24&36kV 1250A LARGE FRONT / COUPLING (REAR) T-BODY INSTALLATION & OPERATING INSTRUCTIONS

DESCRIPTION:

The Chardon 24 & 36 kV 1250A large 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 IEC 60502-4 and CENELEC HD 629.1 S2.

FRONT T-BODY KIT CONTENT:

- Front T-body
- Compression Connector or Shear bolt Connector (Optional)
- Cable Adapter
- Insulating Plug
- Conductive Cap
- Stud
- Washer & Hex nut
- Silicone Grease (5g)
- Grounding Kit for Tape Shield Cable (Optional) (Ground Braid / Constant-force Spring / Copper Tape)
- Paper Towel
- Sealing Tape
- PVC Tape
- Vent String
- Sandpaper Strip
- Instruction Sheet

COUPLING T-BODY KIT CONTENT:

- Coupling T-body
- Compression Connector or Shear bolt Connector (Optional)
- Cable Adapter
- Stud
- Connecting Rod
- Silicone Grease (5g)
- Grounding Kit for Tape Shield Cable (Optional) (Ground Braid / Constant-force Spring / Copper Tape)
- Paper Towel
- Sealing Tape
- PVC Tape
- Vent String
- Sandpaper Strip
- Instruction Sheet

CAUTION:

- The installation of Chardon products must be carried out by qualified technical personnel.
- Contact with energized equipment can cause serious damage and even death.
- Wear appropriate protective equipment.
- Make sure Chardon Accessories are completely dry and in good condition at the time of installation.

DANGER:

- Do not touch or handle energized products without adequate protective equipment. Errors in the compliance of this instruction can result in damage to the product, serious injuries to people and even death.
- All associated equipment must be de-energized during installation and maintenance.
- The following instructions do not cover details or variables in the change / installation of the product, to prevent contingencies, please contact the team of Chardon technicians if required.

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.

Warranty

Chardon products are guaranteed for a period of 2 years after their date of purchase, to make this guarantee effective you can come only by presenting a purchase invoice to your authorized Chardon distributor. The warranty will not be valid in the following cases:

1. When the product has been used under conditions other than normal.
2. When the product has not been operated according to the instructions for use.
3. When the product has been altered or repaired by persons not authorized by Chardon.
4. When using components that are no compatible with Chardon accessories.

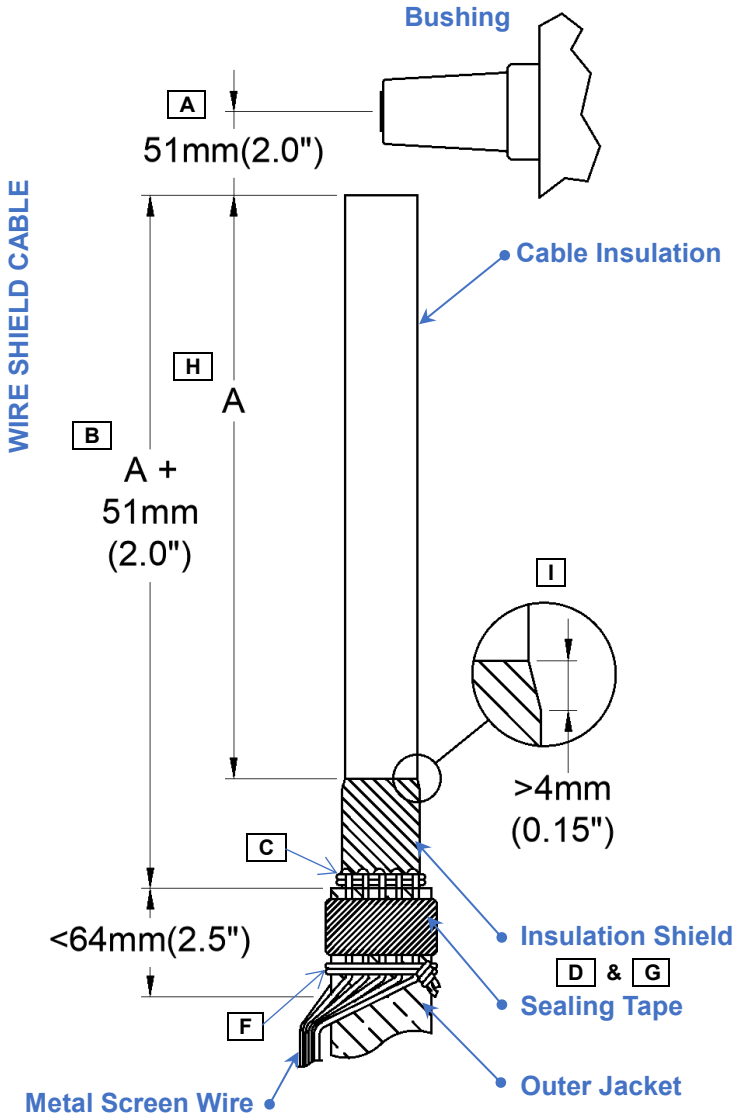
FOR MORE INFORMATION, PLEASE CONTACT YOUR LOCAL DEALER.

