

Hubbell Power Systems, Inc. (HPS)
presents the LIBERTY™ HB Series
Solid Dielectric Switches

Reliability
Safety
Performance

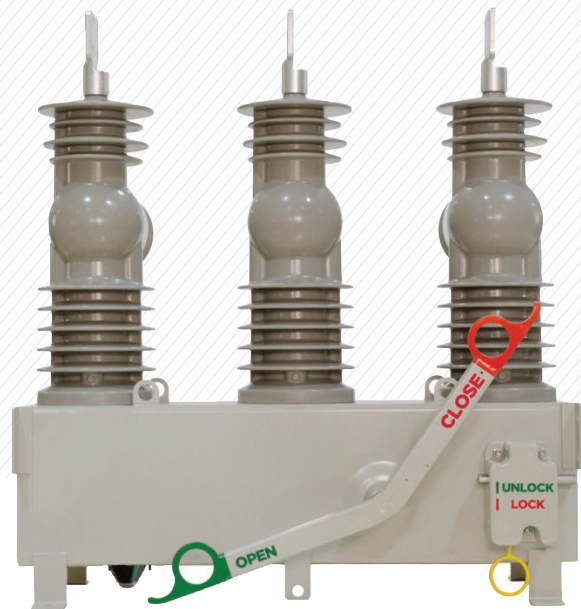
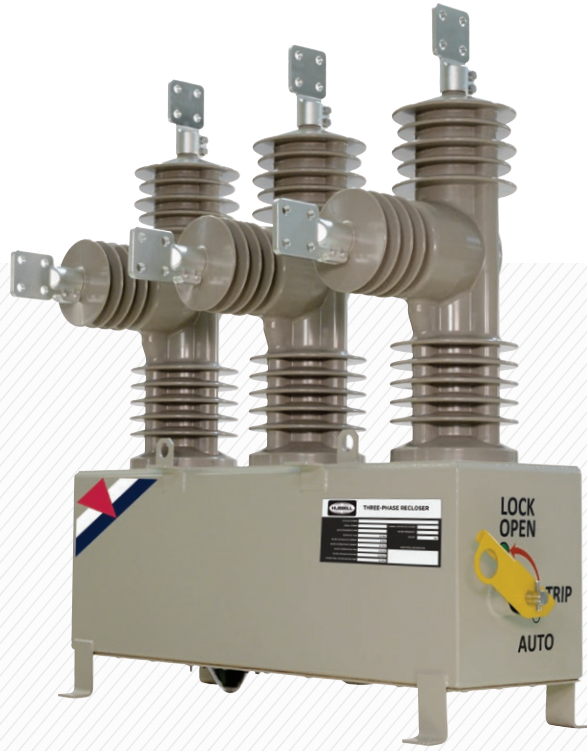


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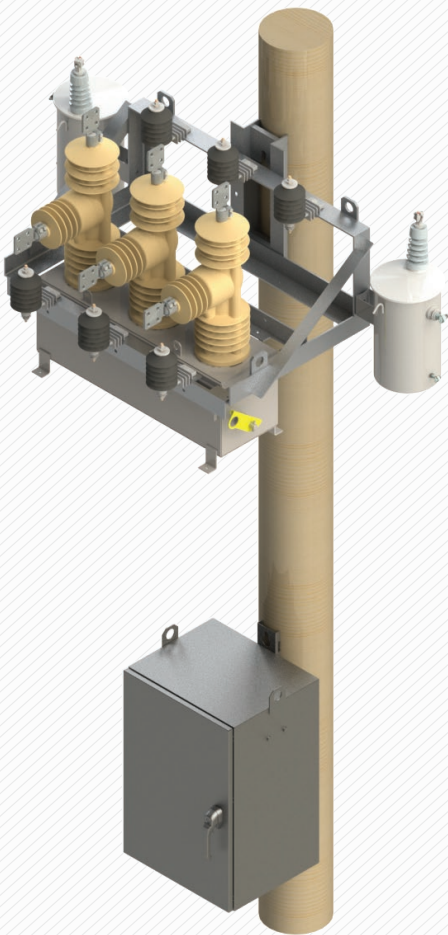
Introduction

Hubbell Power Systems introduces the LIBERTY™ HB Series Three Phase Ganged Recloser (3GR) and Three Phase Load Break Switch (LBS) for advanced distribution automation and switching applications. The HPS product offerings are a site-ready, completely integrated solution.

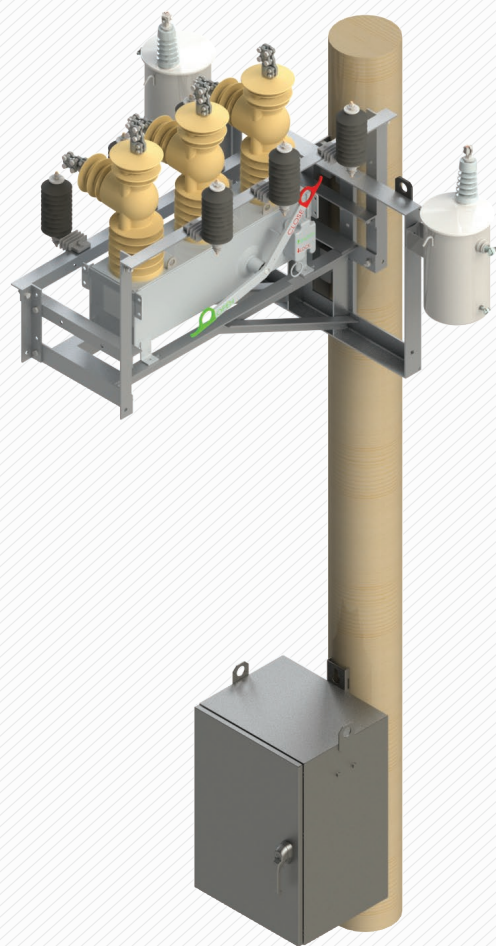
The LIBERTY™ HB series offer customers a reliable, durable, and maintenance-free solution in a single, compact design. Our offering utilizes solid-dielectric vacuum interrupters encapsulated with hydrophobic cycloaliphatic epoxy bushing material providing maximum weather and environmental contamination resistance.

The Hubbell LIBERTY™ HB Series Three Phase Ganged Recloser and Three Phase Load Break Switch offers customers the following benefits:

- Reliable performance
- Unparalleled safety features
- State of the art HCEP technology
- Maintenance-free solution
- Easy Installation



**Figure 1: Center Pole Mount
Three Phase Ganged Recloser**



**Figure 2: Side Pole Mount
Three Phase Load Break Switch**

Technology and Features

Construction

The Liberty™ 3GR and LBS consist of three gang operated vacuum switches in a single housing design. The housing is constructed of welded and riveted stainless steel painted ANSI 70 with a zinc primer for maximum strength and corrosion resistance.

Solid-Dielectric Vacuum Interrupter Technology

The Liberty™ 3GR and LBS's utilization of solid dielectric vacuum interrupter technology avoids the use of SF6 gas or oil insulation, thus improving both safety and lifetime of the switch without any servicing. Encapsulation in Hydrophobic Cycloaliphatic Epoxy (HCEP) bushing material provides excellent weather, water, and ultraviolet resistance. HCEP material reduces the risk of tracking and insulation flashover while providing maximum performance for contaminated environments. Using HCEP also translates into excellent performance in heavily polluted areas, light weight design, and exceptional mechanical strength attributed to epoxy-based design.

