

CAUTION : Read instructions thoroughly and completely prior to beginning installation.

### Installation instructions for separable tee connector - type F interface



# 909TB/G










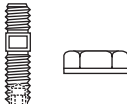



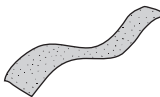


Up to 52 kV

Only to be used on copper wire screened cable with extruded easy strip or bonded semi-conductive screen and conductors of copper or aluminium.  
For conductor cross sections 630 mm<sup>2</sup> only.

Check if the diameter over cable core insulation is in accordance with the cable reducer range as indicated in table below:

Cable reducer size (see label on cable reducer)	Dia. over core insulation (mm)	
	min	max
972CA-43	46.5	51.0

**Required components for the connector installation :**

 1 x 909TB/G tee connector	 1 x Cable reducer 972CA-43	 1 x Heat-shrink tube	 +  1 x Conductor contact 900TMBC-630UN5 Installation instructions	
 1 x Basic insulating plug + cap - 900BIPA	 Field control mastic, type MFC (Hi-K)	 Water sealing mastic, type MWS (outdoor applications)	 Nylon wire 2 m	 3 x Threaded stud M16 & flange nut
 Silicone grease + wipers	 Gloves	 Roll adhesive tape	 Sand paper	 Water sealing mastic, type NGAF (outdoor applications)
 Installation instructions				

**Risk assessment :**

<b>Hazard</b>	<b>Cause</b>	<b>Precaution</b>
Cut fingers or hands	Sharp ends of Cu wire screens. Sharp edges of knives, or blades of cable preparation tools.	Tape ends of Cu wire screens down to the sheath. Use gloves. Take extra care handling sharp items.
Back, arm or wrist strain	Installation of cable adapter.	Ensure you position yourself comfortably over/around the cable adapter when installing to ensure no unnecessary strain.

**Before Starting**

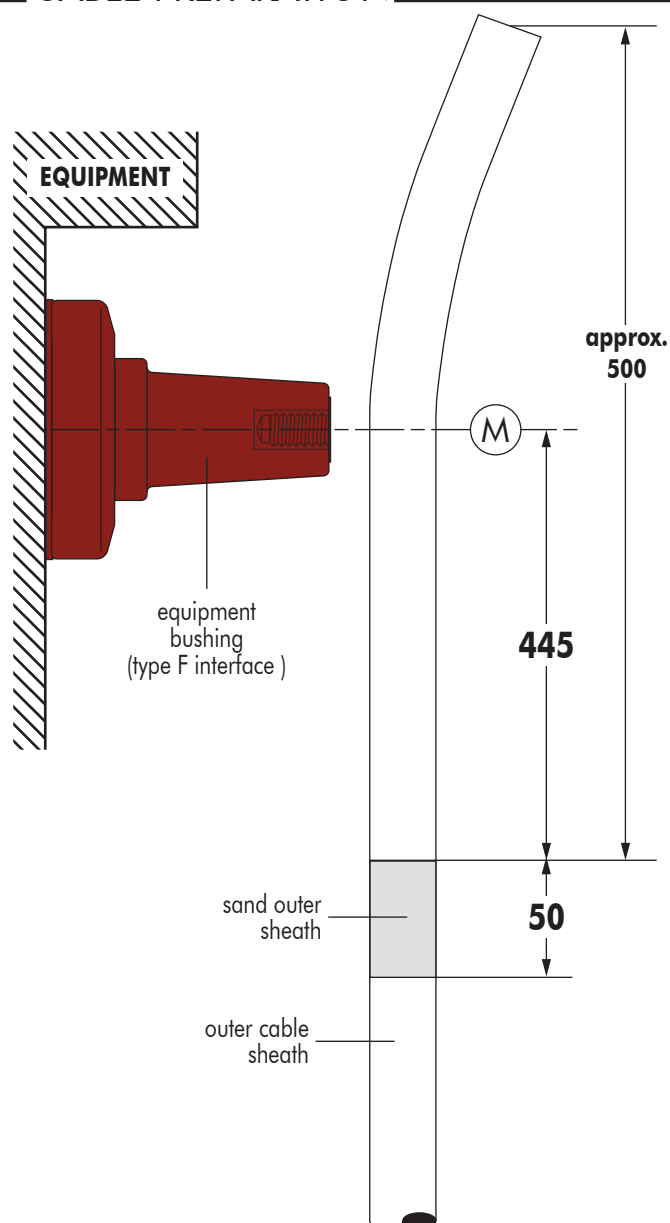
- Ensure the components in the kit are correct for the cable. The cable adapter and cable lug have the ranges on the label.
- Cross check the label on the box with the title of the instruction.
- Some procedures may have changed since you last installed the product. Ensure you read the instruction thoroughly.

