Electricity Distribution

nationalgrid

COMPANY DIRECTIVE

STANDARD TECHNIQUE: CAØB/3

Procedures for live changing of LV Domestic Cut-Outs on PVC or XLPE Plain or Split Concentric and PILC cables.

Policy Summary

This Standard Technique document contains all the approved procedures for live 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.

Author: **Richard Summers**

Implementation Date: **July 2022**

Approved by

Carl Ketley-Lowe
Engineering Policy Manager

Date: **5th July 2022**

Target Staff Group	**All staff who are involved in the changing if cut-outs**
Impact of Change	**Green – Minor impact**
Planned Assurance checks	**Team Managers to audit as part of their routine auditing regime.**

All references to Western Power Distribution or WPD must be read as National Grid Electricity Distribution or NGED

IMPLEMEMENTATION PLAN

Introduction

This document replaces the existing version, ST: CAØB/2. This document contains all the approved procedures for live changing LV Domestic Cut-Outs for PVC or XLPE Plain or Split Concentric and PILC cables.

Main Changes

- This document has been updated to include the live changing of PVC/XLPE loop cut-outs
- Clarification added to the requirement to remove loop services.
- Correction for rating of PILC cable/cut-out.

Impact of Changes

Minor impact - This document makes changes to the types of cut-out and the methods that are used for changing live cut-outs.

Implementation Actions

- Team Managers to brief the procedure for changing PVC/XLPE loop cut-outs and the requirements for removing loops to all staff involved with changing live cut-outs.

Implementation Timetable

The document can be implemented following briefings.

REVISION HISTORY

Document Revision & Review Table		
Date	**Comments**	**Author**
July 2022	• Updated to include changing PVC/XLPE looped cutouts live. • Removing loop cut-out shall be required when work is taking place at the property. • Meter tails changed to 25mm^2 • Correction for rating of PILC cable/cut-out.	Richard Summers
May 2021	• Document re-written to reflect the updated procedures for changing live cut-outs. • Flow charts added to give guidance on cut-out types that can be changed live. • Fuse size table added. • Requirement to remove loop cut-outs added. • Requirement to record replacement cut-outs to the app added. • Authorized staff to be re-assessed within 4 months of the issue of this document by their local Examining Officer.	Richard Summers

Table of Contents

ST: CAØB/2 Procedure for Changing Domestic Cut-outs (up to 100A) With the Incoming Service Live

1.0 INTRODUCTION

This Standard Technique document contains approved procedures and general principles to be used when changing live cut-outs. whilst working with LV service cables and their associated equipment. It shall be implemented in conjunction with the appropriate Jointing Procedure where required, and General Requirements in ST: CAØC, including:

1. General Cleanliness and Accident Prevention

2. General Jointing Procedures - Dead Cables

3. General Jointing Procedures and Safety Precautions - Live Cables

2.0 GENERAL PRINCIPLES / PRACTICES APPLICABLE TO ALL CUT-OUT CHANGES

- Use flowcharts to determine if the cut-out is suitable for live changing.
- Confirm Polarity, Earth Loop Impedance and Phase Rotation before changing the cut-out.)
- Identify and mark the Polarity of the outgoing tails and the incoming cable.
- Switch off all consumer units and remove the previously marked outgoing tails from the top of the cut-out and shroud.
- Remove all out-going earth wires and insulated / shroud.
- Shroud all adjacent metalwork using approved shrouding material
- All PPE as detailed in ST: CAØC - GR3 and Approved tools shall be used
- Confirm Earthing arrangement:- PME, SNE or TT
- Ensure there is sufficient access to change the cut-out safely.
- Complete and document Risk Assessment
- If the condition of the cut-out or environment change, stop work and re assess the job – always be prepared to cut the cable or make the cable dead.
- Once the cut-out has been changed all details must be added to the cut-out recording app.
- Where core trimming is required this can be done, however all other conductors must be fully shrouded and live working techniques must be used.
- All cut-outs must be mounted on their FR backboards (supplied)
- Meter board should be change if required.

3.0 CONVERTING TO PME

Existing Arrangement to be maintained unless it is verified that the network and customer installation is capable for an alternative arrangement e.g. conversion from SNE to PME.

When conversions from SNE to PME - the earth should be presented via the earth terminal in the cut-out as opposed to an external earth bar.

4.0 CUT-OUT SELECTION

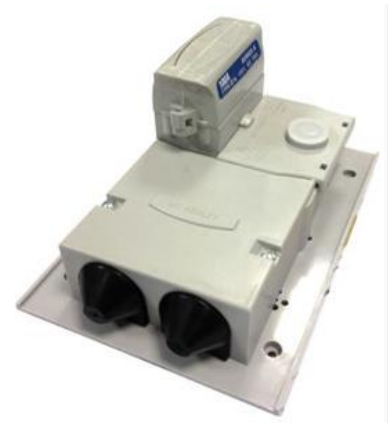
SNE CUT-OUT FOR CUT-OUT CHANGES (PILC CABLES

Note the separate earth block and tailored FR backboard (must always be fitted)

E5 code 43553

SNE CUT-OUT FOR CUT-OUT CHANGES (PVC/XLPE Cables)

For SNE services park the link in the open position



PME CUT-OUT

Note the electrician has access to the neutral/earth block to connect their earths. Also with FR board that must be used. This FR board can be fixed to meter boards or inside meter boxes as a slope board.

E5 code – 43551 backboard)) (cut-out), 43545 (cable cover and backboard),

5.0 CUT-OUT FUSE RATING

With the increased use of electric vehicles and alternative energy devices the maximum rating should be provided however the cut-out and service must never be overloaded as this will increase the risks of failure or fire.

When any work or inspection is taking place at the service position or on the service cable the cut-out shall be inspected / upgraded so that the **service** is capable of providing 80/100A.

For details on fuse size please see ST: SD5D.

Upsizing fuses can only take place if the ELI is acceptable – see ST: SD5R

Meter tails must be 25mm Cu

6.0 AUTHORISATION

Persons changing plastic type single phase cut-outs with unfilled chambers shall hold a WPD authorisation of COPLA and be accompanied by a second appropriately authorised person.

Persons changing metal clad or plastic type single phase single phase cut-outs, connected to PILC cables with compound filled chambers shall hold a WPD authorisation of COMET and be accompanied by a second appropriately.

To ensure all crafts persons are up to date with these new methods of work they must be re-assessed within 12 months of the issue of this document by their local Examining Officer. After which time any person who has not been re-assessed will have their authorisations removed.

7.0 ASBESTOS

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”.

8.0 PHENOLIC CUT-OUTS (ALL BLACK PLASTIC TYPES)

Phenolic materials were manufactured by impregnating paper pulp, cotton or glass fibre with phenolic resin. This was then cured using heat and pressure. When overheated this material can breakdown leaving an ash like substance. When moist this ash can conduct leading to tracking and failure. If this ash is disturbed there is a possibility of short circuit. For this reason where a phenolic cut-out is to be changed due to overheating the cut-out must be made dead before work starts. Note all black plastic type cut-outs will be made of Phenolic.

