

Company Directive

STANDARD TECHNIQUE : CAØB/1

Relating to Procedures for Changing Domestic 100A Cut-Outs with the Incoming LV Service Cable Live

Policy Summary

This Standard Technique document contains all the approved procedures for changing LV Service Domestic Cut-Outs for PVC or XLPE Plain or Split Concentric and PILC cables. It shall be implemented in conjunction with the appropriate General Requirements in ST: CAØC.

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.

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Implementation Date:

May 2012

Approved by:



Policy Manager

Date:

18 May 2012

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ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE DOMESTIC 100A CUT-OUTS

INTRODUCTION

This Standard Technique document contains all the approved procedures for changing “house-service” cut-outs up to 100A rating. None of the Jointing Procedures given in this Standard Technique apply to cut-outs used for public lighting, road signs etc. The Jointing Procedures given in this Standard Technique shall be implemented in conjunction with the appropriate General Requirements in ST: CAØC/1, including: -

1. General Cleanliness and Accident Prevention.
2. General Jointing Procedures - Dead Cables
3. General Jointing Procedures and Safety Precautions - Live Cables

CONTENTS	Page
General Principles	3
General Notes	4
Tools, Shrouding and Fire Precautions	5
7.501 Procedure for changing insulated cut-outs with the incoming PILC service cable - live.	6
7.502 Procedure for changing cut-outs by re-trimming the incoming PILC service cable - live.	12
7.503 Procedure for changing cut-outs by cutting the incoming PILC service cable and extending with tails - live.	24
7.504 Procedure for changing insulated cut-outs with the incoming PVC Plain, Split Concentric or 35mm Waveform service cable - live.	37
7.505 Procedure for changing cut-outs by re-trimming the incoming PVC Plain or Split Concentric service cable - live.	44
7.506 Procedure for changing metal/insulated clad compound filled cut-outs with the incoming PILC service cable - live.	54

The following procedure is ONLY for use in the Midlands region of WPD

Note: -Any reference to plain concentric equally applies to hybrid.

The phase conductor insulation may be either XLPE or PVC.

ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE DOMESTIC 100A CUT-OUTS

GENERAL PRINCIPLES

Before undertaking any cut-out change the work required and the safety considerations shall be evaluated. A risk assessment shall form an integral component of the application of these techniques. Significant risks shall be recorded.

Metal clad cut-outs may contain asbestos material and an area which must be considered whilst undertaking the risk assessment.

Whilst preparing the cut-out for changing and in the event of suspected asbestos material being found the craftsman shall refer to Special Procedure 10.1 “Working with Metal Clad Cut-Outs Which May Contain Asbestos Material”.

If, due to access difficulties, or any other safety consideration it is felt that the work cannot be carried out safely with the incoming service cable live, the work shall be carried out dead, i.e. by cutting the service cable or making the main cable dead.

Insulated single phase and three phase cut-outs with a dry sealing chamber and connected to PVC / XLPE insulated Service Cables may be changed live in accordance with Jointing Procedures 7.504. Persons undertaking this work shall hold a current WPD authorisation of COPLA and be accompanied by a second appropriately authorised person as detailed in ST:CA1C.

Metal and insulated clad single phase and three phase cut-outs with a compound filled sealing chamber and connected to PILC cables, and any associated single phase metal or insulated fuse units (“Tops”) associated with this apparatus may be changed live in accordance with Jointing Procedures 7.501 and 7.506. Persons undertaking this work shall hold a current WPD authorisation of COMET and be accompanied by a second appropriately authorised person as detailed in ST:CA1C.

Cut-outs containing PVC service cables in compound shall not be broken down under any circumstances.

If changing of the cut-out live is not practicable safely, one of the following methods shall be adopted: -

- a) Re-trim the incoming cable and re-terminate into the new cut-out. See Jointing Procedures 7.502 or 7.505.
- b) Cut the service cable below the cut-out and extend using the technique detailed in Jointing Procedure 7.503 (PILC Service Cables only).
- c) Cut the service cable outside the premises.
- d) Cut the service cable under the floor, and extend with new cable.
- e) Lay a new service cable.
- f) Make the main cable dead.

ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE DOMESTIC 100A CUT-OUTS

GENERAL NOTES

1. No cut-out shall be changed live if it is reasonably practicable in the interests of safety to make the service dead. All conductors or associated terminations shall be treated as live, until proved dead.
2. Where a cut-out is used for providing a looped service the procedure shall only apply where the loop service cut-out(s) can be isolated.
3. This work shall be carried out in strict compliance with the current issue of the Distribution Safety Rules with particular reference to sections 8.5 and 8.6.
4. Rule 8.6.2 specifically makes provision for the physical requirement in live cut-out changes where it may be necessary to have more than one conductor bared at a time in order to carry out the operation effectively. The time period when such a condition needs to exist shall be kept to an absolute minimum and all cores not being worked on shall be temporarily shrouded using approved insulation securely taped into position.
5. Rule 8.5.4 states “No person shall work on a live cable unless accompanied by another who shall be in a safe position at the site of the work and have the necessary competence to avoid danger and to render or obtain assistance in an emergency”. It is also important that the second man should ensure non-interference by others and have immediate access to a suitable fire extinguisher.
6. Should the person carrying out the work consider that it would be dangerous to proceed at any stage of the procedure then work shall cease immediately and he shall seek advice from his Supervisor - the work place shall not be left unattended unless safe to do so.
7. Whilst the work is being carried out the person carrying out the work shall make use of protective clothing made available in accordance with Rule 1.10 of the Distribution Safety Rules.
8. LV rubber gloves shall be worn when handling live conductors together with a face visor and your attention drawn to the level of PPE required for this operation which shall be as given in the matrix of General Requirement 3 in ST: CAØC/1.
9. The following tests are to be undertaken in accordance with their relevant Standard Technique: - Polarity ST: OS3E, Phase Rotation ST: MI13K, Voltage ST: HS15J, Earth Loop Impedance ST: MI14D and Required Inspections and Tests of an LV Service ST: NC5A, also General Requirement 6.3 in ST: CAØC/1.
10. Your attention is drawn to the use of Cleaning/Degreasing Solvents, General Requirement 1 in ST: CAØC/1.

ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE DOMESTIC 100A CUT-OUTS

TOOLS, SHROUDING AND FIRE PRECAUTIONS

TOOL REQUIREMENTS

Only approved fully insulated tools shall be used.

This does not preclude the use of the standard core knife for trimming conductor insulation or insulated hack knife for the lead sheath removal.

SHROUDING REQUIREMENTS

The standard LV shrouding is held in CDS on SHOPS No.42637; replacement parts for the kit can be ordered from Boddingtons Electrical Products, but in exceptional circumstances 1000 gauge polythene can be used.

The standard LV shrouding kit has various shapes and sizes for PILC, PVC and XLPE LV Service cables, careful selection of the shrouding will ensure that any exposed neutral and or earth can be fully shrouded. As this is bespoke LV shrouding that is the preferred method of shrouding.

But in exceptional circumstances then the 1000 gauge polythene can be used to shroud, for example: - Sufficient 1000 gauge PVC sheeting (live line pole top bags) to cater for screening all metal work in the vicinity of the work place.

‘VM’ Tape is suitable for screening exposed contacts – it may be cut to size and kept firmly in position by the mastic backing.

FIRE PRECAUTIONS

A fire extinguisher shall be immediately available at the point of work. The BCF type may be used, but extreme caution is necessary and the area must be ventilated following discharge. The dry powder type may also be used, but will make a mess.

**ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE
DOMESTIC 100A CUT-OUTS**

JOINTING PROCEDURE 7.501

**PROCEDURE FOR CHANGING INSULATED 100A CUT-OUTS WITH
THE INCOMING PILC SERVICE CABLE LIVE**

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CAØC/1 Section 6
of the LV Service Cable Jointing Manual**

JOINTING PROCEDURE 7.501

PROCEDURE FOR CHANGING INSULATED 100A CUT-OUTS WITH THE INCOMING PILC SERVICE CABLE LIVE

Note: -

1. This Jointing Procedure applies only to insulated cut-outs where the sealing chamber has not been filled with compound.
2. This Jointing Procedure also applies to cut-outs being changed provided that:-
 - (i) re-trimming of the cable is not required.
 - (ii) a new earth connection is not required.
 - (iii) the cable termination is heat shrink tubing and breakout.

Note: - Your attention is drawn for the need to comply too General Principles, General Notes, Tools, Shrouding and Fire Precautions of this Standard Technique at all times.

JOINTING PROCEDURE 7.501

MATERIALS LIST

Item	Quantity
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Single Phase

Replacement cut-out of the appropriate type	1
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Note: - If the cut-out phase/neutral layout is non-standard, then a cut-out with interchangeable phase and neutral blocks shall be used.

Three Phase

Replacement cut-out of appropriate type	1
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Note: - If the cut-out phase/neutral layout is non-standard, then a cut-out with interchangeable phase and neutral blocks shall be used.

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Whipping thread
PVC tape
“VM” tape
De-Solvit 1000FD
Workhorse dry wipes
Seals
Sealing wire

Note: - Individual material item numbers (SHOPS) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.501

1. PREPARATORY WORK

- 1.1. All immediate adjacent metal work shall be shrouded using approved insulating material.
- 1.2. Switch off all the customers main switches.
- 1.3. Looped Services: -

Switch off all customers main switches.
Remove cut-out fuses (check phase rotation if three phase).
Mark and remove meter and earth tails (shroud tail ends).
Check polarity and earth loop impedance.
Re-seal cut-outs.
Post caution notice.

- 1.4. Remove fuse carriers from service cut-out. Check phase rotation if three phase, apply phase marker tapes to meter tails for identification.
- 1.5. Replace fuse carriers except for the phase to be worked on, or alternatively apply 'VM' tape or a proprietary shroud to shroud the exposed live contact(s).

Note: - If fuse carriers are to be replaced for shrouding purposes then the fuse must be removed.

- 1.6. Remove phase meter tail, shroud tail end and fix back at a safe distance.
- 1.7. Replace fuse carrier, or shroud live contacts.
- 1.8. If three phase repeat actions 1.6 and 1.7 for remaining two phases in turn.
- 1.9. Remove neutral meter tail, shroud tail end and fix back at a safe distance, also remove and secure any earth wires as necessary.
- 1.10. Check polarity and earth loop impedance.
- 1.11. Remove earth braid/wire from earth terminal block, secure and shroud.

Note: - If an earthwire is soldered to the lead sheath and the connection is satisfactory, providing the cross-section of the earth wire is 16mm² or greater, it may be retained.

JOINTING PROCEDURE 7.501 - Continued

2. REMOVAL OF CABLE CORES

The following action (2.1) may be adopted for an insulated single phase cut-out being changed on a “like for like” basis:-

- 2.1. The complete fuse base assembly may be removed, thus exposing both bare conductors, ensure the conductors are restrained by insulating material, remove the cut-out leaving the bared ends. **Immediately** place the new (“like for like”) cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, tighten terminal screws.

Note: - The method in 2.1 shall not be applied to three phase cut-outs and excludes insertion of a looped service at this stage.

In all other circumstances, including three phase cut-outs and looped services, the following actions shall be followed: -

- 2.2. Remove phase core from its terminal block.
- 2.3. Apply an adhesive backed rubber insulation shroud to core end extending 25mm onto the Heatshrink tube.

Apply PVC phase marker tape for core identification.
- 2.4. If three phase repeat actions 2.2 and 2.3 for remaining two phase cores in turn.
- 2.5. Repeat actions 2.2 and 2.3 for neutral core.
- 2.6. Remove cut-out from meter board.
- 2.7. Repeat actions 2.2 to 2.5 for looped service if applicable

3. FITTING OF CUT-OUT

- 3.1. Position and fix new meter board in place (if required). Prepare new cut-out (fit PME link if appropriate), offer to cable setting cores to their required positions.
- 3.2. If trimming of the neutral core is required - remove the shroud, cut the core to length, remove the insulation to the depth of the terminal barrel plus 5mm. Insert the conductor into the terminal barrel, tighten the terminal screws, fit the cover or temporarily shroud to cover the neutral and earth terminal block(s).
- 3.3. Fix cut-out to the meter board.

JOINTING PROCEDURE 7.501 - Continued

- 3.4. If trimming of the phase core is required - remove the shroud, cut the core to length, remove the insulation to the depth of the terminal barrel plus 5mm. Insert conductor into terminal barrel, then tighten the terminal screws, fit the cover or temporarily shroud to live terminal phase block.
- 3.5. If three phase repeat action 3.4 for remaining two phases in turn.

Alternatively: - for fitting single phase insulated cut-outs when it is not practicable to insert cores separately into their terminal blocks, after setting and trimming the conductors the following procedure is permitted: -

- 3.6. Ensure conductors are restrained by insulating material; remove the adhesive backed rubber insulation shroud leaving the bared ends. **Immediately** place the cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, tighten the terminal screws.

Note: - The method in 3.6 shall not be applied to three phase cut-outs and excludes insertion of a looped service at this stage.

- 3.7. Check polarity, if three phase check the phase rotation.
- 3.8. Repeat actions 3.2 to 3.5 for a looped LV service if applicable.
- 3.9. Remove the temporary shrouding from the earth connection assembly and terminal block, connect the earth braid/wire to earth terminal block.
- 3.10. Fit the cable cover and all remaining cut-out covers.

4. CONNECTING CUSTOMERS EARTH AND METER TAILS (INCLUDING LOOP SERVICE)

- 4.1. Apply phase and neutral identification, earthing and security labels.
- 4.2. Check voltage, polarity, earth loop impedance and phase rotation if three phase.
- 4.3. Connect the customers earth conductor(s) to the earth terminal and connect the meter tails in top of cut-out(s).
- 4.4. Insert the fuses and seal the cut-out(s).
- 4.5. Turn on the customers main switches.
- 4.6. If a polyphase meter is used, check the meter disc or neon lights are reacting correctly.
- 4.7. If applicable restore supply to the looped customer, repeating steps 4.1 to 4.6.

**ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE
DOMESTIC 100A CUT-OUTS**

JOINTING PROCEDURE 7.502

**PROCEDURE FOR CHANGING CUT-OUTS BY RE-TRIMMING
INCOMING PILC SERVICE CABLE**

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CAØC Section 6
of the LV Service Cable Jointing Manual**

JOINTING PROCEDURE 7.502

PROCEDURE FOR CHANGING CUT-OUTS BY RE-TRIMMING INCOMING PILC SERVICE CABLE

Note: -

1. This Jointing Procedure applies to all types of single or three phase cut-outs.
2. Refer to Drawing **SVJ 7.502.1, 7.502.2** whilst undertaking this Jointing Procedure.

Your attention is drawn for the need to comply too the General Principles, General Notes, Tools, Shrouding and Fire Precautions of this Standard Technique at all times.

JOINTING PROCEDURE 7.502

MATERIALS LIST

Item	Quantity
Single Phase	
Replacement cut-out of the appropriate type	1
Note: - With this procedure, there is no need to use a cut-out with interchangeable phase and neutral blocks, even if the original cut-out layout is non-standard.	
13mm thin wall Heat shrink tubing -lengths as required	-
2 Finger Heat shrink breakout boot	1
16mm ² tinned copper braid -length as required	-
Tinned copper mesh EPPA/009-3000	1
Roll spring F1	1
Three Phase	
Replacement cut-out of appropriate type	1
Note: - With this procedure, there is no need to use a cut-out with interchangeable phase and neutral blocks, even if the original cut-out layout is non-standard.	
13mm thin wall Heat shrink tubing -lengths as required	-
4 Finger Heat shrink breakout boot	1
16mm ² tinned copper braid - length as required	-
Tinned copper mesh EPPA/009-3000	1
Roll spring F2	1

JOINTING PROCEDURE 7.502 - Continued

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Whipping thread
PVC tape
“VM” tape
De-Solvit 1000FD
De-Solvit 1000
Workhorse dry wipes
Seals
Sealing wire

Note: - Individual material item numbers (SHOPS) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.502

1. PREPARATORY WORK

- 1.1. All immediate adjacent metal work shall be shrouded using approved insulating material.
- 1.2. Switch off all the customers main switches.
- 1.3. Looped Services: -

Switch off all the customers main switches.
Remove the cut-out fuses (check phase rotation if three phase).
Mark and remove meter and earth tails (shroud tail ends).
Check the polarity and earth loop impedance.
Re-seal cut-outs.
Post caution notice.
- 1.4. Remove the fuse carriers from the service cut-out. Check the phase rotation if three phase, apply phase marker tapes to the meter tails for identification.
- 1.5. Replace fuse carriers except for the phase to be worked on, or alternatively apply 'VM' tape or a proprietary shroud to shroud the exposed live contacts.

Note: - If the fuse carriers are to be replaced for shrouding purposes then the fuse/s shall be removed.
- 1.6. Remove the phase meter tail, shroud the tail end and fix it back at a safe distance.
- 1.7. Replace the fuse carrier, or shroud the live contacts.
- 1.8. If cut-out is three phase repeat actions 1.6 and 1.7 for remaining two phases in turn.
- 1.9. Remove the neutral meter tail, shroud the tail end and fix it back at a safe distance, also remove and secure any earth wires as necessary.
- 1.10. Check the polarity and earth loop impedance.
- 1.11. Remove the earth bonding clamp if fitted from cable sheath, examine condition of the lead sheath for damage or deterioration. Work shall not proceed if the condition is considered to present danger.

JOINTING PROCEDURE 7.502 - Continued

2. CABLE PREPARATION

- 2.1. Remove the cut-out retaining screws from meter board; support the cut-out in the upright position allowing room to work around the cable.
- 2.2. Position and fix the new meter board (if required), prepare new cut-out (fit the PME link if appropriate).
- 2.3. Mark position of base of terminal blocks of new cut-out, on new meter board.
- 2.4. Remove outer serving, armour and bedding thoroughly cleaning the lead sheath.
- 2.5. Abrade and remove the lead sheath.

Note: - If the lead sheath is to be removed at an immediate position then a temporary earth continuity bond shall be applied.

- 2.6. Terminate the belt papers 15mm from lead sheath termination.
- 2.7. Shroud the cut-out, lead sheath and armour.
- 2.8. Tie off the core papers either side of cut position.
- 2.9. Ensuring the other cores are protected cut the phase core at the required length. Apply 13mm heat shrink tubing as far down the core as possible extending 25mm beyond the end of the core. Using pliers and while heat shrink is still hot, crimp the end of the heat shrink tubing to form a seal.

Apply PVC phase marker tape for core identification.

- 2.10. If thee phase repeat action 2.9 for remaining two phases in turn.
- 2.11. Repeat action 2.9 for the neutral core.
- 2.12. Repeat actions 2.4 to 2.11 for looped service if applicable.
- 2.13. Remove the existing cut-out.
- 2.14. Remove the shrouding applied in 2.7 and temporary earth continuity bond if applied.
- 2.15. Fit the heat shrinkable breakout boot onto the cable crutch.

JOINTING PROCEDURE 7.502 - Continued

- 2.16. Apply the earth connection in accordance with General Requirement 6.17.3.
- 2.17. Repeat actions 2.15 to 2.16 for the looped service if applicable.
- 2.18. Apply shrouding to the earth connection assembly, exposed armour, earth braid and secure.

3. FITTING OF CUT-OUT

- 3.1. Prepare the new cut-out (fit PME link if appropriate), offer up the cut-out to the cable setting the cores to their required positions.
- 3.2. Cut the neutral conductor to length, remove the insulation to the depth of terminal barrel plus 5mm. Insert the conductor into terminal barrel, tighten the terminal screws, fit cover or temporary shroud to cover neutral and earth terminal block(s).
- 3.3. Fix the cut-out to meter board.
- 3.4. Cut the phase conductor to length, remove the phase insulation to the depth of terminal barrel plus 5mm. Insert the conductor into the terminal barrel; tighten the terminal screws, fit cover or temporary shroud to live terminal phase block.
- 3.5. If three phase repeat action 3.4 for remaining two phases in turn.

Alternatively: - For fitting single phase insulated cut-outs where it is not practicable to insert cores separately into their terminal blocks, after setting and trimming the following procedure is permitted:-

- 3.6. Ensure conductors are restrained by insulating material; remove the adhesive backed rubber insulation shroud leaving the bared ends. **Immediately** place the cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, tighten all the terminal screws.

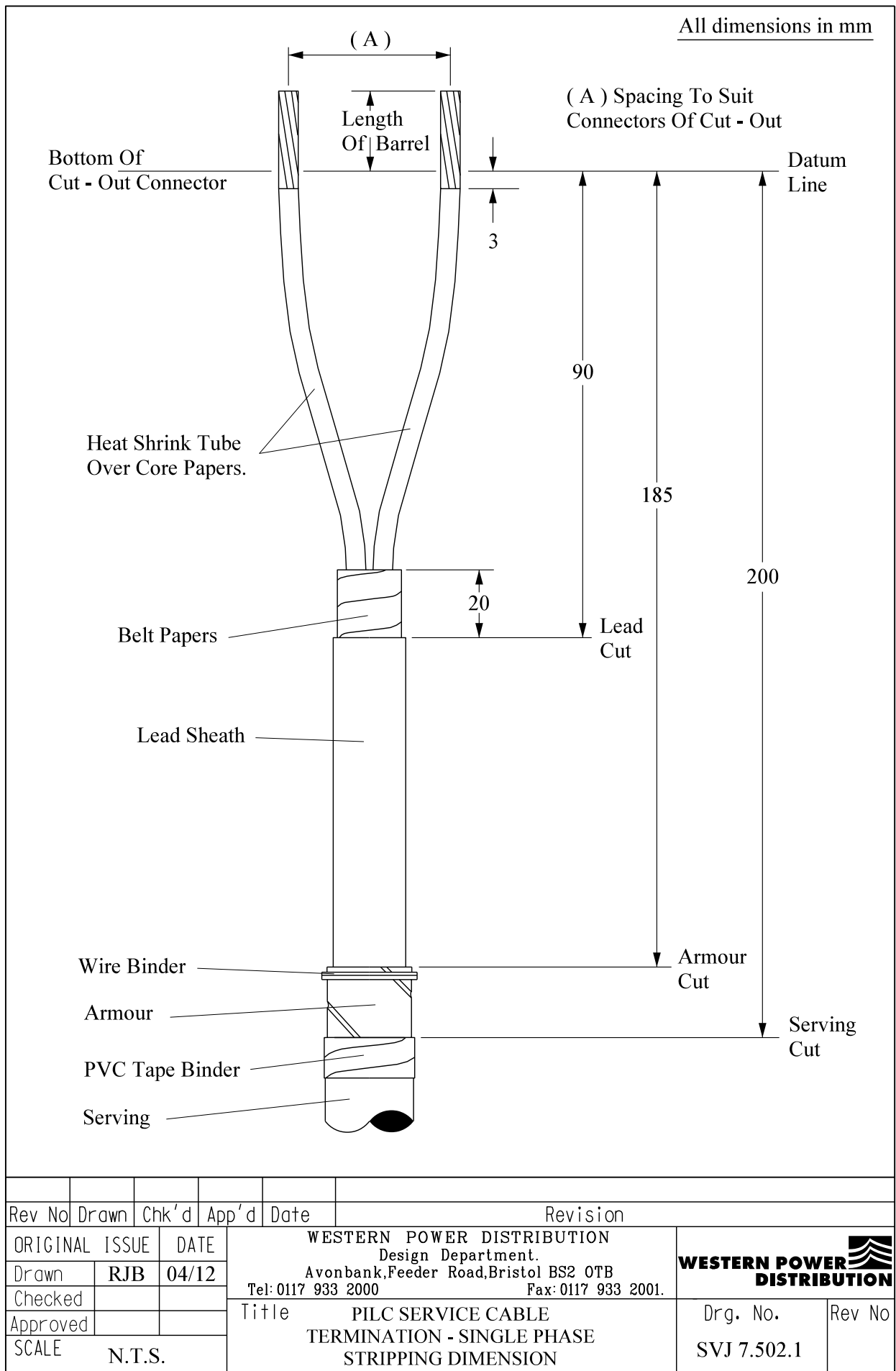
Note: -The method in 3.6 shall not be applied to three phase cut-outs and excludes insertion of a looped service at this stage.

- 3.7. Check polarity, if three phase check phase rotation.
- 3.8. Repeat actions 3.1 to 3.5 for looped service if applicable
- 3.9. Remove temporary shrouding from earth connection assembly and terminal block, connect earth braid to earth terminal block.
- 3.10. Fit cable cover and all remaining cut-out covers.

JOINTING PROCEDURE 7.502 - Continued

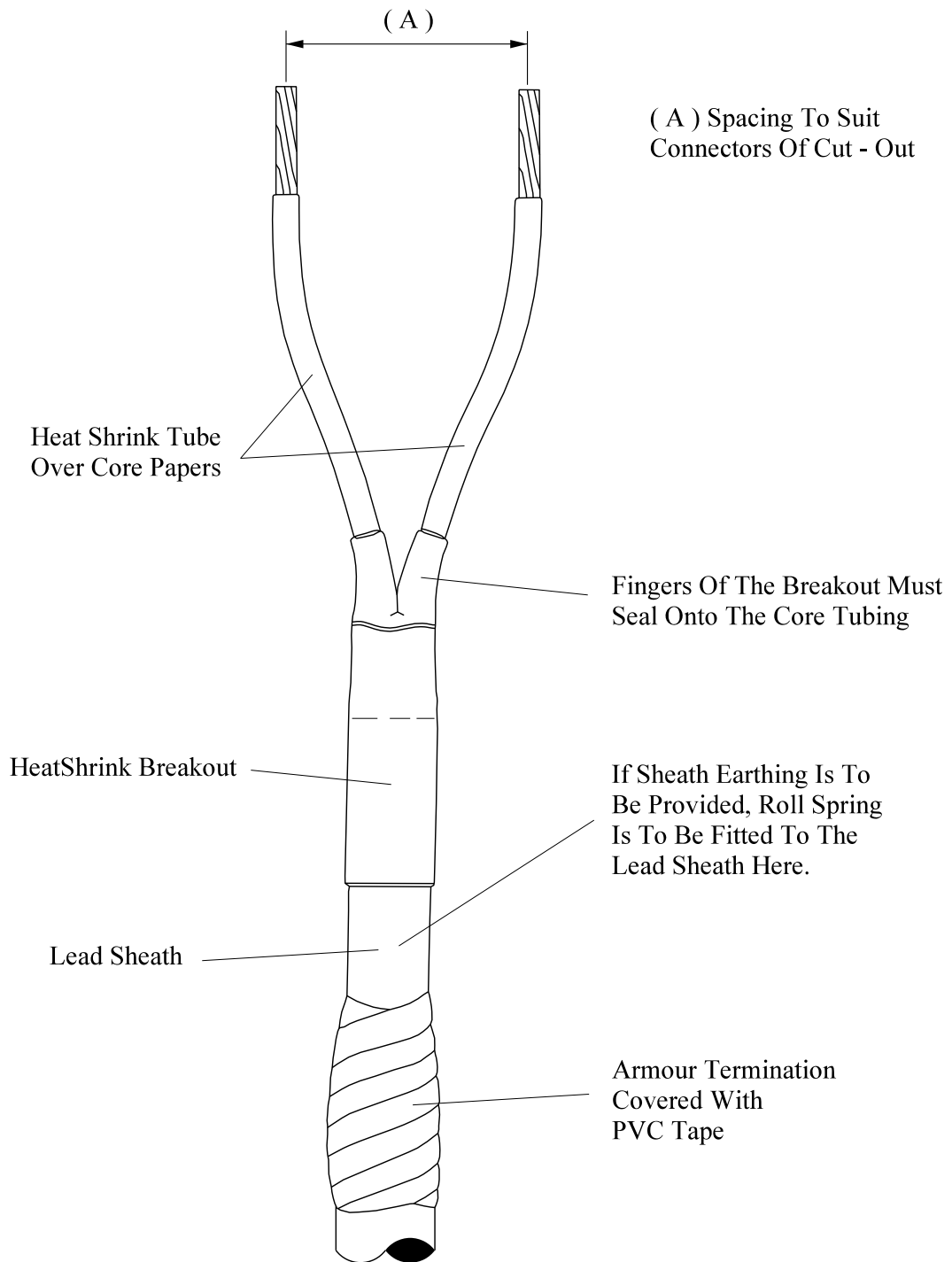
4. CONNECTING CUSTOMERS EARTH AND METER TAILS (INCLUDING THE LOOPED SERVICE)


- 4.1. Apply phase identification, earthing and security labels.
- 4.2. Check the voltage, polarity, earth loop impedance and phase rotation if three phase.
- 4.3. Connect the customers earth conductor(s) to earth the terminal and connect the meter tails in the top of the cut-out(s).
- 4.4. Insert the fuses and seal the cut-out(s).
- 4.5. Turn on the customers main switches.
- 4.6. If a polyphase meter is fitted, check the meter disc or that the neon lights are reacting correctly.
- 4.7. If applicable restore supply to looped customer, repeating actions 4.1 to 4.6.



