HIGH VOLTAGE SWITCHGEAR & AUTOMATION EQUIPMENT

SECTION 2
Overhead Distribution Switches

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OVERHEAD DISTRIBUTION SWITCHES

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The LineBOSS™ Sidebreak switch is the most robust, yet elegant sidebreak switch in the market today. Every LineBOSS™ component brings meaningful operator benefits for years to come. Features such as 1/4 inch steel phase base, stainless steel to brass bearings, silver plated copper reverse loop contacts and busbar blades mean efficient and smooth operation over a very long life; even in hostile environments where dust, humidity, corrosives and other industrial or natural contaminants play havoc with most. You’ll be amazed with how much switch you can buy for the money. The LBS distribution switch is RUS accepted.

Inertia-moving power with passion and innovation!

**SPECIFICATIONS**

**Switch Ratings:**
- Voltage Class: 15.5 kV, 25.8 kV & 38 kV
- Continuous Current Class: 600, 900, 1200 Amps
- Fault Close: 15 kA rms-asym: 5 X manual operation
  - 20 kA rms-asym: 3 X manual operation
  - 30 kA rms-asym: 2 X manual operation
- Momentary current: 600 A: 40,000 A rms 10 cycles
  - 25,000 A rms 3 seconds
  - 900 A: 51,000 A rms 10 cycles
  - 32,000 A rms 3 seconds
  - 1200 A: 70,000 A rms 10 cycles
  - 44,000 A rms 3 seconds
- Ice breaking: 3/4” (manual operation)
- Mechanical: 5000 cycles (open/close)

**Loadbreak Devices:**
- Arc Horns
- Quickbreak Whip Attachments
- Arc Chute Load Break
- AmpRupter Load Break
- AmpVac Load Break

*See data sheet “AIR-BREAK DISCONNECT SWITCH ATTACHMENT SELECTION INFORMATION” for loadbreak descriptions and specifications

**Crossarm Ratings:**
- Crossarm Material | Dead End Loading
  - Galvanized Steel (standard duty) | 2000 lbs/phase
  - Galvanized Steel (heavy duty) | 6000 lbs/phase
  - Aluminum (standard duty) | 1500 lbs/phase
  - Aluminum (heavy duty) | 3000 lbs/phase
  - Fiberglass (standard duty) | 1000 lbs/phase
  - Fiberglass (heavy duty) | 2500 lbs/phase

All materials: equal loading, each side of switch is 12000 lbs. max. Ratings shown are for 25 kV switch

**STANDARD FEATURES**
- Resilient, higher BIL silicone rubber insulators
- Reverse loop silver plated copper jaw contacts
- Maintenance free stainless steel/brass bearings
- Unitized construction: aluminum, steel or fiberglass
- Factory adjusted, ready to mount
- Meets all applicable NEMA and ANSI standards
- All ferrous components are hot dip galvanized
- Tinned copper terminal pads

**STANDARD CONFIGURATIONS**
- Horizontal (upright)  
- Horizontal (underarm)  
- Horizontal (center mount)  
- Riser  
- Vertical (phase over phase)  
- Vertical (phase over phase)  
- Delta (pole top)  

See opposite side of this page for illustrations and selection.
LineBOSS™ Selection Guide (15 kV-38 kV)

**LineBOSS™ Unitized Sidebreak Line Switch**

- **Voltage Class:**
  - 15.5 kV = 1
  - 25.8 kV = 2
  - 38.0 kV = 3

- **Current Rating:**
  - 600 A (ANSI 30°C rise) = 6
  - 900 A (IEEE only) = 6
  - 900 A (ANSI 30°C rise) = 9
  - 1200 A (ANSI 30°C rise) = 1

- **Insulator Type**
  - Silicone Rubber (3.0" BC) = S
  - Porcelain (3.0" BC) = P
  - Increase insulator creepage
  - +1 voltage class = add 1 after S, P
  - +2 voltage classes = add 2 after S, P

