

Company Directive

STANDARD TECHNIQUE: CA2N/6

Relating to Procedures for Making 11kV Cable Stop Ends

Policy Summary

This Standard Technique document contains all the approved 11kV cold applied/pour Stop Ends for EPR, 3 Core XLPE, 3 Core XLPE SWA, PICAS screened and belted, PISAS and PILC cables. It shall be implemented in conjunction with the appropriate General Requirements in ST: CA2C/9.

This ST has not been written as a training document. It is not intended to be exhaustive in content and you must refer to your supervisor if you require training or instruction.

You shall work safely and skilfully, utilising the training/instruction you have already received, relating to the contents of this document and its cross-references.

You must make sure that you understand your job instructions and that you have the necessary tools and equipment for the job.

Author: Richard Summers

Implementation Date: December 2017

Approved by:



Policy Manager

Date:

12 December 2017

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IMPLEMENTATION PLAN

Introduction

This updated Standard Technique defines all the standard 11kV stop ends which are available for use on the 11kV underground cable used within.

Main Changes

Document updated to reflect the implementation of the Lovink M series straight joints during Q2 2018.

Impact of Changes

None at this time – Document issued ahead of change-over to M Series Lovink Joints.

Implementation Actions

These changes will be briefed by our training team who will be visiting all locations Q1 2018

Team Managers to ensure all of their 11kV Jointers attend these sessions

Implementation Timetable

This Standard Technique can be issued with immediate effect.

REVISION HISTORY

Document Revision & Review Table		
Date	Comments	Author
December 2017	The document has been modified to take into account the introduction of the new Lovink M series of straight joint.	Richard Summers
April 2017	Document modified to take into account the WPD losses strategy. Minor changes in the kit lists to remove errors.	Peter White
April 2013	The changes that have been made to this document are the inclusion of all the 11kV cables which have over the years been used in the Midlands Areas and not used in the South Wales and South Western areas, thus providing a unified common document applicable to the whole company. This document now contains all the required the Jointing Procedures associated to the cables used within the enlarged company thus allowing Stop End joints to be installed on the said cables. Rectification of known typographic errors.	Peter White

ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

INTRODUCTION

This Standard Technique document contains all the approved 11kV Stop End Joints, which shall be implemented in conjunction with the appropriate General Requirements, contained in ST: CA2C/9, including: -

1. General Cleanliness and Accident Prevention.
2. Joint Bay Preparation.
3. General Jointing Procedures – Dead Cables.

If the need arises to undertake a branch joint configuration (i.e. non-standard) not covered within the Standard Technique the Policy Manager, Avonbank, is to be consulted.

As from 1st March 2015 WPD have changed the specification of Approved cable sizes. These changes will affect all new installations and are aimed at reducing cable losses in accordance with the WPD Losses Strategy. This means that the 95mm² triplex and single core cables are now removed from general use, they can only be used for padmounts and the repair of faults in existing 95mm² circuits.

Cable sizes shown are the maximum for the individual joint, cable sizes below the maximum and there combinations are accommodated and are provided for in the relevant Jointing Procedure, this is particularly evident for transitional jointing.

Where 240mm² EPR Triplex is to be found, then for material selection and installation data use 300mm² EPR Triplex; but for the electrical purposes i.e. loadings, ratings etc. then the 240mm² EPR Triplex shall be treated as 185mm² EPR Triplex.

Any reference to PICAS equally applies to screened or belted PICAS as well as PISAS. Any reference to EPR triplex equally applies to XLPE triplex.

Resin encapsulated joints must not be broken down.

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.301

185mm² EPR TRIPLEX CABLE 11kV STOP END

(This Jointing Procedure covers cable sizes up to and including 185mm²)

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.301

JOINT KIT MATERIALS

CABLE SIZE: - 70mm²/95mm²/185mm² EPR Triplex

Item	Quantity
70mm² EPR Triplex	
Base Module BM M85	1
Resin Module RM B	1
Cable Depending Module CDM M85/M105-J	1
Stop End Module SEM M85	1
Foam Tape Build up Module FTBM	1
95/185mm² EPR Triplex	
Base Module BM M85	1
Resin Module RM B	1
Cable Depending Module CDM M85-D	1
Stop End Module SEM M85	1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.301

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.301.1, 7.301.2 and 7.301.3**, whilst undertaking this Jointing Procedure.

1. Set and mark cable. 5/6

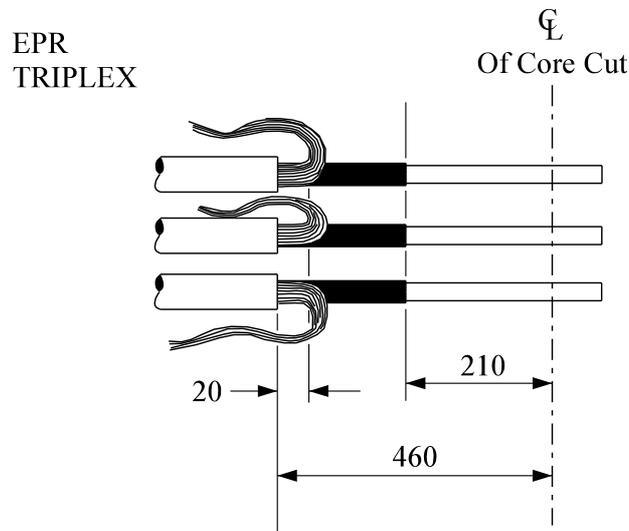
EPR CABLE - Preparation

2. Unravel and straighten individual cores. --
 3. Identify and mark core phasing clear of joint position. 25
 4. Set and align cores into their joint positions ensuring that any cross is undertaken well away from joint position. 25
 5. Clean each oversheath for a distance of 1.5m. --
 6. Apply a temporary earth continuity bond clear of joint position. 10
 7. Park a mastic lined heat shrink tube next to temporary earth continuity bond of each core. --
 8. Set and mark cores ensuring one to the top. --
 9. Remove oversheaths and bedding tapes. 16
 10. Abrade oversheaths. 17
 11. Apply a 20 swg binder around copper screen wires 20mm from oversheath termination point. --
 12. Straighten copper screen wires and form into a bunch. --
 13. Apply black mastic water blocking tape at the termination point of the MDPE oversheaths, 10mm on the coppers screen wires and overlapping 10mm onto the MDPE oversheaths. 45
- Note: - Wrap the fitted water blocking mastic with the yellow wax backing paper to prevent sticking and allow removal on completion of the joint.**
14. Remove semi-conducting screens ensuring insulation is free from all conducting material. 28

JOINTING PROCEDURE 7.301 – Continued

Actions	General Requirements (ST: CA2C/9)
COMPLETION OF JOINT	
15. Cut cores to given length - Do not remove core insulation.	--
16. Apply a stress cone to each core.	35
17. Fit foam filler piece and build-up cable oversheaths.	32
18. Fit inner sleeve foam rings.	34
19. Fit phase insulation tubes together and slide over cores.	37
20. Fit stop end module.	38
21. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
22. Ensure joint is level and fill with Lovisil.	41
23. Clean and degrease inner sleeve.	43
24. Form copper screen wire bunches into one conductor and connect to copper earth bar clamp.	42
25. Remove temporary earth continuity bond applied in 6 and reseal EPR oversheaths.	51
26. Wrap and stretch copper stocking across joint and connect to copper screen wires and stop end module.	44
27. Fit and support outer sleeve ensuring 15mm clearance.	46
28. Mix and pour resin.	47

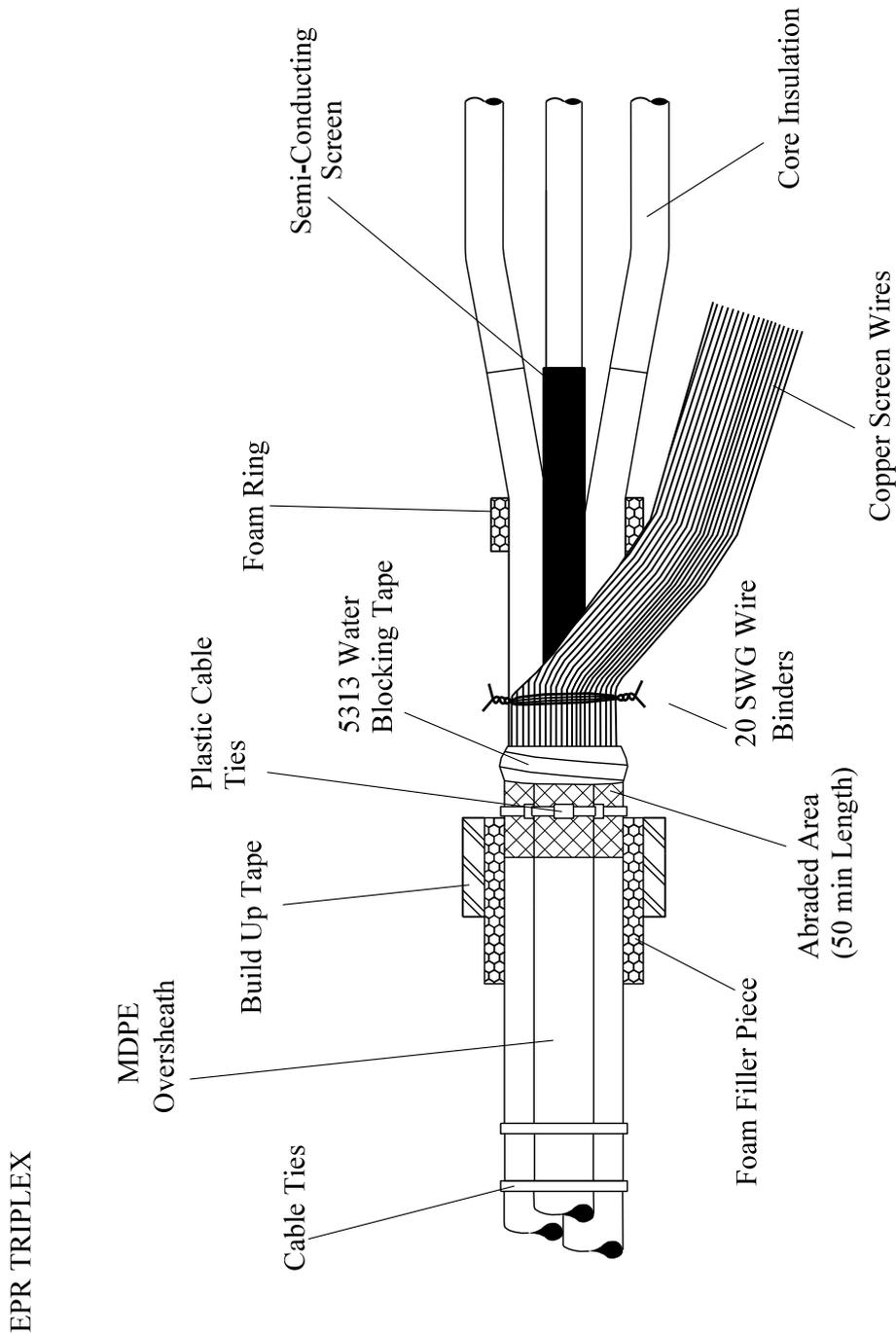
All dimensions in mm



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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	04/13	Title UP TO & INC 185mm ² EPR TRIPLEX STOP END STRIPPING DIMENSIONS			
Checked			Drg. No.			Rev No
Approved			JP2D 7.301.1			
SCALE	N.T.S.					

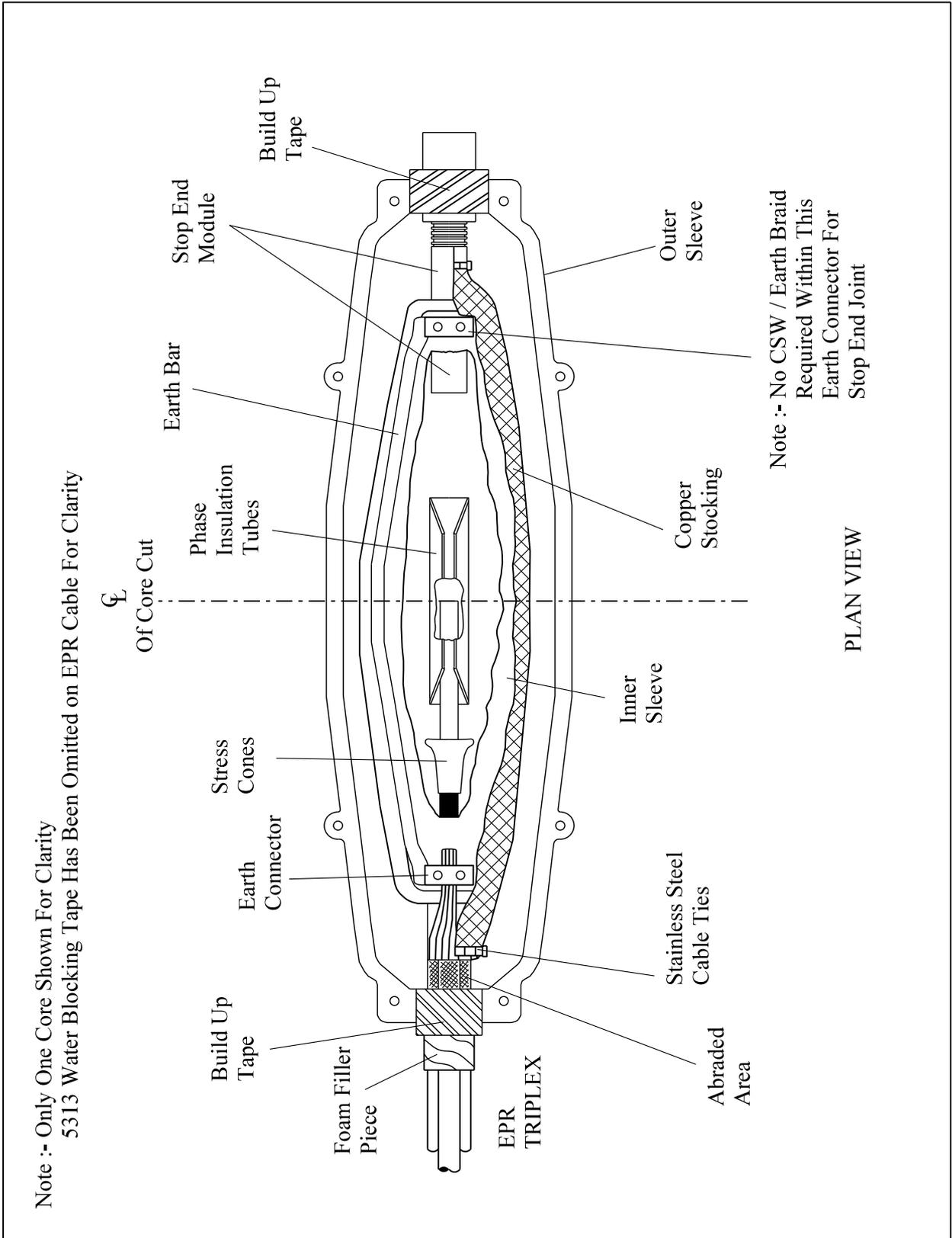
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All dimensions in mm



1	RJB			07/17	DRAWING ALTERED	
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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	04/13	Title			
Checked			PREPARATION OF EPR TRIPLEX			Drg. No.
Approved						JP2D 7.301.2
SCALE	N.T.S.					Rev No
						1

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Drawn	RJB	06/17	Title UP TO & INC 185mm ² EPR TRIPLEX STOP END GENERAL LAYOUT			
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Approved						
SCALE	N.T.S.					

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.302

300 / 400mm² EPR TRIPLEX CABLE 11kV STOP END

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.302

JOINT KIT MATERIALS

CABLE SIZE: - 300 / 400mm² EPR Triplex

Item	Quantity
300mm² EPR Triplex	
Base Module BM M105	1
Resin Module RM B	2
Resin Module RM C	1
Cable Depending Module CDM M85/M105-F	1
Stop End Module SEM M105	1

Note: - The jointing materials for 240mm² EPR Triplex will be the same as 300mm² EPR Triplex.

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.302

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.302.1, 7.302.2** and **7.302.3** whilst undertaking this Jointing Procedure.

1. Set and mark cable. 5/6

EPR CABLE - Preparation

2. Unravel and straighten individual cores. --
 3. Identify and mark core phasing clear of joint position. 25
 4. Set and align cores into their joint positions ensuring that any cross is undertaken well away from joint position. 25
 5. Clean each oversheath for a distance of 1.5m. --
 6. Apply a temporary earth continuity bond clear of joint position. 10
 7. Park a mastic lined heat shrink tube next to temporary earth continuity bond of each core. --
 8. Set and mark cores ensuring one to the top. --
 9. Remove oversheaths and bedding tapes. 16
 10. Abrade oversheaths. 17
 11. Apply a 20 swg binder around copper screen wires 20mm from oversheath termination point. --
 12. Straighten copper screen wires and form into a bunch. --
 13. Apply black mastic water blocking tape at the termination point of the MDPE oversheaths, 10mm on the coppers screen wires and overlapping 10mm onto the MDPE oversheaths. 45
- Note: - Wrap the fitted water blocking mastic with the yellow wax backing paper to prevent sticking and allow removal on completion of the joint.**
14. Remove semi-conducting screens ensuring insulation is free from all conducting material. 28

JOINTING PROCEDURE 7.302 – Continued

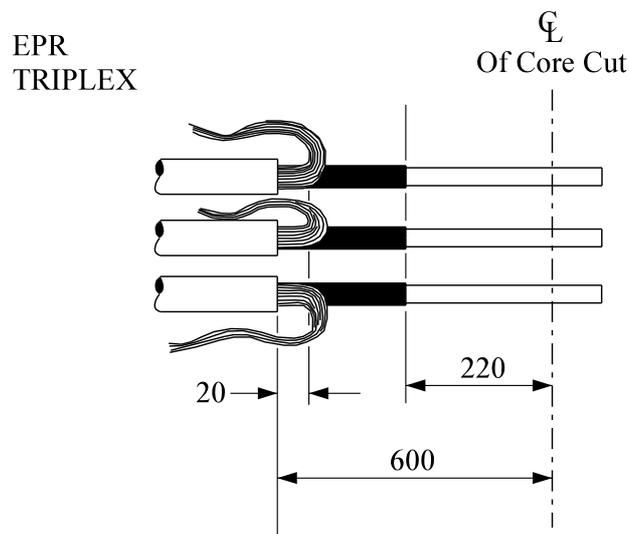
Actions

General Requirements (ST: CA2C/9)

COMPLETION OF JOINT

15.	Cut cores to given length - Do not remove core insulation.	--
16.	Apply a stress cone to each core.	35
17.	Fit foam filler piece and build-up cable oversheaths.	32
18.	Fit inner sleeve foam rings.	34
19.	Fit phase insulation tubes together and slide over cores.	37
20.	Fit stop end module.	38
21.	Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
22.	Ensure joint is level and fill with Lovisil.	41
23.	Clean and degrease inner sleeve.	43
24.	Form copper screen wire bunches into one conductor and connect to copper earth bar clamp.	42
25.	Remove temporary earth continuity bond applied in 6 and reseal EPR oversheaths.	51
26.	Wrap and stretch copper stocking across joint and connect to copper screen wires and stop end module.	44
27.	Fit and support outer sleeve ensuring 15mm clearance.	46
28.	Mix and pour resin.	47

