600 A 25 kV class BT-TAP™ deadbreak connector

General

Eaton terminates high-voltage underground cable to transformers, switches, switchgear and other apparatus with its Cooper Power™ series 600 A, 25 kV Class BT-TAP™ deadbreak connector. Eaton has designed it for use with unthreaded connectors, to easily retrofit its existing Cooper Power series 600 A BOL-T™ connector installations or in new installations where a 200 A interface is required and where the system will not need to be frequently operated. If the system will be frequently operated to sectionalize or to achieve a visible break or ground, Eaton recommends the use of its Cooper Power series T-OP™ II connector system. (See catalog section CA650059EN.) The BT-TAP deadbreak connector is fully shielded, submersible and meets the requirements of IEEE Std 386™-2016 standard — "Separable Insulated Connector Systems".

The 200 A, three-phase rated loadbreak interface provides a means for obtaining a direct conductor test, visible ground and provides a convenient location for Eaton's Cooper Power series M.O.V.E. arrester or grounding elbow.

Eaton offers an optional capacitive test point similar to test points on its Cooper Power series 200 A elbow connectors. This allows use of Eaton's Cooper Power series Type "TPR" faulted circuit indicators products, and provides a hotstick operable means of determining circuit condition when used with high impedance voltage sensing devices designed for test points.

BT-TAP connectors are designed for use on solid dielectric cable (XLPE or EPR) with extruded semiconductive shields and concentric neutral, with or without a jacket.

Installation on jacketed concentric neutral cable may require additional sealing material. Cold shrinkable adapters are available for tape shield, linear corrugated, unishield, and drain wire cables for use with deadbreak connectors.

900 AMP rating

The BT-TAP connector is rated for 900 A continuous when used with a coppertop compression connector or shear bolt, copper stud, and copper bushing or junction. If a 900 A rating is desired, specify a "C" as the 11th digit when determining your part number. See Step 3, page 4.

Interchangeability

Eaton conforms to the electrical, mechanical and dimensional requirements of IEEE Std 386™-2016 standard with its Cooper Power series 600 A deadbreak connectors. The connectors can be used on any comparably rated bushing interface that also meets the requirements of this standard. In addition, all T-bodies, cable adapters, insulating plugs and connectors are designed to be interchangeable with those currently available from other major manufacturers that also certify their components to IEEE Std 386™-2016 standard.

Installation

The T-body is assembled onto prepared cable with an unthreaded compression or shear bolt connector. The stud provided with the kit, is torqued onto a de-energized 600 A bushing. Using a T-WRENCH, the loadbreak reducing tap plug is threaded onto the stud drawing the entire assembly tight to the apparatus bushing. The assembly is then torqued to the apparatus bushing using a torque wrench. Refer to *Service Information MN650004EN 600 A 15 and 25 kV Class BT-TAP Connector System Installation Instructions* for details.

Production tests

Tests conducted in accordance with IEEE Std 386™-2016 standard:

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

Tests conducted in accordance with Eaton requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

Table 1. Voltage Ratings and Characteristics

Description	kV
Standard Voltage Class	25
Maximum Rating Phase-to-Phase (loadbreak reducing tap plug only)	26.3
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™ -2016 standard.

Table 2. Current Ratings and Characteristics

Description	Amperes	
600 A Interface		
Continuous	600 A rms (Aluminum)	900 A rms (Copper or Shear Bolt)
4 Hour Overload	900 A rms (Aluminum)	1,200 A rms (Copper or Shear Bolt)
Short Time	25,000 A rms symmetrical for 0.17 s 10,000 A rms symmetrical for 3.0 s	
200 A Interface*		
Continuous	200 A rms	
Switching	10 operations at 200 rms at 26.3 kV phase-to-phase	
Fault Closure	10,000 A rms symmetrical at 26.3 kV phase-to-phase for 0.17 s after 10 switching operations	
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™-2016 standard.