**Sheath test all cables prior to all jointing work. Megger all cables (5 kV).**

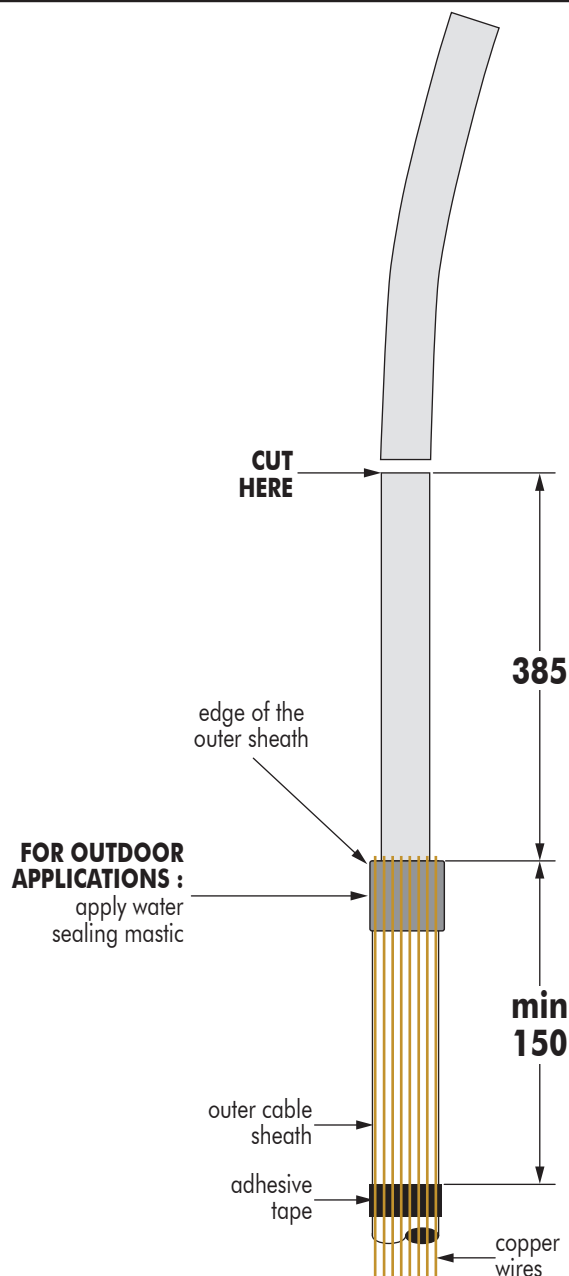
<b>Route km</b>	<b>Screen to earth Minimum values</b>		<b>Core to earth Minimum values</b>	
<b>km</b>	<b>Giga Ohms</b>	<b>Micra Amps</b>	<b>Giga Ohms</b>	<b>Micra Amps</b>
0.25	1	5	4	1.25
0.5	1	5	3	1.66
	<b>Mega Ohms</b>		<b>Mega Ohms</b>	
0.5-1	500	10.0	2000	2.5
2	500	10.0	2000	2.5
3	340	14.7	1332	3.75
4	260	19.2	1000	5.0
5	200	25.0	800	6.25
6	166	30.7	666	7.5
7	142	35.2	572	8.7
8	124	40.3	500	10.0
9	110	45.4	444	11.2
10	100	50.0	400	12.5
11	90	55.5	364	13.7
12	82	60.9	334	14.9
13	76	65.7	308	16.2
14	72	69.4	286	17.4
15	66	75.7	266	18.7
16	62	80.6	250	20.0
17	58	86.2	236	21.1
18	54	92.5	222	22.5
19	52	96.1	210	23.8

**NB : Only one phase is shown in these instructions. Make off all three phases the same way. Use a cable conversion kit for 3-core cables.**

## CABLE PREPARATION



- 1** Train the cable into the approximate finished position next to the equipment bushing.
- 2** Mark the centre line « **M** » of the bushing.
- 3** Remove the outer cable sheath to a point **445** mm from the centre line « **M** » of the bushing.
- 4** Sand the outer sheath over a distance of **50** mm.