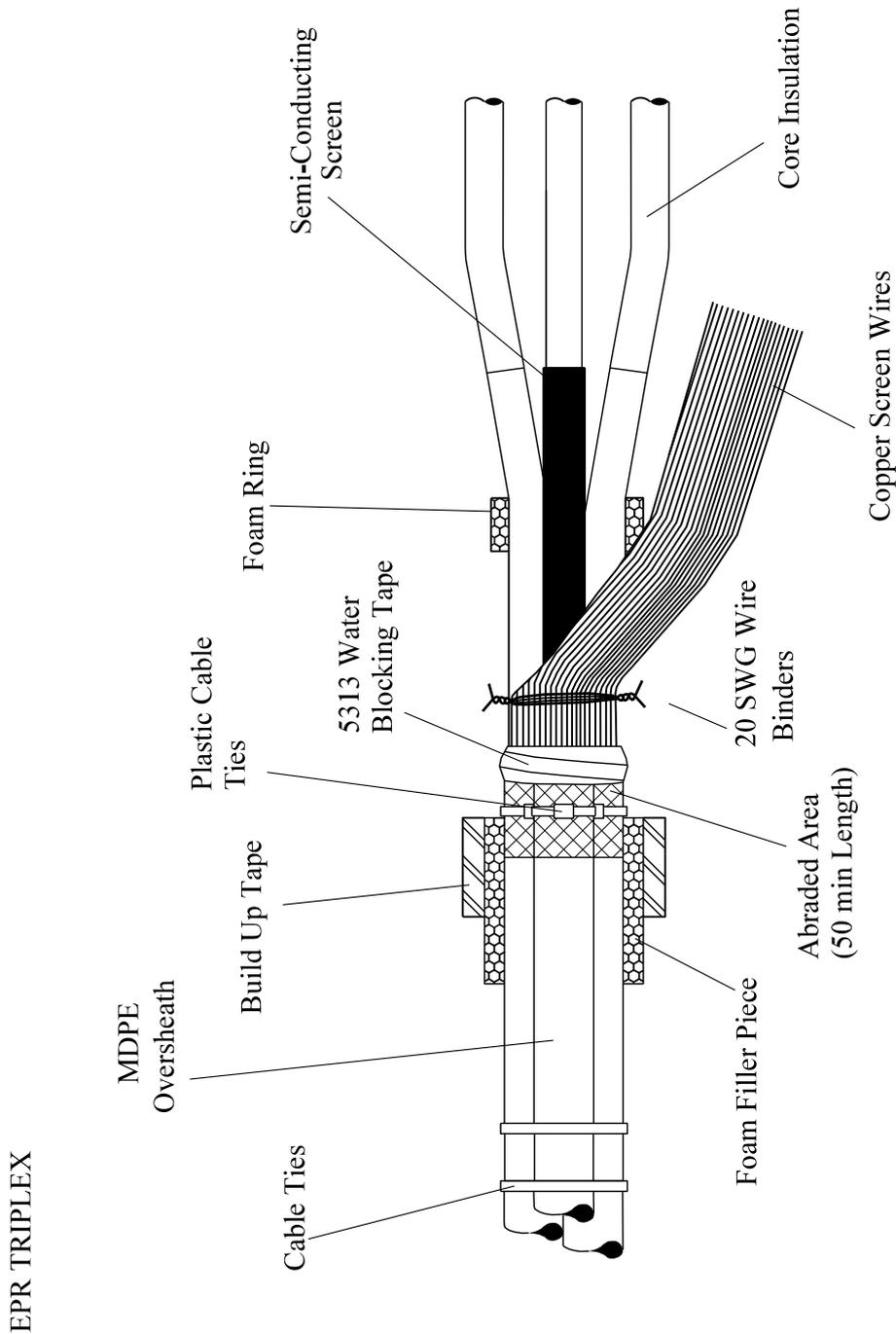
All dimensions in mm



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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	04/13	Title UP TO & INC 300mm ² EPR TRIPLEX STOP END STRIPPING DIMENSIONS			
Checked			Drg. No.			Rev No
Approved			JP2D 7.302.1			
SCALE	N.T.S.					

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All dimensions in mm



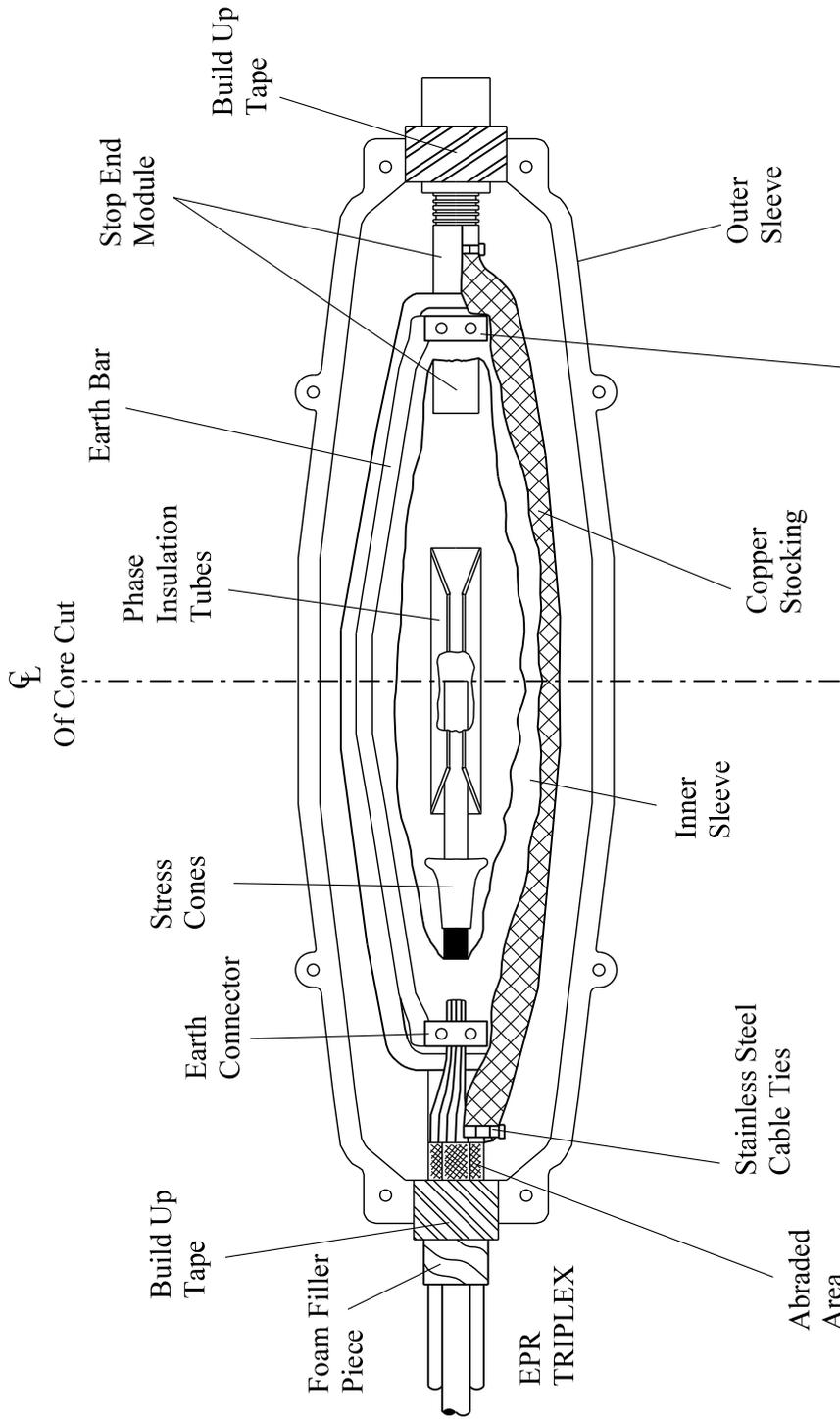
EPR TRIPLEX

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Drawn	RJB						04/13
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Approved							
SCALE	N.T.S.		Title			Drg. No. JP2D 7.302.2	Rev No 1
			PREPARATION OF EPR TRIPLEX				

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All dimensions in mm

Note :- Only One Core Shown For Clarity
5313 Water Blocking Tape Has Been Omitted on EPR Cable For Clarity



Note :- No CSW / Earth Braid
Required Within This
Earth Connector For
Stop End Joint

PLAN VIEW

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Drawn	RJB	06/17	Title UP TO & INC 300mm ² EPR TRIPLEX			
Checked			STOP END		JP2D 7.302.3	
Approved			GENERAL LAYOUT			
SCALE	N.T.S.					

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.303

185mm² 3 CORE XLPE CABLE 11kV STOP END

(This Jointing Procedure covers cable sizes up to and including 185mm²)

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.303

JOINT KIT MATERIALS

CABLE SIZE: - 70mm²/95mm²/185mm² 3 Core XLPE

Item	Quantity
70mm² 3 Core XLPE	
Base Module BM M85	1
Module BM M85X	1
Resin Module RM B	1
Cable Depending Module CDM M85/M105 -J	1
Stop End Module SEM M85	1
Foam Tape Build up Module FTBM	1
Resin Module 'G' - Top-up. Extended Shells	3
95/185mm² 3 Core XLPE	
Base Module BM M85	1
Module BM M85X	1
Resin Module RM B	1
Cable Depending Module CDM KX85-N	1
Stop End Module SEM M85	1
Resin Module 'G' - Top-up. Extended Shells	3

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.303

Actions

General Requirements (ST: CA2C/9)

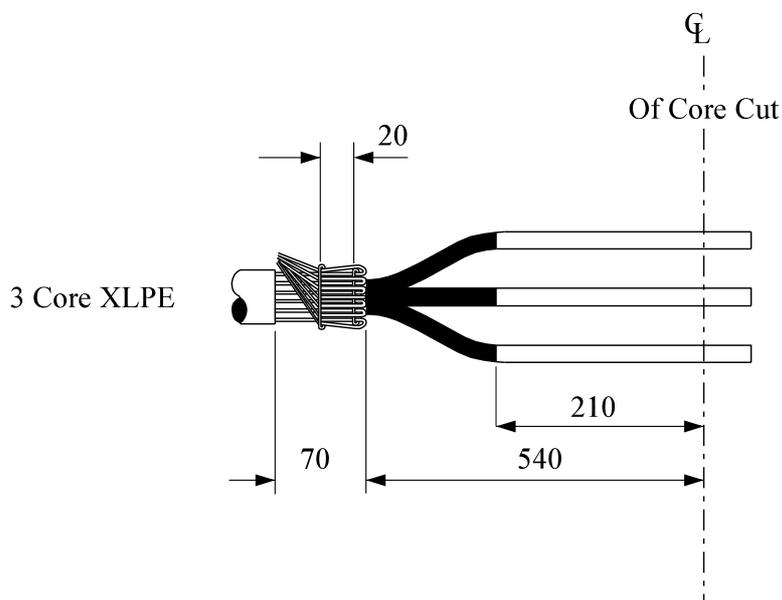
Refer to Drawings **JP2D 7.303.1, 7.303.2 and 7.303.3**, whilst undertaking this Jointing Procedure.

- | | | |
|--|---|-------|
| 1. | Set and mark cables. | 5/6 |
| 3 CORE XLPE CABLE - Preparation | | |
| 2. | Clean each oversheath for a distance of 1.5m. | -- |
| 3. | Apply a temporary earth continuity bond clear of joint position. | 10 |
| 4. | Park a mastic lined heat shrink tube next to temporary earth continuity bond | -- |
| 5. | Remove oversheath. | 15/16 |
| 6. | Apply 20 swg binding wire 70mm from oversheath termination point to collective copper wire screen. | 21 |
| 7. | Straighten copper screen wires and form into a bunch. | -- |
| 8. | Apply black mastic water blocking tape at the termination point of the MDPE oversheaths, 10mm on the coppers screen wires and overlapping 10mm onto the MDPE oversheaths. | 45 |
| Note: - Wrap the fitted water blocking mastic with the yellow wax backing paper to prevent sticking and allow removal on completion of the joint. | | |
| 9. | Remove the semi-conducting bedding layer. | -- |
| 10. | Apply Scotch 13 tape to screen wires and semi-conductor screens. | 21 |
| 11. | Abrade oversheath. | 17 |
| 12. | Set and mark cores ensuring one is at the top. | -- |
| 13. | Remove semi-conducting screens ensuring insulation is free from all conducting material. | 28 |
| COMPLETION OF JOINT | | |
| 14. | Cut cores to given length - Do not remove core insulation. | -- |
| 15. | Apply a stress cone to each core. | 35 |

JOINTING PROCEDURE 7.303 – Continued

Actions	General Requirements (ST: CA2C/9)
16. Fit inner sleeve foam rings.	34
17. Fit phase insulation tubes together and slide over cores.	37
18. Fit stop end module.	38
19. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
20. Ensure joint is level and fill with Lovisil.	41
21. Clean and degrease inner sleeve.	43
22. Form copper screen wire bunches into one conductor and connect to copper earth bar clamp.	42
23. Remove temporary earth continuity bond applied in 3.	51
24. Wrap and stretch copper stocking across joint and connect to copper screen wires and stop end module.	44
25. Fit and support outer sleeve ensuring 15mm clearance.	46
26. Mix and pour resin.	47

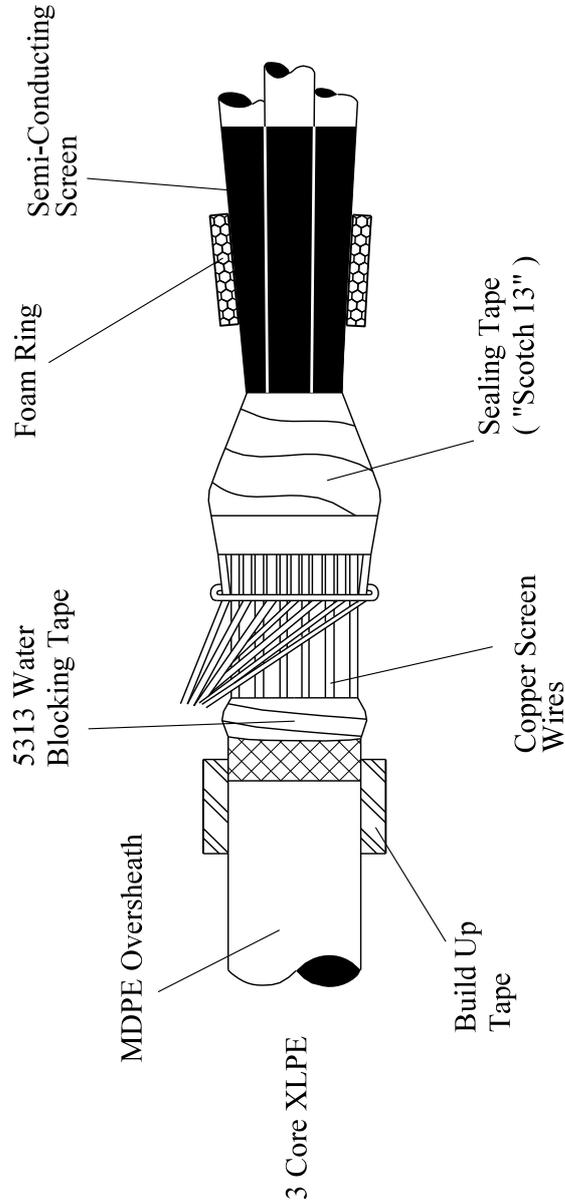
All dimensions in mm



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Drawn	RJB	04/13	Title UP TO & INC 185mm ² 3 CORE XLPE STOP END STRIPPING DIMENSIONS			
Checked			Drg. No.			Rev No
Approved			JP2D 7.303.1			
SCALE	N.T.S.					

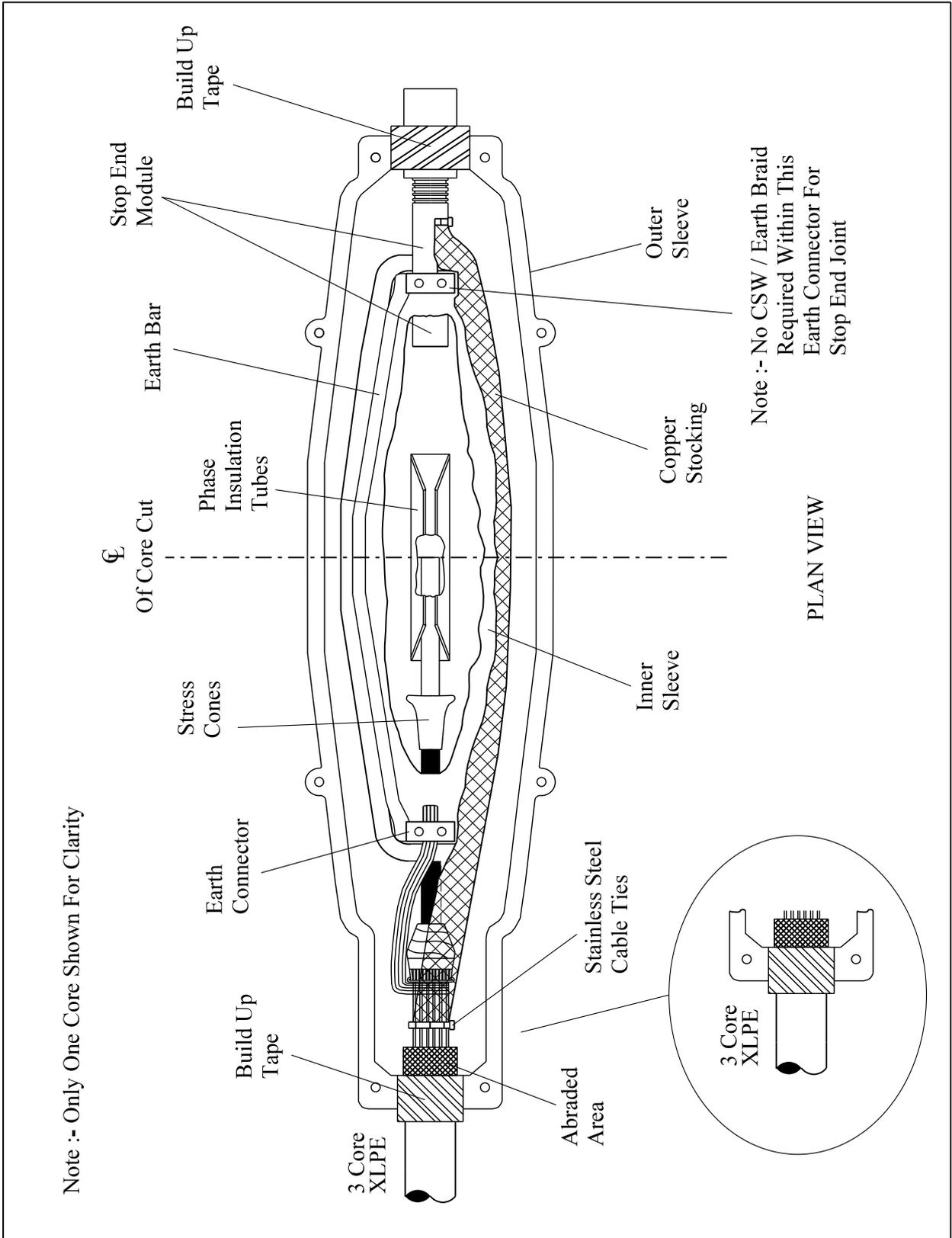
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All dimensions in mm



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Drawn	RJB	04/13	Title				
Checked			PREPARATION OF 3 CORE COLLECTIVE SCREEN CABLES			Drg. No.	Rev No
Approved						JP2D 7.303.2	1
SCALE	N.T.S.						