- **Interrupter Type**
  - NO interrupter = X
  - Arc Whip, Quick-break = Q
  - Arc Chute loadbreak = H
  - Loadbreak, Amprupter = L
  - Vacuum bottle, AmpVac = V

- **Crossarm Type**
  - Galv. Steel = S ("SX" for heavy duty arm)
  - Aluminum = A ("AX" for heavy duty arm)
  - Fiberglass = F ("FX" for heavy duty arm)
  - No Xarm = X
  - Customer specified loading (call factory)

**Mounting Configurations**

- Horizontal Upright = H
- Vertical (Phase over phase) = V
- Vertical (tiered outboard) = B
- Delta (pole top) = D
- Riser = R
- Underarm Horizontal = U
- For GO 95 clearances add G ("HC", "UG" etc)

**Control Rod Type**

- Reciprocating
  - 1" galvanized pipe = 4
  - ¾" galvanized pipe = 3
  - 1" round fiberglass = 2
  - 1 ¾" square fiberglass = 1
  - Torsional
  - 1½" galvanized pipe = 6

**Control Location**

Specify the quadrant by number, where the control is to be located

**Control Mechanism**

- Reciprocating handle = 1
- Torsional handle = 2
- Add "C" for counterclockwise
- Hookstick bellcrank = 3
- None (Motorized Operator) = X

---

**LineBOSS™ Standard Configurations**

- **Horizontal**
- **Underarm Horizontal** (GO95 clearance)
- **Riser**
- **Delta** (Pole top)
- **Vertical** (Phase over phase)
- **Vertical** (tiered outboard)

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*Note: Consult the factory for any options not listed, including; arrestors, sensors, support brackets etc. A Fax-back form can be found on the next page. Copy, fill-out and fax it back with your requirements.*
Make copies of this form to transmit your switch requirements. If you have your own standard’s drawing, please fill out the customer information and send it with this fax form.

Step 1. Voltage Class ______kV  Continuous current rating:^1: _______A  Momentary current_______kA

Step 2. Insulator type (circle one):         Silicone Porcelain One BIL class higher?______

Step 3. Interrupter type (circle one): None ArcHorn ArcWhip ArcChute AmpRupter AmpVac

Step 4. Crossarm type (circle one):  Galvanized steel Fiberglass Aluminum

Step 5. Select the configuration (circle one) and specify spacing dimensions, if necessary:

“A” “B” “C” “D” “E”

HORIZONTAL Upright: Uniserarm
HORIZONTAL, Center mount 1-Way 2-Way 3-Way
TAP SWITCH
RISER
DELTA, Triangular/Pole top
VERTICAL Phase-over-phase
VERTICAL Tiered outboard

Step 6. Select the control mechanism: □ Reciprocating ( ü ) □ Torsional ( ü ) Clockwise or Counterclockwise to open; viewed looking down on the handle □ Hookstick

Step 7. Select control location: □ Specified location; quadrant ________

^1^ LineBOSS switches are ANSI rated switches. The LineBOSS Lx6xxxxx is rated 600 Amps continuous current per the ANSI C37.30 temperature rise test requirements, and for 900 Amp continuous current per the IEEE 1247 temperature rise test requirements. The LineBOSS Lx9xxxxx is rated 900 Amps continuous current per the ANSI C37.30 temperature rise test requirements. The LineBOSS Lx1xxxxx is rated 1200 Amps continuous current per the ANSI C37.30 temperature rise test requirements. Momentary current ratings (10 cycle) are: Lx6xxxxx 600 A (ANSI C37.30) = 40 kA Lx9xxxxx 900 A (ANSI C37.30) = 51 kA Lx1xxxxx 1200 A (ANSI C37.30) = 70 kA
Step 8. Select control rod (circle one): Galvanized pipe: 
- ¾”
- 1”
- 1½” other________
Fiberglass: 
- 1” round
- 1¾” square other________

Step 9. Select control rod length (circle one): 
- 30 ft.
- 40 ft. other________

Step 10. Select additional accessories and modifications (check off and write in)

- “Interrupter Latched” indicator reflective flags (as viewed from directly under the crossarm; Yellow flags indicate CAUTION, an open or improperly closed switch i.e. interrupter not latched)

- Provision for Neutral (4-wire)

- Pole mounting bands; Specify __________________________

- Substation mounting: Specify base mounting dimensions or furnish drawing.

