

OVERHEAD SWITCHES

Gang-Operated

Type AR, Type D7 and Type D6

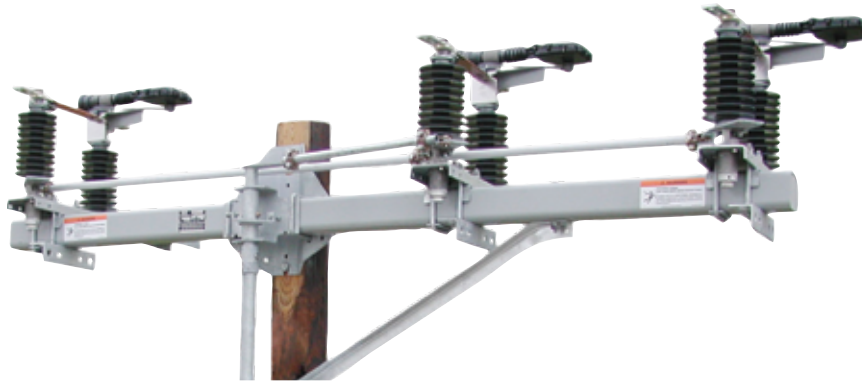
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Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

Description

The Hubbell unitized Type AR switch is a distribution-level, loadbreak, gang-operated side-break switch designed to meet not only today's needs but well into utilities' future of distribution automation. Designed for nominal system voltages of 14.4kV and 25kV three- and four-wire systems and 34.5kV grounded-wye systems. The Type AR switch is available with a variety of options, and in ratings for present and planned requirements.

To minimize field installation time, the Type AR switch is pre-assembled, adjusted and mounted on a crossarm. Installation time is even faster for a Type AR switch with the hook stick-operation option.

Variations and Configurations

The Type AR switch is available in five basic configurations:
 • Horizontal • Vertical • Phase-over-Phase • Delta • Inverted

All feature clockwise opening and are operable by torsional or reciprocating controls as well a hookstick operation option (full-length down-the-pole control or crossarm-mounted hook stick-operation control).

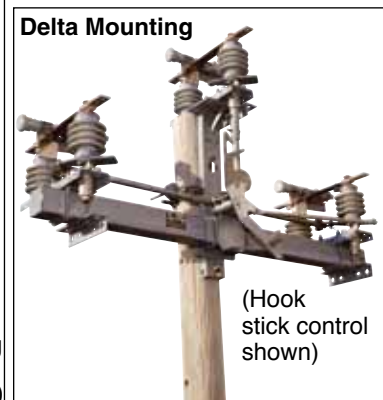
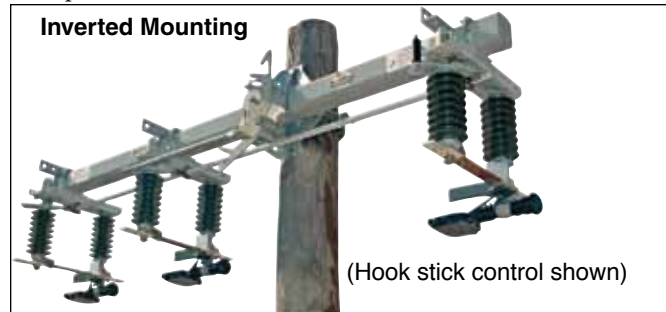
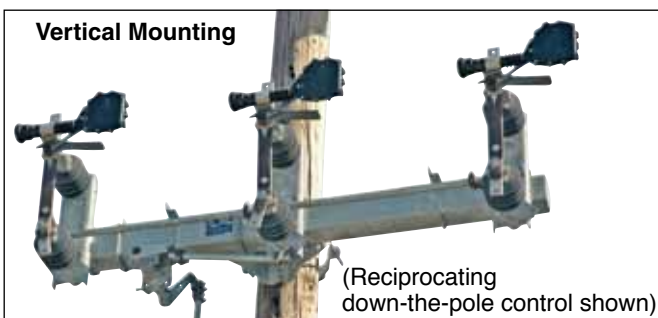
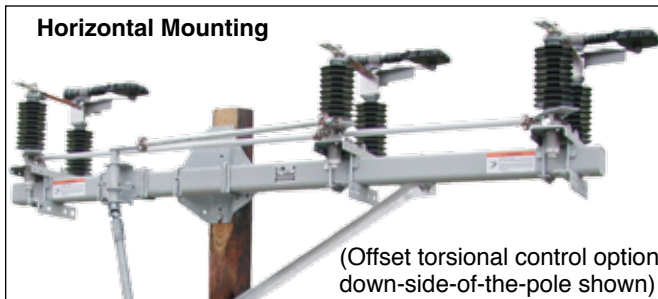
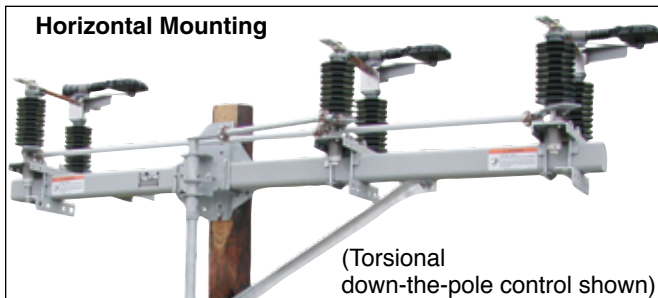
1. Full-length down-the-pole controls consist of Torsional swing-handle operation for Horizontal, Delta and Inverted switches and Reciprocating pump-handle operation for Vertical and Phase-over-Phase switches. (Standard Duty or Heavy Duty controls are available for Vertical and Phase-over-Phase switches.) Switch open or close positions locking provisions are provided.

