7/-8</td><td>±4</td><td>White</td></tr> <tr><td>275</td><td>135</td><td>±10</td><td>±6</td><td>Blue</td></tr> <tr><td>325</td><td>163</td><td>±10</td><td>±6</td><td>Red</td></tr> <tr><td>360</td><td>182</td><td>±10</td><td>±6</td><td>Red</td></tr> <tr><td>450</td><td>232</td><td>±15</td><td>±8</td><td>Green</td></tr> <tr><td>600</td><td>316</td><td>±20</td><td>±11</td><td>Orange</td></tr> <tr><td>725</td><td>385</td><td>±25</td><td>±14</td><td>Orange</td></tr> </tbody> </table>				Temperature Setting		Tolerance		Color Code Detector Tip	(°F)	(°C)	(°F)	(°C)	140	60	+7/-8	±4	Black	160	71	+7/-8	±4	Black	190	88	+7/-8	±4	White	225	107	+7/-8	±4	White	275	135	±10	±6	Blue	325	163	±10	±6	Red	360	182	±10	±6	Red	450	232	±15	±8	Green	600	316	±20	±11	Orange	725	385	±25	±14
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Contact Rating:	EExd/EEExm/UL: 125V AC – 5A, 125V DC – 0.5A, 48V DC – 1A. EEExia: 30V – 300mA.																																																													
	Terminals: 6 x 4mm ² (BK6).																																																													
Labels:	Optional stainless steel tag and duty labels.																																																													
	Cable Entries: 2 x M20 ISO (ATEX/Exd/Exe/Exi versions) 2 x ½" NPT via adaptors (UL version).																																																													
Resistor:	Series & EOL resistor (maximum total 2) minimum value (each) 470Ω – only available Exd & Exi versions.																																																													
	Diodes: Up to 2 off available in Exd, Exi & UL versions—contact sales office.																																																													

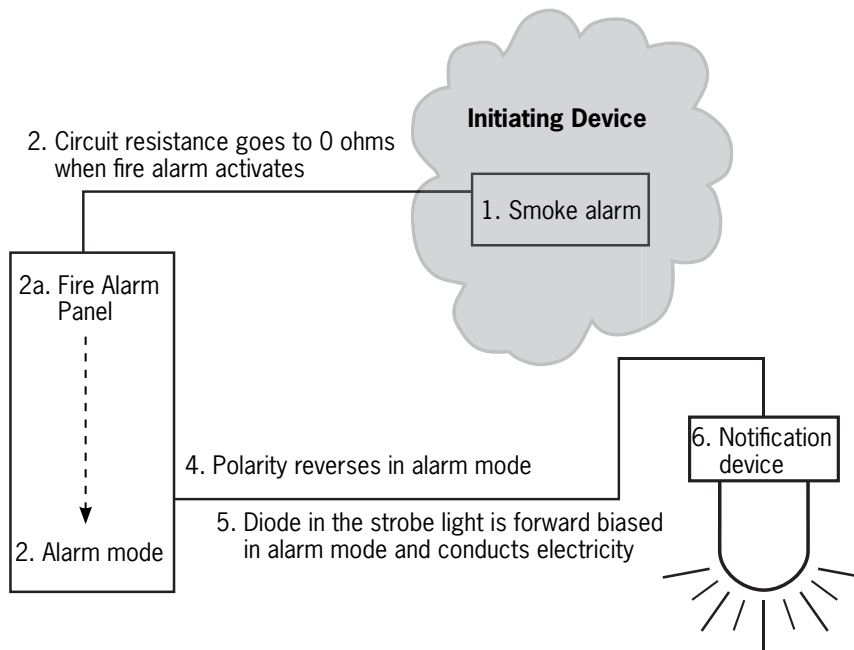
Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component in the appropriate box.