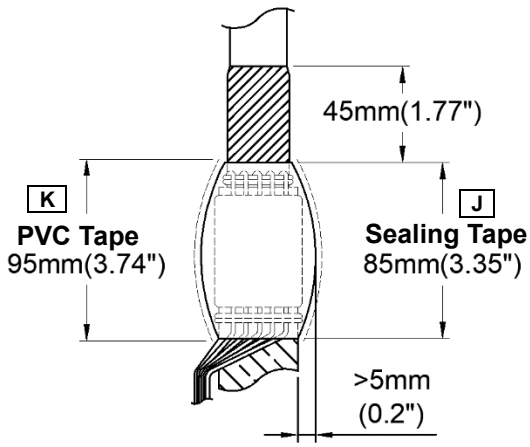
STEP 1:

Check kit components to ensure correct fit according to your project's requirements of **Voltage**, **Cable Diameter** and **Conductor Size** to be used in your installation.

Check CABLE TYPE, for WIRE SHIELD CABLE follow **STEP 2A**, for TAPE SHIELD CABLE follow **STEP 2B**,

STEP 2A Preparation of WIRE SHIELD CABLE





STEP 2A:

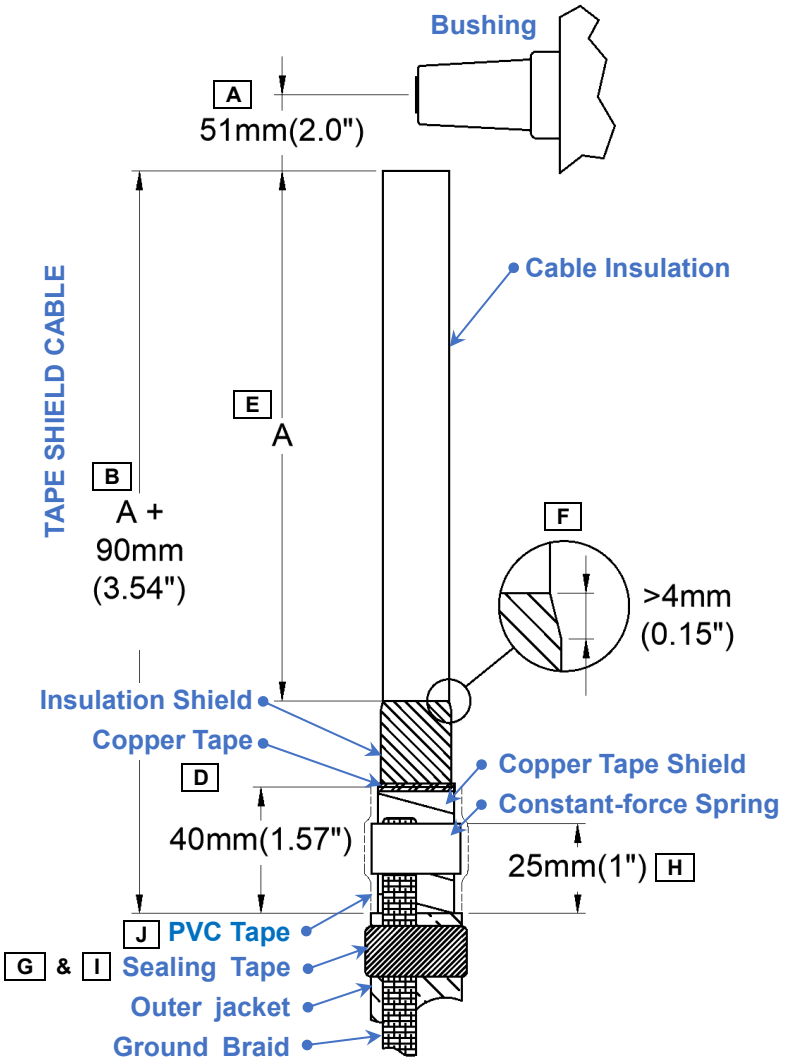
A. Allow **51mm(2.0")** clearance between cable tip and bushing for T-body installation.
B. Remove the Cable Outer Jacket for a distance **"A"+51mm(2.0")** from the end of the cable. If present, remove the Cable Mylar Tape.
C. Use one of the Cable Metal Screen Wires to secure the Cable Metal Screen Wires to Cable Insulation Shield.
D. Use **Sandpaper** to grind the Cable Outer Jacket to rough the surface, clean the grinded surface apply the **Sealing Tape**.
E. Bend the Cable Metal Screen Wires down and parallel to cable.
F. Use one of the Cable Metal Screen Wires to secure the Cable Metal Screen Wires to Cable Outer Jacket.
G. Wrap the **Sealing Tape** onto the Metal Screen Wires.
H. Remove **"A"** of Cable Insulation Shield. Do not damage the Cable Insulation.
I. Eliminate right angles by using **Sandpaper**. Before using **Sandpaper**, cover the Cable Insulation with **PVC Tape** for protecting it and remove **PVC Tape** after sanding.