9.0 LOOP CUT-OUTS

New looped cut-outs are only acceptable for the purpose of providing a landlords or building services supply. In addition, all of the following conditions must be satisfied:-

- Only one loop connection may be provided
- The total load of two service cut-outs must be assessed as being below the rating of the incoming service cable (See ST:SD5D)
- The looped service must be terminated in a cut-out in the same building as the incoming connection and both cut-outs must be located within 5m of each other.

Where other existing looped services are encountered during work, the loop to the adjacent property shall be removed and both properties shall be provided with separate services. If it is not possible to relay the service during the cut-out change a planned replacement shall be programmed.

Where it is not practical to replace the existing looped service it shall only be teed onto existing service cables following a thermal assessment of the cables and cut-out fuses to ensure that the feeding cable does not become overloaded. This option does not apply where the cut-out change is instigated following the introduction of low carbon technologies (car chargers etc.).

Where the cut-out change is require due to the introduction of low carbon technologies and the customer and/or neighbour are opposed to the removal of a looped cut-out or overlay of an insufficient cable, the below list is the hierarchy of works that should be proposed as a resolution;

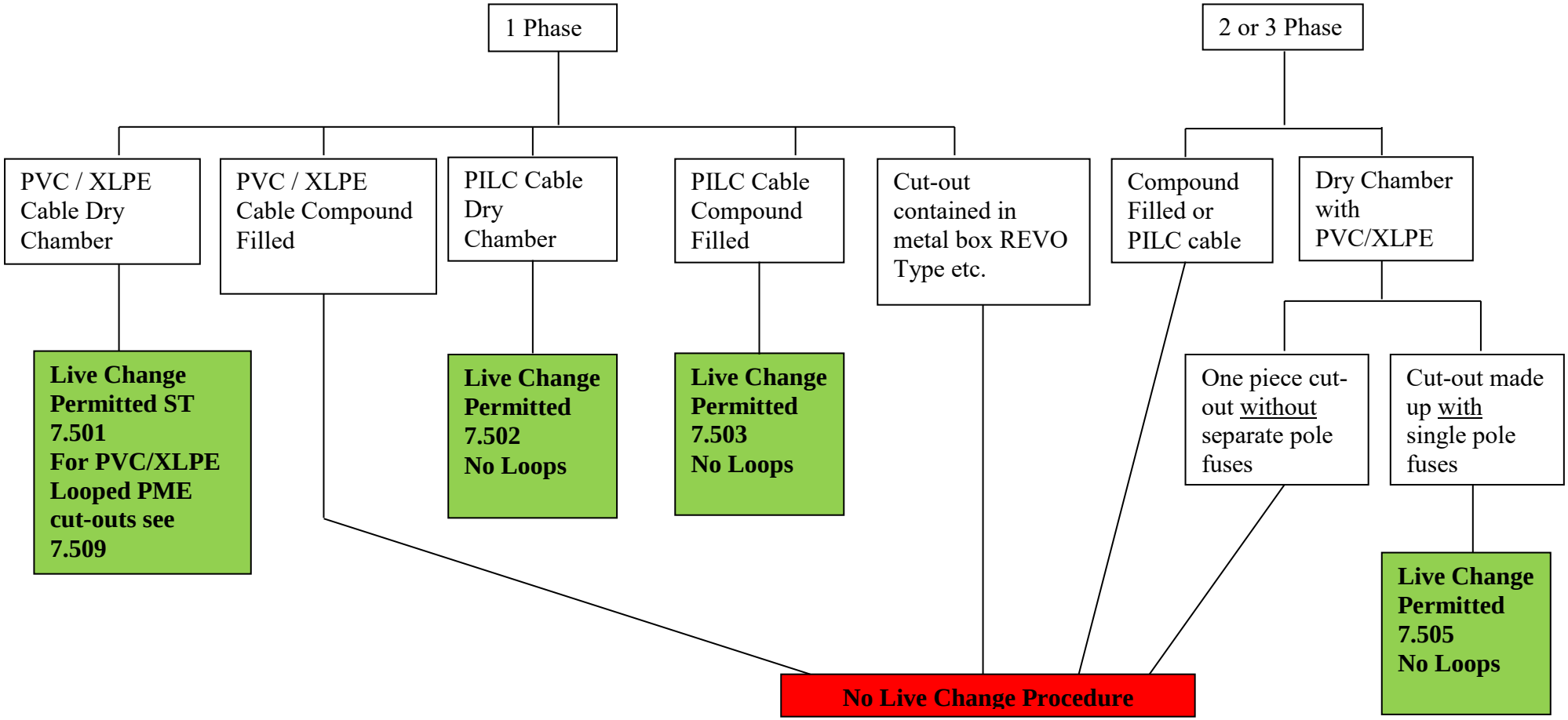
1. Overlay of the service/s with individual three phase cable/s
2. Overlay of the services/s with individual single phase cable/s
3. Overlay of the looped supply only
4. Removal of the looped cut-out with a service branch joint external to the property
5. Installation of a customer owned, funded and maintained import management scheme
6. Customer managing their load by manual means

For more details please see ST: SD5G.

