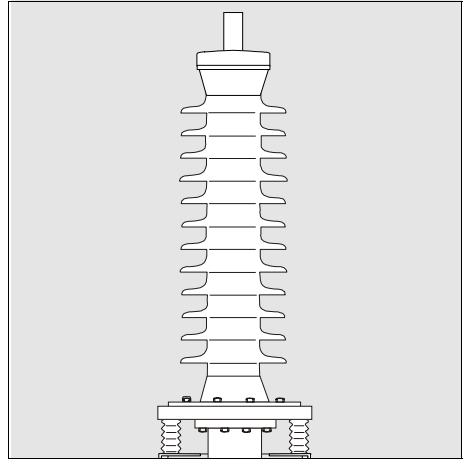


Raychem



Installation Instruction

EPP-1050-8/02

**Outdoor Termination
For Polymeric Cables
with Wire Shield**

U_{max} • 170 kV

OHVT-170XX

Tyco Electronics Raychem GmbH
Energy Division
Finsinger Feld 1
85521 Ottobrunn
Munich, Germany
Tel. ++49-89-6089-0
Fax ++49-89-6096345

Before Starting

Check to ensure that the kit you are going to use fits the cable.

Refer to the kit label and the title of the installation instruction.

Components or working steps may have been improved since you last installed this product.

Carefully read and follow the steps in the installation instruction.

General Instructions

Use a propane (preferred) or butane gas torch.

Ensure the torch is always used in a well-ventilated environment.

Adjust the torch to obtain a soft blue flame with a yellow tip.

Pencil-like blue flames should be avoided.

Keep the torch aimed in the shrink direction to preheat the material.

Keep the flame moving continuously to avoid scorching the material.

Clean and degrease all parts that will come into contact with adhesive.

If a solvent is used follow the manufacturer's handling instructions.

Tubing should be cut smoothly with a sharp knife leaving no jagged edges.

Start shrinking the tubing at the position recommended in the instruction.

Ensure that the tubing is shrunk smoothly all around before continuing along the cable.

Tubing should be smooth and wrinkle free with inner components clearly defined.

The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, Tyco Electronics has no control over the field conditions which influence product installation.

It is the user's responsibility to determine the suitability of the installation method in the user's field conditions. Tyco Electronics' only obligations are those in Tyco Electronics' standard Conditions of Sale for this product and in no case will Tyco Electronics be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products.

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General Instructions (continued)

Obey relevant security and safety rules during the installation.

The cable training and laying needs to be finished and the cable ends have to be properly sealed.

Cable racks are necessary for final positioning and ensure the installation area is free from dust and kept dry.

During the cable preparation the working environment has to be kept clean (tent or shelter) and the installers should wear clean working overalls.

All tools and devices must be free from oil and grease.

All bolts and nuts should be lubricated with Molycote before use.

Torque limits must be checked.

Use appropriate stripping tools to allow for smooth and uniformly round insulation diameter and smooth insulation surface.

NOTE: Adjust the stripping tool to the thickness of the semicon layer so that only the layer is thoroughly removed.

Adjust the cutting depth at the semicon cut to ensure a chamfered transition.

After the tools have been used polish the stripped surface by hand or a machine grinder using 220 grid (Aluminum Oxide cloth) followed by 400 grid.

Remove all protection varnish (red) from the sealing grooves on the metal mounting plates. Grease all sealing O-rings before application (silicone oil / silicone grease).

The oil must be at room temperature before filling (*see step 24*).

Cable Preparation

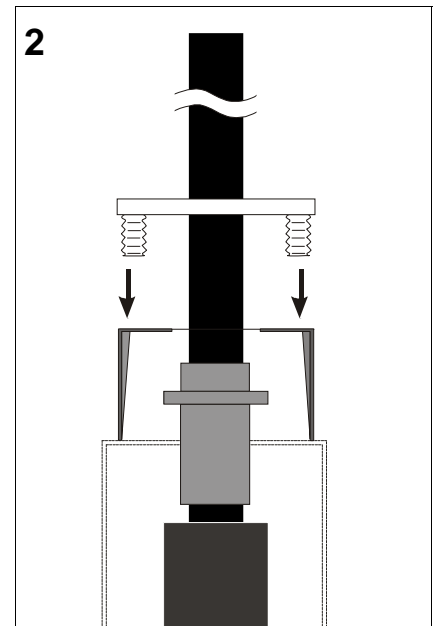
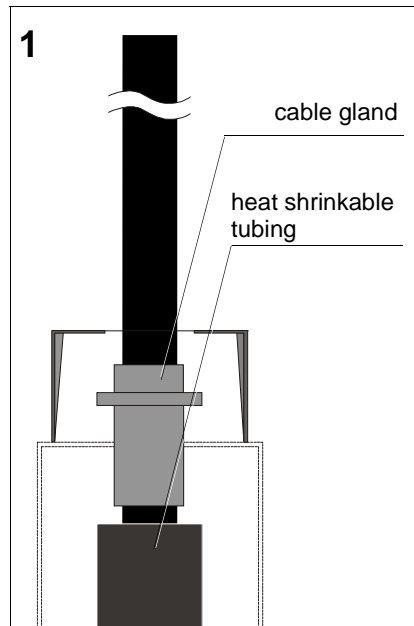
Train the cable end in the straight installation position and fix it. Heat the entire cable by applying heating tape to the oversheath for a minimum of 6 h at 70°C. The temperature needs to be controlled by appropriate thermo couples at the oversheath or by self-regulating heating tapes, which can be provided by the Tyco Electronics Energy Division. Before stripping to the required dimensions the cable needs to be cooled down to ambient temperature.