2. Offset control option for horizontal configuration allows the control to be trained down the side of the pole where interference prohibits mounting the control on the front of the pole.

3. Crossarm-mounted hook stick-operation controls provide pull-to-open / pull-to-close switch with maximum target hook stick accessibility.

Features:

All three phase switches feature a four-link overtoggle mechanism to assure locked closed blades, mechanical advantage for easier open and close operation, and "snap" feedback to the operator.

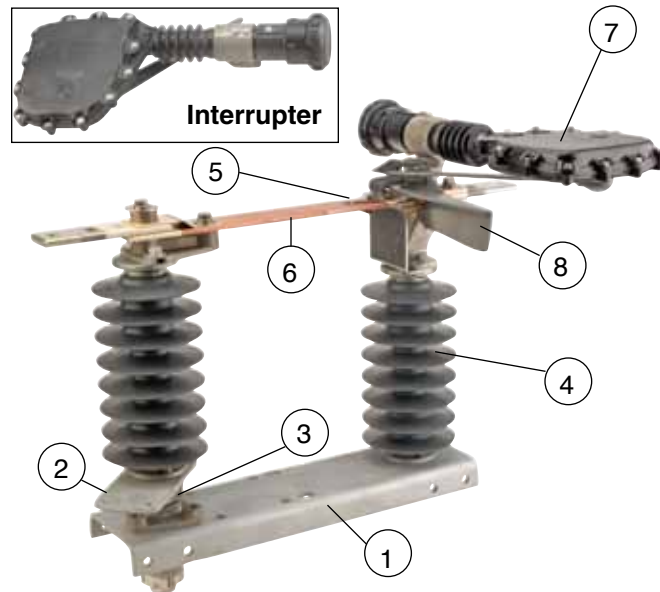


Type AR Switch Ratings	
Nominal Voltage/Lightning Impulse Withstand 14.4 kV/110 kV, 25 kV/150 kV or 34.5 kV grounded-wye/150 kV
Continuous Current 900 amperes
Interrupting Current 900 amperes
Peak Withstand Current65,000 amperes peak
Short Time Withstand Current3 sec.....25,000 amperes, symmetrical
Fault Making:	1 time 25,000 amperes, asymmetrical
	3 time20,000 amperes, asymmetrical
Dead-ending:8,000-lb. working load
Ice Breaking:3/4-in. thick, opening and closing

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Feature —	Advantage —
• Automation-ready design	• Compatible with today's D/A environment by adding a motor operator and RTU of your choice, or upgrade in the future
• 900-amp continuous and interruption current rating	• Meets present and future operation requirements
• Four-link overtoggle mechanism	• Mechanical advantage reduces operating torque to the lowest level in the industry to date
• Hook stick operation capability	• Overtoggle feature assures blades are closed and gives "snap" feedback to the operator
• Unitized, pre-assembled construction	• Minimizes installation time, reduces possible vandalism, eliminates control adjustments
• Four mounting arrangements	• Minimizes installation time and eliminates control adjustments
	• Meets various utility installation requirements



Single Phase of Type AR Switch

- (1) Hot-rolled steel base formed into a channel and galvanized per ASTM A153.
- (2) Hot-rolled crank lever provides high strength and corrosion resistance. Galvanized per ASTM A153.
- (3) Delrin® bushing coupled with a cast aluminum rotating shaft eliminates the need for lubrication during the life of the switch.
- (4) Insulators available in 2.25" bolt circle, porcelain or polymer.
- (5) High-conductivity copper with phosphorous-bronze back-up springs and copper-tungsten fault-closing tips provide reliable contact areas. Silver-to-silver current-transfer points.
- (6) Blade formed from hard-drawn, high-conductivity copper for maximum current carrying capability.
- (7) Interrupter provides current interruption without external arc or flame. High-strength polyurethane material for strength, weatherability and UV resistance. Bolted tongue-in-groove mounting ensures positive alignment.
- (8) Polycarbonate ice shield helps protect contacts from ice build up.