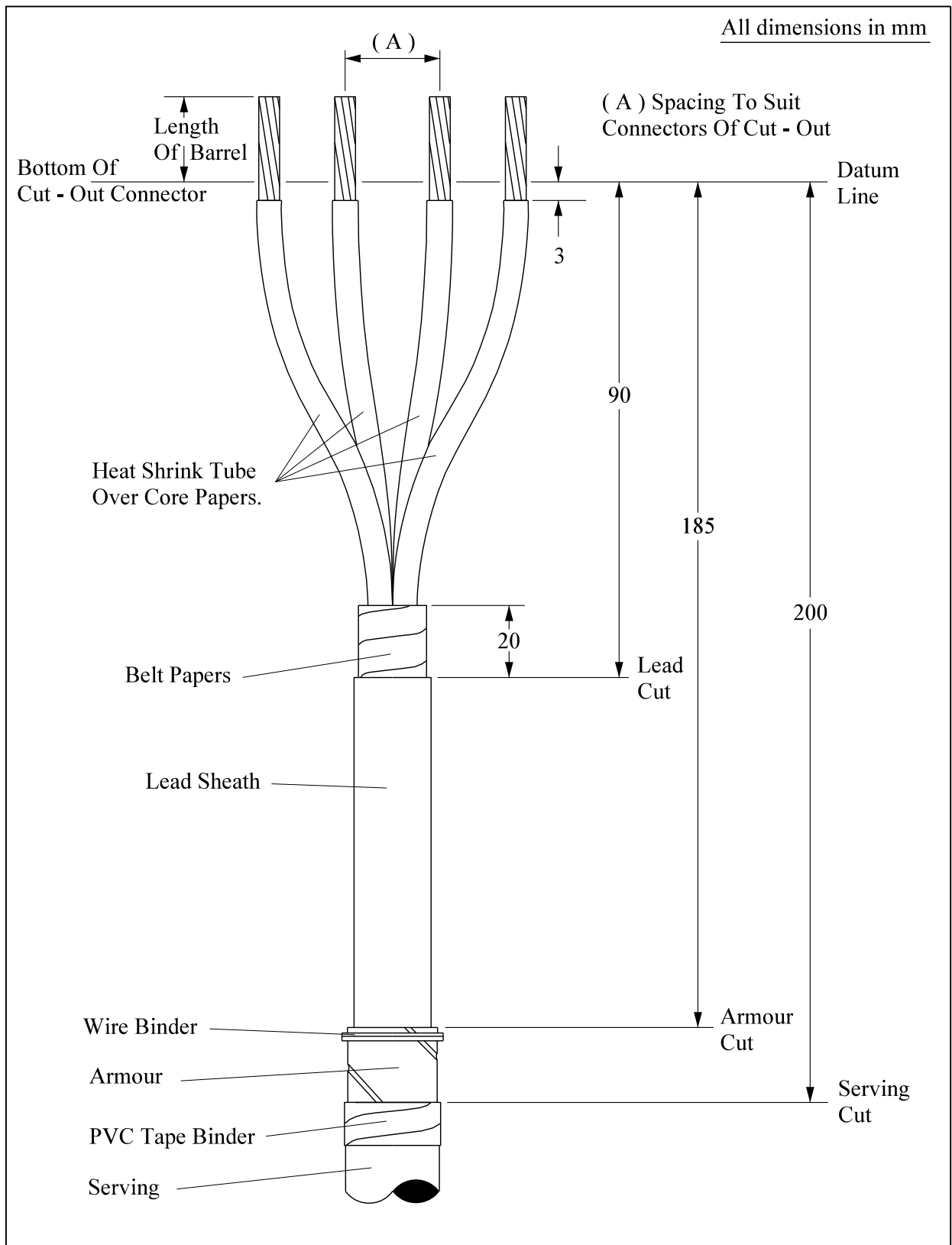
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All dimensions in mm



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.			 WESTERN POWER DISTRIBUTION
Drawn	RJB	04/12				
Checked						
Approved						
SCALE	N.T.S.		Title PILC SERVICE CABLE TERMINATION - SINGLE PHASE GENERAL ARRANGEMENT			Drg. No. SVJ 7.502.2
						Rev No

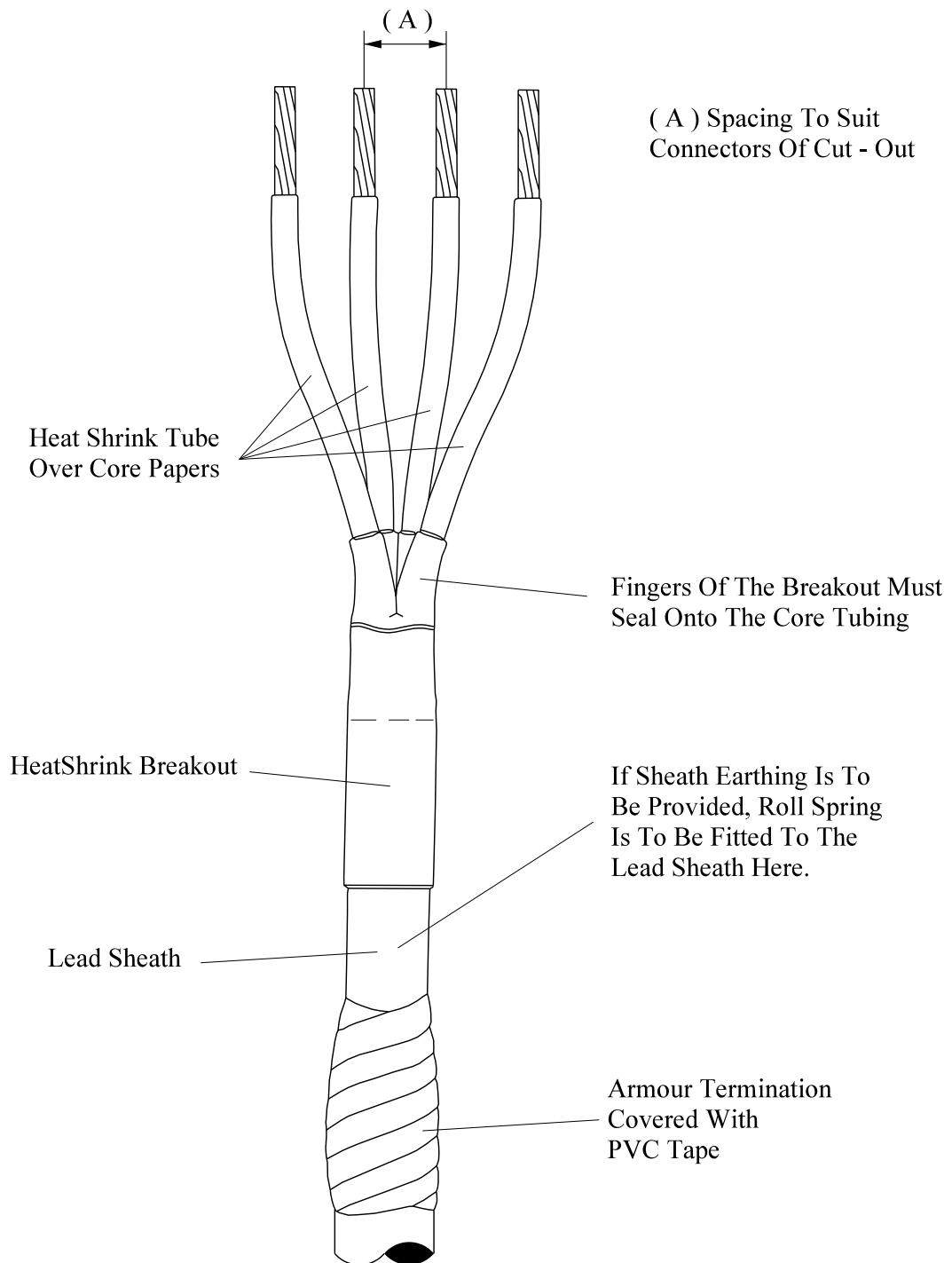
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Rev No	Drawn	Chk'd	App'd	Date	Revision
ORIGINAL ISSUE		DATE		WESTERN POWER DISTRIBUTION Design Department. Avonbank,Feeder Road,Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.	
Drawn	RJB	04/12		Title PILC SERVICE CABLE TERMINATION - THREE PHASE STRIPPING DIMENSION	
Checked					
Approved				Drg. No. SVJ 7.502.3	
SCALE		N.T.S.		Rev No	

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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	04/12	Title PILC SERVICE CABLE TERMINATION - THREE PHASE GENERAL ARRANGEMENT		 WESTERN POWER DISTRIBUTION
Checked					
Approved					
SCALE N.T.S.			Drg. No. SVJ 7.502.4 Rev No		

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**ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE
DOMESTIC 100A CUT-OUTS**

JOINTING PROCEDURE 7.503

**PROCEDURE FOR CHANGING CUT-OUTS BY CUTTING PILC
SERVICE CABLE AND EXTENDING WITH TAILS**

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CAØC/1 Section 6
of the LV Service Cable Jointing Manual**

JOINTING PROCEDURE 7.503

PROCEDURE FOR CHANGING CUT-OUTS BY CUTTING PILC SERVICE CABLE AND EXTENDING WITH TAILS

Note: -

1. This Jointing Procedure may be applied to all types of PILC cable, irrespective of whether or not the sealing chamber is compound filled (single or three phase).
2. A minimum distance of 300mm is required between the cut-out base and floor for single phase installation.
3. A minimum distance of 400mm is required between the cut-out base and floor for three phase installation.
4. Refer to Drawing **SVJ 7.503.1, 7.503.2, 7.503.3, 7.503.4, 7.503.5** whilst undertaking this Jointing Procedure.

Your attention is drawn for the need to comply too the General Principles, General Notes, Tools, Shrouding and Fire Precautions of this Standard Technique.

JOINTING PROCEDURE 7.503

MATERIALS LIST

Item	Quantity
Single Phase	
Replacement cut-out of the appropriate type	1
Note: - With this procedure, there is no need to use a cut-out with interchangeable phase and neutral blocks, even if original layout is non-standard.	
13mm thin wall heat shrink tubing - lengths as required	-
2 Finger heat shrink breakout boot	1
Brass tunnel connectors BTC-1-45W	2
Tinned copper mesh EPPA/009-3000	1
16mm ² tinned copper braid - length as required	-
Roll spring F1	1
30mm thin wall heat shrink tubing (black) - length as required	-
32/12mm medium wall heat shrink tubing (black) - length as required	-
25mm ² copper PVC/PVC (brown/grey and blue/grey) – lengths as required	-
Three Phase	
Replacement cut-out	1
Note: - With this procedure, there is no need to use a cut-out with interchangeable phase and neutral blocks, even if original layout is non-standard.	
13mm thin wall heat shrink tubing - lengths as required	-
4 Finger heat shrink breakout boot	1
Brass tunnel connectors BTC-1-45W	4

JOINTING PROCEDURE 7.503 - Continued

Three Phase - continued

Tinned copper mesh EPPA/009-3000	-
16mm ² tinned copper braid - length as required	-
Roll spring F2	1
30mm thin wall heat shrink tubing (black) – length as required	-
48/16mm medium wall heat shrink tubing (black) - length as required	-
25mm ² copper PVC/PVC (brown/grey and blue/grey - lengths as required	-

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
PVC tape
“VM” tape
De-Solvit 1000FD
De-Solvit 1000
Workhorse dry wipes
Seals
Sealing wire

Note: - Individual material item numbers (SHOPS) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.503

1. PREPARATORY WORK

- 1.1. All immediate adjacent metal work shall be shrouded using the approved insulating material.
- 1.2. Switch off all the customers main switches.
- 1.3. Looped Services: -

Switch off all the customers main switches.
Remove the cut-out fuses (check phase rotation if three phase).
Mark and remove the meter and earth tails (shroud tail ends).
Check the polarity and earth loop impedance.
Re-seal the cut-out/s.
Post caution notice/s.
- 1.4. Remove the fuse carriers from service cut-out. Check the phase rotation if three phase, apply phase marker tapes to meter tails for identification.
- 1.5. Replace the fuse carriers except for the phase to be worked on, or alternatively apply 'VM' tape or a proprietary shroud to shroud the exposed live contacts.

