



Shrink Polymer Systems

Cable Installation Materials – 24 volts to 36 kV

INSTALLATION INSTRUCTION
HEATSHRINK TRIFURCATING TRANSITION JOINT TO SUIT
3 CORE 33kV PILC/SWA/PVC CABLE TO 3 x SINGLE CORE 33kV
XLPE/CWS/PVC CABLES REFERENCE TYPE: SPAJ 36PX-3C-TRIF



- THESE INSTRUCTIONS SHOULD BE FOLLOWED BY A TRAINED COMPETENT FITTER
- A PROPANE GAS TORCH IS THE PREFERRED METHOD FOR SHRINKING THESE MATERIALS
- ENSURE THAT THE MATERIALS ARE KEPT CLEAN AND DRY AND ARE FREE FROM DUST, SAND AND GREASE
- PLEASE CALL SHRINK POLYMER SYSTEMS FOR ANY ADVICE



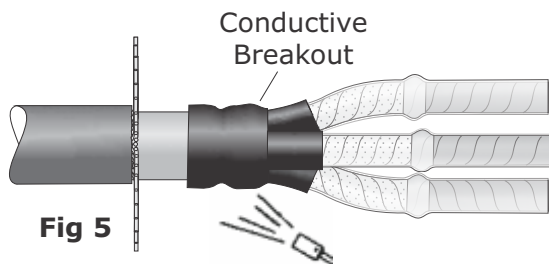
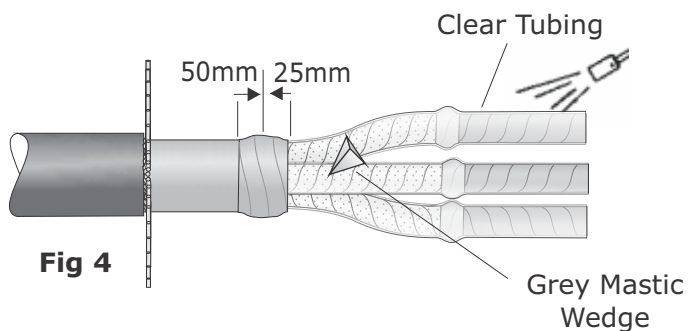
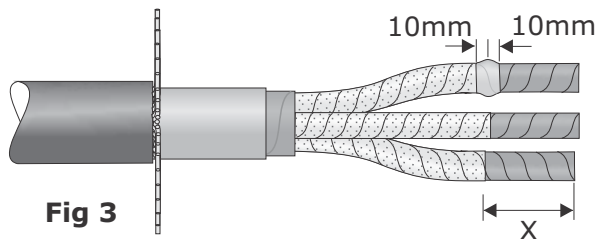
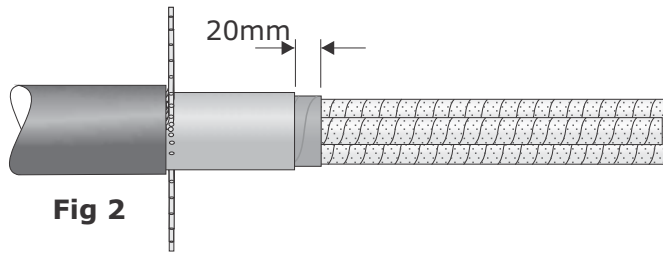
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The diagram illustrates a 3-core breakout boot assembly. It shows a cable with a braided shield and an inner insulation layer. The assembly includes a 3-core breakout boot that splits the cable into three individual cores. The diagram is labeled with dimensions and components:

- Fig 1**: Label for the diagram.
- 70**: Dimension for the length of the braided shield section.
- 200**: Dimension for the length of the inner insulation section.
- 20**: Dimension for the thickness of the inner insulation layer.
- A**: Dimension for the length of the braided shield section.
- X**: Dimension for the length of the inner insulation section.
- B**: Dimension for the length of the 3-core breakout boot section.
- C**: Dimension for the total length of the assembly.
- HALF LENGTH OF CONNECTOR + 5mm**: Dimension for the length of the connector section.
- 3 CORE BREAKOUT BOOT**: Label for the component that splits the cable into three cores.

- | CONDUCTOR SIZE (mm ²) | A | B | C | X (mm) | MAX CONNECTOR LENGTH (mm) |
|-----------------------------------|-----|-----|-----|--------|---------------------------|
| 35-95 | 500 | 300 | 770 | 220 | 110 |
| 120-185 | 520 | 350 | 790 | 230 | 140 |
| 240-300 | 550 | 400 | 820 | 250 | 170 |

Note:- These joints are designed for use with MV compression ferrules and “tapered centralised conductor” mechanical connectors.



