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 as 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.

Horizontal Mounting

(Torsional down-the-pole control shown)

Inverted Mounting

(Hook stick control shown)

Vertical Mounting

(Relationship control down-side-of-the-pole shown)

Phase-over-Phase Mounting

Delta Mounting

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.

Type AR Switch Ratings

Nominal Voltage/Lightning Impulse Withstand .... 14.4kV/110kV, 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 amps, sym
Fault Making: 1 time .............25,000 amperes, asymmetrical
3 time..............20,000 amperes, asymmetrical
Dead-ending: .............................................8,000-lb. working load
Ice Breaking: .............................................7/16-in. thick, opening and closing
**Type AR (Automation-Ready) Switch**

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

**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.

**Single Phase of Type AR Switch**

1. Hot-rolled steel base formed into a channel and 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.
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.

**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 150 kV LIW (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.

**Vacuum Interrupters.** Specifying Vacuum Interrupters increases loadbreak capability to 1,000 or more operations, depending on the current.
Horizontal Mounting – Down-the-Pole Control
Type AR (Automation-Ready) Switch
14.4kV, 25kV or 34.5kV  900 Amperes Continuous/Interrupt

Horizontal Mounting – Offset Side-of-the-Pole Control
Type AR (Automation-Ready) Switch
14.4kV, 25kV or 34.5kV  900 Amperes Continuous/Interrupt

Vertical Mounting
**Type AR (Automation-Ready) Switch**

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

**Phase-over-Phase Mounting**

- **SIDE VIEW**
  - 6-1/2” 165 MM
  - 4”/102 MM SQUARE CROSSARM
  - GALV STEEL OR FIBERGLASS
  - 3/4”/19 MM NPS GALV PIPE
  - OR 1”/25 MM FIBERGLASS ROD

- **VIEW “A”-“A”**
  - ALL MOUNTING HARDWARE
  - 5/8”/16 MM DIA
  - 2-1/2” 64 MM
  - 81-1/2” 2070 MM

- **Standard Control Type “S” and “F”**
  - TOP SECTION
  - 1-1/4”/32 MM NPS GALV PIPE
  - OR FIBERGLASS STEADY LEVER

- **Heavy Duty Control Type “T” and “G”**
  - TOP SECTION
  - 1-1/4”/32 MM NPS GALV PIPE

- **的规定**
  - 85” 216 MM (TYPICAL)
  - 99” 2515 MM

- **规定**
  - 86-3/4” 2203 MM

- **规定**
  - 84” 2134 MM (TYPICAL)

- **规定**
  - ALL LOWER SECTIONS
  - 1-1/4”/32 MM NPS GALV PIPE

- **规定**
  - STABLE LEVER
  - 6” 152 MM (TYPICAL)

- **规定**
  - GROUND STRAP

- **规定**
  - OPEN AND CLOSED LOCKING PROVISIONS

- **规定**
  - NAMEPLATE

- **规定**
  - 28 FT/(8.5 M MAX)

- **规定**
  - WITHOUT ADDITION
  - OF PIPE SECTION

- **规定**
  - AS REQUIRED
  - BY USER
Type AR (Automation-Ready) Switch

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

Delta Mounting

[Diagram of Delta Mounting with annotations and dimensions]
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
For details on Motor Operated AR Switches, refer to catalog section 14C.

Catalog Numbering System

<table>
<thead>
<tr>
<th>A</th>
<th>R</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
</table>

**Position 1:**
1 = Standard Interrupter
2 = Vacuum Interrupter (not available for hookstick operated switch)

**Position 2:**
1 = 'Horizontal
2 = Vertical
3 = Ø-over-Ø
4 = Delta
5 = Inverted

**Position 3:**
Insulation, kV Impulse (maximum system kV)
1 = 110 porcelain (17.1kV)
3 = 110 polymer (17.1kV)
4 = 150 polymer (29kV)
6 = 150 polymer (38kV grounded-wye)
7 = 150 polymer Long Leak (39.6") (38kV grounded-wye)

**Position 4:**
Crossarm/Interphase Shaft
S = Steel
F = Fiberglass
M = Steel crossarm, fiberglass interphase shaft

**Position 5:**
Standard Controls — Pipe sizes on drawings, pages 14A-4 thru -8 (All configurations)
S = All Steel Vertical Sections
F = One Fiberglass Vertical Section
H = Vertical Controls replaced with Hook stick Operating Mechanism

Heavy-Duty Controls — 1¾" IPS (Vertical and Ø-over-Ø only)
T = All Steel Vertical Sections
G = One Fiberglass Vertical Section

