

200 A 15 and 25 kV class deadbreak elbow connector



Description

Eaton's Cooper Power™ series deadbreak elbow connector is a fully-shielded and insulated plug-in termination for connecting underground cable to transformers, switching cabinets and junctions equipped with deadbreak bushings. The elbow connector and bushing comprise the essential components of deadbreak separable connections.

Deadbreak elbows are molded using high quality peroxide-cured EPDM insulation. Standard features include a copperTop connector, tin plated copper probe, stainless steel reinforced pulling-eye, and a capacitive test point.

Cable ranges are sized to accept a wider range of cable diameter for a given size elbow. The wider cable ranges increase installation flexibility.

The coppertop compression connector is a standard item to transition from the cable to the probe. An aluminum crimp barrel is inertia-welded to a copper lug. The aluminum barrel makes the connector easy to crimp and the copper lug ensures a reliable, tight, cool operating connection with the deadbreak probe.

Installation

Cable stripping and scoring tools, available from various tool manufacturers, are recommended for use when installing deadbreak elbows. After preparing the cable, the elbow housing is pushed onto the cable. The probe is threaded into the coppertop connector using the supplied installation tool. A bail assembly is also included to assure a safe, reliable connection.

SEMI-CONDUCTING SHIELD

Molded Semi-Conducting EPDM shield meets requirements of IEEE Std 592™-2007 standard and provides ground shield continuity between elbow and cable shield.

PULLING EYE

Stainless steel reinforced pulling eye provides reliable hotstick operating point. Sturdy construction exceeds IEEE Std 386™-2006 standard requirements.

COPPERTOP CONNECTOR

Coppertop compression connector is a field proven, bimetallic friction welded design that accepts copper or aluminum cable conductors.

TEST POINT

Capacitive test point with snap-on cap provides a shielded, hotstick-operable means to determine circuit condition.

EPDM INSULATION

High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber characteristics.

PROBE

Field replaceable, tin plated copper probe ensures reliable electrical connection.

SEMI-CONDUCTING INSERT

Molded EPDM Semi-Conducting Insert controls electrical stress.

GROUNDING TAB

Grounding tab is molded into semi-conductive shield for the attachment of a ground wire to ensure deadfront construction.

Figure 1. Elbow cutaway illustrates design integrity.

