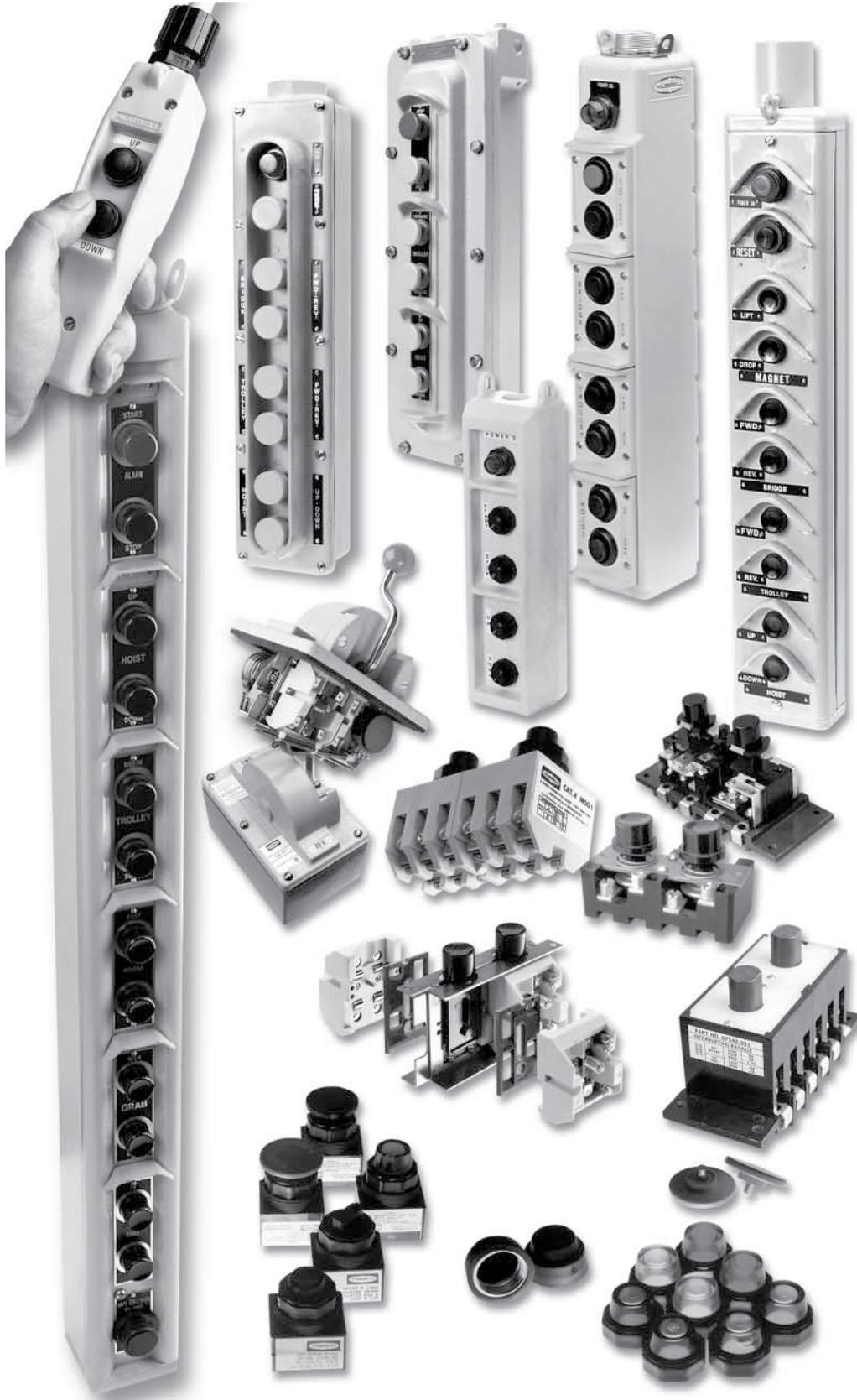


# Euclid Pendants & Pushbuttons

# 2000

Specifications 2000 · June 2013, Replaces May 2013



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## Pushbutton Stations

Euclid Type HD - Pendant Mounting - Heavy Duty, NEMA 1 - Single or Two Speed

2001



Type HD, 10 button station,  
NEMA 1 pendant enclosure

### Features

Euclid's oldest line of rugged time proven pushbutton stations incorporate basic modular construction and are designed for heavy duty applications of all kinds.

- HD pushbutton stations are furnished as assembled stations.
- Safety yellow enclosures for indoor applications.
- Ground connection at cable entrance area.
- Single speed and two speed cumulative contact inserts.
- AC and DC rated.
- Maintained contact inserts optional.
- Enclosures engineered for fast easy access.
- 3/32" thick hard drawn copper (cadmium plated) contacts -- self aligning.

### Description

The HD stations are available as assembled stations. The steel NEMA 1 enclosures have easily removable covers for wiring and contact access.

Single speed, two speed and maintained contact inserts can be arranged in any order. A variety of optional features are available:

- Duplex stations
- Selector switches
- Toggle switches, etc...

### Specifications

#### NEMA Type 1 Enclosures

The general purpose enclosure is die formed, cold reeled steel and is provided with individual guards over each button to prevent accidental operation. Only two screws need be removed for fast easy access.

HD pendant enclosures are engineered and manufactured to withstand the rough usage to which overhead crane equipment is subjected.

The inserts are super heavy duty and consist of a molded phenolic base with cadmium plated 3/32" thick self aligning hard drawn copper contacts. Terminals are located for easy access and wiring.

### Application

The HD stations are designed for long trouble free service on electric overhead traveling (EOT) cranes, hoists, electromagnets, etc; wherever safety and reliability are high priority.

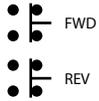


Type HD, 2 button station,  
NEMA 1 pendant enclosure

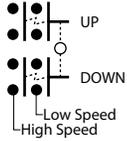


## Pushbutton Inserts

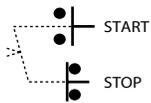
Single Speed or  
Momentary Start-Stop  
Cat# J1/J1A & K1/K1A



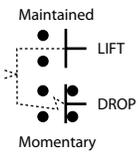
Two Speed  
Cat# J2/K2



Maintained Start-Stop  
Cat# JM/KM



Maintained/  
Momentary Lift/Dr op  
Cat# JN/KN



Toggle Switch  
Cat# JT



Pilot Light  
Cat# JP1/JP5 & KP1/KP5



Momentary Reset  
Cat# JR/KR

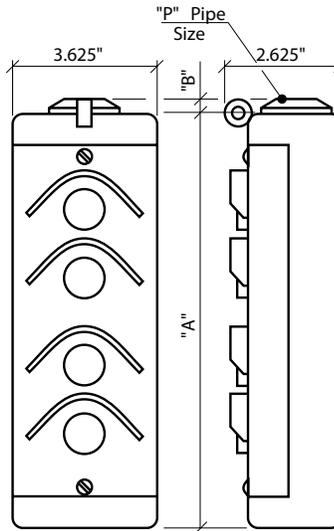


## Contact Ratings Single Break

AC NEMA A300	120V	6A
	240V *	3A
DC NEMA P300	125V	1.1A
	250V	0.55A

\* OSHA limits pendant voltage to 150VAC or 300VDC

Figure 1  
Type HD  
NEMA 1



No. of Buttons	"A"	"B"	"P"	Approx. Wt. (lbs.)	Fig.
	Type HD Pendant - NEMA			1	
2	6.31"	0.56"	0.75"	2.00	1
4	10.00"	0.56"	0.75"	3.75	1
6	13.75"	1.63"	1.00"	4.75	1
8	17.37"	2.00"	1.25"	6.00	1
10	21.12"	2.00"	1.25"	7.50	1



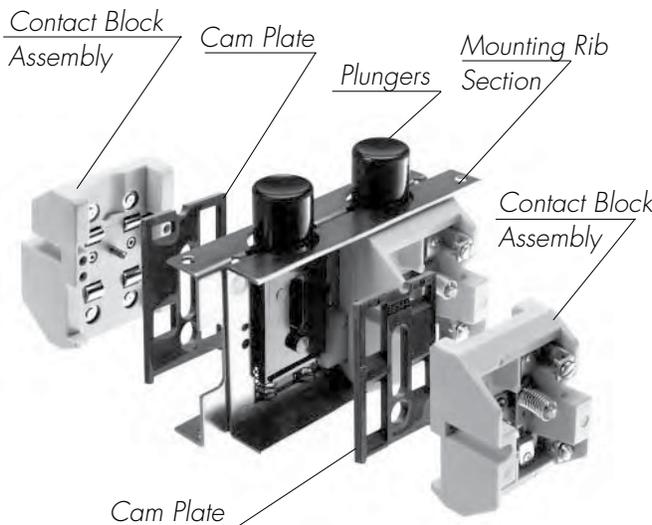
# Specifications

## Euclid™ Type PBC / WPBC / XPBC Pendant Pushbutton Stations

### Features

The modular, cam-operated, PBC pushbutton insert is used in all PBC, WPBC and XPBC pushbutton stations. Only the style of the housing and operator varies to meet environmental requirements.