Available Options

Hook stick Operation The Type AR switch can be operated by a hook stick operation. This option eliminates control pipe sections down the pole and their attendant adjustment during installation and maintenance.

Extra Pipe The extra pipe section includes guide, coupling, and all hardware for attachment.

Extension Links When deadending to the AR switch, extension links must be used to give needed clearance. The end clevis has a slotted hole for inserting the machine bolt without having to remove the extension bar. The extension links supplied are 14 inches long, hot-dip galvanized, and REA accepted. Catalog No. C2070112; six required per switch.

Surge Arrester Brackets Three brackets can be supplied for mounting six surge arresters (utility supplied) for over-voltage protection.

Sensor Brackets Extension Brackets can be supplied, or added to the AR Switch, to allow for the addition of line voltage/current sensors.

Crossarm Braces Crossarm braces may be specified as an option.

ESP™ polymer Insulators The distribution insulators, 2.25-inch bolt circle, are available in a U.S.-manufactured ESP polymer design. They are light weight, durable, and they offer long-term performance in every type of environment.

Terminal Connectors Catalog No. ATC1343, fortified cadmium-plated aluminum parallel-groove clamp can be supplied with switches. Six per switch.

Cable Range:
Minimum No. 2 solid copper [0.258 inch (6.55 mm)] to maximum 500 kcmil copper [0.811 inch (20.60 mm)].

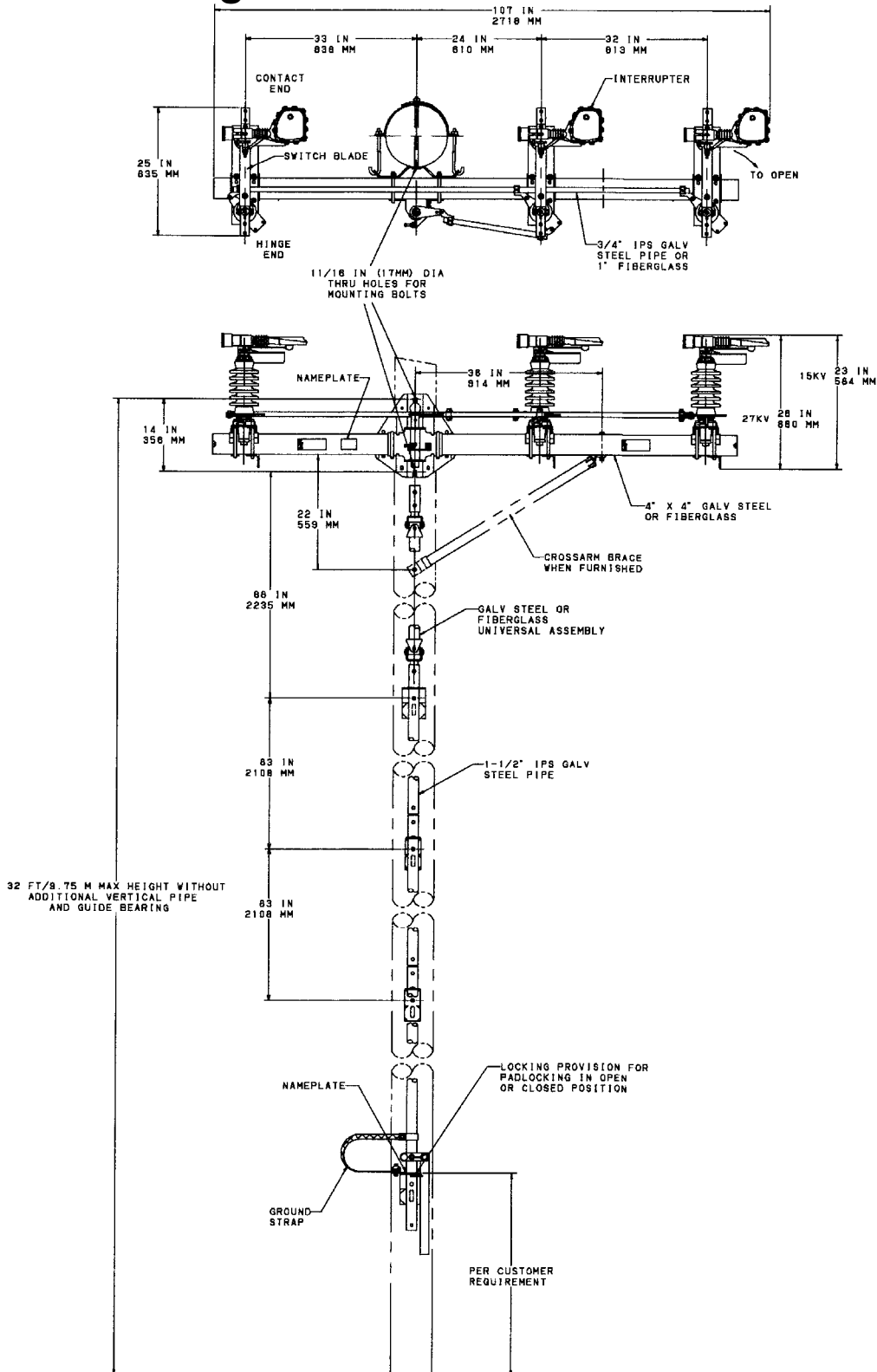
Control Insulator One 150kVLIW (Lightning Impulse Withstand - BIL) polymer insulator in vertical control pipe.