Cable with wire shield

L = 1650 mm

Table 1

Ref. No. of molded part	D
3.35519-05	41.6-52.0
3.35519-02	50.0-58.5
3.35519-03	56.0-66.0
3.35519-06	64.0-75.0
3.35519-07	72.0-84.0



Degrease and clean the oversheath for up to 1800 mm from the graphite coating. Slide the heat shrinkable sealing sleeve and the cable gland onto the cleaned cable surface.

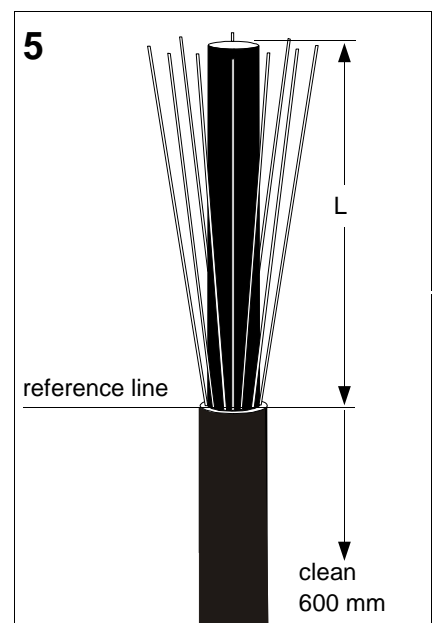
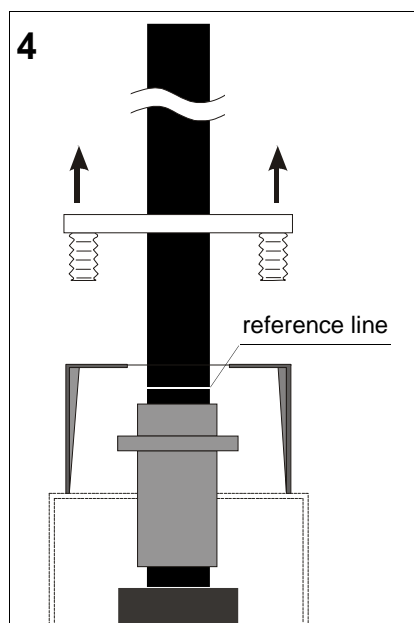
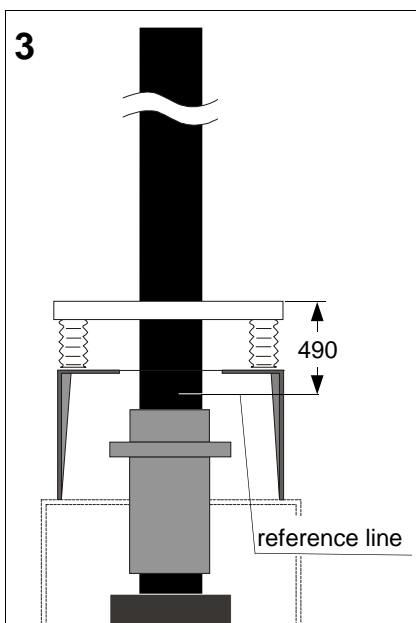
Temporarily mount the base plate onto the termination rack, feeding the cable through the base plate hole.

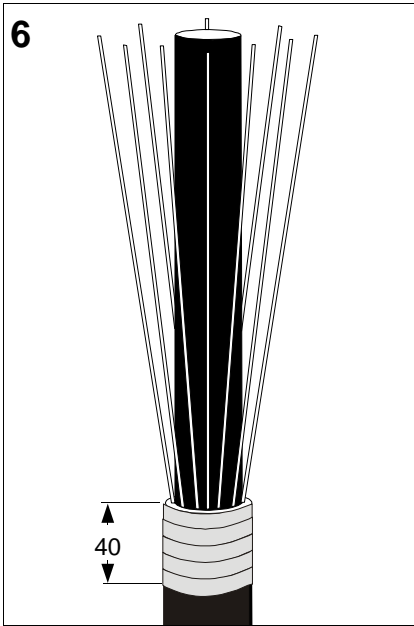
For cable with laminated polymer oversheath follow the cutback and stripping dimensions as described in the separate instruction EPP-0742.

Mark the reference line 490 mm below the top of the base plate. **This is the reference line for all further installation procedures.**

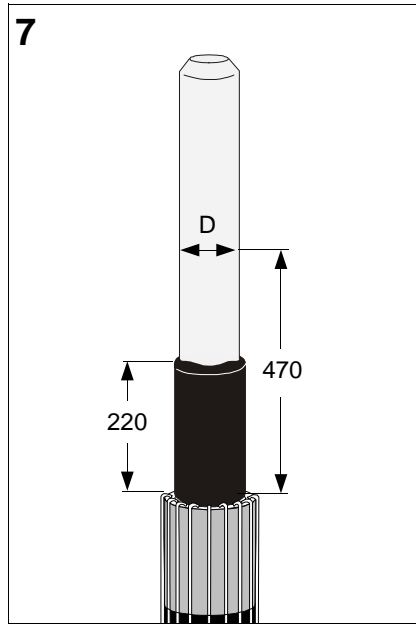
Remove the base plate.