- 150VAC or 300VDC
- Unique, plunger-operated, Nylatron® cam plates.
- Silver-to-silver self cleaning contacts.
- Contact blocks easily inspected and replaced.
- Up to 5-speed points.
- Up to 8 common circuits plus feed for each direction provide unlimited operating sequences.
- Large, mechanically interlocked buttons.
- Grounding connection at cable entrance area.



### Application

PBC cam-operated pushbuttons are engineered for all heavy-duty applications that require utmost reliability and the combination of single and multi-speed performance such as crane and mill drives.

### Description

The **Plungers** are one-piece molded high impact phenolic. The button surface is concave for easy thumb operation. In the assembly, the plunger is protected by steel mounting rib sections and the recessed shape of the front cover. Plungers are mechanically interlocked.

**Return Springs** — Two extra-long, low-stress, corrosion proof springs are provided for each plunger. They are engineered for maximum dependability, safety and ease of plunger operation.

**Cam Plates** are molded of self-lubricating Nylatron® GS and have a series of openings to allow the movable contacts to close in sequence against the stationary contacts. Cam plates are keyed to the operating plungers. Desired operating sequences can be obtained by inserting the proper cam plate.

The **Contact Blocks**, to which the stationary and movable contacts and terminals are assembled, are compression molded from fiberglass polyester material. This material is highly resistant to shock, arcing and tracking.

The heavy-butt-type silver **Stationary Contacts** and terminals are riveted to the contact block.

The **Movable Contact Bar** with its silver contact-buttons is fastened to the contact block by a post and silver coated beryllium copper **Contact Spring** arrangement. The silver-to-silver alignment provides unusually long contact life. A slight wiping action of the movable contact promotes self-cleaning and optimum conductivity.

The contact block assembly is easily replaced as a unit.

### Modifications

Many modifications and special features are available for the PBC WPBC and XPBC pushbutton stations:

- duplex mounting two stations
- interconnecting conduit box
- bottom or side handles
- mushroom head operators
- emergency stop wobble stick
- selector switches
- special sequence multi-speed inserts
- stepless pushbutton inserts
- plus much more...

### Contact Ratings Single Break

AC NEMA B150	120V	3A
	240V*	—
DC NEMA P300	125V	1.1A
	250V	0.55A

\* OSHA limits pendant voltage to 150VAC or 300VDC



## Euclid™ Type PBC Pushbutton Stations

*Bulletin 2015 Heavy-Duty – Cam-Operated NEMA Type 1 Enclosure*

Series PBC Pendant Pushbutton Stations represent the ultimate in custom engineering for specialized applications that can benefit from the unique operating cam feature.

- 150VAC or 300VDC
- NEMA 1 – General Purpose, Indoor Service
- Steel enclosure body.
- Fiberglass rear access/insulating cover.
- Up to five speed points and eight common circuits for each direction.
- One to twelve button models, plus toggle switch.
- Easy one-hand operation.
- More than twelve buttons available on special order.

### Application

PBC pushbutton stations are designed for all heavy-duty applications that require the combination of single and multi-speed units and operation with special contact sequencing.

### Description

The enclosure's front plate and end cups are die formed from heavy gauge steel and welded into an unbreakable unit. The protective plunger guards are integral to the front plate. The double suspension cable hanger and threaded conduit fitting are an integral part of the top cap.

The front plate is designed to provide a bearing surface for the pushbutton plungers and a trough for the control wires.

The "U" shaped access cover, which serves as the sides and back of the enclosure, is molded of high strength fiberglass and is easily removed for inspection or maintenance of the pushbutton inserts. Interior assemblies may be inspected and contact block assemblies are easily replaced. Interior assemblies consist of overlapping mounting rib sections to which the contact blocks are attached. Each unit is fastened to the front plate with two screws. This design permits easy replacement of individual parts or a complete two button assembly.

Options available with PBC Pendants include: A pilot light to signal when power is on, a circuit-disconnect toggle switch, reset button and maintained contacts. Other options are available, on request, to meet your special needs.

All PBC stations are supplied with a grounding connection.



# 2016 Application Info

## Euclid™ Type WPBC Pushbutton Stations

Bulletin 2016 Heavy-Duty – Cam-Operated NEMA Types 3R, 4 or 13 Enclosure

WPBC stations use the same pushbutton inserts as the PBC Stations. The WPBC enclosures are made of machined extruded aluminum.

- 150VAC or 300VDC
- NEMA 3R – Rainproof & Sleet Resistant, Outdoor Service (Standard)
- Up to five speed points and eight common circuits for each direction.
- One to fourteen buttons.
- Easy one-hand operation.
- Pendant and surface mounting models.
- More than fourteen buttons available on special order.

### Optional

- NEMA 13 – Oil-tight & Dust-tight, Indoor Service
- NEMA 4 – Watertight & Dust-tight, Indoor & Outdoor Service

### Application

WPBC Pushbutton Stations are designed for all heavy-duty applications (i.e., crane or mill-type drives) that require the combination of single and multi-speed performance and where conditions require a NEMA 3R rainproof enclosure for outdoor service.

WPBC stations can also be supplied in NEMA 13 enclosures for oil-tight and dust-tight indoor service.

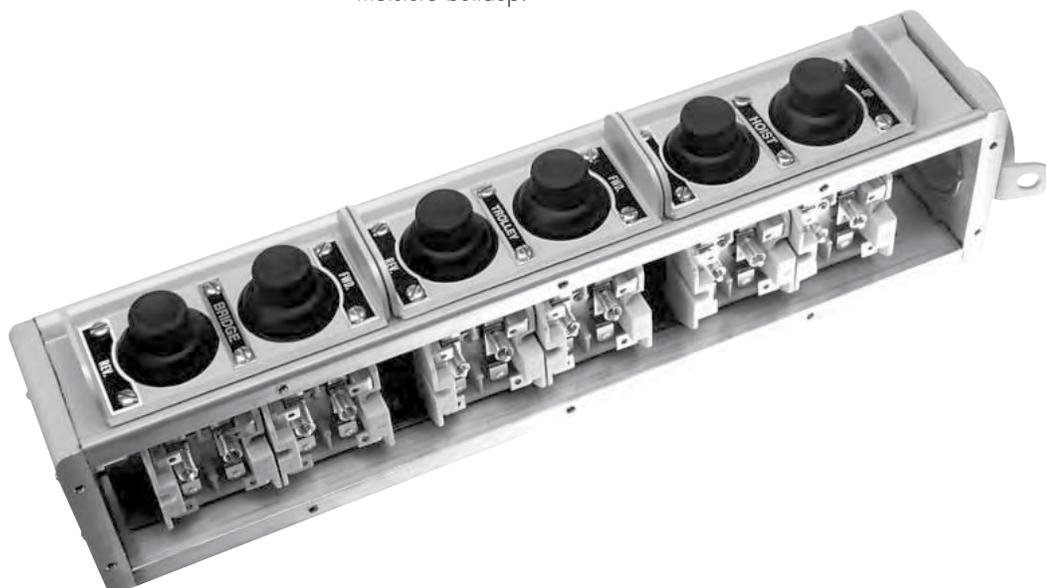
For watertight and dust-tight, indoor and outdoor service, the NEMA 4 enclosure is available. This enclosure has a drain plug on the bottom and a space heater inside the enclosure to minimize moisture buildup.

### Description

The front, back and end plates of the WPBC pushbutton enclosures are machined of extruded aluminum. The removable side covers are machined aluminum extrusions with neoprene gaskets to insure a tight seal.

Large, flexible, neoprene boots cover the operating plungers. This boot has flanges which engage machined channels and make a leakproof seal with the top plate. Options available include: A pilot light to signal when power is on, a circuit-disconnect toggle switch, reset button and maintained contact inserts. Other options are available to meet your special needs.

