



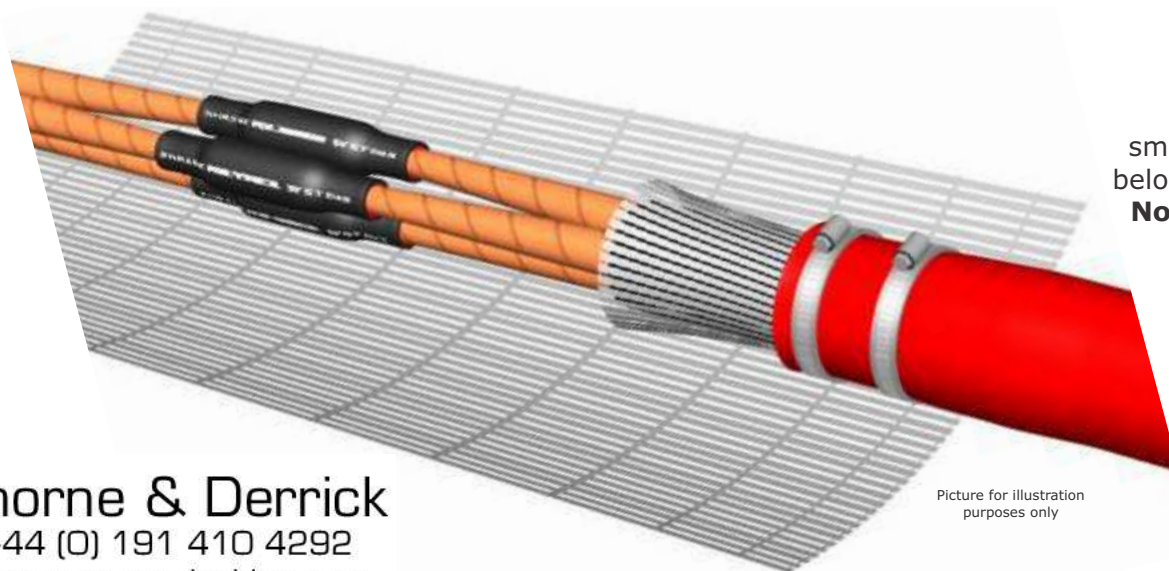
# Shrink Polymer Systems

Cable Installation Materials – 24 volts to 36 kV

## INSTALLATION INSTRUCTION

### HEATSHRINK TRANSITION JOINT SUIT 3 CORE 6.35/11(12kV) XLPE/SWA/PVC TO PILC/SWA/PVC BELTED OR SCREENED CABLES

#### REFERENCE NUMBER: SPAJ 12PX-3C



Picture for illustration purposes only

Use free software on your smart phone to scan the QR code below to watch an installation video  
**Note:** Video is for 3 Core PILC to 3 x Single Core XLPE



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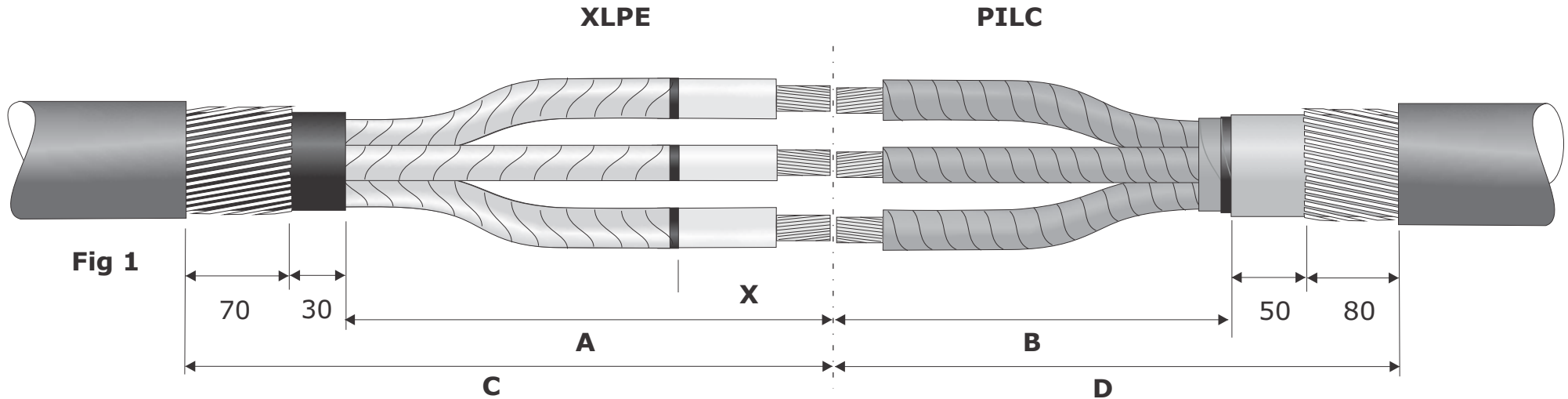
- THESE INSTRUCTIONS SHOULD BE FOLLOWED BY A TRAINED COMPETENT JOINTER
- A PROPANE GAS TORCH IS THE PREFERRED METHOD FOR SHRINKING THESE MATERIALS
- ENSURE THAT THE MATERIALS ARE KEPT CLEAN AND DRY AND ARE FREE FROM DUST, SAND AND GREASE
- PLEASE CALL SHRINK POLYMER SYSTEMS FOR ANY ADVICE