Remove the oversheath to dimension L.

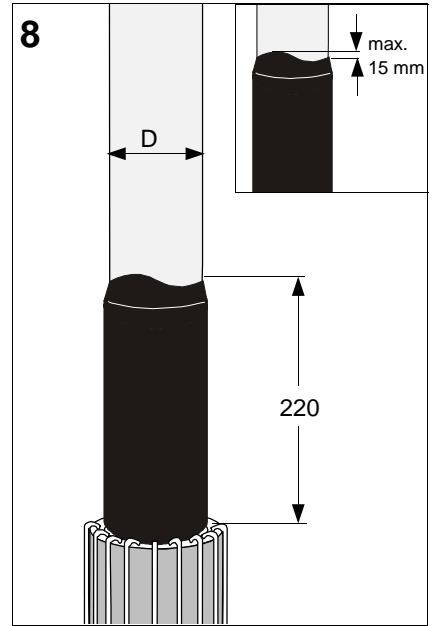




Apply sealant tape (red) with slight tension for approx. 40 mm of the oversheath.



Thoroughly remove the core screen to within 220 mm of the oversheath cut to diameter **D** (see **Table 1**) kept within a range of 470 mm. Chamfer the transition in between 20 to 30 mm of the semicon screen (see also NOTE in General Instructions). The stripping tool should be adjusted to the max. diameter as given in **Table 1** allowing for further reduction during the polishing process.



Chamfer the core screens

Abrade and smooth the insulation up to 220 mm from the screen cut.

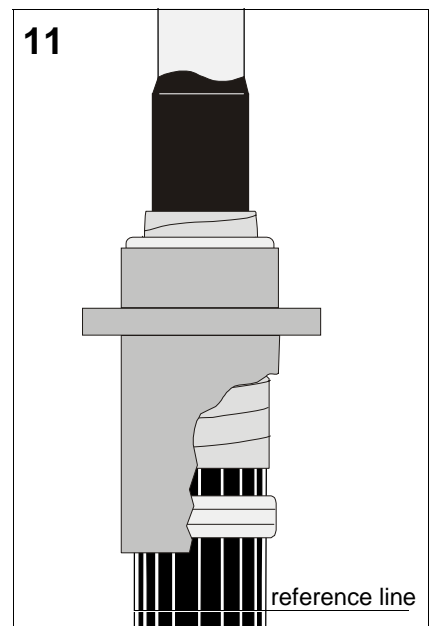
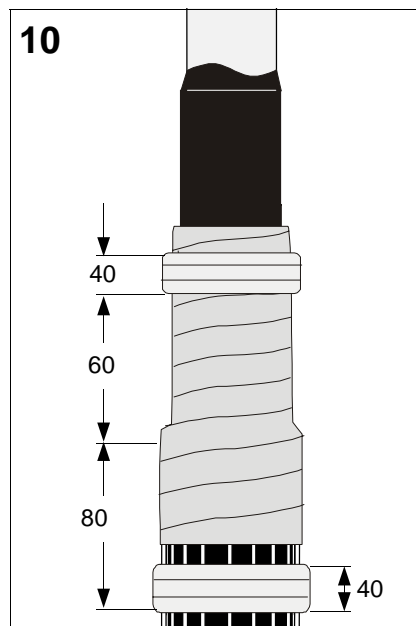
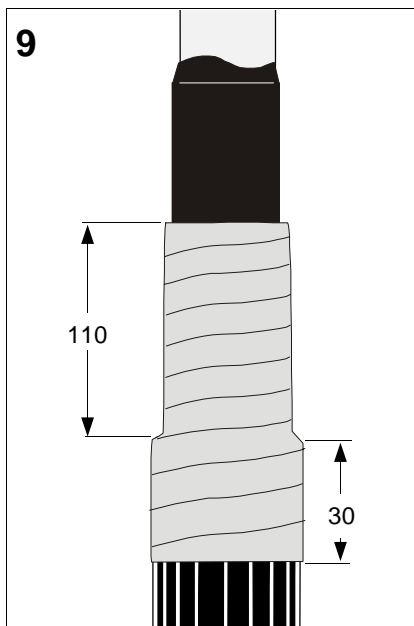
Note: Do not nick the insulation.

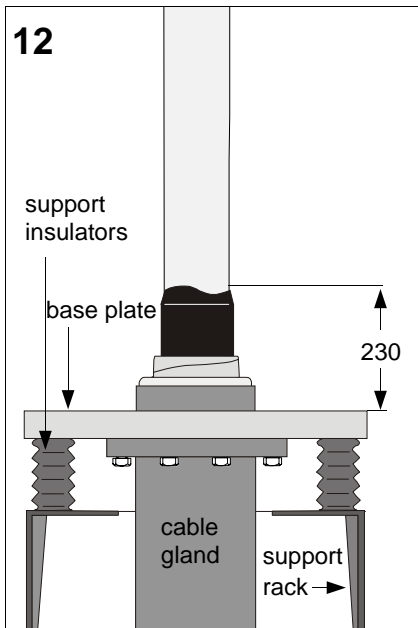
For dimension **D** see **Table 1**. The tolerances given must be kept. Make sure the semicon transition wave shape is in accordance with the values and shape shown in the drawing below. Clean and degrease the insulation with the supplied cleanser in direction of the semicon to prevent contamination. Protect the cleaned surface with non-adhesive PVC tape.