All WPBC stations are supplied with a grounding connection.



## Euclid™ Type XPBC Pushbutton Stations

Bulletin 2017 Heavy-Duty – Cam-Operated NEMA Type 7 Class 1, Group C or D, Div. 1 or 2 Indoor Enclosures

XPBC Stations use inserts similar to the PBC and WPBC stations. XPBC enclosures are made of cast aluminum and are engineered to meet hazardous duty requirements.

- 150VAC or 300VDC
- Rated for NEMA Type 7, Class 1, Group C or D, Div. 1 or 2, Indoor Hazardous Locations.
- Also Rated for NEMA Type 9, Class 2, Group E, F or G, Div. 1 or 2 Encl. for Indoor Applications.
- Up to five speed points and eight common circuits for each direction.
- Stainless steel operating plungers.
- Pendant and surface mounted models.
- Optional features available.

### Application

XPBC Pushbutton Stations are engineered for all heavy-duty applications (i.e., crane or mill-type drives) that require the combination of single and multi-speed performance. They are designed to meet explosion-proof standards as stipulated for NEMA Type 7, Class 1, Group C or D, Div. 1 or 2, hazardous locations. **Not for outdoor use or paint booth applications.**

### Description

The XPBC explosion-proof enclosure is comprised of three dense aluminum castings match machined to close tolerances. All mating surfaces provide ample flame path. The front cover is designed with long bearing surfaces for the operating plungers as well as the nec-

essary flame path. The plunger guards are also an integral part of the front casting. The top casting is tapped to accommodate an approved sealing chamber unit.

Removal of the rear case exposes the pushbutton inserts for easy inspection and maintenance without disturbing wiring.

Options available include a: Circuit disconnect toggle switch, Pilot lights, Selector switches, Maintained contact inserts, and Bottom holding-handle. Other options are available to meet your special needs.

All XPBC stations are supplied with a grounding connection.



# Dimensions

All dimensions are approximate and are not for construction purposes.

No. of Buttons	"A"	"B" Conduit Stem	"C"	Approx. Wt. (lbs.)	Figure
----------------	-----	------------------	-----	--------------------	--------

### Type FBC Pendant - w/o Toggle Switch

4	13.06"	1.25"	—	6.50	1
6	17.81"	1.25"	—	9.00	1
8	22.56"	1.50"	—	11.50	1
10	27.31"	1.50"	—	14.00	1
12	32.06"	1.50"	—	16.50	1

### Type FBC Pendant - w/ Toggle Switch

4	15.81"	1.25"	—	7.25	2
6	20.56"	1.50"	—	9.75	2
8	25.31"	1.50"	—	12.25	2
10	30.06"	1.50"	—	14.75	2
12	34.81"	1.50"	—	17.25	2

### Type WPBC Pendant

2	6.75"	1.25"	—	5.00	3
4	12.00"	1.25"	—	9.75	3
6	16.75"	1.25"	—	14.50	3
8	22.25"	1.50"	—	19.00	3
10	26.25"	1.50"	—	24.00	3
12	32.00"	1.50"	—	28.75	3
14	35.75"	1.50"	—	33.50	3

### Type SWPBC Pendant

2	7.88"	1.25"	8.75"	5.50	4
4	13.12"	1.25"	14.00"	10.25	4
6	17.88"	1.25"	18.75"	15.00	4
8	23.38"	1.50"	24.25"	19.50	4
10	27.38"	1.50"	28.25"	24.50	4
12	32.12"	1.50"	33.00"	29.25	4
14	36.88"	1.50"	37.75"	34.00	4

### Type XPBC Pendant

2	9.38"	1.50"	—	12.00	5
4	15.12"	1.50"	—	17.50	5
6	19.88"	1.50"	—	23.00	5
8	25.63"	1.50"	—	28.50	5
10	30.12"	1.50"	—	34.00	5

### Type SWXPBC Pendant

2	9.63"	1.50"	8.38"	12.00	6
4	15.38"	1.50"	14.12"	17.50	6
6	20.12"	1.50"	18.88"	23.00	6
8	25.88"	1.50"	24.63"	28.50	6
10	30.38"	1.50"	29.12"	34.00	6

### Type ZXPBC Pendant

12	19.88"	1.50"	—	47.00	7
16	25.63"	1.50"	—	58.00	7
20	30.12"	1.50"	—	69.00	7

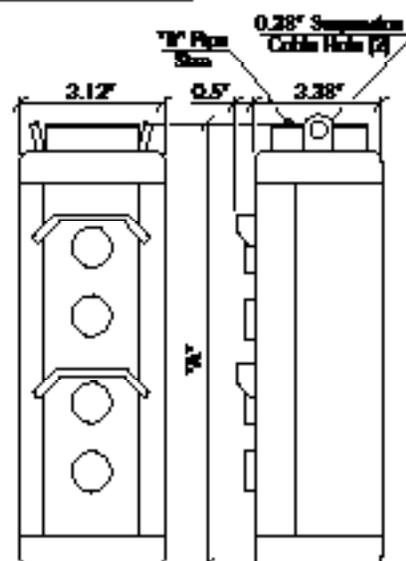


Figure 1  
Type FBC,  
NEMA 1  
Enclosure

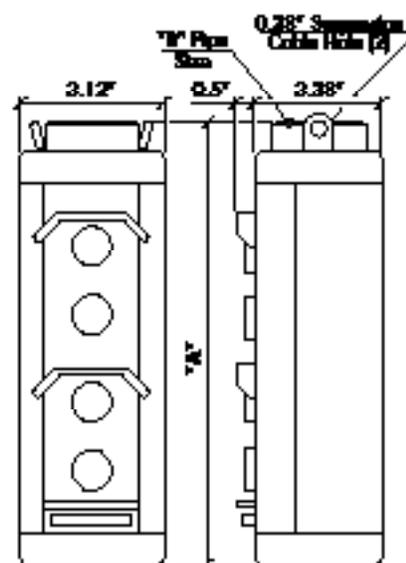


Figure 2  
Type FBC,  
NEMA 1  
Enclosure  
with Toggle  
Switch

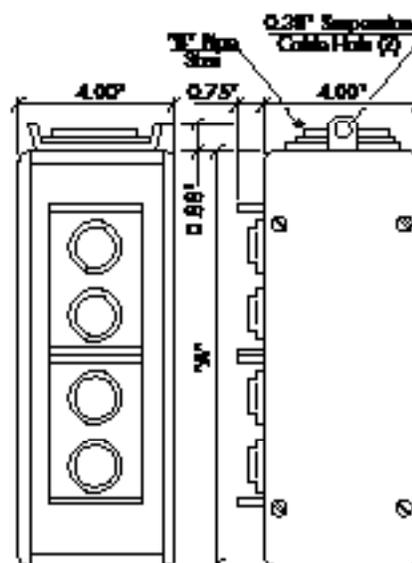


Figure 3  
Type WPBC,  
NEMA 3A/13  
Enclosure



All dimensions are approximate and are not for construction purposes.

# Dimensions

2015/16/17

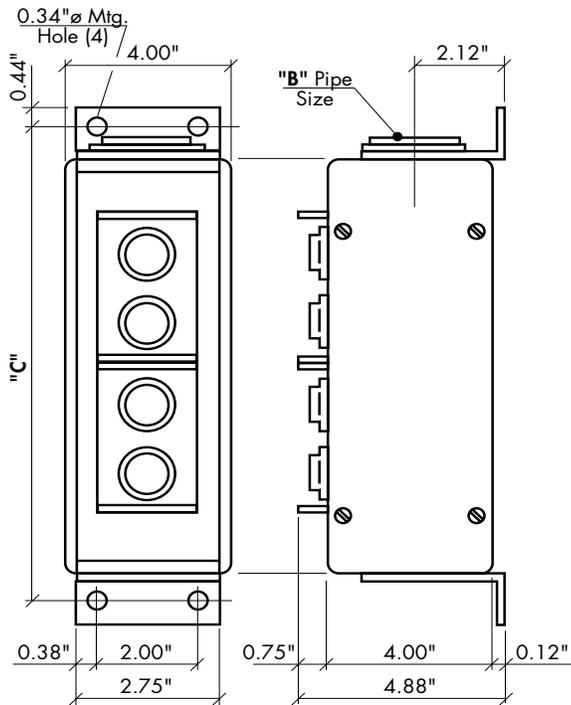


Figure 4  
**Type SWPBC,**  
**NEMA 3/4/13**  
**Enclosure**  
**Surface Mounting**