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Note :- Only One Core Shown For Clarity

Note :- No CSW / Earth Braid Required Within This Earth Connector For Stop End Joint

PLAN VIEW

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Drawn	RJB	06/17	Title			
Checked			UP TO & INC 185mm ² 3 CORE XLPE STOP END GENERAL LAYOUT		JP2D 7.303.3	
Approved						
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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.304

300 / 400mm² 3 CORE XLPE CABLE 11kV STOP END

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.304

JOINT KIT MATERIALS

CABLE SIZE: - 300 / 400mm² 3 Core XLPE

Item	Quantity
300mm² EPR Triplex	
Base Module BM M105	1
Module BM M105X	1
Resin Module RM B	2
Resin Module RM C	1
Cable Depending Module CDM KX95-O	1
Stop End Module SEM M105	1
Resin Module 'G' - Top-up. Extended Shells	3

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.304

Actions

General Requirements (ST: CA2C/9)

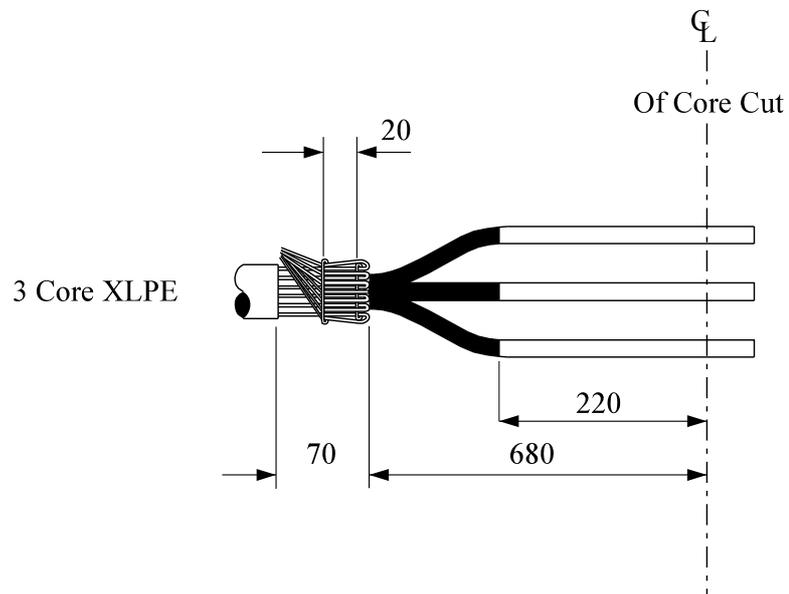
Refer to Drawings **JP2D 7.304.1, 7.304.2** and **7.304.3** whilst undertaking this Jointing Procedure.

- | | | |
|--|---|-------|
| 1. | Set and mark cables. | 5/6 |
| 3 CORE XLPE CABLE - Preparation | | |
| 2. | Clean each oversheath for a distance of 1.5m. | -- |
| 3. | Apply a temporary earth continuity bond clear of joint position. | 10 |
| 4. | Park a mastic lined heat shrink tube next to temporary earth continuity bond | -- |
| 5. | Remove oversheath. | 15/16 |
| 6. | Apply 20 swg binding wire 70mm from oversheath termination point to collective copper wire screen. | 21 |
| 7. | Straighten copper screen wires and form into a bunch. | -- |
| 8. | Apply black mastic water blocking tape at the termination point of the MDPE oversheaths, 10mm on the coppers screen wires and overlapping 10mm onto the MDPE oversheaths. | 45 |
| Note: - Wrap the fitted water blocking mastic with the yellow wax backing paper to prevent sticking and allow removal on completion of the joint. | | |
| 9. | Remove the semi-conducting bedding layer. | -- |
| 10. | Apply Scotch 13 tape to screen wires and semi-conductor screens. | 21 |
| 11. | Abrade oversheath. | 17 |
| 12. | Set and mark cores ensuring one is at the top. | -- |
| 13. | Remove semi-conducting screens ensuring insulation is free from all conducting material. | 28 |
| COMPLETION OF JOINT | | |
| 14. | Apply a stress cone to each core. | 35 |
| 15. | Fit inner sleeve foam rings. | 34 |

JOINTING PROCEDURE 7.304 – Continued

Actions	General Requirements (ST: CA2C/9)
16. Fit phase insulation tubes together and slide over cores.	37
17. Fit stop end module.	38
18. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
19. Ensure joint is level and fill with Lovisil.	41
20. Clean and degrease inner sleeve.	43
21. Form copper screen wire bunches into one conductor and connect to copper earth bar clamp.	42
22. Remove temporary earth continuity bond applied in 3.	51
23. Wrap and stretch copper stocking around joint and connect to copper screen wires and stop end module.	44
24. Build up cable oversheath.	32
25. Fit and support outer sleeve.	46
26. Mix and pour resin.	47

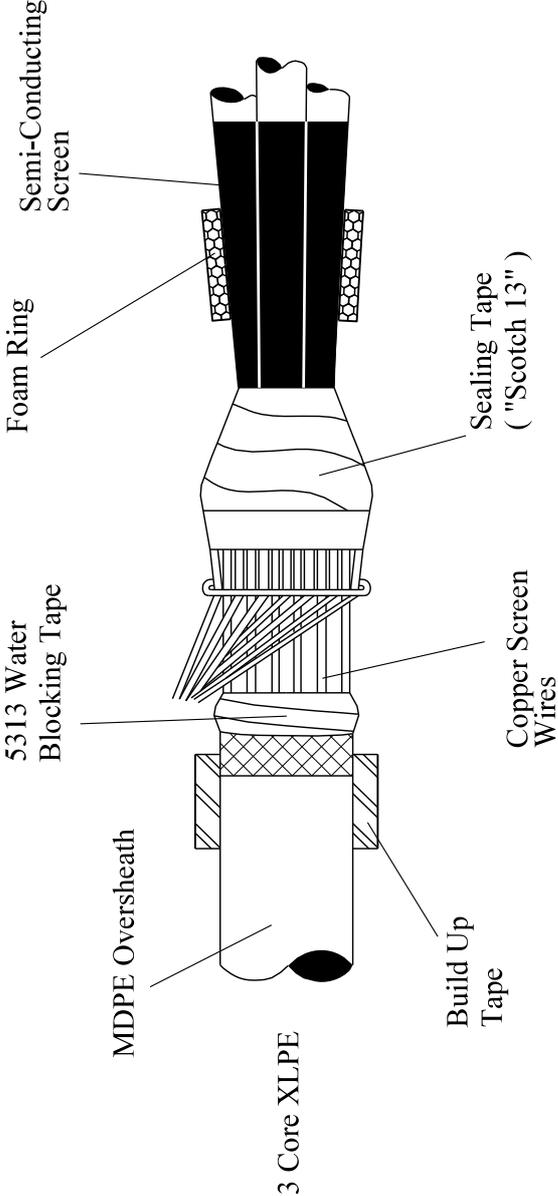
All dimensions in mm



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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	04/13	Title UP TO & INC 300mm ² EPR TRIPLEX - 3 CORE XLPE STOP END STRIPPING DIMENSIONS			
Checked			Drg. No. JP2D 7.304.1			Rev No
Approved						
SCALE	N.T.S.					

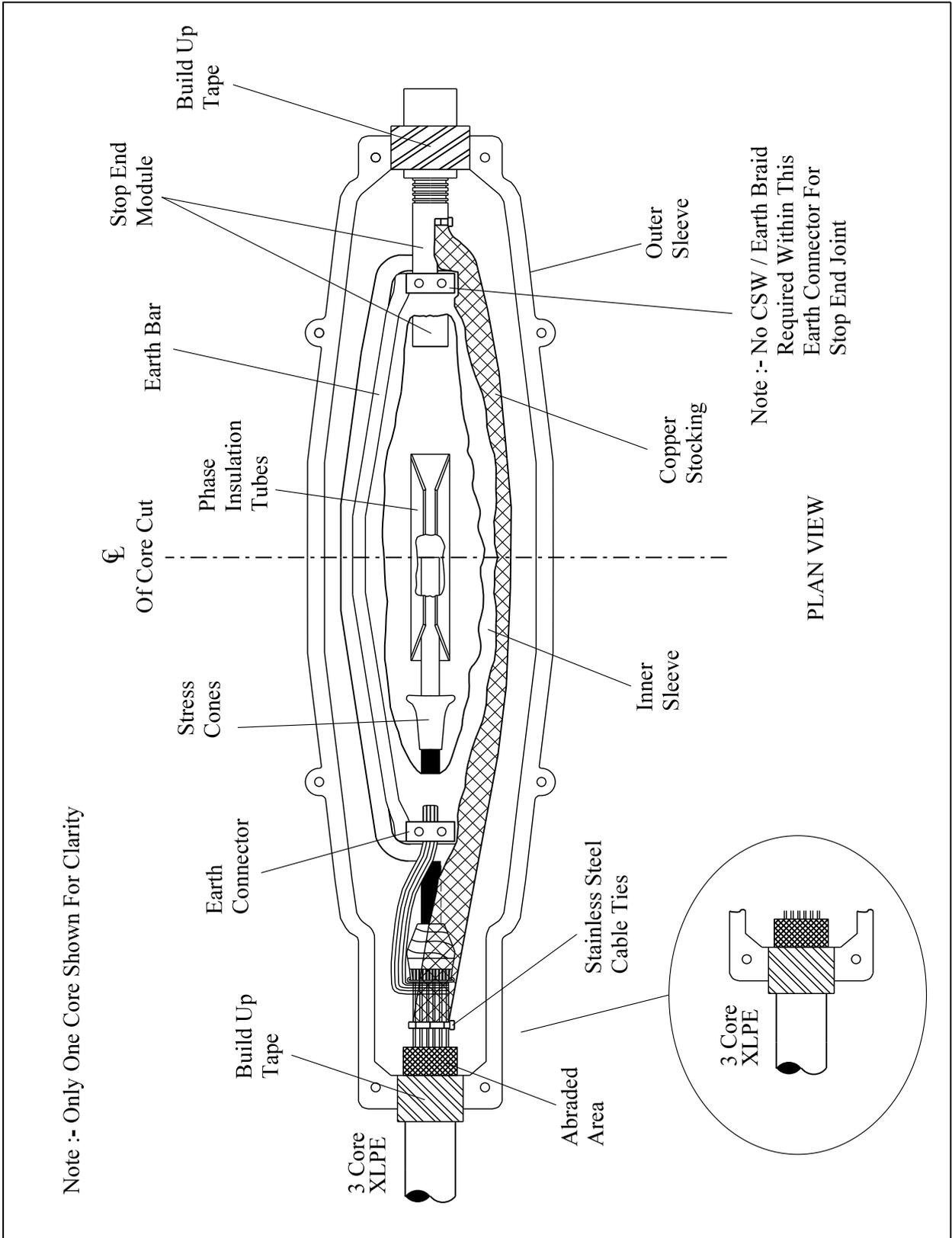
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All dimensions in mm



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Checked			PREPARATION OF 3 CORE COLLECTIVE SCREEN CABLES			Drg. No.	Rev No
Approved						JP2D 7.304.2	1
SCALE	N.T.S.						

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Note :- Only One Core Shown For Clarity

Note :- No CSW / Earth Braid Required Within This Earth Connector For Stop End Joint

PLAN VIEW

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Drawn	RJB 06/17	Title UP TO & INC 300/400mm ² 3 CORE XLPE STOP END JOINT GENERAL LAYOUT				
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Approved						
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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.305

185mm² 3 CORE SWA XLPE CABLE 11kV STOP END

(This Jointing Procedure covers cable sizes up to and including 185mm²)

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.305

JOINT KIT MATERIALS

CABLE SIZE: - 95mm²/185mm² 3 CORE SWA XLPE

Item	Quantity
95/185mm² EPR Triplex	
Base Module BM M85	1
Module BM M85X	1
Resin Module RM B	1
Cable Depending Module CDM KX85-P	1
Stop End Module SEM M85	1
Resin Module 'G' - Top-up. Extended Shells	3

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.305

Actions

General Requirements (ST: CA2C/9)

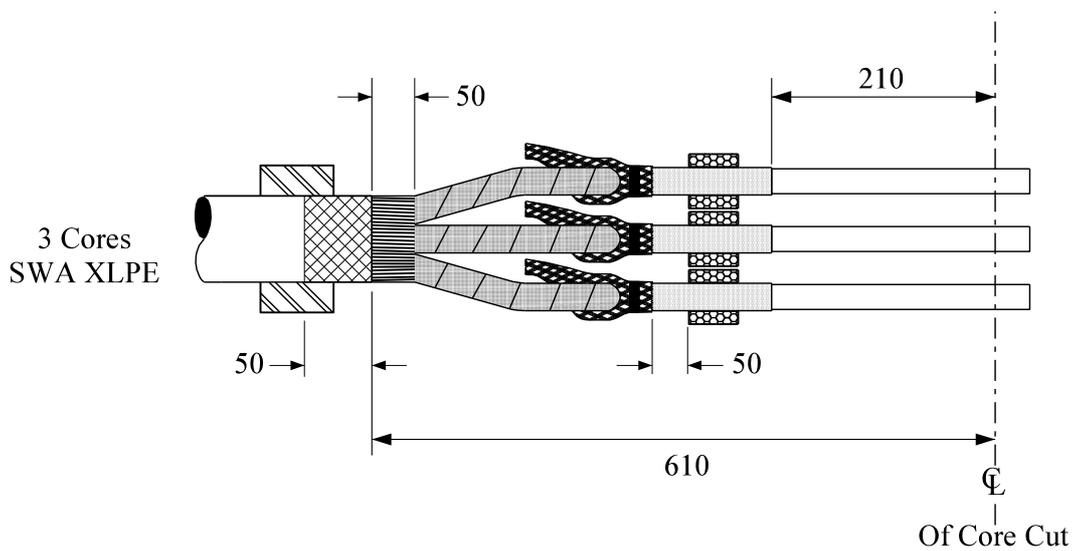
Refer to Drawings **JP2D 7.305.1, 7.305.2 and 7.305.3**, whilst undertaking this Jointing Procedure.

- | | | |
|--|--|-------|
| 1. | Set and mark cables. | 5/6 |
| 3 CORE SWA XLPE CABLE - Preparation | | |
| 2. | Clean each oversheath for a distance of 1.5m. | -- |
| 3. | Apply a temporary earth continuity bond clear of joint position. | 10 |
| 4. | Park a mastic lined heat shrink tube next to temporary earth continuity bond | -- |
| 5. | Remove oversheath. | 15/16 |
| 6. | Apply 20 swg binding wire 70mm from oversheath termination point to steel wire armour. | 13 |
| 7. | Fit support ring and bond SWA. | 14 |
| 8. | Remove bedding layer and core fillers. | -- |
| 9. | Terminate and remove the copper tape from semi-conducting screens. | 14/29 |
| 10. | Fit braids to semi-conductor screens. | 14 |
| 11. | Abrade oversheath. | 17 |
| 12. | Set and mark cores ensuring one to the top. | -- |
| 13. | Remove semi-conducting screens ensuring insulation is free from all conducting material. | 28 |
| COMPLETION OF JOINT | | |
| 14. | Apply a stress cone to each core. | 35 |
| 15. | Fit inner sleeve foam rings. | 34 |
| 16. | Fit phase insulation tubes together and slide over cores. | 37 |
| 17. | Fit stop end module. | 38 |

JOINTING PROCEDURE 7.305 – Continued

Actions	General Requirements (ST: CA2C/9)
18. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
19. Ensure joint is level and fill with Lovisil.	41
20. Clean and degrease inner sleeve.	43
21. Form copper braids into one conductor and connect to copper earth bar clamp.	42
22. Remove temporary earth continuity bond applied in 3.	51
23. Wrap and stretch copper stocking around joint and connect to copper braids and stop end module.	44
24. Build up cable oversheath.	32
25. Fit and support outer sleeve ensuring 15mm clearance.	46
26. Mix and pour resin.	47

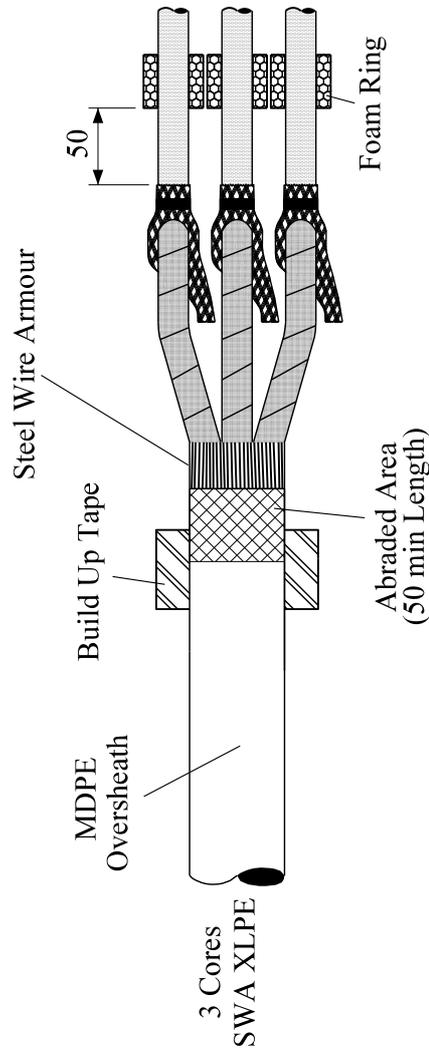
All dimensions in mm



1	RJB			07/17	FOAM RING ALTERED		
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Checked			UP TO & INC 185mm ² 3 CORE SWA XLPE STOP END STRIPPING DIMENSIONS			JP2D 7.305.1	1
Approved			SCALE				
N.T.S.							

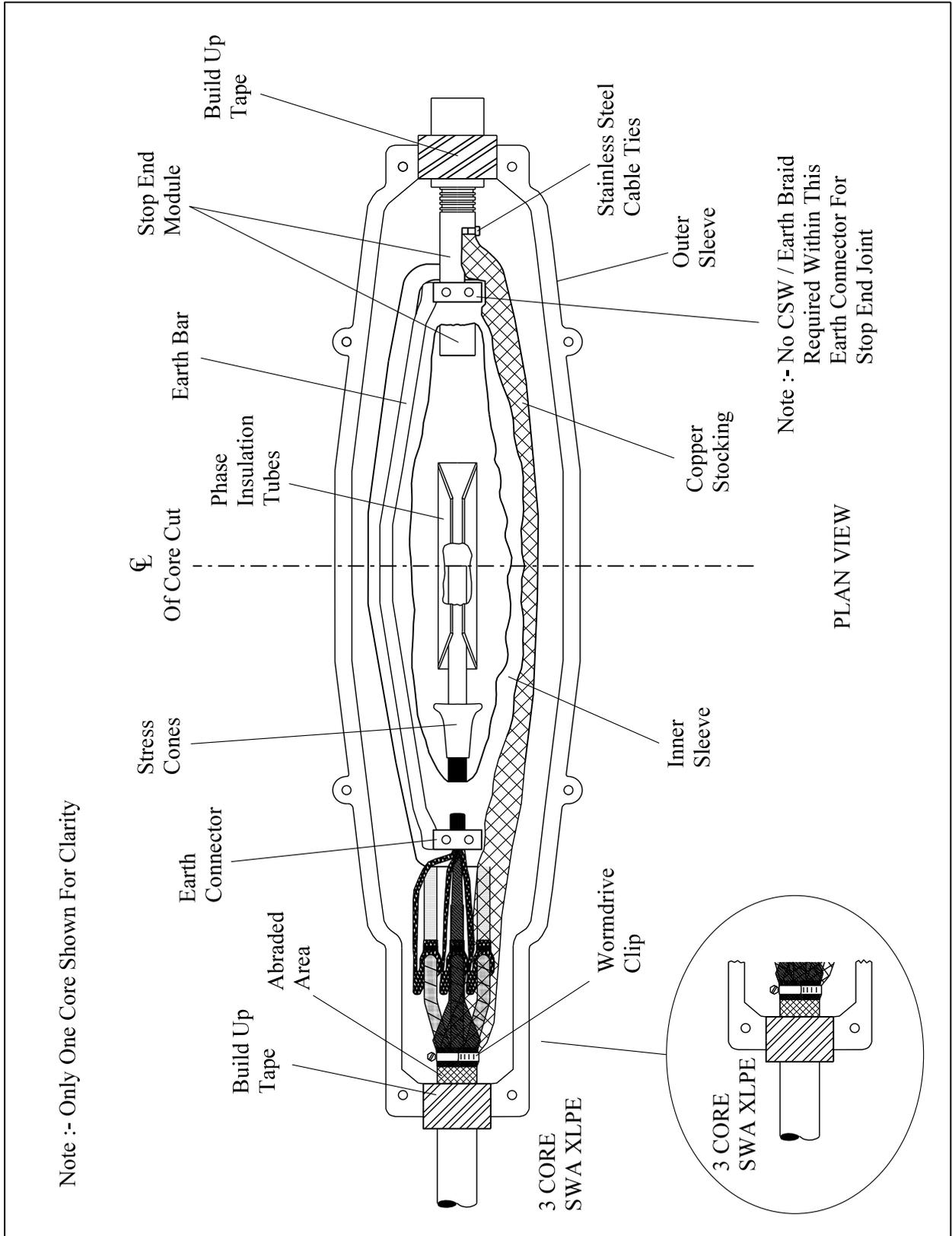
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Note :- Only One Core Shown For Clarity

Note :- No CSW / Earth Braid Required Within This Earth Connector For Stop End Joint

PLAN VIEW

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.306

300 / 400mm² 3 CORE SWA XLPE CABLE 11kV STOP END.