Apply a layer of semicon self-algaming tape with 50 % overlap onto the outer semicon screen, starting 110 mm above the cable oversheath, moving downwards and overlapping the copper shielding wires by 30 mm.

Wrap a 40 mm self-algaming wide bump beginning at 60 mm below the oversheath cut. The tape should match the inner diameter of the gland. Wrap the same bump measured 80 mm below the oversheath cut 40 mm wide onto the semicon layer. Dimensions are given in the picture above.

Position the cable gland above the reference line.





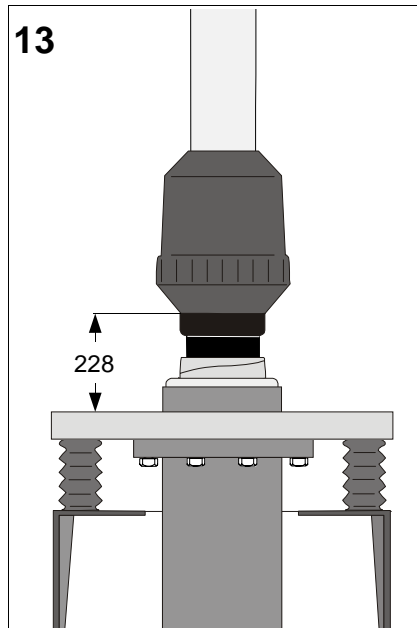
Mount the base plate onto the support rack. Feed the cable through the base plate and bolt the cable gland against the base plate. *)

Move the cable into position until the control dimension of 230 mm is reached. Fix it with appropriate cable cleats

*) - Ensure that the sealing ring in the cable gland is positioned correctly

- Use a torque of 42 Nm to fasten the bolts

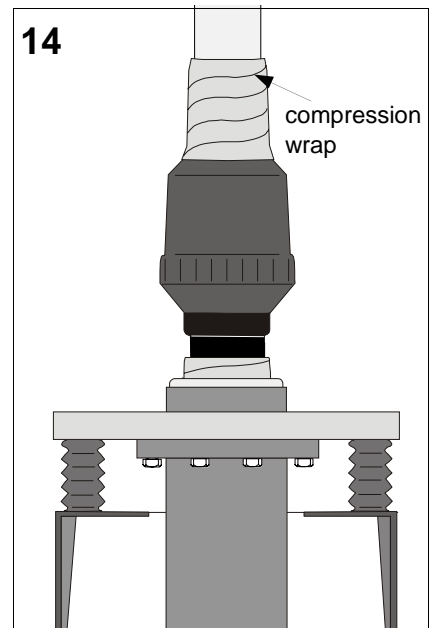
Wrap one layer of semicon self-algaming tape with an overlap of 50 % onto the stress cone collar starting approx. 20 mm on the cable gland tubing.



Installing the stress cone

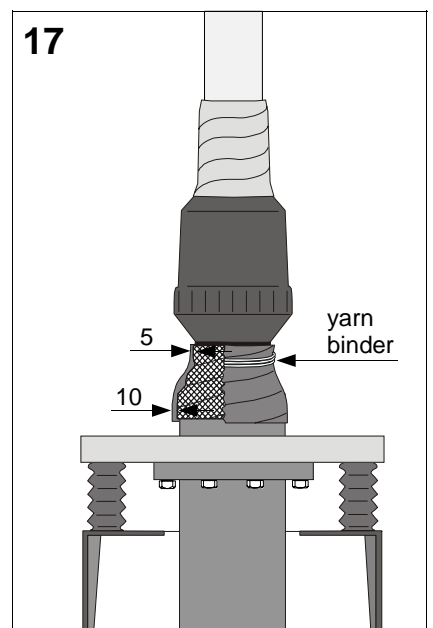
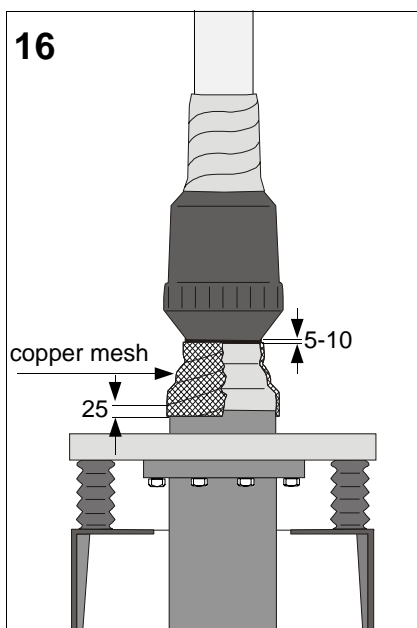
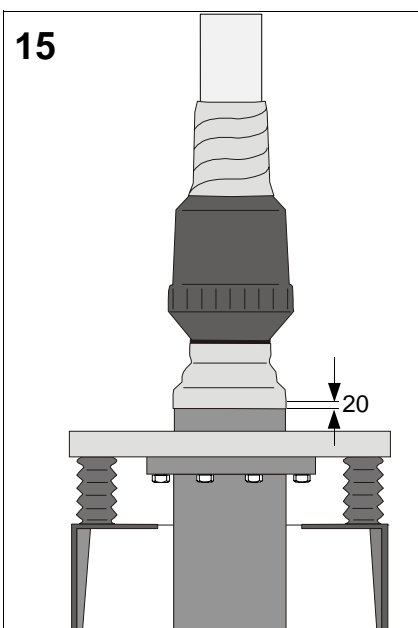
If any, remove the PVC protection tape. Clean the cable insulation and the stress cone bore with alcohol. Thoroughly lubricate the cable insulation and the stress cone bore with silicone oil. Push the stress cone onto the cable core until the insulation transition of the conductive stress cone collar reaches 228 mm distance from the gland base plate. If necessary adjust the cone according to the dimension below.

