

AR Switch Features

- Five different configurations (horizontal shown on page 1)
- 900A continuous current and interrupt rating
- Porcelain and polymer insulators
- Low operating torque, less than 50 ft-lbs
- Mechanical over toggle provides “snap” feedback to indicate switch is open/closed
- Switch adjustment not affected by pole twist
- Ice breaking (3/4”) standard
- Single point lift option
- High conductivity copper blades with tungsten fault closing tips and silver to silver contact points
- Easy automation upgrade with FlexMO motor operator

Five Configurations

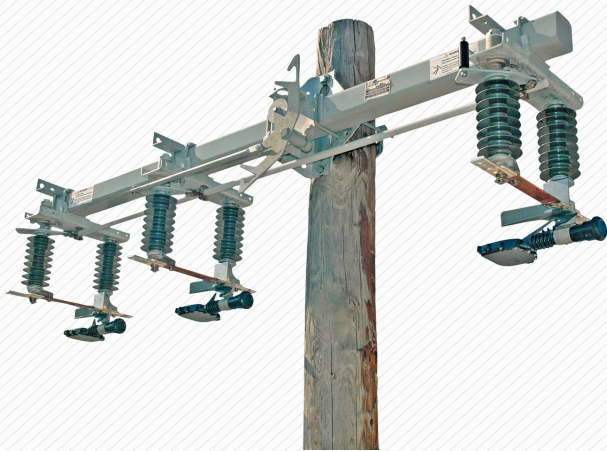
- Horizontal
- Vertical (Riser)
- Phase Over Phase
- Delta
- Horizontal Inverted



Phase-Over-Phase Configuration



Vertical (Riser) Configuration



Inverted Horizontal Configuration



Delta Configuration

Application Flexibility

Overhead distribution systems are constantly changing. Among the realities: Ever greater load densities (more load per mile of line), more interconnections, more laterals and branches. And, in the new competitive environment, a continuing demand for higher degrees of system reliability. Along with this, the continuing expansion of Distribution Automation.

Utility engineers must be confident that the products being installed now will meet the needs of their future distribution systems.

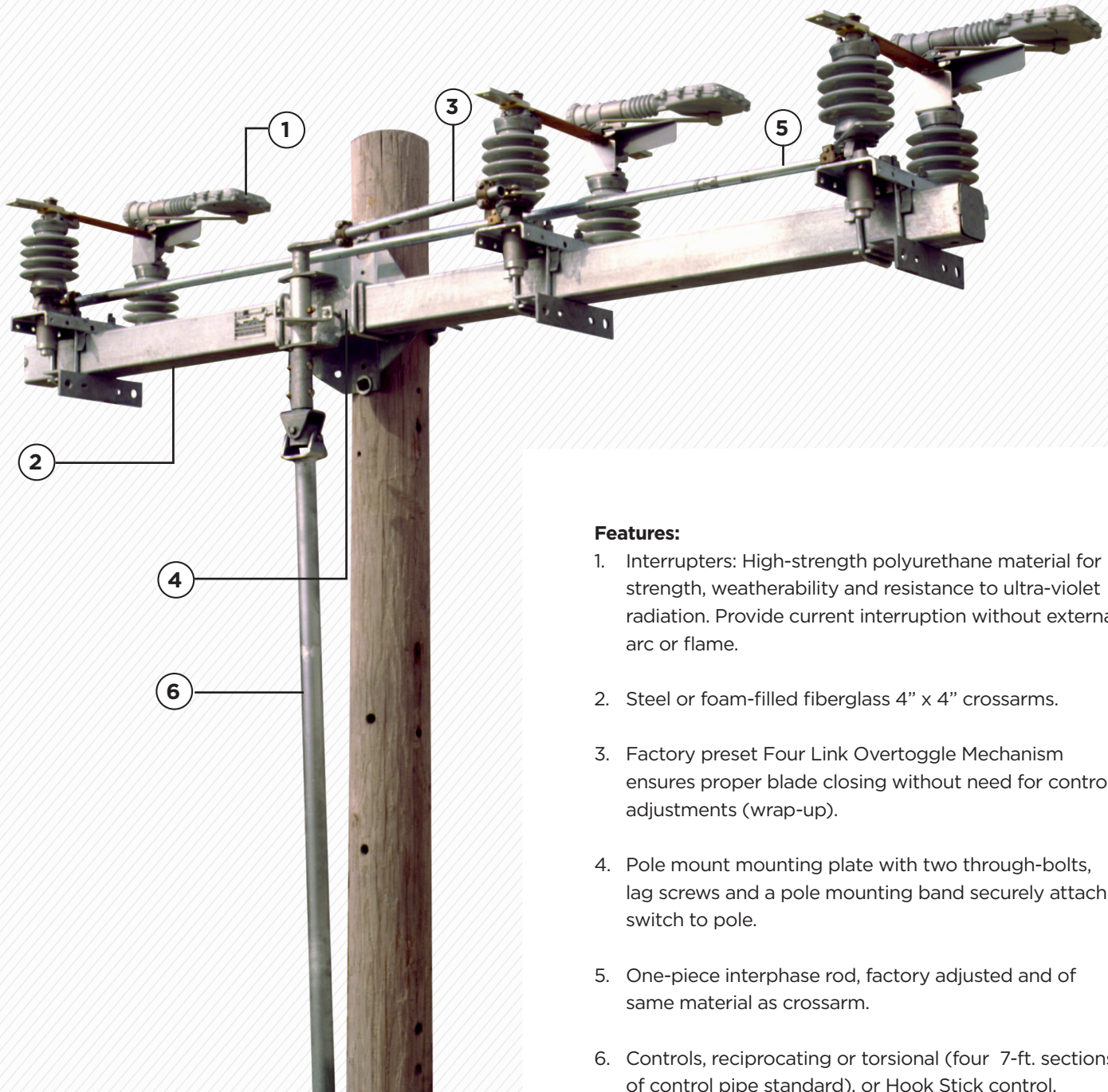
The Hubbell AR Switch was designed with these factors in mind. It's a switch to meet today's needs, and those of the known, anticipated future of your distribution system, including the growth of Distribution Automation.