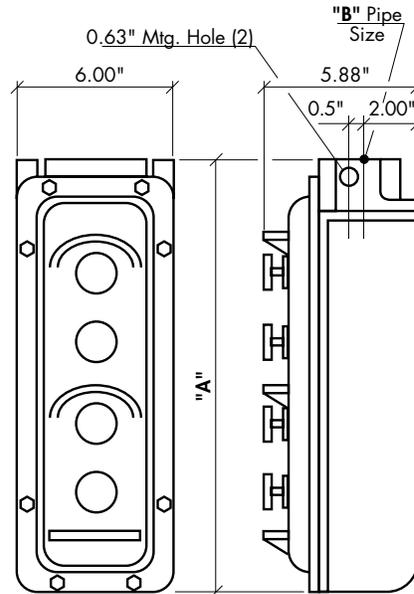


Figure 5  
**Type XPBC,**  
**NEMA 7**  
**Enclosure**

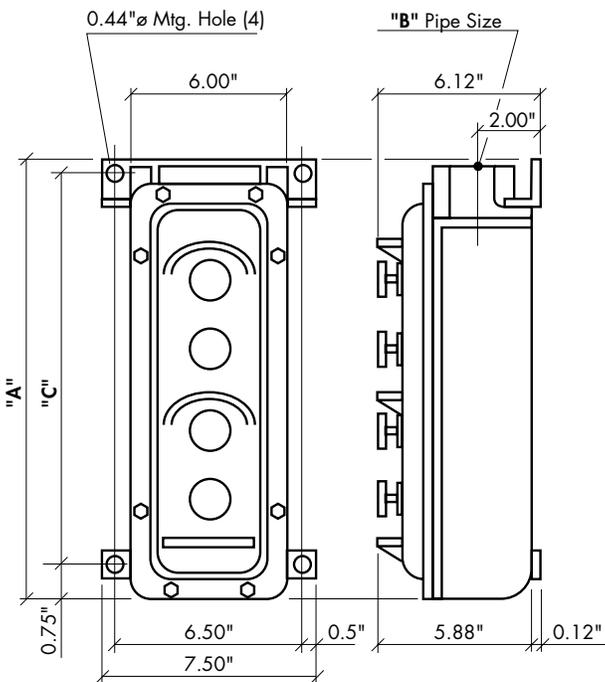


Figure 6  
**Type SXPBC,**  
**NEMA 7**  
**Enclosure**  
**Surface Mounting**

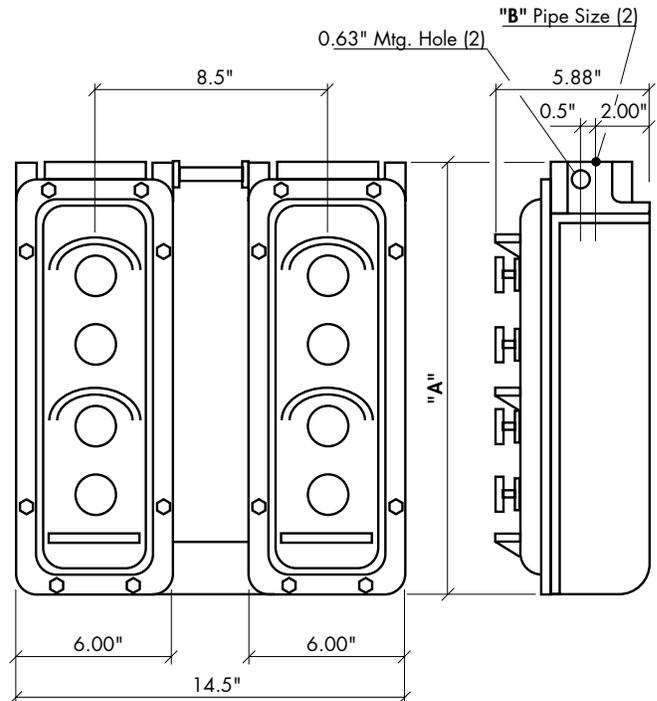


Figure 7  
**Type 2XPBC,**  
**NEMA 7**  
**Enclosure**  
**Duplex**



# Specifications

## Euclid™ PBP Pendant Pushbutton Station

Weather-Proof Rubber Enclosure NEMA 3R — Plug In Inserts — 1 To 5-Speed

2020

Over a half century of Euclid experience in pushbutton design and manufacturing has been incorporated into the unique PBP design. These highly reliable pendants feature maximum safety and durability, ease of installation and maintenance and minimum down time.

- PBP Pushbutton Stations can be ordered completely assembled or in component kit form from stock. Refer to price list for catalog numbers and prices.
- Electrically insulated, highly durable weather-proof nitrile-vinyl rubber enclosure with a durometer reading exceeding that of an automobile tire.
- Molded enclosure, high visibility safety yellow.
- Ground connection at the conduit entrance/cable support area.
- AC and DC rated.
- Choice of 1, 2, 3 or 4 motion enclosures.
- Plug-in single through five speed inserts for easy installation, inspection or replacement without disturbing wiring.

- Mechanical interlock prevents activating both buttons simultaneously.
- Optional features and special construction available.

### Description

Euclid PBP Pushbutton Stations are comprised of modular components (see illustration): A specially compounded, durable, nitrile-vinyl, all rubber enclosure with removable back and front guards; high dielectric strength molded terminal base; optional pilot light; plug-in type pushbutton inserts with bayonet-type vibration resistant, silver-plated terminals; neoprene button covers (boots) to insure weather-proofing; nitrile vinyl rubber guards to protect buttons from physical damage and accidental operation.

The plug-in inserts permit any unit to be inspected or replaced without disturbing the originally installed wiring, hence, **minimal down time**. The modular units can be easily arranged in any order in the pendant station.

The reversing inserts consists of two buttons mechanically interlocked to prevent simultaneous operation.

All modular inserts are keyed to prevent improper installation.

A variety of optional features are available:

- Duplex stations.
- Inter-connecting conduit boxes.
- Handles.
- Selector switches, pilot lights, push/pull buttons, toggle switches, etc.

Refer to factory or local sales office for additional information.

### Application

Euclid PBP Pushbutton Stations are commonly employed for control of electrically powered industrial equipment such as electric overhead traveling (EOT) cranes, hoists, electromagnets, etc...wherever safety and reliability are of greatest concern.

Nameplate marking kits are furnished with the enclosure. Special markings can also be provided at an additional cost.

### Specifications

The nitrile-vinyl rubber pushbutton enclosure with neoprene pushbutton covers (boots) is suitable for exposure to:

- Air
- Ozone
- Hydrogen
- Carbon Monoxide
- Methane
- Hydrocarbon Gases
- Greases
- Oils
- Aromatic Fuels
- Transformer Lubricants

At Room Temperatures:

- Detergents
- Ammonia
- Mild Acids
- Alkalies

The PBP Pushbutton Stations are suitable for most industrial environmental conditions, indoor and outdoor, within the following temperature range: 0° to 180°F (-18° to 82°C).

The Pushbutton inserts are high impact and shock resistant and high dielectric strength molded phenolic with oversize silver contacts that operate with a positive wiping action offering excellent contact reliability. The multi-speed inserts have a one piece self-lubricating "Nylatron" plunger-cam for easier operation and greater durability.

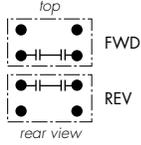
Kellems grips are available and provide positive strain relief for the multi-conductor cable, increasing its service life many times, thus avoiding unnecessary downtime and maintenance costs. Refer to price sheet for part numbers and cord diameters.



