



Engineering Bulletin

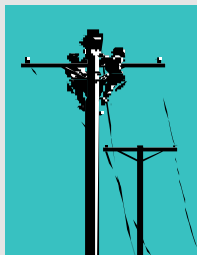
e-on | Central
Networks

CinC Jan 2008

Number	Date	Subject	Status	
07/090	Oct 2007	UltraTEV Partial Discharge Monitoring Equipment	ISSUED	
07/089	Oct 2007	Lucy 15/24/30 Way Multi Service Distribution Board	ISSUED	
07/088	Sep 2007	Distribution Substation Switchgear changes	ISSUED	
07/087	Aug 2007	Failures of Insulation Piercing Connectors	ISSUED	
07/086	Aug 2007	SJ1 & SJ1A LV / Street Lighting Jointing Kits	ISSUED	
07/085	Sep 2007	Series 5, 6 & 7 Cut-Out Standardisation & Rationalisation	ISSUED	
07/084	Jun 2007	Cooper Tape Anti-Theft Procedures (Revised Materials)	ISSUED	
07/081	Apr 2007	New style Heavy Duty Cut-Outs from Lucy	ISSUED	
07/077	Mar 2007	Danger of Death Sign for Wood Poles	ISSUED	
07/076	Feb 2007	Rationalisation of MV Joints	ISSUED	
07/074	Jan 2007	Lucy LV Fuse Cabinet	ISSUED	
06/070	Oct 2006	Revision & Rationalisation of Overhead Line Helical Fittings (Pre-forms) for CN	ISSUED	
06/069	Oct 2006	Reminder/revision of Joint Shell Sealing Practice	ISSUED	
06/064	Jul 2006	Earthing of Surge Arrestors associated with Cable Terminations	ISSUED	
06/061	May 2006	Construction of Distribution and HV Consumer Substations	ISSUED	
06/060	May 2006	Integrated EFI in New RMU and Single Hole Cable Gland for Consumer's 3core Cables	ISSUED	
06/059	Sep 2006	Neutral Earth Resistor Policy (revised)	ISSUED	
06/058	Apr 2006	West Substation Access Locking	ISSUED	
05/057	21/12/2005	Withdrawal of Earth Rod Clamp Com Code 235 6020	ISSUED	
05/056	17/11/2005	Changes to Components contained in West LV Jointing Tasks on SAP	ISSUED	
05/055	17/11/2005	Changes to 33kV Termination Kits	ISSUED	
05/054	16/11/2005	Revised Method of Terminating Triplex Cables into Cable Boxes	ISSUED	
05/052	03/08/2005	Installation of Equipotential earth mat gratings in all Primary/Grid sites	ISSUED	
05/050	14/06/2005	Pole Transformer Platforms	ISSUED	

05/048	06/06/2005	Introduction of LV Joint Kitting System across Central Networks	ISSUED	
05/047	09/06/2005	Changes to Standard Cables Used in Central Networks	ISSUED	
05/045	04/05/2005	Neutral Earth Resistor Guidance	ISSUED	
05/043	12/05/2005	Application Guide to Supplies to Mobile Phone Base Stations mounted on EHV Towers (G78 Installations)	ISSUED	
05/042	05/05/2005	Earthing at Ground Mounted Distribution Substations	ISSUED	
05/041	20/04/2005	Perimeter HV Earthing around Brick-Built 11kV Substations	ISSUED	
05/039	13/04/2005	Pole Mounted Transformers fitted with HV & Neutral Point Surge Arresters	ISSUED	
05/036	21/02/2005	West HV Joint Materials List	ISSUED	
05/035	21/02/2005	Guidance for Supplies to Telecomms Installations located within Distribution Substations and Primary/Grid Substations	ISSUED	
05/034	14/02/2005	Revision of Cables and Cable Laying Accessories Manual	ISSUED	
05/030	06/01/2005	New Hybrid Mini Wedge	ISSUED	
04/028	01/12/2004	Revision Logs for CoP's 14 & 15 HV&LV Jointing	ISSUED	
04/027	01/12/2004	Changes to 11kV termination kit lugs	ISSUED	
04/026	25/11/2004	Changes to wood pole drilling	ISSUED	
04/024	24/08/2004	Revision of COP 15 LV Cable Jointing	ISSUED	
04/023	24/08/2004	Introduction of New Cable Joint Shell	ISSUED	
04/022	13/08/2004	Changes to low voltage jointing kits	ISSUED	
04/021	06/08/2004	Changes to Code of Practice 15	ISSUED	
04/019	02/07/2004	New Harmonised Low Voltage Cable Colours	ISSUED	
04/018	28/05/2004	Introduction of adapter plate and earth pins	ISSUED	
04/017	28/01/2004	Rationalisation of substation locks and locking	NOT ISSUED	
03/016	03/10/2003	Pirelli S-Z 11kV Cables	ISSUED	
03/015	01/10/2003	Power Outage Devices	ISSUED	
03/014	10/09/2003	Changes to Code of Practice 15 – LV Jointing	ISSUED	
03/013	09/09/2003	Information regarding cable cleats for 11 & 33 kV cables up poles	ISSUED	
03/012	09/09/2003	Introduction of new Low Voltage pole termination kits	ISSUED	
03/011	12/08/2003	Changes to service procedures SER 3.3.2 & SER 7.3.2 (hybrid & 35mm 3 phase waveform from PILC main).	ISSUED	
03/010		Rationalisation of substation locks and locking (SEE 04/017)	NOT ISSUED	
03/008	01/10/2003	New Wedge Connector and Tool	ISSUED	
03/007		New LV Air Circuit Breaker (ACB) Cabinets as supplied by Schneider Electric	NOT ISSUED	