Note: - If the fuse carriers are to be replaced for shrouding purposes then the fuse must be removed.
- 1.6. Remove the phase meter tail, shroud the tail end and fix back at a safe distance.
- 1.7. Replace the fuse carrier, or shroud the live contacts.
- 1.8. If three phase installation repeat actions 1.6 and 1.7 for remaining two phases in turn.
- 1.9. Remove the neutral meter tail, shroud tail end and fix back at a safe distance, also remove and secure any earth wires as necessary.
- 1.10. Check the polarity and earth loop impedance.
- 1.11. Remove earth bonding clamp if fitted to the cable sheath, examine the condition of lead sheath for damage or deterioration. Work shall not proceed if the condition considered to present danger.

JOINTING PROCEDURE 7.503 - Continued

2. CABLE PREPARATION/FITTING OF CUT-OUT

- 2.1. Remove the cut-out retaining screws from meter board, support the cut-out in the upright position allowing room to work around the cable.
- 2.2. Position and fix the new meter board (if required), prepare the new cut-out (fit the PME link if appropriate).
- 2.3. Remove the outer serving, armour and bedding and thoroughly clean the lead sheath.
- 2.4. Abrade and apply a temporary earth continuity bond to the lead sheath.
- 2.5. Remove lead sheath.
- 2.6. Terminate the belt papers 15mm from lead sheath termination.
- 2.7. Shroud the cut-out, lead sheath and armour.
- 2.8. Tie off the core papers either side of cut position.
- 2.9. Ensuring the other cores are protected, cut the phase core at the required length. Apply 13mm heat shrink tubing as far down as possible, ensuring it extends 25mm beyond the end of the core. Using pliers and while the heat shrink is still hot, crimp the end of the heat shrink tube to form a seal.

Apply PVC phase marker tape for core identification.
- 2.10. If a three phase installation repeat action 2.9 for remaining two phases in turn.
- 2.11. Repeat action 2.9 for the neutral core.
- 2.12. Repeat action 2.3 to 2.11 for looped service if applicable.
- 2.13. Remove the existing cut-out.
- 2.14. Remove the shrouding applied in 2.7 and the temporary earth continuity earth bond.
- 2.15. Repeat action 2.14 for looped service, if applicable.
- 2.16. Using PVC/PVC tails, brown/grey cable for phases and blue/grey cable for the neutral, cut the required length, apply adhesive backed rubber insulation shroud to one end of each of the cores.

Apply PVC phase marker tape for identification.

JOINTING PROCEDURE 7.503 - Continued

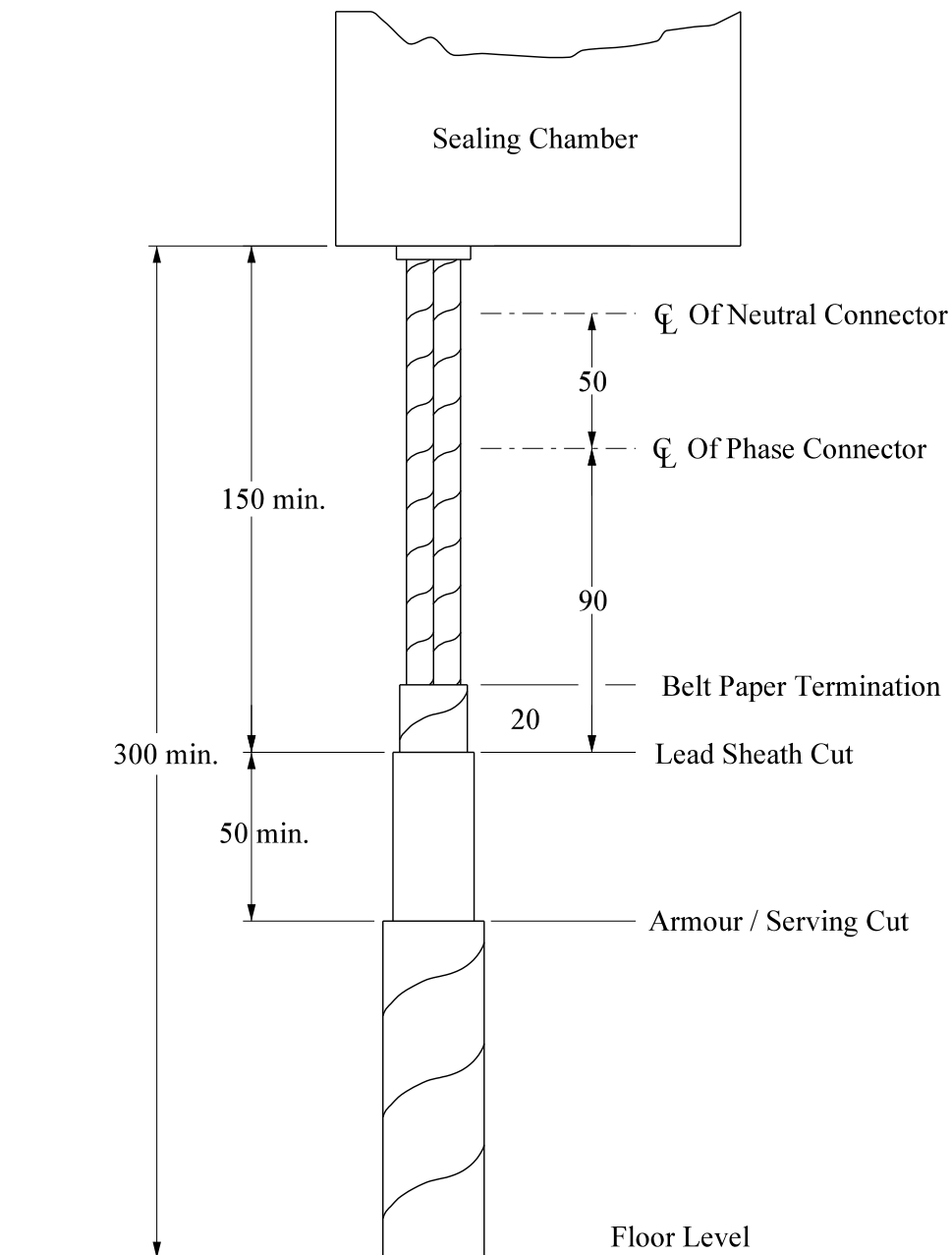
- 2.17. Taking each core in turn, connect the tails using brass connectors, staggered as in Drawings SVJ 7.503.2 or SVJ 7.503.4. Insulate the connectors with two layers of 30mm heat shrink tubing. In addition, apply adhesive backed rubber insulation shroud over each of the phase connectors. Tape the PVC/PVC tails together and remove shrouding from lead sheath.
- 2.18. Fix new cut-out and cable cover to existing or new meter board.
- 2.19. Mark base of cable cover on meter board and remove the crutch cover.
- 2.20. Clean and abrade lead sheath.
- 2.21. Lay and tape 16mm² earth braid to the cores extending 50mm beyond armour termination.
- 2.22. Apply tinned copper mesh with half lapped layers to form a cable screen, extending from the armour termination to a position 20mm inside cable crutch cover.
- 2.23. Apply the earth connection in accordance with General Requirement 6.17.3.
- 2.24. Slide medium wall heat shrink tube over the full length overlapping onto the armour by 50mm and extending into the cable cover by 25mm. Shrink into place working upwards towards the cut-out end of the cable.
- 2.25. Ensure the cable is lined up to fit in cable crutch cover entry and apply the rubber grommet.
- 2.26. Turn the earth braid back towards cable crutch and shroud.
- 2.27. Cut the neutral conductor to length, remove the insulation the depth of the terminal barrel plus 5mm. Insert conductor into terminal barrel, tighten the terminal screws, fit the neutral cover or temporarily shroud to cover neutral and earth terminal block(s).
- 2.28. Cut the phase conductor to length, remove the insulation the depth of the terminal barrel plus 5mm. Insert the conductor into terminal barrel, tighten the terminal screws, fit the cover or temporarily shroud the live terminal phase block.
- 2.29. If three phase installation repeat action 2.28 for remaining two phases in turn.
- 2.30. Remove the shroud from the earth braid, cut to length, insert the braid into the earth terminal block and tighten the terminal screws.
- 2.31. Check the polarity, if three phase installation check phase rotation.
- 2.32. Repeat actions 2.16 to 2.30 for looped service if applicable.

JOINTING PROCEDURE 7.503 - Continued

3. CONNECTING CUSTOMERS EARTH AND METER TAILS (INCLUDING LOOPED SERVICE)

- 3.1. Apply phase identification, earthing and security labels.
- 3.2. Check the voltage, polarity, earth loop impedance and the phase rotation if it's a three phase installation.
- 3.3. Connect the customers earth conductor(s) to the earth terminal and connect the meter tails in top of the cut-out(s).
- 3.4. Insert the fuses and seal cut-out(s).
- 3.5. Turn on the customers main switches.
- 3.6. If it's a polyphase meter, check the meter disc or the neon lights are reacting correctly.
- 3.7. If applicable restore supply to the looped customer, repeating steps 3.1 to 3.6.

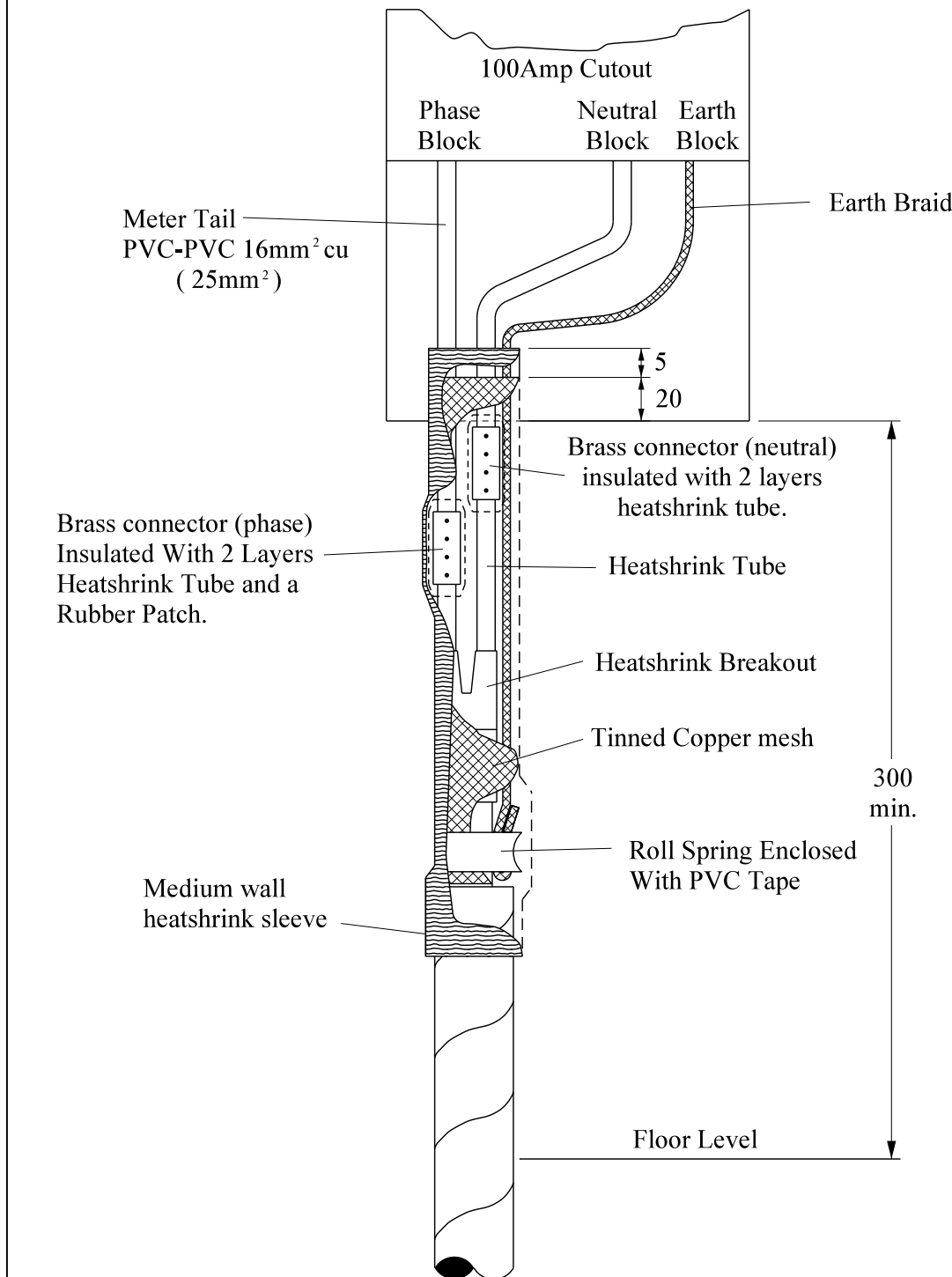
All dimensions in mm




Rev No	Drawn	Chk'd	App'd	Date	Revision						
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Drawn	RJB	04/12									
Checked											
Approved											
SCALE		N.T.S.		Title		CHANGING CUTOOUT BY CUTTING PILC CABLE AND EXTENDING WITH TAILS - SINGLE PHASE STRIPPING DIMENSION		Drg. No. SVJ 7.503.1		Rev No	

