CHARDON GROUP

24-FDT630 / 24-RDT630

IEC Separable Connectors 17.5 kV/24 kV, 630A

Front T-Body / Coupling (Rear) T-Body Connector

APPLICATION

The Chardon T-Body Connectors are used to terminate polymeric cable to dead front apparatus such as transformers, switchgear, and other equipment. They can be used at 17.5 kV and 24 kV. They can be used for indoor or outdoor applications, and can be used for all polymeric cable types (XLPE, EPR, etc.) with copper or aluminum conductors.

KEY FEATURES

- Provides a fully shielded and submersible connection when mated with the proper bushing or plug.
- Type "C" 630A Interface.
- Mounting can be vertical, horizontal, or any angle in between.
- No minimum phase clearance requirements.
- 100% electrical tested at factory.

PRODUCT RATINGS

Maximum Voltage Class (U_m)	24 kV
AC 5 Minute Withstand	54 kV
Minimum Corona Voltage Level	20 kV < 3pC
BIL and Full Wave Crest (Impulse)	125 kV
Thermal Short Circuit (Conductor, 2 sec.)	23 kA / 2s
Dynamic Short Circuit (Conductor, 10 sec.)	82 kA / 10ms
Continuous Current	630 A
Overload Current (8 hours maximum)	900 A

PRODUCTION TESTS

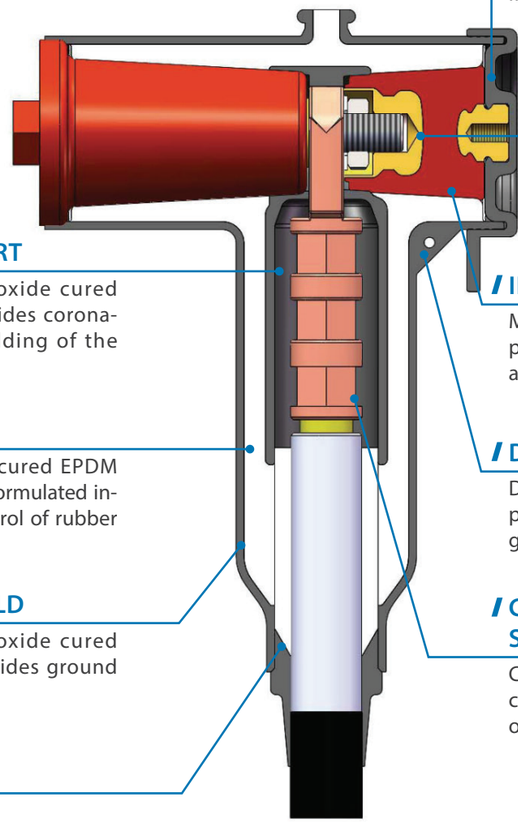
Tests conducted in accordance with IEC 60502-4.

- Minimum Corona Voltage Level – 20 kV < 3pC
- AC 5 Minute Withstand – 54 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

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

DETAILED COMPOSITION OF THE CHARDON 17.5 KV/24 KV FRONT T-BODY CONNECTOR



RUBBER END CAP

Molded EPDM conducting rubber end cap protects and grounds the insulating plug test point.

STUD

Stainless steel studs.

CONDUCTING INSERT

Precision molded peroxide cured conducting insert provides corona-free electrostatic shielding of the compression connector.

INSULATING PLUG

Molded epoxy insulating plug provides excellent electrical,thermal and mechanical reliability.

INSULATION LAYER

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

DRAIN WIRE TAB

Drain wire table provide a convenient point to connect drain wire to ensure grounding of the connector shield.