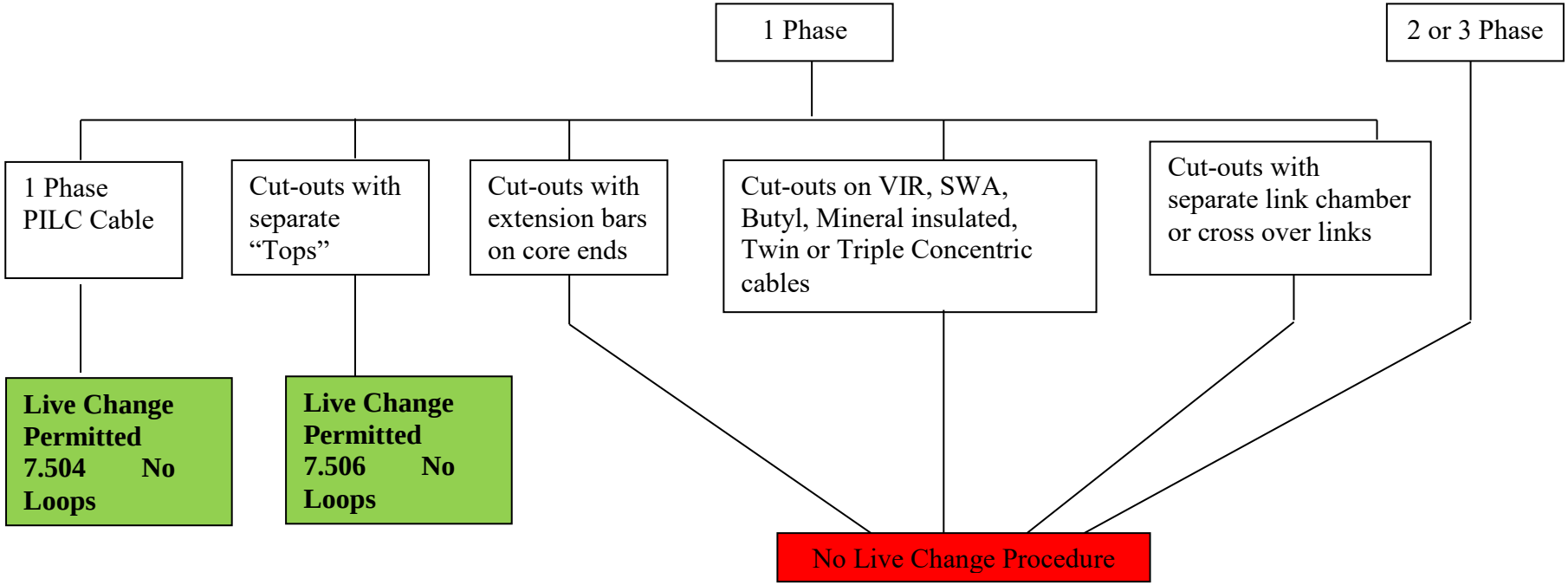
10.0 NON STANDARD CUT-OUTS

The procedures contained in this document have been designed around the standard / generic types of cut-out. There are probably hundreds of different types of cut-out on our network so providing details on all models is not possible. Where staff encounter differing designs of cut-out they should use Flow Charts 1 and 2 to decide if the unit is suitable for a live change. Where there is any doubt the cut-out shall be made dead before it is changed.

11.0 FLOW CHART 1 - PLASTIC TYPE CUT-OUT CHANGING



12.0 FLOW CHART 2 - IRON CLAD CUT-OUT CHANGING



PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.501

7.501 - PROCEDURE FOR CHANGING PLASTIC TYPE CUT-OUTS WITH THE INCOMING PLASTIC SERVICE CABLE LIVE – DRY CHAMBER ONLY

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

MATERIALS LIST

	Item Quantity
Replacement cut-out	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.501

1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

2. Remove the fuse carrier and neutral cover (and earth block from meter board if applicable).

3. Remove the earth conductors from the earth block (if applicable) and shroud.

4. Undo the terminal screws that hold the neutral earth conductor. Remove the conductor from the neutral/earth terminal block and bend it down away from the phase terminals, lay onto the outer-sheath of the service cable.

5. Shroud the neutral earth conductor.

6. Whilst holding the service cable, remove the fixing screws that hold the cut-out to the meter board.

7. Undo the terminal screws that hold the phase conductor and lift the cut-out off the cable. Fit insulating cap onto the phase core.

8. Prepare the new cut-out before removing the phase cap and fitting the new cut-out onto the phase core.

9. Fix the cut-out and fire retardant backboard to the meter board.

10. Fit the neutral/earth conductor to the cut-out.

11. Check Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

12. **Check all terminals screws** before reassembling the cut-out, fitting labels and sealing.

13. Switch on consumer units.

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.502

7.502 - PROCEDURE FOR CHANGING PLASTIC TYPE CUT-OUTS WITH THE INCOMING PILC SERVICE CABLE LIVE – NON COMPOUND FILLED

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

MATERIALS LIST

	Item Quantity
Replacement cut-out	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.502

Note. This procedure is only applicable when an iron clad cut-out has been previously replaced with a plastic type cut-out and the cable has been sealed with heatshrink tubes and breakout. If these have not been fitted when the cut-out was previously changed JP7.503 shall be used.

1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

2. Remove the fuse carrier and neutral cover (and earth block from meter board if applicable).

3. Whilst holding the service cable, remove the fixing screws that hold the cut-out to the meter board.

4. Undo the terminal screws that hold both the phase and neutral earth conductor.

5. Lift the cut-out off the cable. Fit insulating cap onto the phase and neutral core.

6. Remove any remaining bitumen before over-tape the termination with 2 layers of 19mm VM tape whilst always keeping one cap in place (do not expose the phase and neutral cores at the same time) taking care to seal the crutch area. Secure the VM tape by applying 2 layers of PVC adhesive tape ensuring the termination is completely sealed. **Do not remove any cotton tapes that were applied when the cut-out was originally made**.

7. Prepare the new cut-out before removing the insulating caps and fit the new cut-out onto the cable cores before tightening the incoming terminal screws

8. Fix the cut-out and fire retardant backboard to the meter board

9. Check Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

10. Check all terminals before reassembling the cut-out, fitting labels and sealing.

11. Switch on consumer units.

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.503

7.503 - PROCEDURE FOR CHANGING PLASTIC TYPE, COMPOUND FILLED CUT-OUTS WITH THE INCOMING PILC SERVICE CABLE LIVE

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

MATERIALS LIST

	Item Quantity
Replacement cut-out	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
19mm “VM” tape
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.503

1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

2. Remove the fuse carrier and neutral cover (and earth block from meter board if applicable).

3. Remove the earth conductors from the earth block (if applicable) and shroud.

4. Remove the screws that secure the front of the compound chamber before splitting the case using a plastic hack knife. The knife should be positioned over the unused ports, away from the cable or cable cores and can be lightly tapped with a hammer. **If soft set bitumen has been used the bitumen must be melted out using a gas torch**.

4. Once the front of the cable chamber has been removed, inspect the cable/termination.

5. Undo the terminal screws that hold both the phase and neutral conductors.

6. Remove the fixing screws that hold the cut-out to the meter board and angle the cut-out forward slightly.

7. Whilst holding the service cable, gently tap the sides of the compound filled chamber with hand (do not use a hammer), pressing the base of the cut-out away from the cable. Do not damage the crutch or crack the core papers. **If soft set bitumen has been used or if you prefer the bitumen must be melted out using a gas torch**.



8. Lift the cut-out off the cable whilst keeping a wedge between the phase and neutral. Fit insulating cap onto the phase and neutral core.