Reference		A
Shear Bolt Connector	SBC-B-25-120	240mm (9.45")
	SBC-B-95-300	240mm (9.45")
	SBC-B-400-630	240mm (9.45")
	SBC-B-800-1200	240mm (9.45")
Compression Connector		240mm (9.45")

J. Measure **45mm(1.77")** below the Cable Insulation Shield, wrap highly stretched half-lapped with **85mm(3.35") Sealing Tape**.
Note that the height of the tape layer should be **5mm(0.2")** higher than that of the Cable Outer Jacket.
K. Wrap with **95mm(3.74")** 4 layers of **PVC Tape** to cover the Sealing Tape.

Move on to STEP 3.

STEP 2B Preparation of TAPE SHIELD CABLE



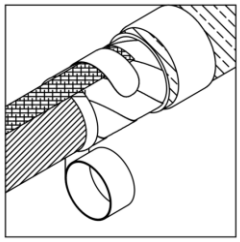
STEP 2B:

* Preparation of **Tape Shield Cable** by using **Grounding Kit**.

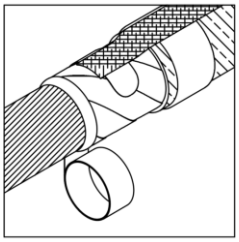
A. Allow **51mm(2.0")** clearance between cable tip and bushing for T-body installation.
B. Remove the Cable Outer Jacket for a distance **"A" +90mm(3.54")** from the end of the Cable. Do not damage the Cable Copper Tape Shield.
C. Keep the **40mm(1.57")** Cable Copper Tape Shield and remove excess.
D. Apply a **Copper Tape** at the end of Cable Copper Tape Shield.
E. Remove **"A"** of Cable Insulation Shield. Do not damage the Cable Insulation.
F. Eliminate right angles by using **Sandpaper**. Before using **Sandpaper**, cover the Cable Insulation with **PVC Tape** for protecting it and remove **PVC Tape** after sanding.

Reference		A
Shear Bolt Connector	SBC-B-25-120	240mm (9.45")
	SBC-B-95-300	240mm (9.45")
	SBC-B-400-630	240mm (9.45")
	SBC-B-800-1200	240mm (9.45")
Compression Connector		240mm (9.45")

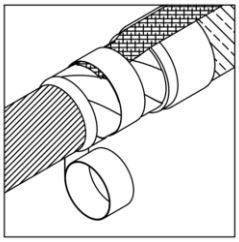
H Constant-force Spring Installation



Press the **Constant-Force Spring** against the **Ground Braid** and wind it once.

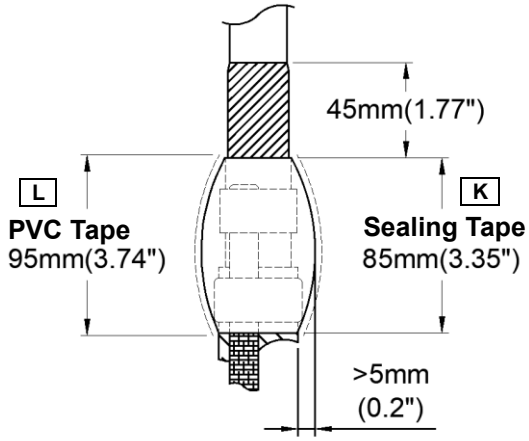


Bend **Ground Braid** down and parallel to the cable.