# Single Speed Plug-In Inserts

## Momentary N.O.

Cat# PG1

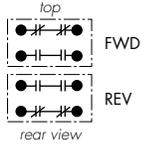


## Momentary N.O. & N.C.

## Maintained N.O. & N.C.

## Maintained/Momentary Lift-Drop

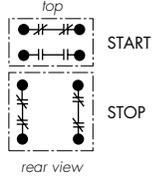
Cat# PG2/3/4



## Momentary/Maintained Start-Stop

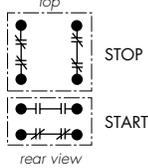
## Momentary Start-Stop/Reset-Stop

Cat# PG5/6



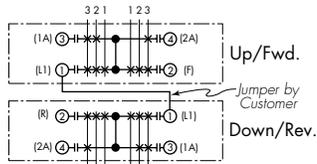
## Momentary Stop-Start/Stop-Reset

Cat# PG7



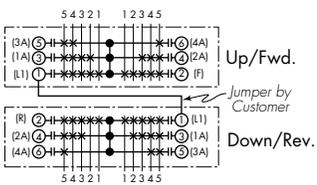
# Multi-Speed Plug-In Inserts

Two and Three Speed – Cat# MS2



3 Speed rear view  
(for 2 Speed do not use Terminal 3)

Four and Five Speed – Cat# MS5

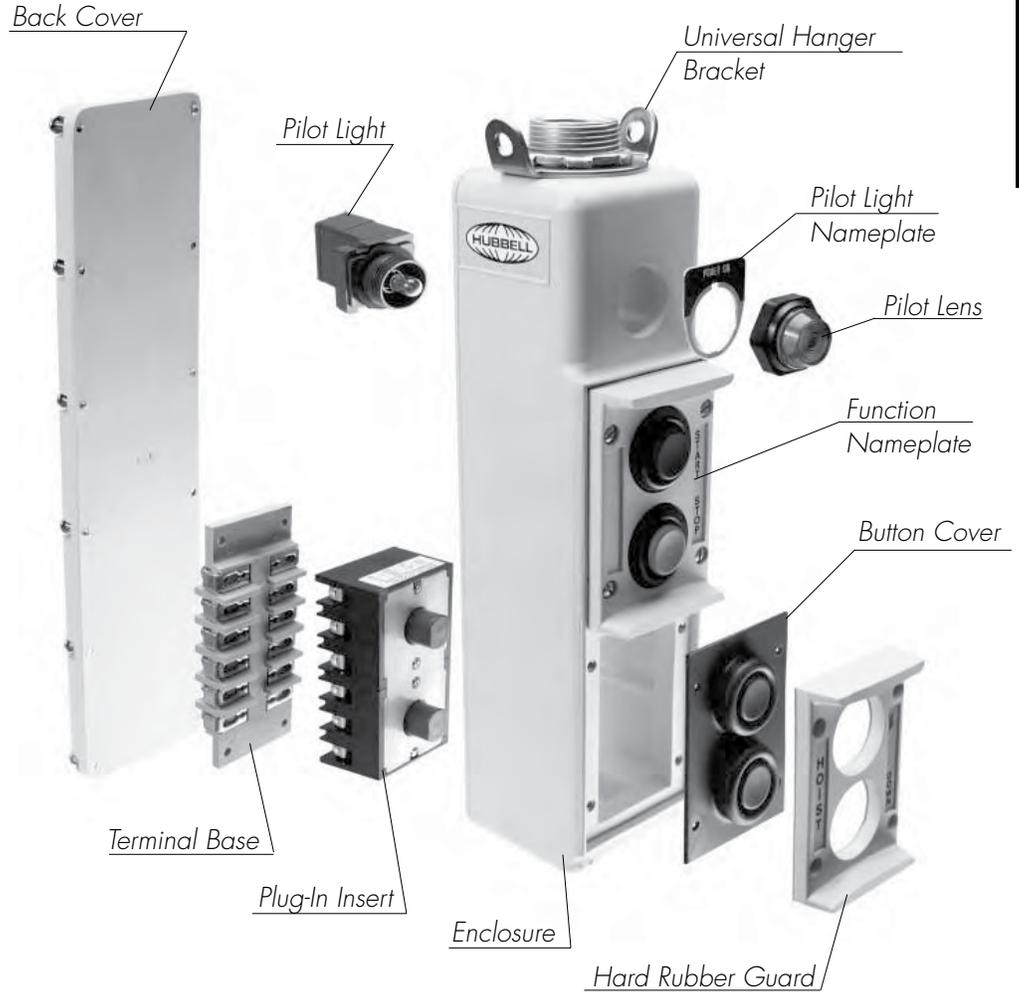


5 Speed rear view  
(for 4 Speed do not use Terminal 4)

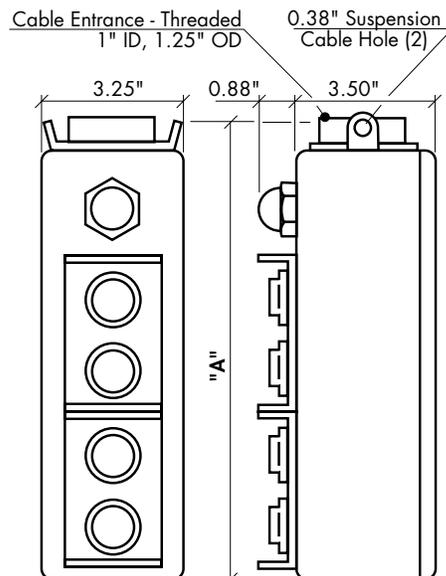
PG4 and PG5 inserts have one button maintained and one button momentary. "Off-On" buttons recommended to comply with provision of NEMA ICS 3-442.15.

# Specifications

2020



## Dimensions



Number of Buttons      "A"      Approx. Wt. (lbs.)

2	7.87"	2.5
5†	13.69"	4.5
7†	18.00"	5.5
9†	22.31"	7.0

† Enclosures include extra 30mm hole at top for pilot light, toggle switch, etc. (N/A for 2 button case).

## Contact Ratings – Single Break

Single Speed			Multi Speed		
AC NEMA A300	120V 240V*	6A 3A	AC NEMA A300	120V 240V*	6A 3A
DC NEMA P300	125V 250V	1.1A 0.55A	DC NEMA R300†	125V 250V	0.4A 0.2A

\* OSHA limits pendant voltage to 150VAC or 300VDC  
† Closest NEMA rating.



# Specifications

2030

## Compact Pendant Pushbutton Station

NEMA Type 4X Enclosure

Hubbell's Compact Pendant Stations are typically used to control industrial cranes and hoists or the remote control of industrial machines.

This high-quality pendant station features a tough molded polymer housing that meets the most rigorous requirements of industrial applications and their environments for control of electric hoists. The compact pendant is rated NEMA 4X when used with the cord connector kit.

- Safety Yellow high impact polymer enclosures.
- A compact pendant station engineered to fit the hand comfortably.
- Choice of single-speed, two-speed, or on-off capabilities.

- Mechanical interlock on reversing stations prevents actuating both pushbuttons simultaneously.
- UL and CSA listed.
- Ambient Temperature Range  $-20^{\circ}$  to  $158^{\circ}\text{F}$  ( $-29^{\circ}$  to  $70^{\circ}\text{C}$ )
- Optional - Cord Connector Kit - to permit use in NEMA 4X watertight, dust-tight, and corrosion resistant applications or for outdoor use.

## Application

Industrial plants have expanded the use of electric motor driven hoists (over the chainfall types) as the need for greater hoist capacity has increased. These electric motor hoists are an excellent application for the Hubbell Compact Pendant. Especially in areas where the stations are subject to operational abuse.

Locations include jib cranes on building columns, small overhead hoists on gantry cranes, and even the operation of hoists applied to single girder cranes.

These pendant stations are designed for the comfort of the operator in controlling the hoists and built to withstand hostile environments in the industrial arena.

Most of the electric hoists have reversing electrical relays or contactors which can be controlled from a single control contact and these pendant stations are designed for those hoist applications, not for the direct power handling of the motor current in the pendant station.

Jogging operation of floor-mounted machines away from the main operator's station is generally associated with only one motion, easily handled by the pendant station applied to an umbilical cord.

These stations have also been used very successfully for winch control on recreational vehicles and tow trucks and for dock control with carriers in the food industries.