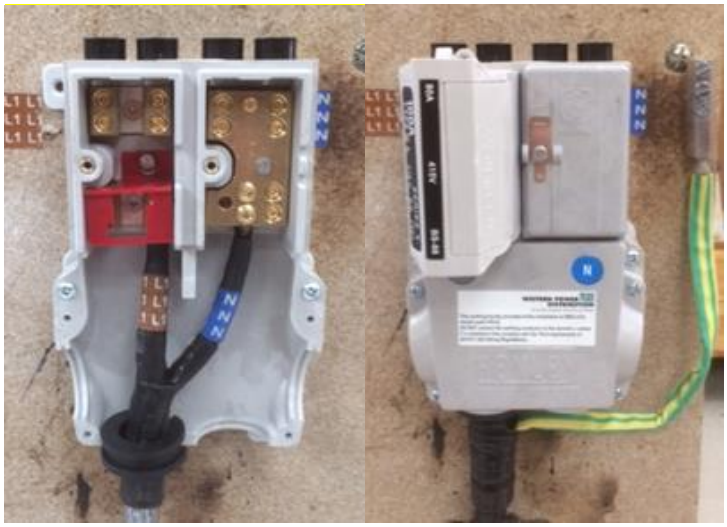
9. Remove any remaining bitumen using a plastic wedge before over-taping the termination with 2 layers of 19mm VM tape whilst always keeping one cap in place (do not expose the phase and neutral cores at the same time) taking care to seal the crutch area. Secure the VM tape by applying 2 layers of PVC adhesive tape ensuring the termination is completely sealed. **Do not remove any cotton tapes that were applied when the cut-out was originally made.**

10. Mark the phase and neutral conductors using marker tapes.

11. Prepare the cut-out for fitting.

12. Ensure that the cores are held in position.

13. Remove the caps from the phase and neutral conductor and fit the new cut-out ensuring that the phase barrier remains between the phase and neutral. Keep the time that both the phase and neutral are exposed to a minimum. Tighten the terminal screws



14. Fit earth connection if required.

15. Screw the FR backboard and cut-out to the meter board and check the Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

16. Check all terminals before reassembling the cut-out, fitting labels and sealing.

17. Switch on consumer units

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.504

7.504 - PROCEDURE FOR CHANGING METAL CLAD, COMPOUND FILLED CUT-OUTS WITH THE INCOMING SERVICE LIVE

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

MATERIALS LIST

	Item Quantity
Replacement cut-out	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
19mm “VM” tape
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.504

1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

2. Remove earth conductors between the iron clad case and lead sheath. Remove cut-out door and fuse carriers Apply VM tape to both the phase and neutral terminals so that they are fully shrouded.

3. Check that the porcelain insulated spacers are in place and that they are not broken - Isolate the cut-out if broken or missing

4. Remove the compound chamber fixing screws. Do not release the cut-out from the back-board at this stage.

5. Remove the front of the compound chamber by splitting the case using a plastic hack knife. The knife should be positioned over the unused ports away from the cable or cable cores and can be lightly tapped with a hammer

6. Once the front of the cable chamber has been removed, inspect the cable before removing the fixing screws that hold the cut-out to the meter board and angle the cut-out forward slightly. If extension bars are connected to the ends of the cable work must stop and the cut-out must be made dead.

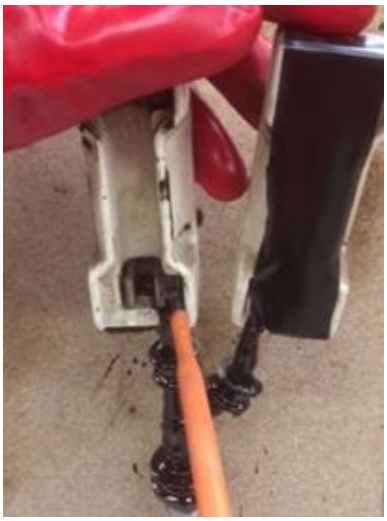
7. Remove the screws that secure both porcelain carriers from the cast iron back plate. **If these screws cannot be removed work should stop and the cut-out must be made isolated**.


8. Gently tap the sides of the compound filled chamber with hand (do not use a hammer). Whilst doing this support the back plate to prevent it dropping when it becomes free - **If the back plate cannot be released with hand pressure or if soft set bitumen has been used or if you prefer the bitumen must be melted out using a gas torch**.

9. Lift off the back plate from the cable leaving the porcelain carriers attached to the cable cores.

10. Remove any remaining bitumen using a plastic wedge – do not use a hammer. **If soft set bitumen has been used or if you prefer the bitumen must be melted out using a gas torch**.

11. Remove insulation patch on one of the porcelain carriers and undo the two terminal screws whilst supporting the carrier.



12. Remove the porcelain carrier and porcelain spacer then cover the cable core with a core cap.

13. Repeat this procedure on the other core and then remove the grommet.

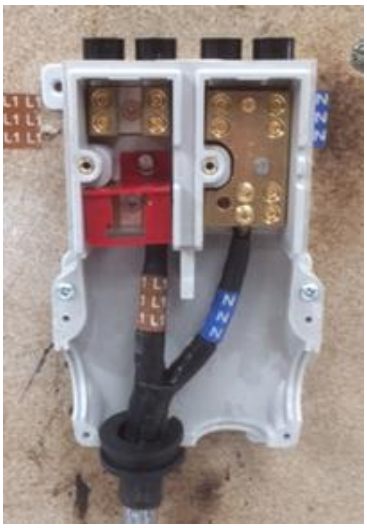
14. Remove any remaining bitumen using a plastic wedge before over-taping the termination with 2 layers of 19mm VM tape whilst always keeping one cap in place (do not expose the phase and neutral cores at the same time) taking care to seal the crutch area. Secure the VM tape by applying 2 layers of PVC adhesive tape ensuring the termination is completely sealed. **Do not remove any cotton tapes that were applied when the cut-out was originally made.**

15. Mark the phase and neutral conductors using marker tapes.

16. Prepare the cut-out for fitting.

17. Ensure that the cores are held in position.

18. Remove the caps from the phase and neutral conductor and fit the new cut-out ensuring that the phase barrier remains between the phase and neutral. Keep the time that both the phase and neutral are exposed to a minimum. Tighten the terminal screws.



19. Fit earth connection if required.

20. Screw the cut-out to the fire retardant backboard and mount the FR board onto the meter board.

21. Check the Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

22. Check all terminals before reassembling the cut-out, fitting labels and sealing.

23. Switch on consumer units.

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.505

7.505 - CHANGING 3 PHASE CUT-OUTS ON PVC/XLPE CABLE WITH THE INCOMING SERVICE CABLE LIVE SINGLE POLE CUT-OUT TYPES ONLY

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

MATERIALS LIST

	Item Quantity
Replacement cut-out	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
19mm “VM” tape
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.505

Note. When carrying out this procedure a cable cleat may be required below the cut-out to prevent the cable dropping when the fixing screws are removed

1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

2. Remove the fuse carrier and neutral cover (and earth block from meter board if applicable).

3. Remove the cable chamber before refitting the neutral cover.

4. Shroud the neutral earth conductor.

5. Prepare the new cut-out for fitting.

6. Undo the terminal screws from the L1 fuse carrier and remove the L1 fuse carrier.

7. Immediately replace the original L1 fuse carrier with the new one.

8. Temporarily refix the single pole fuse to the meter board

8. Repeat items 6,7 and 8 on the L2 fuse carrier.

9. Undo the terminal screws that hold the neutral/earth conductor and remove the conductor by bending the strands against the service cable (away from the L3 conductor).

10. Shroud the neutral/ earth wires.

11. Whilst holding the cable, undo the terminal screws and fuse carrier fixings before lifting off the original phase / neutral unit.

