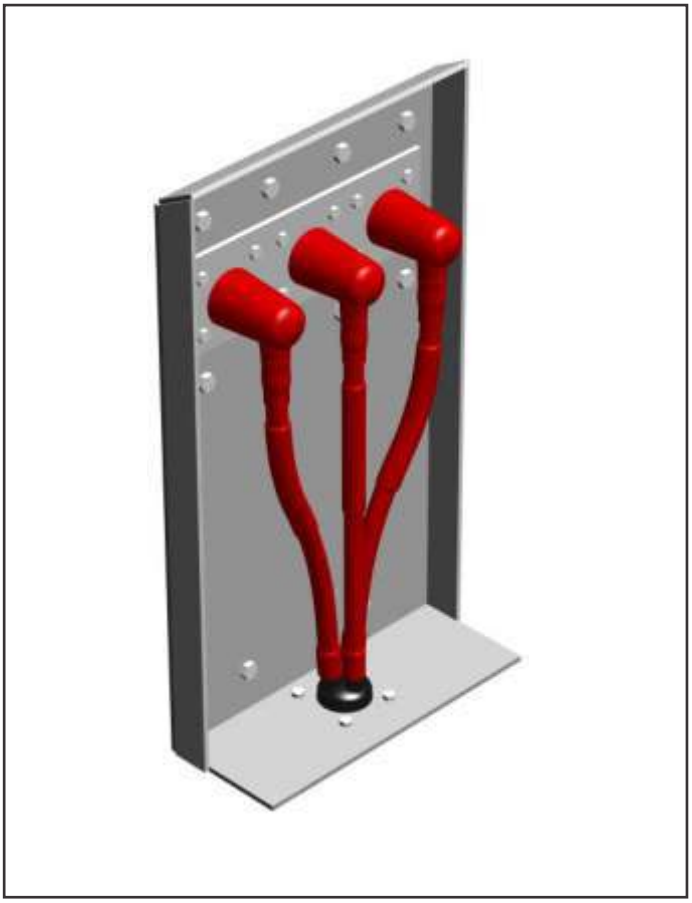
Shrink Polymer Systems

Cable Installation Materials – 24 volts to 36 kV

Installation Instruction Heatshrink Termination for Protolon Type Reeling Cables 12/20(24kV)

