200 A and 600 A Variable Junction 15 & 25 kV Class installation and operation instructions
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Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally-approved safety procedures and safety instructions when working around high-voltage lines and equipment, and support our “Safety For Life” mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

● Is thoroughly familiar with these instructions.
● Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.
● Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
● Is trained in the care and use of protective equipment such as arc flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

⚠️ DANGER
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠️ WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

⚠️ DANGER
Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally-approved safety procedures when working around high- and low-voltage lines and equipment.

⚠️ WARNING
Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling, or maintenance can result in death, severe personal injury, and equipment damage.

⚠️ WARNING
This equipment is not intended to protect human life. Follow all locally-approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury, and equipment damage.

⚠️ WARNING
Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install, or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.
Product information

Introduction
Eaton’s Cooper Power™ series 200 A and 600 A, 15 kV and 25 kV variable junction systems, including CLEER 600 A loadbreak interfaces provides two to six mixed junction interfaces that are internally bussed together and meet all requirements of IEEE Std 386-2016™ standard, Separable Insulated Connector Systems. Variable junctions are used in pad-mounted apparatus, underground vaults, and other apparatus to sectionalize, establish loops, taps, or splices, and to facilitate apparatus changeouts.

WARNING
High voltage. All associated apparatus must be de-energized during any hands-on installation or maintenance. Failure to comply may result in death, severe personal injury, and equipment damage.

CAUTION
High voltage. The 200/600 A Variable Junction is designed to be operated in accordance with normal safe operating procedures. These instructions are not intended to supercede or replace existing safety and operating procedures. The Variable Junction should be installed and serviced only by personnel familiar with good safety practices and the handling of high-voltage electrical equipment.

Read this manual first
Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Acceptance and initial inspection
Each variable junction is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the variable junction and inspect it thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

Handling and storage
Be careful during handling and storage of the variable junction to minimize the possibility of damage. If the variable junction is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Quality standards
ISO 9001 Certified Quality Management System

Additional information
These instructions cannot cover all details or variations in the equipment, procedures, or processes described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user’s purpose, please contact your Eaton representative.

Equipment required
Variable junction includes:
- Molded rubber variable junction
- Stainless steel bracket with grounding lug
- Stainless steel back plate
- Installation instruction sheet

Tools/accessories needed:
- 1/2-inch mounting surface hardware (customer-supplied)
- 3/4-inch wrench for mounting surface hardware (customer-supplied)
200 A and 600 A Variable Junction 15 & 25 kV Class

Dimensions

Figure 1. 6-Way variable junction top view

Table 1. Variable junction top dimensions

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Number of mounting holes per side</th>
<th>A (Overall junction length – 2 parking stands)</th>
<th>A (Overall junction length – no parking stands)</th>
<th>B Mounting Hole offset no parking stands (Bracket Start to slot center)</th>
<th>B Mounting Hole offset, 2 parking stands (Bracket start to slot center)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>15-1/2</td>
<td>9</td>
<td>1</td>
<td>4-1/4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>19-1/2</td>
<td>13</td>
<td>3</td>
<td>2-3/4</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>23-1/2</td>
<td>17</td>
<td>1-1/2</td>
<td>1-1/4</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>27-1/2</td>
<td>21</td>
<td>3-1/2</td>
<td>3-1/4</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>31-1/2</td>
<td>25</td>
<td>2</td>
<td>1-3/4</td>
</tr>
</tbody>
</table>
Installation

1. Lift the back plate to the desired mounting location.
2. Mark the hole location in the center of the slots on each end of the back plate.
3. Remove the back plate and drill pilot holes where previously marked.
4. Place the back plate on a flat surface.
5. Place the variable junction between the two flanges on the back plate carefully to avoid any damage to the conductive coating.
6. Place the bent junction bracket over the top of the interfaces and slide it down over the interfaces.
7. Ensure the collar of the interfaces is through the interface holes on the bent junction bracket and that the bent junction bracket slots align with the back plate slots.
8. Lift the pieces up together, align with the previously drilled pilot holes.
9. Install the mounting surface hardware to attach the junction assembly.
10. Install the surface mounting hardware in all remaining slots.
11. Remove the protective shipping caps from the junction interfaces and clean the interfaces.
12. Using silicone grease, apply a thin layer of lubricant to the junction interfaces and mating accessory.

Table 2. Variable junction side dimensions

<table>
<thead>
<tr>
<th>kV</th>
<th>Interface</th>
<th>C (Height – bottom of bracket to top of interface)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>200 A</td>
<td>9-3/4</td>
</tr>
<tr>
<td>25</td>
<td>200 A</td>
<td>10-1/4</td>
</tr>
<tr>
<td>15/25</td>
<td>600 A</td>
<td>7-1/4</td>
</tr>
<tr>
<td>15/25</td>
<td>600 A Cleer</td>
<td>10-1/4</td>
</tr>
</tbody>
</table>

Figure 2. Variable junction right side view
Operation

**WARNING**
High voltage. The operator should always use personal protective equipment (insulated gloves, clampstick, and eye protection) whenever operating the connector. The operator should always be in the best possible operating position, providing firm footing and enabling a secure grasp of the clampstick positioned to the side of one’s torso, while maintaining positive control of the connector before, during, and immediately after operation. If there is any question regarding the operator’s operating position, de-energize the connector before operation. The operator should not be looking directly at the connector during the moment of circuit interruption or connection. Failure to comply could result in death or serious injury.