12. Immediately replace the combined L3/neutral/earth unit with a new unit.

13. Remove shrouding from the neutral/earth wires and connect them into the neutral/earth terminal.

6. Undo the fixing screws that hold the L1 and L2 single pole fuse carriers onto the meter board and slide behind the fire retardant cut-out board.

7. Fix the FR cut-out board and fuse units into final position.

8. Check the Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

9. Check all terminals before reassembling the cut-out, fitting labels and sealing.

10. Switch on consumer units.

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.506

7.506 - PROCEDURE FOR CHANGING METAL CLAD, COMPOUND FILLED CUT-OUTS WITH THE SEPARATE PHASE AND NEUTRAL "TOPS"

This procedure is to be read in conjunction with the appropriate General Requirements ST: CAØC

MATERIALS LIST

	Item Quantity
Replacement cut-out	1

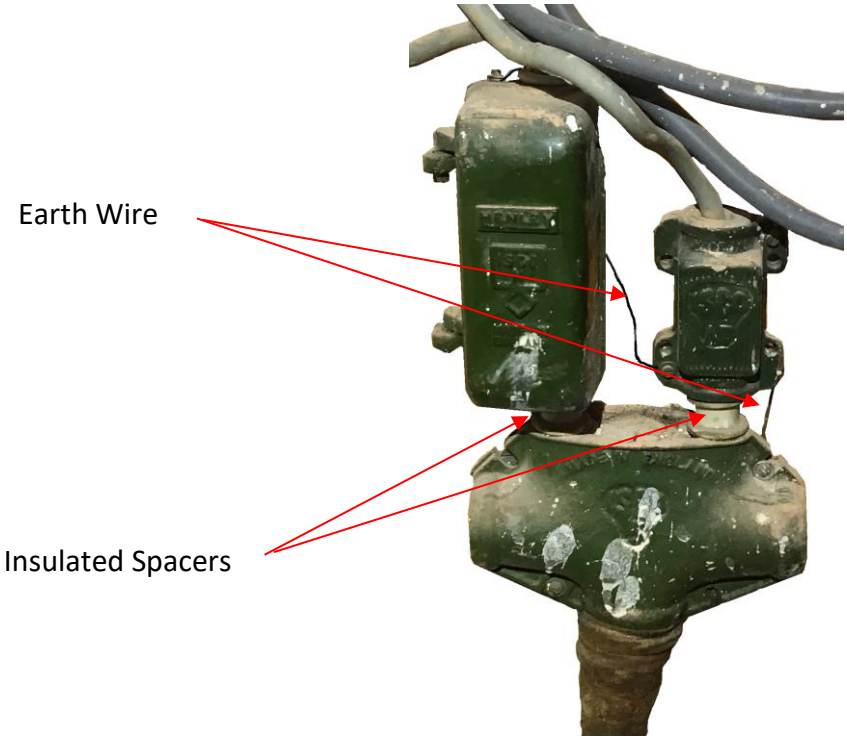
ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
19mm “VM” tape
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.506

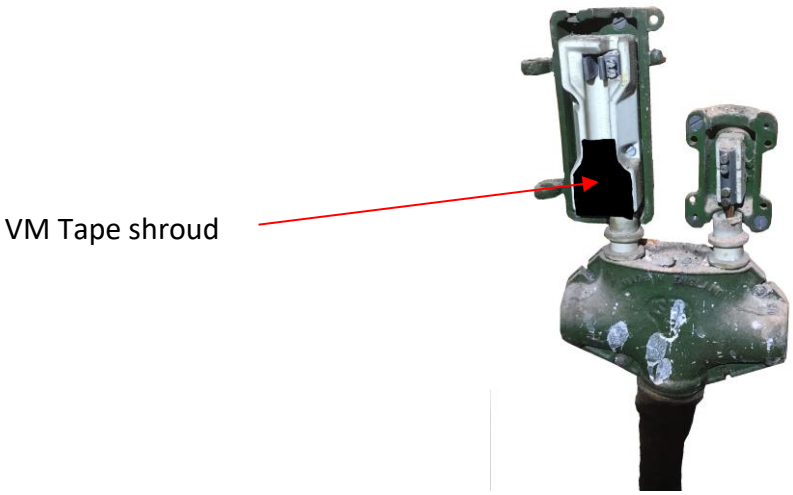
1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

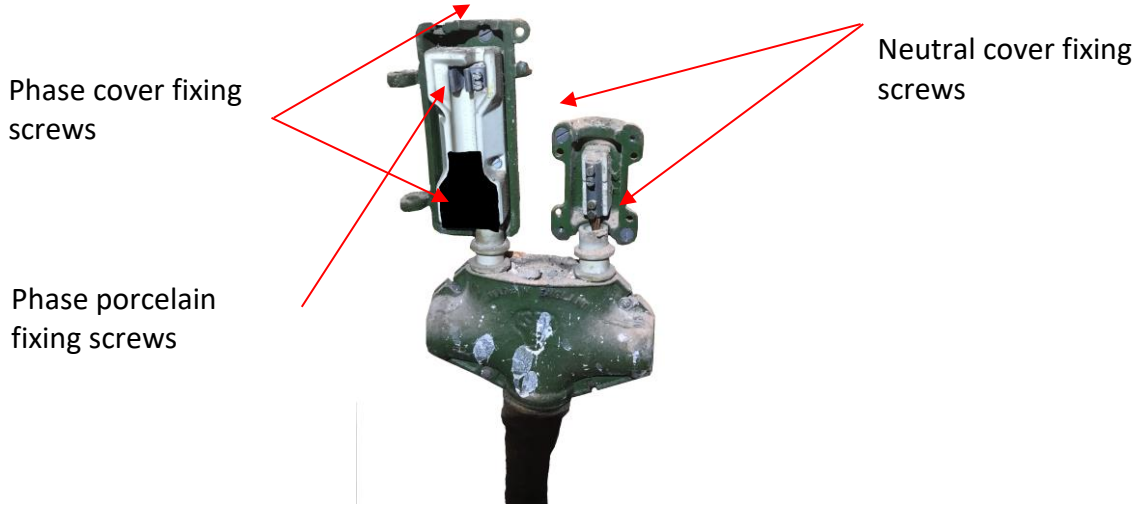


2. **<u>Ensure that the insulated spacers are fitted and that they are in good condition</u>**. If these spacers are not present or are damaged the cut-out must not be changed live.

3. Remove earth conductors between the iron clad case, “tops” and lead sheath.

4. Open and remove the phase door/cover and shroud the incoming terminal with VM tape before removing the out-going meter tails.





5. Remove the two fixing screws that attach the neutral cover to the meter board then unscrew the terminal screws. Lift off the neutral terminal before shrouding the core with an end cap.

6. Remove the phase cover screws and the screws that secure the compound filled base to the meter board. Gently ease the cut-out forward, away from the board.