### For indoor applications :

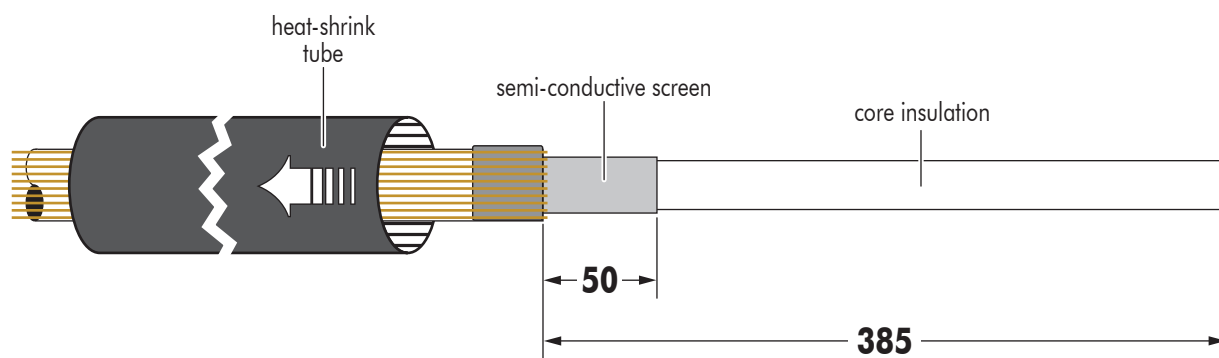
bend the screen wires back over the outer sheath and proceed to step no. 6.

### For outdoor applications :

- Wrap one layer of water sealing mastic (type MWS) around the outer sheath, flush with the end (**25** mm minimum width). Completely encircle the cable.
- Bend the screen wires back over the mastic and along the outer sheath, pressing them into the mastic.

**IMPORTANT :** screen wires should not touch each other when pressed into the mastic to prevent water ingress.

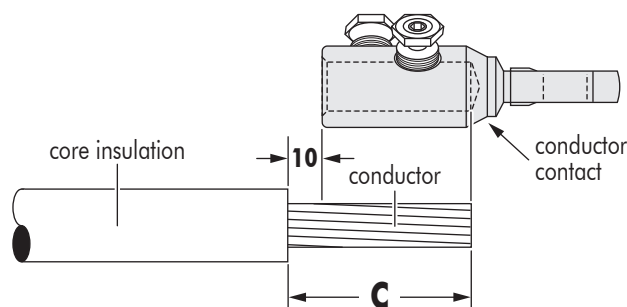
- 6** Using adhesive tape, fix the screen wires at a distance of min **150** mm from the edge of the outer sheath.
- 7** Cut the cable to a point **385** mm from the outer sheath.



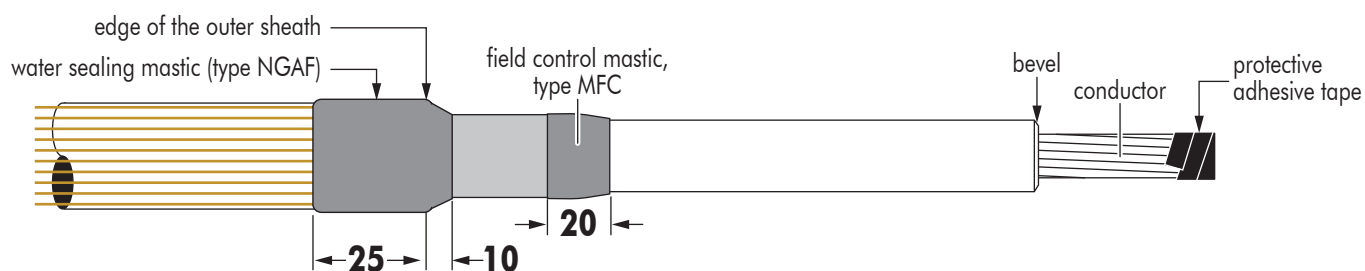
- 1 Slide the heat-shrink tube over the cable.
- 2 Check distance of **385** mm.
- 3 Remove the semi-conductive screen to a point **50** mm from the outer sheath.