*** PLEASE READ INSTRUCTIONS THOROUGHLY BEFORE PROCEEDING ***

INDOOR



THORNE & DERRICK INTERNATIONAL

ISSUE DATE: 05.09.16

CABLE PREPARATION

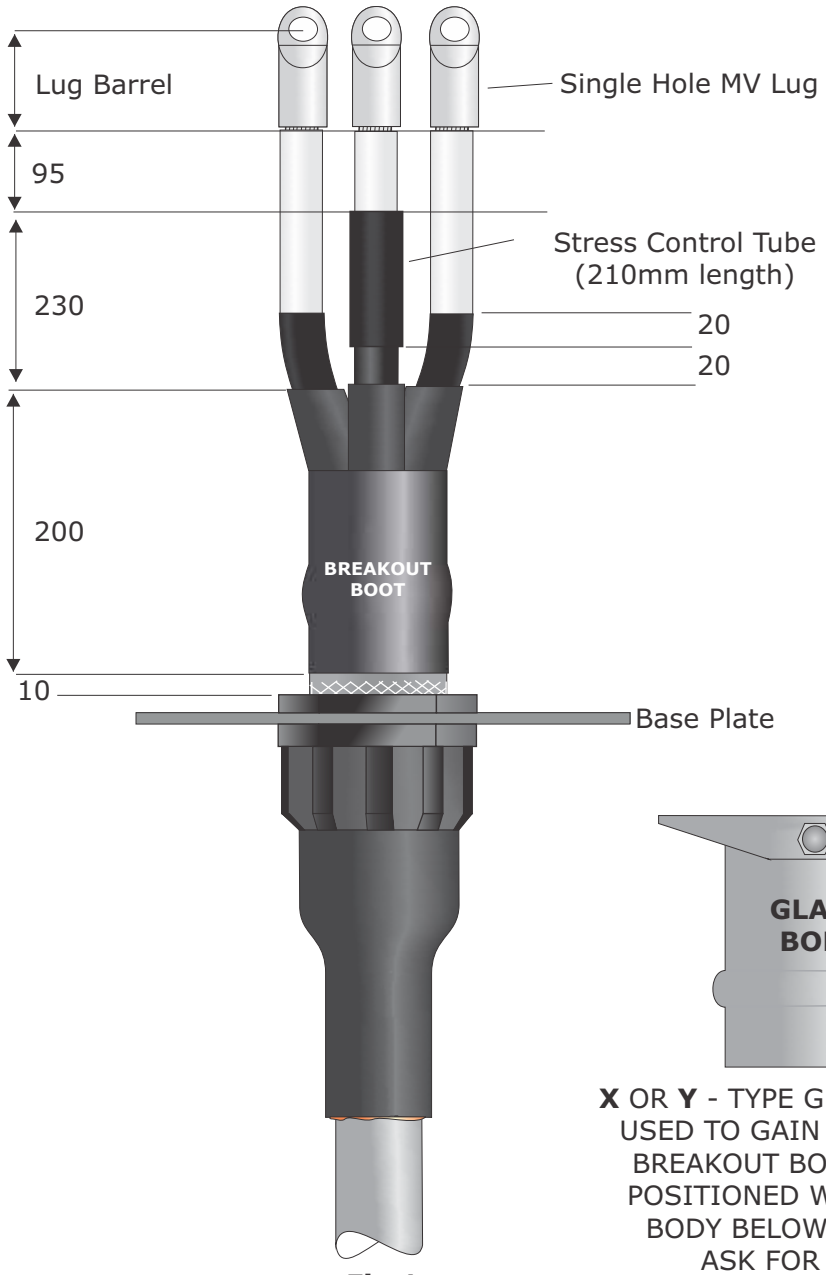
ALL DIMENSIONS SHOWN IN mm

In order for a medium voltage termination to work reliably, certain spacings have to be achieved within switchgear/transformer or motor boxes. Whilst some manufacturers spacings may differ from the ones listed below, they are broadly all similar.

The dimensions shown below in mm, are the **minimum** required at 12/20(24kV) for a protolon type flexible reeling cable termination, with a single hole mv terminal lug to fit in the box. The drawing is not to scale and only the power cores are shown. You can see that if the breakout boot is to be fitted within the box, a minimum clearance of 535mm + length of lug barrel is required. The use of a bolt on type gland as shown below the base plate, would reduce the amount of space needed as the breakout could fit within it beneath the gland plate.

Important: irrespective of whether the termination fits within the box, clearance dimensions between phases and earth still must be maintained. See the termination installation instruction sheet for these and page 62 from our general catalogue.

Below are the minimum dimensions. Please use standard dimensions shown in Fig 2 if possible.



X OR **Y** - TYPE GLAND COULD BE USED TO GAIN SPACE AS THE BREAKOUT BOOT COULD BE POSITIONED WITHIN GLAND BODY BELOW BASE PLATE ASK FOR DETAILS