7. Remove the two screws that fix the porcelain fuse base to the iron phase cover whilst holding to prevent it dropping. Lift off the iron phase cover leaving the porcelain fuse base attached to the core.

8. Once the iron phase cover has been removed, remove the VM tape and undo the phase terminal screws. Lift off the porcelain fuse base off the core before fitting an insulated core cap.

9. Remove the front of the compound chamber by splitting the case using a plastic hack knife. The knife should be positioned over the unused ports away from the cable or cable cores and can be lightly tapped with a hammer

10. Once the front of the cable chamber has been removed, inspect the cable. If extension bars are connected to the ends of the cable work must stop and the cut-out must be made dead.

11. Gently tap the sides of the compound filled chamber with hand (do not use a hammer). Whilst doing this support the back plate to prevent it dropping when it becomes free - **If the back plate cannot be released with hand pressure or if soft set bitumen has been used or if you prefer the bitumen must be melted out using a gas torch**.

12. Lift off the back plate from the cable

13. Remove any remaining bitumen using a plastic wedge – do not use a hammer. **If soft set bitumen has been used or if you prefer the bitumen must be melted out using a gas torch**.

14. Remove the end cap from the neutral core and slide off the insulated spacer and then refit the end cap.

15. Remove the end cap from the phase core and slide off the insulated spacer and then refit the end cap

16. Remove any remaining bitumen using a plastic wedge before over-taping the termination with 2 layers of 19mm VM tape whilst always keeping one cap in place (do not expose the phase and neutral cores at the same time) taking care to seal the crutch area. Secure the VM tape by applying 2 layers of PVC adhesive tape ensuring the termination is completely sealed. **Do not remove any cotton tapes that were applied when the cut-out was originally made.**

17. Mark the phase and neutral conductors using marker tapes.

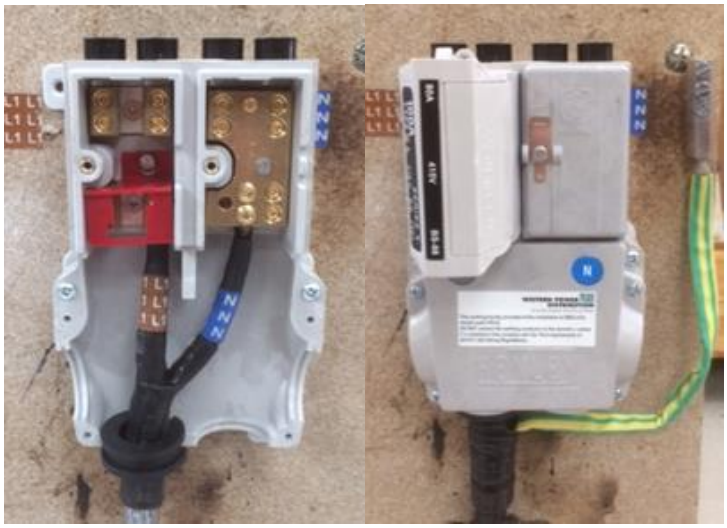
18. Prepare the cut-out for fitting.

19. Ensure that the cores are held in position.

20. Remove the caps from the phase and neutral conductor and fit the new cut-out ensuring that the phase barrier remains between the phase and neutral. Keep the time that both the phase and neutral are exposed to a minimum. Tighten the terminal screws

21. Fit earth connection if required.

22. Screw the cut-out to the fire retardant backboard and mount the FR board onto the meter board.



23. Check the Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

24. Check all terminals before reassembling the cut-out, fitting labels and sealing.

25. Switch on consumer units.

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.507

7.507 – FITTING EARTH CONNECTIONS AND CONVERTING TO PME

This procedure is to be read in conjunction with the appropriate General Requirements ST: CAØC

JOINTING PROCEDURE 7.507

CAUTION – Roll springs may have sharp edges and gloves are to be worn

1. Remove the serving, armour and bedding in accordance with General Requirement 9 if required

2. Ensure the lead sheath and tape armour is thoroughly abraded and cleaned with the approved solvent Fig 1. Apply the tinned copper mesh over the abraded surfaces.