First the basics: The AR Switch is available for 14.4kV, 25kV and 34.5kV (Grounded Wye) systems. And in five mounting configurations: Horizontal, Vertical (Riser), Phase Over Phase, Delta, and Horizontal Inverted. All AR Switches are fully rated for 900 ampere continuous current and 900 ampere interrupting current.

AR Switches have a one-time and three-time duty cycle fault-closing capability of 25,000 amperes RMS asymmetrical and 20,000 amperes RMS asymmetrical, respectively. For switches installed in icy weather conditions, AR Switch mechanical and electrical operation is ensured, even with ice buildup of up to 3/4" without any additional ice shielding devices, the highest level in the industry.

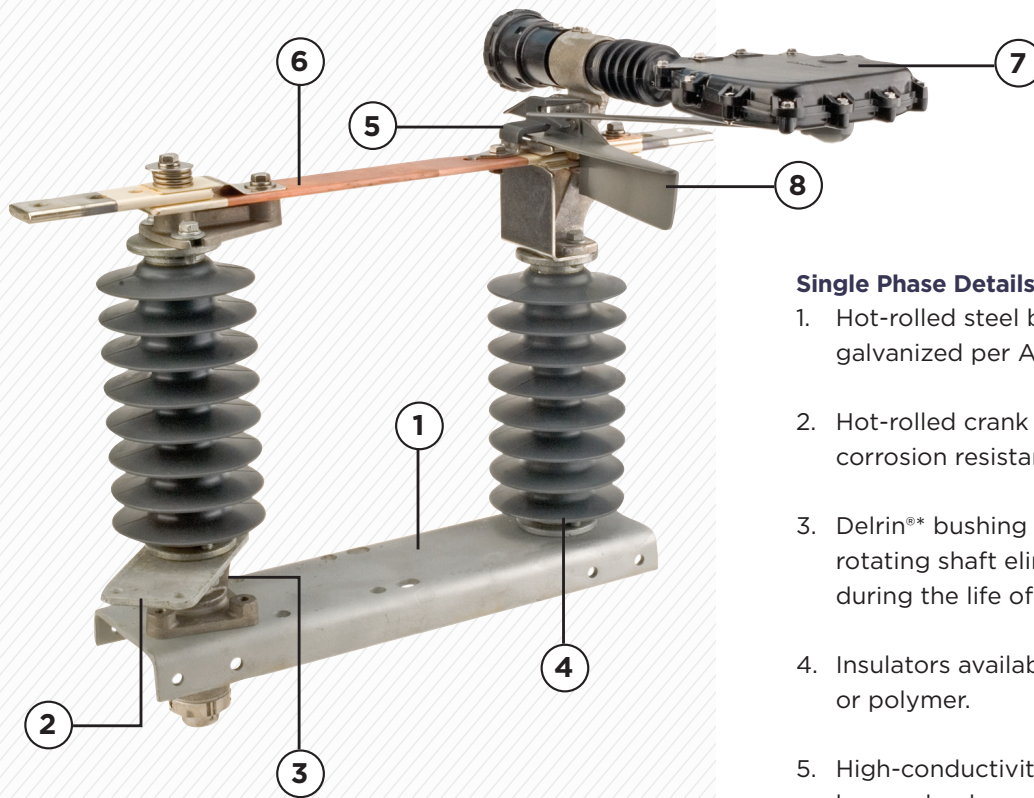
The AR Switch can be purchased as a standard switch and upgraded for Distribution Automation in the future, or ordered as a complete automated switch today. Bracket extensions are available for mounting line sensors (sensors can be provided as specified by the user) as is the HPS FlexMO Motor Operator, with or without an RTU and communication package.