## REMOVAL OF THE CORE INSULATION

### Mechanical type contacts (Type 900TMBC-630UN5)

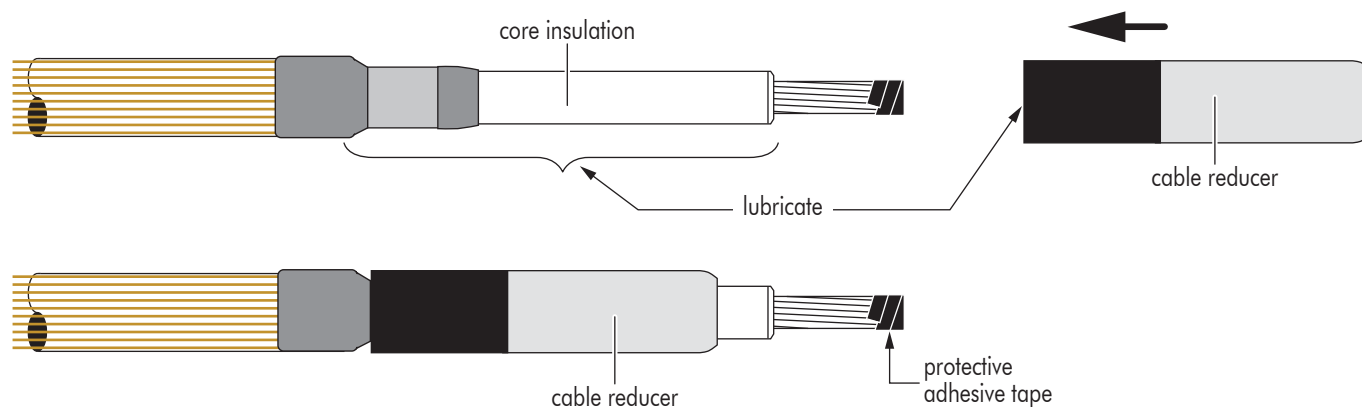


- 1 **For mechanical type contacts :** remove the core insulation from the conductor for a distance « **C** » mm (**C** = depth of contact bore + **10** mm).



- 2 Slightly bevel the edge of the core insulation. **Do not sharpen in cone-shape.**
- 3 **Thoroughly clean core insulation.** Always wipe towards the screen wires.
- 4 As a protection, wrap a few turns of adhesive tape around the conductor end.
- 5 Remove field control mastic strip, type MFC, from coated paper. Apply the mastic on the cutback edge of the semi-conductive screen, covering approximately **10** mm of the extruded semi-conductive screen and **10** mm of the core insulation. Push the mastic in place while stretching it progressively until both ends overlap and tear-off the excess mastic. Using the coated side of the paper, squeeze the mastic tightly in place on the step of the semi-conductive screen.
- 6 **For outdoor applications:** Wrap another layer of water sealing mastic (type NGAF). Start taping **25** mm from the end of the outer sheath over the first mastic layer and the screen wires and continue up to a point **10** mm on the semi-conductive screen. Make a cone-shape.

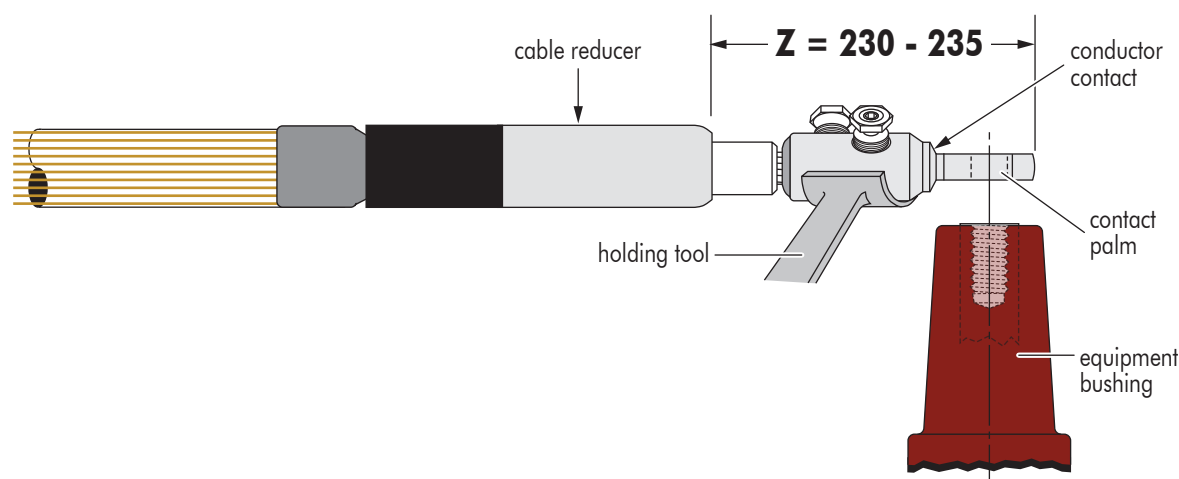
## INSTALLATION OF THE CABLE REDUCER



- 1** Lubricate\* the indicated area : core insulation, mastic, semi-conductive screen and inner surface of the reducer.
- 2** Slide the reducer down the cable.
- 3** Remove the protective adhesive tape from the conductor.