DATE OF ISSUE: 28.01.16

# CABLE PREPARATION

ALL DIMENSIONS SHOWN IN mm



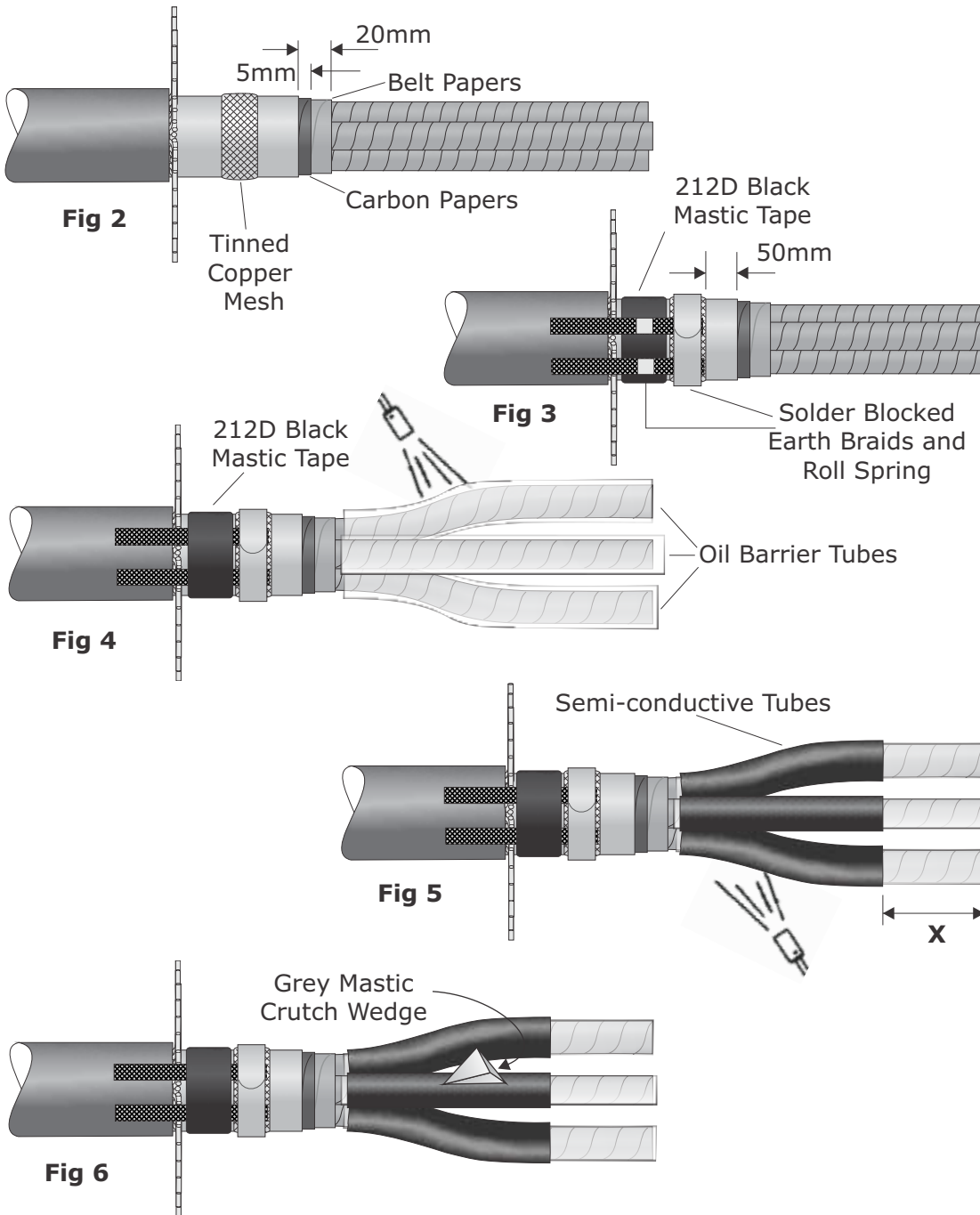
1. Ensure the cables overlap before preparation. Strip the cables to the dimensions shown above in Fig 1 and in Table 1 below. Dimension **X** is shown in Fig 5 on the following page.