**WARNING**
High voltage. Cleer 600 A loadbreak bushings should only be mated with other Cleer 600 A loadbreak products. Do not attempt to mate 200 A loadbreak or 600 A deadbreak products to Cleer 600 A loadbreak bushings. Failure to comply could lead to a fault that may result in death or serious injury.

**WARNING**
High voltage. Do not close or pull the loadbreak connectors slowly onto or off of bushings during a loadmake or loadbreak operation. Failure to comply could cause the contacts leading to excessive arcing causing a fault that may result in death or serious injury.

**WARNING**
High voltage. The loadbreak connectors are not designed to be switched under water. When operating the loadbreak connectors where moisture is present, such as during a rainstorm, take steps to ensure the connector interfaces stay dry. Failure to comply could lead to a fault that may result in death or serious injury.

**WARNING**
High voltage. Verify that BOTH arc followers are approximately 1-1/2” into the bushings. Failure to comply could lead to a fault that may result in death or serious injury.

Do not connect two different phases of a multiple phase system. Before closing a single phase loop, make certain both ends of the loop are the same phase.

Loadmake operation – 200 A loadbreak
1. Make sure the area is clear of obstructions or contaminants that would interfere with the operation of the loadbreak elbow.
2. Securely fasten a clampstick to the pulling eye.
3. Place the loadbreak elbow over the bushing, inserting the white arc follower of the probe into the bushing until a slight resistance is felt.
4. Immediately thrust the elbow onto the bushing with a fast, firm, straight motion, with sufficient force to latch the elbow to the bushing.
5. Push again on the elbow with the clampstick, and then pull gently to make sure that it is secure.

Loadbreak operation – 200 A loadbreak
1. Securely fasten a clampstick to the pulling eye.
2. Without exerting any pulling force, slightly rotate the connector clockwise to break surface friction between the elbow and bushing.
3. Withdraw the connector from the bushing with a fast, firm, straight motion, being careful not to place the connector near a ground plane.
4. Place the connector on an appropriate accessory device following the operating instructions for that accessory.
5. Using a clampstick, place an insulated protective cap with the drain wire attached to system ground on any exposed energized bushing.

Loadmake operation – 600 A Cleer loadbreak
This operation is only applicable to junction-to-junction switching applications.
1. Make sure the area is clear of obstructions or contaminants that would interfere with the operation of the loadbreak C connector (LCN).
2. Securely fasten a clampstick to the operating eye of the connector.
3. Place the C connector over the bushings, inserting both white arc followers of the probes into both bushings approximately 1-1/2” (38 mm). This will align and stabilize the connector.
4. Turn your back to the bushings and grasp the clampstick securely and obtain good footing. Slam the connector onto the bushing with one firm, quick, and continuous motion.
5. Turn around and apply a force to the clampstick to push the connector onto the bushing. The yellow latch indicator rings on the bushings should be visible in the connector cuff windows at this point.
6. To check that the connector is properly latched, apply a gentle pull force to the clampstick. When latched properly, the connector will slide back off of the bushing about 1/4” (5 mm) and stop. The yellow latch indicator rings on the bushings should not be visible at this point.
Loadbreak operation – 600 A loadbreak
This operation is only applicable to junction-to-junction switching applications.

1. Make sure the area is clear of obstructions or contaminants that would interfere with this operation.
2. Secure the connector operating eye firmly onto the clampstick and lock.
3. Thrust the clampstick forward until the connector moves approximately 1/4" (5 mm) further onto the bushings. This action will break any surface friction between outer surfaces of bushings and inner surfaces of connector interfaces. The yellow latch indicator rings on the bushings should now be visible in the cuff windows of the connector.
4. While, looking away from the connector, pull the clampstick and withdraw the connector from the bushings with a fast, firm, straight motion. The minimum amount of travel of connector to break load is 9" (230 mm).
5. Using the clampstick, move the connector away from the bushings and place the metallic portion of the probes directly onto a ground plane. This will discharge any capacitive charge that may still be on the probes. Alternatively, the “C” connector can be mated directly with the Cleer standoff bushing to discharge any capacitive charge that may still be on the probe.

CAUTION
High voltage. If the fiberglass contact tube of one or both loadbreak bushing(s) extends forward, the unit MUST be replaced. Failure to comply could cause thermal runaway failure, or failure to successfully fault-close, which may result in serious personal injury.

6. Using a clampstick, place an insulated protective cap with a ground wire attached to system ground on the exposed energized bushings.

Fault close – 200 A and 600 A loadbreak
It is not recommended that operations be made on known faults. If a fault is experienced, the connector and bushings must be replaced.

Assembly – 600 A deadbreak

WARNING
All associated apparatus must be de-energized during installation or maintenance.

CAUTION
The 600 A Deadbreak junction is designed to be operated in accordance with normal safe operating procedures. These instructions are not intended to supercede or replace existing safety or operating procedures.

The junction should be installed and serviced only by personnel familiar with good safety practices and the handling of high voltage electrical equipment.

1. Remove the protective shipping caps.
2. Clean and lubricate the 600 A deadbreak interfaces and mating apparatus. Lubricate using the supplied lubricant or an Eaton-approved equivalent.
3. Install the cleaned and lubricated mating apparatus according to the instructions provided with the product.
4. All interfaces must be covered with the mating apparatus.
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