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.306

JOINT KIT MATERIALS

CABLE SIZE: - 300 / 400mm² 3 CORE SWA XLPE

Item	Quantity
300mm² 3 Core SWA XLPE	
Base Module BM M105	1
Module BM M105X	1
Resin Module RM B	2
Resin Module RM C	1
Cable Depending Module CDM KX95-R	1
Stop End Module SEM M105	1
Resin Module 'G' - Top-up. Extended Shells	3

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.306

Actions

General Requirements (ST: CA2C/9)

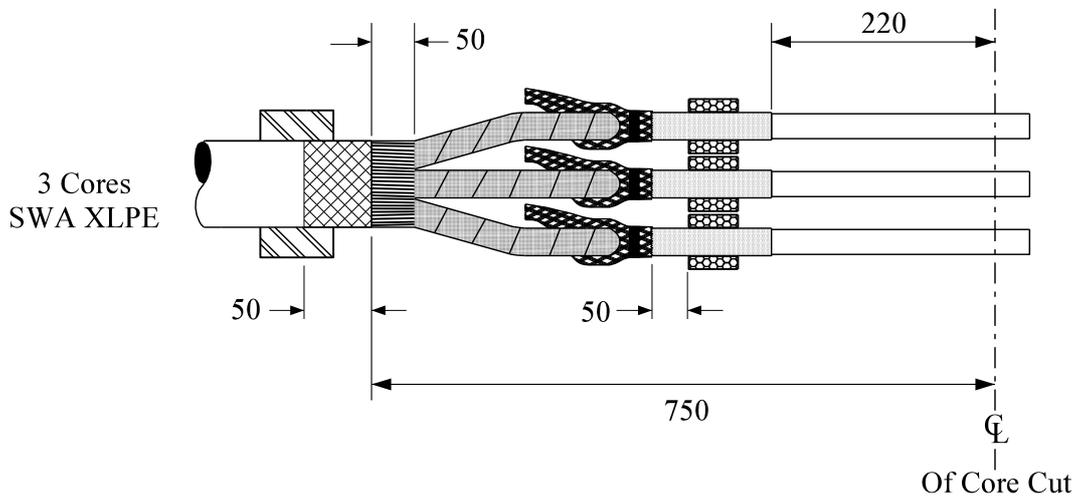
Refer to Drawings **JP2D 7.306.1, 7.306.2 and 7.306.3** whilst undertaking this Jointing Procedure.

1.	Set and mark cables.	5/6
3 CORE SWA XLPE CABLE - Preparation		
2.	Clean each oversheath for a distance of 1.5m.	--
3.	Apply a temporary earth continuity bond clear of joint position.	10
4.	Park a mastic lined heat shrink tube next to temporary earth continuity bond .	
5.	Park a mastic lined heat shrink tube next to temporary earth continuity bond .	--
6.	Remove oversheath.	15/16
7.	Apply 20 swg binding wire 70mm from oversheath termination point to steel wire armour.	13
8.	Fit support ring and bond SWA.	14
9.	Remove bedding layer and core fillers.	--
10.	Terminate and remove the copper tape from semi-conducting screens.	14/29
11.	Fit braids to semi-conductor screens.	14
12.	Abrade oversheath.	17
13.	Set and mark cores ensuring one to the top.	--
14.	Remove semi-conducting screens ensuring insulation is free from all conducting material.	28
COMPLETION OF JOINT		
15.	Apply a stress cone to each core.	35
16.	Fit inner sleeve foam rings.	34
17.	Fit phase insulation tubes together and slide over cores.	37

JOINTING PROCEDURE 7.306 – Continued

Actions	General Requirements (ST: CA2C/9)
18. Fit stop end module.	38
19. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
20. Ensure joint is level and fill with Lovisil.	41
21. Clean and degrease inner sleeve.	43
22. Form copper braids into one conductor and connect to copper earth bar clamp.	42
23. Remove temporary earth continuity bond applied in 3	51
24. Wrap and stretch copper stocking around joint and connect to copper braids and stop end module.	44
25. Build up cable oversheath.	32
26. Fit and support outer sleeve ensuring 15mm clearance.	46
27. Mix and pour resin.	47

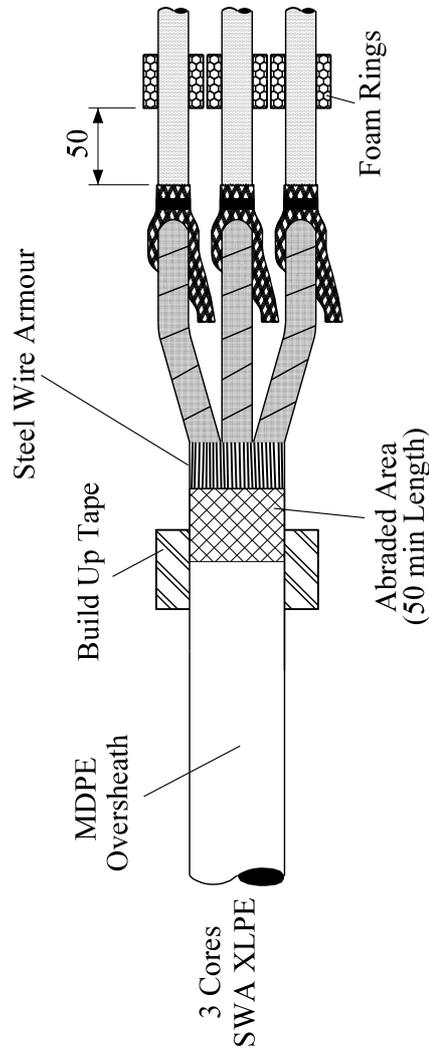
All dimensions in mm



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Checked			UP TO & INC 300/400mm ² - 3 CORE SWA XLPE STOP END STRIPPING DIMENSIONS			JP2D 7.306.1	1
Approved			SCALE				
N.T.S.							

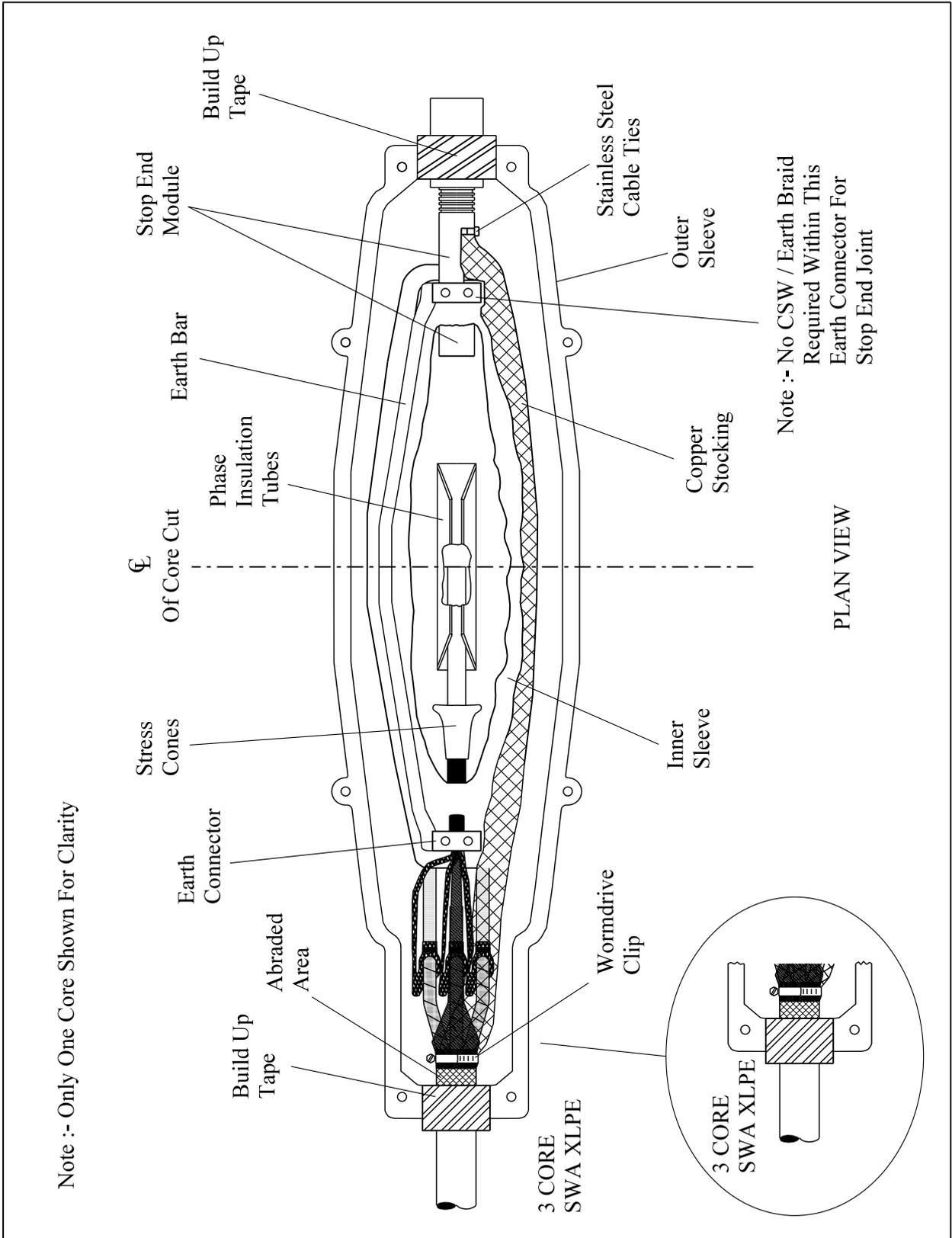
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All dimensions in mm



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Approved						JP2D 7.306.2	1
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Note :- Only One Core Shown For Clarity

Note :- No CSW / Earth Braid Required Within This Earth Connector For Stop End Joint

PLAN VIEW

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.307

185mm² PILC/PICAS CABLE 11kV STOP END

(This Jointing Procedure covers cable sizes up to and including 185mm²)

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.307

JOINT KIT REFERENCES

CABLE SIZE	JOINT KIT REFERENCE
	Stop End
16mm ² PILC	SE 1101
25mm ² PILC	SE1102
35mm ² PILC	SE 1103
50mm ² PILC	SE 1104
70mm ² PILC	SE 1105
95mm ² PILC	SE 1106
120mm ² PILC	SE 1107
150mm ² PILC	SE 1108
185mm ² PILC	SE 1109
95mm ² PICAS	SE 1110
185mm ² PICAS	SE 1111

Note: - Any reference to PICAS equally applies to PISAS.

JOINTING PROCEDURE 7.307

JOINT KIT MATERIALS

KIT REF	BASE MODULE	RESIN MODULE		CABLE DEPENDING MODULE					FOAM TAPE BUILD UP MODULE	ARMOUR BONDING MODULE	STOP END MODULE
	K 85	B	D	Belted		Screened			FTBM	ABM STA/SWA	SEM M85
				A	B	C	K	L			
SE 1101	1	1	1	1					1	1	1
SE 1102	1	1	1	1					1	1	1
SE 1103	1	1	1	1					1	1	1
SE 1104	1	1	1	1					1	1	1
SE 1105	1	1	1		1		1			1	1
SE 1106	1	1	1		1		1			1	1
SE 1107	1	1	1		1		1			1	1
SE 1108	1	1	1		1		1			1	1
SE 1109	1	1	1			1		1		1	1
SE 1110	1	1	1		1		1				1
SE1111	1	1	1			1		1			1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
 Scotch 70
 Scotch 13 tape
 Tinned copper wire 16 swg
 Tinned copper wire 20 swg
 De-Solvit 1000 FD
 De-Solvit 1000
 Workhorse dry wipes
 Emery cloth
 5313 Water block tape
 Cable ties

Sealing putty

Aluminium oxide cloth 320 grit

Aluminium oxide cloth 400 grit

Note: - Individual material item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.307

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.307.1, 7.307.2, 7.307.3 and 7.307.4** whilst undertaking this Jointing Procedure.

1. Set and mark cables. 5/6

PILC/PICAS/PISAS CABLE - Preparation

2. PILC: - Remove serving, armour and clean lead sheath. 11
PICAS/PISAS: - Remove PVC oversheath and clean aluminium sheath. 15
3. PILC: - Abrade metallic sheath from its termination point to serving/oversheath termination point. --
4. PILC: - Apply armour bond. 12
PICAS/PISAS: - Abrade PVC oversheath. 17
5. Apply a temporary earth continuity bond onto metallic sheath. 10
6. Remove metallic sheath: - PILC (lead) 18
PICAS/PISAS (aluminium) 19
7. Terminate board of trade sheath (if present) 20
8. Carry out moisture test. 8

BELTED CABLES

9. Apply string ties and terminate carbon (if present) and belt papers. 22
10. Apply a silicon tape seal to belt papers and metallic sheath. 24
11. Remove core fillers. --
12. Using a clean dry wipe remove excess impregnate from cores. --

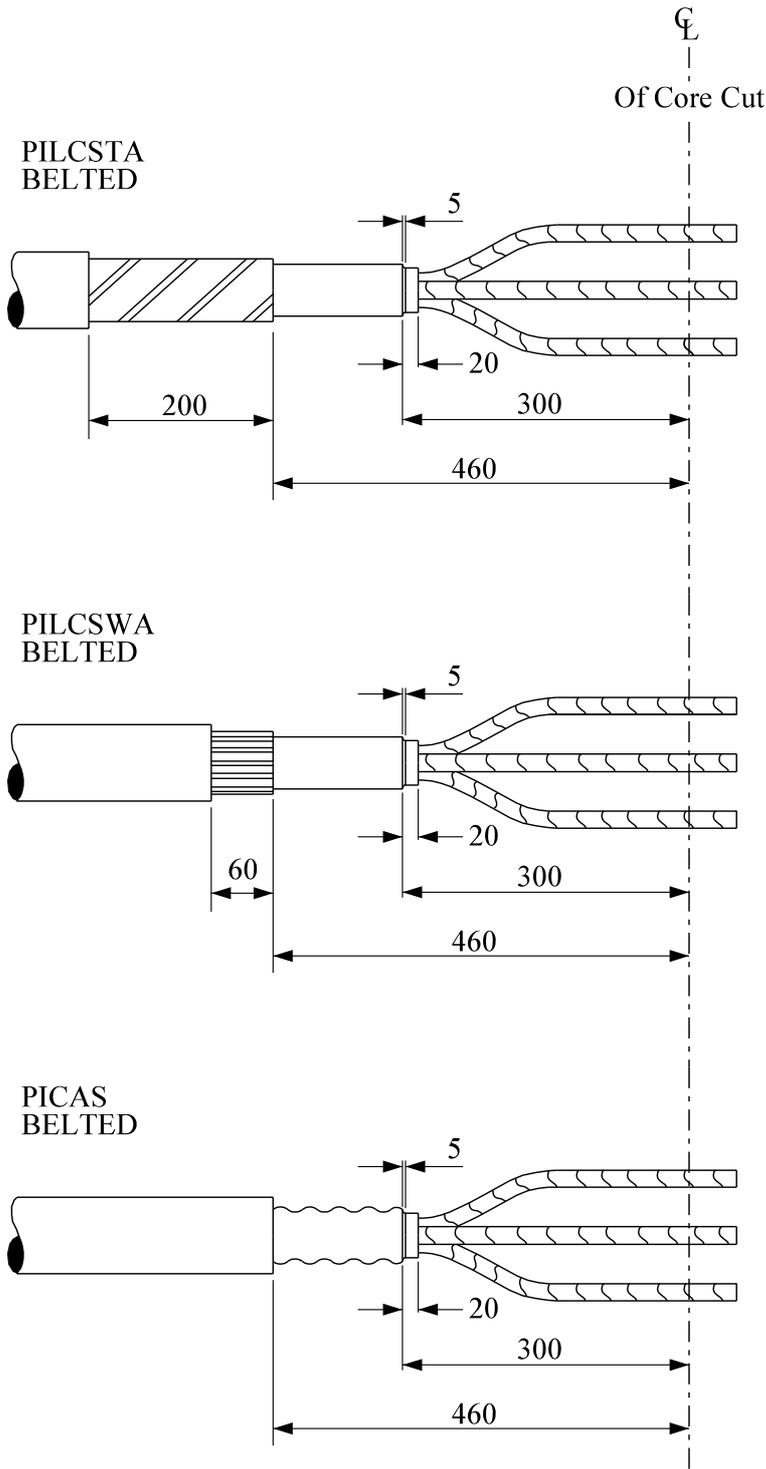
SCREENED CABLES

13. Tie off and remove copper woven fabric tape. 23

JOINTING PROCEDURE 7.307 - Continued

Actions	General Requirements (ST: CA2C/9)
14. Apply a silicon tape seal to copper woven fabric tape and metallic sheath.	24
15. Remove core fillers.	--5
16. Using a clean dry wipe remove excess impregnate from cores.	--
17. Remove metallic screens, carbon paper and two conductor papers.	27
COMPLETION OF JOINT	
18. Apply a stress cone to each core – only if metallic screens fitted.	35
19. Fit inner sleeve foam rings.	34
20. Fit phase insulation tubes together and slide over cores.	37
21. Fit stop end module.	38
22. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
23. Ensure joint is level and fill with Lovisil.	41
24. Clean and degrease inner sleeve.	43
25. Apply metallic sheath bond to PILC/PICAS/PISAS cable and copper earth bar clamp.	42
26. Remove temporary earth continuity bond applied in 3.	51
27. Wrap and stretch copper stocking across joint and connect to metallic sheath and stop end module.	44
28. Apply water block tape to metallic sheath.	45
29. Build up cable oversheath.	32
30. Fit and support outer sleeve ensuring 15mm clearance.	46
31. Mix and pour resin.	47