## CRIMPING/TIGHTENING OF THE CONTACT

### Before tightening



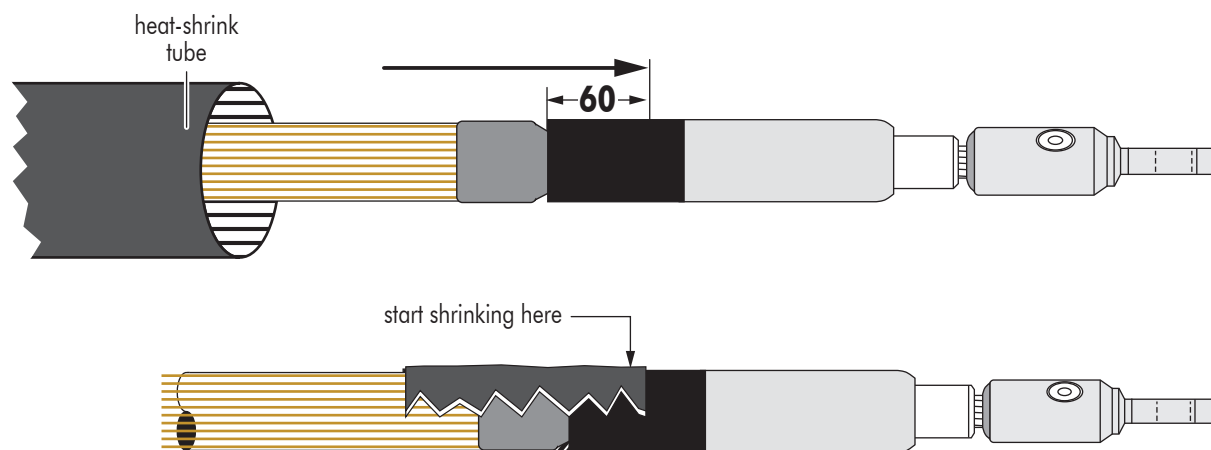
- 1 For aluminium conductors : before installing the conductor contact, wire brush the conductor.
- 2 Insert, if necessary, the centre ring into the contact barrel according to the table in the contact installation instruction.
- 3 Position the contact taking care that the contact hole aligns with the bushing hole.
- 4 Before tightening, distance «  $Z$  » must be between **230** and **235** mm.
- 5 Tighten the contact. Please refer to the installation instruction included with the contact.

### After tightening



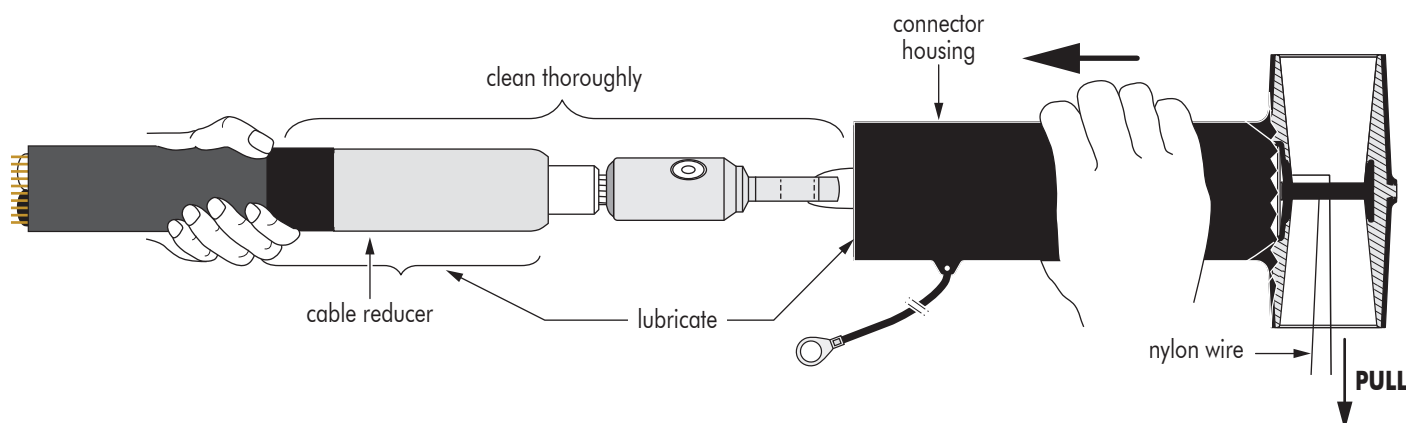
- 6 After tightening, distance «  $Z$  » must be between **230** and **240** mm.  
If necessary, adjust the position of the cable reducer until distance «  $Z$  » is within the tolerance range.