CONDUCTING SHIELD

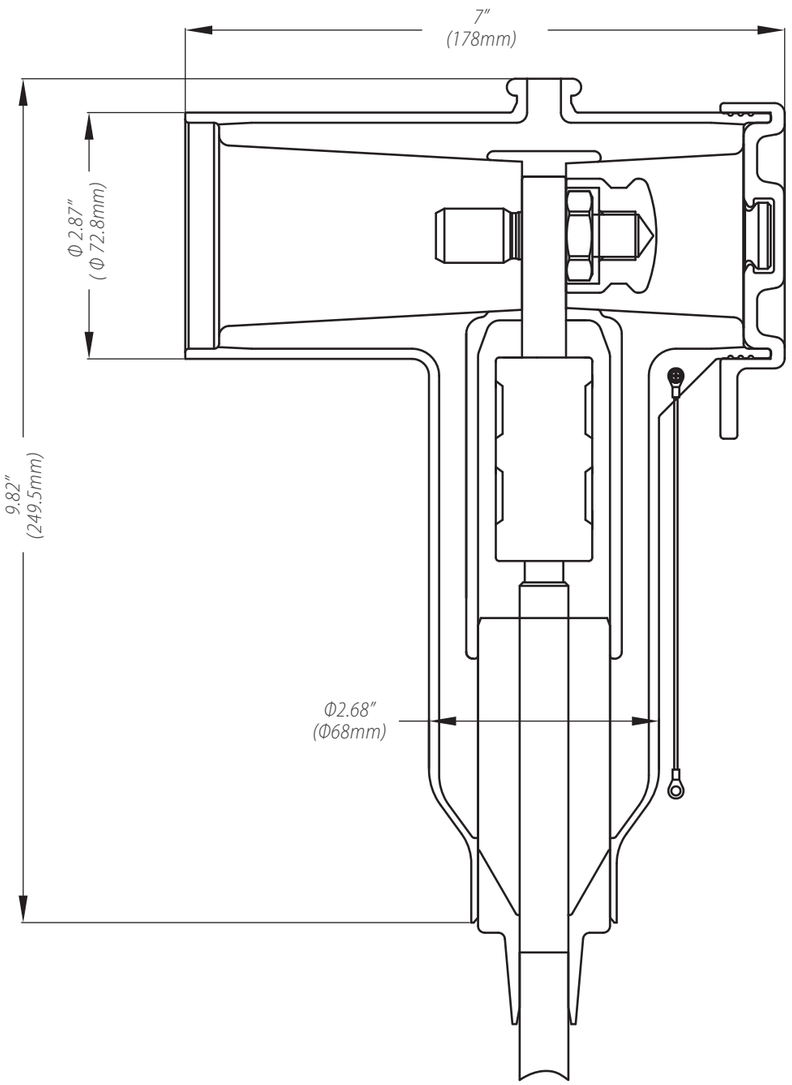
Precision molded peroxide cured conducting shield provides ground shield continuity.

COMPRESSION CONNECTOR/ SHEARBOLT CONNECTOR

Compression connector/shearbolt connector made of aluminum, copper, or bimetal (aluminum/copper).

CABLE ADAPTER

DETAILED COMPOSITION OF THE CHARDON 17.5 KV/24 KV FRONT T-BODY CONNECTOR



DETAILED COMPOSITION OF THE CHARDON 17.5 KV/24 KV, COUPLING (REAR) T-BODY CONNECTOR

CONTACT ROD
Copper made contact rod provides a consistent current transfer path.

STUD
Stainless steel studs.

INSULATING PLUG
Molded epoxy insulating plug provides excellent electrical,thermal and mechanical reliability.

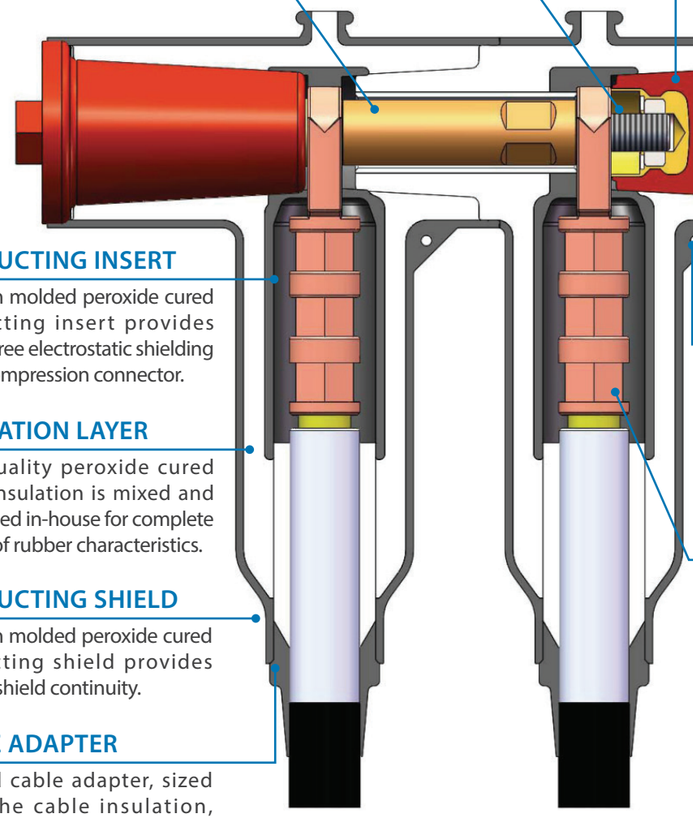
RUBBER END CAP
Molded EPDM conducting rubber end cap protects and grounds the insulating plug test point.