* System design and protection must recognize the ratings of 200 A interface.

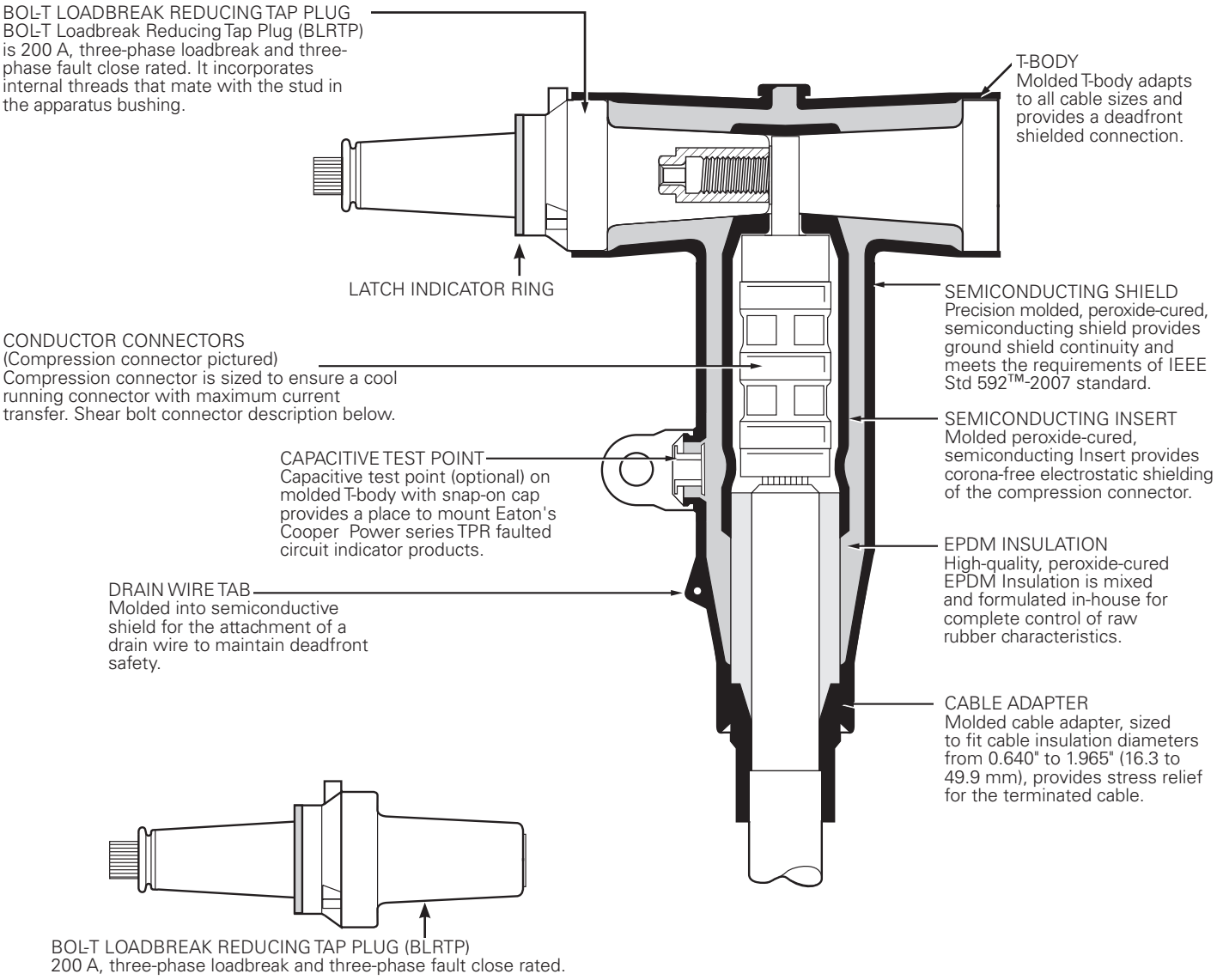


Figure 1. Cutaway drawing illustrates design features.