Fig 1

Ony the 3 x Power Cores Shown for clarity

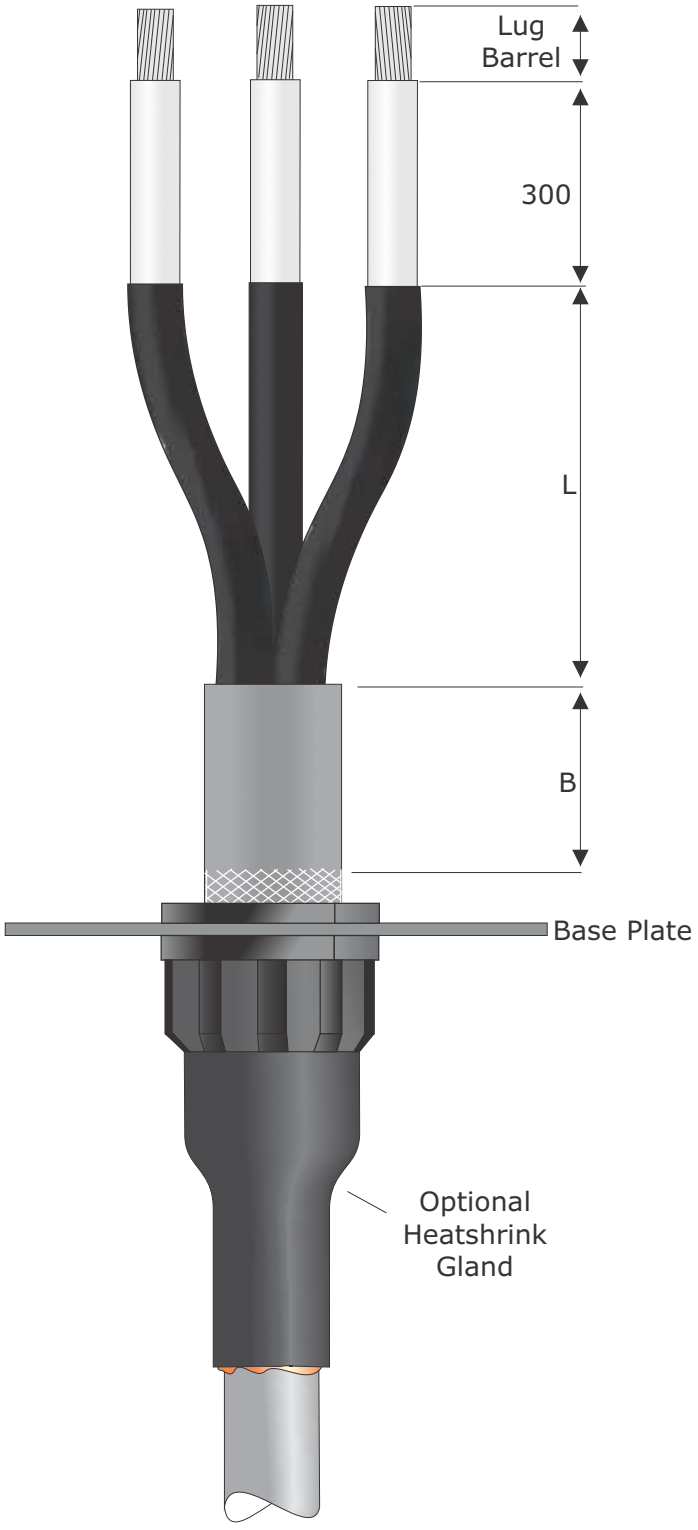


Fig 2

1. Remove the outer cable jacket to reveal the cores beneath. Distance "L" should not be longer than the distance between bushing centres and base plate.

Expose the inner cable bedding "B" to the length of the breakout boot skirt supplied +20mm.

2. Make a mark on the cores for a distance of 300mm + length of lug barrel.

Important: carefully remove the black semi-conductive layer to this point making sure no damage is caused to the primary insulation beneath.

Easy Strip Screen

3. The best method is to use a round "rat tail" file to create the circumferential cut through the semi-conductive layer and just into the primary insulation below. Then use an approved scoring tool to make longitudinal score marks. Now carefully peel the layer away to reveal the primary insulation beneath.

Bonded Screen

4. Use an approved shaving tool to remove the semi-conductive layer. It can also be used for easy strip screens.

Ensure all signs of carbon are completely removed. You may wish to polish the cores using 240 grade aluminium oxide paper.

Videos are available on our website showing both of the above methods.

Note: if the cable has a copper tape screen on each core (not shown), remove to a point 15mm below the semi-conductive screen point.

A solderless earth screen kit will be required, please consult SPS.