Single 32-pin Connector

Each switch housing has a 32-pin MIL spec twist-lock bayonet-style connector which meets and exceeds the industry standard. The connector is sealed to provide protection from the elements and prevent moisture ingress. The ¼ twist-lock style allows for easy field installation.

Integrated Sensing

The Liberty™ three-phase ganged recloser and load break switch come standard with six voltage (3 source side and 3 load side) and three current sensors. Voltage sensing is accomplished through a resistive voltage divider encapsulated to the source and load side terminals. The integrated sensing supplies $\pm 1\%$ accuracy measurements of line conditions. This configuration allows for an all-in-one design without requiring additional current and voltage sensors for the switches.



Semaphore and Mechanical Counter

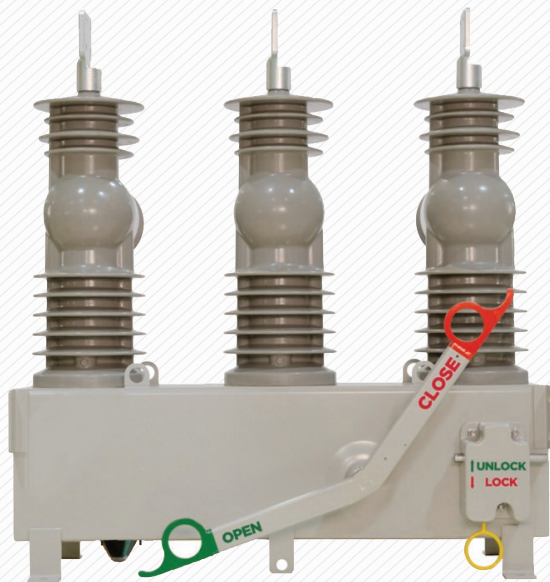
A ground visible, colored semaphore is located on the lower portion housing giving a 360-degree indication of the current position (open-closed) of the switch contacts. The semaphore rotates indicating green when the contacts are opened and indicating red when the contacts are closed. The colored indicator flags are made of fade resistant, reflective material. A mechanical counter is also located on the lower portion of the housing which records each opening of the switch and serves as a visual indication of the vacuum interrupter usage.

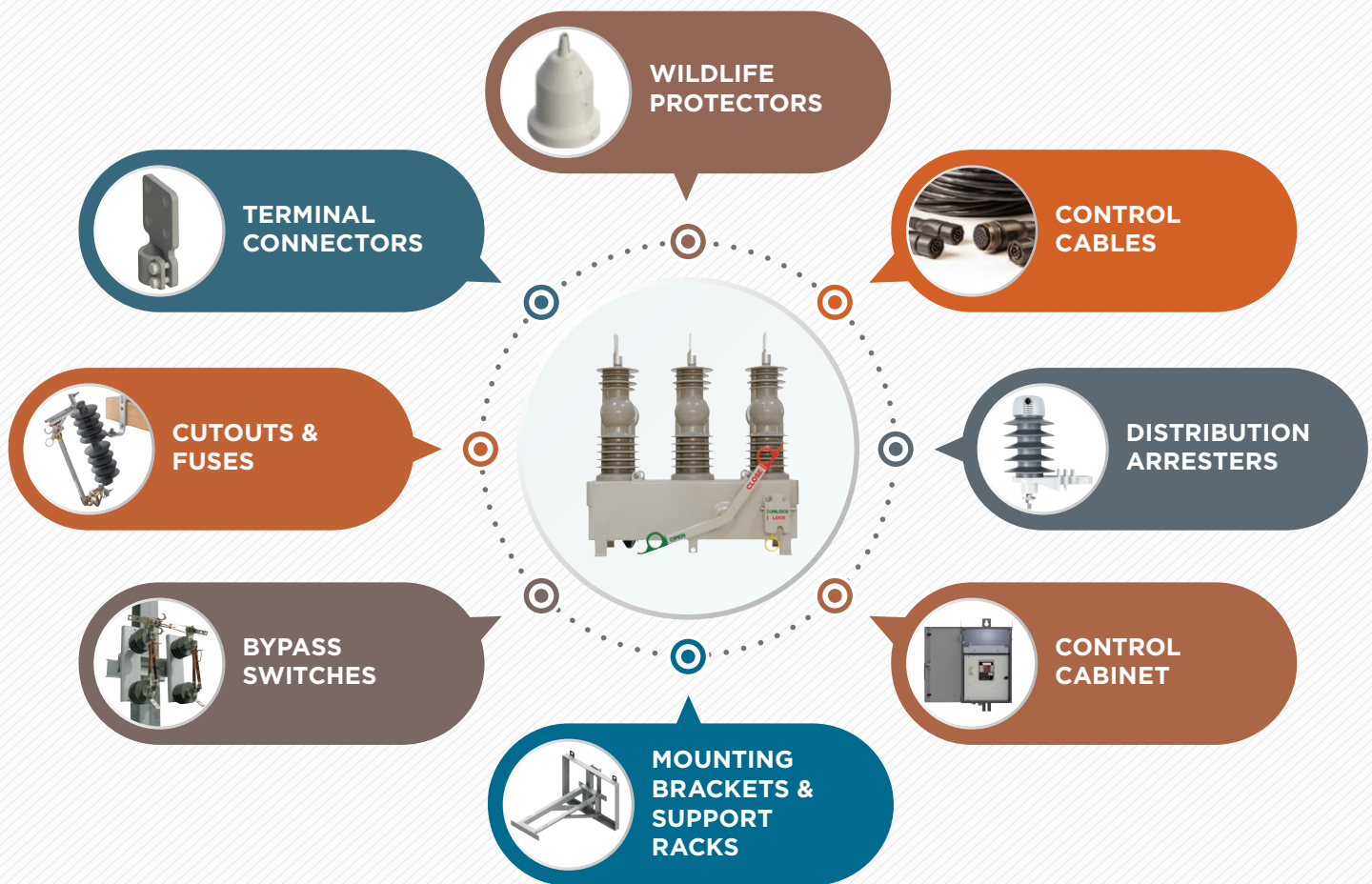


Manual Operation and Lockout Handle

The 3GR and LBS each have a manual operating handle that is designed to allow manual open operation of the switch with a hookstick. Each switch also has a mechanical blocking mechanism which is designed to prevent any unexpected and unwanted closures of the switch. The operating and

lockout handles include a substantial hookstick ring for easy down-pole engagement and disengagement. More detailed information on the handle operation for each switch is included in the appropriate switch sections following in this document.