CONDUCTING INSERT
Precision molded peroxide cured conducting insert provides corona-free electrostatic shielding of the compression connector.

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

CONDUCTING SHIELD
Precision molded peroxide cured conducting shield provides ground shield continuity.

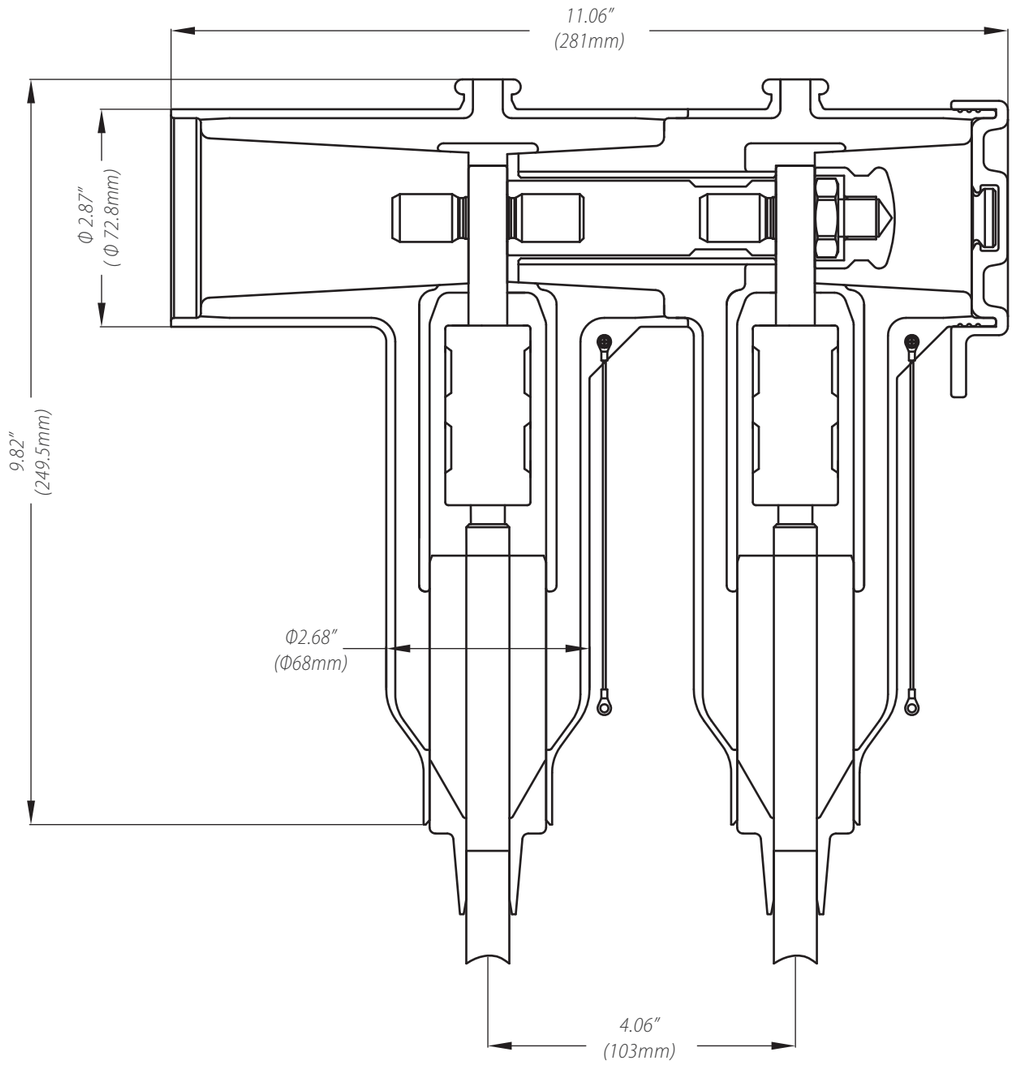
CABLE ADAPTER
Molded cable adapter, sized to fit the cable insulation, provides stress relief for the terminated cable.