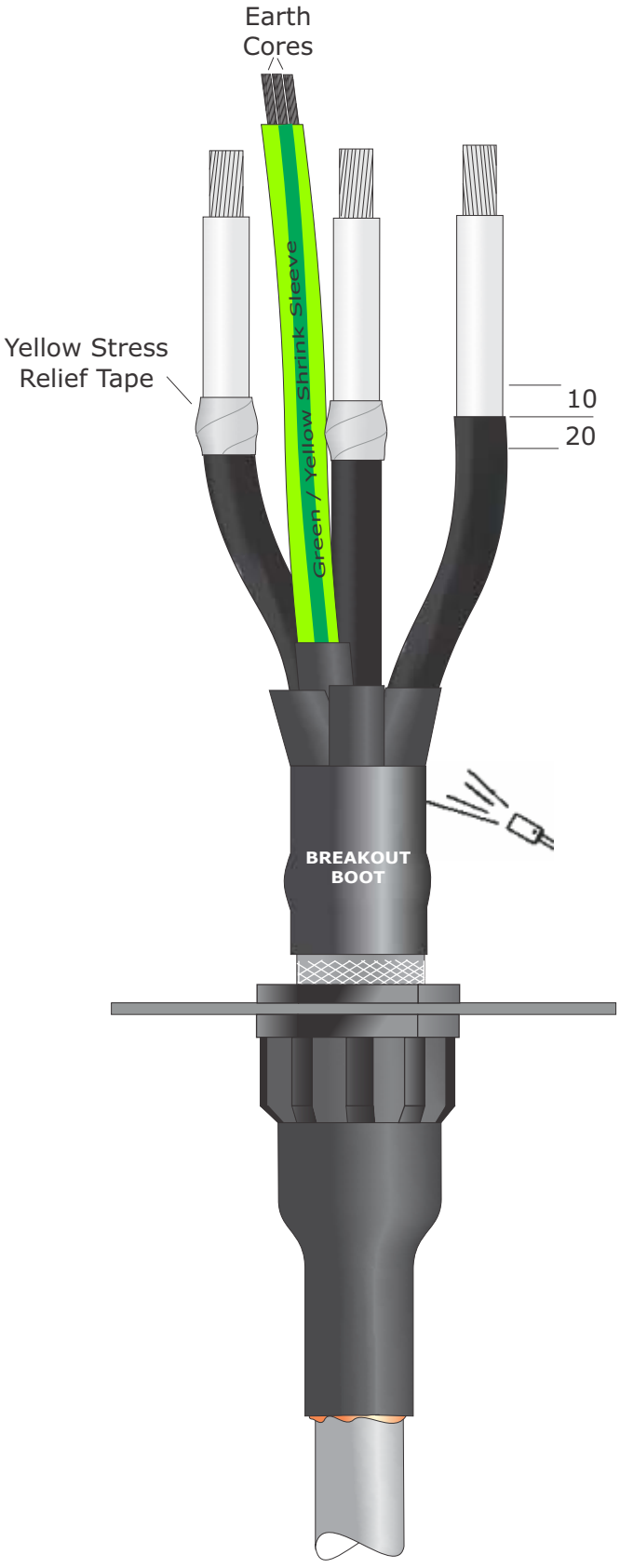


Fig 3

Fitting the Breakout Boot

Earth Cores

5. The main power cores will use three of the legs of the boot. The earth cores should exit the fourth leg of the boot. A length of green/yellow striped heatshrink sleeve has been provided to enclose the earth cables. Fit this first before positioning the boot over the cores. Push the boot down as far as it will go.

Shrink from the shoulder of the breakout and down to the cable sheath, then from the shoulder to the cores.

If user wishes not to fit the earth sleeve, apply some red mastic tape between the earth cores at the point where the leg of the breakout recovers upon the earth cores to create a moisture seal.

Fibre Optic Cable

6. Some reeling cables have additional fibre optic cables within. When terminating this cable, a 5 core breakout boot will be provided. User should house the fibre optic cable within a flexible conduit in order to protect it and bring the conduit through the fifth leg of the breakout.

Stress Relief Tape

7. Clean the cores thoroughly with the tissues provided or other suitable solvent. Now take the yellow stress relief tape, stretch and apply a piece over each semi-conductive screen end and extend onto the primary insulation by 10mm and onto the semi-conductive layer by 20mm as shown in Fig 3.