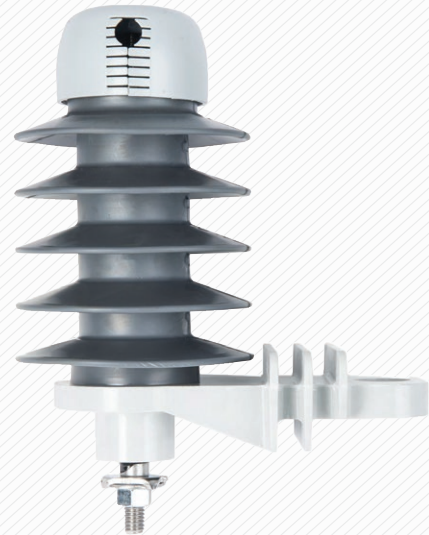
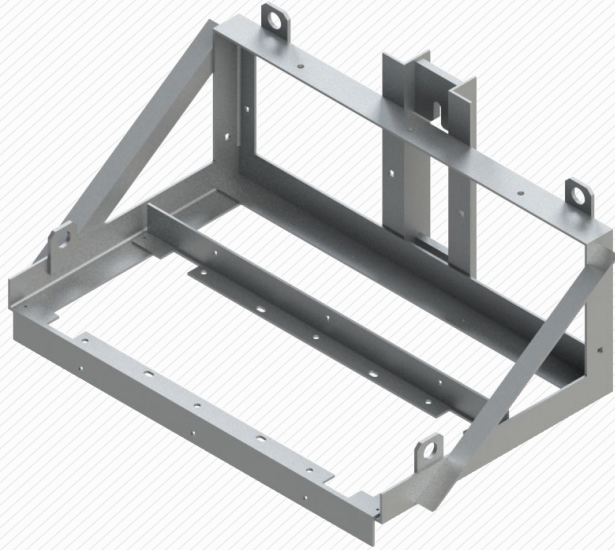




One Hubbell Site-Ready Solution

The Hubbell solution brings together high-quality products in a site-ready package that best suits the needs and demands of customers. The fully integrated solution is comprised of Hubbell product options such as Liberty™ recloser or Liberty™ load break switch, mounting and support racks, rugged control cables, surge arresters, control cabinet with driving infrastructure, wildlife protection and cover ups, bypass options, and terminal connectors.

The integrated solution consisting of controllers, cables, and switching devices is assembled, configured, integrated, and tested in the Hubbell Boonton, New Jersey manufacturing facility. Internal sensing compensation for selected cable length and factory calibration is conducted on each integrated solution before shipment.



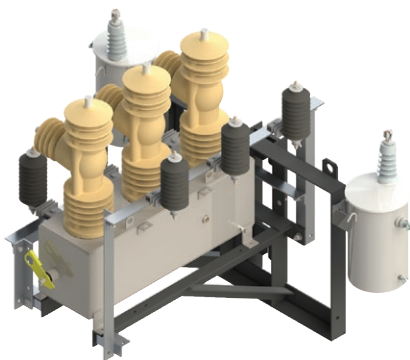
Hubbell Liberty Series Mounting Frames

Frames are made from heavy-duty, fully welded 6061-T6 aluminum designed for maximum structural integrity for pole mounting applications. Frames are available as either center mount or side arm mount. They come standard with provisions for source and load side arresters and two control power transformers. Please refer to images on page 3 for other available mounting frame options.

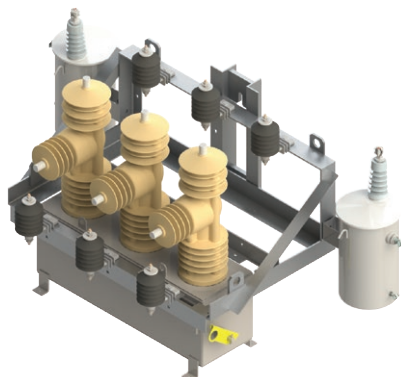
Hubbell PDV-100 Optima Arresters

Protect your investment and achieve the best operating results with Ohio Brass® surge arresters.

- Over 30 years of excellent field performance with more than 36 million distribution arresters installed
- Long lasting ESPTM housing material with superior mechanical strength and electrical characteristics
- Reliable capacitive disconnecter operates at fault currents as low as 1 Amp



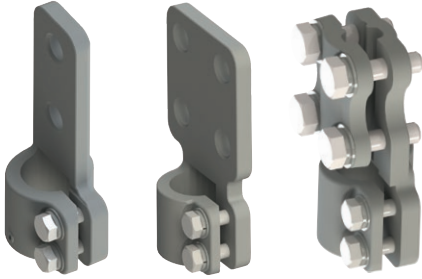
3GR Side Arm Mount



LBS Center Mount

Arrester Housing	ESPTM (Enhanced Silicone Polymer)
Arrester Type	Heavy Duty (IEEE), Distribution High (IEC)
Mounting	Insulating Base Bracket with Capacitive Disconnecter
Design Standards	IEEE C62.11, IEC 60099-4 Ed. 3

Table 1: Arresters



Terminal Connectors

Hubbell Liberty™ switches are offered with the following terminal connectors.

- NEMA 2-Hole Flat Pad
- NEMA 4-Hole Flat Pad
- Clamp Style



Wildlife Protectors

To optimize wildlife mitigation and equipment protection, wildlife guard protectors are offered as accessories for Hubbell Liberty™ switches, surge arresters, and control power transformers. Both vented and non-vented options are available.

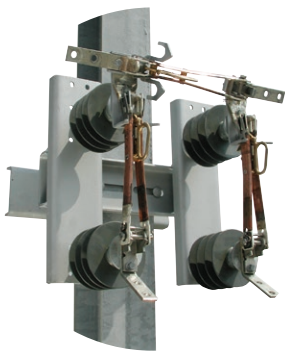


Control Power Transformers

The Hubbell Liberty™ switches are offered with options for control power transformers (dry or oil filled).

The CPTs are mounted on the switch frame and are chosen for optimal performance to power any controller and communication modules to be used by the customer.

These fixed-load transformers meet IEEE standards (ANSI/IEEE C57.12 and NEMA TR1) and are smaller, economical and have low operating losses.



Bypass Switches

Hubbell Liberty™ switches are compatible with HPS bypass switches to safely bypass units with up to 900A of continuous current.

Please refer to Catalog 14B on the Hubbell Power Systems Literature Page for detailed information on Hubbell Hookstick By-Pass Switches.

Note: Bypass switches are typically ordered as a separate item based on the system requirements.



Cutouts & Fuses

Hubbell cutouts are tested with our own line of CHANCE® fuse links at all standard specified fault ratings.

- Polymer compliant to IEEE C37.41
- Synthetic fuse tube liner provides superior longevity in the field to standard Bone Fiber
- Link break, load break, and cutout arrester combinations available to meet any overhead fusing application

Please refer to Catalog 10AA and 10B on the Hubbell Power Systems Literature Page for detailed information on Hubbell Cutouts & fuse links

Note: Cutouts and Fuses are typically ordered as a separate item based on the system requirements.

Liberty™ Three Phase Ganged Recloser

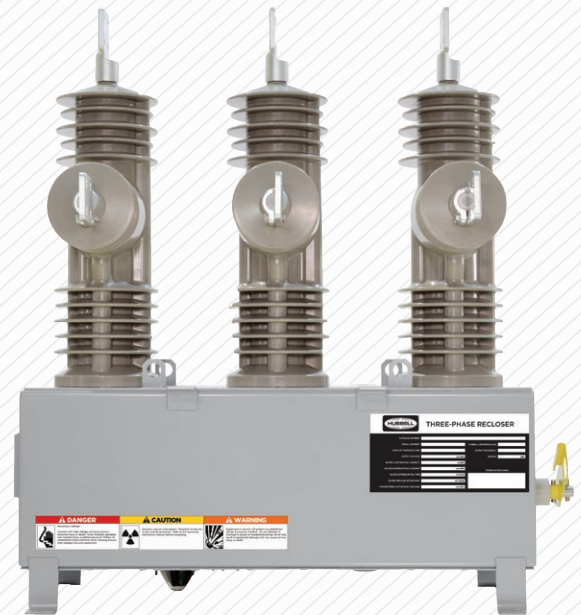
The Liberty™ Three Phase Ganged Recloser design offers customers a reliable and low maintenance solution. The 3GR features a low maintenance design by implementing solid dielectric insulation. Our offering utilizes the latest in magnetic actuator technology. Vacuum interrupters are insulated with hydrophobic cycloaliphatic epoxy to provide maximum weather resistance.