DRAIN WIRE TAB
Drain wire table provide a convenient point to connect drain wire to ensure grounding of the connector shield.

COMPRESSION CONNECTOR/ SHEARBOLT CONNECTOR
Compression connector/ shearbolt connector made of aluminum, copper, or bimetal (aluminum/copper).

DETAILED COMPOSITION OF THE CHARDON 17.5 KV/24 KV, COUPLING (REAR) T-BODY CONNECTOR



ORDERING INFORMATION

24-	_ _ _	630-	_	_ _ _	_
	STEP1		STEP2	STEP3	STEP4

STEP1 _ _ _

Selection of Front / Rear T-body

Code	
FDT	Front T-body
RDT	Coupling (Rear) T-body

STEP2 _

Selection of Cable Insulation Dimension

Range Code	mm
A	15.5 - 19.0
B	18.0 - 23.0
C	22.0 - 27.0
D	26.0 - 32.0
E	31.0 - 37.0

STEP3 _ _ _

Selection of Conductor Size

Conductor Code	Conductor Size (mm^2)
25	25
35	35
50	50
70	70
95	95
120	120
150	150
185	185
240	240
300	300
400	400

STEP4 _

Selection of Compression Connector Material

Code	
B	Bi-metal (Al & Cu)
C	Copper

Note :
When ordering a shear bolt connector in a kit, use the chart below and add code in the end of the part number, for example, SBC-B-25-50/1.

Selection of Shear Bolt Connector Material

Catalog No.	Conductor Range (mm^2)
SBC-B-25-50/1	25 - 50
SBC-B-70-95/1	70 - 95
SBC-B-70-120/2	70 - 120
SBC-B-150-240/2	150 - 240

Ordering Example:

For a CHARDON 24kV Front T-body with cable insulation outer dimension of 26.4mm and a conductor size of 185mm^2 with copper compression connector, the part number would be as follows.

24-	FDT	630	C	185	C

If a shear bolt connector is selected in this kit, the part number would be as follows:

24-	FDT	630	C	SBC-B-25-50/1

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42 kV 630A IEC Front / Coupling (Rear) T-Body Connector
INSTALLATION & OPERATING INSTRUCTIONS

DESCRIPTION

The CHARDON 42 kV 630A IEC front / coupling (rear) T-body connectors are used to terminate polymeric cable to equipment, such as transformers, switchgear, motors etc. equipped with bushings meeting type C interface per CENELEC EN 50180 and 50181. They are fully screened and fully submersible when mated with the proper bushing or plug and they meet the requirements of CENELEC HD 629.1 S2.

- 42kV 630A Class (26/35kV)

Front T-body Kit Content:

◎ - Front T-body
◎ – Connector
◎ - Cable Adapter
◎ - Stud
◎ - Washer
◎ - Hex nut
◎ - Insulating Plug
◎ - Conductive Cap
◎ - Silicone Lubricant
◎ - Paper Towel
◎ - Installation Instructions

Coupling T-body Kit Content:

◎ - Coupling (rear) T-body
◎ - Connector
◎ - Cable Adapter
◎ - Stud
◎ - Connecting rod
◎ - Silicone Lubricant
◎ - Paper Towel
◎ - Installation Instructions

CAUTION: All associated apparatus must be de-energized during installation and/or maintenance. Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

DANGER: Do not touch or move energized product by hand. Otherwise it will result in death or serious injury.

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.

INSTALLATION PROCEDURE

STEP 1

Check kit components to insure proper fit with the cable diameter dimensions, conductor size, and mating products.