3. Lay the earth braid directly onto the tinned copper mesh Fig 2.

4. Apply roll spring over the braid and tape armour Fig 3.

5. Apply roll spring over the braid and lead sheath Fig 3.

6. Tighten (with gloved hand) both roll springs by twisting in the direction they were applied Fig 3.

7. Cover the complete assembly using a minimum of 3 layers black PVC tape Fig 4.

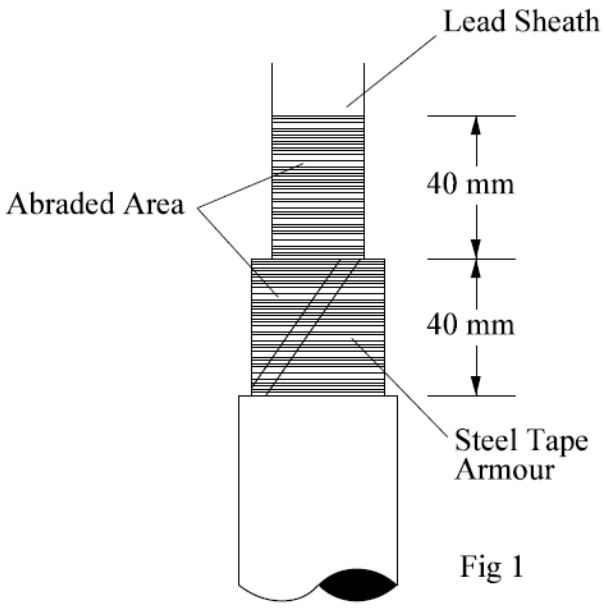


Fig 1

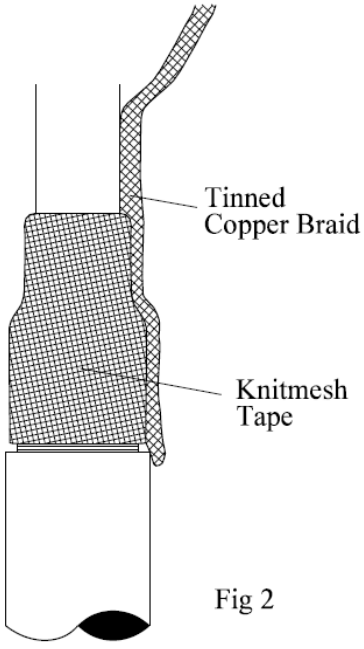


Fig 2

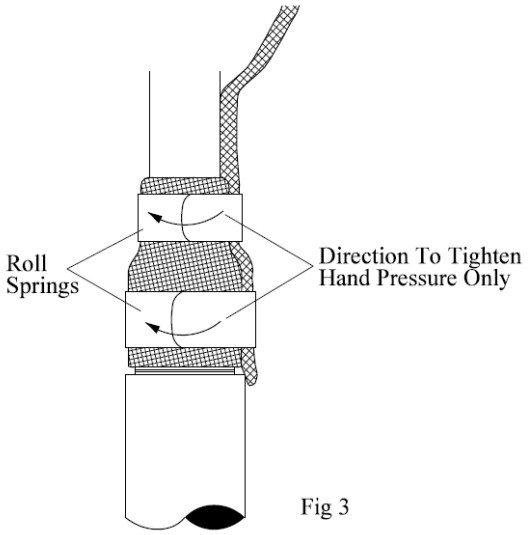


Fig 3

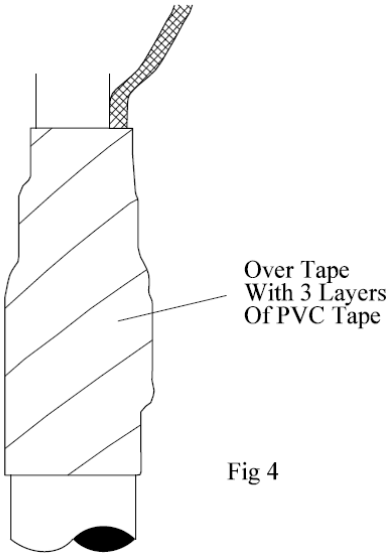
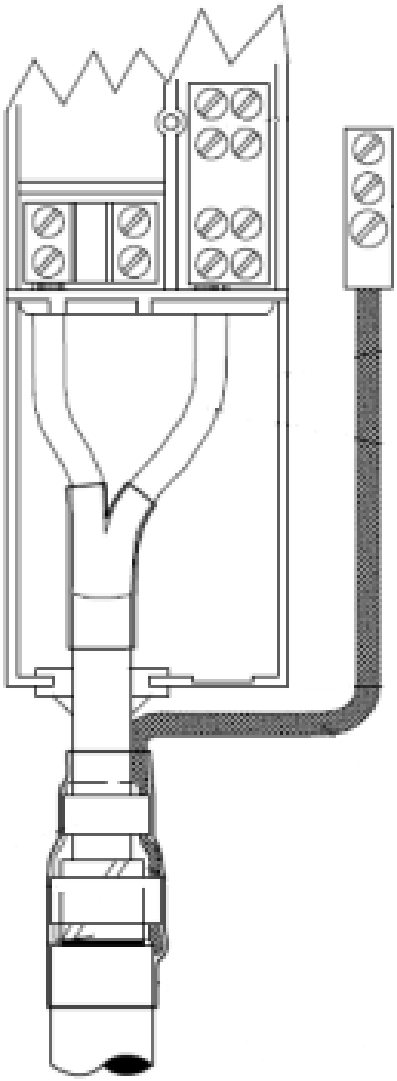
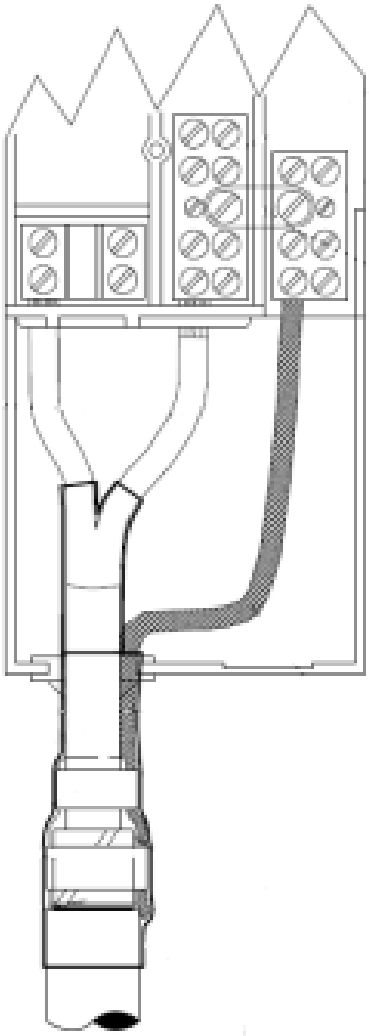


Fig 4

Please note: - When converting a PILC service to PME at the cut-out a SNE cut-out (with link connected) must be used – see drawing 1. Where the cut-out is non-linkable it must be changed.

Where an upgrade to an earth terminal is required and the existing cut-out is rated at 80A, is of a plastic design and has been recently changed it is acceptable to replace only the earth terminal as shown in drawing 2. **In all other scenarios the cut-out must be replaced**





PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.508

7.508 - CHANGING CUT-OUTS WITH THE INCOMING SERVICE CABLE DEAD

This procedure is to be read in conjunction with the appropriate General Requirements ST: CAØC

JOINTING PROCEDURE 7.508

When changing cut-outs under dead conditions there is always a possibility that the incoming service could become energized from inadvertent backfeeds or customer generation. Therefore unless the whole length cable between the point of isolation and the cut-out can be visibly traced (in accordance with GR2 Working on Live/Dead LV Underground Cables) the cut-out must be changed using the appropriate live changing procedure.

Where the cut-out is of a non-standard design or where there is no live changing procedure the cable must be made dead and the cut-out tested to prove that it is dead. The cut-out can then be changed using the principles associated with live cut-out changing. The cut-out must be tested periodically to confirm the cable remains dead. The appropriate live working PPE must be worn in case the service cable becomes live (see GR2).

Where the cable can be visibly traced from the point of isolation to the cut-out and there in no possibility that it can be re-energised the cut-out can be changed without live working PPE. General PPE as listed in ST: CAØC - GR3 must be worn.

PROCEDURE FOR CHANGING DOMESTIC CUT-OUTS (UP TO 100A) WITH THE INCOMING SERVICE LIVE

JOINTING PROCEDURE 7.509

7.509 - PROCEDURE FOR CHANGING PLASTIC TYPE LOOP CUT-OUTS WITH THE INCOMING PLASTIC SERVICE CABLE LIVE – DRY CHAMBER ONLY CNE (PME) CUT-OUTS ONLY

This procedure is to be read in conjunction with the appropriate General Requirements ST: CAØC

MATERIALS LIST

	Item Quantity
Replacement cut-out	1
Anchor connector 30948	1

ADDITIONAL ITEMS FOR EACH TERMINATION

Insulation patch
Heat shrink tubing
PVC adhesive tape
PVC marker tapes
Seals
Sealing wire

Note: - Individual material item numbers (E5) are to be found in Section 4 of the LV Service Cable Jointing Manual.