Manual Operating Handle

The Liberty™ recloser has an operating handle which allows manual tripping to lockout the recloser. The operating handle has a lock position which mechanically prevents closing operation locally from the controller or remotely through SCADA. When the operating handle is in the auto position the recloser can be closed electrically.

Magnetic Actuator

The magnetic actuator design technology consists of a simple and reliable magnetically actuated operating mechanism. This operating mechanism can be relied on to operate over 10,000 times under full load operating conditions. Our design does not require maintenance or lubrication.



Three Phase Ganged Recloser Technical Specifications

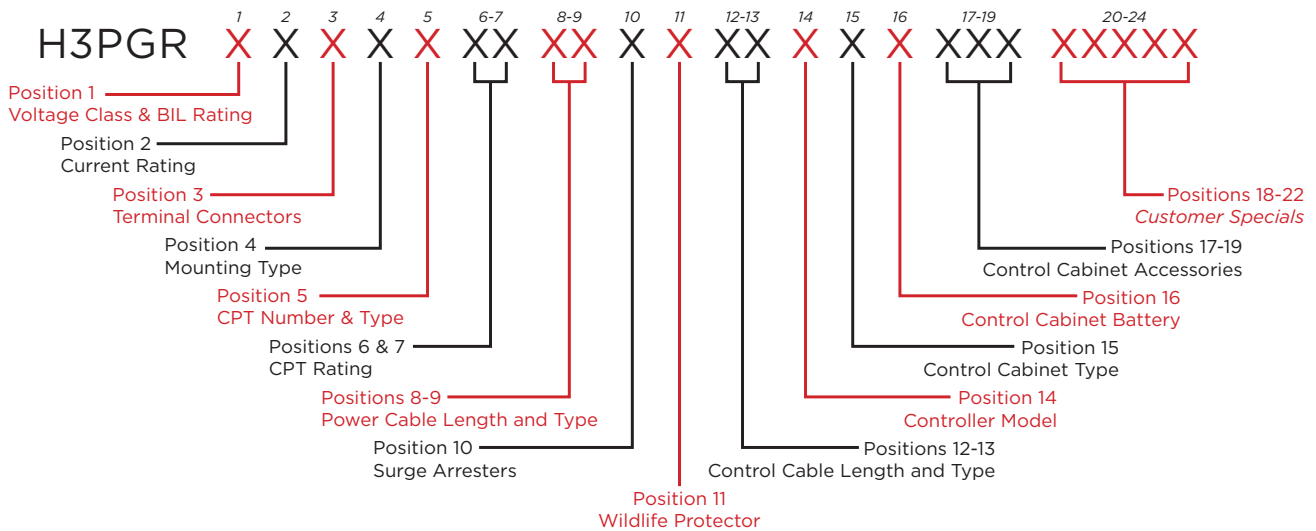
Description	Hubbell 3Ø Ganged Recloser			
	15.5kV	27kV		38kV
Rated Maximum Voltage (kV)	15.5	27		38
Nominal Frequency (Hz)	50/60	50/60	50/60	50/60
Rated Continuous Current (A RMS)	630	630	800	800
8 hour Overload Capability (A RMS)	787	787	960	960
Rated Short-Circuit Current - 3 second (kA)	16	12.5	16	16
Rated Peak Withstand Current, Asymmetrical (kA)	41.6	41.6	41.6	41.6
Impulse Withstand Voltage (kV)	110	150	150	170
Power Frequency Withstand Voltage - Dry (kV)	50	60	60	70
Power Frequency Withstand Voltage - Wet (kV)	45	50	50	60
Switch Weight lbs. (kg)	254 (115)*	320 (145)*	320 (145)*	421 (191)*
Rated Mechanical Operations	10,000 (Max. 30,000)			
Temperature (°C)	-40°C to +60°C			
Switching Performance Test	Standard IEEE / IEC 62271-111			

* approximate weight for switches (less frame)

Table 2. Three Phase Ganged Recloser Technical Specifications

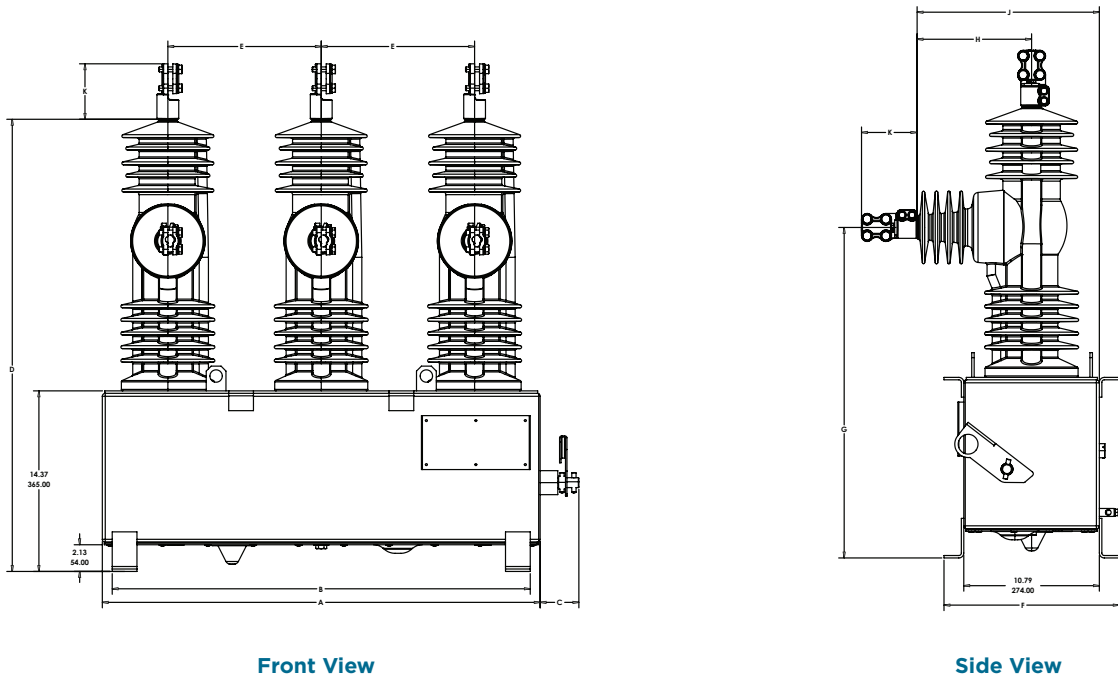
Catalog Numbering Matrix

Example Part Number: H3PGR1B3C31B4D13S2B1AAXXXXX



Note: The matrix provided above is for referencing catalog numbering positions only. For a complete ordering chart, including all number options, please contact your Hubbell Power Systems representative.