- Surge Arrestor brackets
  - set of 3 arrestor brackets
  - set of 6 arrestor brackets

- Extension links:
  - set of 6; each 6” long
  - set of 6; each 14” long

- Terminals:
  - Terminal paddle for fired wedge connectors (specify size)
  - Terminals, 2-hole copper NEMA pad #2-500 kcmil (600 & 900 A switch) Specify:
  - Terminals, 4-hole copper NEMA pad 500-750 kcmil (1200 A switch) Specify:
  - Terminals, other: ______________________(specify size)

- Sensor Brackets; 1 set of 3 brackets

- Current/Voltage Sensors: 3 each of . . .
  - Current
  - Voltage
  - Current/Voltage

- Fiberglass section in pipe control rod:
  - 1” round fiberglass
  - 1¾” square fiberglass

- Station post insulator in control rod section

- Intermediate control rod guides
  - Oval-eye Nuts
  - Swing-arm type

- Bonded handle
  - Grounding connector on crossarm __________ AWG range

- Key Interlock - single key for circuit switching safety (“locked open”)

- Crossarm Braces
  - Galvanized Steel
  - Fiberglass

- Lifting Points
  - Single
  - Double

Notes/Sketches
AmpRupter™

AmpRupter load interruption occurs as the switch blade leaves the contact clip; making contact with the catch arm. At this point, current is shunted through the actuator arm, through the contacts to the load side. As the blade continues towards its open position, the internal spring powered mechanism trips; breaking the internal contacts. This action evolves a pressurized non-conductive gas that extinguishes the arc. This process occurs within one half cycle (first zero crossing), and will not “chop” the current upon circuit interruption. The speed of the AmpRupter mechanism is not dependent on the switch operating speed, insuring that the load breaking capabilities are consistent regardless of switch opening speed. The AmpRupter automatically resets for the next operation. The AmpRupter is not in the current path during the switch closing operation, and has no fault closing capabilities. The AmpRupter is in the current path during the switch opening operation only.

AmpVac™

The AmpVac is an enclosed vacuum bottle interrupter where no gases are vented to the atmosphere. The AmpVac interrupter has much higher interruption capabilities than other load break devices. Single contact AmpVac interrupters break loads up to 1500 amps at 35 kV. Single vacuum bottle interrupters may be used at increased voltages for parallel or loop switching applications as long as the peak recovery voltage does not exceed 38 kV. The mechanical and electrical life of the AmpVac is 5000 operations at full load. The AmpVac was tested to IEEE 1247-1998.
LineBOSS™ Selection Guide suffix “H”
The ArcChute Interrupter is a minimal load-breaking device that utilizes air break technology. The arc is quenched as the two Delrin arc chute plates close and the arc whip breaks away establishing the required metal-to-metal open gap. Arc Chute interrupters are widely used for line charging and magnetizing current interrupting. Full loadbreak and parallel breaking currents up to 150 amps at 21kV or 20 amps at 34.5kV are common applications. Arc Chute interrupters are only in the current path during the opening process and have an average life of 150 operations.

ArcChute (Delrin “Clapper”)

LineBOSS™ Selection Guide suffix “Q”
The ArcWhip has a small interrupting rating of between 10 and 20 amps. ArcWhips can clear arcs from residual energy stored in capacitor banks, transformers or conductors. ArcWhips are only in the current path during switch opening operations, and have an average life of 150 open operations.

ArcWhip

LineBOSS™ Selection Guide suffix “A”
The Arc Horn is not an interrupter and has no ratings. It is used as an arc deflecting mechanism to save the life of switch blades and contact clips. The ArcHorn, also known as “sacrificial arcing horn”, is the first point of contact during switch closing operations. The initial making current during a closing operation creates small arcs; pitting the arc horns. This “sacrificial” mechanism helps prevent degradation of the main contacts. The Arc Horn is used to redirect the arc resulting from residual or stored charge left after a down-line circuit is opened. Arc Horns will not prevent damage from the inadvertent opening of a loaded switch.