STEP 2

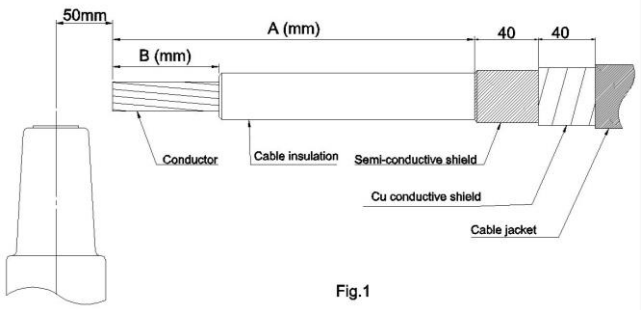
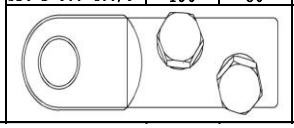
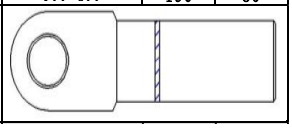


Fig.1

	Sheal bolt range	A	B	Compression Lug	A	B
42kV 630A	SBC-B-25-50/1	200	50	25-35	190	50
	SBC-B-70-95/1	200	50	50-70	190	60
	SBC-B-70-120/2	197	70	95-150	190	65
	SBC-B-150-240/2	197	70	185-240	190	70
	SBC-B-300-400/3	190	80	300-400	190	80
						

Prepare the cable to the desired finished position and cut the cable. (See Fig. 1)

1) Remove the cable jacket for a distance of "A"+80 mm from the end of the cable. Do not damage the copper conductive shield or copper wire.(See step 3 to deal with the copper conductive shield or copper wire.)
2) Remove "A" +40(mm) of copper conductive shield. Do not damage the semi-conductive shield.
3) Remove "A" (mm) of insulation screen. Do not damage the cable insulation.
4) Remove "B" mm of cable insulation. Use PVC tape to secure the exposed ends of the cable conductors.
5) At the end of the insulation and semi-conductive shield chamfer the sharp end at a 45° angle.

STEP 3

For Tape Shielded Cable

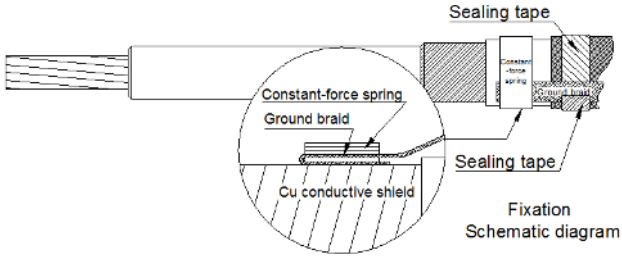


Fig.2-1

- Use sandpaper to grind the cable jacket to rough the surface and clean cable jacket and Semi-conductive shield.
- Wrap the sealing tape onto the cable jacket.
- Use constant-force spring to fix ground braid into Semi-conductive shield.
- Wrap the sealing tape onto the ground braid. as shown in Fig. 2-1.

For Wire Shielded Cable / JNC Cable

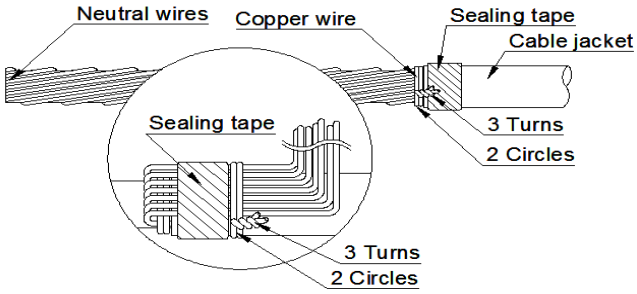
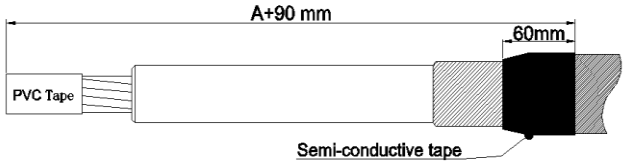


Fig.2-2

- Use tinned copper wire to lash the neutral wires
- Use sandpaper to grind the cable jacket to rough the surface, clean the grinded surface then bind the sealing tape on.
- Bend neutral wires down and parallel to cable.
- Use tinned copper wire to secure neutral wires to cable jacket
- Wrap the sealing tape onto the neutral wires.

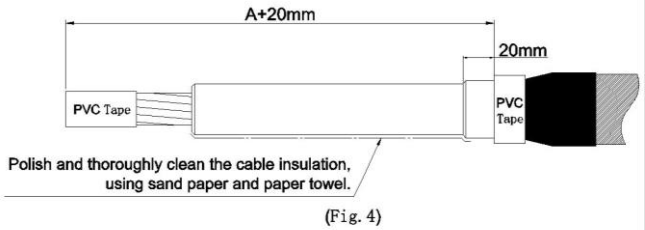
STEP 4



(Fig. 3)

Wrap 2 layers a distance of 60mm of the semi-conductive tape for a distance of “A” +90mm from the end of cable, copper conductive shield and semi-conductive shield as shown in Fig. 3.