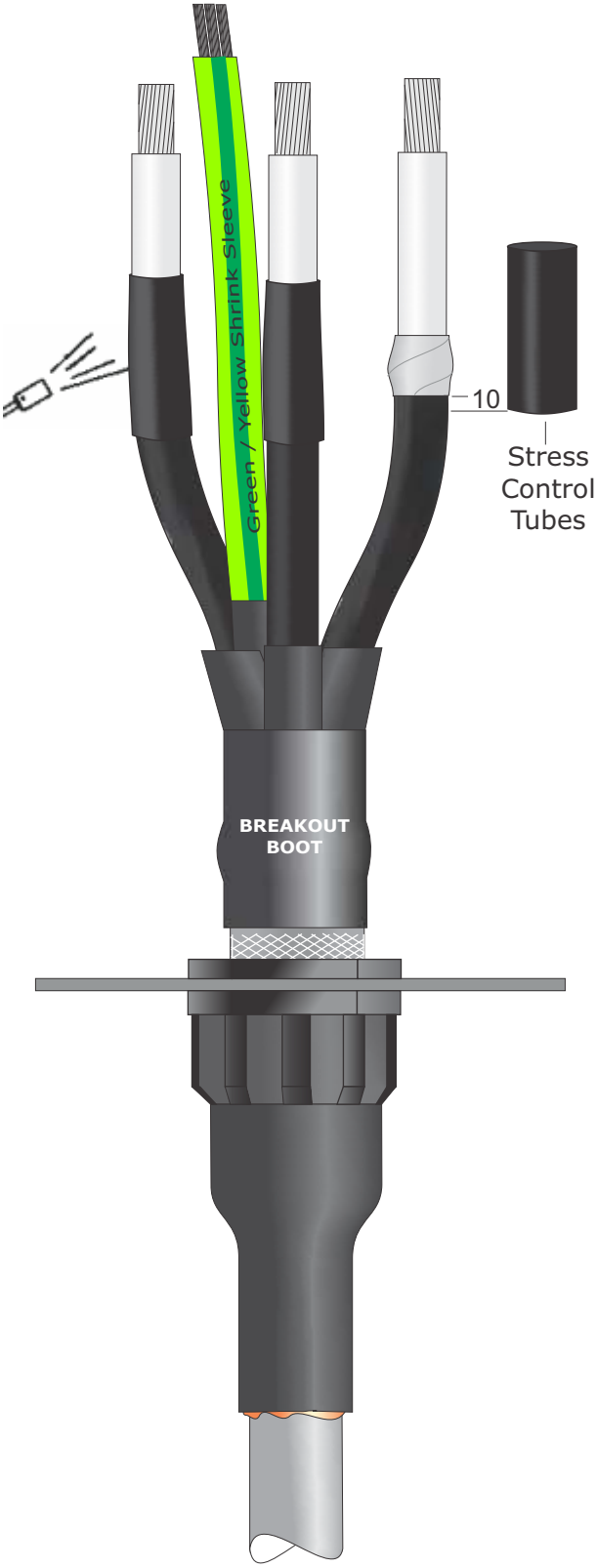


Fig 4

Stress Control Tubes

8. Position the stress control tubes onto each core so that the bottom of each tube is covering the yellow stress relief tape by approximately 10mm as in Fig 4.

Starting at the bottom of the tube, shrink each tube one at a time all around the tube until fully recovered. Keep the flame on the move to create an even wall thickness.

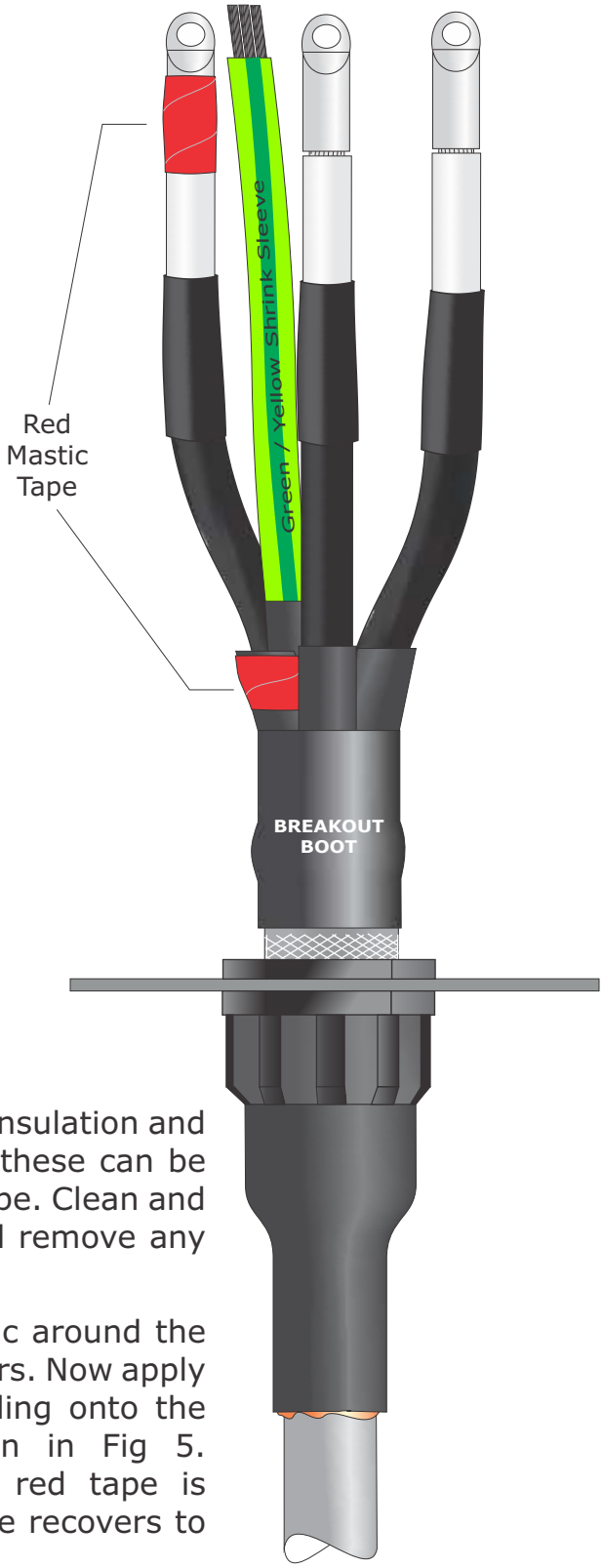


Fig 5

9. Remove sufficient primary insulation and fit the medium voltage lugs, these can be compression or mechanical type. Clean and de-grease the lug barrels and remove any sharp edges.