Captive Hardware Two stainless-steel spline bolts pressed into each terminal pad, nuts and lockwashers included.

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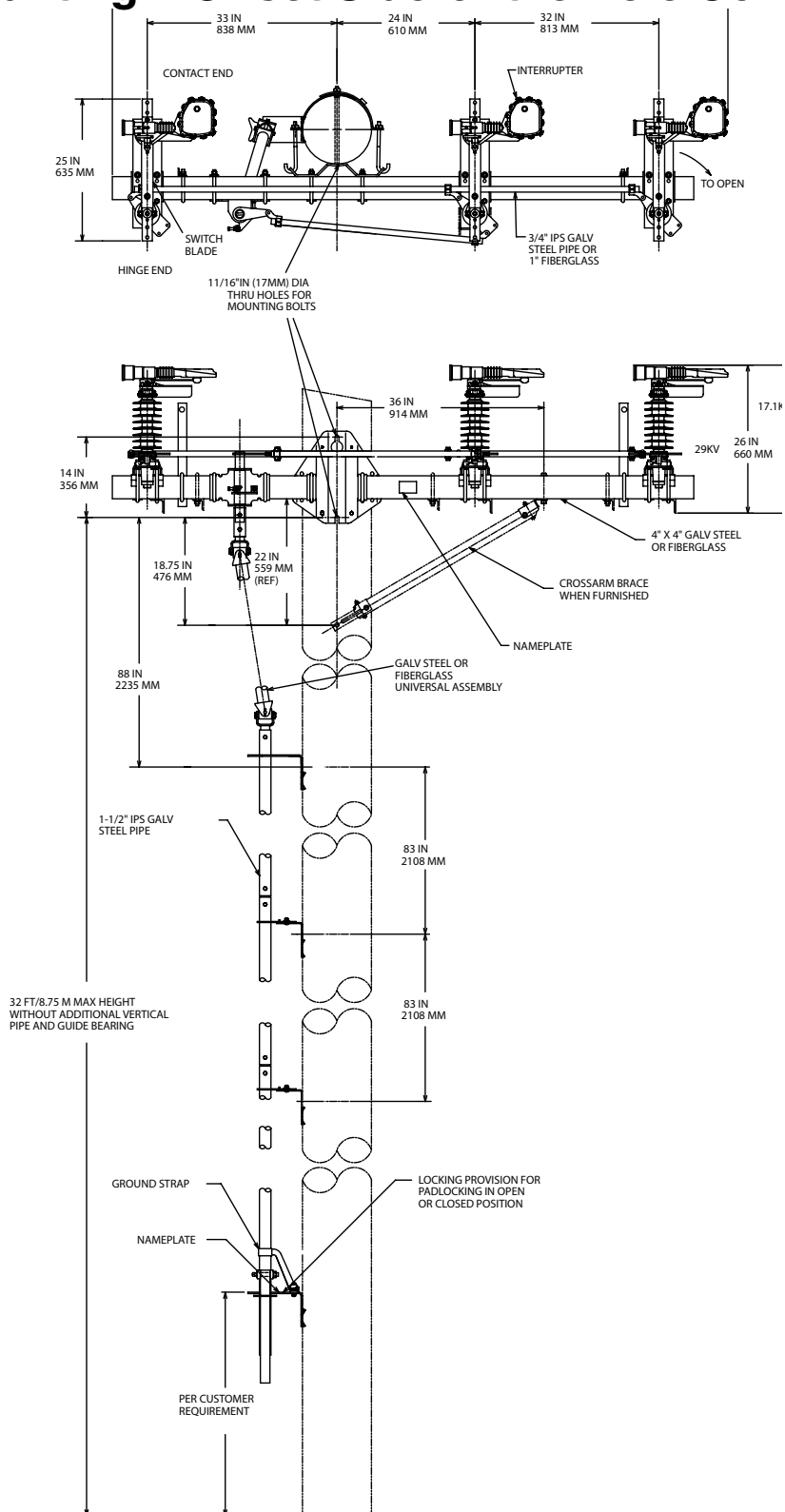
Horizontal Mounting – Down-the-Pole Control