**Note:-** Ensure you follow the dimensions according to the size range of the kit supplied.

CONDUCTOR SIZE (mm <sup>2</sup> )	A	B	C	D	X (mm)	MAX CONNECTOR LENGTH (mm)
35-70	550	330	650	460	160	100
95-185	550	330	650	460	170	130
185-300	700	380	800	510	180	140

**Table 1**

**Note:-** These joints are designed for use with MV compression ferules and "tapered centralised conductor" mechanical connectors.



## Paper Belted Cable

2. Lift the wire armours, clean and de-grease the exposed lead for approx 150mm.

Remove the lead sheath to the dimensions shown in Fig 1 and Table 1.

3. Tie a binder 5mm from the lead cut and remove the black carbon papers. Tie a further binder 20mm from the lead cut and remove the belt papers as shown in Fig 3. Remove any fillers to this point and remove any excess cable grease present.

4. Tightly wrap (stretching to about half its width) a layer of tinned copper mesh 50mm from the lead cut, and using the constant force roll spring provided, secure the 2 x short earth braids as shown in Fig 3.

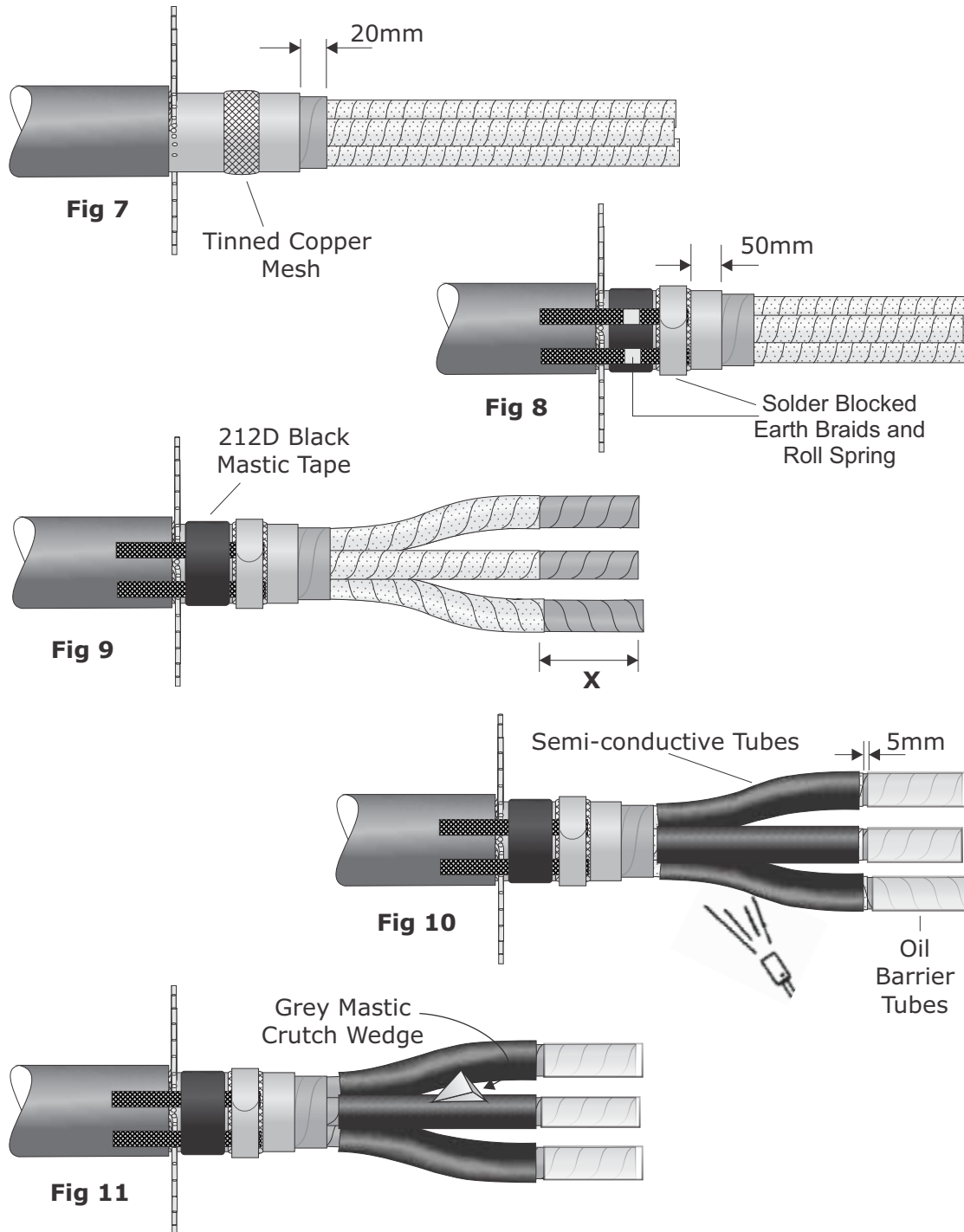
5. Apply a turn of 212D black tape behind the spring and lay the solder blocked braids upon it. Apply another turn over as shown in Fig 3+4.

