General

Eaton’s Cooper Power™ series Cleer™ loadbreak connector system is a 600 A loadbreak device rated for operation on 25 kV class systems. It is used to provide a visible break and visible ground on 600 A network and distribution systems without having to remove 600 A terminations and move heavy cable. The Cleer Loadbreak Connector System is fully shielded, submersible and meets the applicable requirements of IEEE Std 386™ -2006 standard – “Separable Insulated Connector Systems”.

Many configurations are possible with this connector system. Under normal operating conditions, the current path is through one of the 600 A loadbreak/deadbreak 2-position junctions (DLJ625), through the 600 A loadbreak “C” connector and through the second 600 A loadbreak/deadbreak junction.

When isolating underground cable, with the system energized or de-energized, with or without rated load current, with the use of a clampstick, the “C” connector can be removed. A 600 A loadbreak protective cap (LPC625) can then be installed on the two exposed loadbreak interfaces. All bushings of the connector system are then insulated and deadfront. When a 600 A termination with a 200 A reducing tap plug is used on the IEEE Std 386™ -2006 standard 600 A 15/25 kV deadbreak interfaces of the junction, a direct conductor test can be performed. A Cleer grounding elbow can then be installed on the 600 A loadbreak interfaces providing a visible ground. It is then safe to perform work on the underground cable.
**Construction**

The Cleer 600 A loadbreak connector system includes two loadbreak/deadbreak junctions, each consisting of one of Eaton's Cooper Power series exclusive 600 A loadbreak interface and one IEEE Std 386™ -2006 standard 600 A deadbreak interface.

The 600 A loadbreak “C” connector incorporates Eaton’s Cooper Power series field proven POSI-BREAK™ technology, providing a layer of insulation over the conductive internal inserts and an insulative sleeve on the base of the probes. This results in increased strike distance greatly reducing the possibility of partial vacuum flashovers and providing superior switching performance and reliability.

**Interchangeability**

The IEEE Std 386™ -2006 standard 600 A deadbreak interfaces are interchangeable with 600 A terminations currently available from all other manufacturers that also comply with IEEE Std 386™ -2006 standard.

**Installation**

No special tools are required for installation.

The Cleer 600 A loadbreak connector system is available in both in-line and square configurations. It is designed to be mounted directly to a vault or manhole walls or inside an enclosure. The in-line junction assembly has an adjustable stainless steel bracket for mounting at various operating angles. 600 A, BOLT™, T-OP™ II or BT-TAP™ cable terminations are assembled to the source and load side 600 A deadbreak bushings following the instructions provided in those kits. Using a clampstick, the loadbreak “C” connector is assembled to the two center 600 A loadbreak interfaces to complete the current path. Refer to mounting dimensions on page 5 and installation instructions, Service Information, MN650019EN for details.

**Production tests**

Tests are conducted in accordance with IEEE Std 386™ -2006 standard.

- ac 60 Hz 1 Minute Withstand
  - 40 kV
- Minimum Partial Discharge Extinction Voltage
  - 19 kV (3pc Sensitivity)

Tests are conducted in accordance with Eaton requirements.

- Physical Inspection
- Periodic Dissection
- Periodic Fluoroscopic Analysis

**Table 1. Voltage Ratings and Characteristics**

<table>
<thead>
<tr>
<th>Description</th>
<th>kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Voltage Class</td>
<td>25</td>
</tr>
<tr>
<td>Maximum Rating Phase-to-Phase</td>
<td>28</td>
</tr>
<tr>
<td>Maximum Rating Phase-to-Ground</td>
<td>16.2</td>
</tr>
<tr>
<td>ac 60 Hz 1 Minute Withstand</td>
<td>40</td>
</tr>
<tr>
<td>dc 15 Minute Withstand</td>
<td>78</td>
</tr>
<tr>
<td>BIL and Full Wave Crest</td>
<td>125</td>
</tr>
<tr>
<td>Minimum Partial Discharge Extinction Voltage</td>
<td>19</td>
</tr>
</tbody>
</table>

Voltage ratings and characteristics are in accordance with applicable IEEE Std 386™ -2006 standard requirements.

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**Ordering information**

To order the 600 A, 25 kV Class Cleer loadbreak connector system, refer to Table 3.

Each complete 600 A, 25 kV Class Cleer loadbreak connector (LCN2DLJ625) assembly kit contains:

- (2) 600 A, 25 kV, loadbreak/deadbreak 2-position junctions
- (1) 600 A, 25 kV, loadbreak “C” connector
- (1) Stainless steel mounting bracket
- (1) Stainless steel hardware kit (in-line bracket only)
- (2) Ground lugs (#8 sol to 2/0 str.)
- Silicone lubricant
- Installation Instruction Sheet
Figure 1. 600 A, 25 kV Cleer loadbreak connector system with in-line bracket.