# Diagrams & Dimensions

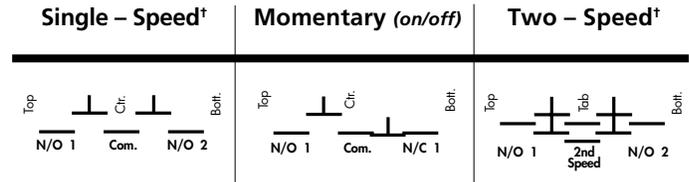
2030

## Contact Ratings – Single Break

Single Speed			Two Speed		
<b>AC</b> NEMA A300	120V 240V*	6A 3A	<b>AC</b> NEMA B300	120V 240V*	3A 1.5A
<b>DC</b> NEMA P300	125V 250V	1.1A 0.55A	<b>DC</b>	125V 250V	— —

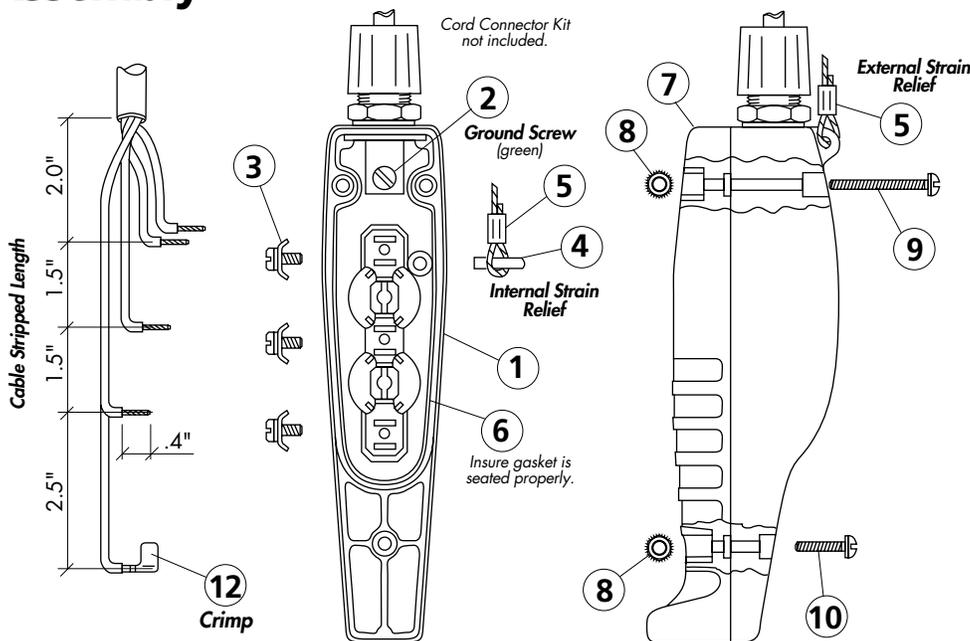
\* OSHA limits pendant voltage to 150VAC or 300VDC

## Wiring Diagrams



† Single-speed and two-speed stations are mechanically interlocked to prevent actuating both buttons simultaneously.

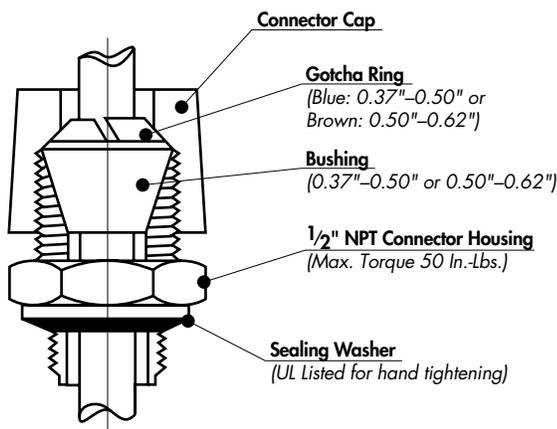
## Compact Pendant Assembly



## Label Pack

UP	DOWN
ON	OFF
IN	OUT
FWD	REV
RIGHT	LEFT
RAISE	LOWER
START	STOP
OPEN	CLOSE
NORTH	SOUTH
EAST	WEST

## Cord Connector Kit Assembly



## Compact Assembly Parts List

Part No.	Qty.	Assembly Parts Listing
1	1	Front Housing
2	1	1/2" NPT Locknut Gnd. Brkt.
3	3	Terminal Clamps
4	1	Pin *
5	1	Crimp Sleeve *
6	1	Gasket
7	1	Rear Housing
8	3	#8-32 Hex Nut
9	2	#8-32 x 1 3/4" Lg. R.H.M.S.
10	1	#8-32 x 1" Lg. R.H.M.S.
11	1	Button Labels (not shown)
12	1	90° Terminal (Two-Speed Only)

\* Discard items no. 4 and 5 if not used as shown.

# Specifications

## Euclid™ PBM Pendant Pushbutton Stations

2040

The Multi-Purpose PBM Pendant Pushbutton Stations have been designed to use 22mm NEMA 4X pushbutton elements to provide full flexibility. Spacing of the mounting holes will permit enlarging the hole to install the larger 30mm pushbutton elements if desired. Each enclosure is provided with a full complement of standard self-adhesive nameplates to meet most pendant pushbutton applications.

The multiple screws used for fastening the front and back portions of the enclosures provide rigidity to the enclosures for added strength to withstand operational abuse and provide a watertight seal.

- Light Weight, Rugged Molded Enclosures, "Safety Yellow."
- Molded-in Stainless Steel hanger brackets for external strain-relief cable. Provisions for internal strain relief are also provided.
- Five Enclosure sizes, 3 to 11 button with provision for single function option — pilot light, selector switch, push-pull unit, etc.
- Enclosures gasketed for NEMA 4X rating; Watertight, Dusttight, Corrosion Resistant.
- Enclosure arranged for internal grounding screw.
- Optional Connector Kits: 3/4" NPT (19mm) for 2 and 4-button enclosures 1" NPT (25mm) for 6, 8, and 10-button enclosures
- 22mm NEMA 4X pushbutton elements available from stock.
- Optional Mechanical Interlocks

### Application

PBM Pendant Pushbutton Stations are designed for control of electrically powered industrial equipment such as electric overhead traveling (E.O.T.) cranes or hoists where one to five speed motors are used. The lightweight ergonomically designed enclosures fit comfortably into an operators hand and yet are built using a polymer selected to resist shock.

Standard indicator plate markings (self-adhesive) are included with each enclosure, but special nameplates or markings can be provided.

Select standard 22mm NEMA 4X contact elements from tables or specify the type required for your completed control station.

### Specifications

#### Enclosures:

- Enclosures are rated NEMA 3, 3R, 4, 4X when equipped with Hubbell PBM NEMA 4X inserts and Hubbell Cord Connector Kits or comparable approved devices.

#### Contact Ratings:

- NEMA A600 & A300 AC
- NEMA P300 & R300 DC

#### Cord Connector Kits:

- 3/4" NPT Corrosion Resistant Nylon for cable diameter 5/8" to 7/8" (15.7mm to 22.2mm)
- 1" NPT Corrosion Resistant Nylon for cable diameters 7/8" to 1 1/8" (22.2mm to 28.6mm)

#### Operators:

- 22mm NEMA 4X Elements
- Neon Pilot Lights, 120V, 60 Hz, Red, Green, Amber
- Incandescent Pilot Lights, 120VAC/DC; 250VDC; Red, Green, Amber
- Extended Pushbuttons, 1 speed, NO/NC contacts, Red, Green, Black
- Extended Pushbuttons, 2 speed, Black
- Mushroom Head Pushbuttons, 1 speed, NO/NC contacts, Red, Green, Black
- 2 and 3 position Selector Switches

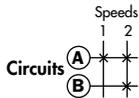


## Standard Pushbuttons



Hubbell's standard 22 mm pushbuttons feature polyester construction for superior corrosion resistance, and the #6 terminal screws have self-lifting captive wire clamps to accommodate #22 through 2 – #12 wires per terminal. The pushbuttons mount in a round 22 mm or 7/8" hole. These pushbuttons are rated for NEMA 1, 2, 3/3R, 4/4X, 12 and 13 installations and are UL/CSA approved.

\* Contact Sequence



No. of Speeds	No. of Contacts		Button Color	Part No.
	NO	NC		
One	1	1	Black	<b>80320-100</b>
One	1	1	Red	<b>80320-101</b>
One	1	1	Green	<b>80320-102</b>
One	1	0	Black	<b>80320-103</b>
One	0	1	Red	<b>80320-104</b>
One	1	0	Green	<b>80320-105</b>
Two*	2	0	Black	<b>80320-110</b>
One	2	2	Black	<b>80320-400</b>
One	2	2	Red	<b>80320-401</b>
One	2	2	Green	<b>80320-402</b>

## Mushroom Head Pushbuttons



Hubbell's mushroom head pushbuttons are constructed to the same standards and quality as the standard pushbuttons. Mushroom heads are available in either black, red, green, or a special "Stop" red. Mushroom caps be easily replaced or interchanged in the field without special tools.