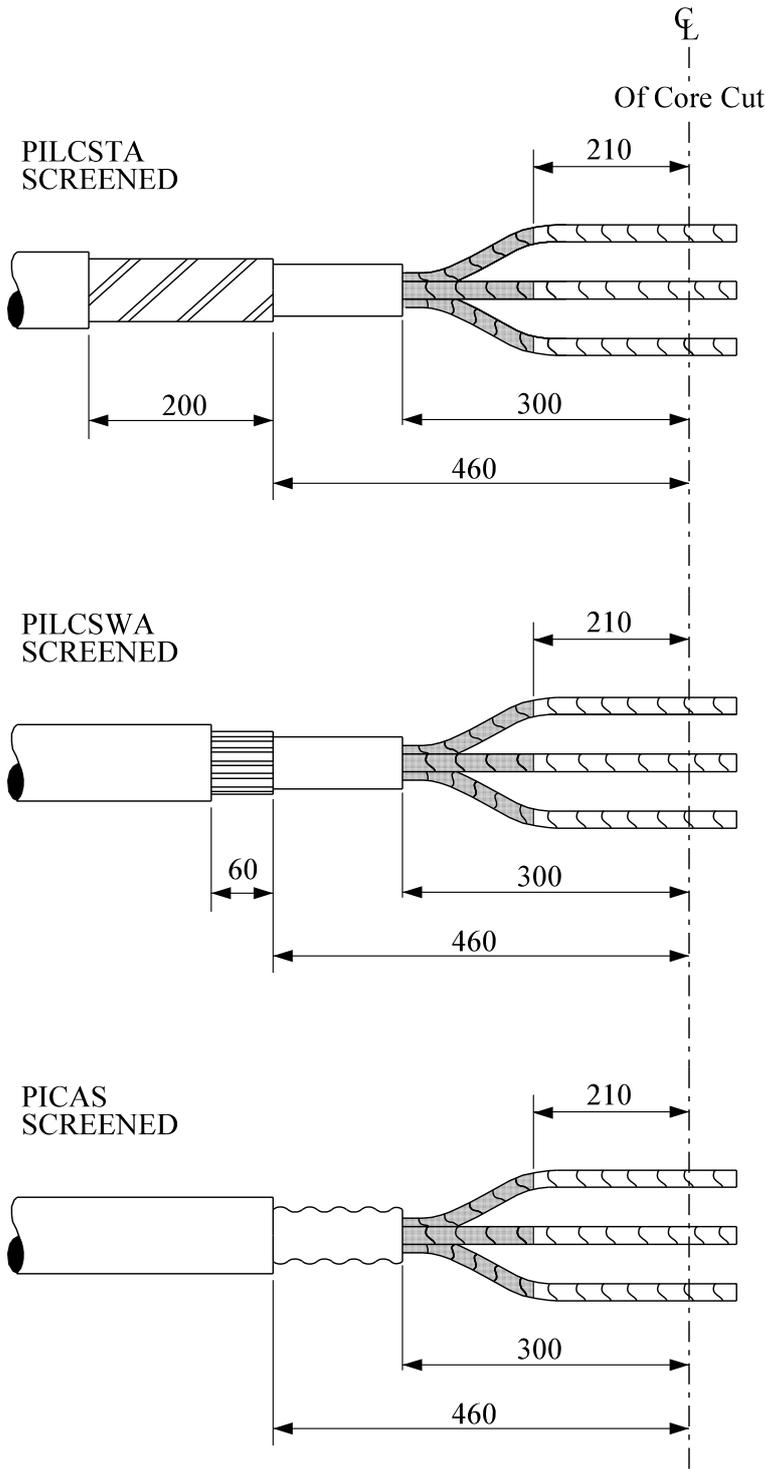
All dimensions in mm



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Drawn	RJB	04/13	Title UP TO & INC 185mm ² PILC/PICAS STOP END STRIPPING DIMENSIONS			
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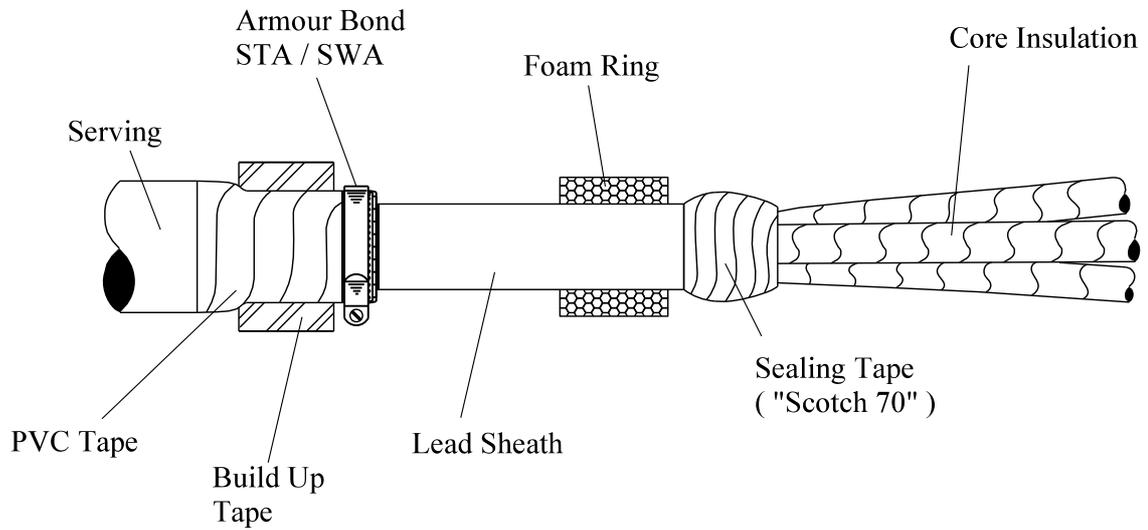


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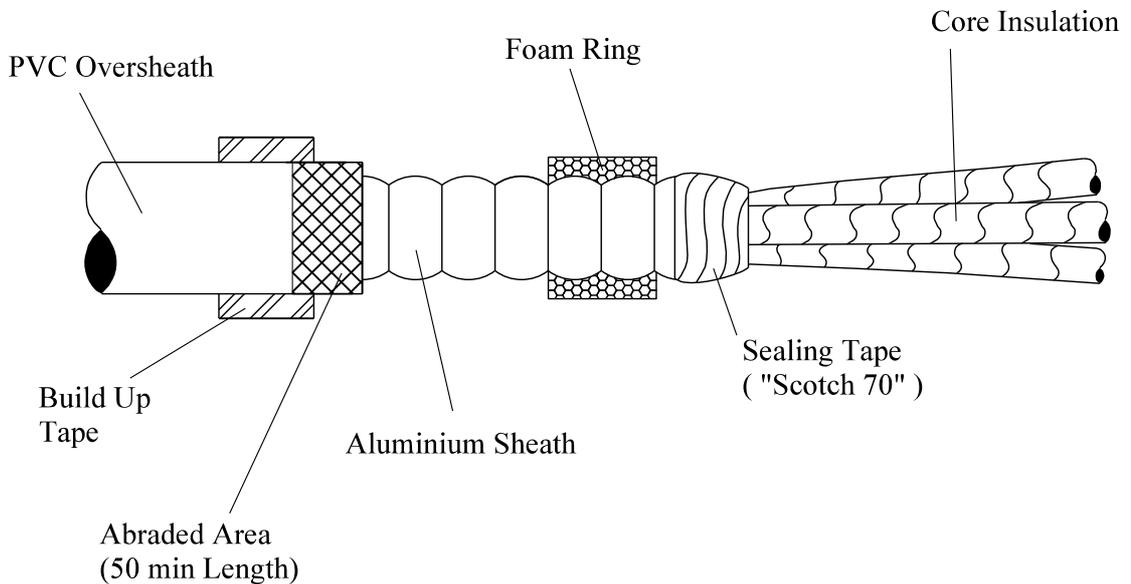
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PILC

All dimensions in mm

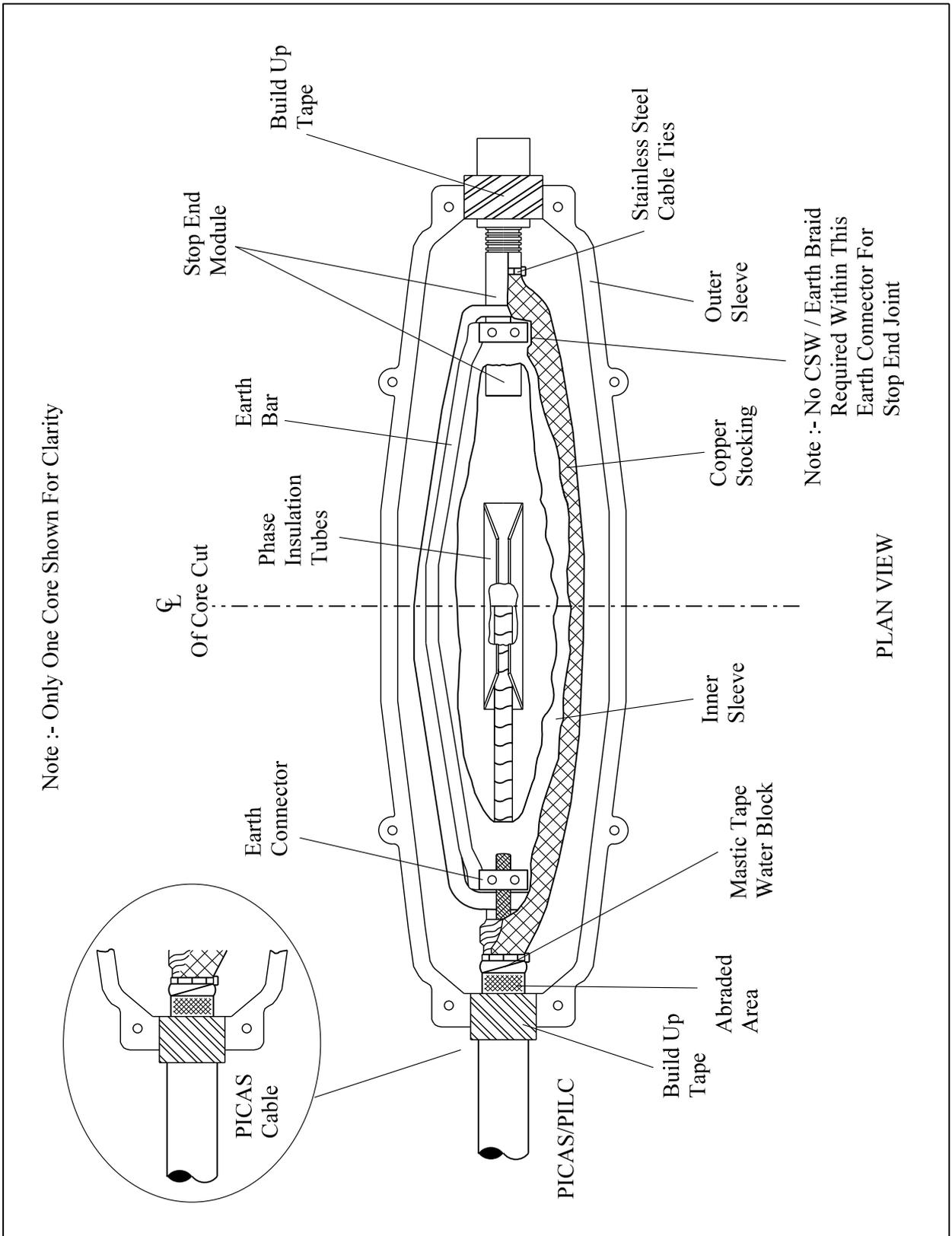


PICAS / PISAS



1	RJB			07/17	FOAM RING ALTERED		
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SCALE	N.T.S.						

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Note :- Only One Core Shown For Clarity

Note :- No CSW / Earth Braid Required Within This Earth Connector For Stop End Joint

PLAN VIEW

Rev No	Drawn	Chk'd	App'd	Date	Revision	
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	06/17	Title			
Checked			UP TO & INC 185mm ² PILC/PICAS		JP2D 7.307.4	
Approved			STOP END			
SCALE	N.T.S.		GENERAL LAYOUT			

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.308

300 / 400mm² PILC/PICAS CABLE 11kV STOP END

(This Jointing Procedure covers cable sizes up to and including 400mm²)

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.308

JOINT KIT MATERIALS

CABLE SIZE: - 240mm²/300mm² PILC & 300mm²/400mm² PICAS

Item	Quantity
240mm²/300mm² PILC & 300mm² PICAS	
Base Module BM M105	1
Resin Module RM B	1
Resin Module RM C	1
Cable Depending Module CDM M105-E - belted	1
Cable Depending Module CDM M105-M - screened	1
Foam Tape Build up Module FTBM	1
Armour Bonding Module ARM STA/SWA	1
Stop End Module SEM M105	1
400mm² PICAS	
Base Module BM M105	1
Resin Module RM B	1
Resin Module RM C	1
Cable Depending Module CDM M105-H	1
Stop End Module SEM M105	1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual.

JOINTING PROCEDURE 7.308

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.308.1, 7.308.2, 7.308.3 and 7.308.4** whilst undertaking this Jointing Procedure.

1. Set and mark cables. 5/6

PILC/PICAS/PISAS CABLE - Preparation

2. PILC: - Remove serving, armour and clean lead sheath. 11

PICAS/PISAS: - Remove PVC oversheath and clean aluminium sheath. 15

3. PILC: - Abrade metallic sheath from its termination point to serving/oversheath termination point. --

4. PILC: - Apply armour bond. 12

PICAS/PISAS: - Abrade PVC oversheath. 17

5. Apply a temporary earth continuity bond onto metallic sheath. 10

6. Remove metallic sheath: - PILC (lead) 18

PICAS/PISAS (aluminium) 19

7. Terminate board of trade sheath (if present) 20

8. Carry out moisture test. 8

BELTED CABLES

9. Apply string ties and terminate carbon (if present) and belt papers. 22

10. Apply a silicon tape seal to belt papers and metallic sheath. 24

11. Remove core fillers. --

12. Using a clean dry wipe remove excess impregnate from cores. --

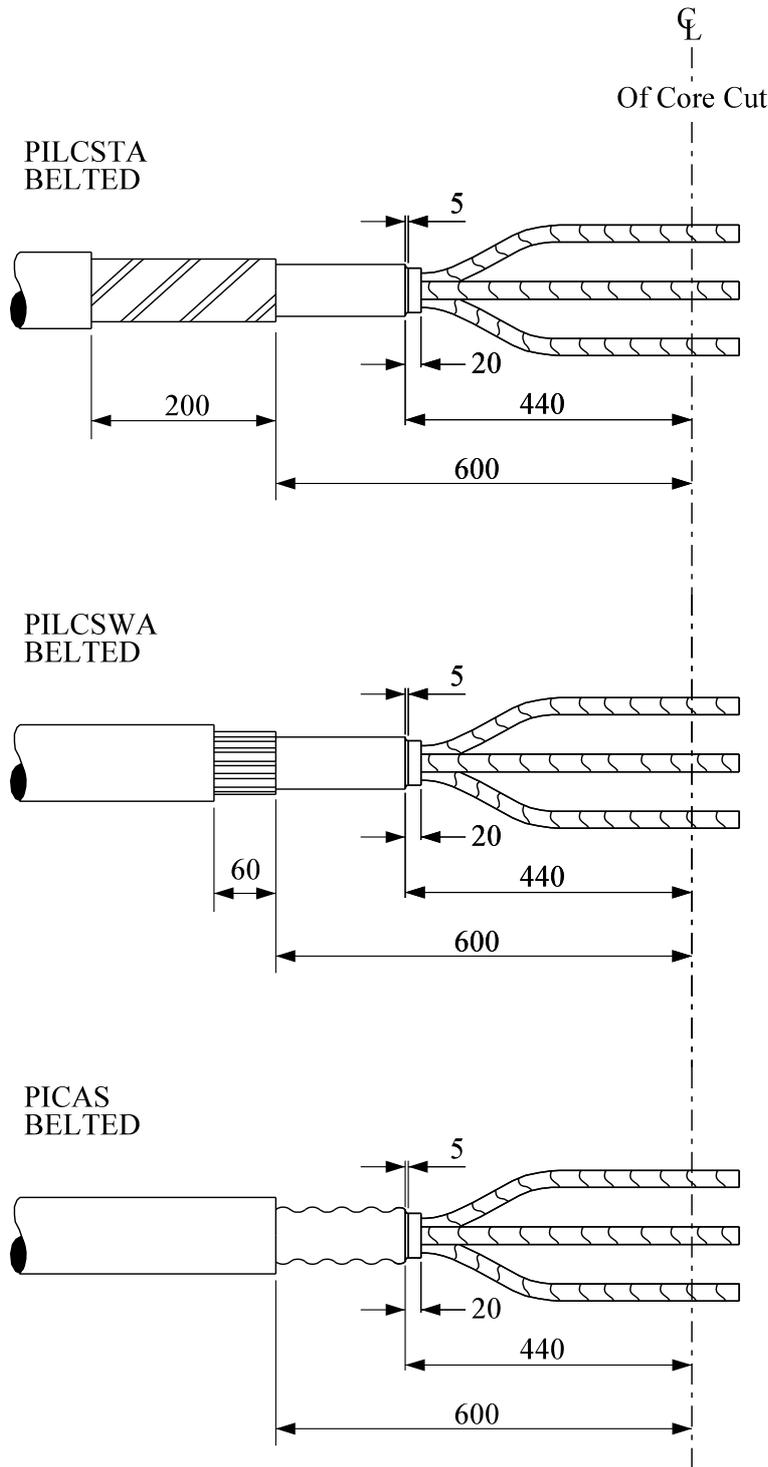
SCREENED CABLES

13. Tie off and remove copper woven fabric tape. 23
metallic sheath.

JOINTING PROCEDURES 7.308 – Continued

Actions	General Requirements (ST: CA2C/9)
14. Apply a silicon tape seal to copper woven fabric tape and metallic sheath.	24
15. Remove core fillers.	--
16. Using a clean dry wipe remove excess impregnate from cores.	--
17. Remove metallic screens, carbon paper and two conductor papers.	27
COMPLETION OF JOINT	
18. Apply a stress cone to each core – if metallic screens fitted.	35
19. Fit inner sleeve foam rings.	34
20. Fit phase insulation tubes together and slide over cores.	37
21. Fit stop end module.	38
22. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
23. Ensure joint is level and fill with Lovisil.	41
24. Clean and degrease inner sleeve.	43
25. Apply metallic sheath bond to PILC/PICAS/PISAS cable and copper earth bar clamp.	42
26. Remove temporary earth continuity bond applied in 3.	51
27. Wrap and stretch copper stocking across joint and connect to metallic sheath and stop end module.	44
28. Apply water block tape to metallic sheath.	45
29. Build up cable oversheath.	32
30. Fit and support outer sleeve ensuring 15mm clearance.	46
31. Mix and pour resin.	47

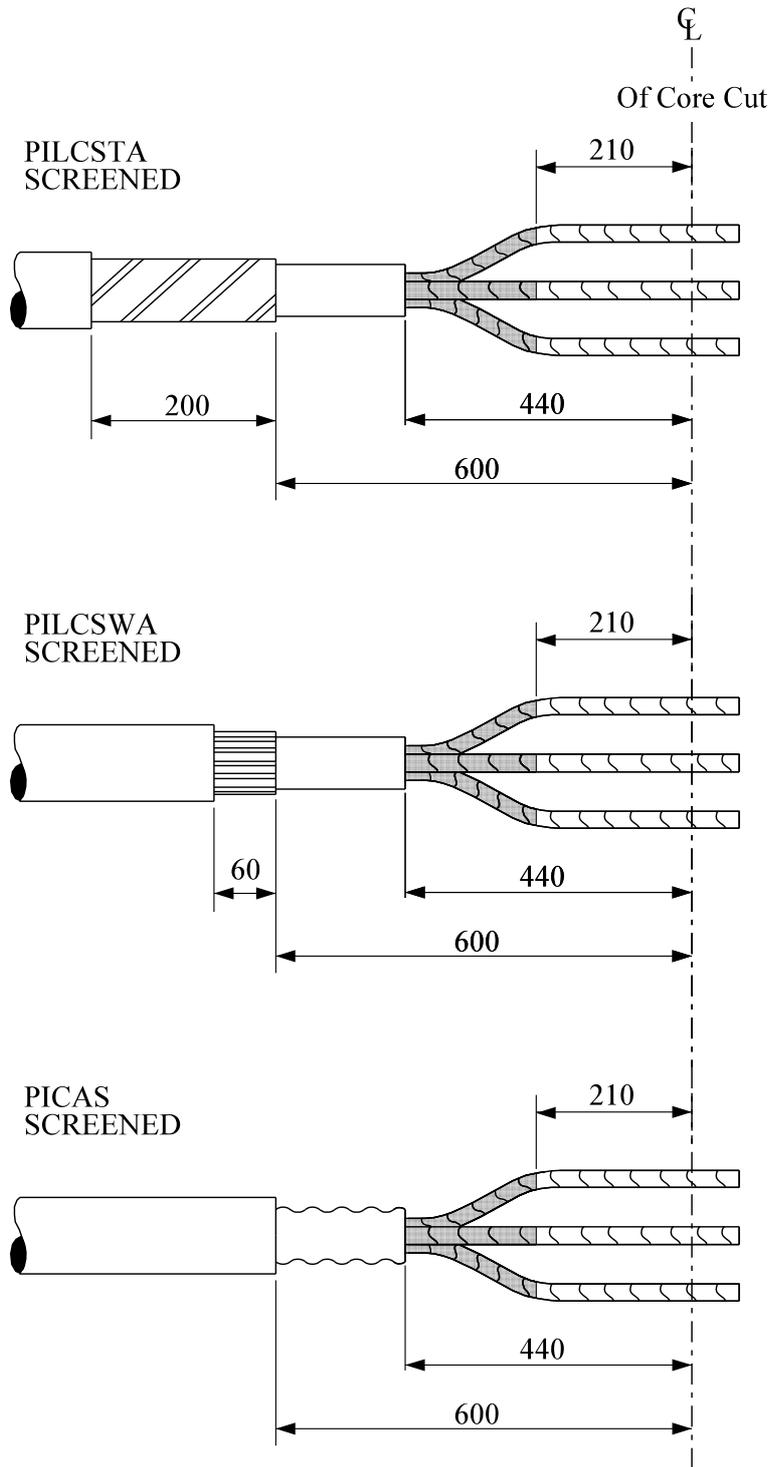
All dimensions in mm



Rev No	Drawn	Chk'd	App'd	Date	Revision	
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	04/13	Title UP TO & INC to 400mm ² PILC/PICAS STOP END STRIPPING DIMENSIONS			
Checked					Rev No	
Approved						
SCALE	N.T.S.					