Three Phase Ganged Recloser Dimensions



Dimensions in(mm)	Voltage Class		
	15kV	27kV	38kV
A	32.48 (825.0)	34.84 (884.9)	37.99 (964.95)
B	30.91 (785.1)	33.27 (845.1)	32.48 (824.99)
C	3.04 (77.2)	3.08 (78.2)	3.10 (78.74)
D	30.20 (767.1)	35.98 (913.9)	40.76 (1035.30)
E	11.02 (279.9)	12.20 (309.9)	13.78 (350.01)
F	13.94 (354.1)	13.94 (354.1)	14.72 (373.89)
G	22.12 (561.8)	26.30 (668.0)	27.96 (710.18)
H	8.64 (219.5)	9.11 (231.4)	12.40 (314.96)
J	14.04 (356.6)	14.5 (368.3)	20.04 (509.02)

Table 3. Three Phase Ganged Recloser Dimensions

Dimensions in(mm)	15kV	27kV	38kV
Terminal to Terminal	34.25 (870)	37.80 (960)	60.89 (1546.60)
Terminal to Ground	24.02 (610)	31.14 (791)	49.13 (1247.90)

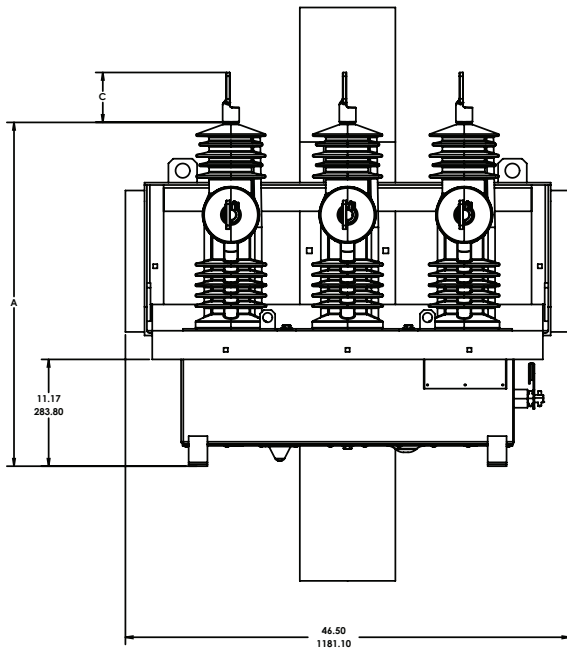
Table 4. Three Phase Ganged Recloser Creepage Distance

Dimensions in(mm)	Terminal		
	Clamp Style	2 Hole Nema	4 Hole Nema
K	4.41 (112)	5.40 (137)	5.21 (132)

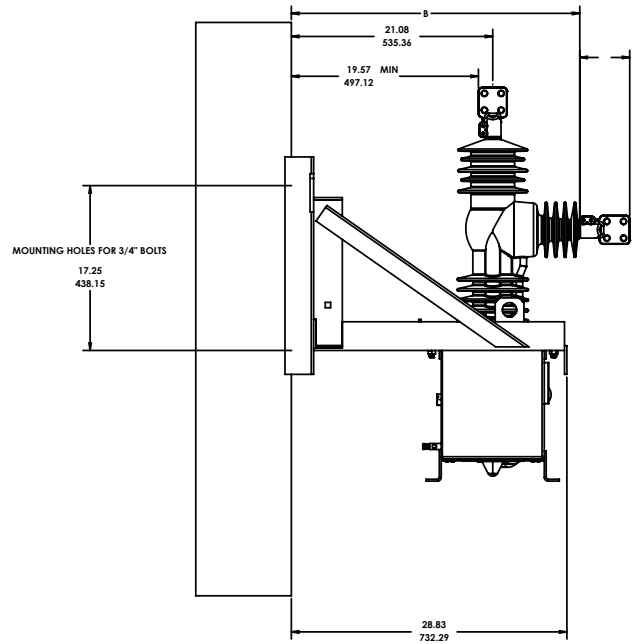
Table 5. Three Phase Ganged Recloser Terminal Connectors

NOTE: Dimensions shown are approximate.

Three Phase Ganged Recloser Center Pole Mount Dimensions



Front View



Side View

Dimensions in(mm)	Voltage Class		
	15kV	27kV	38kV
A	30.2 (767.1)	35.98 (914.0)	39.53 (1004.0)
B	29.72 (754.9)	30.19 (766.8)	32.68 (830.06)

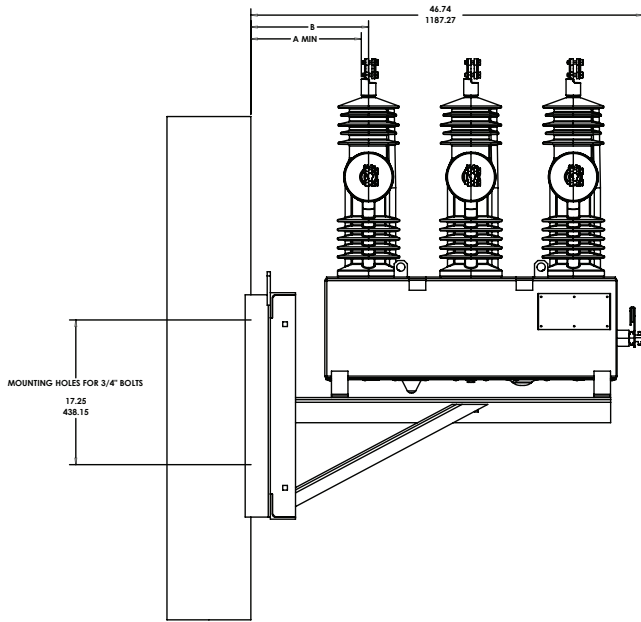
Table 6. Three Phase Ganged Recloser Center Pole Mount Dimensions

Dimensions in(mm)	Terminal		
	Clamp Style	2 Hole Nema	4 Hole Nema
C	4.41 (112)	5.40 (137)	5.21 (132)

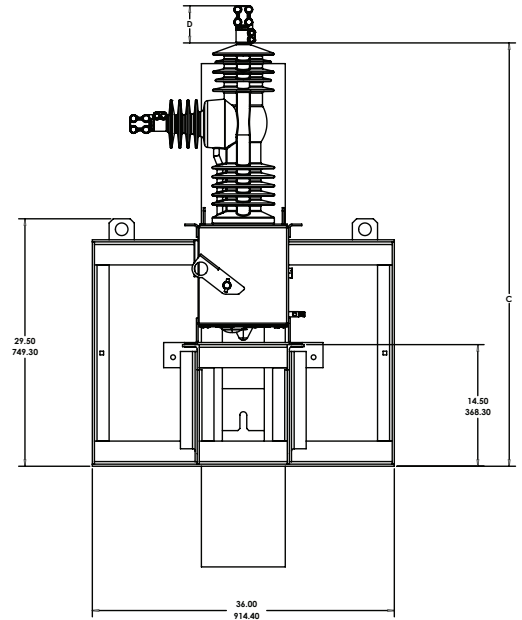
Table 7. Three Phase Ganged Recloser Terminal Connectors

NOTE: Dimensions shown are approximate.