6. Position the clear oil barrier tubes over each core, stopping approx. 50mm from the belt papers. With a suitable heat source, shrink the tubes from the crutch end for approx 50mm.

Allow to cool, twist slightly in the direction of the paper lay and slide as far as possible into the crutch in order to protect the papers when setting the cores. Continue to shrink the tubes ensuring they are wrinkle free.

7. Position the black semi-conductive tubes over each core ensuring the "X" (shown in Table 1) dimension is maintained (trim tubes if needed). With a suitable heat source gently shrink the tubes into place starting from the open end working towards the crutch.

8. 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 as in Fig 6.



## Paper Screened Cable

9. Lift the wire armours. Clean and de-grease the exposed lead for approx 150mm.

Remove the lead sheath to the dimensions shown in Fig 1 and Table 1.

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

11. Tightly wrap (stretching to about half its width) a layer of tinned copper mesh 50mm from the lead cut, and using the constant force roll spring provided, secure the 2 x short earth braids as shown in Fig 8.

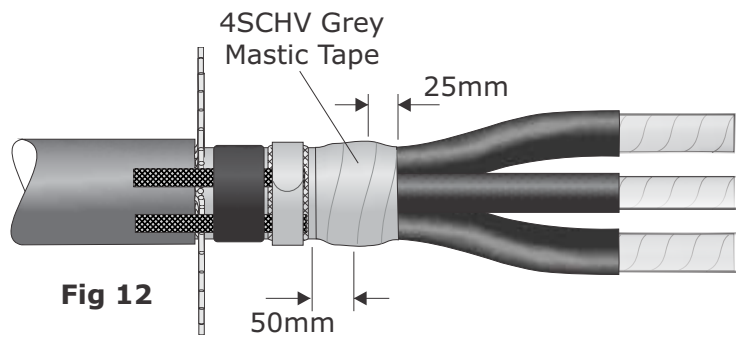
12. Apply a turn of 212D black tape behind the spring and lay the solder blocked braids upon it. Apply another turn over as shown in Fig 8+9.

13. Carefully remove the metalised paper screens to dimension "X" as shown in Fig 9 and Table 1.

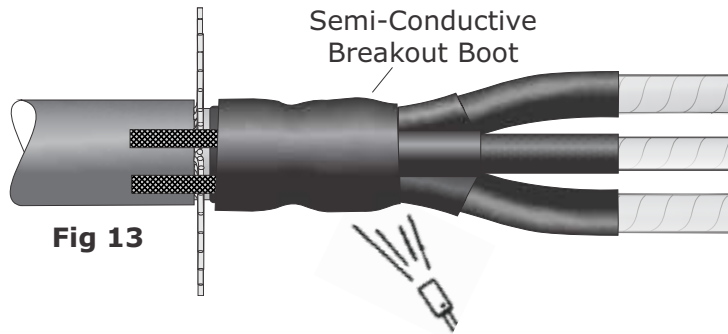
14. Position the black semi-conductive tubes over each core ensuring 5mm of the core screens are visible. With a suitable heat source gently shrink the tubes into place starting from the open end working towards the crutch as shown in Fig 10.

15. Take the clear tubing and position it to leave 5mm of paper insulation exposed. Using a suitable heat source, and starting from the crutch side, gently shrink in place, ensuring a wrinkle free finish.

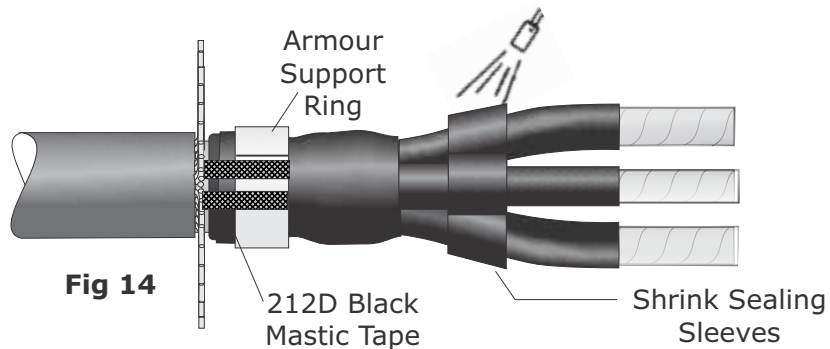
16. Take the grey mastic crutch wedge and with the aid of a little cable grease, force it into the crutch between the cores as far as possible, see Fig 11.