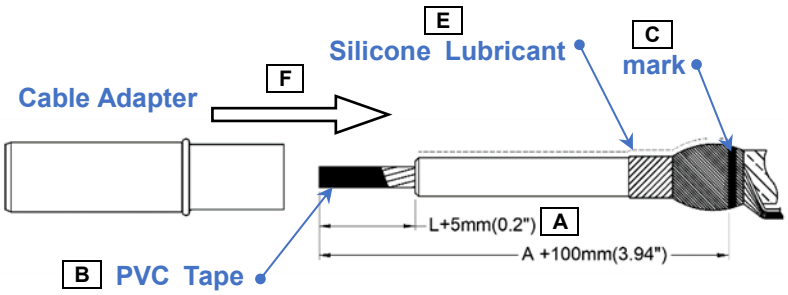
Wind the **Constant-Force Spring** until complete.

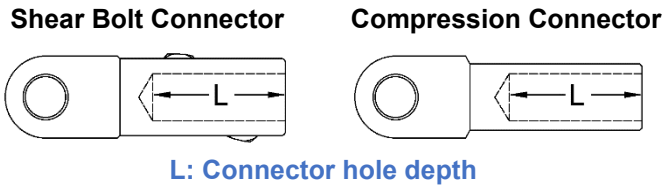
G. Use **Sandpaper** to grind the Cable Outer Jacket to rough the surface, clean the grinded surface apply the **Sealing Tape**.
H. From the top of the Cable Outer Jacket, cover the **Ground Braid** with a **Constant-force Spring**. Install constant-force spring as shown.
I. Wrap the **Sealing Tape** onto the **Ground Braid** and the Cable Outer Jacket.
J. Wrap the Cable Copper Tape Shield, the **Constant-force Spring** and the **Ground Braid** with 2 layers of **PVC Tape**.