JOINTING PROCEDURE 7.509

Notes:-

- **This procedure can only be carried out where the cut-out type and the previous termination give sufficient space to enable the safe fitting of the brass "anchor" connector. Where insufficient space exists to carry out this procedure safely the cable must be cut.**
- **This procedure can only be carried out on plastic type single phase CNE (PME) cut-outs**

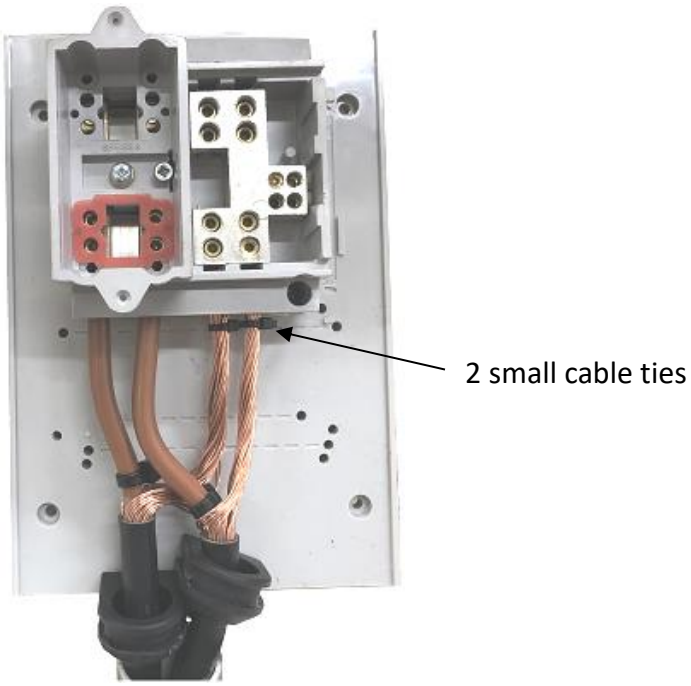
1. Carry out the General Principles / Practices applicable to all cut-out changes detailed on page 3 and confirm that the cut-out is suitable for a live change using flowcharts 1 and 2.

2. Switch off the consumer unit and remove the fuse from the looped property. Refit the empty carrier and seal.

3. Remove the fuse carrier and neutral cover (and earth block from meter board if applicable) from the double cut-out.

4. Remove the base chamber and inspect the cable / cut-out.

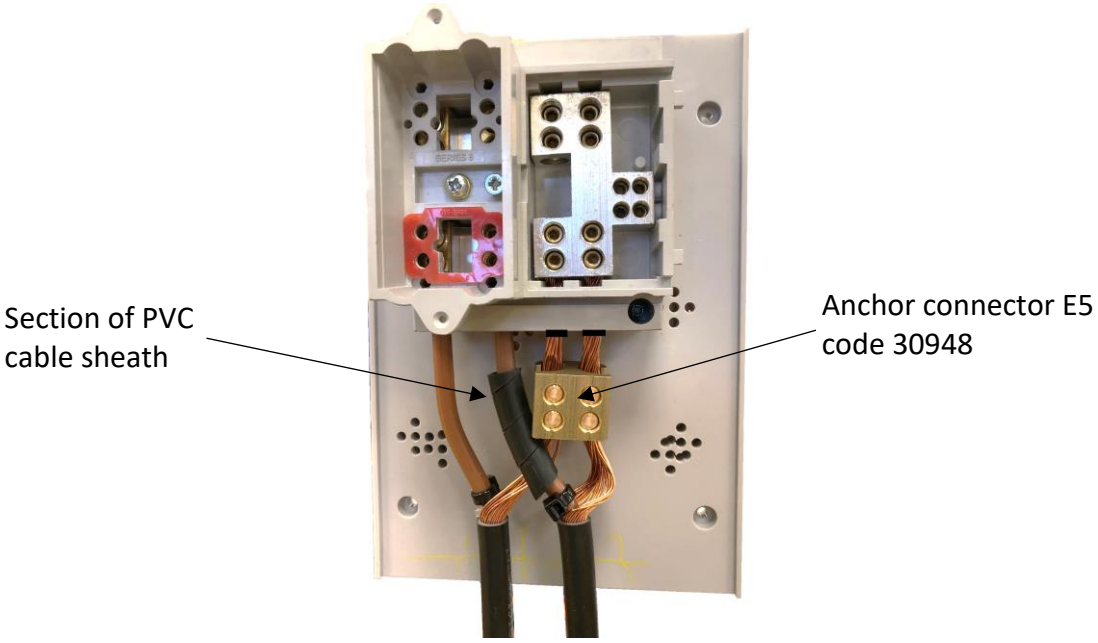
5. Remove the earth conductors from the earth block (SNE cut-out) and fully shroud.



6. Fit two small cable ties around the neutral/earth strands to hold them together where they enter the terminal block.

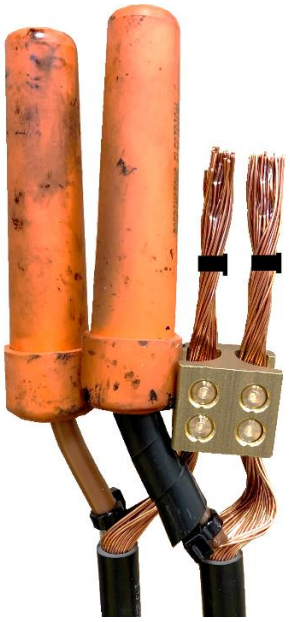
8. Fit a section of split outer sheath around the phase insulation to provide a double layer of insulation where the anchor connector will be fitted.

9. Fit the anchor connector and shear the grub screws



10. Remove the screws securing the cut-out from the backboard before removing all of the incomming terminal screws.

11. Carefully lift off the cut-out off the four cores before fitting shroud/caps over the phase conductors.



12. Prepare the new cut-out removing the appropriate blanking plugs.

13. Refit the cut-out to the cables ensuring all four cores fully enter the correct terminals in the blocks.

14. Tighten the 8 terminal screws.

15. Fix the cut-out and fire retardant backboard to the meter board.

16. Fit the earth conductor to the cut-out / meter board (SNE cables).

17. Check Voltage, Polarity and Earth Loop Impedance before reconnecting customers meter tails and earth conductors.

18. **Check all terminals screws** before reassembling the cut-out and fitting the labels.

19. Install the cut-out fuse, seal and switch on consumer units.

20. Repeat items 17-19 at the looped property remove the fuse carrier check voltage, polarity and earth loop impedance before refitting the fuse and sealing the cut-out.

    Note. The anchor connector is left connected. Where the loop is to be removed at a later date the neutral/earth wires on the looped cable can be cut below the connector.

APPENDIX A

RISK ASSESMENT

This Risk Assessment assumes that the controls in the above ST have been followed and all listed PPE and tools have been used.

This assessment determines the risk rating to be a 2D – It is Improbable for an accident to occur, but in the unlikely event of this happening the PPE will limit the severity to minor.

Risk probability	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely improbable 1	1A	1B	1C	1D	1E

APPENDIX B

SUPERSEDED DOCUMENTATION

This Standard Technique supersedes ST: CAØB/2 dated May 2021 which has now been withdrawn.

APPENDIX C

RECORD OF COMMENT DURING CONSULTATION

Comments – ST: CAØB/3

APPENDIX D

ASSOCIATED DOCUMENTATION

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

APPENDIX E

KEY WORDS

Cut-out, iron clad, fused neutral