**Positions 6 through 13:**
See Option Tables for each Configuration

**Options by Configuration**

**Horizontal and Inverted Switches**

<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
</table>
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

**Phase-over-Phase Switch, S & F Controls**

<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
</table>
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

**Phase-over-Phase Switch, S & F Controls**

<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
</table>
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

**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   | Standard Interrupter (all Configurations) |
| E8181000P | Live Parts (all Ratings & Configurations) |
| PSC8180099 | Vacuum Interrupter Kit                    |
Application and Ratings

The Chance unitized D7 is a distribution-level, gang-operated, side-break switch for 15 through 38 kV applications. It is pre-assembled, adjusted, and mounted on a common support at the factory for three-phase service. D7 switches meet a continuous-current rating of 600 amperes, a momentary rating of 40,000 amperes, a three-second short time current rating of 25,000 amperes, and applicable NEMA and ANSI standards. It is available in 15 kV (110 kV LIW*), 27 kV (150 kV LIW*), 34.5 kV (150kV LIW*) or 38 kV (200 kV LIW*). The D7 is a 600-ampere loadbreak switch with the Duogap® expulsion interrupters. With the Duogap, the D7 is capable of switching load currents up to 600 amperes, with full recovery voltage across the switch, and interrupting transformer magnetizing and line-charging currents. This switch may be used for disconnecting, line sectionalizing, circuit breaker bypassing, and isolating.

*Lightning Impulse Withstand (BIL)

Convenient Installation

Field installation time of this pre-assembled switch is greatly reduced below what is usually required to install separate gang-operated distribution level switches. The three-phase unit is conveniently raised in one piece to its mounting position, secured to the pole, control sections attached, and field adjustment made. Proper synchronization and phase spacing have been made at the factory. Unitized switches are installed in 2 to 4 hours, compared to non-unitized switches that take 6 to 8 hours.

One-lift installation cuts time and cost of separate gang-operated, distribution-level switches.
Design Features
The jaw socket and hinge terminal castings of the D7 are bronze with tin-plated NEMA terminal pads. The blade is a round tubular copper with flattened ends to allow for a silver/copper contact. A four-point silver plated contact is supplied on the jaw end to make the switch easier to open and close. An all-copper current path is provided.

Interrupters
Chance Duogap® expulsion interrupter converts any D7 to a loadbreak switch. Built-in sockets on each switch accept the interrupter. The Duogap may be ordered with the switch or may be hotstick-installed for load management conversion. For more on the Duogap, see Bulletin No. 14-9405.

Terminal Pads, Arcing Horns
Two-hole NEMA terminal pads are standard. The D7 terminal pads are bronze with tin-plating to provide low-resistance efficient current transfer.

A stainless steel arcing horn is provided to pick up load current, thus preventing burning or arc pitting on the main contacts.

Insulators
The Vee configuration of the insulators simulates a low profile with less bulk and a pleasing visual appearance. The gray-tone insulator for the unitized D7 switch is NEMA 3-inch BC.

15 thru 34.5 kV Switch Base and Bearings
The base castings consist of high strength, high corrosion resistant aluminum alloy. This lightweight aluminum is comparable to bronze in almost all metal technical categories, such as: ultimate tensile, tensile yield, elongation, hardness, modulus of elasticity, thermal conductivity, and electrical conductivity. Bearings are high-strength, high-density Delrin, for smooth pivotal action.

Conductors are dead-ended to each individual switch base. Pull-off holes are designed for a 6,000-lb. working load rating. The switch frame is limited to an unequal loading of 700 lb.

Common Support
The 4 x 4-inch common support member is furnished in either galvanized-steel or fiberglass tubing. The "interphase" shaft which connects the three rotating insulators is constructed of the same material as the crossarm.

Controls
Controls are either all metal or metal with a vertical fiberglass section. Three options combine the metal or insulated interphase shaft with the metal or fiberglass common support.
Unitized and Pre-Assembled
Type D7 Switches — Unitized
15 to 38 kV  600 Amperes

Riser Pole Mounting

<table>
<thead>
<tr>
<th>kV</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>36</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>27</td>
<td>48</td>
<td>17</td>
<td>42</td>
</tr>
<tr>
<td>34.5</td>
<td>48</td>
<td>17</td>
<td>42</td>
</tr>
</tbody>
</table>

*150 kV LIW (Lightning Impulse Withstand)
Unitized and Pre-Assembled
Type D7 Switches — Unitized
15 to 38 kV  600 Amperes

Horizontal Mounting

<table>
<thead>
<tr>
<th>Dimensions (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>kV</strong></td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>*34.5</td>
</tr>
</tbody>
</table>

*150 kV LIW (Lightning Impulse Withstand)