3 CORE PILC CABLE PREPARATION

3. Lift the wire armours and clean the exposed lead for approximately 270mm.

4. Remove the lead sheath to the dimensions shown in Table 1.

5. Remove the cloth or paper binding tape 20mm from the sheath cut as shown in Fig 2. Remove the core fillers and any excess cable grease.

6. Secure and carefully remove the metalised paper screens (or carbon loaded screen papers) to dimension **X** shown in Table 1.

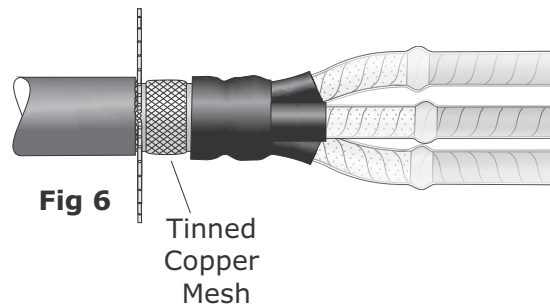
7. Stretch and apply the short pieces of yellow stress relief tape over the screen removal area, extending onto the paper screens 10mm and paper insulation 10mm (Fig 3).

8. Position the clear tubes right down into the crutch whilst ensuring the yellow stress relief tape is not disturbed. Using a suitable heat source and starting from the crutch side, gently shrink in place, ensuring a wrinkle free finish.

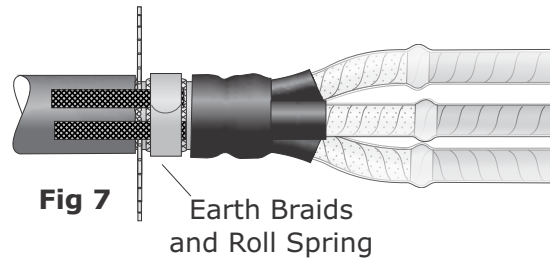
9. Take the grey mastic crutch wedge and with the aid of a little cable grease, force it into the crutch between the cores as far as possible. Wrap the grey mastic tape (4SC HV) over the lead cut area, extending onto the lead sheath by approx. 50mm as shown in Fig 4 and onto the cores by about 25mm.

10. Thoroughly de-grease the exposed lead sheath and slide over the semi-conductive cable breakout.

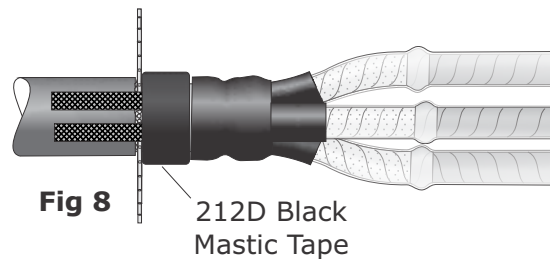
Using a suitable heat source and starting from the mould line and working towards the armours, shrink the breakout body. Continue to shrink down the breakout fingers.



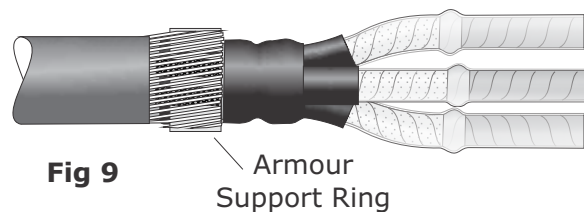
11. Tightly wrap a layer of tinned copper mesh around the exposed lead sheath as shown in Fig 6.



12. Secure the 2 x short copper earth straps to the lead with the large roll spring supplied as in Fig 7. These will be secured to the armours at a later stage.



13. Apply some 212D black mastic tape over the lead earth bond as shown in Fig 8.



14. Fit the armour support ring and band back the armour wires upon it along with the 2 x copper earth straps from the lead sheath.