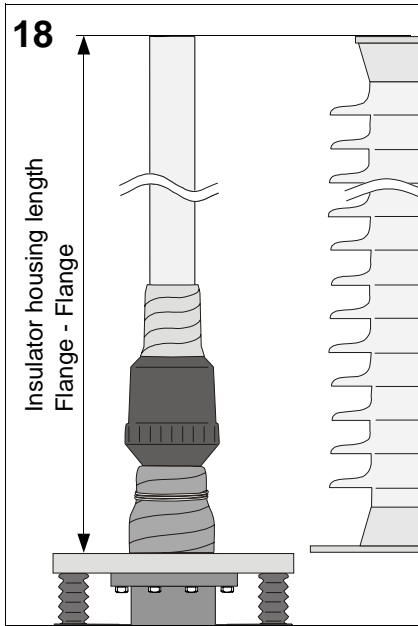
Wrap copper mesh onto the stress cone collar overlapping the top of the cable gland by approx. 25 mm along the semicon layer.



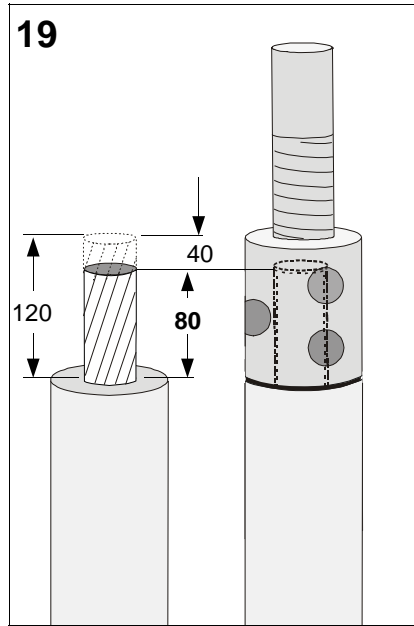
Degrease and clean the surplus lubricant from the cable insulation and the stress cone using alcohol. Fix the stress cone temporarily by applying a compression wrap (PE) at the cone top and the cable insulation.

Wrap self-algaming insulation tape from the bottom of the cable gland tubing all the way up to the stress cone overlapping the stress cone insulation by approx. 10 mm. The semicon layer and the stress cone should be covered by at least 5 mm of tape and the gland tubing by at least 10 mm.

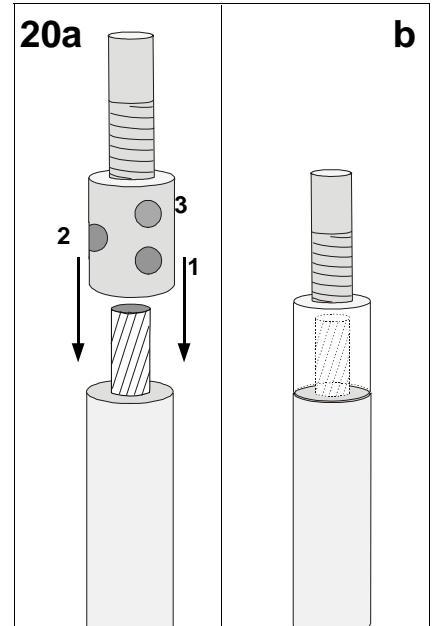




Measure the distance between the flanges of the insulator housing. Precisely cut the cable core measured from the mounting base plate top.



Remove the cable insulation by the dimension 120 mm top down. Then remove 40 mm of the conductor. **The remaining conductor length must be 80 mm.**