Horizontal Mounting
38 kV — 200 BIL
Unitized and Pre-Assembled
Type D7 Switches — Unitized
15 to 38 kV       600 Amperes

Phase-over-Phase Mounting

Dimensions (inches)

<table>
<thead>
<tr>
<th>kV</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>84</td>
<td>36</td>
</tr>
<tr>
<td>27</td>
<td>108</td>
<td>48</td>
</tr>
<tr>
<td>*34.5</td>
<td>108</td>
<td>48</td>
</tr>
</tbody>
</table>

*150 kV LIW (Lightning Impulse Withstand)
Unitized and Pre-Assembled
Type D7 Switches — Unitized
15 to 38 kV  600 Amperes

15kV (110kV LIW*) Switch Phase Outline

27kV (150kV LIW*) Switch Phase Outline

34.5 kV (150kV LIW*) Switch Phase Outline

*Lightning Impulse Withstand
### Type D7 Switches — Unitized

**38 kV  600 Amperes**

38 kV (200 LIW*) Switch Phase Outline

---

**Ordering Information — Type D7 Unitized Switches**

**Catalog Numbering System**

**Type D7 Switches** — Unitized and Pre-Assembled

**38 kV**

- **600 Amperes**

---

**Mounting**

- **Horizontal Upright**
  - CCW Opening ———— H
  - CW Opening ———— X
  - CCW Opening
  - Extra pole clearance - R
  - CW Opening
  - Extra pole clearance - T
  - CCW Opening ———— V
  - CCW Opening ———— P

- **Vertical**
  - Phase-over-Phase

**Support**

- Galvanized Steel ———— S
- Fiberglass ———— E

**Ratings**

- 15 kV/110 kV LIW* NEMA Porcelain Insulator ———— 1
- 15 kV/110 kV LIW* NEMA Polymer Insulator ———— 4
- 27 kV/150 kV LIW* NEMA Porcelain Insulator ———— 2
- 38 kV/200 kV LIW* NEMA Porcelain Insulator ———— 3
- 38 kV/200 kV LIW* NEMA Polymer Insulator ———— 6
- 34.5 kV/150 kV LIW* NEMA Porcelain Insulator ———— 7

**Controls**

- All steel controls (Used with steel support only) ———— A
- Fiberglass universal section and steel interphase shaft (Used with steel support only) ———— B
- Fiberglass universal section and interphase rod (used with fiberglass support only) ———— C

**Options**

- **A** - Additional 10 ft. operating pipe, coupling, and guide bracket. Horizontal mounting only. Cat. No. E8012729P.
- **B** - Additional 10 ft. operating pipe, coupling, and pipe guide. Phase-Over-Phase and Vertical only. Cat. No. E8012729P.
- **D** - Lightning arrester brackets. Horizontal and Vertical only. Specify Cat. No. C8011014 for complete mounting assembly for six distribution class lightning arresters.
- **E** - Lighting arrester brackets. Phase-Over-Phase only. Specify Cat. No. C8011381 for complete mounting assembly for six distribution class arresters; C8011380 for three arrester application.
- **Q** - One 150 kV LIW* insulator in vertical controls. Specify porcelain or polymer.
- **T** - Six fortified cadmium-plated aluminum parallel-groove terminal connectors. Cat. No. ATC1343 for one connector, No. 2 through 500 kcmil.
- **U** - Crossarm braces. Wood braces for fiberglass crossarm (pair), steel brace for steel crossarms.

**Interrupter**

- **L** - With Duogap® Interrupter
- **N** - No interrupter

**NOTE:**

1. 200 kV LIW* not available with vertical mounting or fiberglass crossarm. (2) Consult factory for motor operators.

*L*ightning *I*mulse *W*ithstand
Type D6 Switches — Non-Unitized
15 to 38 kV     600 Amperes

Application and Ratings
The Chance Type D6 is a distribution-level, gang-operated, side-break switch for 15 through 38kV applications. D6 switches meet a continuous-current rating of 600 amperes, a momentary rating of 40,000 amperes, a three-second short-time current rating of 25,000 amperes, and all applicable NEMA and ANSI standards. It is available in 15 kV (110 kV LIW*), 27 kV (150 kV LIW*) and 38 kV (200 kV LIW*). The unit is a 600-ampere loadbreak switch with Duogap® expulsion interrupters. Each switch comes prefitted with a socket to accept the Duogap. Orders also may specify switches come without the interrupters. With the Duogap, D6 is capable of switching load currents up to 600 amperes, with full recovery voltage across the switch, and interrupting transformer magnetizing and line-charging currents. The D6 switch may be used for disconnecting, line sectionalizing, circuit breaker bypassing, and isolating.