Figure 2. 600 A, 25 kV Cleer loadbreak connector system with square bracket.
Table 3. 600 A 25 kV Cleer Loadbreak Connector System

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 A, 25 kV Loadbreak Connector Assembly includes: two loadbreak/ deadbreak junctions with loadbreak “C” connector assembled in an In-Line SS. Bracket</td>
<td>LCN2DLJ625A2ILB</td>
</tr>
<tr>
<td>600 A, 25 kV Loadbreak Connector assembly includes: two loadbreak/ deadbreak junctions with loadbreak “C” connector assembled in a Square SS. Bracket</td>
<td>LCN2DLJ625A2SQB</td>
</tr>
<tr>
<td>600 A Cleer Loadbreak Standoff Bushing (Parking Stand Mount)</td>
<td>PS600CLEER</td>
</tr>
<tr>
<td>600 A Cleer Loadbreak Standoff Bushing (Direct Wall Mount)</td>
<td>PS600CLEERDM</td>
</tr>
<tr>
<td>600 A, 25 kV Insulated Loadbreak Protective Cap</td>
<td>LPC625</td>
</tr>
<tr>
<td>600 A, 25 kV Loadbreak “C” Connector</td>
<td>LC6625</td>
</tr>
<tr>
<td>600A, 25 kV Loadbreak Bushing Insert with Copper Stud</td>
<td>LB625CSPX</td>
</tr>
<tr>
<td>CLEERBAIL</td>
<td>CLEERBAIL</td>
</tr>
<tr>
<td>• Increases 10 cycle short time current rating on Cleer connector assembly from 25 kA to 40 kA</td>
<td></td>
</tr>
<tr>
<td>• WARNING: FAULT-CLOSURE RATING REMAINS 10 kA</td>
<td></td>
</tr>
<tr>
<td>CLEERCHAIN</td>
<td>CLEERCHAIN</td>
</tr>
<tr>
<td>• Allows use of CLEERBAIL with a Cleer grounding elbow, LB625CSPX, and 35 kV 600A TEE</td>
<td></td>
</tr>
</tbody>
</table>
**Accessories**

**Standoff bushing**

Eaton meets the applicable requirements of IEEE Std 386™ -2006 standard - Separable Insulated Connector Systems with its 600 A, 15 and 25 kV Class Cleer loadbreak standoff bushing and provides double interfaces for temporarily parking the Cleer loadbreak connector in sectionalizing cabinets and in underground vaults. The standoff bushing is designed to be installed in the parking stand of the sectionalizing cabinet or in a parking stand mounted in a vault.

![Figure 3. 600 A Cleer loadbreak standoff bushing.](image)

**Protective Cap**

The 600 A, 25 kV Cleer loadbreak protective cap is an accessory device designed to electrically insulate and mechanically seal the 600 A Cleer loadbreak bushing interfaces.

Eaton incorporates its Cooper Power series field proven POSI-BREAK technology, providing a layer of insulation over the conductive internal insert and an insulative sleeve on the base of the probe. This results in increased strike distance greatly reducing the possibility of partial vacuum flashovers and providing superior switching performance and reliability.

The protective cap is fully shielded and submersible and meets the applicable requirements of IEEE Std 386™ -2006 standard. Refer to Installation Instruction Sheet, MN650020EN for details.

![Figure 4. 600 A, 25 kV Cleer loadbreak connector protective cap.](image)

**Grounding Elbow**

The 600 A, 15/25 kV Class Cleer loadbreak grounding elbow (Figure 5) mates directly to the Cleer 600 A loadbreak interfaces providing a convenient means to ground after a visible break has been achieved. See Catalog Section CA650013EN for details.

![Figure 5. 600 A, 15 and 25 kV Cleer loadbreak grounding elbow.](image)

**CLEERBAIL and CLEERCHAIN**

Cleer bail and chain system allow for increased through fault ratings on Cleer systems. The Cleer bail increases through fault ratings to 40 kA when used on a Cleer C connector and 25 kA when used on a Cleer grounding elbow on a Cleer bracketed system. The CLEERBAIL and CLEERCHAIN can be used together to increase through fault ratings from 16 kA to 25 kA on a 35 kV 600 A T-body assembly with Cleer bushing insert and grounding elbow.

![Figure 6. CLEERCHAIN and CLEERBAIL](image)

![Figure 7. CLEERBAIL and CLEERCHAIN Installation](image)
**Typical configurations**

**In-Line Bracket configurations**

![Image of In-Line Bracket configurations](image)

**Figure 8.** 600 A, 25 kV loadbreak connector system with (2) BOL-T terminations.

![Image of Square Bracket Configurations](image)

**Figure 9.** 600 A, 25 kV loadbreak connector system with (1) BOL-T and (1) T-OP II or BT-TAP termination.

**Square Bracket Configurations**

![Image of Square Bracket Configurations](image)

**Figure 10.** 600 A, 25 kV loadbreak connector system with (2) BOL-T terminations.

![Image of Square Bracket Configurations](image)

**Figure 11.** 600 A, 25 kV loadbreak connector system with (1) BOL-T and (1) T-OP II or BT-TAP termination.
Figure 12. Dimensional drawing shows mounting configurations for in-line bracket.

Note: Dimensions given are for reference only.

Figure 13. Dimensional drawing shows mounting configurations for square bracket.

Note: Dimensions given are for reference only.
Additional information
Refer to the following reference literature for application recommendations:

CA650010EN, 15 kV Class Cleer Loadbreak Connector System
CA650012EN, 28 kV Class Cleer Loadbreak Connector System
CA650013EN, 15 and 25 kV Class Cleer Grounding Elbow
CA901002EN, 600 A 15, and 25 kV Class Cleer SecTER™ Cabinet
MN650019EN, 600 A 15, and 25 kV Class Cleer Loadbreak Connector System Installation Instructions
MN650020EN, 600 A 15, 25, and 35 kV Class Cleer Loadbreak Connector Insulated Protective Cap Installation Instructions
MN650021EN, 600 A 15 and 25 kV Class Cleer Loadbreak Standoff Bushing Installation Instructions
MN650056EN, 600 A, 15, 25, and 35 kV Class Cleer Grounding Elbow Installation Instructions
CP1204, 600 A 25 kV Class Cleer Loadbreak Separable Connector System Certified Test Report
PA650002EN, The Cleer Solution for Distribution Systems