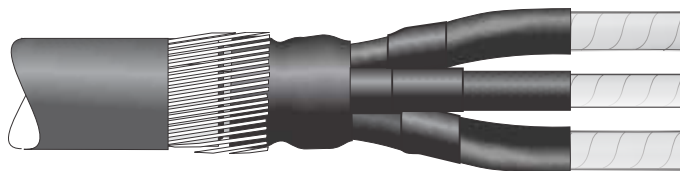
**Fig 12**



**Fig 13**



**Fig 14**



**Fig 15**

## Paper Belted and Screened Cable

17. Remove any binders holding the carbon and belt papers.

Wrap the 4SCHV grey mastic tape over the carbon and belt papers, extending 50mm onto the lead sheath and 25mm onto the semi-conductive tubes, creating a smooth profile, as shown in Fig 12.

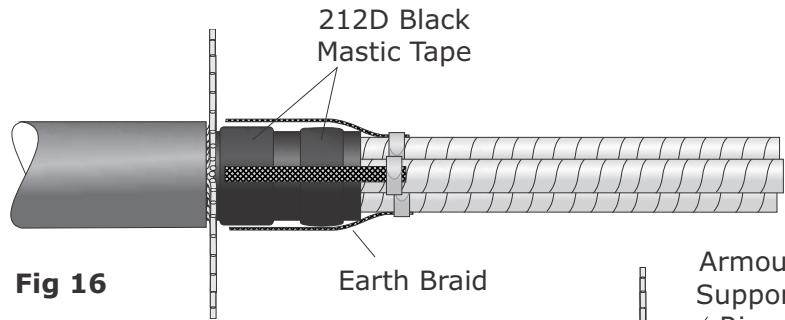
18. Thoroughly de-grease the exposed lead sheath and slide over the semi-conductive cable breakout.

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.

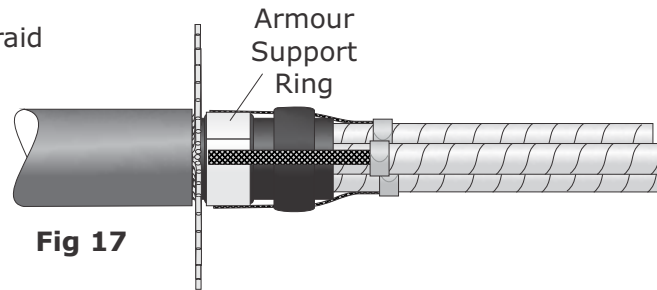
19. Apply the 212D black mastic tape over any exposed lead sheath as shown in Fig 14 and position the armour support rings over the bottom of the breakout body.

20. Position the short adhesive lined shrink sealing sleeves (Fig 14) and shrink into position so they cover the end of the breakout boot fingers.

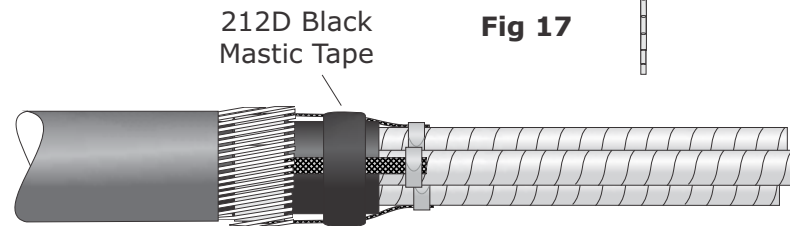
Lay the wire armours down over the armour support ring as shown in Fig 15 and temporarily secure.