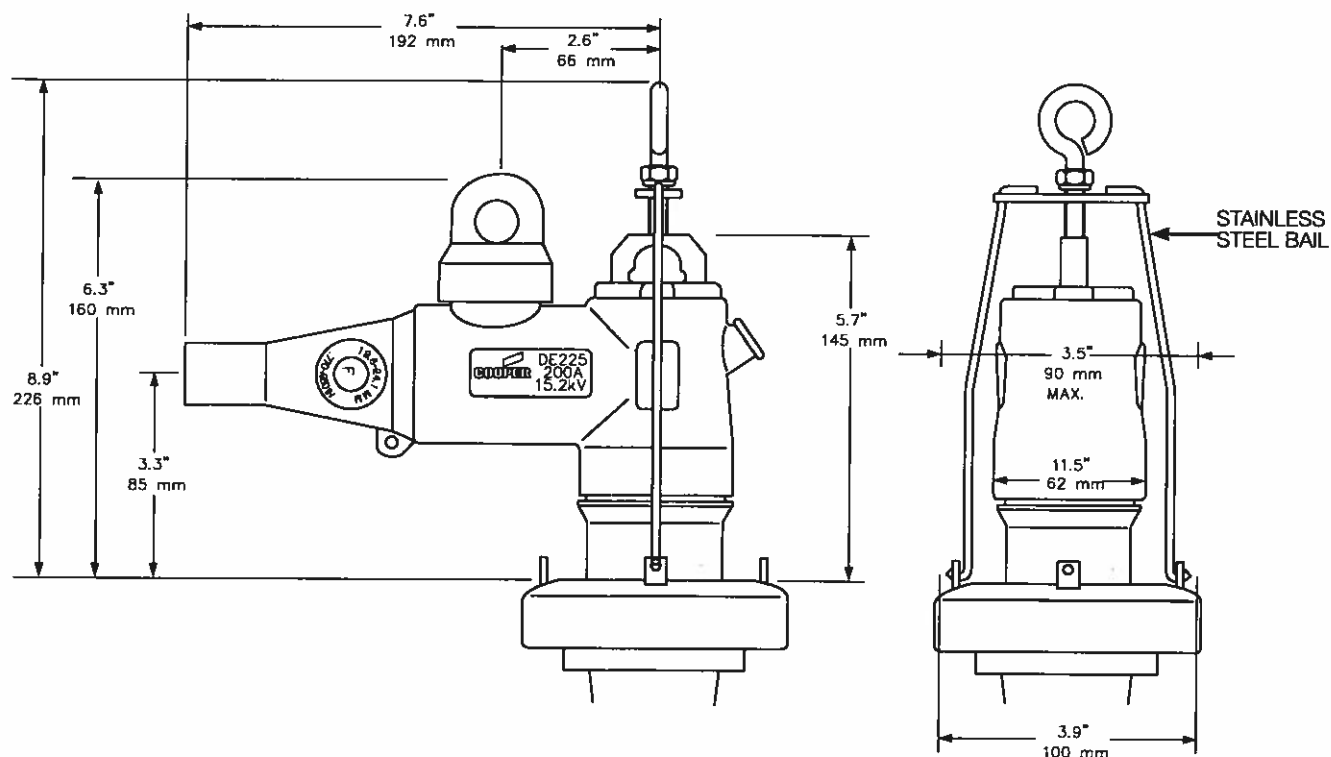


Figure 2. DE225 deadbreak elbow connector dimensional information.

Production tests

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

- ac 60 Hz 1 Minute Withstand
 - 40 kV
- Minimum Partial Discharge Extinction Voltage
 - 19 kV
- Test Point Voltage Test

Tests are conducted in accordance with Eaton requirements:

- Physical Inspection
- Periodic Dissection
- Periodic Fluoroscopic Analysis

Table 1. Voltage Ratings and Characteristics

| Description | kV |
|--|------|
| Standard Voltage Class | 25 |
| Maximum Rating Phase-to-Ground | 15.2 |
| ac 60 Hz 1 Minute Withstand | 40 |
| dc 15 Minute Withstand | 78 |
| BIL and Full Wave Crest | 125 |
| Minimum Partial Discharge Extinction Voltage | 19 |

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

Table 2. Current Ratings and Characteristics

| Description | Amperes |
|-------------|-------------------------------------|
| Continuous | 200 A rms |
| Short Time | 10,000 A rms symmetrical for 0.17 s |
| | 3,500 A rms symmetrical for 3.0 s |

Current ratings and characteristics are in accordance with IEEE Std 386™-2006 standard.

Ordering information

The standard elbow kit is packaged in a heavy-duty polyethylene bag and bulk-packed, 20 kits to a multipak box. Individual boxed kits are also available by special part number. To order a 15/25 kV Class Deadbreak Elbow Kit, for cable meeting AIEC CS5 and CS6, follow the easy steps below.

Each kit contains:

- Elbow Body
- CopperTop Compression Connector
- Copper Probe
- Probe Installation Tool
- Bail Assembly
- Silicone Lubricant
- Installation Instruction Sheet

STEP 1: Determine the cable's diameter over the electrical insulation as shown in Figure 3 (including tolerances). Then identify a cable range from Table 3 that brackets the minimum and maximum insulation diameters. Select the CABLE RANGE CODE from the far right column.

STEP 2: Identify the conductor size and type in Table 4 and select the CONDUCTOR CODE from the far right column.

STEP 3: For an elbow kit with a capacitive test point order:

DE225 CABLE RANGE CODE CONDUCTOR CODE T

For an elbow kit without a compression connector, use "00" for the conductor code.

For an elbow kit individually packaged in a corrugated cardboard box, insert an "X" as the last character in the part number.

EXAMPLE: Select an elbow kit with a capacitive test point for use on a #1 compact cable with a nominal insulation diameter of .760".

STEP 1: Nominal diameter over the insulation is $0.760" \pm .030"$.