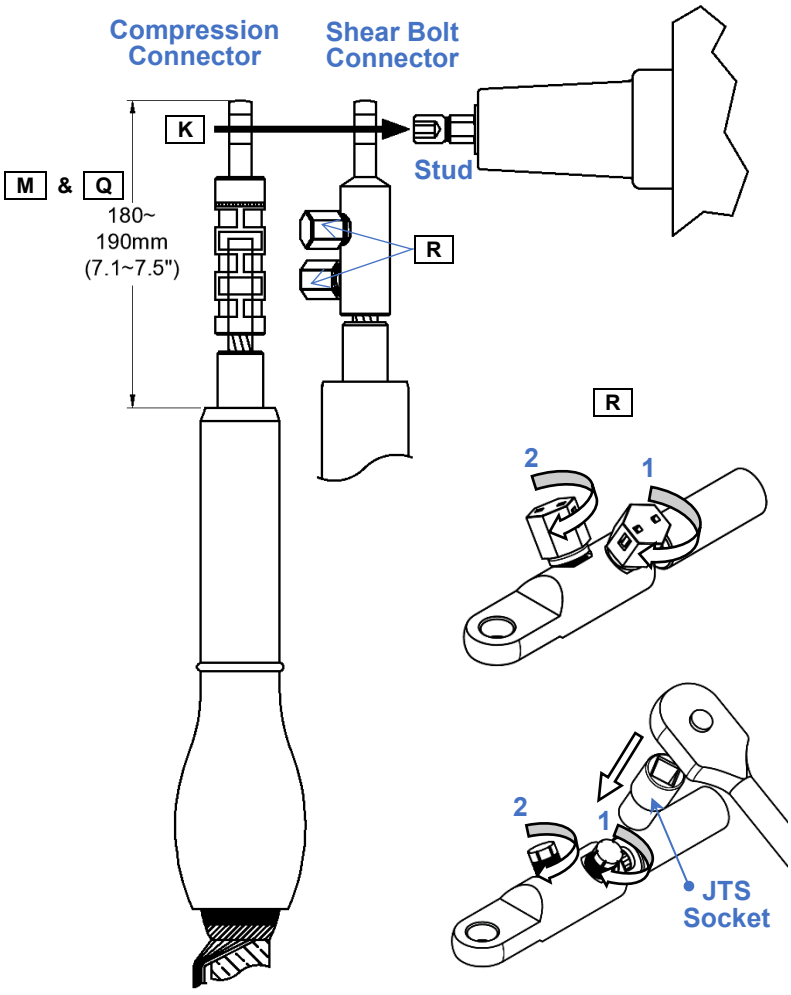


K. Measure **45mm(1.77")** below the Cable Insulation Shield, wrap highly stretched half-lapped with **85mm(3.35") Sealing Tape**.
Note that the height of the tape layer should be **5mm(0.2")** higher than that of the Cable Outer Jacket.
L. Wrap with **95mm(3.74")** 4 layers of **PVC Tape** to cover the Sealing Tape.

Move on to STEP 3.







Connector PN	Conductor Size	Ring Color
SBC-B-25-120	25~50 mm^2	Black
	70~120 mm^2	N/A
SBC-B-95-300	95~120 mm^2	Orange
	150~185 mm^2	Grey
	240~300 mm^2	N/A
SBC-B-400-630	400 mm^2	Blue
	500~630 mm^2	N/A
SBC-B-800-1200	800~1000 mm^2	White
	1000 mm^2	Grey
	1000~1200 mm^2	N/A

STEP 3:

A. Remove **L+5mm(0.2")** mm of Cable Insulation.
B. Use **PVC Tape** to secure the exposed ends of the Cable Conductors. Place a 3.2mm(0.125") maximum chamfer on the insulation to ease **Cable Adapter** installation.
C. Wrap two turns of **PVC Tape** to serve as a marker at a position of **"A" +100mm(3.94")** from the end of the cable.

STEP 4:

D. Polish and thoroughly clean the Cable Insulation using **Sandpaper** and **Paper Towel**.
E. Lubricate the exposed Cable Insulation and the internal interface of the **Cable Adapter**.
F. Slide the **Cable Adapter** onto the cable, end first, until the end is flush with tape marker.
G. Wipe off grease from the end of the **Cable Adapter**.

NOTE:
Do not substitute other lubricants for those provided.

STEP 5:

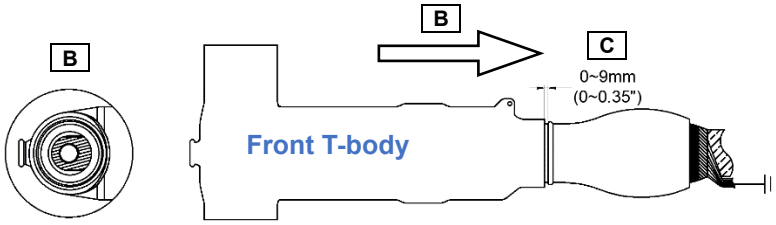
H. Remove **PVC Tape** and the oxide layer on the Cable Conductor surface with a brush.
I. For **Shear Bolt Connector**, select the necessary Rings at the table. Insert the Ring into the connector bore.
J. Fully insert Cable Conductor into **Compression or Shear Bolt Connector**.
K. Make sure that the eyelet of the connector is facing the bushing where the T-body will be installed.

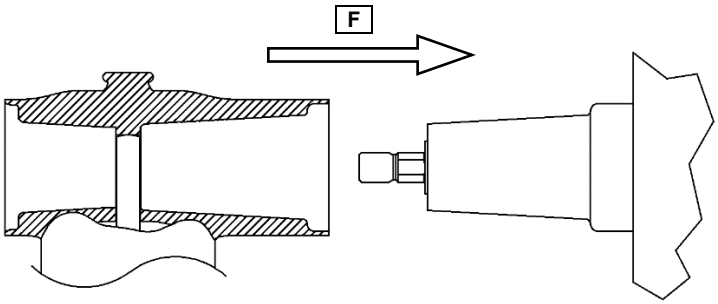
STEP 6-A Compression Connector

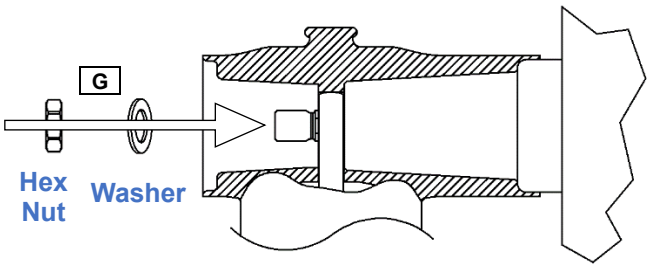
L. Compress once as shown in the image.
M. Make sure the distance from the end of the connector to the **Cable Adapter** after crimping should be between 180 to 190mm(7.1 to 7.5").
N. Rotate the tool 90° between each successive crimp to prevent connector distortion.
O. Re-align the connector with the cable to eliminate any bends caused by crimping.