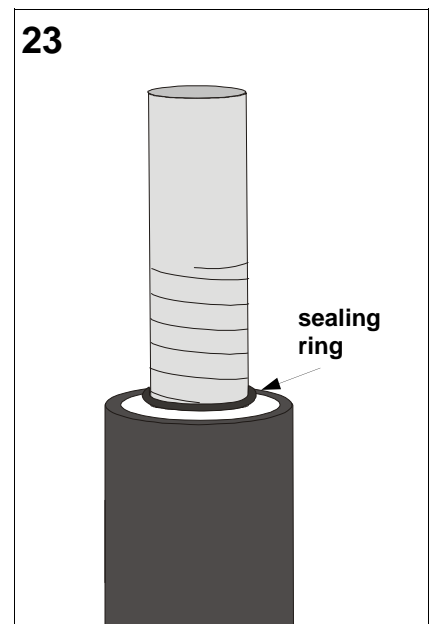
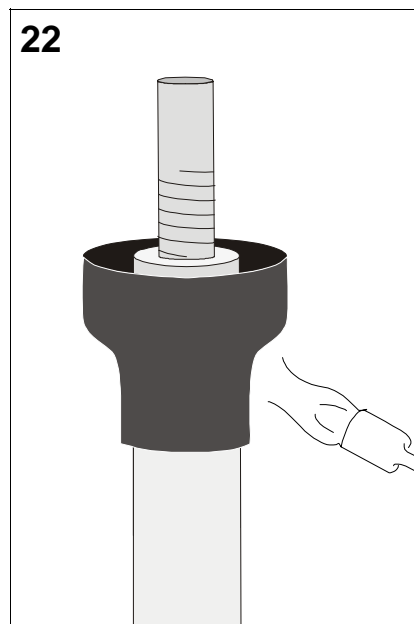
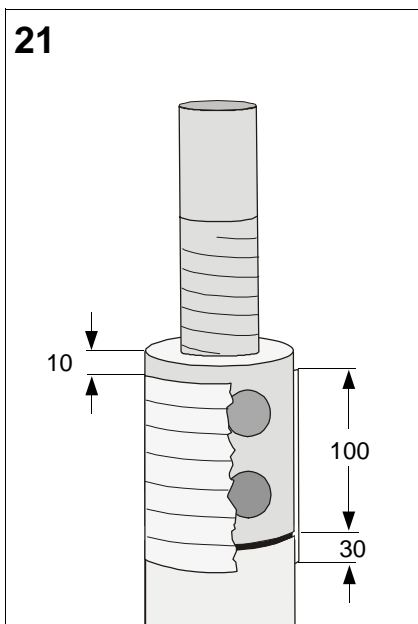


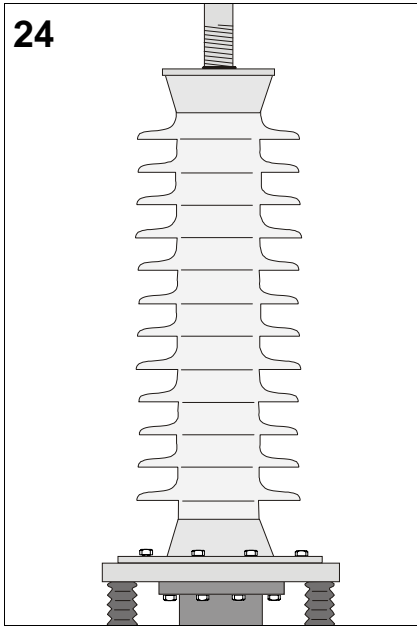
Insert the conductor in the connector barrel and butt it to the insulation cut. Tighten the shear bolts firmly by hand. Make sure the distance between base plate top and connector barrel top matches the distance between the flanges of the insulator housing. Use a box spanner or equivalent means to shear off the bolts in the sequence as shown above.

Degrease and clean the surface of the connector barrel. Fill the bolt indents by using the yellow void filler. Fill the gap between barrel end and insulation, if any, with yellow void filler. Wrap the barrel and overlap the cable insulation by one layer at 50% tension as shown in the drawing.

Position the heat shrinkable sealing sleeve in such a way that it overlaps the connector barrel by 10 mm. Shrink the sleeve in place. Pre-heat the sealant area sufficiently to make sure that the adhesive flows properly. **Note: Let the sleeve cool down before further manipulation.**

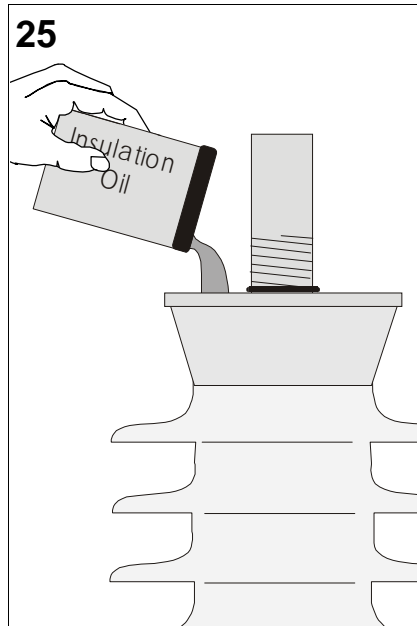
Position the thick sealing ring at the connector barrel. Clean and degrease the entire cable assembly from the base plate up to the bolt.





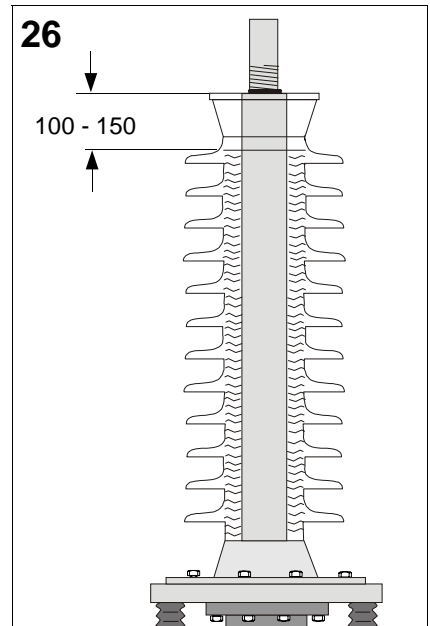
24

Clean the entire inside of the insulator housing.
 Ensure that contaminants and/or moisture are removed.
 Carefully apply the insulator housing over the cable assembly and bolt the bottom flange to the termination base support plate.
 Tighten the bolts cross-over with the torque defined on page 10.