Three Phase Ganged Recloser Side Pole Mount Dimensions



Front View



Side View

Dimensions in(mm)	Voltage Class		
	15kV	27kV	38kV
A	15.53 (394.6)	13.17 (334.5)	10.16 (258.1)
B	16.4 (416.6)	14.04 (356.6)	11.03 (258.1)

Table 8. Three Phase Ganged Recloser Side Pole Mount Dimensions

Dimensions in(mm)	Terminal		
	Clamp Style	2 Hole Nema	4 Hole Nema
D	4.41 (112)	5.40 (137)	5.21 (132)

Table 9. Three Phase Ganged Recloser Terminal Connectors

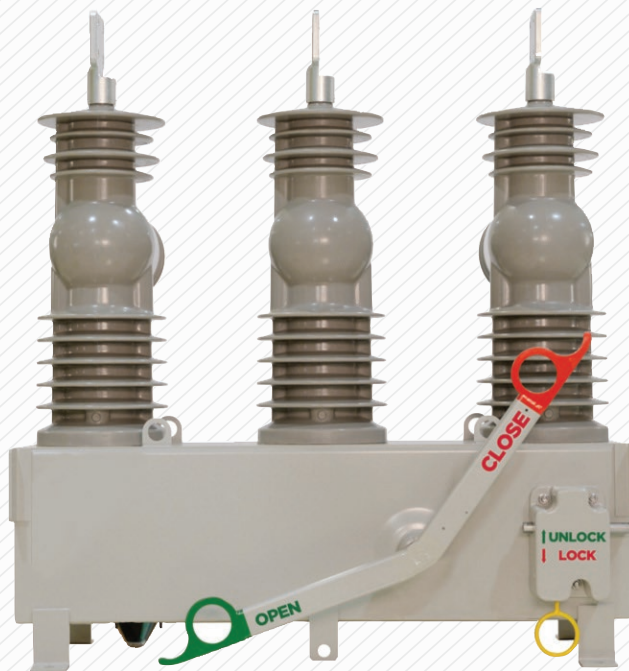
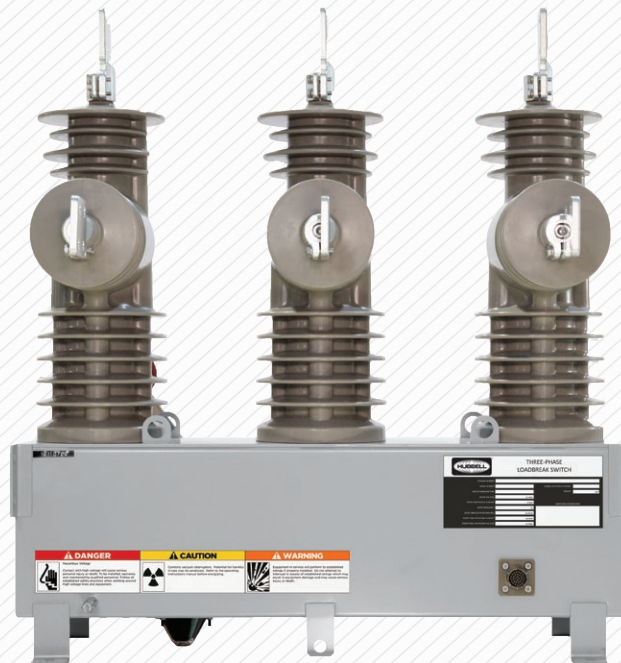
NOTE: Dimensions shown are approximate.

Liberty™ Three Phase Load Break Switch

The Liberty™ Three Phase Load Break Switch is a durable and maintenance-free design offering both three phase sectionalizing and load switching capabilities in a single, compact and lightweight design. The 3Ø LBS features a low maintenance design by implementing solid dielectric insulation. Our offering utilizes the latest in motor driven circuitry technology. Vacuum interrupters are insulated with hydrophobic cycloaliphatic epoxy to provide maximum weather resistance.

Manual Operating Handle

The bi-colored manual operating handle is designed to allow manual opening and closing operation of the switch with a hookstick. The Liberty™ load break switch has a mechanical locking mechanism which prevents changing the status of the switch when in the locked position. The locking mechanism prevents manual, local from the control, or remote through SCADA operation.



Three Phase Load Break Switch Technical Specifications

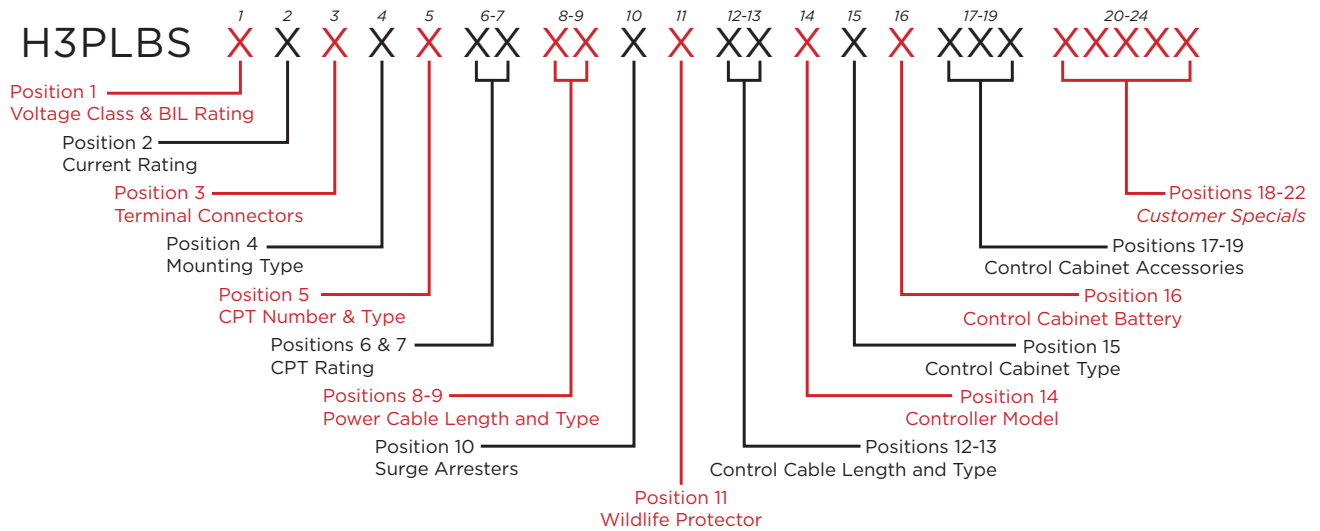
Description	Hubbell 3Ø Load Break Switch
Rated Maximum Voltage (kV)	27
Nominal Frequency (Hz)	50/60
Rated Continuous Current (A RMS)	630
Impulse Withstand Voltage (kV)	150
Rated Short-Circuit Current - 1 second (RMS, A)	12.5
5-Time Duty Cycle Fault Making / Closing Current, Asymmetrical (RMS, A)	32.5
Power Frequency Withstand Voltage (1min) Dry (kV)	60
Power Frequency Withstand Voltage (1min) Wet (kV)	50
Rated Mechanical Operations	6,000
Operating Temperature (°C)	-40°C to +60°C
Switch Weight lbs. (kg)	254 (115)*
Switching Performance Test	Standard IEC 62271-103

* approximate weight for switches (less frame)