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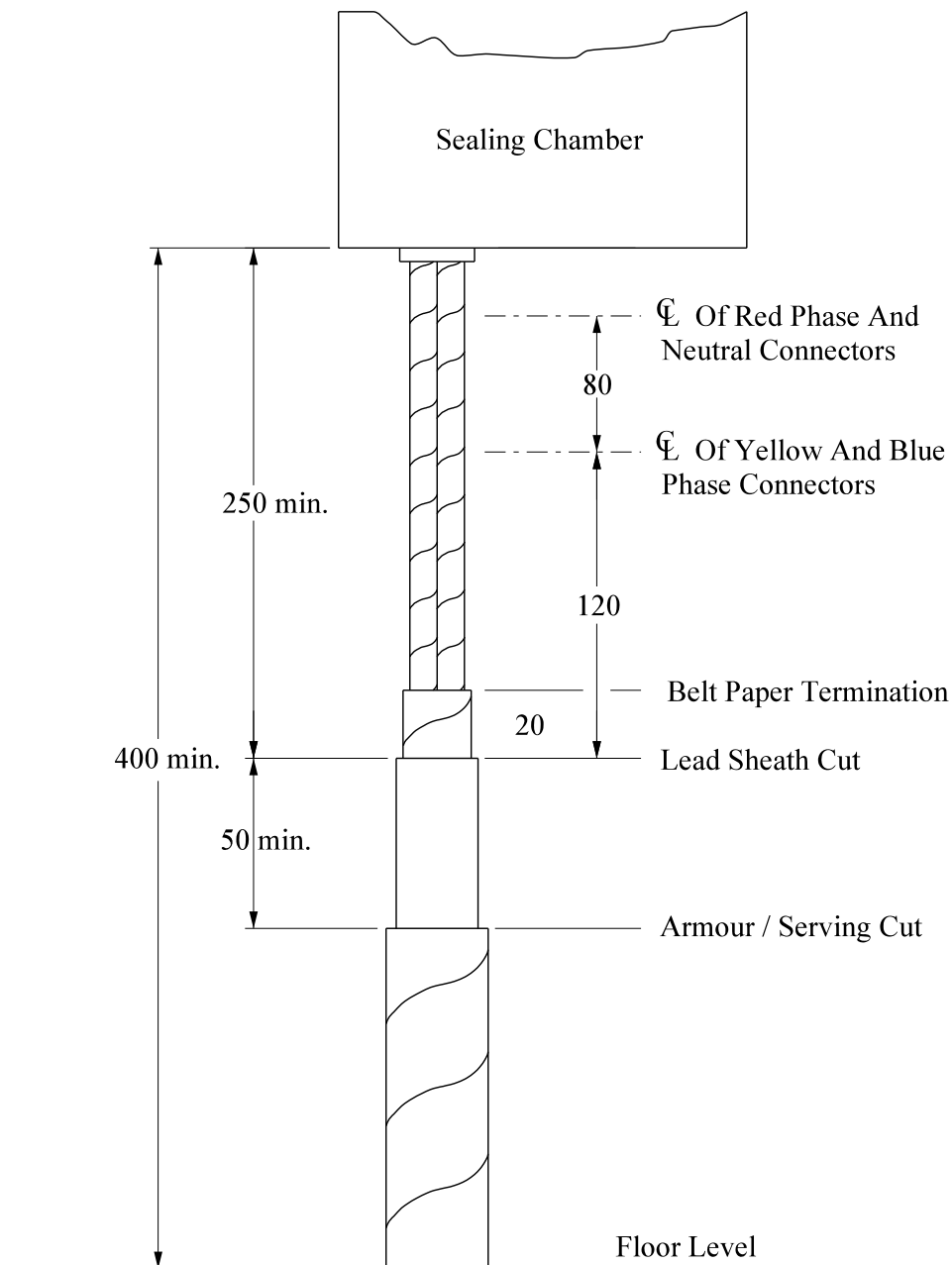
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SCALE		N.T.S.		Title		Drg. No.		Rev No	
				CHANGING CUTOOUT BY CUTTING PILC CABLE AND EXTENDING BY TAILS - SINGLE PHASE GENERAL ARRANGEMENT		SVJ 7.503.2			

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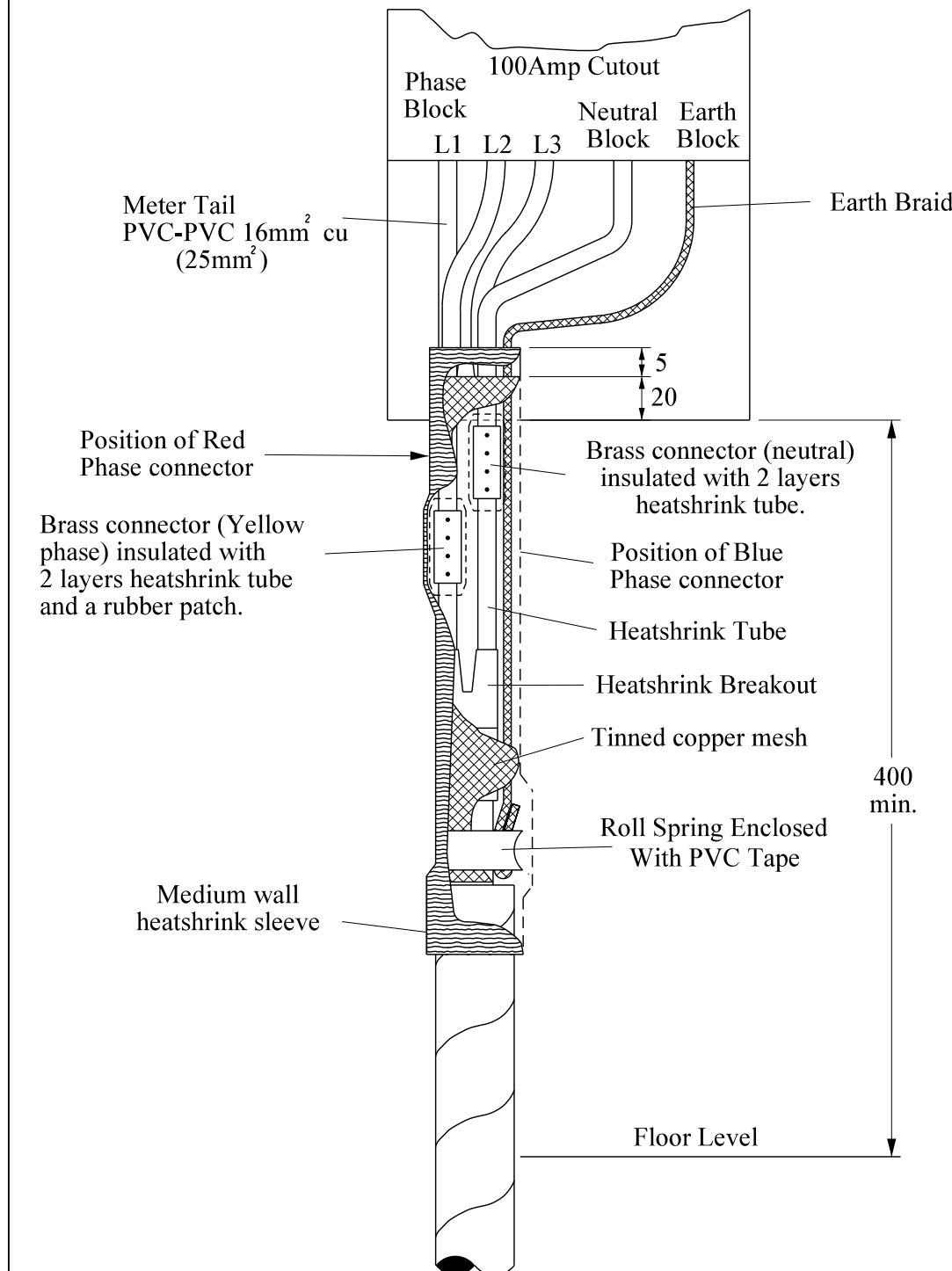
All dimensions in mm



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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.			 WESTERN POWER DISTRIBUTION
Drawn	RJB	04/12				
Checked						
Approved						
SCALE	N.T.S.		Title CHANGING CUTOFF BY CUTTING PILC CABLE AND EXTENDING WITH TAILS - THREE PHASE STRIPPING DIMENSION			Drg. No. SVJ 7.503.3 Rev No

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All dimensions in mm

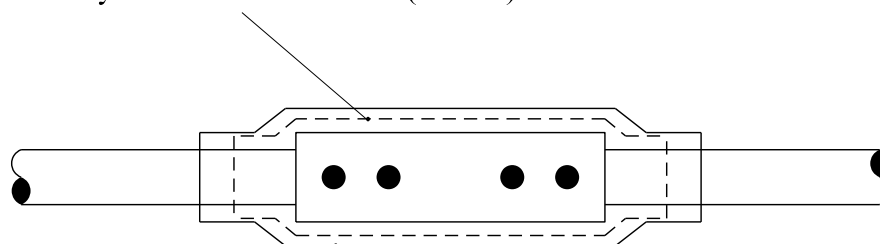


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ORIGINAL ISSUE		DATE		WESTERN POWER DISTRIBUTION Design Department. Avonbank,Feeder Road,Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.	
Drawn	RJB	04/12		Title CHANGING CUTOUT BY CUTTING PILC CABLE AND EXTENDING WITH TAILS - THREE PHASE GENERAL LAYOUT	
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Approved				Drg. No. SVJ 7.503.4	
SCALE		N.T.S.		Rev No	

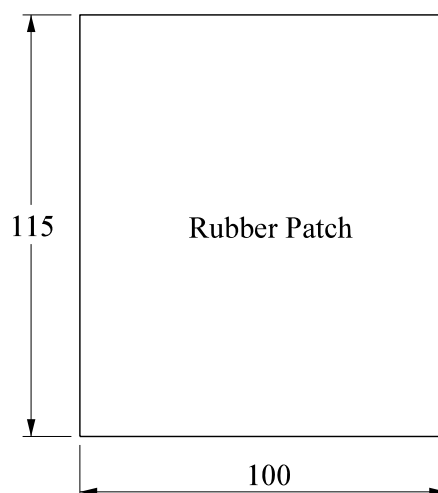
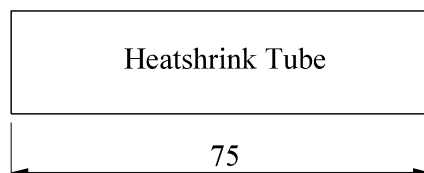
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All dimensions in mm

Two Layers Of Heatshrink Tube (30 dia.)



Rubber Patch Placed Over Two Layers
Of Heatshrink Tube On Phase Connector.
(Patch omitted on neutral connector)



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	04/12		 WESTERN POWER DISTRIBUTION	
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SCALE		N.T.S.			
Title				CHANGING CUTOUT BY CUTTING PILC CABLE AND EXTENDING WITH TAILS - SINGLE AND THREE PHASE INSULATION OF CONNECTORS	Drg. No. SVJ 7.503.5
				Rev No	

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**ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE
DOMESTIC 100A CUT-OUTS**

JOINTING PROCEDURE 7.504

**PROCEDURE FOR CHANGING CUT-OUTS WITH THE
INCOMING PVC, XLPE PLAIN, SPLIT CONCENTRIC or 35mm
WAVEFORM SERVICE
CABLE LIVE**

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CAØC/1 Section 6
of the LV Service Cable Jointing Manual**

JOINTING PROCEDURE 7.504

PROCEDURE FOR CHANGING CUT-OUTS WITH THE INCOMING PVC, XLPE PLAIN, SPLIT CONCENTRIC OR 35mm WAVEFORM SERVICE CABLE LIVE

Note: -

1. This procedure applies only to insulated cut-outs where the sealing chamber has not been filled with compound.
2. Any reference to plain concentric applies equally to 'hybrid' cable.

Your attention is drawn for the need to comply too the General Principles, General Notes, Tools, Shrouding and Fire Precautions of this Standard Technique at all times.

JOINTING PROCEDURE 7.504

MATERIALS LIST

Item	Quantity
Replacement cut-out of the appropriate type	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC tape
“VM” tape
Seals
Sealing wire

Note: - Individual material item numbers (SHOPS) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.504

1. PREPARATORY WORK

- 1.1. All immediate adjacent metal work shall be shrouded using approved insulating material.
- 1.2. Switch off all the customers main switches.
- 1.3. Looped Services: -

Switch off all the customers main switches.
Remove the cut-out fuses (check phase rotation if three phase).
Mark and remove the meter and earth tails (shroud the tail ends).
Check the polarity and earth loop impedance.
Re-seal the cut-outs.
Post caution notice.
- 1.4. Remove the fuse carriers from the service cut-out. Check the phase rotation if it's a three phase installation, apply phase marker tapes to the meter tails for identification.
- 1.5. Replace the fuse carriers except for the phase to be worked on, or alternatively apply 'VM' tape or a proprietary shroud to shroud the exposed live contacts.

Note: - If fuse carriers are to be used for shrouding purposes then the fuse must be removed.
- 1.6. Remove the phase meter tail, shroud the tail end and fix back at a safe distance.
- 1.7. Replace the fuse carrier, or shroud the live contacts.
- 1.8. If a three phase installation repeat actions 1.6 and 1.7 for remaining two phases in turn.
- 1.9. Remove neutral meter tail, shroud tail end and fix back at a safe distance, also remove and secure any earth wires as necessary.
- 1.10. Check the polarity and earth loop impedance.

JOINTING PROCEDURES 7.504 - Continued

2. REMOVAL OF CABLE CORES

The following action (2.1) may be adopted for an insulated single phase cut-out being changed on a “like for like” basis, provided that no re-trimming of the cable is required: -.

- 2.1. The complete fuse base assembly may be removed, thus exposing both the bare conductors, ensure that the conductors are restrained by insulating material, remove the cut-out leaving the bared ends. **Immediately** place the new (“like for like”) cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, and tighten the terminal screws.

Note: - The method in 2.1 shall not be applied to three-phase cut-outs and excludes the insertion of a looped service at this stage.