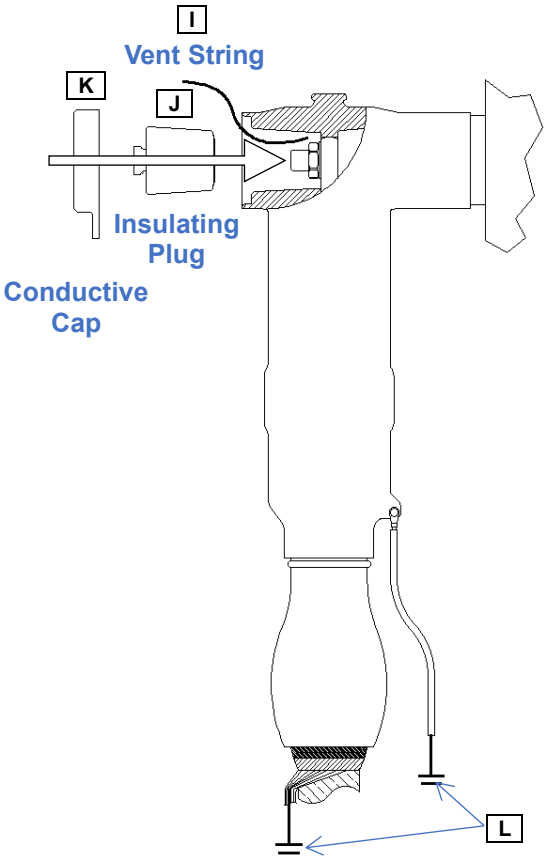
STEP 6-B Shear Bolt Connector

P. Hand-tighten all bolts to fix Cable Conductor at the center of the **Shear Bolt Connector**.
Q. Make sure the distance from the end of the connector to the **Cable Adapter** should be between 180 to 190mm(7.1 to 7.5").
R. Use a torque wrench to tighten the bolt (2 times 1/4 turn approximately) in order 1 then 2 alternately until they shear off.
If use a JTS tool, take off the plastic shell, use the JTS socket to fit the bolt. Tighten the bolt (2 times 1/4 turn approximately) in order 1 then 2 alternately until they shear off. It is important that the JTS socket collar remains in contact with the connector body at all times.
S. Once the bolt shears off, use a file to even out all the sharp edges.









STEP 7:

A. Clean and evenly lubricate the entire interior surface of the **Cable Adapter** with silicone lubricant. Lubricate inside the cable entrance of the **Front T-body** at least 51mm(2") deep.
B. Slide the **Front T-body** onto the cable with a twisting motion. Ensure that the hole in the top of the connector is visible through the interface end of the T-body.
C. Make sure the distance from the end of T-body to the **Cable Adapter** ring should be between 0~9mm (0~0.35").

STEP 8:

D. Tighten the **Stud** to 30Nm (266 in-lbs) by using a 14mm (0.55") open end wrench.
E. Clean and evenly lubricate both interfaces of **Front T-body** and equipment bushing.
F. Push the **Front T-body** onto the equipment bushing. Make sure the **Stud** passes through the hole of connector.

If need to install Coupling T-body, move on to STEP 12.

STEP 9:

G. Push **Washer** and **Hex Nut** on the **Stud** and tighten the **Hex Nut** to 50~55Nm (443~487 in-lbs) by using a torque wrench with 24mm (0.95") socket.
H. Clean and evenly lubricate both interfaces of **Front T-body** and **Insulating Plug**.