Optional features

Protective cap

200 A Insulated Protective Cap fits over loadbreak reducing tap plug for deadfront shielding.

Capacitive test point

Capacitive Test Point on molded T-body, with snap-on cap, provides a place to mount Eaton's Cooper Power series TPR faulted circuit indicator products.

Shear bolt connector

Bolted cable lug is fitted with stepless bolts, which shear off when optimum contact force has been reached. Provides electrical continuity for copper and aluminum conductors while eliminating need for dies and compression tools.

Figure 2. Shear bolt connector.

BT-TAP Connector Kit – Catalog Numbering System

Build the 12 digit catalog number for a 25 kV BT-TAP Connector Kit by following the steps given below. The first 6 digits are always "BTP625", only digits 7 through 12 need to be selected.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
B	T	P	6	2	5								

Catalog number digits:

1, 2 & 3 = "BTP", BT-TAP Connector System

4 = "6", 600 A System

5 & 6 = "25", 25 kV Class Bushing Interface

Step 1 – Select Digits 7 and 8 Cable Adapter Range Code

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 covers the minimum and maximum insulation diameters.

Select the correct CABLE RANGE CODE from Table 3.

Table 3. Cable Insulation Diameter Range

Cable Diameter Range

Inches	mm	Code
0.610-0.970	15.5-24.6	**AB**
0.750-1.080	19.1-27.4	**CC**
0.970-1.310	24.6-33.3	**DD**
1.090-1.470	27.7-37.3	**EE**
1.260-1.640	32.0-41.7	**FF**
1.360-1.710	34.5-43.4	**GG**
1.510-1.850	38.4-47.0	**HH**
1.700-1.970	43.2-50.0	**JJ**

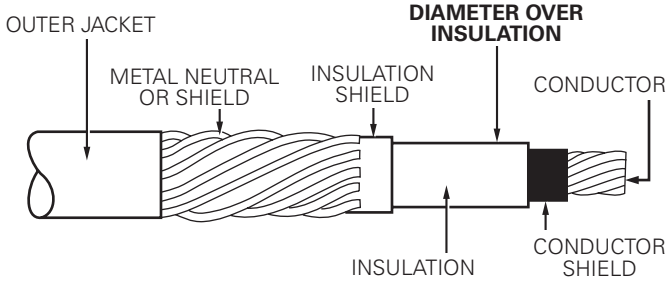


Figure 3. Illustration showing typical construction of medium voltage underground cable.

Step 2 – Select Digits 9 and 10 Conductor Code

Identify the conductor size and type in Table 4 and select the CONDUCTOR CODE from the appropriate (compression or shear bolt) column.

Step 3 – Select Digit 11

Determine whether 600 A or 900 A rating is required.

"A" = 600 A Rating (Aluminum Compression or Shear Bolt Connector, Aluminum Stud, and Aluminum Reducing Tap Plug)

"C" = 900 A Rating (Coppertop Compression Connector or Shear Bolt Connector, Copper Stud, and Copper Reducing Tap Plug)

Step 4 – Select Digit 12

Determine if a standard length or extended length stud is required.

S = Standard Length

L = Extended Length

Step 5 – Select Digit 13 (optional)

Determine if the T-body should have a test point.

T = Test Point on T-body

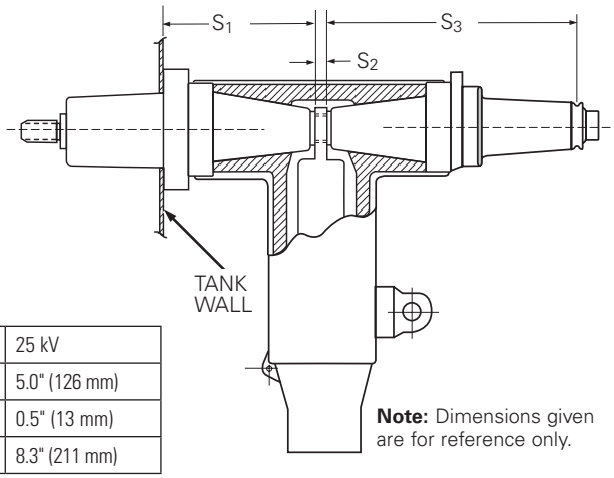
If no test point is required, do not include a 13th digit.