03/002	16/05/2003	Single core cables through steel pipes/plates/glands hazards	ISSUED	
03/001	01/05/2003	New 3 phase service – main joint kits.	ISSUED	



001

Distribution Engineering Bulletin

What ?

Introduction of new 3 phase service joint kits for up to two 35mm CNE service cables from CNE or PILC mains

When ?

1st May 2003

Where ?

All EME Distribution jointing areas.

Why ?

Existing 3 phase kits required a single phase kit and two additional piercing connectors to be added. Also to fit two 3 phase services in the box was very tight, if not impossible.

The new kits will include three new two port piercing connectors and can accommodate up to two 3 phase services.

The joint boxes have also been re-designed with the help of EME Jointers to give more room.

Who ?

All EME & ESP Jointers and Project Managers

How ?
**Other
Information**

Commodity codes are as follows:-

Size	Kit Code	Comm Code
Up to 185 CNE	MSJ185W23/EME	5387770
185 to 300 CNE	MSJ300W23/EME	5387780
Up to 185 PILC	MSJ185P23/EME	5387790
185 to 300 PILC	MSJ300P23/EME	5387800

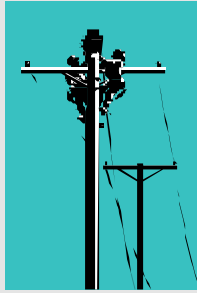
Code of Practice 15 Procedures are:-

Up to 185 CNE	SER 6.3.2
185 to 300 CNE	SER 6.3.2
Up to 185 PILC	SER 7.3.2
185 to 300 PILC	SER 7.3.2

N.B. - Procedures are included in the kits.

Joint kits are currently in stock at Huthwaite and available (only 100 of each at present to determine usage).

Technical or quality issues should be addressed either to the relevant Equipment Specialist (Terry Dutton 782 3212) or Operations Support (formerly Procurement) Team (Manjit Bilkhu 782-3362 or Dave Harvey 782-3284).



**East Midlands
Electricity**

002/03

Engineering Bulletin

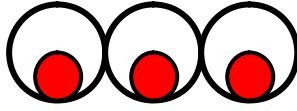
16 May 2003

What ?	Cables in steel pipes/through steel plates.
When ?	With immediate effect.
Where ?	All Distribution Cabling Activities.
Why ?	When using steel pipes for cable ducts e.g. crossing a brook or a shallow bridge, then it is important that the correct use of a steel pipe is made. The reason for this is, that if the steel pipe has a single core of a cable passing through it, then the pipe will act as a CT (current transformer) and become heated, possibly to a high temperature depending on the current flowing in the cable. This may present a hazard to personnel and will also de-rate the capacity of the cable. It must be emphasised that this ONLY applies to a SINGLE CORE in a STEEL pipe. Three cores in a steel pipe is OK (e.g. Triplex – as the magnetic fields of the cables in trefoil cancel themselves out) A single core in an Aluminium pipe would be OK because Aluminium cannot be magnetised. Similarly SINGLE CORES passing through a STEEL plate separately will cause the same effect. The plate should be split or made out of different material. Remember that a STEEL CLEAT or BAND around a single core will have the same effect as will any metal work (such as Dexion for instance) that encloses the cable. This effect happens at ALL voltages from a single meter tail through to 132kV cables.
Who ?	All EME & ESP Jointers and Project Managers.
How ?	Team Brief EME & Direct e-mail to ESP's.

Other
information

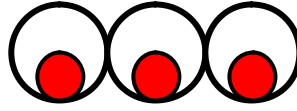
To Summarise:-

**Single Core in
Individual Pipes**



X

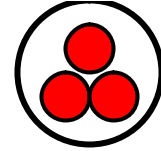
Steel Pipe



✓

**Aluminium
Pipe**

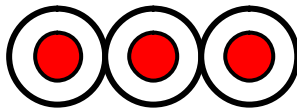
**Three Cores in
Trefoil**



✓

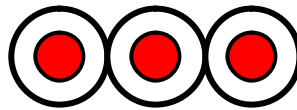
Steel Pipe

**Single Cores
Through Plate**



X

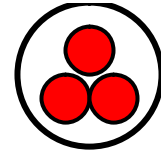
Steel Plate



✓

**Aluminium
Plate**

**Three Cores
Through Plate**

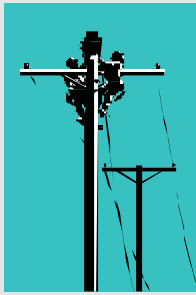


✓

Steel Plate

Technical issues should be addressed to the relevant Equipment Specialist within the Development & Standards Team of Asset Development (Terry Dutton 782-3212).