No. of Speeds	No. of Contacts		Button Color	Part No.
	NO	NC		
One	1	1	Black	<b>80322-100</b>
One	1	1	Red	<b>80322-101</b>
One	1	1	Green	<b>80322-102</b>
One	1	1	"Stop" Red	<b>80322-103</b>
One	2	2	Black	<b>80322-400</b>
One	2	2	Red	<b>80322-401</b>
One	2	2	Green	<b>80322-402</b>
One	2	2	"Stop" Red	<b>80322-403</b>

## Maintained Pushbuttons



Hubbell's maintained pushbuttons are available in two variations. Single button mushroom head "push/pull" units are stand alone buttons that are commonly used for a maintained "emergency stop" function which has "push-to-stop/pull-to-start" operation. Single maintained buttons are used with another operator and an MRI "maintained reset interlock" to provide two button operation for either "maintained/maintained" or "maintained/momentary" action.

Type of Head	No. of Contacts		Button Color	Part No.
	NO	NC		
"Push/Pull"	1	1	Black	<b>80323-100</b>
"Push/Pull"	1	1	Red	<b>80323-101</b>
"Push/Pull"	1	1	Green	<b>80323-102</b>
Button	1	1	Black	<b>80323-103</b>
Button	1	1	Red	<b>80323-104</b>
Button	1	1	Green	<b>80323-105</b>



# Specifications

2040

## Selector & Toggle Switches

Hubbell's selector switches are available in 2 or 3 position maintained or spring return operators. Hubbell also has a 2 position toggle switch that is rated at 10 amps.

Circuits			Operator	Type of Return			Part No.
↙	↑	↘		↙	↑	↘	
X			Selector	M	M		<b>80321-100</b>
O		X	Toggle	M	M		<b>80321-101</b>
X	X	O	Selector	M	M	M	<b>80321-301</b>
X	O	O	Selector	M	M	M	<b>80321-302</b>
O	O	X	Selector	M	M	M	<b>80321-303</b>
X	O	O	Selector	S	M	S	<b>80321-304</b>
O	O	X	Selector	M	M	S	<b>80321-305</b>
			Selector	S	M	M	<b>80321-306</b>

### Symbol Key

M – Maintained Position; S – Spring Return Position  
X – Contact Closed; O – Contact Open



## Illuminated Pilot Lights

Hubbell's pilot lights are available in either 120VAC/DC or 250VAC/DC and are constructed to the same standards and quality as the pushbuttons. The pilot light bulb and lenses are easily removed for maintenance. Additional color lenses are available.

Type of Bulb	Voltage AC/DC	Lens Color	Part No.
Neon	120V	Red	<b>80324-100</b>
Neon	120V	Amber	<b>80324-101</b>
Neon	120V	Green	<b>80324-102</b>
Incandescent	120V	Red	<b>80324-210</b>
Incandescent	120V	Amber	<b>80324-211</b>
Incandescent	120V	Green	<b>80324-212</b>
Incandescent	250V	Red	<b>80324-213</b>
Incandescent	250V	Amber	<b>80324-214</b>
Incandescent	250V	Green	<b>80324-215</b>

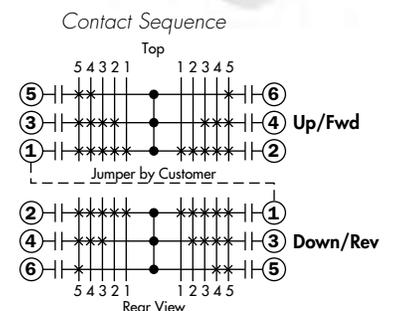


## Two Button – Five Speed Element

Hubbell's two button – five speed element is specifically designed to meet the most severe conditions. The two buttons are **mechanically interlocked** which prevents both buttons from being depressed simultaneously. These switches are ideal for pendant or other control applications that require multi-speed operation.

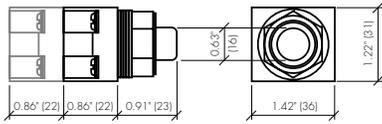
No. of Speeds	No. of Contacts	Button Color	Part No.
Five	6-NO/Button Sequentially Closed	Black	<b>80825-000*</b>

\* CSA Approved

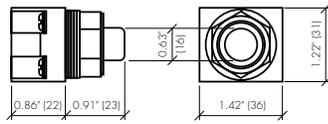


## Dimensions

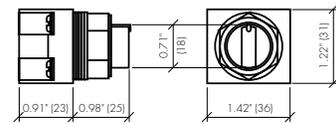
Standard Pushbuttons



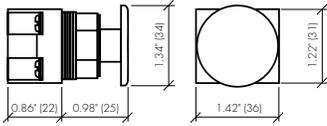
Maintained Pushbuttons



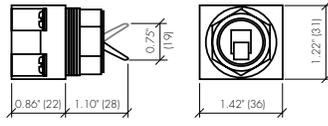
Selector Switches



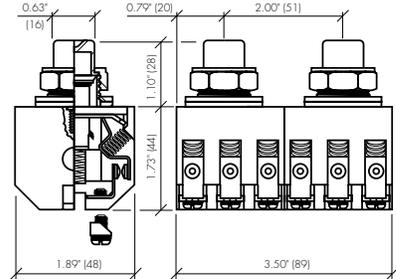
Maintained "Push-Pull" Buttons



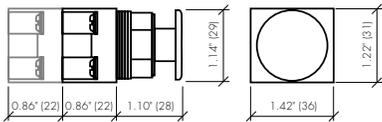
Toggle Switches



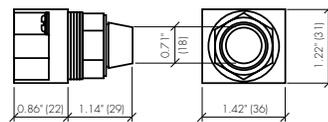
Two Button - Five Speed Elements



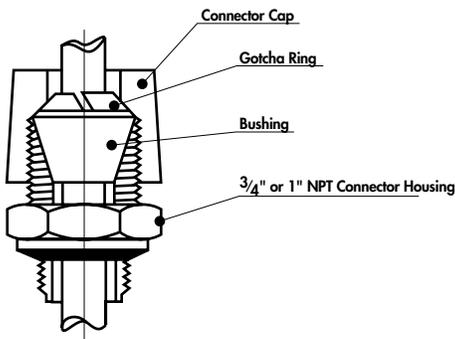
Mushroom Head Pushbuttons



Pilot Lights

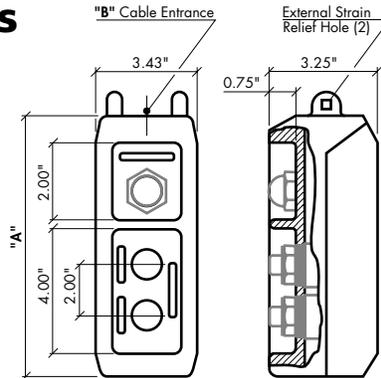


## Cord Connector Kit Assembly

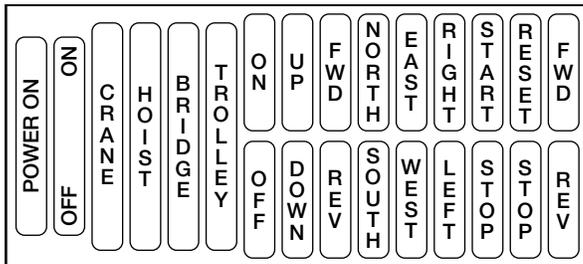


## Enclosure Dimensions

Cat No.	"A" Length Inches	"B" Conduit Size
ME2	8.156"	3/4" NPT
ME4	12.50"	3/4" NPT
ME6	16.84"	1" NPT
ME8	21.18"	1" NPT
ME10	25.53"	1" NPT



## ELK1 Label Pack

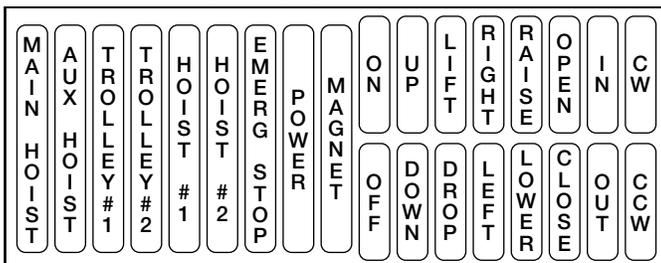


## Contact Ratings – Single Break

	Single Speed		Multi Speed	
<b>AC</b> NEMA A600	120V	6A	<b>AC</b> NEMA A300	120V 6A 240V* 3A
<b>DC</b> NEMA P300	125V	1.1A	<b>DC</b> NEMA R300†	125V 0.4A 250V 0.2A

\* OSHA limits pendant voltage to 150VAC or 300VDC  
† Closest NEMA rating.

