JOINT 11KV TRIFURCATING TRANSITION BRANCH
THREE CORE PAPER CABLES MAIN (THROUGH CABLE)
(FOR SCREENED OR BELTED CABLES)
to
SINGLE CORE UNARMOURED POLYMERIC CABLES (FOR CABLES WITH COPPER WIRE SCREEN)

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<th>Product Reference</th>
<th>Comm Code</th>
<th>Max SAC Polymeric Conductor size mm²</th>
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An additional build-up kit may be required as instructed in the jointing matrix.

SHELL RESIN VOLUME = 62 LITRES

1. PREPARATION

1.1 Clean the cables throughout the length to be jointed, and additional length for parking of components.

1.2 Identify any phasing requirements and mark as appropriate.

1.3 A minimum distance of 300 mm is recommended between the cable and joint bay base.
2. SETTING OF CABLES

2.1 Bend and set the cable to the position that it will occupy on completion of the joint.

2.2 Mark the appropriate datum line on both cables.

2.3 Mark the datum line and cut the cables to length, ensuring a minimum of 100 mm overlap.

2.4 Test the paper cable for moisture.

Do not remove excess for connector block until all cores have been prepared.
3. PREPARATION OF PAPER CABLE – SHORT SIDE

3.1 Prepare the short side of paper cable as shown in Fig 1, depending on the cable type, taking all measurements from the joint centre line.
4. **PREPARATION OF PAPER CABLE – LONG SIDE**

Prepare the long side of paper cable as shown in Fig 2, depending on the cable type, taking all measurements from the joint centre line.

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**Fig 2**

**PILC Preparation – Long Side**

- Belted Cable
- Screened Cable

**PICAS Preparation – Long Side**

- Belted Cable

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Grey Mastic Strip overlap with ETFE
Foil Core Screen
For Belted Cables;
4.1 Remove the carbon belt paper and terminate 5 mm from the metallic sheath.
4.2 Remove the belt papers 25 mm from the metallic cut.
4.3 Apply PVC tape to the end of the core papers to prevent them un-winding and gently remove any excess compound.

For Screened Cables;
4.4 Remove the foil core screen and two additional paper tapes 235 mm from joint centre line.
4.5 Apply 1 layer of 20 mm grey mastic strip at the end of the foil core screen. Over tape mastic with 1 layer of ETFE tape.
4.6 Apply PVC tape to the end of the core papers to prevent them un-winding and gently remove any excess compound.

If the cable has an armour, section 5 must be followed, for all other types of cable go to section 6.

5. **ARMOUR PREPARATION**
5.1 Apply layers of 3M™ “24 mesh” tape adjacent to the armour cut so that the diameter is equal to the armour.
5.2 Apply the P10 roll spring half onto the armour, half onto the 3M™ “24 mesh” tape.
5.3 Over tape the roll spring with PVC tape, applied in a direction to tighten. Abrade the outer surface.
5.4 Over tape exposed armour with Black Bitumen Cotton Tape (Not supplied in the kit).

![Diagram of PILC Cable – Armour Bond](image)
6. **RED HEATSHRINK TUBING – FOR ALL PAPER CABLE TYPES**

6.1 Slide the red heatshrink tubes over the cores and place 5 mm from the belt paper termination, or the lead sheath cut, depending on the cable type.

6.2 Shrink the tubes starting at the crutch. Ensure the tubes are fully shrunk down and wrinkle free.

7. **BLACK SEMI-CONDUCTIVE TUBES**

7.1 Mark distance 185 mm from joint centre on the red tubes as indicated in Fig 5.

7.2 Position the semi-conductive tubes over the cores and commence shrinking from the mark towards the crutch. Ensure the tubes are fully shrunk down and wrinkle free.
8. **STRESS CONTROL MASTIC**

8.1 Allow tubes to cool and degrease the red and semi-conductive tubes.

8.2 Cut one B1 mastic square in half and form two plugs and insert one into the crutch of each paper cable, as far as possible.

8.3 Cut 3 B1 Mastic squares in half and form two “Y” shapes and insert one into the crutch of each paper cable.

8.4 Using the two B2 mastic strips, form a poultice over crutch of the cable extending 10mm onto the sheath and 30mm onto the semi-conductive tubes.

**Fig 6**

**Stress Control Mastic**

*Allow semi-con tube to cool before applying mastic.*

- **Step 1** – Cut one B1 Mastic square in half to form two “plug” shapes and insert this first, one into each cable.