## WATER SEALING



- 1 Mark a distance of **60** mm starting at the end of the cable reducer.
- 2 Slide the heat-shrink tube over the black part of the cable reducer until flush with the marker.
- 3 Shrink down the tube. Start shrinking at the side of the contact using a torch with a soft yellow flame. Heat regularly in the same direction and in a circular motion around the tube while moving forward continuously. Take care that the tube doesn't glide off during shrinking. Let the tube cool down.

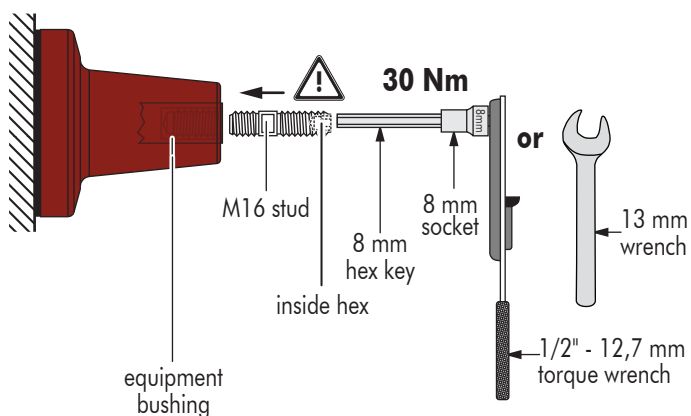
## CONNECTOR INSTALLATION ON CABLE



- 1 **Clean cable reducer, core insulation and contact.**
- 2 Lubricate\* the inside of the connector housing and outer surface of the cable reducer.
- 3 Whilst preventing the cable reducer from further movement down the cable, gently slide the housing on the cable. Its final position is reached when the centre of the contact spade is along the axis of the interfaces of the connector.  
**The cable reducer must stay in place during installation.** In case of a flexible cable, pull the cable contact through the connector by means of the nylon wire. Afterwards remove the nylon wire.



## CONNECTOR INSTALLATION ON BUSHING

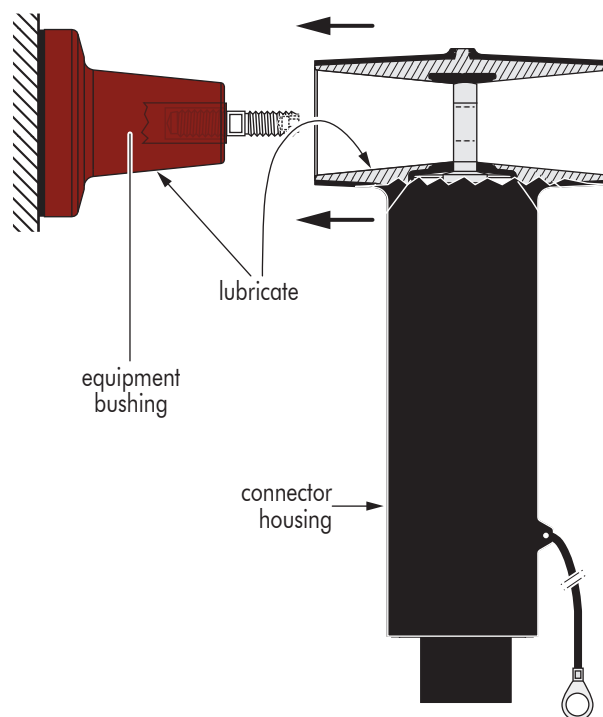


- 1 Install M16 threaded stud into the bushing interface.
- 2 Using a 13 mm wrench or a hex key of 8 mm, tighten the stud exerting 30 Nm (3 kgm or 22,1 foot-pounds).

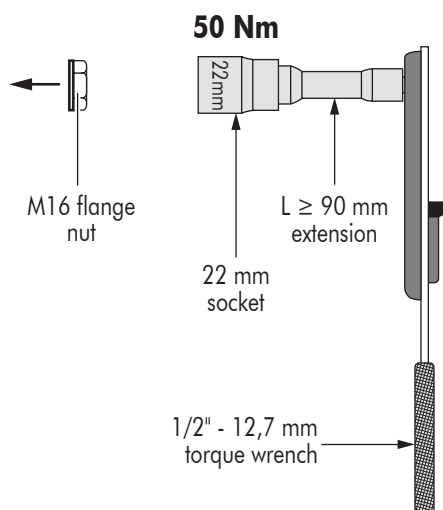
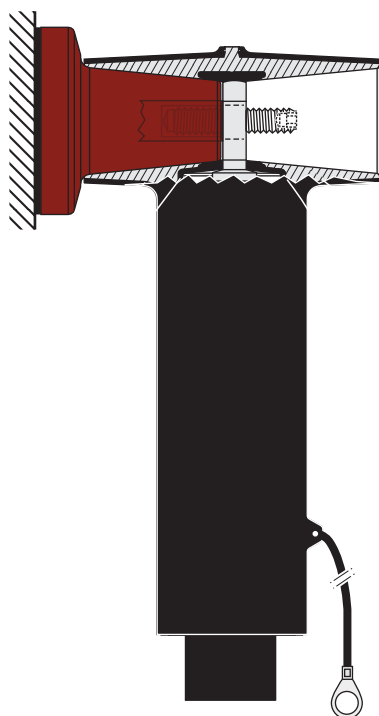