STEP 5



(Fig. 4)

Polish and thoroughly clean the cable insulation, using sand paper and paper towel.
Wrap two turns of PVC tape to serve as a marker at a position of 20 mm from end of the insulation screen (a distance of “A”+20 mm from the end of the cable, See Fig. 4).

STEP 6

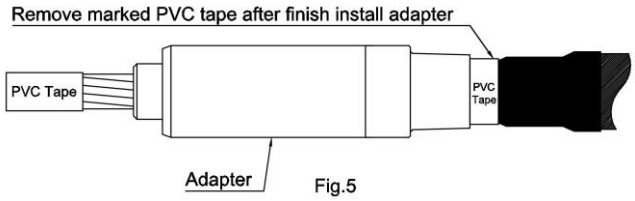
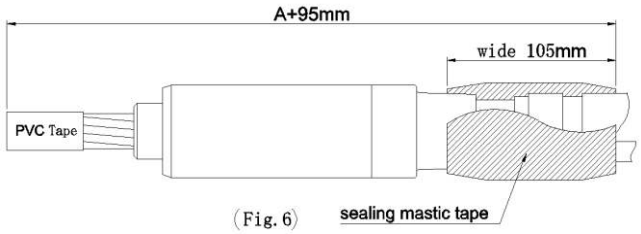


Fig.5

Lubricate the exposed cable insulation and adapter inside interface. Slide the cable adapter onto the cable, black end first, until the black end is flush with tape marker. Check the Critical Dimension as shown in Fig. 5 below.

Then remove the marker. Wipe off grease from end of cable adapter, preparing the surface for application of tape.

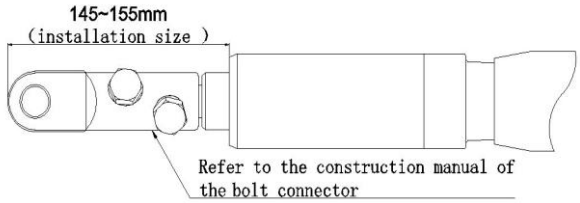
STEP 7



(Fig. 6)

Wrap 2 layers of sealing mastic tape “A” +95mm from the end of cable (wide 105mm). Wrap 2 layers of PVC tape on the sealing mastic tapes. (See Fig. 6)

STEP 8



(Fig. 7-1)

(Fig. 7-2)

Remove the PVC tape and clean conductor from the end of the conductor.

Immediately insert the conductor into the crimping barrel as far as it will go. Ensure that the flat of the lug spade is parallel to the face of the bushing. Stress from the tail cone to the terminals 145 ~ 155mm at the top of the terminals，installed as shown in Fig. 7.

STEP 9

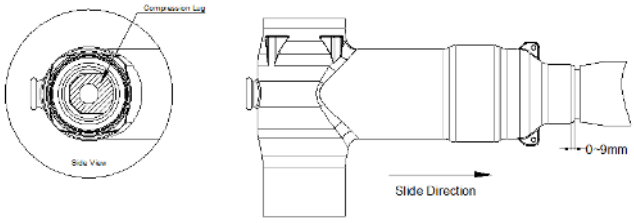


Fig.8

Clean the outer surface of the cable adapter and the interior of the cable entrance of the front T-body with a lint-free cloth. Apply a thin layer of lubricant to both surfaces. Push the front T-body over the cable adapter as far as it will go. Ensure that the hole in the top of the crimp connector is visible through the interface end of the T-body. (See Fig. 8)

STEP 10

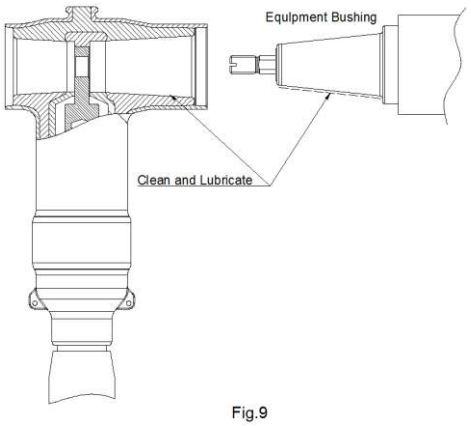


Fig.9

Tighten the stud to 55 Nm, using a 14 mm open end wrench. (Slotted outwards) Clean equipment bushing and front T-body interface. Wait for cleaning solvent to evaporate.