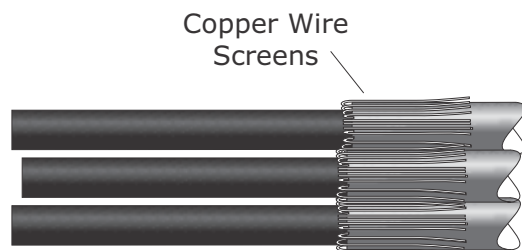


Fig 10

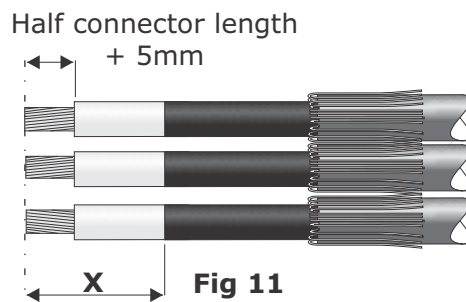


Fig 11

Single core shown for clarity

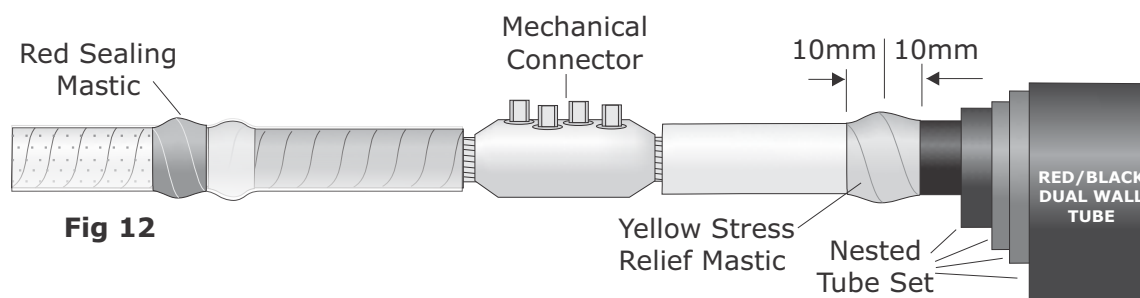


Fig 12

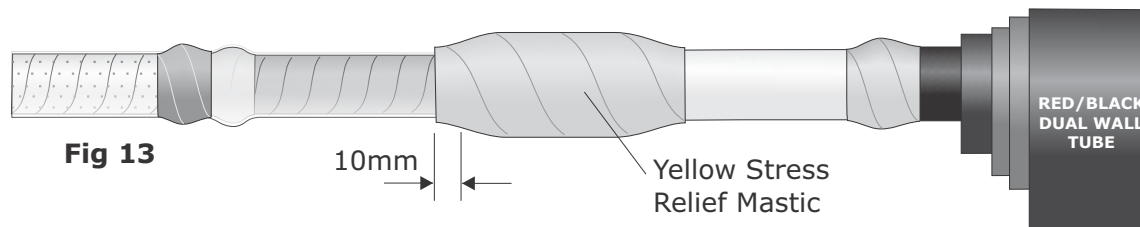


Fig 13

Single Core Xlpe Cables

15. Prepare the cables according to the dimensions shown in Fig 1 and Table 1.

With a suitable tool, remove the semi-conductive layer with great care. Tools are available for bonded screens and a useful video is available to view on our website for 'Peelable' and bonded screen layers.

Remember to position the large 3 leg breakout boot over the single core cables as shown in Fig 1.

16. Position and cut the cores ensuring dimension "X" is maintained. Remove the core insulation as shown in Fig 11.

17. Ensure the outer shrink tube/s are over the cable end/s. Park the stress control tubes, red insulation tubes and red/black dual wall tubes over each core as shown in Fig 12.

Join the conductors using an approved MV "Tapered" connector, remove any sharp edges and de-grease before proceeding.

18. Stretch the yellow stress relief tape and apply over the screen cut area, extending onto the primary insulation by 10mm as in Fig 12.

19. Apply the red mastic sealing tape over the paper cores at a point just behind the bulge of the previously applied yellow stress relief tape (Fig 12).

20. Apply the yellow stress relief mastic over the connector area under tension and with a 50% overlap. Extend onto the primary insulation by 10mm each side, as shown in Fig 13.

Important:- Fill in the gap between primary insulation and connector. Also if mechanical connectors used, fill any voids that the bolts leave after they have been sheared.



Fig 14

21. Centralise the 3 x black stress control tubes over the connector area, ensuring they overlap the core screens at both ends. Starting from the middle and using a soft flame torch, apply heat all around the tubes until fully recovered as in Fig 14.