The HPS FlexMO Motor Operator is available for switches with rotating controls.



Features:

1. Interrupters: High-strength polyurethane material for strength, weatherability and resistance to ultra-violet radiation. Provide current interruption without external arc or flame.
2. Steel or foam-filled fiberglass 4" x 4" crossarms.
3. Factory preset Four Link Overtoggle Mechanism ensures proper blade closing without need for control adjustments (wrap-up).
4. Pole mount mounting plate with two through-bolts, lag screws and a pole mounting band securely attach switch to pole.
5. One-piece interphase rod, factory adjusted and of same material as crossarm.
6. Controls, reciprocating or torsional (four 7-ft. sections of control pipe standard), or Hook Stick control.



Single Phase Details of 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. Bolted tongue-in-groove interrupter mounting ensures positive alignment of the interrupter.
8. Polycarbonate ice shield helps protect contacts from ice build up.



Interrupter

The AR Switch interrupter provides circuit interruption without external arc or flame. It is designed with a unique trailer, liner and muffler, to create the necessary de-ionizing gases for efficient circuit interruption.

AR Switch interrupter housings are manufactured from a high strength polyurethane material for strength, weatherability and resistance to ultraviolet radiation. The housing is a two part housing which is fully gasketed to prevent water entry. The interrupter incorporates a self resetting mechanism, to ensure that the interrupter is in the circuit and ready to operate for each switch opening.

Extensive testing has been conducted to ensure proper operation under a variety of switching applications

Switch operation performance

The AR Switch blades are formed from hard-drawn, high-conductivity copper for maximum current carrying capability. The leading edge of the Blade incorporates a copper-tungsten inlay, for fault closing performance. The stationary contacts are high-conductivity copper with phosphorous-bronze back-up springs to maintain optimum contact pressure and operating ease.

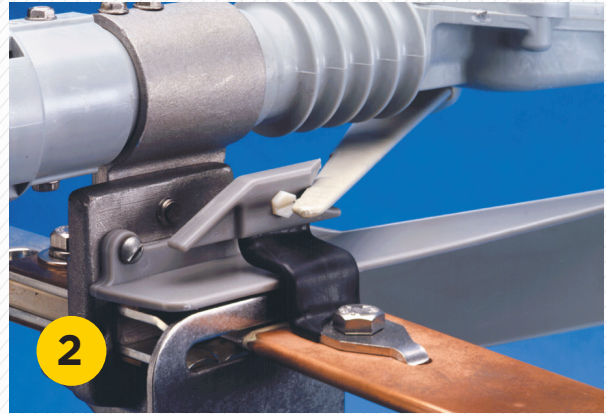
The stationary contact also includes a copper-tungsten fault close tip. All current transfer points are silver to silver.

The hinged contact includes a stainless steel compression spring for optimum contact pressure, operating ease and terminal pad stability. All current transfer points are silver to silver.

Opening Sequence: Switch Blade and Interrupter



1 Switch blade in closed position



2 As switch blade is opened, current is transferred to the Interrupter before the main contacts fully separate



3 Current is fully transferred to the Interrupter and arc interruption is accomplished by thermal interaction of the arc on the specifically designed arc trailer and liner within the interrupter



4 Switch is fully opened and the Interrupter self-resets

Optional Features:

- Hook stick Operation**
 The AR switch can be operated by hook stick. 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 extension links supplied are 14 inches long, hot-dip galvanized, and RUS accepted.
 - Surge Arrester Brackets**
 Three brackets can be supplied for mounting six surge arresters 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.
 - Polymer Insulators**
 The ESP insulators have 2.25" bolt circles. 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 150 kV BIL polymer insulator in vertical control pipe.
 - Captive Hardware**
 Two stainless steel spline bolts pressed into each terminal pad, nuts and lockwashers included.

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 Current.	65,000 amperes peak
Short Time Withstand Current.	3 sec. 25,000 amperes, symmetrical
Fault Making	1 time 25,000 amperes, asymmetrical 3 time 20,000 amperes, asymmetrical
Dead-ending Ice Breaking	8,000-lb. working load
Ice Breaking	3/4-in. thick, opening and closing



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