Lubricate both interfaces. (See Fig. 9)

STEP 11

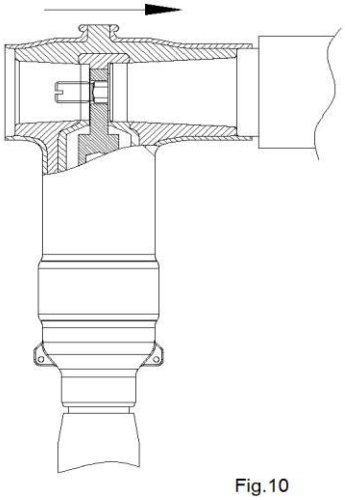


Fig.10

Push the front T-body onto the equipment bushing. Make sure the stud passes through the hole in spade of lug. (See Fig.10)

STEP 12

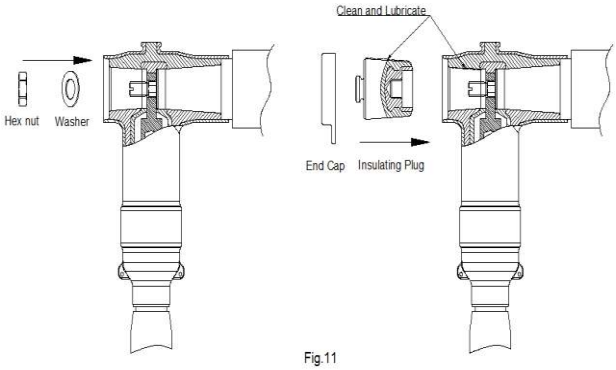


Fig.11

Put washer and hex nut on the stud, and tighten the nut to 50-55 Nm, using a torque wrench and a 24 mm socket. Clean the insulating plug and front T-body interfaces with cleaning wipes. Wait for the cleaning solvent to evaporate. Apply a thin layer of lubricant to both surfaces. Insert the insulating plug into the front T-body and engage the threads of the threaded stud. Tighten the insulating plug to 35-40 Nm, using a torque wrench and 19 mm socket. (See Fig.11)

STEP 13

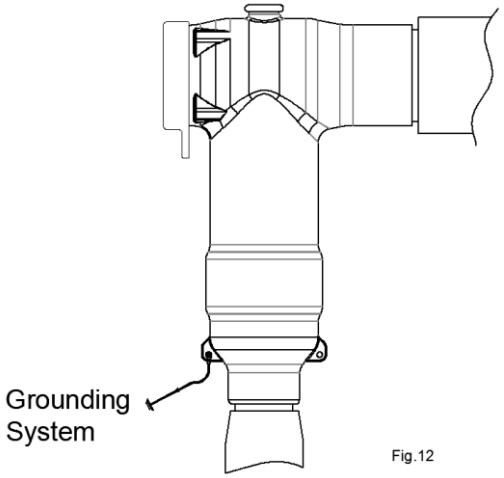


Fig.12

Clean the interior surface of the rubber cap. Place it over the insulating plug and push it until it snaps into place. Connect drain wire on front T-body to the grounding system. (See Fig.12)

CAUTION: A connector/bushing mated combination should not be allowed to carry the full weight of the cable. Therefore it is necessary to clamp the cable as close as possible to the connector.

STEP 14

IEC Coupling (Rear) T-body Instructions:

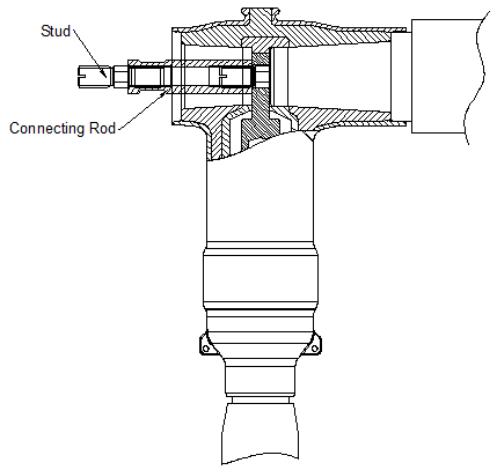


Fig.13

Step 1. Before install coupling (rear) T-body, complete step 1 to step 11 of front T-body instructions. If front T-body was installed completely, remove insulating plug, nut and washer.