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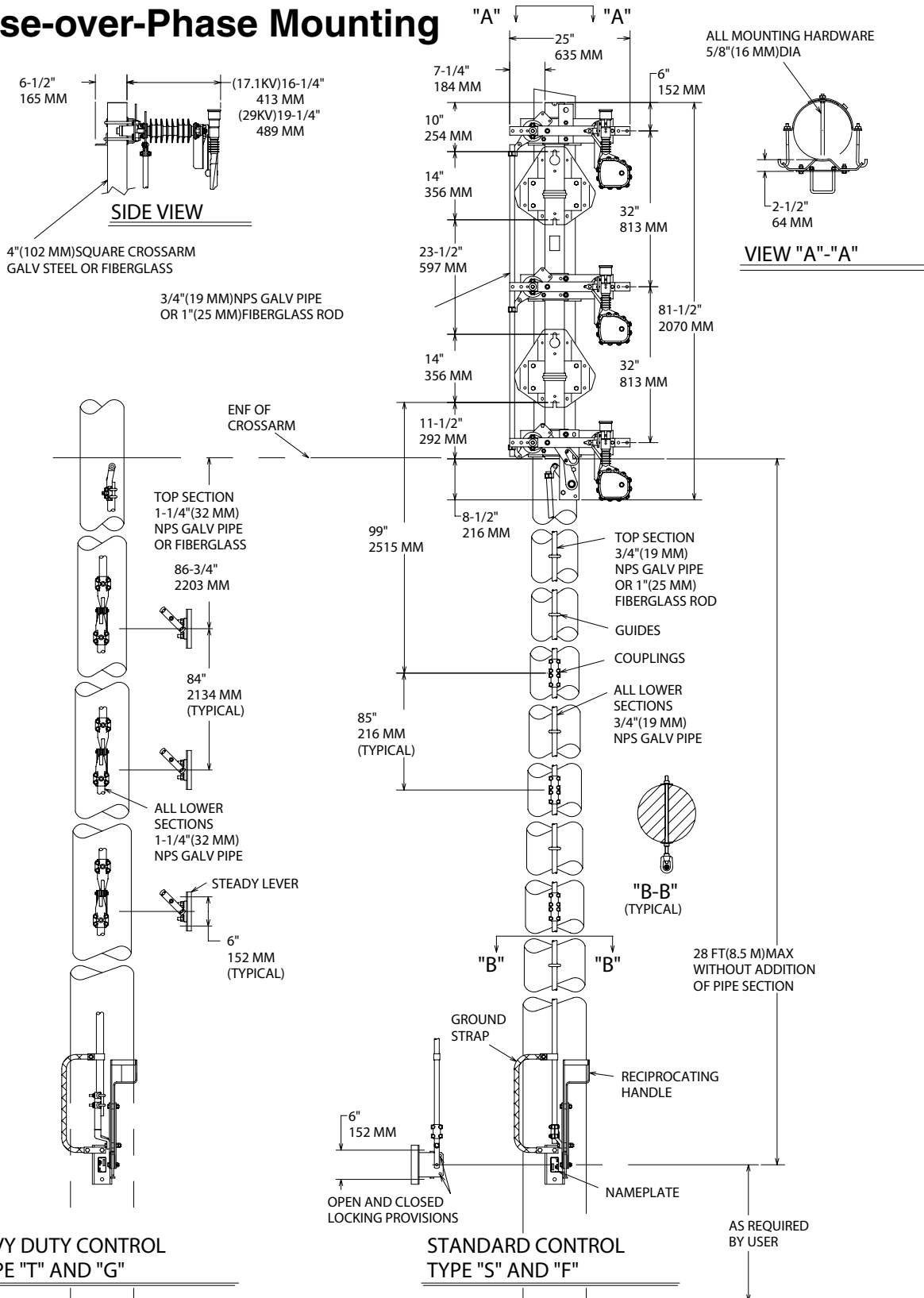
Horizontal Mounting – Offset Side-of-the-Pole Control