In all other circumstances, including three phase cut-outs and looped services, the following actions shall be followed: -

- 2.2. Remove the phase core from its terminal block.
- 2.3. Apply an adhesive backed rubber shroud extending 25mm onto the core insulation.

Apply PVC phase marker tape for core identification.
- 2.4. If three phase repeat actions 2.2 and 2.3 for the remaining two phases in turn.
- 2.5. Remove the neutral/earth wires from their terminal block.
- 2.6. Apply a piece of 13mm heat shrink tubing as far down the core as possible and extending 25mm beyond the end of the wires. Using pliers and while the heat shrink is still hot, crimp the end of the heat shrink tubing to form a seal.
- 2.7. Tape over any exposed neutral/earth wires with 2 half-lap layers of black PVC tape.
- 2.8. For Split Concentric - repeat actions 2.5 to 2.7 for the earth wires.
- 2.9. Repeat actions 2.2 to 2.8 for the looped service if applicable.

JOINTING PROCEDURE 7.504 - Continued

3. FITTING OF NEW CUT-OUT

- 3.1. Position and fix the new meter board in place (if required). Prepare the new cut-out (fit PME link if appropriate); offer the cut-out up to the cable setting the cores to their required positions.
- 3.2. If trimming of the neutral/earth wires is required - cut the core to length, remove the heat shrink tube to the depth of terminal barrel plus 5mm. Insert the conductor into terminal barrel and tighten the terminal screws, fit cover or temporary shroud to cover neutral/earth terminal block.
- 3.3. For Split Concentric- repeat action 3.2 for the earth wires.
- 3.4. Fix the cut-out to meter board.
- 3.5. If trimming of the phase core is required - remove the shroud, cut the core to length, remove the insulation to the depth of the terminal barrel plus 5mm. Insert the conductor into terminal barrel, tighten the terminal screws, fit the cover or apply a temporary shroud to live terminal phase block.
- 3.6. If a three phase installation repeat action 3.4 for remaining two phases in turn.

Alternatively: - for fitting single phase insulated cut-outs when it is not practicable to insert the cores separately into their terminal blocks, after setting and trimming the following procedure is permitted: -

- 3.7. Ensure the conductors are restrained by insulating material, remove the adhesive backed rubber insulation shroud leaving the bared ends. **Immediately** place the cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, tighten terminal screws.

Note: -The method in 3.7 shall not be applied to three phase cut-outs and excludes insertion of a looped service at this stage.

- 3.8. Check the polarity, if a three phase installation then check the phase rotation.
- 3.9. Repeat actions 3.1 to 3.6 for looped service if applicable.
- 3.10. Fit the cable crutch cover and all remaining cut-out covers.

4. CONNECTING CUSTOMERS EARTH AND METER TAILS (INCLUDING LOOP SERVICE)

- 4.1. Apply phase marker identification, earthing and security labels.

JOINTING PROCEDURE 7.504 - Continued

- 4.2. Check the voltage, polarity, earth loop impedance and the phase rotation if it's a three phase installation.
- 4.3. Connect the customer's earth conductor(s) to the earth terminal and connect the meter tails in top of the cut-out(s).
- 4.4. Insert the fuses and seal cut-out(s).
- 4.5. Turn on the customers main switches.
- 4.6. If it's a polyphase meter, check the meter disc or that the neon lights are reacting correctly.
- 4.7. If applicable restore the supply to the looped customer, repeating steps 4.1 to 4.6.

**ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE
DOMESTIC 100A CUT-OUTS**

JOINTING PROCEDURE 7.505

**PROCEDURE FOR CHANGING CUT-OUTS BY RE-TRIMMING
INCOMING PVC or XLPE PLAIN or SPLIT CONCENTRIC SERVICE
CABLE LIVE**

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CAØC/1 Section 6
of the LV Service Cable Jointing Manual**

JOINTING PROCEDURE 7.505

PROCEDURE FOR CHANGING CUT-OUTS BY RE-TRIMMING INCOMING PVC PLAIN OR SPLIT CONCENTRIC SERVICE CABLE LIVE

Note:-

1. This Jointing Procedure may be applied to all types of domestic 100A single and three phase cut-outs.
2. Refer to Drawing **SVJ 7.505.1, 7.505.2, 7.505.3, 7.505.4** whilst undertaking this Jointing Procedure.
3. Any reference to plain concentric applies equally to 'hybrid' cable.

Your attention is drawn for the need to comply too the General Principles, General Notes, Tools, Shrouding and Fire Precautions of this Standard Technique at all times.

JOINTING PROCEDURE 7.505

MATERIALS LIST

Item	Quantity
Replacement cut-out of appropriate type	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heatshrink tubing
PVC tape
“VM” tape
Seals
Sealing wire

Note: - Individual material item numbers (SHOPS) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.505

1. PREPARATORY WORK

- 1.1. All immediate adjacent metal work shall be shrouded using approved insulating material.
- 1.2. Switch off all the customers main switches.
- 1.3. Looped Services: -

Switch off all the customers main switches.
Remove the cut-out fuses (check the phase rotation if three phase installation).
Mark and remove the meter and earth tails (shroud tail ends).
Check the polarity and earth loop impedance.
Re-seal the cut-outs.
Post caution notice.
- 1.4. Remove the fuse carriers from the service cut-out. Check the phase rotation if a three phase installation, apply phase marker tapes to the meter tails for identification.
- 1.5. Replace the fuse carriers except for the phase to be worked on, or alternatively apply 'VM' tape or using a proprietary shroud to shroud the exposed live contacts.

Note: - If fuse carriers are to be used for shrouding purposes, then the fuse must be removed.
- 1.6. Remove the phase meter tail, shroud the tail end and fix back at a safe distance.
- 1.7. Replace the fuse carrier, or shroud the live contacts.
- 1.8. If a three phase installation repeat actions 1.6 and 1.7 for remaining two phases in turn.
- 1.9. Remove the neutral meter tail, shroud the tail end and fix back at a safe distance, also remove and secure any earth wires as necessary.
- 1.10. Check the polarity and earth loop impedance.

JOINTING PROCEDURE 7.505 - Continued

2. CABLE PREPARATION

- 2.1. Remove the cut-out retaining screws from meter board, support the cut-out in the upright position allowing room to work around the cable.
- 2.2. Position and fix the new meter board (if required), prepare the new cut-out (fit the PME link if appropriate).
- 2.3. Mark the base position of the new cut-out cable crutch cover on the meter board.
- 2.4. Remove the PVC oversheath to 25mm above the mark made in 2.3.
- 2.5. Shroud the existing cut-out.

For Plain Concentric and Split Concentric Cables

- 2.6. Open and cut the service cable in accordance with General Requirement 6.12 of ST: CAØC/1.
- 2.7. Repeat actions 2.3 to 2.6 for the looped service if applicable.
- 2.8. Remove the existing cut-out.

3. FITTING OF NEW CUT-OUT

- 3.1. Offer up the new cut-out to the cable, setting the cores to their required positions.
- 3.2. Cut neutral conductor to length, remove the insulation to the depth of terminal barrel plus 5mm. Insert the conductor into the terminal barrel, tighten the terminal screws, fit the cover or temporarily shroud to cover the neutral/earth terminal block.
- 3.3. For Split Concentric - repeat 3.2 for the earth wires.
- 3.4. Fix the cut-out to meter board.
- 3.5. Cut the phase conductor to length, remove the insulation to the depth of terminal barrel plus 5mm. Insert the conductor into the terminal barrel, tighten the terminal screws, fit the cover or temporarily shroud the live terminal phase block.
- 3.6. If three phase installation repeat action 3.5 for remaining two phases in turn.

JOINTING PROCEDURE 7.505 - Continued

Alternatively: - for fitting single phase insulated cut-outs when it is not practicable to insert the cores separately into their terminal blocks, after setting and trimming the following procedure is permitted: -

- 3.7. Ensure the conductors are restrained by insulating material; remove the adhesive backed rubber insulation shroud thus leaving the ends bared. **Immediately** place the cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, tighten the terminal screws.

Note: -The method in 3.7 shall not be applied to three phase cut-outs and excludes insertion of a looped service at this stage.

- 3.8. Check polarity, if a three phase installation then check phase rotation.

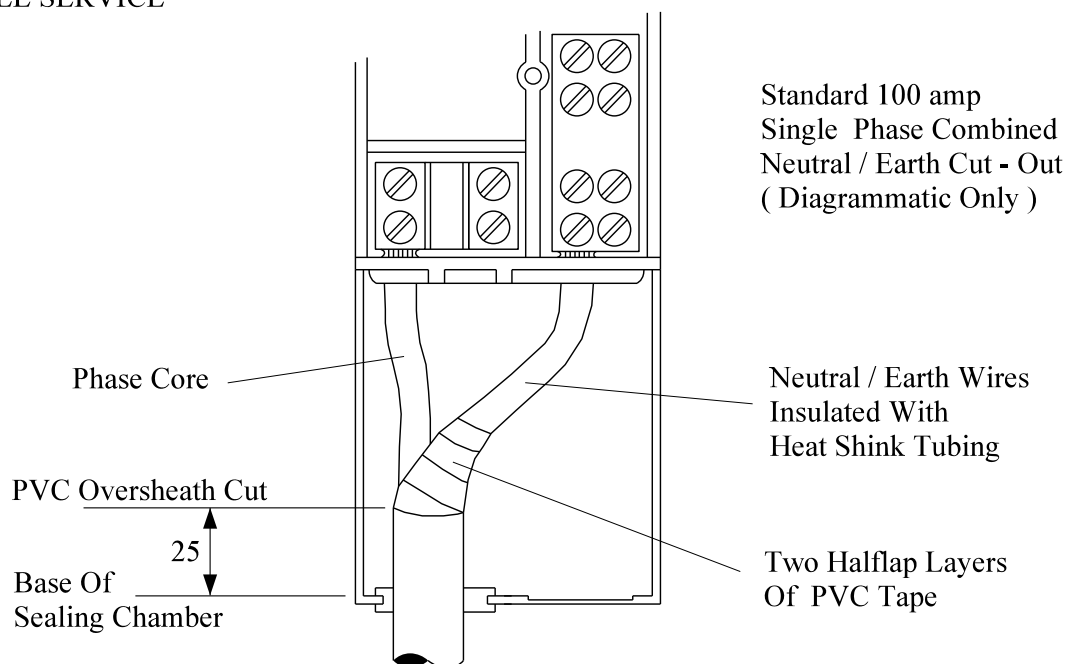
- 3.9. Repeat actions 3.1 to 3.6 for looped service if applicable

4. CONNECTING CUSTOMERS EARTH AND METER TAILS (INCLUDING LOOPED SERVICE)

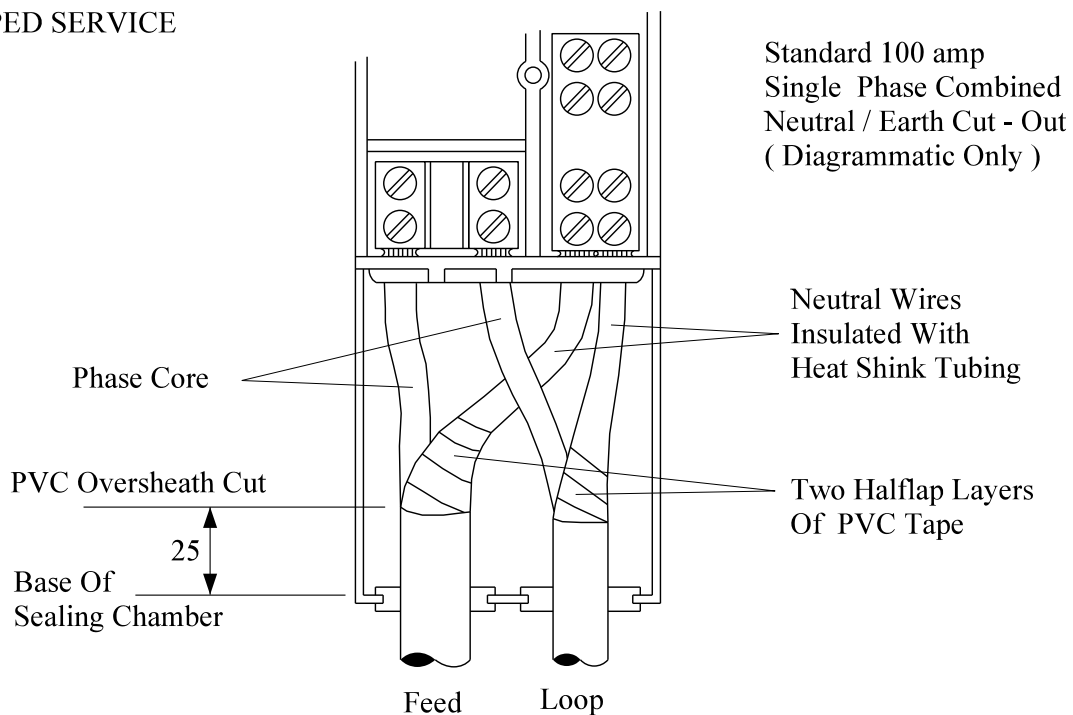
- 4.1. Apply phase marker identification, earthing and security labels.
- 4.2. Check the voltage, polarity, earth loop impedance and phase rotation if it's a three phase installation.
- 4.3. Connect the customer's earth conductor(s) to the earth terminal and connect the meter tails into the top of the cut-out(s).
- 4.4. Insert the fuses and seal cut-out(s).
- 4.5. Turn on the customers main switches.
- 4.6. If it's a polyphase meter, check the meter disc or that the neon lights are reacting correctly.
- 4.7. If applicable restore the supply to the looped customer, repeating steps 4.1 to 4.6.