Table 10. Three Phase Load Break Switch Technical Specifications

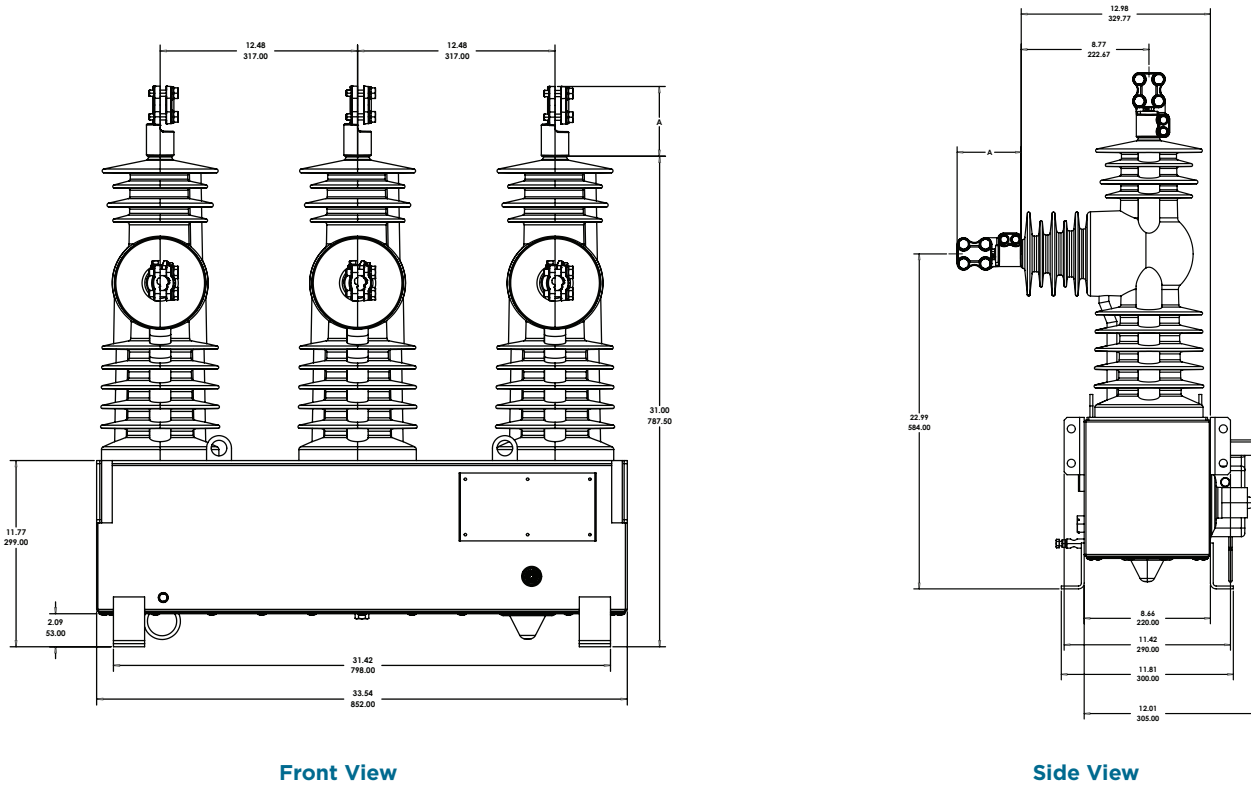
Catalog Numbering Matrix

Example Part Number: H3PLBS1B3C31B4D13S2B1AAXXXXX



Note: The matrix provided above is for referencing catalog numbering positions only. For a complete ordering chart including all number options, please contact your Hubbell Power Systems representative.

Three Phase Load Break Switch Dimensions



Front View

Side View

Dimensions in(mm)	Terminal		
	Clamp Style	2 Hole Nema	4 Hole Nema
A	4.41 (112)	5.40 (137)	5.21 (132)

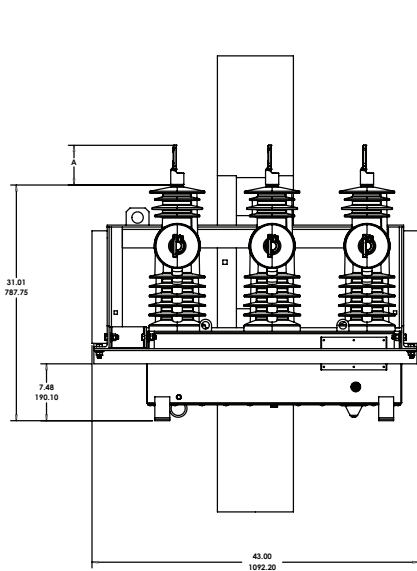
Table 11. Three Phase Load Break Switch Terminal Connectors

Creepage Distance, Terminal to Terminal in(mm)	33.23 (844) E Class
Creepage Distance, Terminal to Ground in(mm)	31.97 (812) D Class

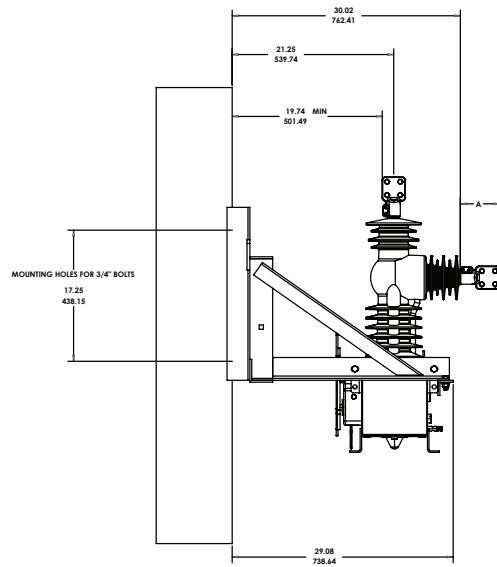
Table 12. Three Phase Load Break Switch Creepage Distance

NOTE: Dimensions shown are approximate.

Three Phase Load Break Switch Center Pole Mount Dimensions

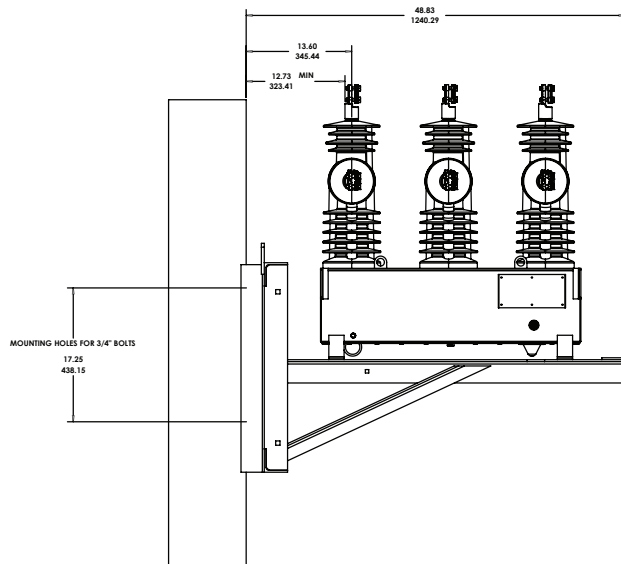


Front View

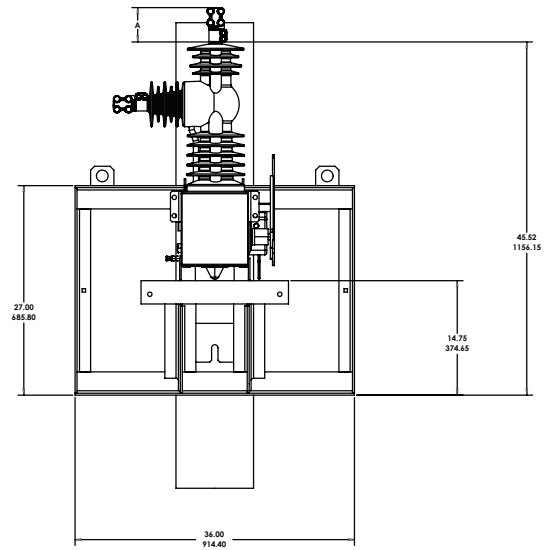


Side View

Load Break Switch Side Pole Mount Dimensions



Front View



Side View

Dimensions in(mm)	Terminal		
	Clamp Style	2 Hole Nema	4 Hole Nema
A	4.41 (112)	5.40 (137)	5.21 (132)