ArcHorn (not an interrupter)

Vacuum Bottle Interrupter Applications:

<table>
<thead>
<tr>
<th>Type of Switching</th>
<th>AmpVac, 1-Gap Vacuum Interrupter</th>
<th>V2, 2-Gap</th>
<th>V3, 3-Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.5 kV</td>
<td>25.8 kV</td>
<td>38.0 kV*</td>
</tr>
<tr>
<td>Loadbreak, 70% PF</td>
<td>1500 A</td>
<td>1500 A</td>
<td>1500 A</td>
</tr>
<tr>
<td>Parallel Break &lt; 30% PF</td>
<td>1500 A</td>
<td>1500 A</td>
<td>1500 A</td>
</tr>
<tr>
<td>Cable Charging</td>
<td>1500 A</td>
<td>950 A</td>
<td>100 A</td>
</tr>
<tr>
<td>Magnetizing</td>
<td>1500 A</td>
<td>1000 A</td>
<td>300 A</td>
</tr>
<tr>
<td>Capacitor Bank,(grnd. neut.)</td>
<td>1500 A</td>
<td>950 A</td>
<td>100 A</td>
</tr>
</tbody>
</table>

* Recovery voltage between source and load must be less than 38 kV, immediately.
** Higher current rating available with use of a voltage limiter; Consult the factory for details.

Interrupter Attachment Device Applications:

<table>
<thead>
<tr>
<th>Type of Switching</th>
<th>ArcHorn</th>
<th>ArcWhip</th>
<th>ArcChute</th>
<th>AmpRupter™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loadbreak, &gt;70% PF</td>
<td>NA</td>
<td>NA</td>
<td>15kV : 150 A</td>
<td>15 kV : 900 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21 kV :100 A</td>
<td>23 kV : 900 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35 kV : 20 A</td>
<td>34 kV : 600 A</td>
</tr>
<tr>
<td>Parallel Break (Loop) &lt; 30% Power Factor</td>
<td>NA</td>
<td>NA'</td>
<td>15kV : 150 A</td>
<td>5 kV : 900 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21 kV :100 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35 kV : 20 A</td>
<td></td>
</tr>
<tr>
<td>Cable Charging</td>
<td>NA</td>
<td>up to 72.5 kV : 15 A</td>
<td>up to 72.5 kV : 15 A</td>
<td>27 kV : 26 A</td>
</tr>
<tr>
<td>Line Charging</td>
<td>NA</td>
<td>up to 72.5 kV : 3500 kVA</td>
<td>up to 72.5 kV : 3500 kVA</td>
<td>23 kV : 6.2 A</td>
</tr>
<tr>
<td>Magnetizing</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>27 kV : 2.7 A</td>
</tr>
</tbody>
</table>
Busbar grade copper contact components are structurally superior with greater conductivity than cast contact material. Cast aluminum and copper bronze contact castings are 34-36% conductive and often contain unseen surface irregularities and voids that create ‘hot spots’. Busbar grade C110 copper is 99% conductive and is many times smoother to provide better terminal connection surfaces and is not subject to unseen porosity. With this contact system, the LineBOSS has achieved the highest momentary and fault close ratings in the industry. Momentary: to 70 kA for 10 cycles and 44 kA for 3 seconds. Fault close: 30 kA (2X)

Busbar grade copper contact components are structurally superior with greater conductivity than cast contact material. Cast aluminum and copper bronze contact castings are 34-36% conductive and often contain unseen surface irregularities and voids that create ‘hot spots’. Busbar grade C110 copper is 99% conductive and is many times smoother to provide better terminal connection surfaces and is not subject to unseen porosity. With this contact system, the LineBOSS has achieved the highest momentary and fault close ratings in the industry. Momentary: to 70 kA for 10 cycles and 44 kA for 3 seconds. Fault close: 30 kA (2X)

Often, switch manufacturers use cast clamps to connect the interphase rod to the rotating stacks. This clamping method has one fixed side and only one open side to pinch the interphase rod. The interphase rod clamp is the device that assures uniform operation of the three switch phases. Any slippage results in an improperly adjusted switch, with not all phases fully closed into the contacts. The LineBOSS uses formed two-piece clamps to compress the interphase rod surface with significantly more distributed pressure. This helps to maintain uniform operation of all three phases throughout the life of the switch.