10. Apply a turn of red mastic around the end of the breakout boot fingers. Now apply around the lug barrel extending onto the primary insulation as shown in Fig 5. **Important:** ensure enough red tape is applied so that anti-track tube recovers to the lug barrel.

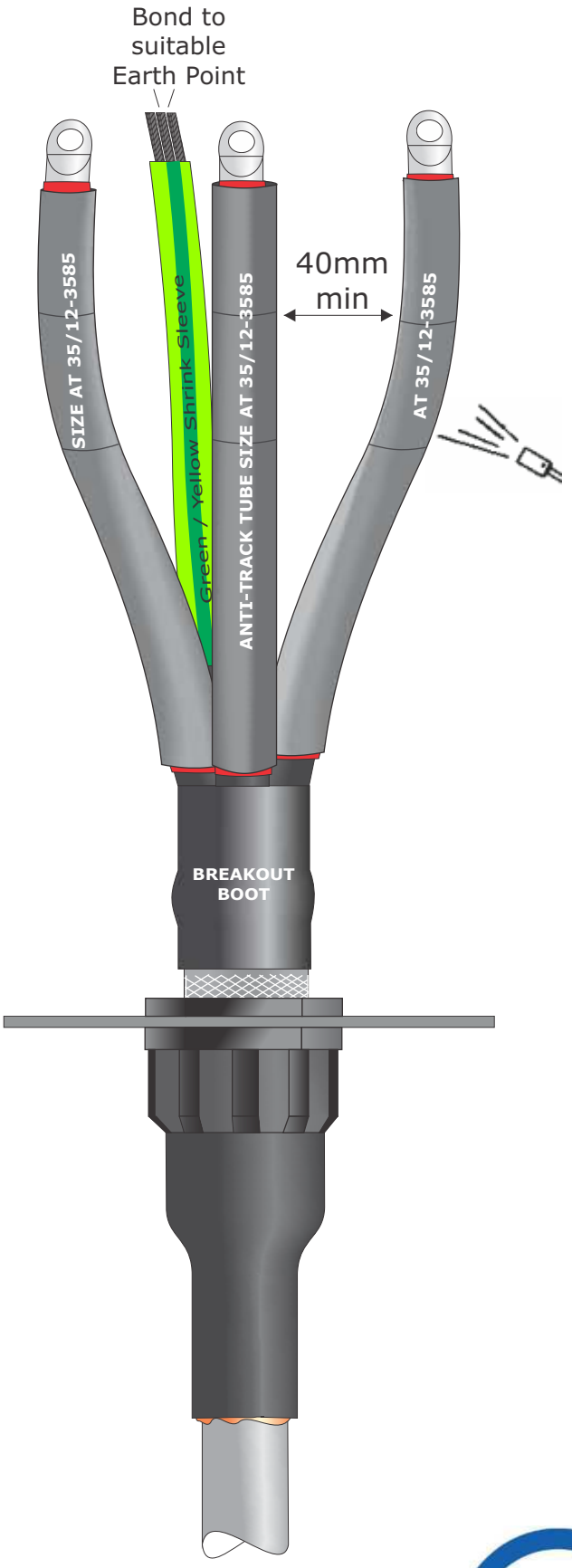


Fig 6

Fitting the Anti-Track Tube

11. Position the anti-track tubes so that they cover the fingers of the breakout boot and lug barrels as shown in Fig 6.

Starting from the crutch area, shrink the tubes in place whilst keeping the flame moving all around the tube to ensure an even wall thickness.

Allow the tubes to cool to hand hot before trimming at the lug end with a sharp knife.

Important: ensure minimum clearance dimensions are maintained as follows:-

Top of stress control tube to bottom of lug barrel = 95mm

Phase/Phase & Phase/Ground at the top of the stress control tubes = 40mm

No Bushing Protection Boots fitted

Distance between phases at bushing fixing point = 242mm

Distance from back of terminal lug fixing to backplate of box = 140mm

Bushing Protection Boots fitted

Distance between phases at bushing fixing point = 100mm

Distance from back of terminal lug fixing to backplate of box = 75mm