Design Features
D6 jaw socket and hinge terminal pads are bronze castings with stainless steel supports. The blade is round tubular copper with flattened ends to allow for a silver/copper contact. Silver contacts are used to ensure smooth, easy operation.

Bases and Bearings
The switch base for 38 kV (200 kV LIW*) is galvanized-steel hat-section. A sealed, greaseless main bearing supports the rotating insulator. The stainless-steel balls are encased in a high-strength, heat-treated aluminum housing for maintenance-free operation. The switch base for 15 kV (110 kV LIW*) and 27 kV (150 kV LIW*) is extruded aluminum channel and the bearings are high-density Delrin.

Insulators
The Sky-Glaze® insulator is gray porcelain NEMA 3-inch BC.

Blade Opening
All side-break D6 switches open in the counter-clockwise direction.

Blade Opening
All side-break D6 switches open in the counter-clockwise direction.

Blade Opening
All side-break D6 switches open in the counter-clockwise direction.

Terminal Pads, Arcing Horn
NEMA-standard, two-hole terminal pads accept aluminum or bronze connectors. Tin-plated bronze D6 pads reduce resistance to assure efficient current transfer. A stainless steel arcing horn picks up load current, preventing burning or arc pitting on the main contacts.

Interrupters
Chance Duogap® expulsion interrupter makes the D6 a loadbreak switch. Built-in sockets on each switch accept the interrupter. The Duogap may be ordered with the switch or may be hotstick-installed for load management conversion. For more on the Duogap, see Bulletin No.14-9405.

Alternate Mounting Arrangements
The standard D6 switch design allows for a multitude of mounting and control configurations. The switch can be mounted horizontally or vertically. Controls can be installed on any side of the pole or off the switch ends for structure mount. Some common configurations are shown below. Consult factory for other requirements.

*Lightning Impulse Withstand
### Type D6 Switches — Non-Unitized
15 to 38 kV  
600 Amperes

#### Catalog Numbering System

<table>
<thead>
<tr>
<th>Mounting</th>
<th>D6 X X X X X X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase-over-Phase</td>
<td></td>
</tr>
<tr>
<td>CCW Opening</td>
<td>P</td>
</tr>
<tr>
<td>Horizontal Upright</td>
<td></td>
</tr>
<tr>
<td>CCW Opening</td>
<td>H</td>
</tr>
<tr>
<td>Vertical (Riser Pole)</td>
<td></td>
</tr>
<tr>
<td>CCW Opening</td>
<td>V</td>
</tr>
<tr>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>* Galvanized Steel</td>
<td>5</td>
</tr>
<tr>
<td>(Horizontal mount only)</td>
<td></td>
</tr>
<tr>
<td>* Supports are bundled with the control pipe separate from the switch crate.</td>
<td></td>
</tr>
</tbody>
</table>

#### Dimensions (inches)

<table>
<thead>
<tr>
<th>kV</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>36</td>
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<td>36</td>
</tr>
<tr>
<td>27</td>
<td>48</td>
<td>17</td>
<td>42</td>
</tr>
</tbody>
</table>

#### Ratings

- 15 kV/110 kV LIW* NEMA Insulator - 1
- 27 kV/150 kV LIW* NEMA Insulator - 2
- 38 kV/200 kV LIW* NEMA Insulator - 3

#### Controls

- All steel controls - A
- Fiberglass universal section and steel interphase shaft - B

#### Options

- A - Additional 10 ft. operating pipe, coupling, guide bracket. Horizontal mounting only. Cat. No. E8012729P.
- B - Additional 10 ft. operating pipe, coupling, pipe guide. Phase-Over-Phase and Vertical only. Cat. No. E8012729P.
- D - Lightning arrester brackets. Horizontal and Vertical only. Specify Cat. No. C8011014 for complete mounting assembly for six distribution class arresters.
- E - Lightning arrester brackets. Phase-Over-Phase only. Specify Cat. No. C8011381 for complete mounting assembly for six distribution-class arresters; C8011380 for 3 arrester application.
- Q - One 150 kV LIW* insulator in vertical controls. Specify porcelain or polymer.
- T - Six fortified cadmium-plated aluminum parallel-groove terminal connectors. Cat. No. ATC1343 for one connector, No. 2 through 500 kcmil.

#### Interrupter

- L - With Duogap® Interrupter
- N - No interrupter

#### NOTE:

1. 200 kV KIW* is not available with vertical mounting or fiberglass support.
2. Consult factory for structure mounting applications.
3. Consult factory for motor operators.
4. If non-standard phase spacing is required, please provide length of interphase control desired.

*Lightning Impulse Withstand