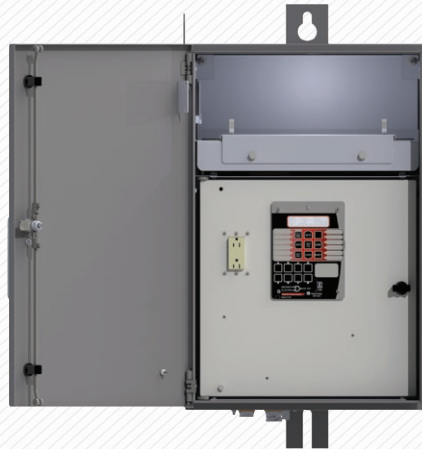
Table 13. Three Phase Load Break Switch Terminal Connectors

NOTE: Dimensions shown are approximate.

Control Cabinet Solution



Control Cabinet Isometric View



Control Cabinet Interior



Control Cabinet Bottom View

Hubbell Cabinet Solution

The Hubbell Power Systems cabinet solution for Liberty™ HB Series switches delivers a complete performance in protection, monitoring, control and automatic configuration of distribution networks. Liberty™ HB Series switches can be configured with several communication options and controls. The control options may be ordered along with the switch and control cabinet. The cabinet solution is currently compatible with Beckwith M-7679 R-PAC. Compatibility with other control suppliers is coming soon. When ordering the control and cabinet with the Liberty™ switches, all required components for basic operation will be factory installed.

For example, the control cabinet will include: a heater, a battery 12Ah or 20Ah 12VDC, disconnect switch, driver circuitry, and appropriate wiring. If additional components, such as a GPS module, radio(s), or other components are ordered they will also be factory installed and wired appropriately. The only component shipped separately and requiring customer installation is the battery.

Control Cables

The control cabinet uses a 32-pin control interface for providing auxiliary switch indicators and for both sensing and operating the Liberty™ HB series switches. The shielded 20AWG 28 conductor cable is rated 300V and includes a polyurethane jacket and optional galvanized steel armor.

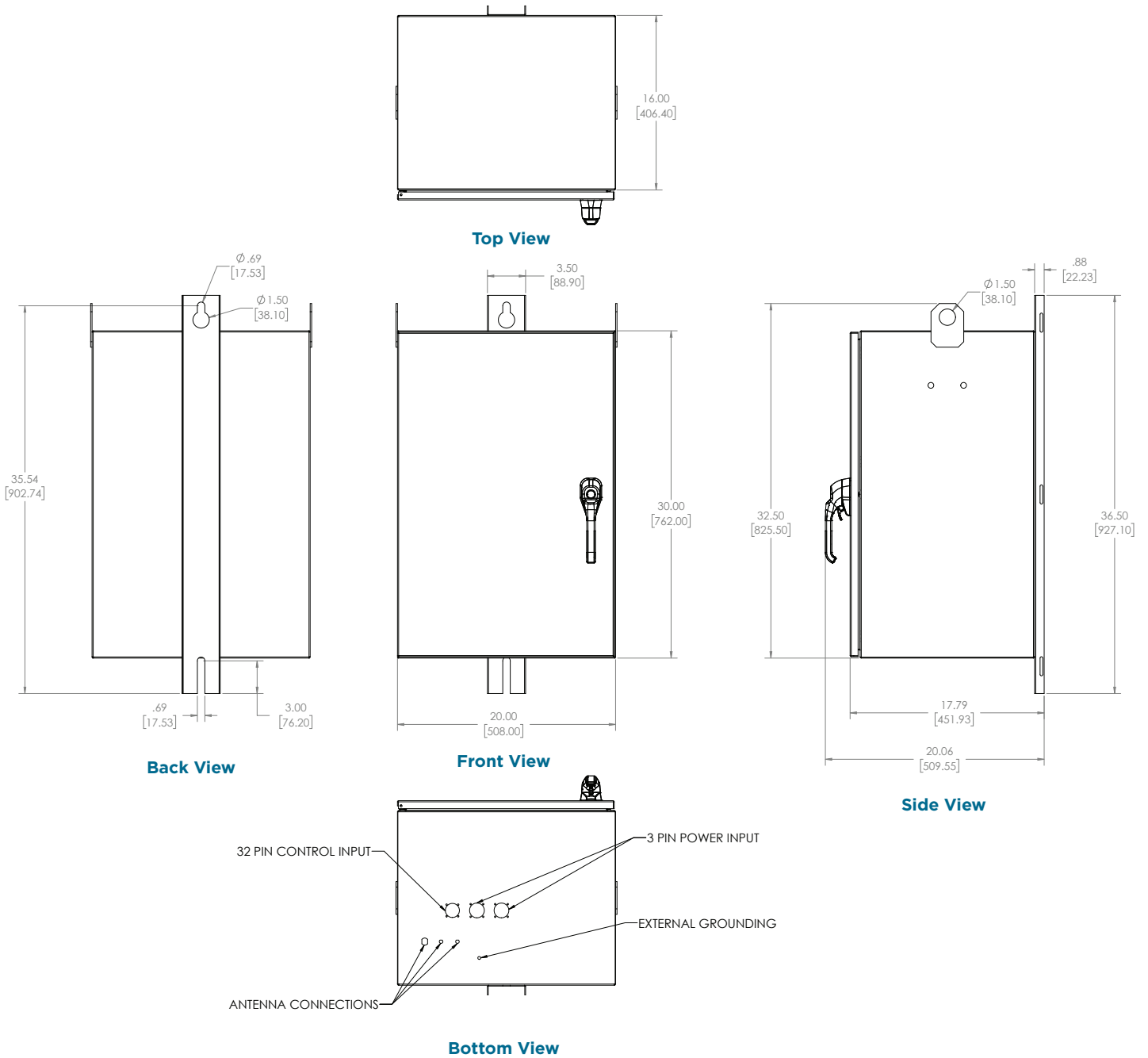
The MIL- spec twist lock bayonet-style connector meets and exceeds the industry standard. It can be ordered in customizable lengths ranging from 10ft to 65ft.

Power Cables

The control cabinet power input uses a 3-pin connector for providing 120V or 240V input power from the pole-mounted power transformer to the switch control and other cabinet accessories. The cable is a 12AWG 3 conductor cable and is rated 600 Volts.

The 3-pin receptacle on the lower housing of the control cabinet uses a MIL-spec circular 3 socket bayonet coupling connector that provides rapid and secure mating and un-mating. It can be ordered in customizable lengths ranging from 10ft to 65ft.

Control Cabinet Dimensions



NOTE: Dimensions shown are approximate.



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For product inquiries, please contact your local sales representative or customer service representative.

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Because Hubbell has a policy of continuous product improvement,
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