STEP 10:

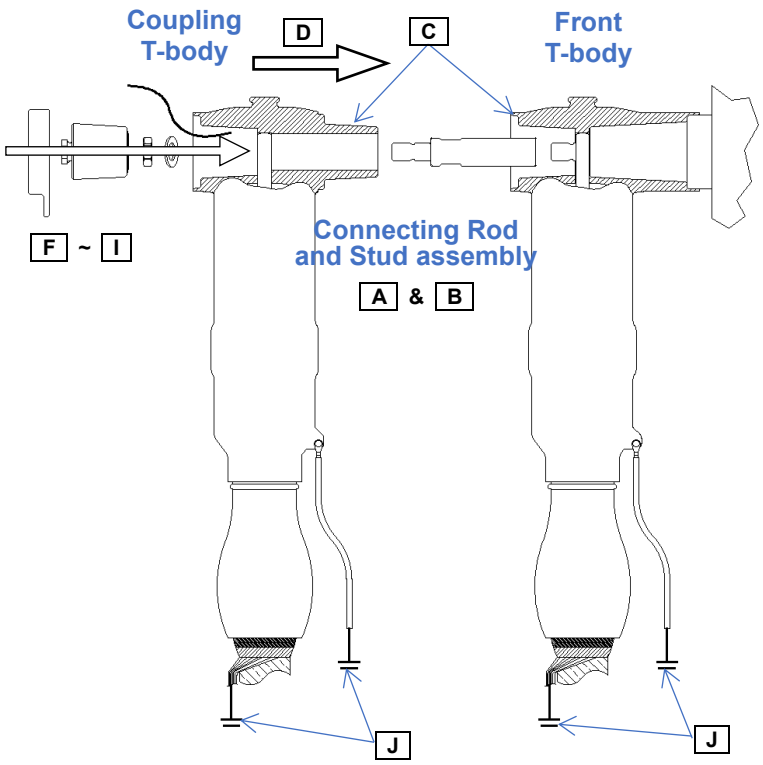
I. Use the **Vent String** when inserting the **Insulating Plug** into the **Front T-body** to remove the air confined inside the T-body. Engage the plug threads to the thread of **Stud** for two turns, remove vent string by pulling it steadily and slowly.
J. Tighten the **Insulating Plug** to 35~40Nm (310~354 in-lbs) by using a torque wrench with 19mm (0.75") socket.

STEP 11:

K. Clean the interior surface of the **Conductive Cap**. Place it over the **Insulating Plug** and push it until it snaps into place.
L. Connect Grounding Wire (Wire size > 2.5mm^2 / #14AWG) on **Front T-body** to the grounding system. Attach the Cable Metal Screen Wire or Ground Braid to the system ground.

COUPLING T-BODY INSTRUCTIONS

Before installing **Coupling T-body**, complete **step 1 to step 8** of **Front T-body** instructions. If **Front T-body** was installed completely, remove **Conductive Cap**, **Insulating Plug**, **Hex Nut** and **Washer**.



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.

CAUTION:
The connector and cable should be kept as straight as possible and avoid excessive bending of cable. Excessive bending of cable may result in gaps between the connector and cable.

CAUTION:
The waste generated during the construction should be sorted and disposed of properly. It should not be discarded arbitrarily.

STEP 12:

A. Install the **Connecting Rod** and **Stud** assembly by hand in the **Front T-body**. Make sure the **Stud** in the equipment bushing passes through the hole inside of the connector.
B. Tighten **Connecting Rod** and **Stud** assembly with a torque of approximately 50~55Nm (443~487 in-lbs) by using 27mm (1.06”) and 14mm (0.55”) open end wrench.

STEP 13:

Repeat **steps 1 to step 7**, prepare Cable and install Coupling T-body Connector.

C. Clean and evenly lubricate both interfaces of **Front T-body** and **Coupling T-body**.
D. Slide the **Coupling T-body** over the **Rod** and **Stud** assembly and into the **Front T-body**.

STEP 14:

E. Put the **Hex Nut** onto the **Rod** and **Stud** assembly and tighten to 50~55Nm (443~487 in-lbs).
F. Clean and evenly lubricate both interfaces of **Coupling T-body** and **Insulating Plug**.
G. Use the **Vent String** when inserting the **Insulating Plug** into the **Coupling T-body** to remove the air confined inside the T-body. Engage the plug threads to the thread of **Stud** for two turns, remove vent string by pulling it steadily and slowly.
H. Tighten the **Insulating Plug** to 35~40Nm (310~354 in-lbs).
I. Clean the interior surface of the **Conductive Cap**. Place it over the **Insulating Plug** and push it until it snaps into place.
J. Connect Grounding Wire (Wire size > 2.5mm^2 / #14AWG) on **Front T-body** and **Coupling T-body** to the grounding system. Attach the Cables Metal Screen Wire or Ground Braid to the system ground.