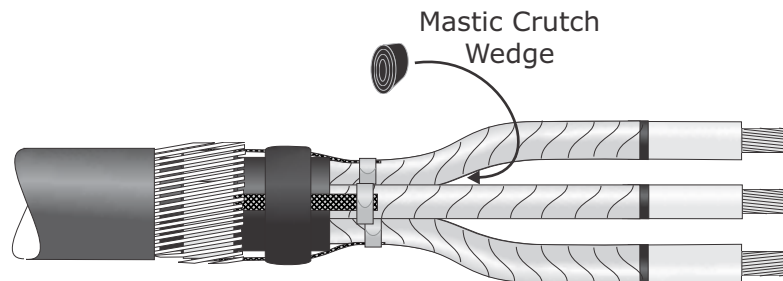
**Fig 16**



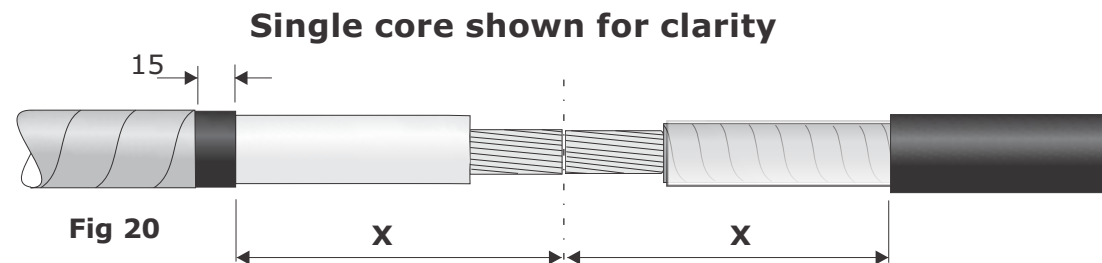
**Fig 17**



**Fig 18**



**Fig 19**



**Fig 20**

## **XLPE CABLES**

21. Lift the wire armours and apply a two bands of black mastic tape as shown in Fig 16. Secure the three earth braids to the copper tape screens using the constant force springs supplied.

22. Fit the under armour support ring and fold down the armours as shown in Fig 17.

23. Remove the backing papers from the piece of black mastic tape labelled crutch wedge and form into a wedge. Open up the cores and insert these as far as possible into the crutch of the cable as in Fig 19.

24. Prepare the cores to the dimensions given in Table 1. It may be advisable to secure the copper tape screens to prevent them from unwinding.

25. Using a suitable tool, remove the semi-conductive layer, taking care not to damage the primary insulation, particularly at the screen ends.

Thoroughly de-grease the exposed insulation using the cleaning tissues provided.

It may be advisable to secure the copper tape screens to prevent them from unwinding.

**Note:-** screen removal tools can be provided. See website for screen removal advice/videos.

26. Position the cores ensuring dimension "X" is maintained.

Remove the insulation to half the length of the connector + 5mm. Make sure the core conductors are not damaged.

Using the cleaning tissues provided, thoroughly de-grease the area.