Model	Certification	Type	Temp. Settings	Options	Enclosure Finish																																														
HD1																																																			
	<table border="1"> <thead> <tr> <th>Certification</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>ATEX</td> <td>B</td> </tr> <tr> <td>UL listed</td> <td>UL</td> </tr> </tbody> </table>	Certification	Code	ATEX	B	UL listed	UL	<table border="1"> <thead> <tr> <th>Type</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Exd</td> <td>D</td> </tr> <tr> <td>Exe</td> <td>E</td> </tr> <tr> <td>Exi</td> <td>I</td> </tr> <tr> <td>UL</td> <td>U*</td> </tr> </tbody> </table> *Select this option for UL listed.	Type	Code	Exd	D	Exe	E	Exi	I	UL	U*	<table border="1"> <thead> <tr> <th>Temp °F</th> <th>Code</th> </tr> </thead> <tbody> <tr><td>140</td><td>140</td></tr> <tr><td>160</td><td>160</td></tr> <tr><td>190</td><td>190</td></tr> <tr><td>225</td><td>225</td></tr> <tr><td>275</td><td>275</td></tr> <tr><td>325</td><td>325</td></tr> <tr><td>360</td><td>360</td></tr> <tr><td>450</td><td>450</td></tr> </tbody> </table>	Temp °F	Code	140	140	160	160	190	190	225	225	275	275	325	325	360	360	450	450	<table border="1"> <thead> <tr> <th>Guard</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>No Guard</td> <td>N</td> </tr> <tr> <td>Guard</td> <td>G</td> </tr> </tbody> </table>	Guard	Code	No Guard	N	Guard	G	<table border="1"> <thead> <tr> <th>Finish</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Natural Black (EEExe/EEExi/UL only)</td> <td>N</td> </tr> <tr> <td>Gray</td> <td>G</td> </tr> </tbody> </table>	Finish	Code	Natural Black (EEExe/EEExi/UL only)	N	Gray	G
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Diode Polarized Technology: Also known as supervisory diode circuit for use in fire alarm applications or other critical warning requirements such as industrial hazards and process control emergency indication. Units with a supervisory diode typically have four wires.

In fire alarm technology, when a fire-initiating device such as a smoke alarm is activated, circuit resistance on the initiating circuit goes to zero. The fire alarm panel goes into alarm mode when it senses the resistance at zero. See diagram below.



With the fire alarm panel in alarm mode, voltage polarity is reversed (under normal operation the diode is reversed biased blocking voltage) on the circuit powering the notification device or strobe light. The strobe light is activated (diode is now forward biased allowing voltage through) when it senses a change in polarity. All NFPA approval visual indication for fire alarm must use a clear lens.

Terms used in fire alarm circuits

Initiating Device Circuits (IDC) connect the fire alarm panel to the system components that detect the fire. System components such as smoke detectors, manual pull stations, and water flow switches.

Appliance Circuits connect the fire alarm panel to the signaling devices such as strobe lights, bells, horns and speakers that alert building occupants of a fire.

PROTECTIVE SIGNALING SYSTEM WIRING PRACTICES

INTRODUCTION

The installation of fire alarm system wiring is similar in many respects to any other low-voltage system wiring. Because the nature of the system affects life and property, additional measures are required during installation to ensure the system is operational at all times. The most sophisticated of control panels will not operate properly if the field wiring is installed incorrectly. It is the goal of this section to explain why correctly installed field wiring is vital in the operation of a fire alarm system, and how to recognize proper and improper installations. The process requires four basic steps: **SELECT** the proper cable for the application; **INSTALL** the cable properly; **TEST** the cable to make sure it is free of shorts, opens, and ground faults; and **TERMINATE** the cable properly.

BASIC CIRCUIT SUPERVISION

There are two types of circuit supervision widely used in fire alarm systems today. Direct Current (DC) continuity supervision is used extensively on small systems. Large fire alarm systems use sophisticated electronic multiplex circuitry and “electronic questions and answers” to supervise field wiring and devices.

Figure 1 shows a simplified fire alarm panel supervising a single Initiating Device Circuit or zone using Direct Current (DC) continuity supervision. The supervisory current from the battery flows through terminal #1, the field wiring, the EOL resistor, terminal #2 of the control panel through a second resistor, and returns to the battery. The internal resistor and EOL resistor have equal resistance values. The voltage at the zone test point V_z is measured by voltage sensing circuits. As long as the supervisory current flows through the EOL resistor, the voltage at V_z is one half the supply voltage V_s and the voltage sense circuitry generates a normal panel response.

Figure 2 shows when a smoke detector or pull station operates, it effectively puts a **short** across terminals #1 and #2. This brings the zone test point voltage V_z up to the supply voltage V_s . When the voltage sense circuitry sees $V_z = V_s$, it generates an alarm response, such as ringing a bell.