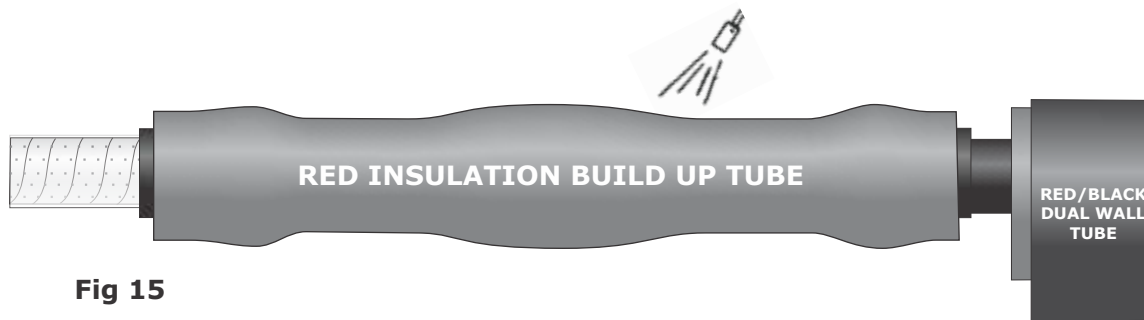


Fig 15

22. Now centrally position the first set of red insulation build up tubes as shown in Fig 15 and apply heat from the centre to one end at a time. Heat as before to ensure an even wall thickness.

Now position the second slightly shorter red insulation build up tubes and shrink as before.

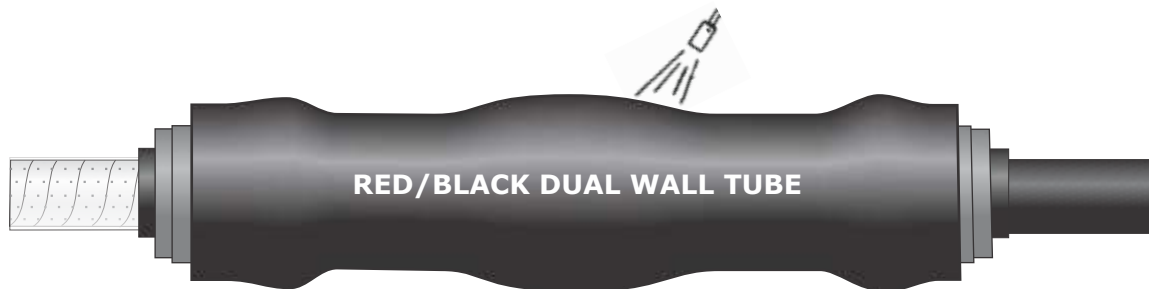


Fig 16

23. Finally position the red/black dual wall tubes and starting in the middle and working towards the ends, shrink them, keeping the flame moving all around the tubes to ensure an even recovery and wall thickness.



Fig 17

24. Stretch and apply the 4SCHV grey mastic tape over the end of each insulation tube set as shown in Fig 17.

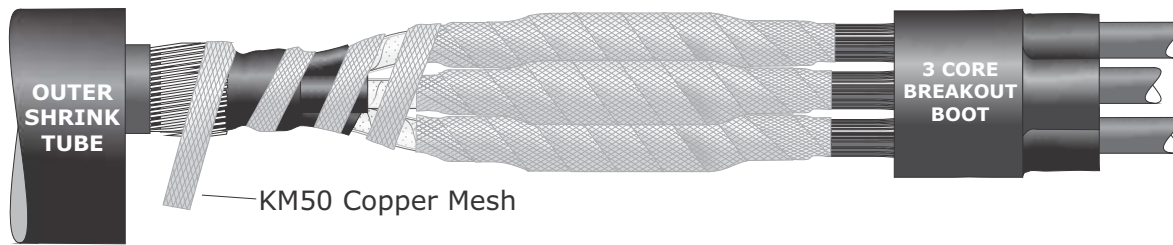


Fig 18

25. Using the KM 50 tinned copper mesh applied with a 50% overlap, apply around each core as shown in Fig 18. With an open spiral extend to the armours of the 3 core pilc cable.