- **Step 2** – Cut 3 B1 Mastic squares in half to form two “Y” shapes and insert this second, one into each cable.

Check diameter over mastic against glove inner dia.
9. CONDUCTIVE GLOVE

9.1 Push the conductive glove firmly into the crutch.
9.2 Holding the glove in position, shrink down commencing mid body, onto the turrets and finishing at the rear of the glove.

Fig 7  Conductive Glove

10 REMOVE CORE INSULATION

10.1 Remove the core insulation to a depth 75mm as shown in Fig 8 which equals the connector depth + 10 mm, taking into account the connector water block.

Fig 8  Remove Core Insulation

Remove excess for connector block as required (13)
11 PREPARATION OF POLYMERIC CABLES

11.1 Remove the outer sheath shown fig 9.
11.2 Abrade the outer sheath for a distance of 100 mm, clean and degrease.
11.3 Remove any swelling and equalising tapes at the sheath cut position.
11.4 Form the screen wires back along the cable sheath and secure with PVC Tape along the sheath.
11.5 Remove the semi-conductive core screen to a distance of 185 mm from the joint centre line.
11.6 Remove the core insulation to a depth of 70 mm, taking into account the connector water block.
11.7 Degrease the prepared cable, wiping from the insulation onto the semi-conductive screen and discard.

**Fig 9**

**Preparation of Polymeric Cables**

![Diagram of cable preparation process](image-url)
12. PAPER CORE PREPARATION

12.1 Apply one mastic strip at the end of the end of the PICAS/PILC insulation, going onto the conductor by 5 mm.

12.2 Apply one mastic strip over the red insulation tube, adjacent to the black semi-conducting tube.

12.3 Apply one layer of ETFE Tape, starting at the end of the semi-conducting working towards the joint centre line.

**Fig 10**

![Diagram of jointing procedure](image)

Grey Mastic Strip

ETFE Tape

Start here

13. CONNECTION OF EARTH

For all cable types, the water blocked braid with soldered end should be installed on the short side; the 1.2m length braid should be installed on the long side.

**For PILC cables:**

13.1 Apply two layers of 5313 mastic, 5mm onto the metallic layer, and 10mm onto the conductive glove.

13.2 Apply one layer of 5313 mastic for a distance of 40mm from the roll spring, as shown in fig 11.

13.3 Apply five layers of copper knit mesh, adjacent to the mastic on the conductive boot.

13.4 Secure with the water blocked braids over the copper knit mesh, using a constant force spring and over tape with PVC tape, applied in a direction to tighten the spring. Abrade the outer surface.

13.5 Secure the braids onto the cores using cable ties.
For PICAS cables;

13.6 Apply two layers of 5313 mastic, 5mm onto the metallic layer, and 10mm onto the conductive boot.

13.7 Apply two layers of 5313 mastic at the sheath cut as shown in fig 11.

13.8 Apply five layers of copper knit mesh, adjacent to the mastic on the conductive boot.

13.9 Secure with the water blocked braids over the copper knit mesh, using a worm-drive and tighten to 5Nm.

13.10 Secure the braids onto the cores using cable ties.
14. **CORE PREPARATION**

14.1 The pre-moulded grey silicone adapters are fitted with the chamfered inside edge first.

14.2 Both the single and binocular piece must be selected in accordance with the jointing matrix.

14.3 Push the PVC shroud over the exposed conductor.

14.4 Apply GC30 grease as shown in figure 12, on all cores.

14.5 Apply GC30 grease to the inside of the grey adaptor.

14.6 Push the grey adaptor on to the cores until the internal step of the sits against the insulation cut and remove the PVC shrouds. There should be 65mm of exposed conductor.

14.7 Degrease the exposed section of the conductor.

14.8 Apply 2228 mastic adjacent to the adaptors until the mastic is the same diameter as the adaptor. Place a roll of mastic between the cores.

14.9 Install one half of the connector.

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Fig 12
15. **MAKE CONNECTION**

15.1 Make the conductor connection ensuring that the joint bodies are parked on the long side of the joint in the correct orientation (blue Velcro straps furthest from the joint centreline).

15.2 Using the mastic strips, fill all the bolt shear points.

15.3 Degrease the exposed section of the connector.

15.4 Mark a joint body landing position at the end of the binocular adaptor.

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**Fig 13**

Make Connection

- For each cable with a stranded core: fill all shear bolt points with Grey Mastic
- Chinagraph Mark for Joint Body Landing Position
- Remove debris after shearing
- Joint Body Parked
- Short Side
- Long Side
15.5 Remove all outer packaging.