### Position of the stud:

The longest side with inside hex outside of the bushing interface.



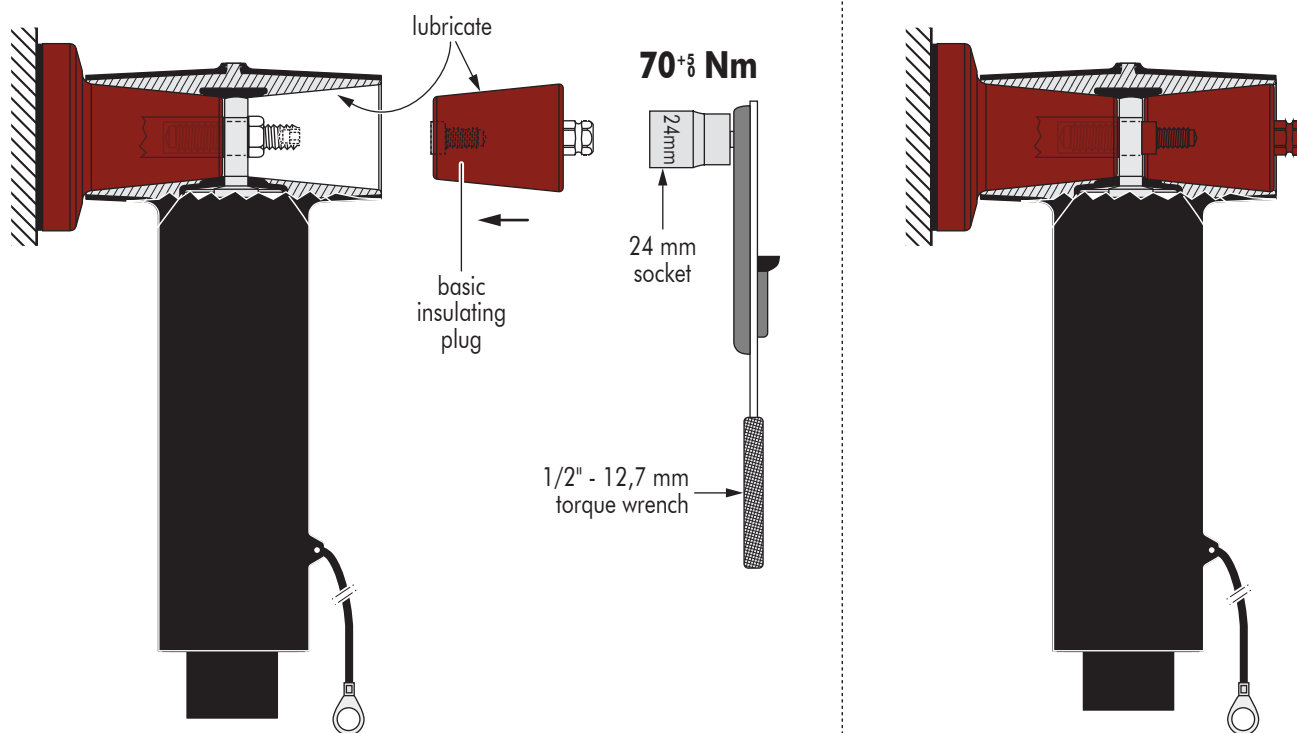
- 3 Clean and lightly lubricate\* both connector and bushing interface.
- 4 Push the connector on to the bushing.