## ELK2 Label Pack



# Specifications

## Mini-Master Switch

4211

The Euclid Mini-Master Switch uses a handle operated cam switch mechanism in a NEMA rated housing. It is engineered for use where master switch control is preferred, for CMAA duty overhead crane and similar applications.

- Housings for surface or flush mounting.
- NEMA Types 1, 3, 4 and 13.
- Very compact size.
- Choice of spring return vertical handle or maintained position vertical handle.
- Plunger detents give operator "positive position feel."
- Heavy-duty, cam-operated switch units.
- Up to 5-speed points in each direction.
- Up to 16 circuits plus feed for each direction provide unlimited operation sequences.
- Jam-proof mechanism for contact protection.

### Application

Euclid Mini-Master Switches are engineered to meet the need for a small, multi-circuit master switch for installations such as: small crane cabs, and mill auxiliaries.

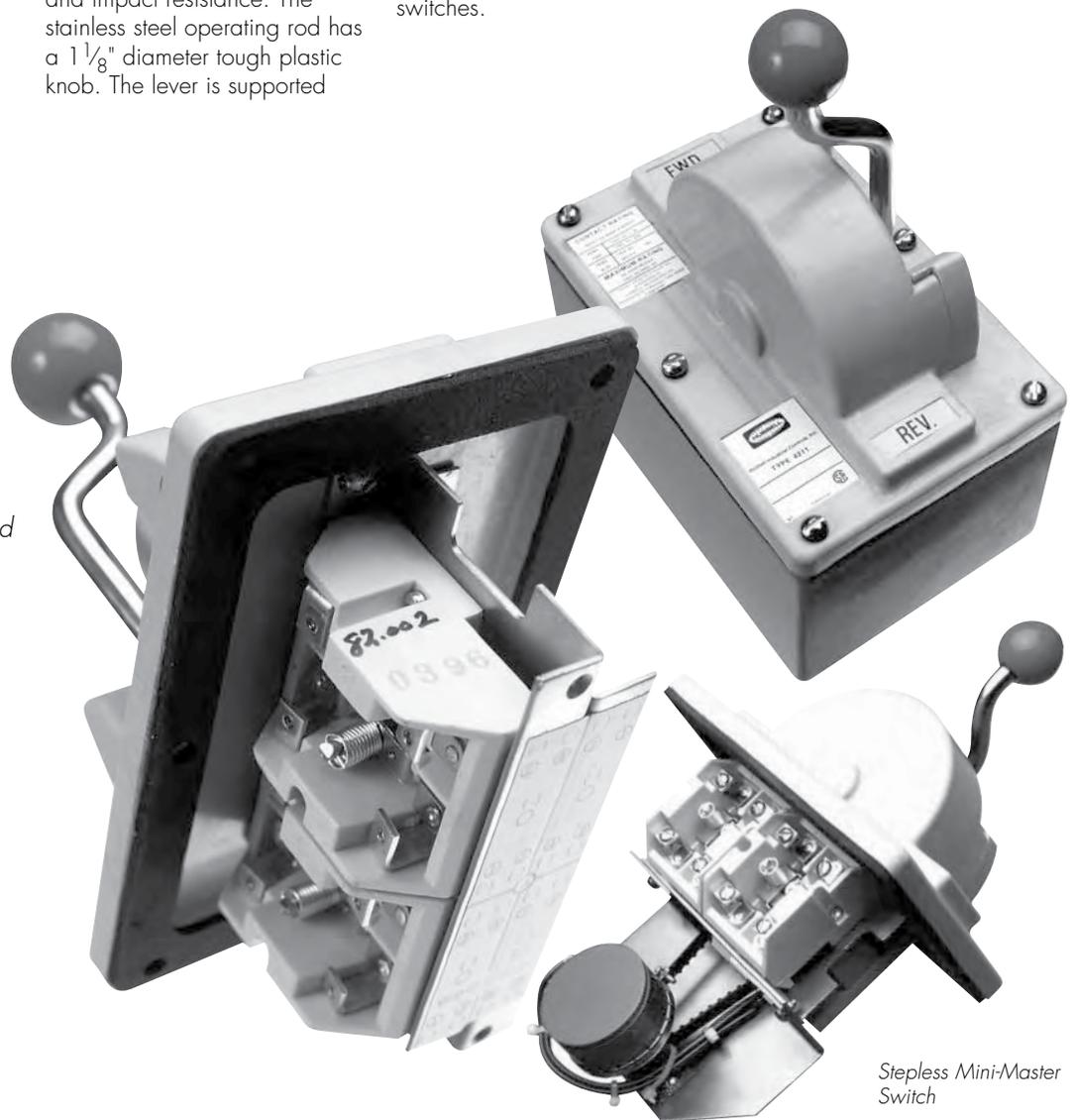
### Description

The operating head is molded of tough fiberglass reinforced polyester resin. The housing is engineered for extra strength and impact resistance. The stainless steel operating rod has a  $1\frac{1}{8}$ " diameter tough plastic knob. The lever is supported

within the operating head by oil-impregnated bushings. The operating mechanism within the head is comprised of precision machined components carefully assembled and tested to assure a long, trouble-free service life.

The enclosure to which the head is fastened is a die-formed metal stamping. On NEMA 1 housings, two  $\frac{3}{4}$ " knockouts are supplied. The operating head is gasketed for sealing to the enclosure or customers panel on flush mounting switches.

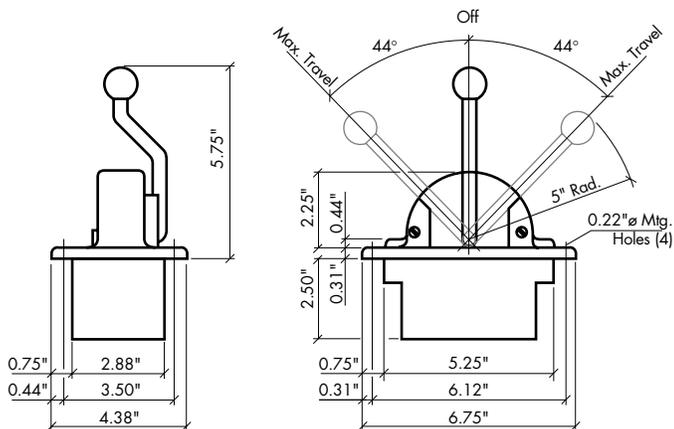
The cam-operated inserts are similar to those used with type PBC & WPBC pushbutton stations, with the following modifications: The operating plungers are glass-fibre reinforced plastic with a special lip overhang to interlock with the operating lever. Plungers are also equipped with location detents, corresponding to the cam development and speed points. This feature provides the operator with a "positive position feel."



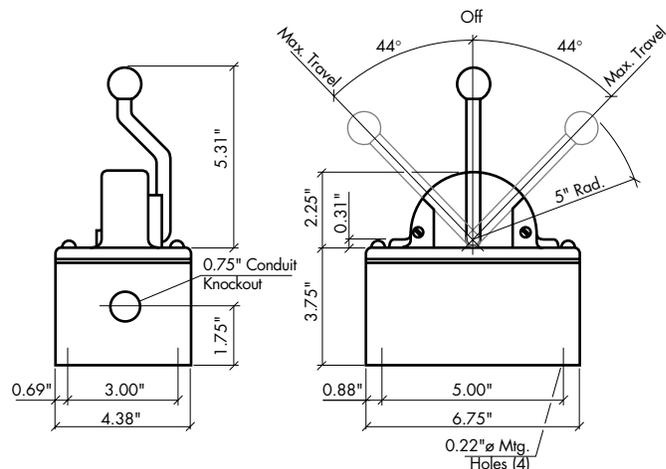
Stepless Mini-Master Switch

# Diagrams & Dimensions

4211



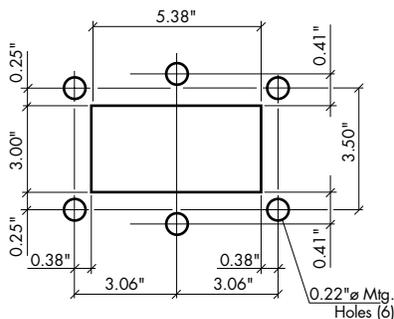
Flush Mounted Mini-Master Switch



Surface Mounted Mini-Master Switch

### Contact Ratings Single Break

<b>AC</b> NEMA B150	120V	3A
	240V	—
<b>DC</b> NEMA P300	125V	1.1A
	250V	0.55A



Cutout and Drilling for Flush Mounted Mini-Master Switch



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