These insulators have superior mechanical characteristics over 2¼” BC insulators. Silicone insulators have additional BIL, leakage and weatherability ratings over either porcelain or epoxy insulators.

<table>
<thead>
<tr>
<th>Insulator Type</th>
<th>Load Ratings:</th>
<th>B.I.L. Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>(25 kV example)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cantilever</td>
<td>Torsion</td>
<td>Peak</td>
</tr>
<tr>
<td>3” BC silicone</td>
<td>1,200 lbs.</td>
<td>6,000 lbs.</td>
</tr>
<tr>
<td>3” BC porcelain</td>
<td>2,000 lbs.</td>
<td>7,000 lbs.</td>
</tr>
<tr>
<td>2¼” BC porcelain</td>
<td>1,000 lbs.</td>
<td>3,000 lbs.</td>
</tr>
<tr>
<td>2¼” BC epoxy</td>
<td>1,200 lbs.</td>
<td>5,000 lbs.</td>
</tr>
</tbody>
</table>

Specifications and Benefits

- **1/4” hot-rolled steel phase base**
- **Stainless steel-brass bearings on rotating stacks**
- **Rotating insulator shaft support**
- **Stainless steel/brass bearings in the bellcrank**
- **ANSI TR2xx series, 3” bolt circle station post insulators are provided in silicone or porcelain.**
- **Busbar grade copper contact components.**
- **Formed interphase rod clamps with two-bolt clamping.**

**BENEFITS**

Many manufacturers use 7 gauge (3/16”) steel bases that can flex during normal operation, causing blade-to-clip misalignment.

Some rotating insulator spindles and bearings are supported solely on the 3/16” thick phase base surface. The spindle and its bearing should be supported at both the phase base surface and the end of the spindle opposite the blade. A ¼” thick base supporting the rotating stack at two points assures a robust construction that maintains the blade to contact alignment throughout the life of the switch.

Some rotating insulator spindles are made of zinc chromate plated steel which can rust. Others use cast aluminum which is inexpensive, but has poor wear characteristics and does not have the strength of steel. Switches can come out of contact adjustment if a spindle bearing fails. The added benefit of stainless steel and brass ensures a long reliable switch life.

Bearings in the bellcrank reduce the force required to operate the switch and eliminate corrosion due to plated metal-to-metal wear.
SPECIFICATION ELEMENTS

Part Description:
GANG OPERATED LOADBREAK OVERHEAD SWITCHES (vertical, horizontal, riser, delta (pole top), twin circuit or horizontal underarm).

1. Nominal voltage: (15 kV, 25 kV or 35 kV)
2. Insulators: Silicone rubber station post; BIL rating (15 kV: 130 kV, 25 kV: 175 kV, 35 kV: 240 kV)
3. Switch bearings: Stainless steel to brass on all rotating insulators and switch operating shafts.
5. Contacts: Copper busbar blade and reverse loop contacts are to be silver-plated, N.E.M.A. terminal pads shall be tin-plated copper busbar with a surface finish of 32 minimum.
6. The switch shall provide means to attach line current/voltage sensors.
7. All ferrous components shall be hot dip galvanized.
8. Loadbreak shall be self-resetting; where the trip ping speed of the loadbreak shall be independent of switch operating speed. No component of the loadbreak shall make contact with the closing switch blade prior to main switch contact engagement. All actuating mechanism components of the loadbreak device must be stainless steel or non-corrosive parts.
9. Switch base (crossarm) is to be: (hot dip galva-nized steel, fiberglass or aluminum) see LineBOSS™ switch selection guide for dead-end loading specifications. Specify pole clearance spacing i.e. 24”, GO95.
10. Operating rod: specify type and length of control rod, and if an insulated section is required (see LineBOSS selection guide).
11. The gang operated sidebreak style switch shall be capable of seamless automation with a torsional or reciprocating motor operator as dictated by the switch type. It shall be available with the motorized switch operator replacing the manual handle.