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Carefully open the buckets with the insulation oil and fill the insulation oil into the insulator housing (**see page 3: General Instructions**).
 Ensure that the insulator housing is free from any contaminants and/or moisture.



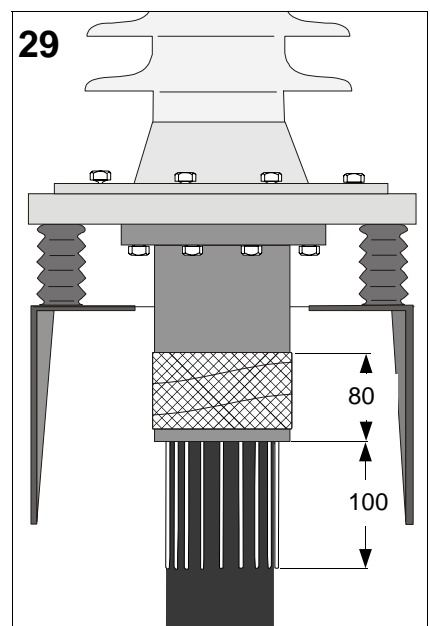
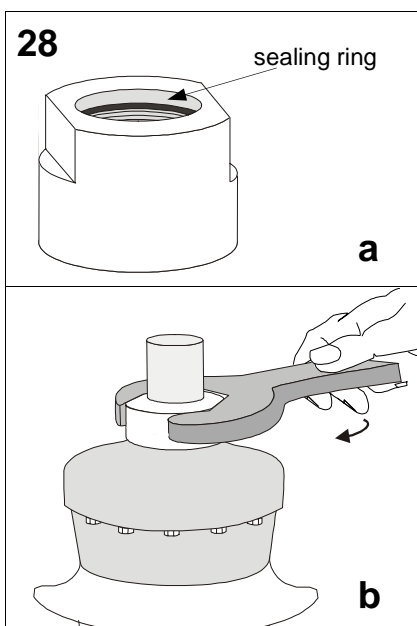
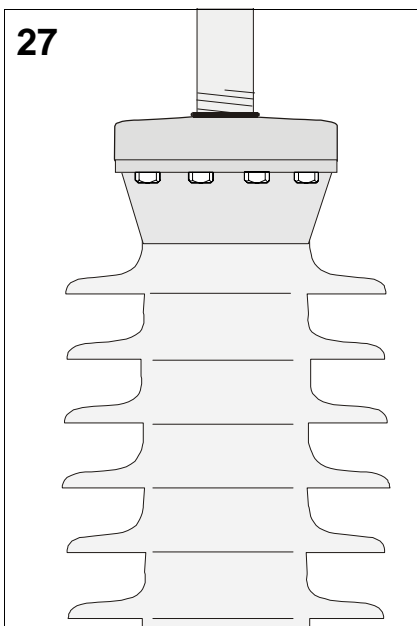
26

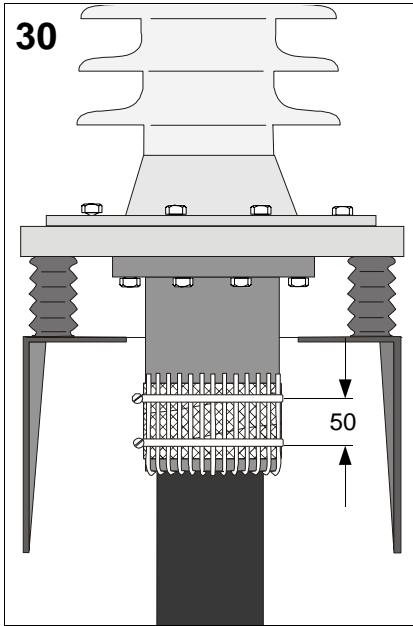
Check the filling level. The insulation oil level should be within a range of 100 - 150 mm measured from the top flange downwards.

Ensure that the other sealing rings of the connector bolt are in place. Ensure that the large sealing ring is placed in the top cover. Carefully place the top cover onto the insulator flange. Tighten the bolts cross-over with the torque defined on page 10.

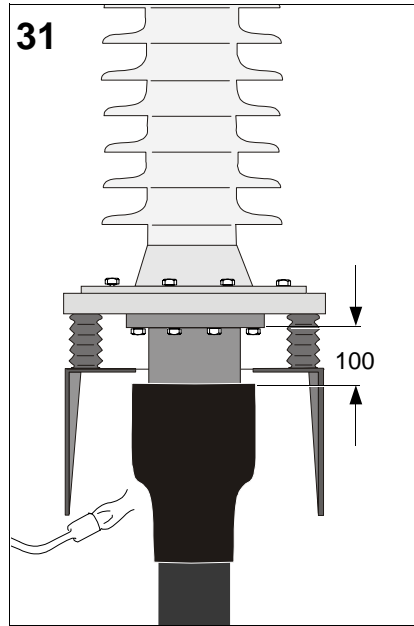
Place the appropriate sealing ring in the groove of the connector nut. Slightly lubricate the bolt thread with insulation oil. Apply the nut and tighten it with the torque defined on page 10.