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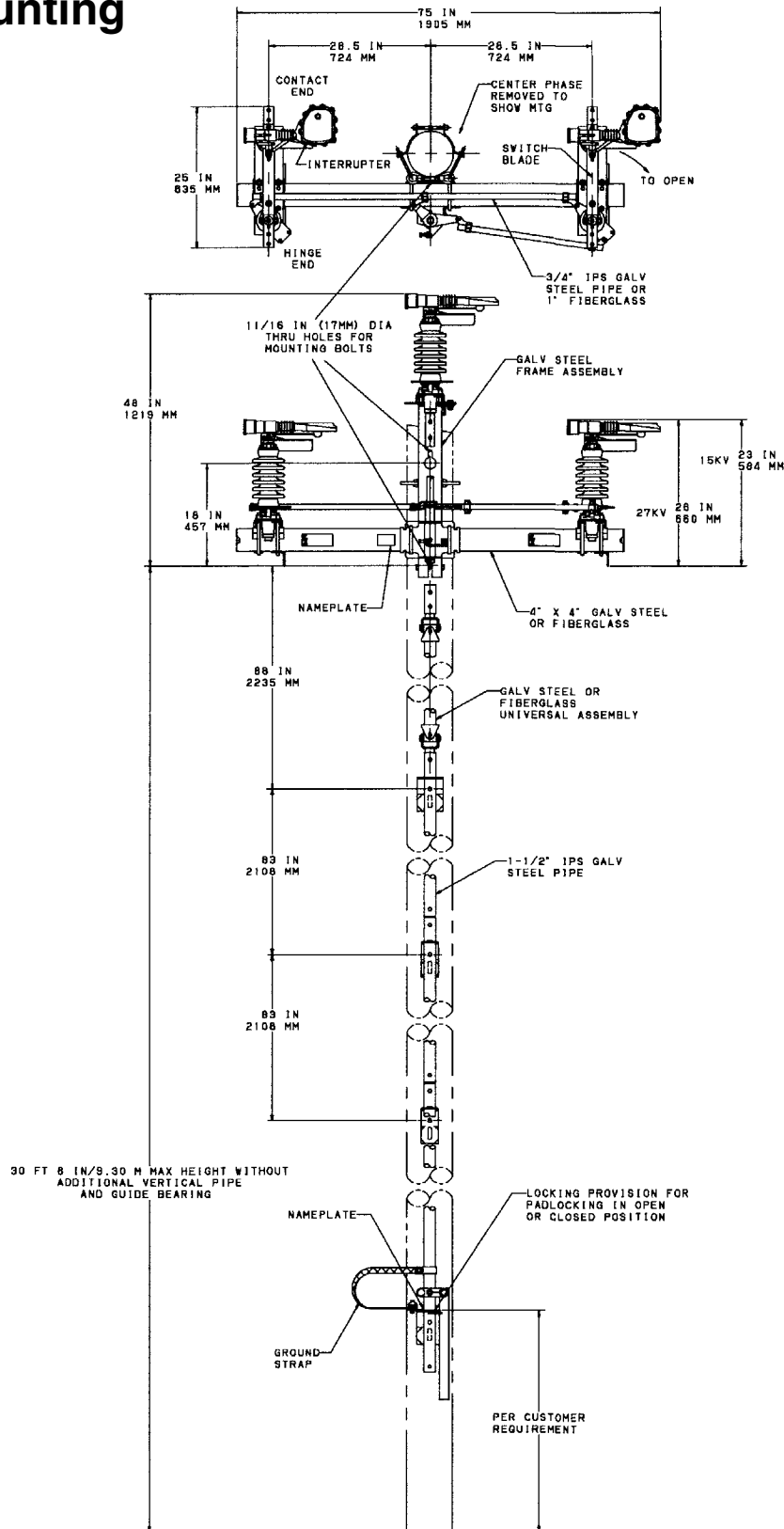
Phase-over-Phase Mounting