Switch Ratings

Voltage Class: 15.5 kV, 25.8 kV and 38.0 kV
Current Class: 600, 900 and 1200 A continuous
Fault Close: 15 kA rms-asym: 5 X Manual Operation
20 kA rms-asym: 3 X Manual Operation
30 kA rms-asym: 2 X Manual Operation
Momentary current: 600 A: 40,000 A-rms 10 cycles
25,000 A-rms 3 seconds
900 A: 51,000 A-rms 10 cycles
32,000 A-rms 3 seconds
1200 A: 70,000 A-rms 10 cycles
44,000 A-rms 3 seconds
Ice breaking: ¾” (manual operation)
Mechanical: 5000 Open/Close cycles
ACCC Designation DO6
Loadability factor 1.22 at 25 Deg. C.
(not applicable to loadbreak devices)

Loadbreak Device Ratings

AmpVac Loadbreak: 12 kV through 35 kV
Load Current: 1500 A-rms
Parallel Current: 1500 A-rms
Cable Charging: 600 A-rms
Magnetizing Current: 600 A-rms

AmpRupter Loadbreak:
Load Current: 900 A-rms @ 23 kV
Parallel Current: 900 A-rms @ 5 kV
Cable Charging: 26 A-rms @ 27 kV
Magnetizing Current: 2.7 A-rms @ 27 kV

Arc Chute Loadbreak: @ 15 kV 21 kV 35 kV
Load Current: 150 A 100 A 20 A
Parallel Current: 150 A 100 A 20 A
Cable charging: 15 A 15 A 15 A
Magnetizing Current: NA NA NA

Quick Break Whip Ratings:
Voltage (nominal) 15 kV - 35 kV
Cable Charging 15 A-rms
Line Charging 3500 kVA
This drawing is for illustrative purposes only and therefore; may, or may not reflect the current revision of this drawing. Please request the current revision from the factory.

### NOMINAL VOLTAGE RATING

<table>
<thead>
<tr>
<th>DIM</th>
<th>15 kV</th>
<th>25 kV</th>
<th>35 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>13 1/2&quot;</td>
<td>17 1/2&quot;</td>
<td>21 1/2&quot;</td>
</tr>
<tr>
<td>B</td>
<td>14 1/4&quot;</td>
<td>18 1/4&quot;</td>
<td>22 1/4&quot;</td>
</tr>
<tr>
<td>C</td>
<td>13 3/16&quot;</td>
<td>16 3/16&quot;</td>
<td>22 3/16&quot;</td>
</tr>
<tr>
<td>D</td>
<td>13&quot;</td>
<td>16&quot;</td>
<td>22&quot;</td>
</tr>
</tbody>
</table>

### SWITCH RATINGS

- **Voltage Class:** 15 kV nom. (15.5 kV max.) 110 kV BIL
  - 25 kV nom. (25.8 kV max.) 150 kV BIL
  - 35 kV nom. (38.0 kV max.) 200 kV BIL

- **Current Class:** 600, 900 and 1200 Amps, continuous

- **Momentary Current Rating:**
  - 600 A Continuous: 40,000 Amps, 10 cycles
  - 25,000 Amps, 3 seconds
  - 900 A Continuous: 51,000 Amps, 10 cycles
  - 32,000 Amps, 3 seconds
  - 1200 A Continuous: 70,000 Amps, 10 cycles
  - 44,000 Amps, 3 seconds
This drawing is for illustrative purposes only and therefore; may, or may not reflect the current revision of this drawing. Please request the current revision from the factory.
UNDERARM CONSTRUCTION REDUCES WILDLIFE CAUSED OUTAGES AND PROVIDES A CLEAR VIEW OF SWITCH CONTACTS TO WORKMEN.