Figure 1

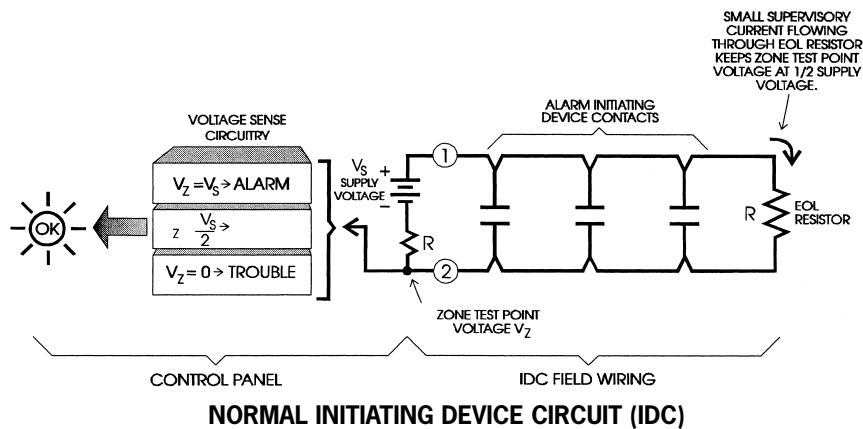


Figure 2

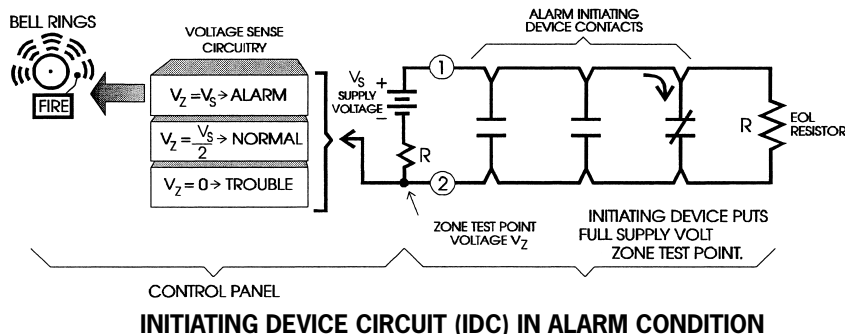


Figure 3 shows should the field wiring **open**, the supervisory current no longer flows through the field wiring and EOL resistor and V_z goes to zero. When the voltage sense circuitry sees $V_z = 0$, it generates a trouble response, such as sounding the trouble buzzer.

Figure 4 shows an improperly wired Initiating Device Circuit. Because the supervisory current is not forced to flow through the top and bottom branches, the break in the top branch doesn't interrupt the supervisory current, and there is no indication of the trouble. Should the top device detect a fire, the signal would never reach the control panel. Note that the lower device would send a fire alarm signal but would not send a trouble signal to the fire alarm panel, a classic symptom of miswiring.

Large multiplex systems use sophisticated electronics that employ a system of "electronic questions and answers" to verify circuit viability. The control panel knows the "names" of all the devices that should be connected to it. After asking a "question" of each name or device on its list, the control panel must receive an answer from that device only. Failure to receive the proper answer causes the panel to generate a trouble signal. Because multiplex systems do not depend on the wiring path for supervision, some multiplex systems permit limited branch wiring or T-taps.