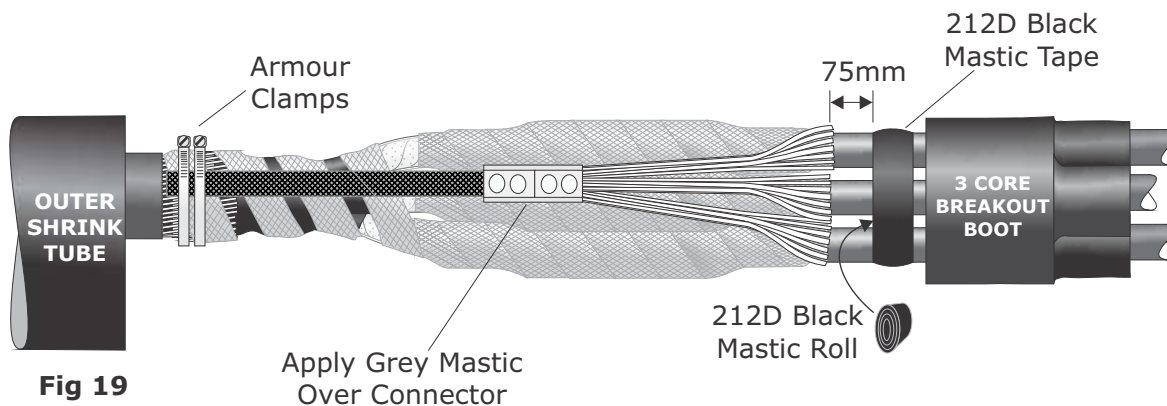


Fig 19

26. Using worm drive clamps connect the tinned copper mesh tails and the long earth strap/s to the armours as in Fig 19.

27. Form the copper wire screens on the single core cables into a conductor and referring to Fig 19, use a mechanical connector to join them to the main earth strap/s from the 3 core pilc cable.

28. Form a strip of black mastic tape into a roll and position between the single cores as shown in Fig 19.

29. Apply a band of black mastic tape over the 3 x single core cables as shown in Fig 19 approx 75mm from the cable sheath cuts.

30. Abrade all the cable sheaths each side of the joint. Position the large cable breakout so that the body is just onto the single core cable sheaths.

31. Using a suitable heat source, start shrinking the breakout body, once completed continue with the legs. Keep the flame moving at all times to ensure an even recovery.

32. Apply a band of the grey mastic tape over the breakout body as shown in Fig 20.

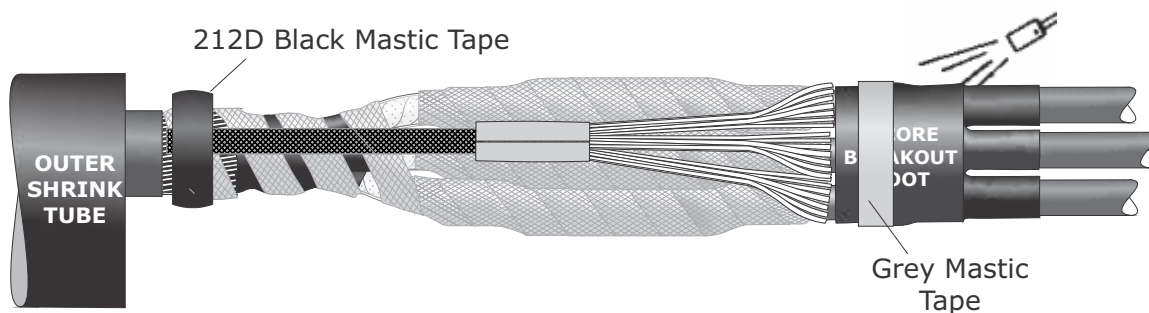


Fig 20



Fig 21

33. After cleaning and abrading the outer cable sheaths, position the outer shrink tube centrally so that once recovered, it overlaps the main body of the 3 core breakout and the outer sheath of the 3 core cable.

Start shrinking from the middle to one end at a time. Apply heat evenly all around the tube. Once fully recovered sealant should be visible at the ends of the tube.

Allow the joint to completely cool before applying any mechanical strain.

Note:- On the largest joint ($240-300\text{mm}^2$). Two outer tubes are supplied. Fit the first overlapping onto the 3 core cable sheath by approx 100mm.

Apply a turn of grey mastic around the tube end 75mm in and then position the second tube so that it overlaps the skirt of the breakout boot on the single core end. Shrink as described previously.

Important: user/circuit designer should determine whether or not special earthing requirements are needed to reduce the possible effects of circulating currents in armoured cables. The decision to single point earth/solid point earth or install cross bonding kits needs to be considered once length of run, loading and positioning of cables is known.

IMPORTANT NOTICE TO PURCHASER:- Sellers and Manufacturere's only obligation shall be to replace such quantity of the product proved to be defective. Neither the Seller nor Manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use or inability to use the product. Before using, User shall determine the suitability of the product for his or her intended use and User assumes all risk and liability whatsoever in connection therewith.