THREE WIRE SWITCH DIMENSIONS.

<table>
<thead>
<tr>
<th>DIM</th>
<th>NOMINAL KV RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td>A</td>
<td>90&quot;</td>
</tr>
<tr>
<td>B</td>
<td>27&quot;</td>
</tr>
<tr>
<td>C</td>
<td>18&quot;</td>
</tr>
<tr>
<td>D</td>
<td>39&quot;</td>
</tr>
</tbody>
</table>

SWITCH RATINGS

Voltage Class:
- 15 kV nom. (15.5 kV max.) 110 kV BIL
- 25 kV nom. (25.8 kV max.) 150 kV BIL
- 35 kV nom. (38.0 kV max.) 200 kV BIL

Current Class:
- 600 A Continuous: 40,000 Amps, 10 cycles
- 900 A Continuous: 51,000 Amps, 10 cycles
- 1200 A Continuous: 70,000 Amps, 10 cycles
- 1200 A Momentary: 44,000 Amps, 3 seconds
- 900 A Momentary: 32,000 Amps, 3 seconds

This drawing is for illustrative purposes only and therefore; may, or may not reflect the current revision of this drawing. Please request the current revision from the factory.

CONTACT THE FACTORY FOR CONTROL TYPES AND SWITCH DIMENSIONAL INFORMATION
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<table>
<thead>
<tr>
<th>NOMINAL VOLTAGE RATING</th>
<th>DIM</th>
<th>15 kV</th>
<th>25 kV</th>
<th>35 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>76&quot;</td>
<td>87&quot;</td>
<td>102&quot;</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>33 1/2&quot;</td>
<td>48&quot;</td>
<td>48&quot;</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>35&quot;</td>
<td>33&quot;</td>
<td>48&quot;</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**SWITCH RATINGS**

Voltage Class: 15 kV nom. (15.5 kV max.) 110 kV BIL
25 kV nom. (25.8 kV max.) 150 kV BIL
35 kV nom. (38.0 kV max.) 200 kV BIL

Current Class: 600, 900 and 1200 Amps, continuous

Momentary Current Rating:
- 600 A Continuous: 40,000 Amps, 10 cycles
- 900 A Continuous: 51,000 Amps, 10 cycles
- 1200 A Continuous: 70,000 Amps, 10 cycles

LBS, 15 kV - 35 kV RISER, Dimensions

Material: None

Description: LBS, 15 kV - 35 kV RISER, Dimensions

Drawn by: None

Date: 07/06/06

Drawing No: 9185M

Revision: 2
This drawing is for illustrative purposes only and therefore; may, or may not reflect the current revision of this drawing. Please request the current revision from the factory.
LBS 15-35 kV, LineBOSS™ Tap Switches

Dimensions

Material: LBS 15-35 kV, LineBOSS™ Tap Switches

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### NOMINAL VOLTAGE RATING

<table>
<thead>
<tr>
<th>DIM</th>
<th>15 kV</th>
<th>25 kV</th>
<th>35 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>60&quot;</td>
<td>60&quot;</td>
<td>76&quot;</td>
</tr>
<tr>
<td>B</td>
<td>30&quot;</td>
<td>32&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>C</td>
<td>24&quot;</td>
<td>24&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>D</td>
<td>35&quot;</td>
<td>35&quot;</td>
<td>41&quot;</td>
</tr>
<tr>
<td>E</td>
<td>49&quot;</td>
<td>53&quot;</td>
<td>57&quot;</td>
</tr>
</tbody>
</table>

### SWITCH RATINGS

- **Voltage Class:**
  - 15 kV nom. (15.5 kV max.)  110 kV BIL
  - 25 kV nom. (25.8 kV max.)  150 kV BIL
  - 35 kV nom. (38.0 kV max.)  200 kV BIL
- **Current Class:** 600, 900 and 1200 Amps, continuous
- **Momentary Current Rating:**
  - 600 A Continuous: 40,000 Amps, 10 cycles
  - 900 A Continuous: 51,000 Amps, 10 cycles
  - 1200 A Continuous: 70,000 Amps, 10 cycles
  - 25,000 Amps, 3 seconds
  - 32,000 Amps, 3 seconds
  - 44,000 Amps, 3 seconds
The Inertia hookstick operated switch eliminates the need for a control rod, so there is no need for any field adjustment of the switch. Compression of the blades into the clips and interrupter timing are factory set. Without lower controls; pole clutter is reduced.