Step 6 – Select Digit 14 (optional)

Determine whether a 25 kV, 200 A protective cap is required in the kit.

C = Protective Cap

If no cap is required, do not include a 14th digit.



	25 kV
S_1	5.0" (126 mm)
S_2	0.5" (13 mm)
S_3	8.3" (211 mm)

Note: Dimensions given are for reference only.

Figure 4. BT-TAP profile and stacking dimensions from Figure 11A of IEEE Std 386™-2016 standard.

Table 4. Conductor Size and Type

Compression Connector					Shear Bolt Connector					
Concentric or Compressed		Compact or Solid			Cable Conductor Size				Shear Bolt Connector	
					AWG or kcmil					
AWG or kcmil	mm^2	AWG or kcmil	mm^2	Compression Conductor Code	Compact	Compressed	Concentric	mm^2 Standard Sizes	Conductor Code	Catalog Number
No Connector				**0**	1/0	1/0	1/0	50	S1	CDT630SB150
#2	35	1	-	**11**	2/0	2/0	2/0	70		
#1	-	1/0	50	**12**	3/0	3/0	3/0	-		
1/0	50	2/0	70	**13**	4/0	4/0	4/0	95		
2/0	70	3/0	-	**14**	250	250	250	120		
3/0	-	4/0	95	**15**	350	-	-	150		
4/0	95	250	120	**16**	-	350	350	185	S3	CDT630SB300
250	120	300	-	**17**	500	500	500	240		
300	-	350	-	**18**	600	600	600	300		
350	-	400	185	**19**	700	-	-	-		
400	185	450	-	**20**	-	700	700	-	S4	CDT630SB400
450	-	500	240	**21**	750	750	750	-		
500	240	600	300	**22**	800	800	-	400		
600	300	700	-	**23**	900	-	-	-		
650	-	750	-	**24**						
750	-	900	-	**25**						
900	-	1000	500	**26**						
1000	500	-	-	**27**						
1250	630	-	-	**28**						

To order replacement parts and tools, refer to Table 5.

To order replacement compression connectors and cable adapters for a BT-TAP connector system, see section CA650007EN "Deadbreak Accessories, Tools and Replacement Parts."

Table 5. Replacement Parts and Tools

Description	Catalog Number
T-body without Test Point	DT625
T-body with Test Point	DT625T
Hex Wrench	HD625
Aluminum Stud	STUD-A
25 kV, 200 A Insulated Protective Cap	LPC225
25 kV, 200 A POSI-BREAK™ Insulated Protective Cap	PLPC225
BOL-T Loadbreak Reducing Tap Plug "BLRTP", aluminum	BLRTP625A
BOL-T Loadbreak Reducing Tap Plug "BLRTP", copper	BLRTP625C
BOL-T Loadbreak Reducing Tap Plug "BLRTP", aluminum with stud	BLRTP625AS
BOL-T Loadbreak Reducing Tap Plug "BLRTP", aluminum with stud, Factory installed	BLRTP625ASP
BOL-T Loadbreak Reducing Tap Plug "BLRTP", copper with stud	BLRTP625CS
BOL-T Loadbreak Reducing Tap Plug "BLRTP", copper, Factory installed	BLRTP625CSP
Aluminum Stud, Extended Length	STUDAL
Copper Stud, Standard Length	STUD-C
Copper Stud, Extended Length	STUDCL

Note: The standard packaging for the BLRTP is a sealed plastic bag. Add "X" to the end of the catalog number for an individual box.

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