Minimum Diameter

$$0.760" - .030" = 0.730"$$

Maximum Diameter

$$0.760" + .030" = 0.790"$$

From Table 3, identify the cable range .642"-.819" and select the "D" CABLE RANGE CODE.

STEP 2: The conductor size is a #1 and the type is compact.

From Table 4, under the column "Compact or Solid" identify #1 and select the "04" conductor code.

STEP 3: Order catalog number.

DE 225 DA 04 T

Table 3. Cable Range

| Cable Range | | Cable Range Code |
|-------------|-------------|------------------|
| Inches | Millimeters | |
| .531-.685 | 18.5-17.4 | BA |
| .642-.819 | 16.3-20.8 | DA |
| .772-.949 | 19.6-24.1 | FA |
| .909-1.13 | 23.1-28.7 | HA |
| 1.10-1.32 | 27.9-33.5 | JA |

Table 4. Conductor Size and Type

| Concentric or Compressed | | Compact or Solid | | Conductor Code |
|--------------------------|-----------------|------------------|-----------------|----------------|
| AWG | mm ² | AWG | mm ² | |
| No Connector | | | | 00 |
| #6 | 16 | #4 | — | 01 |
| #4 | — | #3 | — | 02 |
| #3 | — | #2 | 25 | 03 |
| #2 | 25 | #1 | 35 | 04 |
| #1 | 35 | 1/0 | 50 | 05 |
| 1/0 | 50 | 2/0 | 70 | 06 |
| 2/0 | 70 | 3/0 | — | 07 |
| 3/0 | — | 4/0 | 95 | 08 |
| 4/0 | 95 | 250 | 120 | 09 |
| 250* | 120 | 300 | — | 10 |

* Compressed stranding only.

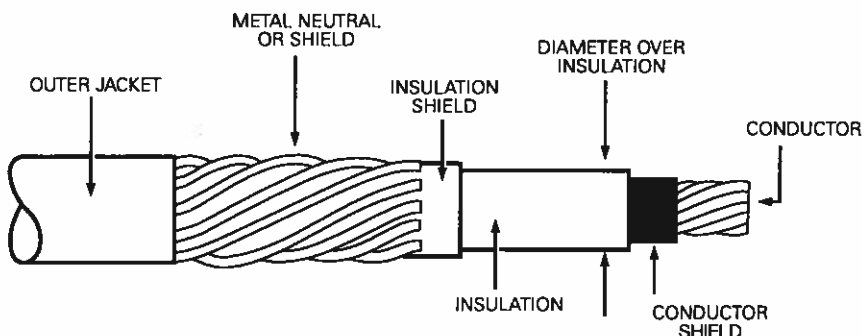


Figure 3. Illustration showing typical construction of medium voltage underground cable.

Table 5. Replacement Coppertop Connectors**Conductor Size**

| Concentric or Compressed | | Compact or Solid | | Catalog Number |
|---------------------------------|-----------------------|-------------------------|-----------------------|-----------------------|
| AWG | mm² | AWG | mm² | |
| #6 | 16 | #4 | — | CC2C01T |
| #4 | — | #3 | 25 | CC2C02T |
| #3 | 25 | #2 | 35 | CC2C03T |
| #2 | 35 | #1 | — | CC2C04T |
| #1 | — | 1/0 | 50 | CC2C05T |
| 1/0 | 50 | 2/0 | 70 | CC2C06T |
| 2/0 | 70 | 3/0 | — | CC2C07T |
| 3/0 | — | 4/0 | 95 | CC2C08T |
| 4/0 | 96 | 250 | 120 | CC2C09T |
| 250* | 120 | 300 | — | CC2C10T |

* Compressed Stranding Only

Note: CopperTop compression connector may be used on both aluminum and copper cable conductors.

Table 6. Replacement Parts

| Description | Catalog Number |
|-----------------------------------|-----------------------|
| Deadbreak Probe Installation Tool | 2639205B01 |
| Deadbreak Probe Only | 2638370C01EX |
| Bail Assembly | 2638409C06B |
| Silicone Grease | |
| .25 oz tube | 2603393A03 |
| 5.2 oz tube | 2605670A02M |
| Test Point Cap | 2638855C02 |