Abrade, degrease and clean the cable oversheath and the cable gland. Cut the shielding wires 100 mm from the oversheath cut. Wrap one layer of copper mesh onto the cable gland.

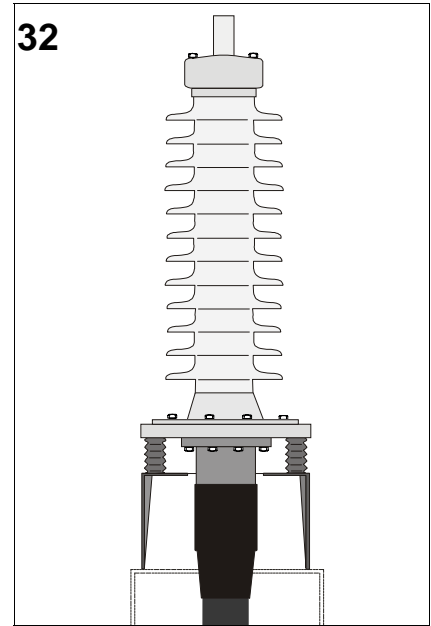




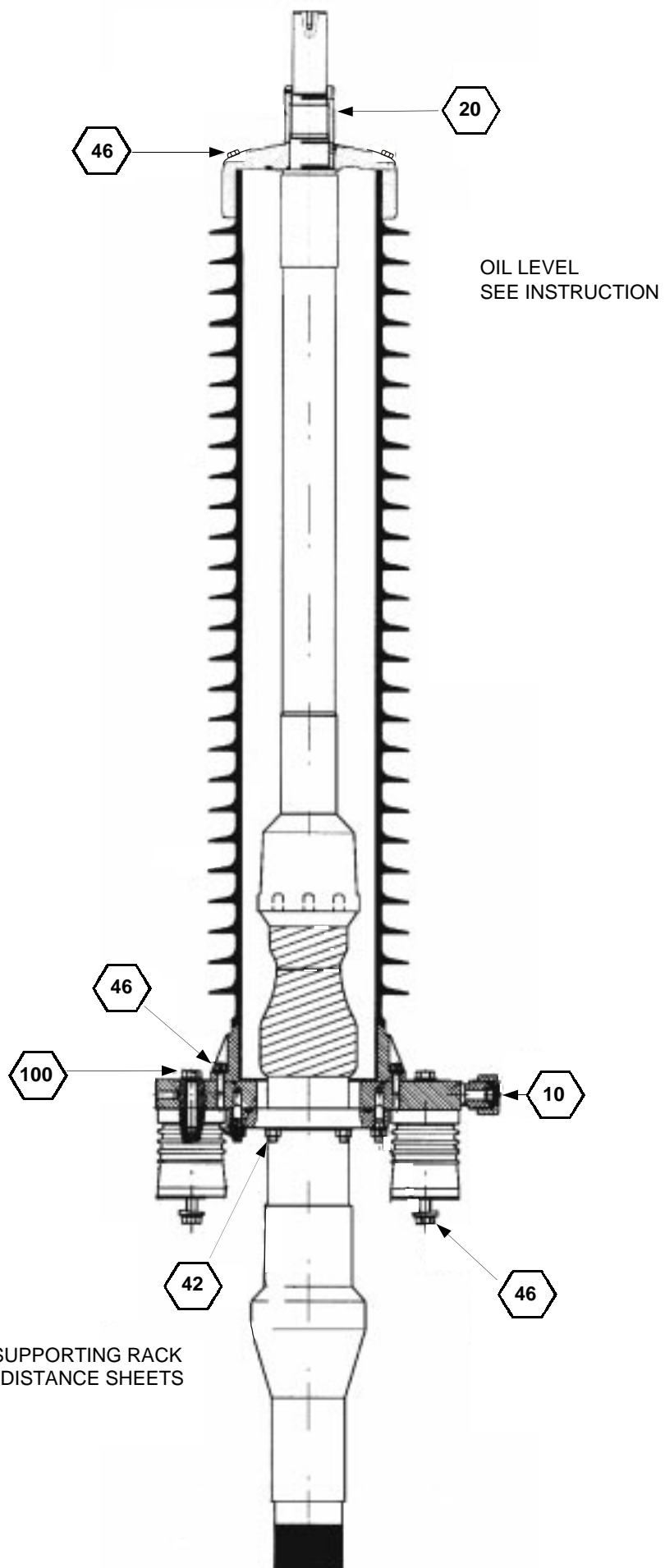
30
Bend the shielding wires up. Fix the shielding wires with two worm drive clips. The distance between the worm drive clips should be 50 mm.



31
Position the heat shrinkable sealing sleeve approx. 100 mm from the gland stud and shrink it into place.



32
Termination completed.



OIL LEVEL
SEE INSTRUCTION

UNEVENNESS IN THE SUPPORTING RACK
TO BE ADJUSTED BY DISTANCE SHEETS

 TORQUE