SINGLE SERVICE

All dimensions in mm



LOOPED SERVICE

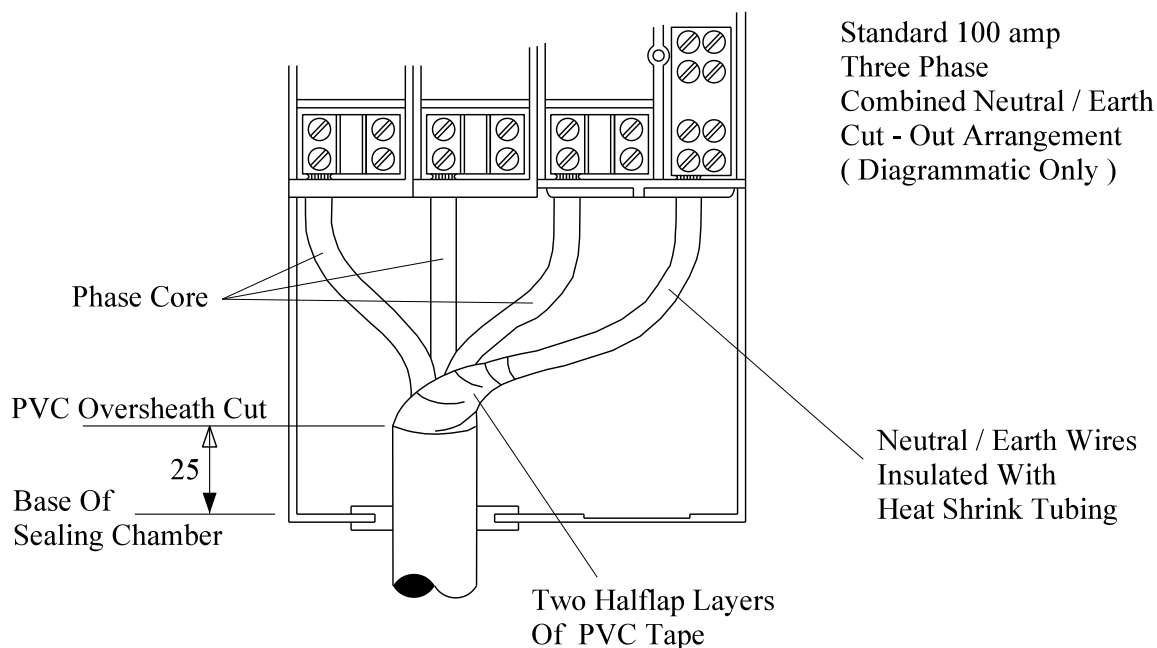


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SCALE		N.T.S.		<div>Title PVC PLAIN CONC SERVICE CABLE RETRIM TERMINATION - SINGLE PHASE GENERAL LAYOUT</div> <div>Drg. No. SVJ 7.505.1</div> <div>Rev No</div>	

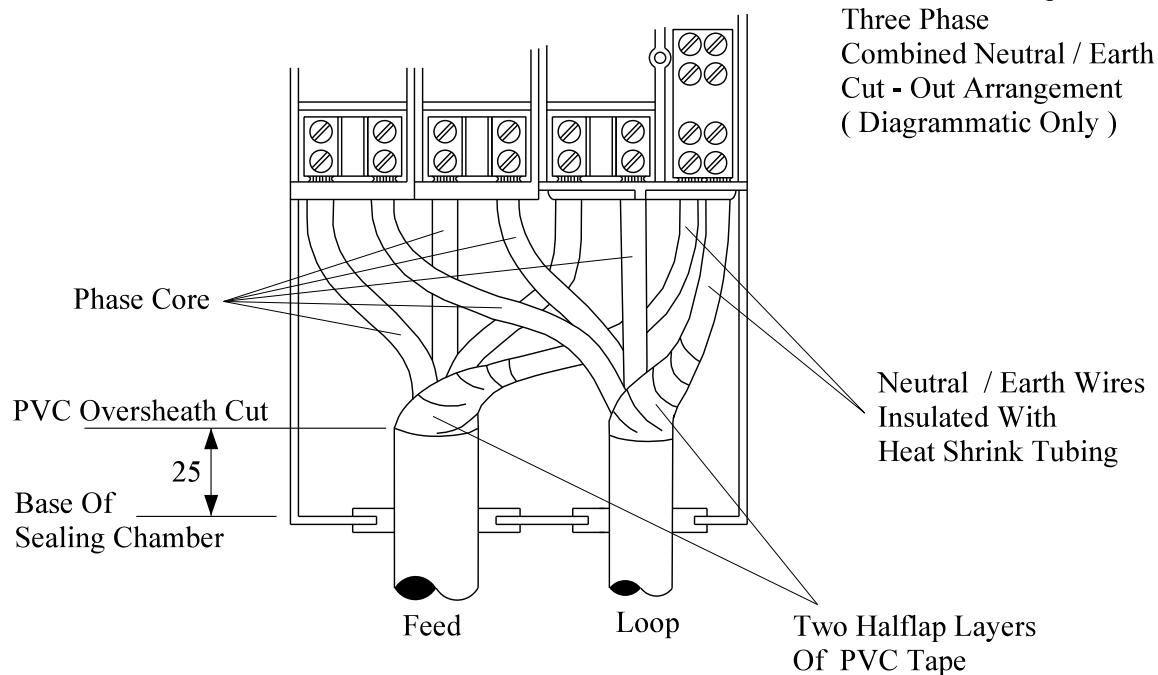
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SINGLE SERVICE

All dimensions in mm



LOOPED SERVICE

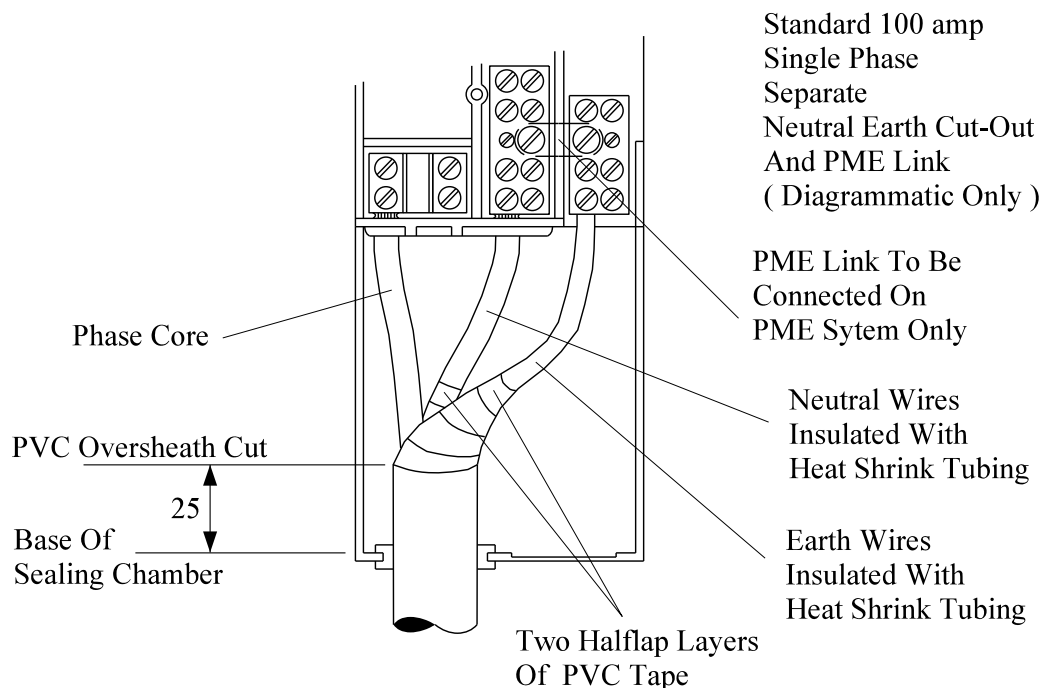


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SCALE		N.T.S.		PVC PLAIN CONC SERVICE CABLE RETRIM TERMINATION - THREE PHASE GENERAL LAYOUT	
				Drg. No. SVJ 7.505.2	
				Rev No	

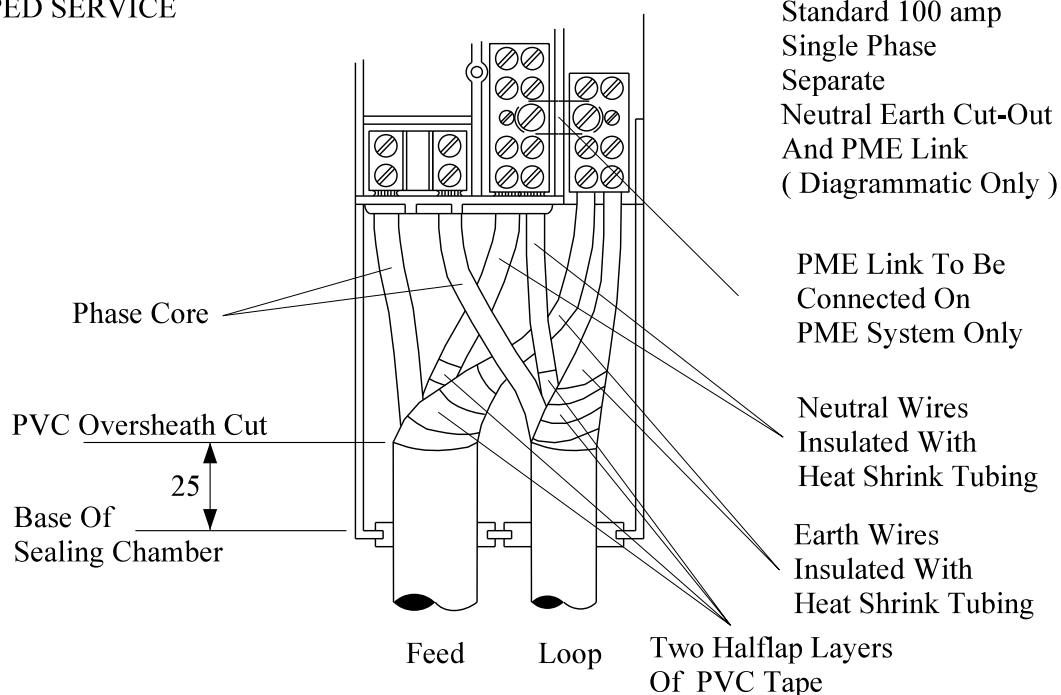
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SINGLE SERVICE

All dimensions in mm



LOOPED SERVICE

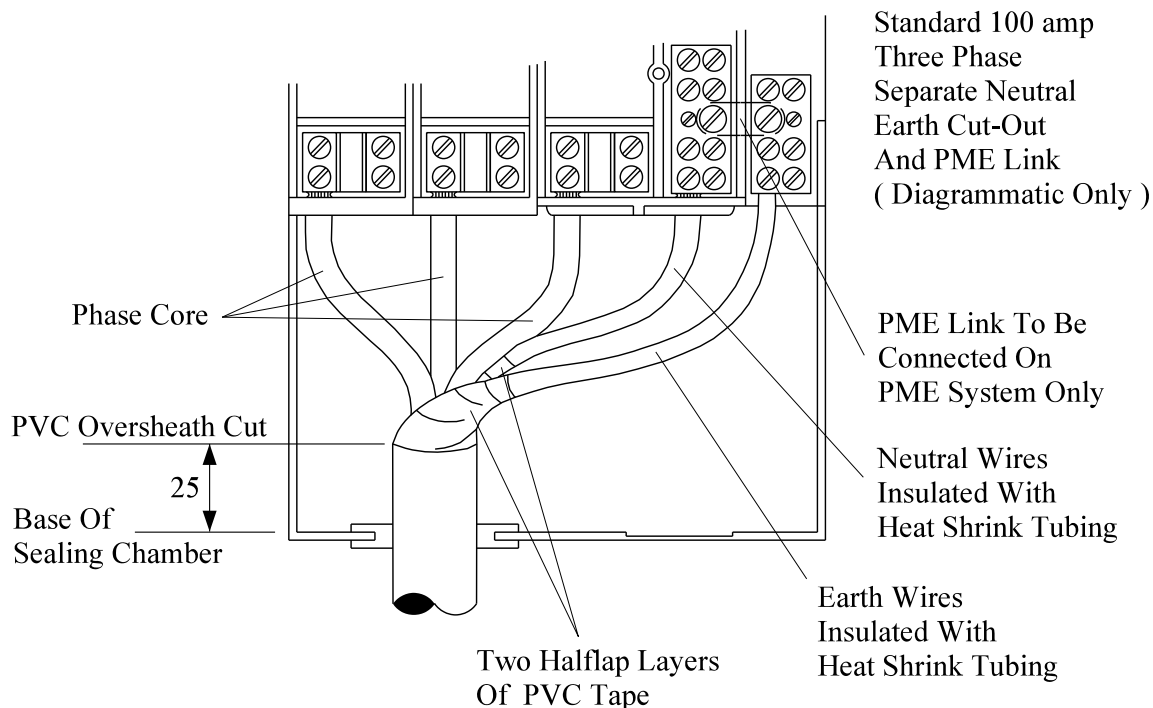


Rev No	Drawn	Chk'd	App'd	Date	Revision
ORIGINAL	ISSUE	DATE	WESTERN POWER DISTRIBUTION Design Department. Avonbank, Feeder Road, Bristol BS2 0TB Tel: 0117 933 2000 Fax: 0117 933 2001.		
Drawn	RJB	04/12	Title PVC SPLIT CONC SERVICE CABLE RETRIM TERMINATION - SINGLE PHASE GENERAL LAYOUT		
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Approved			Drg. No. SVJ 7.505.3		
SCALE	N.T.S.		Rev No		