- 5 Install the M16 flange nut on to the threaded stud.
- 6 Use torque wrench with a socket wrench 22 and tighten exerting 50 Nm (5 kgm or 36,9 foot-pounds) of torque.  
**In order to achieve the correct applied torque ensure that there is no lubricant on the threaded parts.**

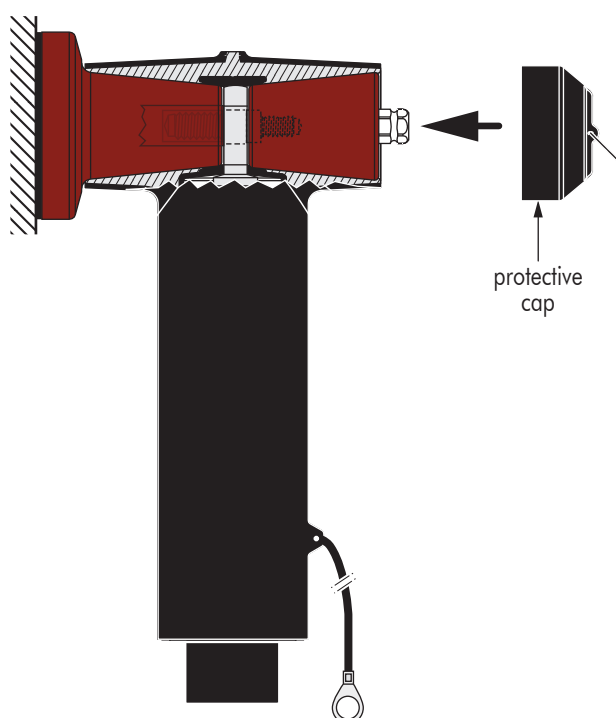
\* USE ONLY THE SILICONE LUBRICANT SUPPLIED

## INSTALLATION OF THE BASIC INSULATING PLUG



- 1 Clean and lubricate\* the insulating plug for the opposite side of the connector.
- 2 Insert the plug in the connector and tighten it until the plug noticeably blocks in its end position (no further rotation is possible), using a torque wrench with a socket of 24 mm. **Remark:** The required torque may exceed **70 Nm**.
- 3 Once the plug is blocked, apply a torque of **70<sup>+5</sup> Nm** to secure.

## INSTALLATION OF THE CAP



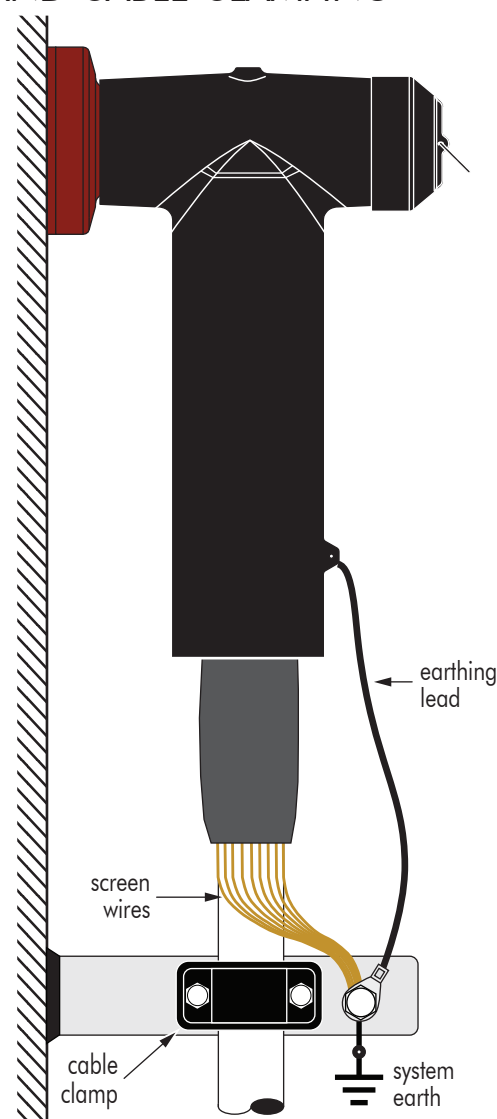
### Installation on insulating plug :

Clean the inside of the cap and the outside surface of the connector and insulating plug. Push the cap over the connector and on to the insulating plug. Slightly pull up the edge of the cap to exhaust the air during assembly. Press the centre of the cap on to the locking point until it snaps in place. Position the cap with the pulling tab pointing downwards.

### NOTE :

**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.**

## CONNECTOR EARTHING AND CABLE CLAMPING



- 1 Bend back the screen wires along the outer sheath to form a pig tail.
- 2 Connect the earthing lead and screen wires to the system earth.

### IMPORTANT NOTES :

- **Never disconnect the connector from energised equipment nor energise a disconnected connector without previously installing on its appropriate corresponding mating part.**
- **Do not allow hydrocarbon oils or solvents to contaminate the E.P.D.M. rubber.**  
**In the event of contamination, wipe the surface clean with a dry cloth.**