Figure 3

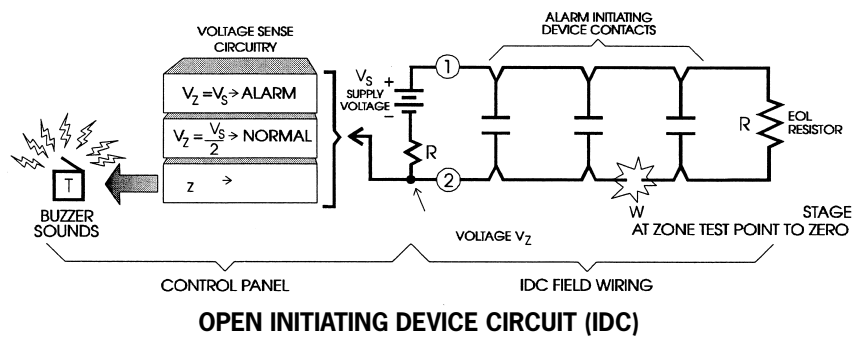
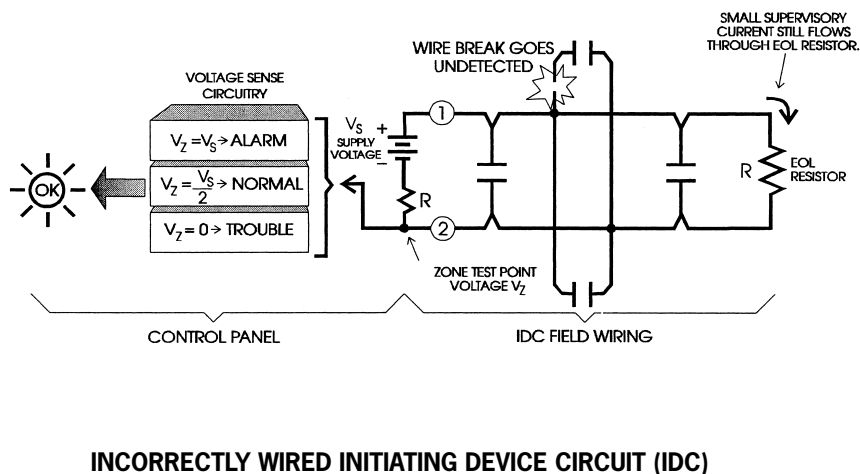


Figure 4



When using decibels, to double the loudness you only have to add 3 dB. For example, if a signal is rated at 85 dB at 10 feet, then a signal twice as powerful would be rated at 88 dB at 10 feet. The table below illustrates how the sound pressure level changes with distance under good conditions.

SOURCE IN dB	FEET FROM SOURCE
100 dB	10
94 dB	20
90 dB	30
88 dB	40
82 dB	80

THINGS TO CONSIDER WHEN SPECIFYING AUDIBLE SIGNALS.

1. Define the function of the signal: For example, general alarm, emergency, shift dismissal, paging, and process indication.
2. Uniform sound distribution: A larger number of smaller devices evenly distributed throughout the signaling area are better than a single large/loud device.
3. Ambient Sound: The signal should exceed the surrounding ambient noise by 6 decibels.
4. Size of the area: Common sense applies here, the larger the area, the louder the signal required and/or the greater the number of signaling devices required.
5. Mounting: As with all our products, consider mounting constraints and choose a suitable device and mount. Horns and speakers perform best when rigidly mounted to the structure.

Candela Seconds: Actual light energy contained in a pulse of light. Used to specify the minimum requirements for light output from a flashing light. Candela seconds is a relative measure of how bright a flash of light will appear to a human eye. (Candela: The intensity base unit for light.) Candela seconds and candela effective (below) are the primary metrics by which to compare flashing warning lights.

Candela Effective or Effective Candlepower: Equates the brightness of a flashing light source to the brightness of a steady burning source. If a flashing light has a candela effective rating of 100 then it will be visible at the same distance as a 100 candela steady burning source. Candela effective is used in specifying intensities of flashing light sources because it compares flashing warning lights with steady burning light sources.

Peak Candela or Peak Candlepower: The maximum light intensity generated by a flashing light during its light pulse.

Strobe, Principle of Operation: A strobe light consists of a xenon strobe lamp, power supply, energy storage capacitor and a trigger circuit.

The strobe bulb consists of a glass tube that has an electrode at either end called an anode (+) and cathode (-). The tube is filled with xenon gas and a trigger element is applied to the outside of the bulb. The trigger element could be a wire wrapped around the tube, a conductive paint stripe along one side of the glass bulb or clear conductive coating over the outside of the tube.

The power supply charges a large capacitor with the voltage needed to “strike” the bulb and is applied to the anode and cathode. The voltage is generally between 200 and 500 VDC depending on the design of the light.

The trigger circuit applies 7,000 to 10,000 volts (low current) to the trigger element of the bulb causing the xenon gas to ionize and discharge the capacitor.

The energy excites the xenon gas and produces a very short burst of high intensity white light.

Watts (Power): joules x flash rate

$$\text{Joules} = \frac{\text{Watts}}{\text{Flash Rate}}$$

$$\text{Joules} = (\text{Capacitance in Microfarads}) \left(\frac{\text{lamp voltage}^2}{1000} \right)$$

2

Things that impact light output:

- Physical shape of the strobe lamp and arrangement within lens
- Efficiency of the strobe lamp—its ability to turn electricity into a bright white light
- Color of the lens
- Size and efficiency of the lens