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All dimensions in mm

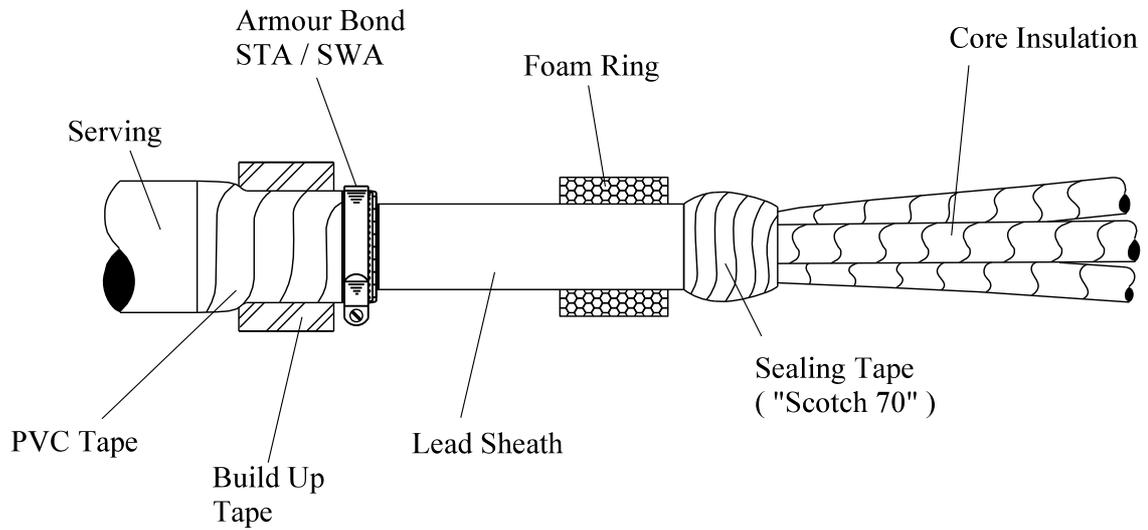


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ORIGINAL	ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.			
Drawn	RJB	04/13	Title 240 UP TO & INC to 400mm ² PILC/PICAS STOP END STRIPPING DIMENSIONS			
Checked			Drg. No.			Rev No
Approved			JP2D 7.308.2			
SCALE	N.T.S.					

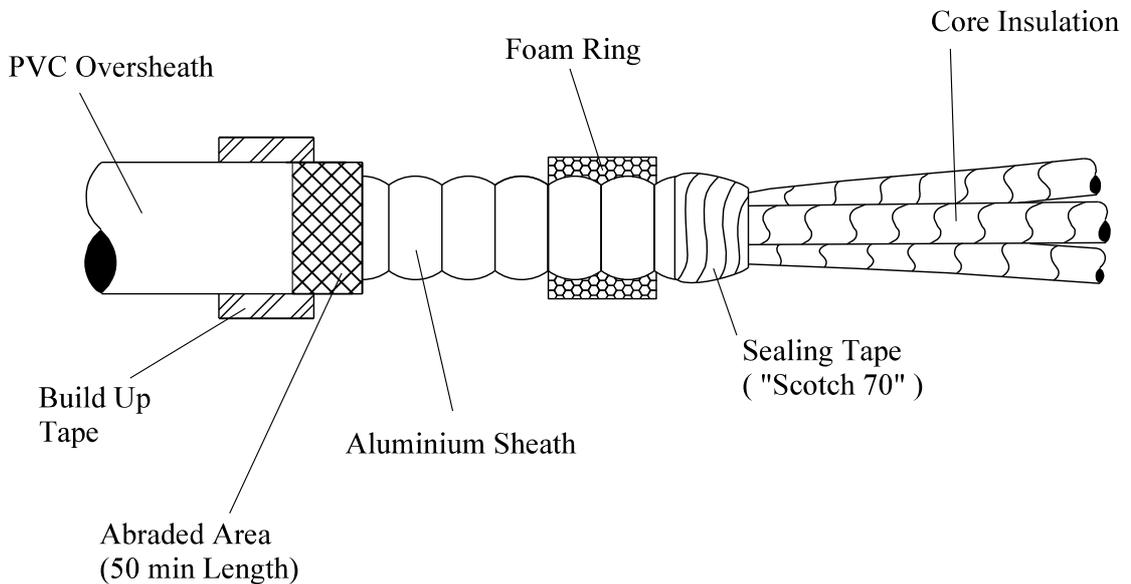
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PILC

All dimensions in mm

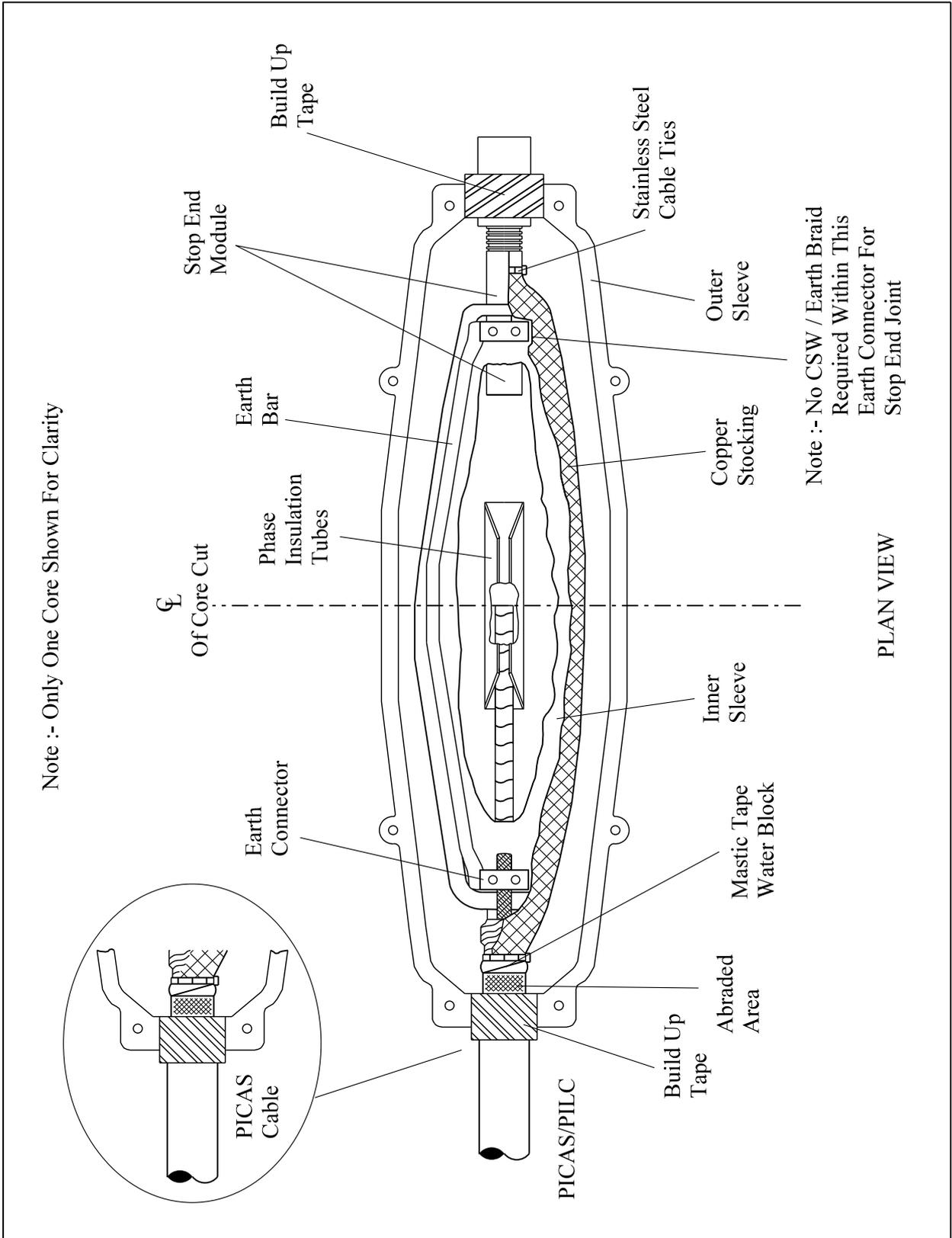


PICAS / PISAS



1	RJB			07/17	FOAM RING ALTERED		
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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.					
Drawn	RJB 04/13	Title					
Checked		PREPARATION OF PILC/PICAS			JP2D 7.308.3	1	
Approved		SCALE			N.T.S.		

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Note :- Only One Core Shown For Clarity

Note :- No CSW / Earth Braid Required Within This Earth Connector For Stop End Joint

PLAN VIEW

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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	06/17	Title UP TO & INC to 300/400mm ² PILC/PICAS			
Checked			STOP END		JP2D 7.308.4	
Approved			GENERAL LAYOUT			
SCALE	N.T.S.					

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.309

630mm² EPR SINGLE CORE CABLE 11KV STOP END

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.309

JOINT KIT MATERIALS

CABLE SIZE: - 630mm² EPR Single Core

Item	Quantity
Base Module BM M75	1
Resin Module RM B	1
Stop End Module SEM M85	1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.309

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.309.1, 7.309.2** and **7.309.3** whilst undertaking this Jointing Procedure.

1. Set and mark cables. 5/6

EPR CABLE - Preparation

3. Set and align cables into their joint position. --
4. Clean each oversheath for a distance of 1.5m. --
5. Apply a temporary earth continuity bond onto metallic sheath. 10
6. Remove oversheaths and bedding tapes. 16
7. Abrade oversheaths. 17
8. Apply a 20 swg binder around copper screen wires 20mm from oversheath termination point. --
9. Straighten copper screen wires and form into a bunch. --
10. Apply black mastic water blocking tape at the termination point of the MDPE oversheaths, 10mm on the coppers screen wires and overlapping 10mm onto the MDPE oversheaths. 45

Note: - Wrap the fitted water blocking mastic with the yellow wax backing paper to prevent sticking and allow removal on completion of the joint.

11. Remove semi-conducting screens ensuring insulation is free from all conducting material. 28

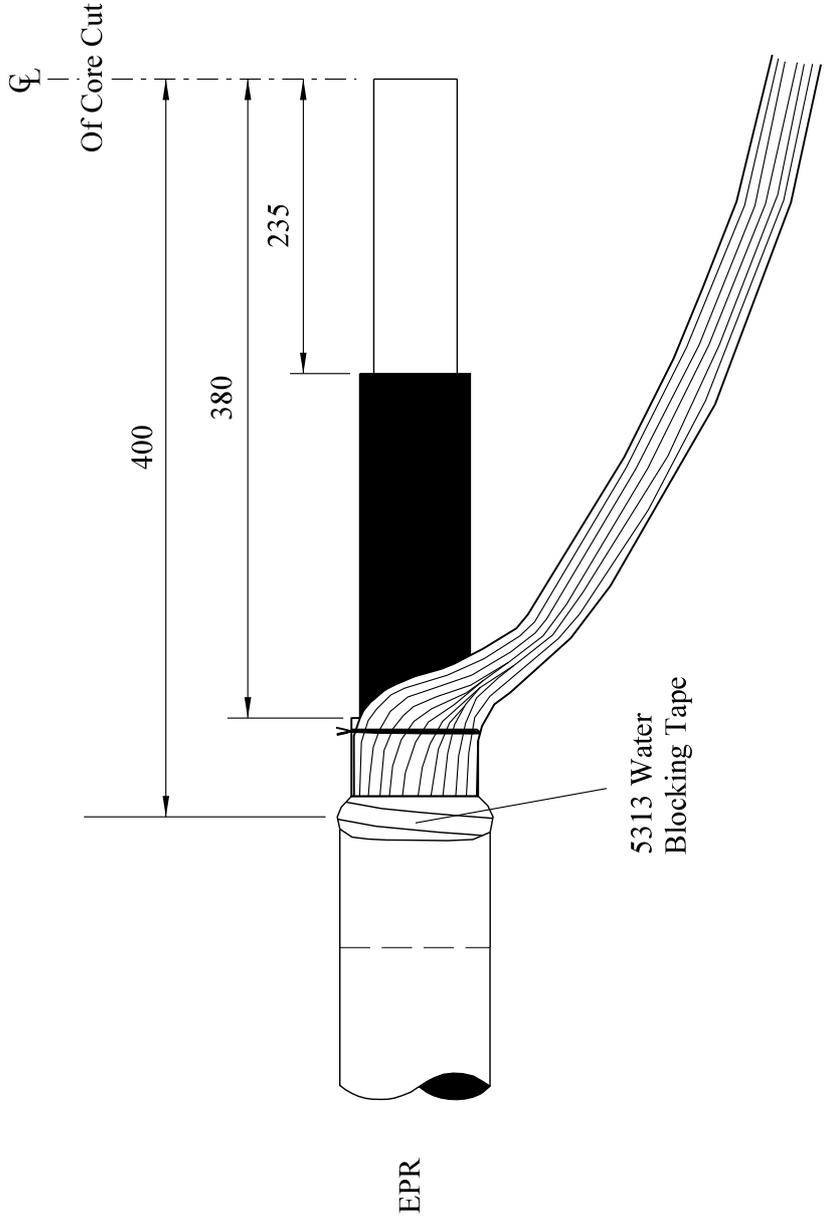
COMPLETION OF JOINT

12. Apply a stress cone to core. 35
13. Fit inner sleeve foam rings. 34
14. Fit cable core support ring.

JOINTING PROCEDURES 7.309 – Continued

Actions	General Requirements (ST: CA2C/9)
15. Fit stop end module.	38
16. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
17. Ensure joint is level and fill with Lovisil.	41
18. Clean and degrease inner sleeve.	43
19. Form copper screen wire bunches into one conductor and connect to copper earth bar clamp.	42
20. Remove temporary earth continuity bond applied in 5.	51
21. Wrap and stretch copper stocking across joint and connect to copper screen wires and stop end module.	44
22. Fit and support outer sleeve ensuring 15mm clearance.	46
23. Mix and pour resin.	47

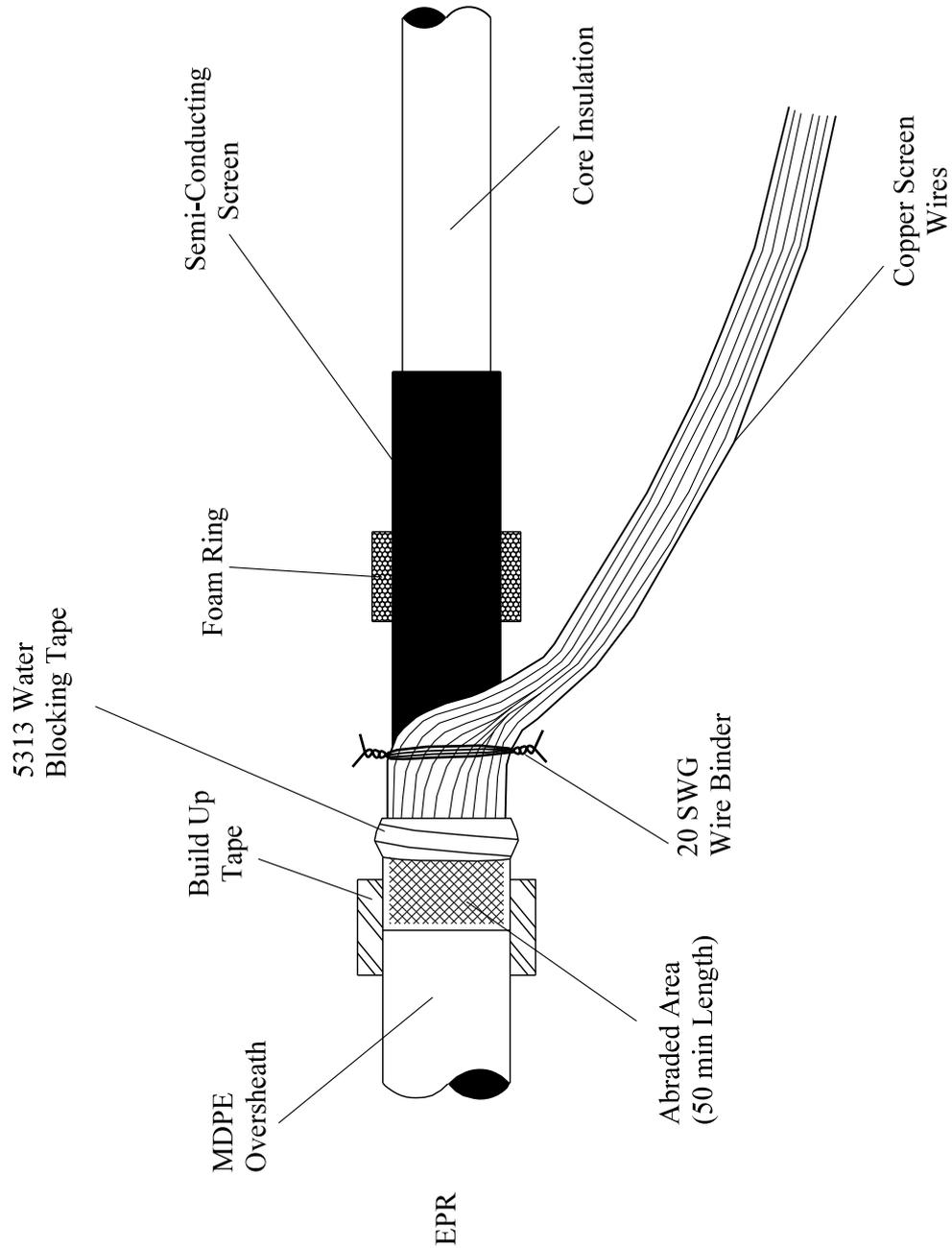
All dimensions in mm



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Drawn	RJB	04/13	Title			
Checked			630mm ² EPR SINGLE CORE STOP END STRIPPING DIMENSIONS			Drg. No.
Approved						JP2D 7.309.1
SCALE	N.T.S.					Rev No