Step 2. Install the rod and stud assembly by hand in the front T-body. Make sure the stud in the equipment bushing passes through the hole in spade of the connector.

Step 3. Tighten the rod and stud assembly to approximately 50-55 Nm, using a 22 mm open end wrench. (See Fig. 13) (Slotted outwards)

Step 4. Repeat Step 1 to Step 8, prepare cable and install bolted companion coupling (rear) T-body connector. (See Fig. 14)

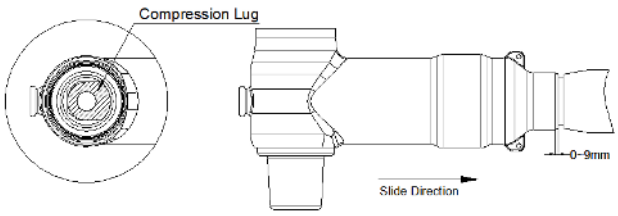


Fig.14

Step 5. Clean the interface of companion front T-body connector and coupling (rear) T-body connector with an ISO wipe. Wait for the cleaning solvent to evaporate. Apply a thin layer of lubricant to both interfaces. Slide the bolted companion coupling (rear) T-body connector over the rod and stud assembly and into the front T-body connector.

Step 6. Put the hex nut onto the rod and stud assembly and tighten to 50-55 Nm using a 24 mm socket and a torque wrench.

Step 7. Clean the insulating plug and the companion coupling (rear) T-body interfaces with an ISO wipe. Wait for the cleaning solvent to evaporate. Apply a thin layer of lubricant to both surfaces.

Step 8. Insert the insulating plug into the back of the companion coupling (rear) T-body and engage the threads of the threaded stud.

Tighten the insulating plug to 35-40 Nm, using a 19 mm socket and a torque wrench.

Step 9. Clean the interior surface of the rubber cap. Place it over the insulating plug and push it until it snaps into place.

Step 10. Connect drain wire on front T-body /companion coupling (rear) T-body to grounding system. Clamp the cable below cable jacket seal. (See Fig. 15)

CAUTION: A connector/bushing mated combination should not be allowed to carry the full weight of the cable. Therefore it is necessary to clamp the cable as close as possible to the connector.

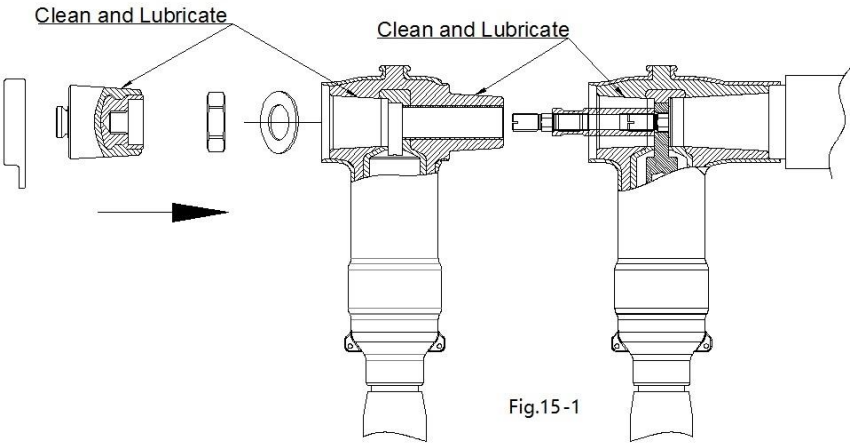


Fig.15-1

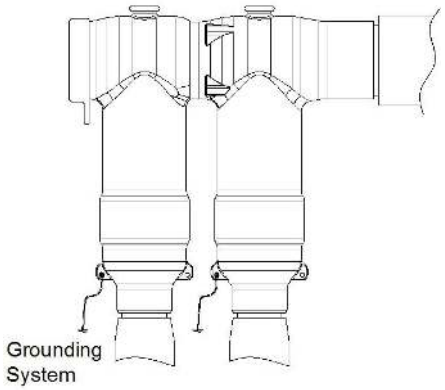


Fig.15-2

FOR FURTHER INFORMATION WRITE TO

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