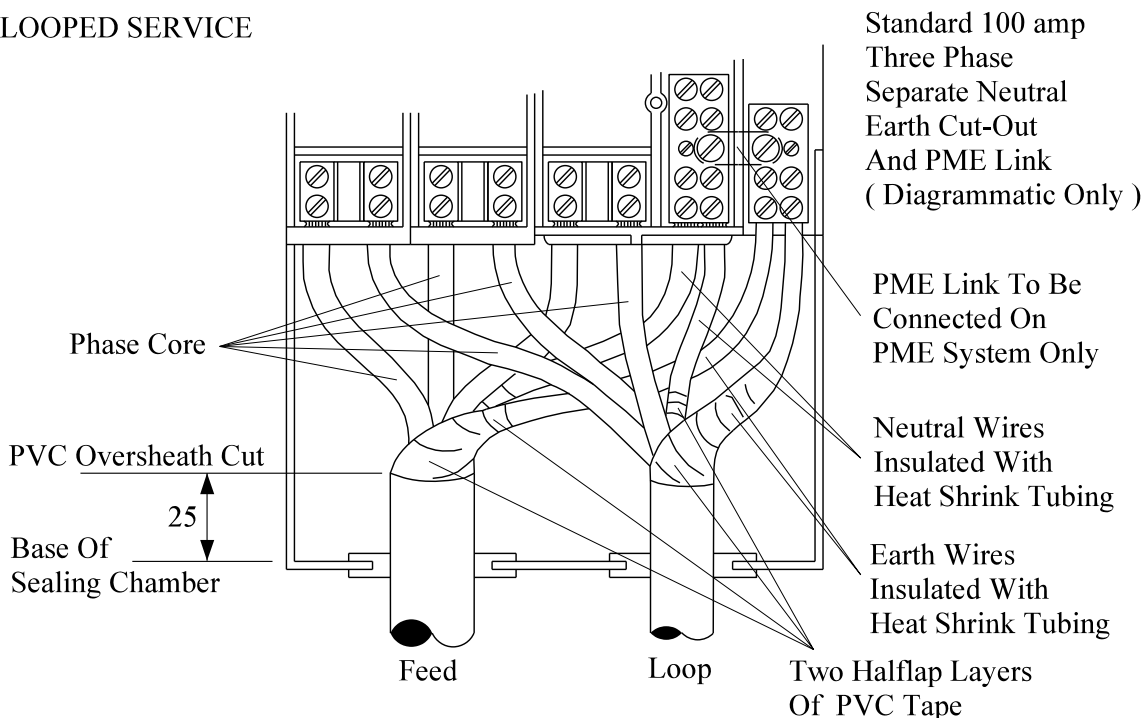
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SINGLE SERVICE

All dimensions in mm



LOOPED SERVICE



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.		 WESTERN POWER DISTRIBUTION	
Drawn	RJB	04/12				
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SCALE	N.T.S.		Title PVC SPLIT CONC SERVICE CABLE RETRIM TERMINATION - THREE PHASE GENERAL LAYOUT			Drg. No. SVJ 7.505.4 Rev No

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**ST: CAØB/1 PROCEDURES FOR CHANGING LV SERVICE CABLE
DOMESTIC 100A CUT-OUTS**

JOINTING PROCEDURE 7.506

**PROCEDURE FOR CHANGING METAL CLAD or INSULATED
CUT-OUTS WHICH ARE COMPOUND FILLED WHERE THE
INCOMING PILC SERVICE CABLE is LIVE**

**This procedure is to be read in conjunction with the appropriate
General Requirements ST: CAØC/1 Section 6
of the LV Service Cable Jointing Manual**

JOINTING PROCEDURE 7.506

PROCEDURE FOR CHANGING METAL CLAD or INSULATED CUT-OUTS WHICH ARE COMPOUND FILLED WHERE THE INCOMING PILC SERVICE CABLE is LIVE

Note: -

1. This Jointing Procedure applies equally to metal clad or insulated cut-outs where the sealing chamber has been filled with compound.
2. This procedure is to be undertaken on PILC service cables only, PVC service cables terminated in compound filled cut-outs shall not be broken down under any circumstances.
3. PILC concentric service cables installed in cut-outs shall not be changed live.

Your attention is drawn for the need to comply too the General Principles, General Notes, Tools, Shrouding and Fire Precautions of this Standard Technique at all times.

JOINTING PROCEDURE 7.506

MATERIALS LIST

Item	Quantity
Single Phase	
Replacement cut-out of the appropriate type	1
Note: - With this procedure, there is no need to use a cut-out with interchangeable phase and neutral blocks, even if the original cut-outs layout was non-standard.	
13mm thin wall heat shrink tubing - lengths as required	-
2 Finger heat shrink breakout boot	1
16mm ² tinned copper braid - length as required	-
Roll spring F1	1
Tinned copper mesh EPPA/009-3000	1
Three Phase	
Replacement cut-out of the appropriate type	1
Note: - With this procedure, there is no need to use a cut-out with interchangeable phase and neutral blocks, even if the original cut-outs layout was non-standard.	
13mm thin wall heat shrink tubing - lengths as required	-
4 Finger heat shrink breakout boot	1
16mm ² tinned copper braid - length as required	-
Roll spring F2	1
Tinned copper mesh EPPA/009-3000	1

JOINTING PROCEDURE 7.506 - Continued

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Whipping thread
PVC tape
“VM” tape
De-solvit 1000FD
Workhorse dry wipes
Seals
Sealing wire

Note: - Individual material item numbers (SHOPS) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.506

1. PREPARATORY WORK

- 1.1. All immediate adjacent metal work shall be shrouded using the approved insulating material.
- 1.2. Switch off all the customers main switches.
- 1.3. Looped Services: -

Switch off all the customers main switches.
Remove the cut-out fuses (check phase rotation if three phase installation).
Mark and remove the meter and earth tails (shroud the tail ends).
Check the polarity and earth loop impedance.
Re-seal the cut-outs.
Post caution notice.
- 1.4. Remove the fuse carriers from the service cut-out. Check the phase rotation if it's a three phase installation, apply phase marker tapes to the meter tails for identification.

Note: -If re-wireable fuses without carriers are used, then remove the fuse wire. Otherwise if fuse carriers are to be used for shrouding purposes, then the fuse wire must be removed.
- 1.5. Replace the fuse carriers except for the phase to be worked on, or alternatively apply 'VM' tape to shroud the exposed live contact(s).
- 1.6. Remove the phase meter tail, then shroud the tail end and fix back at a safe distance.
- 1.7. Replace the fuse carrier, or shroud the live contacts.
- 1.8. If it's a three phase installation repeat actions 1.6 and 1.7 for remaining two phases in turn.
- 1.9. Remove the neutral meter tail, shroud the tail end and fix back at a safe distance, also remove and secure any earth wires as necessary.
- 1.10. Check the polarity and earth loop impedance.
- 1.11. Remove the earth bonding clamp, if fitted, from cable sheath, examine the condition of lead sheath for damage or deterioration. Work shall not proceed if the condition considered to present danger.

Note: -If an earth-wire is soldered to the lead sheath and the connection is satisfactory, provided that the cross-section of the earth wire is 16mm² or larger, it may be retained. The earth wire shall be secured and shrouded.

JOINTING PROCEDURE 7.506 - Continued

- 1.12. Remove the front cover of the cable sealing chamber to expose the cable cores and compound. It may be necessary to warm the cover gently with a gas torch.

2. DISCONNECTION AND INSULATION OF CORES

- 2.1. Ensure any metalwork exposed by operation 1.12 is shrouded, (e.g. the cable sheath and the back plate of an metal-clad box).
- 2.2. If there is a possibility of the gas torch coming into contact with live terminals, each core (and live fuse contact) shall be shrouded using approved insulating material.
- 2.3. Where the length of bare cable core exceeds 25mm, the cut-out metal work and adjacent terminals shall be shrouded using approved insulating material. The shrouding shall cover all terminals other than the one being worked on, unless the fuse carrier(s) provide(s) adequate shrouding.
- 2.4. Remove sufficient compound using a nylon wedge and gently warming the compound with a gas torch, thus allowing the available cable core to be more readily exposed from the compound. In the case of a single phase cut-out this should be the phase conductor.
- 2.5.
 - a) Where a re-wireable element is used, disconnect the core from the terminal, remove the termination lug and pull clear inserting insulating material behind the core if necessary.
 - b) Where a fuse carrier is used the cable core shall be removed from the cut-out with the porcelain fuse base still attached to the cable core with the live contact suitably shrouded. Pull clear from cut-out and remove the fuse base inserting insulating material if necessary.

Do not attempt to loosen all pinch screws and lift the old box away from phases and neutral at once as all conductors will be exposed simultaneously with a serious risk of short circuit against the cast iron or metal box.

- c) Where a terminal block is used (normally insulated metal clad cut-outs) disconnect core from the terminal block and ease out, alternatively the terminal block retaining screw may be released allowing the complete terminal block and core to be eased forward. In either method pull clear of the cut-out inserting insulating material behind the core if necessary.

JOINTING PROCEDURE 7.506 - Continued

- 2.6. Following the extraction from the cut-out, remove any cut-out conductor fitting and insulate the core as follows:-

a) If cores are contained within compound, apply 13mm heat shrink tubing to cover all the exposed core and extending 25mm above the core end. Using pliers whilst the heat shrink tubing is still hot, crimp the end to form a seal.

b) If the cores are in air, apply heat shrink tubing to cover the core right down into the crutch and extending 25mm above the core end. Using pliers whilst the heat shrink tubing is still hot, crimp the end to form a seal.

Apply PVC phase colour tape for core identification.

- 2.7. If three phase repeat actions 2.5 to 2.6 for the remaining two phases in turn.

- 2.8. Repeat actions 2.1 to 2.6 for looped service if applicable.

3. REMOVAL OF METAL OR INSULATED CLADDING

- 3.1. Ease the cable crutch and insulated cores away from the cut-out carcass removing the compound with a nylon wedge and gas torch gently warming as necessary.

- 3.2. Apply further 13mm heat shrink tubing to each core, pushing well down into the crutch.

Apply PVC phase colour tape for core identification.

- 3.3. Remove rear portion of the cut-out from meter board and discard.

4. FITTING OF NEW CUT-OUT

- 4.1. Prepare new cut-out (fit PME link if appropriate), offer to cable and mark outer serving.

- 4.2. Remove outer serving, armour and bedding, thoroughly cleaning the lead sheath (if required).

- 4.3. Abrade and remove lead sheath (if required).

- 4.4. Terminate belt papers 15mm from lead sheath termination (if required).

- 4.5. Fit a heat shrinkable breakout into the cable crutch.

- 4.6. If it is necessary to provide an earth connection, apply in accordance with General Requirement 6.17.3.

JOINTING PROCEDURE 7.506 - Continued

- 4.7. Position and fix new meter board in place (if required). Offer the new cut-out up to the cable, setting the cores to their required positions.
- 4.8. Cut the neutral conductor to length, remove the insulation to the depth of terminal barrel plus 5mm. Insert conductor into the terminal barrel, then tighten the terminal screws, fit cover or temporary shroud to cover neutral and earth terminal block(s).
- 4.9. Fix cut-out to meter board.
- 4.10. Cut the phase conductor to length, remove the insulation to the depth of terminal barrel plus 5mm. Insert the conductor into terminal barrel, tighten the terminal screws, fit cover or temporary shroud to live terminal phase block.
- 4.11. If three phase repeat action 4.10 for remaining two phases in turn.

Alternatively: - for fitting single phase insulated cut-outs when it is not practicable to insert the cores separately into their terminal blocks, after setting and trimming the following procedure is permitted :-

- 4.12. Ensure the conductors are restrained by insulating material, remove the adhesive backed rubber insulation shroud leaving the bared ends. **Immediately** place the cut-out carefully onto the bared conductors ensuring that the cores are inserted fully into the respective terminal blocks, tighten the terminal screws.

Note: -The method in 4.12 shall not be applied to three phase cut-outs and excludes insertion of a looped service at this stage.

- 4.13. Check polarity, if three phase check phase rotation.
- 4.14. Repeat actions 4.1 to 4.11 for looped service if applicable.
- 4.15. Remove temporary shrouding from earth connection assembly and terminal block, connect earth braid to earth terminal block.
- 4.16. Fit cable cover and all remaining cut-out covers.

5. CONNECTING CUSTOMERS EARTH AND METER TAILS (INCLUDING LOOP SERVICE)

- 5.1. Apply phase identification, earthing and security labels.
- 5.2. Check the voltage, polarity, earth loop impedance and phase rotation if three phase installation.

JOINTING PROCEDURE 7.506 - Continued

- 5.3. Connect the customers earth conductor(s) to earth terminal and connect meter tails in top of cut-out(s).
- 5.4. Insert the fuses and seal the cut-out(s).
- 5.5. Turn on the customers main switches.
- 5.6. If polyphase meter, check meter disc or that the neon lights are reacting correctly.
- 5.7. If applicable restore the supply to the looped customer, repeating steps 5.1 to 5.6.

APPENDIX A

SUPERSEDED DOCUMENTATION

This Standard Technique supersedes ST:CAØB dated April 2006 which should now be withdrawn.

APPENDIX B

ASSOCIATED DOCUMENTATION

ST:CAØA, ST:CAØC, ST:CAØM, ST:CAØN, ST:CAØS, ST:CAØT, ST:CAØU, ST:CAØV, ST:CAØW, ST:CAØZ.

APPENDIX C

IMPACT ON COMPANY POLICY

None, as this document has just been updated to incorporate all the latest SHOPS numbers and other subtle minor changes.

APPENDIX D

IMPLEMENTATION OF POLICY

This Standard Technique shall be communicated to all relevant WPD engineers and site staff at the next Team Briefing by the Team Manager.

APPENDIX E

KEY WORDS

Jointing configurations available for LV Service cable jointing.

APPENDIX F

DOCUMENT LAST REVIEWED

May 2012