Hookstick operating mechanisms are available on Horizontal, Underarm horizontal, Riser, Vertical (phase over phase) and Delta (triangular) configurations.

The Inertia Hookstick bellcrank and rotating stacks have stainless steel-to-brass shaft bearings. Consider the savings in restrictive losses when the control rods, guides and handle are no longer a factor! This makes the Inertia Hookstick operated switch the easiest switch to operate. High leverage cam action ensures properly closed switch and reduced operating force.

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### SWITCH RATINGS

<table>
<thead>
<tr>
<th>Voltage Class</th>
<th>Continuous</th>
<th>Momentary Current Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 kV nom. (25.8 kV max.)</td>
<td>150 kV BIL</td>
<td></td>
</tr>
<tr>
<td>1200 A</td>
<td>70,000 Amps, 10 cycles</td>
<td></td>
</tr>
<tr>
<td>900 A</td>
<td>51,000 Amps, 10 cycles</td>
<td></td>
</tr>
<tr>
<td>600 A</td>
<td>40,000 Amps, 10 cycles</td>
<td></td>
</tr>
<tr>
<td>44,000 Amps, 3 seconds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32,000 Amps, 3 seconds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25,000 Amps, 3 seconds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

MINIMUM PHASE SPACING SHOWN. ALTERNATE SPACING IS AVAILABLE.
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**SWITCH RATINGS**

**Voltage Class:**
- 15 kV nom. (15.5 kV max.) 110 kV BIL
- 25 kV nom. (25.8 kV max.) 150 kV BIL
- 35 kV nom. (38.0 kV max.) 200 kV BIL

**Current Class:** 600, 900 and 1200 Amps, continuous

**Momentary Current Rating:**
- 600 A Continuous: 40,000 Amps, 10 cycles
- 900 A Continuous: 51,000 Amps, 10 cycles
- 1200 A Continuous: 70,000 Amps, 10 cycles

<table>
<thead>
<tr>
<th>Amps</th>
<th>Current Rating</th>
<th>Cycles/Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>40,000</td>
<td>600 A Continuous</td>
<td>10 cycles</td>
</tr>
<tr>
<td>51,000</td>
<td>900 A Continuous</td>
<td>10 cycles</td>
</tr>
<tr>
<td>70,000</td>
<td>1200 A Continuous</td>
<td>10 cycles</td>
</tr>
</tbody>
</table>

**Description:**
- 25 kV Twin Loadbreak, Tap Riser Switch
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**SWITCH RATINGS**

<table>
<thead>
<tr>
<th>Voltage Class</th>
<th>Current Class</th>
<th>Momentary Current Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 kV nom. (15.5 kV max.) 110 kV BIL</td>
<td>600 A Continuous</td>
<td>40,000 Amps, 10 cycles</td>
</tr>
<tr>
<td>25 kV nom. (25.8 kV max.) 150 kV BIL</td>
<td>900 A Continuous</td>
<td>51,000 Amps, 10 cycles</td>
</tr>
<tr>
<td>35 kV nom. (38.0 kV max.) 200 kV BIL</td>
<td>1200 A Continuous</td>
<td>70,000 Amps, 10 cycles</td>
</tr>
<tr>
<td>Continuous</td>
<td>600, 900 and 1200 Amps, continuous</td>
<td>25,000 Amps, 3 seconds</td>
</tr>
<tr>
<td>Momentary</td>
<td>30,000 Amps, 3 seconds</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>44,000 Amps, 3 seconds</td>
<td></td>
</tr>
</tbody>
</table>