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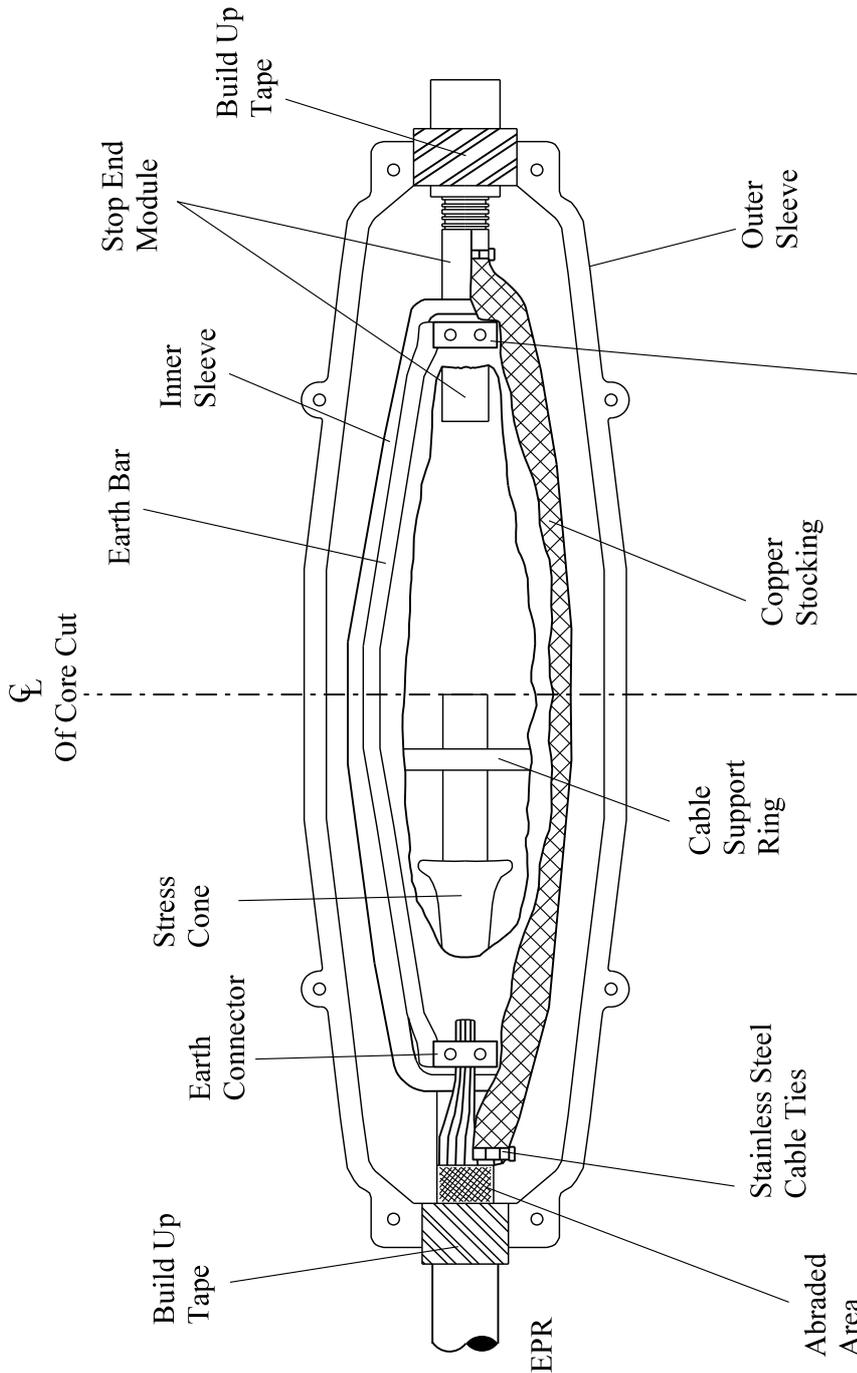
All dimensions in mm



1	RJB			07/17	DRAWING ALTERED		
Rev No	Drawn	Chk'd	App'd	Date	Revision		
ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.					
Drawn	RJB	04/13	Title				
Checked			PREPARATION OF EPR			Drg. No.	Rev No
Approved						JP2D 7.309.2	
SCALE	N.T.S.						

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Note :- 5313 Water Blocking Tape Has Been Omitted on EPR Cable For Clarity



PLAN VIEW

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Drawn	RJB	06/17	Title			
Checked			630mm ² EPR SINGLE CORE STOP END GENERAL LAYOUT		JP2D 7.309.3	
Approved						
SCALE	N.T.S.					

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.310

500/630mm² PILC SINGLE CORE CABLE 11kV STOP END.

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.310

JOINT KIT MATERIALS

CABLE SIZE: - 500/630mm² PILC Single Core

Item	Quantity
Base Module BM M75	1
Resin Module RM B	1
Stop End Module SEM M85	1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.310

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.310.1, 7.310.2** and **7.310.3**, whilst undertaking this Jointing Procedure.

1. Set and mark cables. 5/6

PILC CABLE - Preparation

2. Set and align cables into their joint position. --
3. Clean each oversheath for a distance of 1.5m. --
4. Apply a temporary earth continuity bond onto metallic sheath. 10
5. Remove serving and clean lead sheath. 11
6. Abrade lead sheath from its termination point to serving/oversheath termination point. --
7. Remove lead sheath. 18
8. Tie off and remove copper woven fabric tape metallic sheath. 23
9. Carry out moisture test. 8
10. Apply a silicon tape seal to copper woven fabric tape and metallic sheath. 24
11. Using a clean dry wipe remove excess impregnate from cores. --
12. Remove metallic screens, carbon paper and two conductor papers. 27

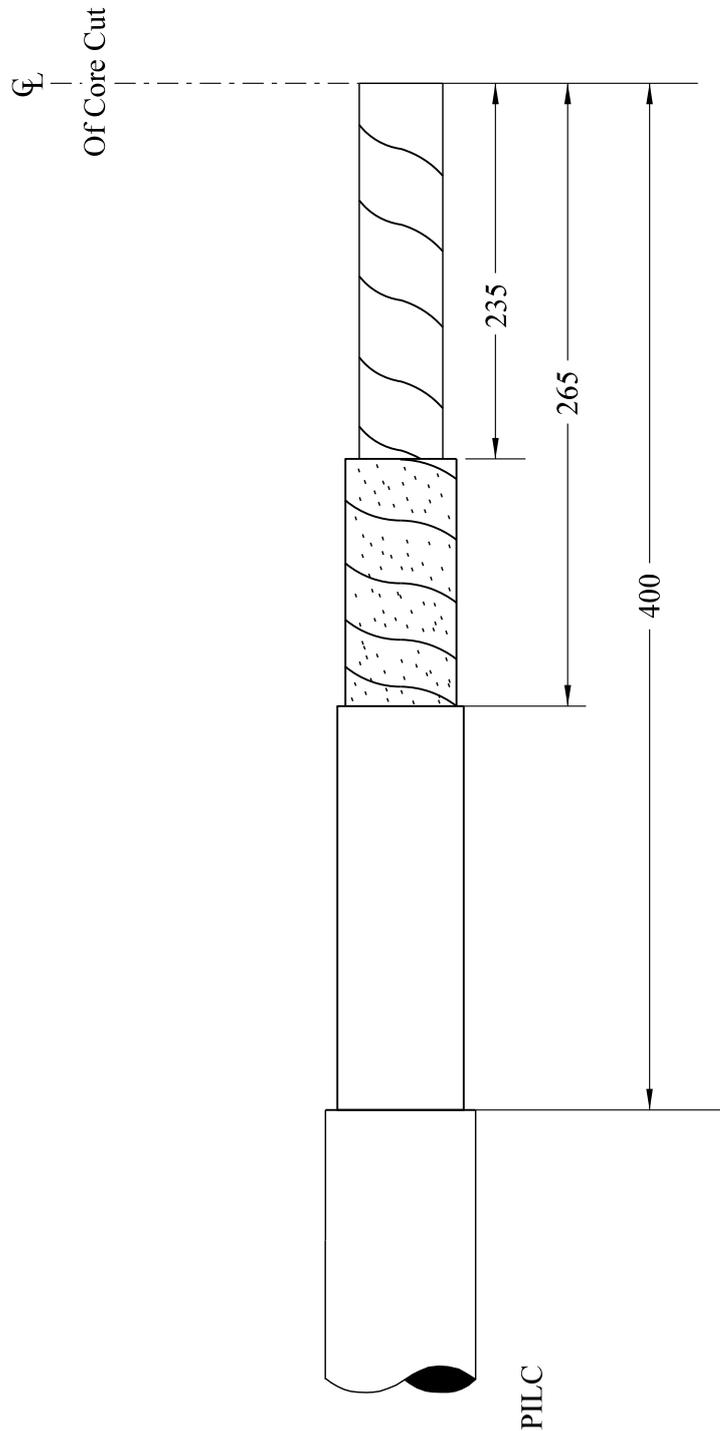
COMPLETION OF JOINT

13. Apply a stress cone to core - **if metallic screens fitted**. 35
14. Fit inner sleeve foam rings. 34
15. Fit cable support ring. --
16. Fit stop end module. 38

JOINTING PROCEDURES 7.310 – Continued

Actions	General Requirements (ST: CA2C/9)
17. Fit inner sleeve, ensure bolts tightened in correct sequence and catch is fully home on second click.	39/40
18. Ensure joint is level and fill with Lovisil.	41
19. Clean and degrease inner sleeve.	43
20. Apply metallic sheath bond to PILC cable and copper earth bar clamp.	4
21. Remove temporary earth continuity bond applied in 4.	51
22. Wrap and stretch copper stocking across joint and connect to lead sheath and stop end module.	44
23. Apply water block tape to metallic sheath.	45
24. Build up cable oversheath.	32
25. Fit and support outer sleeve ensuring 15mm clearance.	46
26. Mix and pour resin.	47

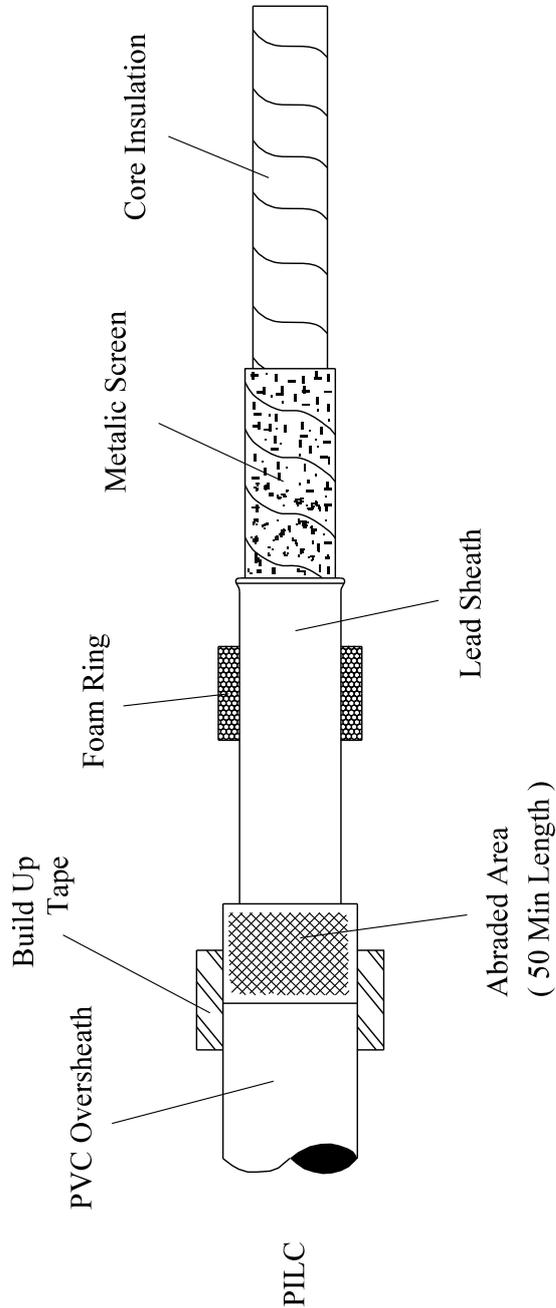
All dimensions in mm



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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	04/13	Title 500 to 630mm ² PILC SINGLE CORE STOP END STRIPPING DIMENSIONS			
Checked			Drg. No. JP2D 7.310.1			Rev No
Approved						
SCALE	N.T.S.					

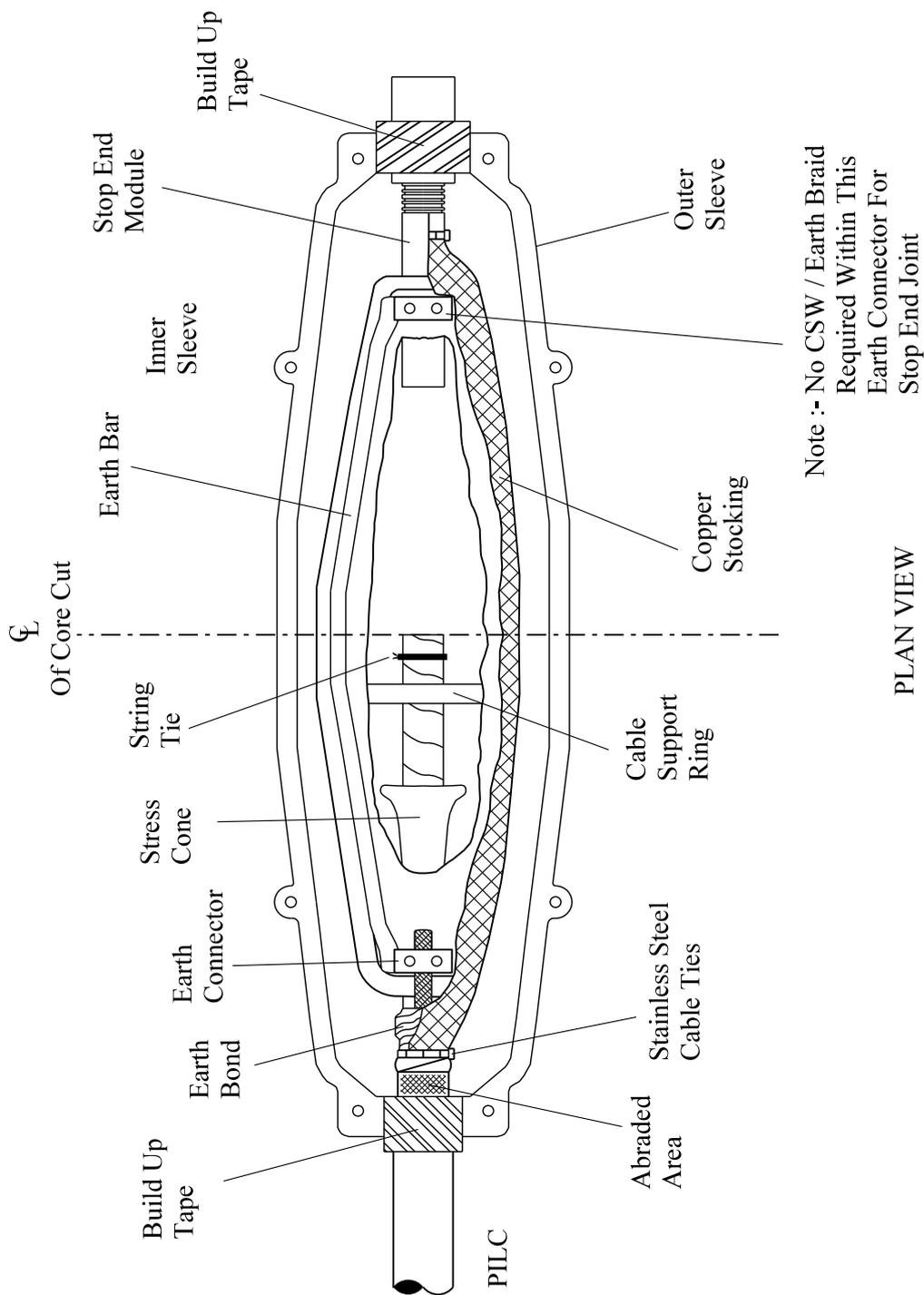
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All dimensions in mm



1	RJB			07/17	FOAM RING ALTERED		
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Drawn	RJB	04/13	Title				
Checked			PREPARATION OF PILC			JP2D 7.310.2	1
Approved			SCALE			N.T.S.	

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ORIGINAL ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.				
Drawn	RJB	06/17	Title 500mm ² To 630mm ² PILC SINGLE CORE			
Checked			STOP END			Drg. No.
Approved			GENERAL LAYOUT			Rev No
SCALE	N.T.S.					JP2D 7.310.3

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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.311

185mm² EPR SINGLE CORE CABLE 11kV STOP END.

(This Jointing Procedure covers cable sizes up to and including 185mm²)

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.311

JOINT KIT MATERIALS

CABLE SIZE: - 70/95mm² EPR Single Core

Item	Quantity
70mm² EPR	
Base Module EJSCX11A-WPD	1
Stop End Module EPERS CX11A-WPD	1
Build up Module MF 14304-95-WPD	1
Resin 5 Lt	1
95mm² EPR	
Base Module EJSCX11A	1
Stop End Module EPERS CX11A-WPD	1
Resin 5 Lt	1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.311

Actions	General Requirements (ST: CA2C/9)
----------------	--

Refer to Drawings **JP2D 7.311.1, 7.311.2, 7.311.3, 7.311.4, 7.311.5** and **7.311.6** whilst undertaking this Jointing Procedure.