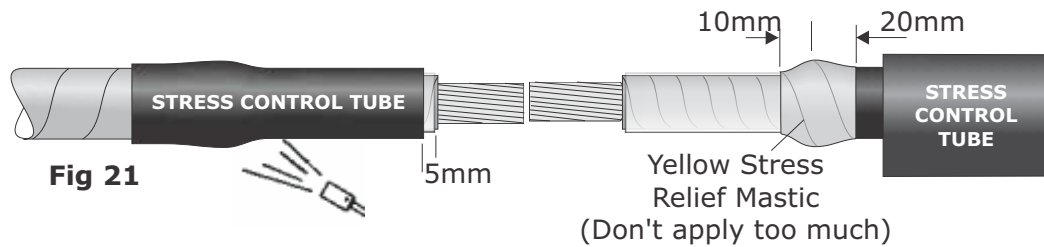


Fig 21

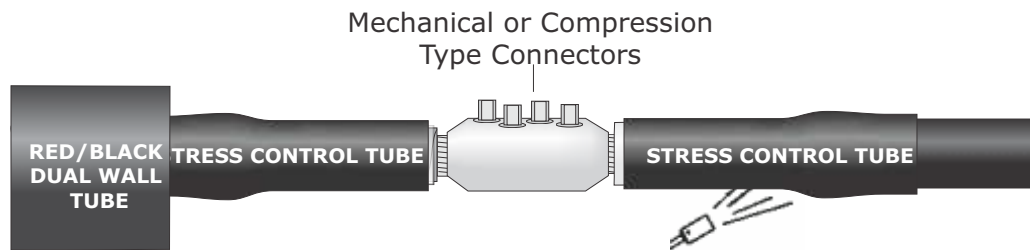


Fig 22

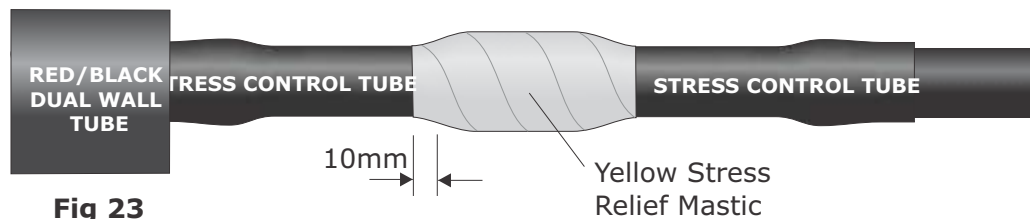


Fig 23

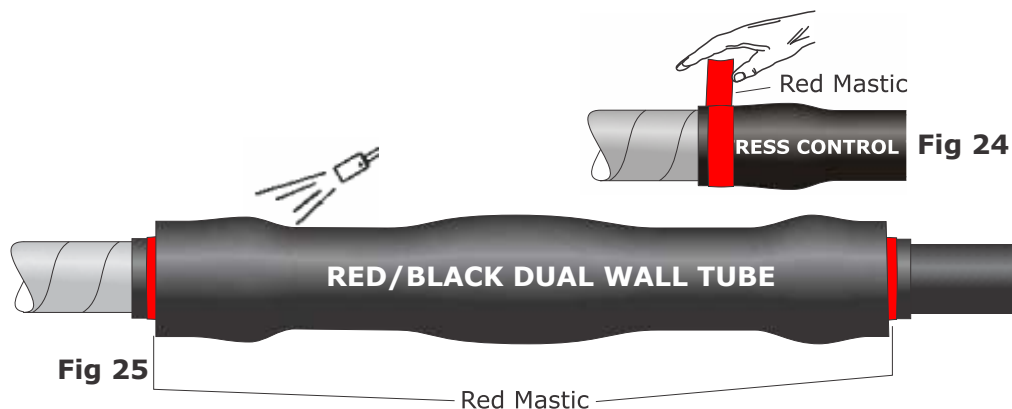


Fig 25

Fig 24

27. On the PILC cable end stretch the yellow stress relief tape and apply over the end of the semi-conductive tubing, extending onto the clear tube by 10mm.

28. On the XLPE cable end stretch the yellow stress relief tape and apply over the semi-conductive screen, extending onto the insulation by 10mm and onto the copper tape screens by 5mm.  
**Note:** It may not be necessary to use all of the tape supplied.

29. Position the stress control tubes as shown in Fig 21 and 22. Starting 5mm from the insulation end and using a soft flame torch, apply heat all around the tubes until fully recovered.

30. Before proceeding, ensure the outer shrink tubes/s are positioned over the cable.

Position the red/black dual wall tubes over each core as shown in Fig 22.

31. Join the conductors using an approved MV "Tapered" connector, remove any sharp edges and de-grease before proceeding. Use the centering rings but don't use the black plastic caps.

32. Stretch and apply the yellow stress relief mastic over the connector area with a 50% overlap. Extend onto the black stress control tubes by 10mm, as shown in Fig 23.

**Important:-** Fill in the gap between primary insulation and ensure a smooth taper to the connector. Don't apply too much tape, two layers maximum over the main body of connector. Also if mechanical connectors used, fill any voids that the bolts leave after they have been sheared with the grey hv mastic tape supplied.

33. Stretch and apply the short red mastic tape pieces over the stress control tubes as shown in Fig 24, so that the red/black tubes sit upon it. This will create an additional moisture seal.

34. Slide over and centralise the 3 x red/black dual wall tubes over the connector area.

Starting in the middle and working towards the ends, shrink down the dual wall tubes, keeping the flame moving all around the tubes to ensure an even recovery.