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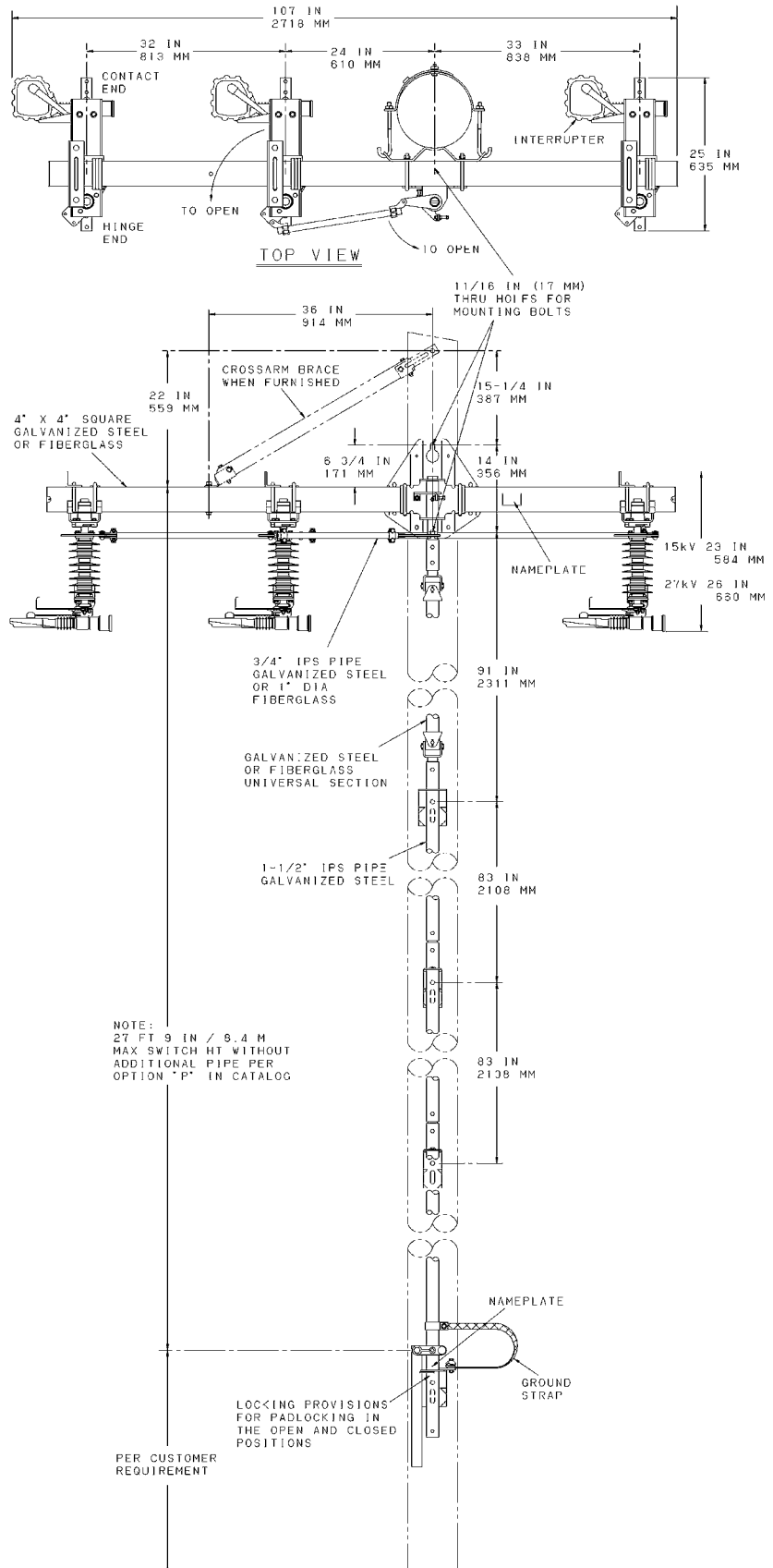
Delta Mounting



Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

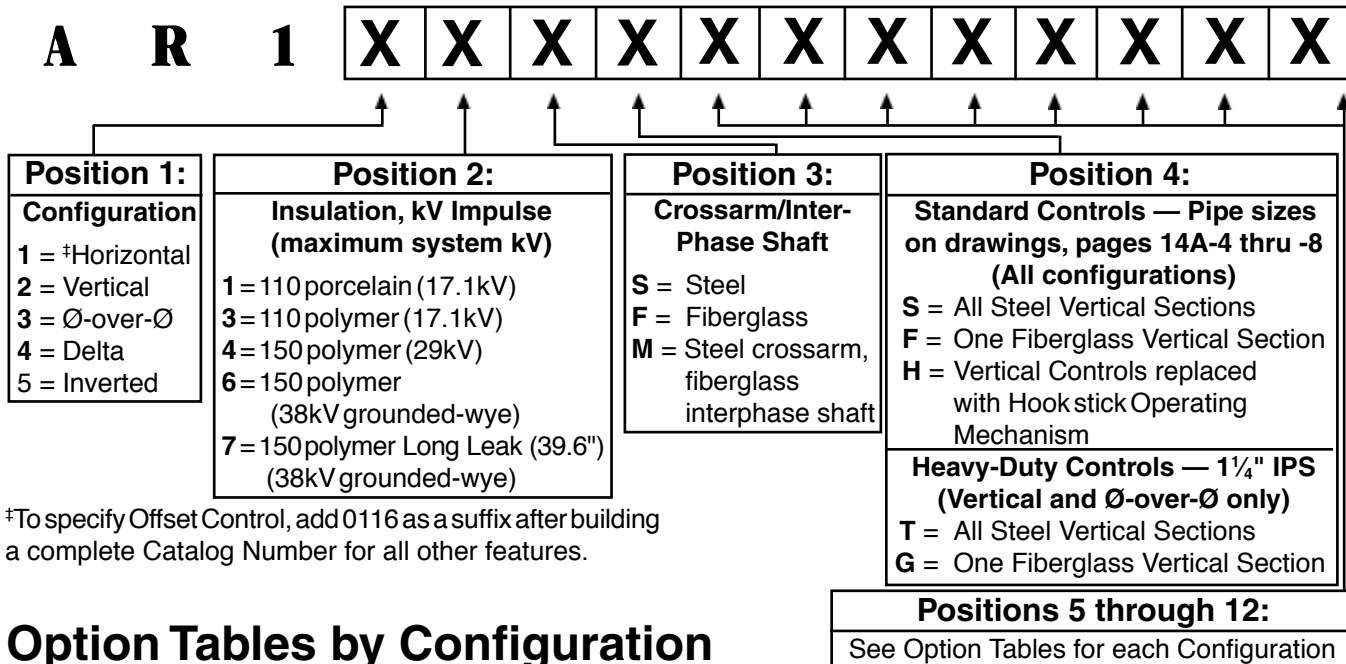
Inverted Mounting



Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

Catalog Numbering System



Option Tables by Configuration

Horizontal and Inverted Switches
B = Sensor Brackets * C = Control Insulator † H = Captive Hardware L = Surge Arrester Brackets * P = Extra Pipe * PP = Two Extra Pipes S = Steel Crossarm Brace, only one supplied † T = Terminal Connectors (ATC 1343) W = Wood Crossarm Brace, only one supplied X = Extension Links

Vertical Switch, S & F Controls
B = Sensor Brackets * C = Control Insulator H = Captive Hardware L = Surge Arrester Brackets * P = Extra Pipe * PP = Two Extra Pipes † T = Terminal Connectors (ATC 1343)

Phase-over-Phase Switch, S & F Controls
B = Sensor Brackets * C = Control Insulator † H = Captive Hardware L = Surge Arrester Brackets * P = Extra Pipe * PP = Two Extra Pipes † T = Terminal Connectors (ATC 1343) X = Extension Links

Vertical Switch, T & G Controls
B = Sensor Brackets * D = Control Insulator H = Captive Hardware L = Surge Arrester Brackets * R = Extra Pipe * RR = Two Extra Pipes † T = Terminal Connectors (ATC 1343)

Phase-over-Phase Switch, S & F Controls
B = Sensor Brackets * C = Control Insulator † H = Captive Hardware L = Surge Arrester Brackets * R = Extra Pipe * RR = Two Extra Pipes † T = Terminal Connectors (ATC 1343) X = Extension Links

Delta Switch
B = Sensor Brackets * C = Control Insulator † H = Captive Hardware L = Surge Arrester Brackets * P = Extra Pipe * PP = Two Extra Pipes † T = Terminal Connectors (ATC 1343) X = Extension Links

*Options C, P, R, PP and RR do not apply when Hook Stick Operated Control is supplied.
 †Options H and T, Captive Hardware and Terminal Connectors, cannot be ordered together.

Replacement Parts

- C8180001** Interrupter for all Mounting Configurations
- E8181000P** Live Parts for all kV Ratings and Mounting Configurations