15.6 Position the short eject side of body to align with the end of the stress control tube on the double side.

15.7 Attach the 2 "C" spanners – one at each end of the tube, in opposite directions.

15.8 Using the "C" spanners, turn the two halves of the joint carrier tube in opposite directions in order to release the short side eject tube.

15.9 The Velcro holds the long side in position, allowing final adjustments to align the joint body with the edge of the stress control tube.
15.10 Release the Velcro straps- the long eject tube will now eject.

15.11 Remove the holdout tubes from the cable by cutting with side cutters along the longitudinal weak marks.

15.12 Repeat on all other cores.

15.13 After installing all 3 joint bodies, set the cores into their final position and post-heat the semi-conducting heatshrink glove.

![Installed joint body](image)

*Post-heat the gloves after installing all 3 joint bodies.*
16. CONNECTION OF EARTH

16.1 Fold the individual polymeric cable screen wires back over into the joint and form into bundles.

16.2 Connect the water-blocked braid on the short side together with the long side braid using the brass shear bolt connector.

16.3 Repeat on the other cores.

Fig 16

For clarity – Only one connection is shown.
17. APPLICATION OF KNIT MESH

17.1 Over tape the entire joint with knit mesh, using a 20% overlap. Ensure that all part of the joint are covered.

Fig 17

Application Of Knit Mesh Tape.

Over tape the entire joint, 20% overlap with knit mesh
18. COMPLETION OF RESIN CASE

18.1 Trim the cable entry point of the shell to suit the size of the paper cable.

18.2 Degrease the abraded outer sheath.

18.3 Fit the foam sealing plate in place.

18.4 Fit the shell, ensuring a minimum of 10 mm clearance. Ensure that the joint bodies are positioned between the internal supports.

18.5 Secure using Velcro strip and metal clips. Seal both ends with putty.

18.6 Mix the resin in accordance with the instruction provided with the resin and pour into the case until full.

18.7 Fit the lids over the filling ports.

18.9 Allow resin to set before moving or back-filling.
19. RED HEATSHRINK TUBING – FOR ALL PAPER CABLE TYPES

19.1 Check the diameter over the red heatshrink tube. Use additional tubes from the build up kit until the minimum diameter from the table below is exceeded –Please note that it is not necessary to apply all available red tubes once the minimum diameter has been reached.

19.2 Slide the red heatshrink tubes over the cores and place 5 mm from the red tube below.

19.3 Shrink the tubes starting at the crutch. Ensure the tubes are fully shrunk down and wrinkle free.

### KIT REF.

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Fig 19

Red Heatshrink Tubing

Grease in-side tube if required

Red Tubes

Check Diameter over Red Tube
20. **BLACK SEMI-CONDUCTIVE TUBES**

20.1 Check the diameter over the metallic layer. Use additional tubes from the build up kit until the minimum diameter from the table below are exceeded, depending on which semi-conductive boot is used.

20.2 Position the semi-conductive tubes in line with the metallic sheath and commence shrinking away from the crutch. Ensure the tubes are fully shrunk down and wrinkle free.

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**Fig 20**

**Black Semi-conductive Tube**

![Diagram of Black Semi-conductive Tube]

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When using any of the 6 build up kits refer to sizes below

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<td>366028 to 366031</td>
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21. CONDUCTIVE GLOVE

21.1 Select the correct glove depending on the size of cable from the above chart and push the conductive glove firmly into the crutch.

21.2 Holding the glove in position, shrink down commencing mid body, onto the turrets and finishing at the rear of the glove.
22. FITTING STRESS CONTROL MOULDINGS – JOINING ONTO SMALLER CABLES

22.1 When jointing on to smaller cables, the binocular piece from the build up kit must be used instead of the piece supplied in the main kit.

22.2 The brass connector sleeve must be used from the build up kit. Writing to outside of connector.

22.3 All cables should be stripped as per main instructions.

22.4 Examine the binocular piece, this is fitted with the chamfered inside edge first, ensuring appropriate size hole is used for the correct cable size.

22.5 The internal step of the binocular piece should sit against the insulation cut.

22.6 Return to the main section for the remaining instructions.
### PRYSMIAN 11KV TRIFURCATING TRANSITION BREACH JOINT - TWO BUILD UP KITS ARE REQUIRED WHEN JOINING 2 PAPER CABLES

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**TRIPLEX POLY CABLE**
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