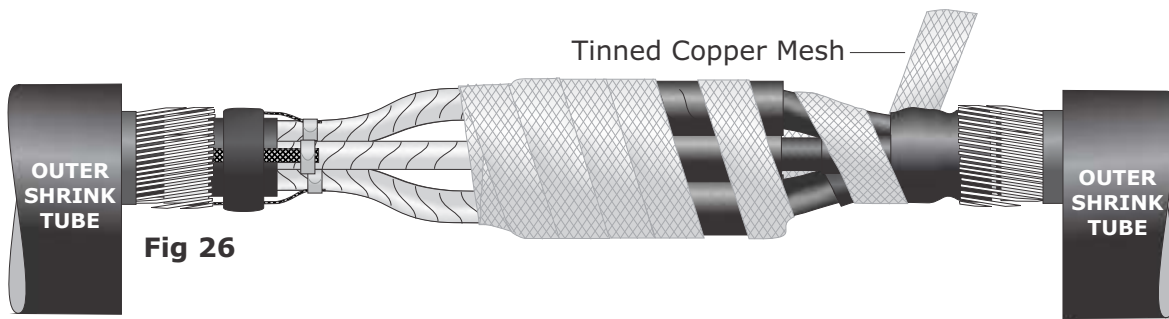


Fig 26

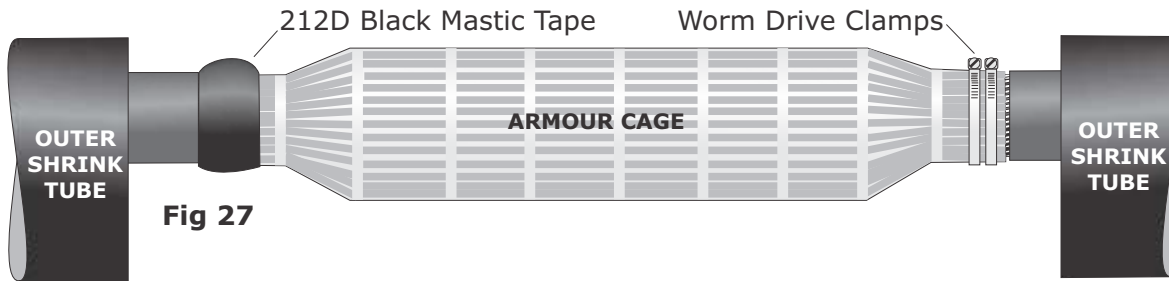


Fig 27

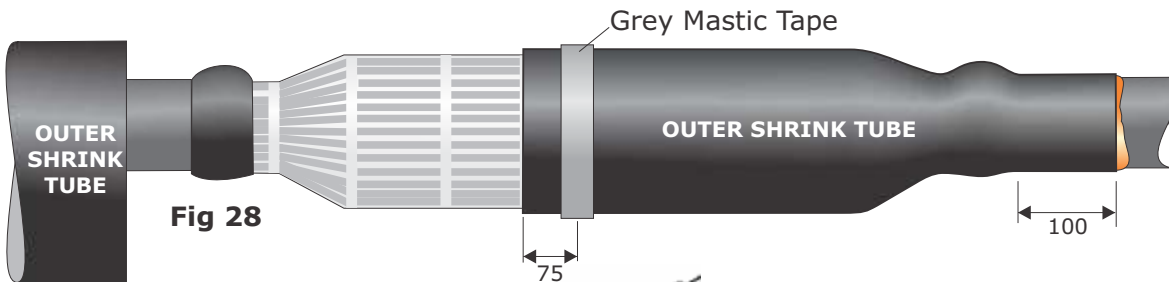


Fig 28

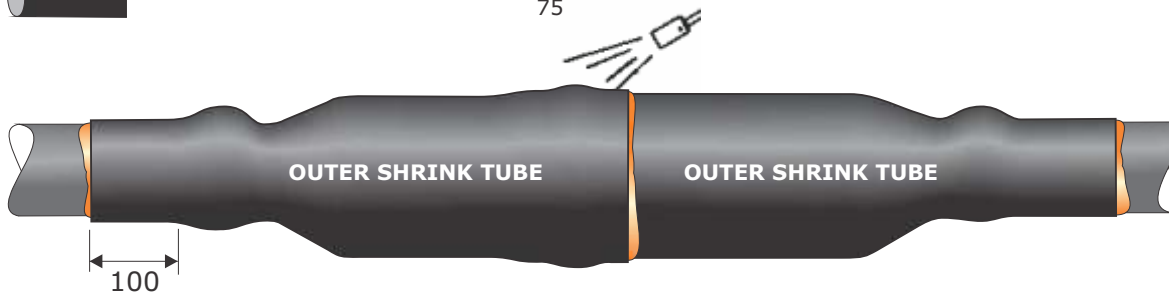


Fig 29

35. Using the tinned copper mesh, pull the cores together. Extend the mesh onto the semi-conductive tubes as shown in Fig 26.

With an open spiral take one end of the tinned copper mesh and wrap around the armours.

36. Wrap the armour cage around the completed joint and secure using the worm drive clamps provided. Ensure all earth braids/mesh are connected along with it.

37. Abrade the outer sheath for approximately 100mm on each side.

Remove the backing papers from the 212D black mastic strips and apply over the worm drive clamps.

38. Position one of the outer shrink tubes approx. 100mm over the cable sheath.

Using a suitable heat source, start shrinking from the centre and work toward one end at a time. Keep the flame moving all around the tubes to ensure an even recovery.

39. Apply a band of the grey mastic tape approx. 75mm from the end of the tube as shown in Fig 28.

40. Now fit the second outer shrink tube as before. Once fully recovered sealant should be visible at the ends of the tubes.

Allow the joint to completely cool before applying mechanical strain.

IMPORTANT NOTICE TO PURCHASER:- Sellers and Manufacturer'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.



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