- | | |
|-------------------------|-----|
| 1. Set and mark cables. | 5/6 |
|-------------------------|-----|

EPR CABLE – PREPARATION

- | | |
|--|----|
| 2. Clean each oversheath for a distance of 1.5m. | -- |
| 3. Remove oversheaths and bedding tapes. | 16 |
| 4. Apply 20swg binder to copper wire screens 10mm up from oversheath termination. | 48 |
| 5. Abrade oversheath for 100mm. | 17 |
| 6. Apply one layer Scotch 5313 tape at oversheath termination. | 48 |
| 7. Turn back copper screen wires over earth arrangement applied in 6 and secure with Scotch 88 tape. | 48 |
| 8. Trim copper screen wires back to 50mm. | -- |
| 9. Remove semi-conducting screen ensuring insulation is free from all conducting material. | 28 |

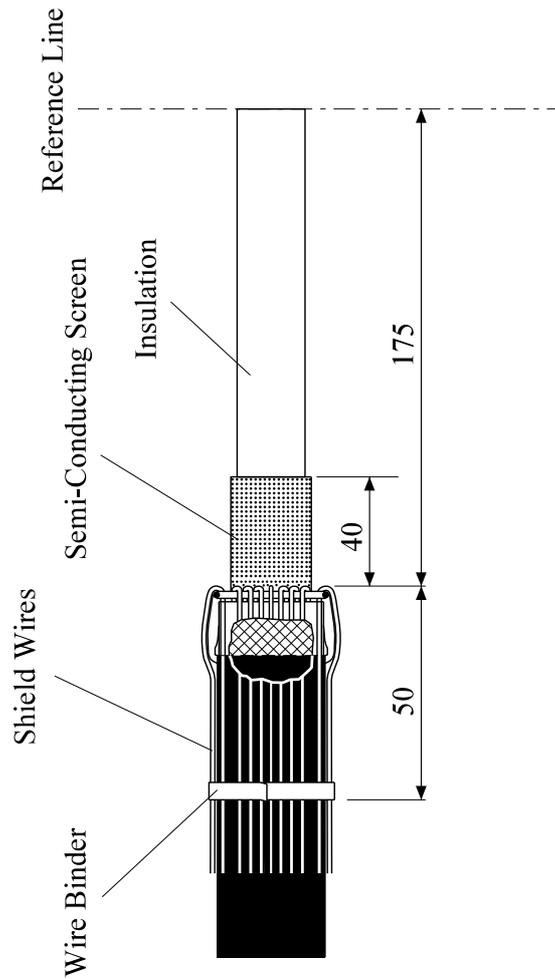
COMPLETION OF JOINT

- | | |
|--|----|
| 10. Position cold shrink joint body over a core. | 48 |
| 11. Insert phase conductor and polymer rod onto the connector until it butts up to the insulation and shear bolts. | -- |
| 12. Apply a slight pulling tension to the rod to ensure a firm hold on conductor. | -- |
| 13. Clean and degrease rod, wipe from the rod end down towards semi-conducting screen. | 38 |
| 14. Fit cold shrink insulation tube. | 28 |
| 15. Clean and degrease joint length. | 43 |

JOINTING PROCEDURE 7.311 – Continued

Actions	General Requirements (ST: CA2C/9)
16. Apply silicon grease to phase insulation and polymeric rod.	--
17. Position cold shrink joint body with the copper screen wires.	--
18. Release the spiral by pulling counter-clockwise.	--
19. Apply two layers of 50% overlap knit mesh over joint body.	49
20. Overlap 50mm on to the copper screen wires.	--
21. Secure copper knit mesh to the screen wires with a roll spring and cover with two layers of 50% overlap Scotch 88 tape.	--
22. Clean and degrease exposed polymeric rod and 200mm of oversheath.	--
23. Apply VM tape binders at shell stand-off positions.	49
22. Build-up cable oversheaths.	34
23. Fit and support shell ensuring 15mm clearance.	49
24. Mix and pour resin.	50

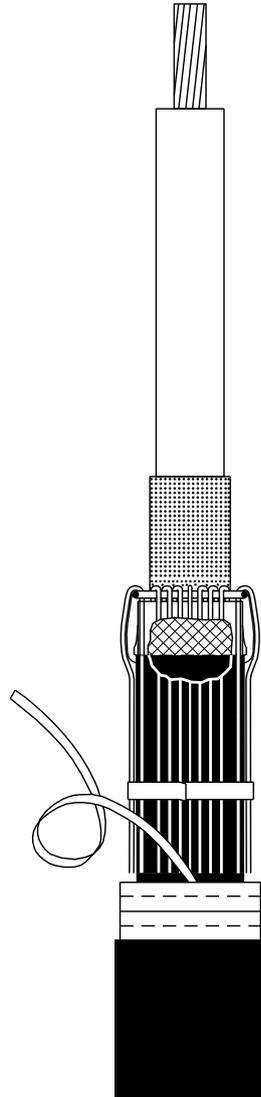
All dimensions in mm



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Drawn	RJB	04/13	Title			
Checked			95 TO 185mm ² STOP END STRIPPING DIMENSIONS		JP2D 7.311.1	
Approved						
SCALE	N.T.S.					

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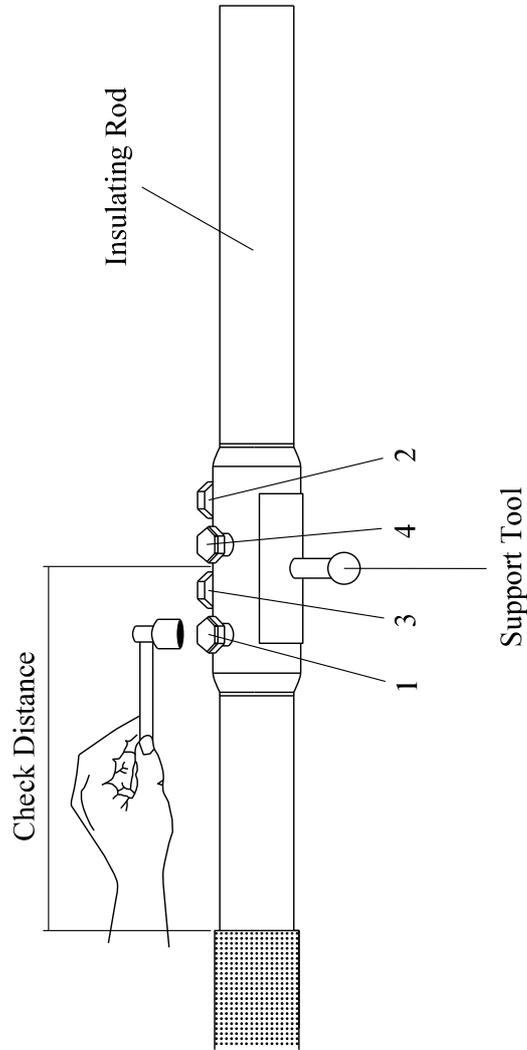
All dimensions in mm



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Drawn	RJB	04/13	Title			
Checked			95 TO 185mm ² STOP END PARKING JOINT BODY		JP2D 7.311.2	
Approved						
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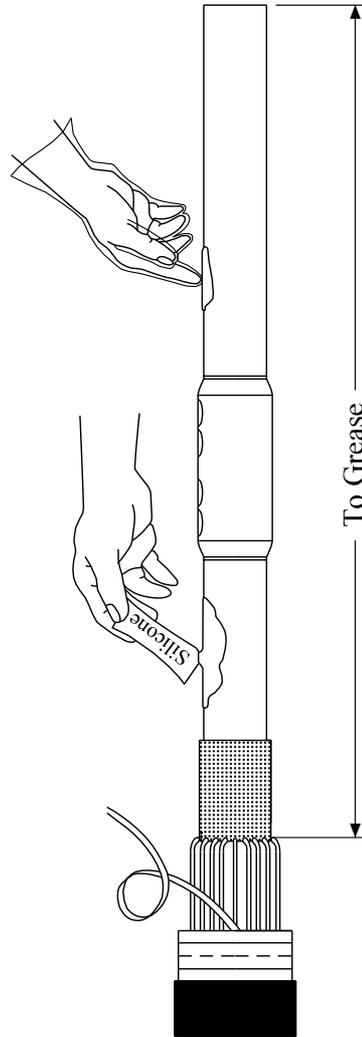
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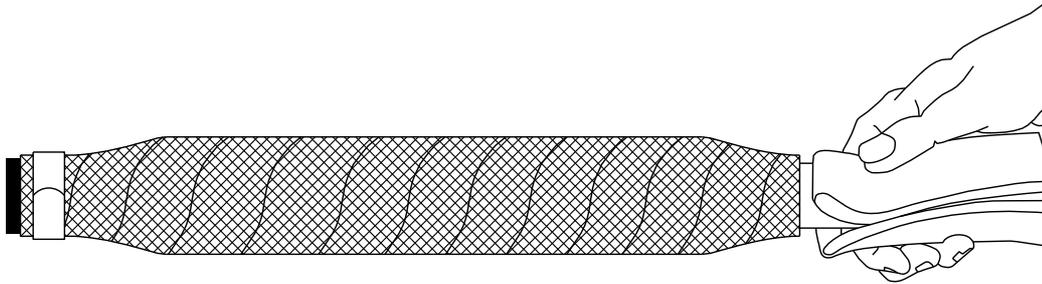
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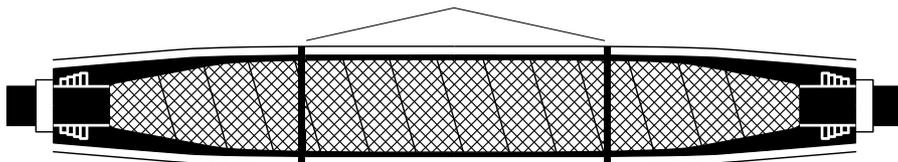
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ST: CA2N/6 PROCEDURES FOR MAKING 11kV CABLE STOP ENDS.

JOINTING PROCEDURE 7.312

300mm² EPR SINGLE CORE CABLE 11kV STOP END.

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CA2C/9 Section 6
of the 11kV Jointing Manual**

JOINTING PROCEDURE 7.312

JOINT KIT MATERIALS

CABLE SIZE: - 300mm² EPR Single Core

Item	Quantity
300mm² EPR	
Base Module EJSCX11B-WPD	1
Stop End Module EPERS CX11B-WPD	1
Resin 6.5 Lt	1

ADDITIONAL ITEMS FOR EACH JOINT

PVC tape
Scotch 70
Scotch 13 tape
Tinned copper wire 16 swg
Tinned copper wire 20 swg
De-Solvit 1000 FD
De-Solvit 1000
Workhorse dry wipes
Emery cloth
5313 Water block tape
Cable ties
Sealing putty
Aluminium oxide cloth 320 grit
Aluminium oxide cloth 400 grit

Note: - Individual item numbers (E 5) are to be found in Section 4 of the 11kV Jointing Manual (ST: CA2S).

JOINTING PROCEDURE 7.312

Actions

General Requirements (ST: CA2C/9)

Refer to Drawings **JP2D 7.312.1, 7.312.2, 7.312.3, 7.312.4, 7.312.5** and **7.312.6** whilst undertaking this Jointing Procedure.

1. Set and mark cables. 5/6

EPR CABLE – PREPARATION

2. Clean each oversheath for a distance of 1.5m. --
3. Remove oversheaths and bedding tapes. 16
4. Apply 20swg binder to copper wire screens 10mm up from oversheath termination. 48
5. Abrade oversheath for 100mm. 17
6. Apply one layer Scotch 5313 tape at oversheath termination. 48
7. Turn back copper screen wires over earth arrangement applied in 6 and secure with Scotch 88 tape. 48
8. Trim copper screen wires back to 50mm. --
9. Remove semi-conducting screen ensuring insulation is free from all conducting material. 28

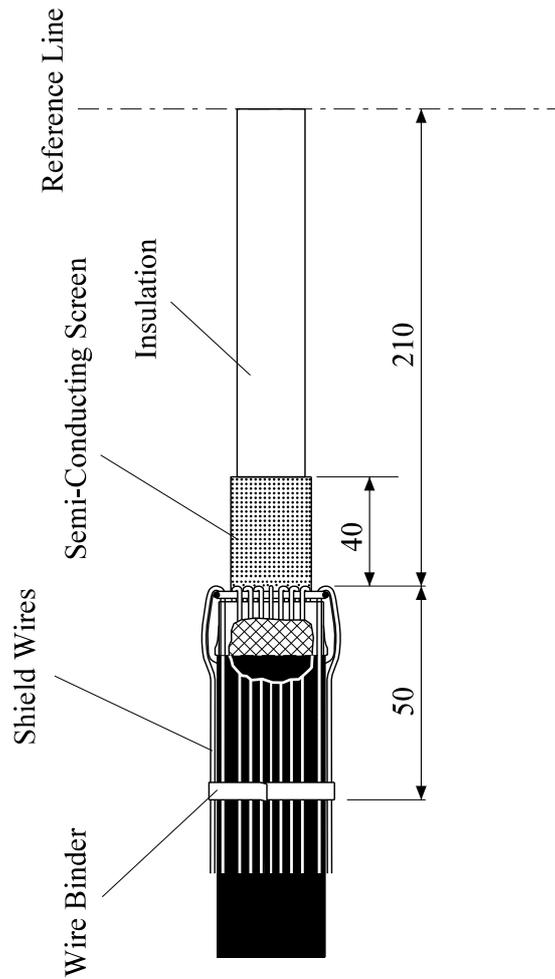
COMPLETION OF JOINT

10. Position cold shrink joint body over a core. 48
11. Insert phase conductor and polymer rod onto the connector until it butts up to the insulation and shear bolts. --
12. Apply a slight pulling tension to the rod to ensure a firm hold on conductor. --
13. Clean and degrease rod, wipe from the rod end down towards semi-conducting screen. 38
14. Fit cold shrink insulation tube. 28
15. Clean and degrease joint length. 43

JOINTING PROCEDURE 7.312 – Continued

Actions	General Requirements (ST: CA2C/9)
16. Apply silicon grease to phase insulation and polymeric rod.	--
17. Position cold shrink joint body with the copper screen wires.	--
18. Release the spiral by pulling counter-clockwise.	--
19. Apply two layers of 50% overlap knit mesh over joint body.	49
20. Overlap 50mm on to the copper screen wires.	--
21. Secure copper knit mesh to the screen wires with a roll spring and cover with two layers of 50% overlap Scotch 88 tape.	--
22. Clean and degrease exposed polymeric rod and 200mm of oversheath.	--
23. Apply VM tape binders at shell stand-off positions.	49
22. Build-up cable oversheaths.	34
23. Fit and support shell ensuring 15mm clearance.	49
24. Mix and pour resin.	50

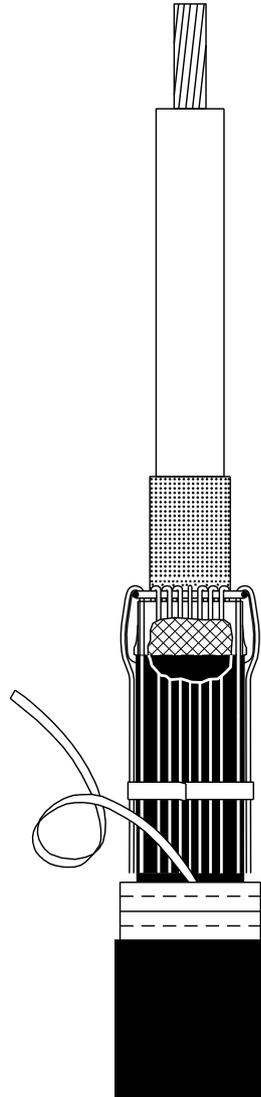
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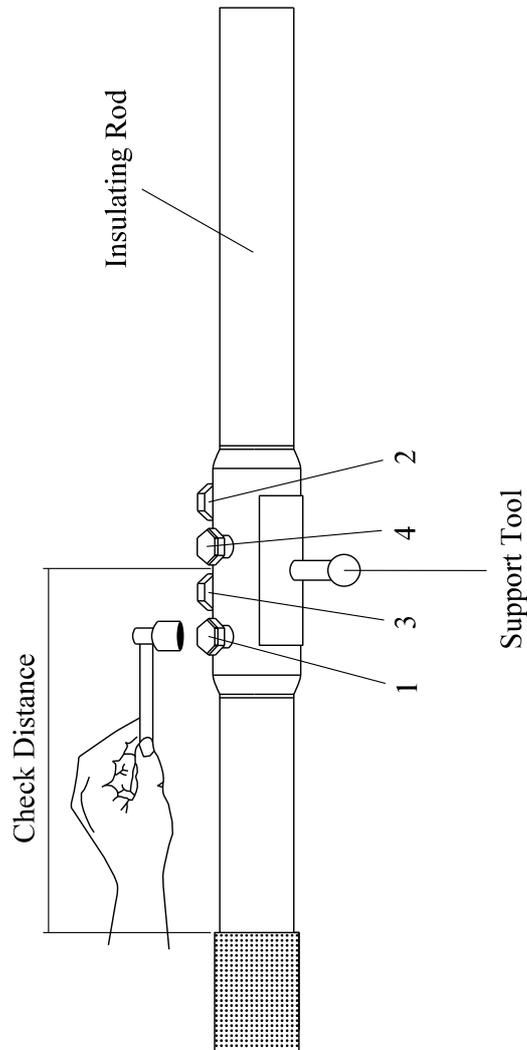
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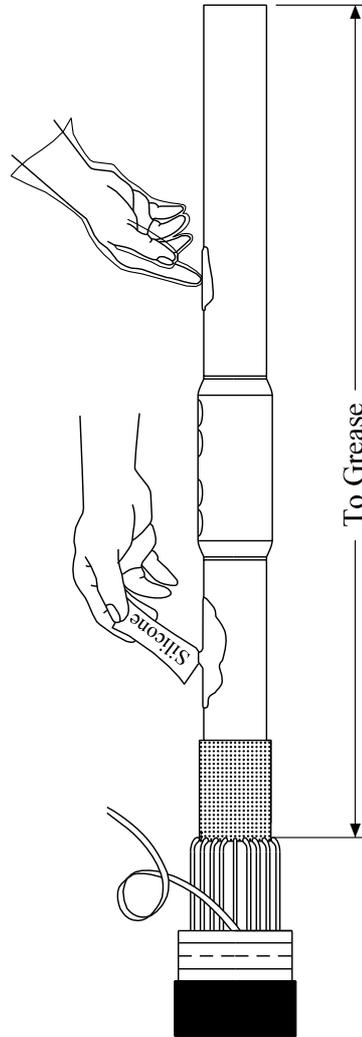
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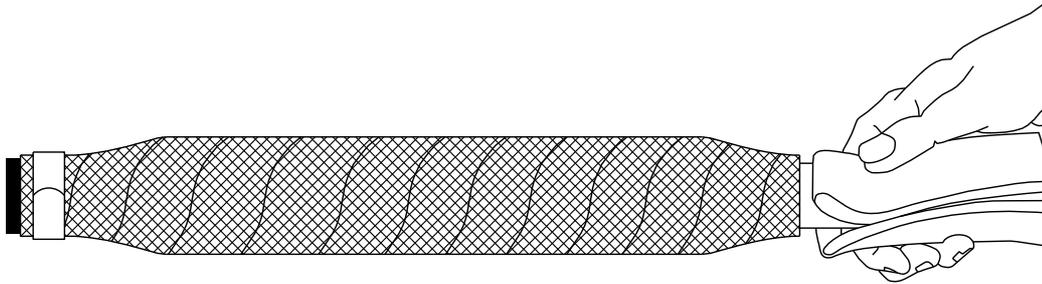
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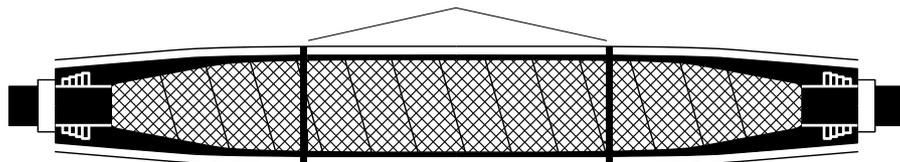
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APPENDIX A

SUPERSEDED DOCUMENTATION

This document replaces ST: CA2N/5 dated May 2016 which should now be withdrawn.

APPENDIX B

ASSOCIATED DOCUMENTATION

ST: CA2A, ST: CA2C, ST: CA2M, ST: CA2N, ST: CA2O, ST: CA2S, ST: CA2U,
ST: CA2V, ST: CA7D.

APPENDIX C

IMPACT ON COMPANY POLICY

None, as this document has just been updated to incorporate the WPD Losses strategy.

APPENDIX D

IMPLEMENTATION OF POLICY

For WPD staff Team Managers shall ensure that all relevant 11kV Jointing staff are aware of the changes to 11kV Jointing Manual of which this Standard Technique forms a major part. It can be implemented into all areas of WPD with immediate effect. Managers shall ensure that all staff involved in the design, installation, maintenance and operation of the 11kV system are familiar with, and follow, the requirements of this document.

Independent Connection Providers (ICPs) shall follow the requirements of ST: CA2N/6 or of this document (ST: CA2N/5) for a period of up to 3 months from the issue of this document. After this date, all jointing works shall comply with ST: CA2N/6.

Where any difficulty is encountered in the application of this Standard Technique the author shall be notified who will determine whether a variation is appropriate.

APPENDIX E

KEY WORDS

11kV EPR stop end, 11kV paper cable stop end.