Steel Pipe **X**



Engineering Bulletin

1 October 2003

What ?	New Wedge Connectors and Tool
When ?	October 2003
Where ?	All overhead line activities
Why ?	Pirelli have discontinued the BICC MP100 and MP200 Wedge tools These are superseded by new tools made by Burndy – the WTRB & WTY tools The BICC MP100 & MP200 tools can remain in use and only need replacing by the Burndy tools when they reach the end of their life. So far only Asset Operations staff have been issued with the new Burndy tool in EME. However, some ESP linesmen may have these tools already. The main changes to the new Burndy tools are: 1. They use different cartridges – these are the large plastic type similar to the ones we used to use with the Ampliversal wedge system. <i>Burndy call them 'Boosters' not cartridges in the catalogue</i> 2. The colour coding system is different from the BICC system 3. The Burndy tool is a breech loading design – the booster cartridge is installed in a chamber on the side instead of having to unscrew the whole breech as in the BICC tool – it's a lot quicker and easier to use. 4. The Burndy tools are too powerful for the existing small aluminium WG-AS range of wedges used on conductors up to 50mm² 5. These small wedges are being changed for stronger aluminium alloy versions under the same commodity codes. The existing wedges will be issued from stores until stocks run out and they are replaced by the new type. • If you have one of the new Burndy tools make sure you don't use it on the existing small wedges. Asset Operations are issuing their staff with a supply of the new taps until all the old type have gone from stock. • The BICC tool can be used on any copper or aluminium wedges • All existing copper wedges and bail clamps are OK with the Burndy tool • All existing aluminium bail clamps are OK with the Burndy tool Actions • The Overhead Line Manual Vol 1 Section 5 Approved Material – Overhead Line Joints is being updated. • EME staff being issued with the new Burndy tool will be given training in it's use and maintenance.
Who ?	Linesmen, Project Managers, ESPs, TNT Stores, EmPower Training

How ?

Team Brief EME & Direct e-mail to ESP's

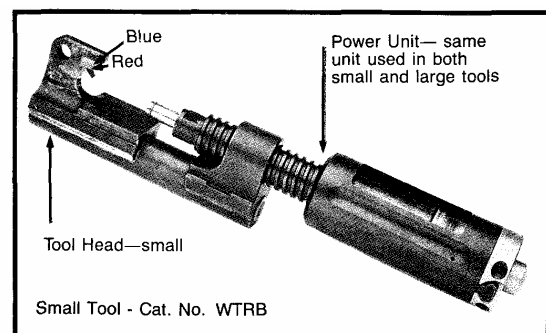
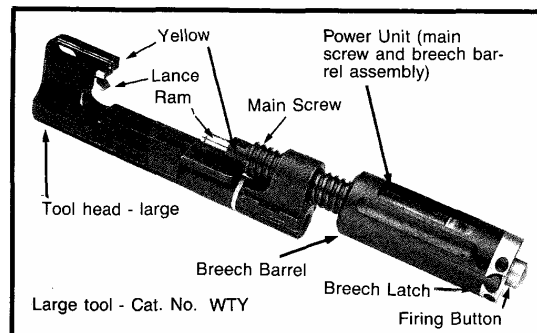
Tools & Cartridges:

Wedge Range	Bail	Tool	Take-off Clip	Cartridge	
				Install	Removal
BICC tool					
WG - AS	WG1A -K1	MP100	MPA4	YELLOW	GREEN
WG - AM	WG2A –K1				
WG – AL	WG3A -K1	MP200	MPA1	YELLOW	GREEN
	WG1C - K1 to WG4C – K1	MP100	MPA4	YELLOW	GREEN
Burndy tool					
WG - AS	WG1A -K1	WTRB	WTOCBR	RED	RED
WG - AM	WG2A –K1			BLUE	RED
WG – AL	WG3A-K1	WTY	WTOCY	BLUE	RED
	WG1C - K1 to WG4C – K1	WTRB	WTOCBR	BLUE	RED

Changes to wedges:

Existing wedge (Being discontinued)	New Wedge	Commodity code (not changed)
WG2A-S	WG29A-S	2663050
WG1A-S	WG30A-S	2663060
WG03A-S	WG32A-S	2663070

Cartridges	Manufacture ref	Commodity code	Qty	Comment
BICC YELLOW	Hilti 5035160	5818910	10	Existing
BICC GREEN	Hilti 5035124	5818930	10	Existing
BURNDY RED	WPBRN	5818940	50	NEW CODE
BURNDY BLUE	WPBBN	5818950	50	NEW CODE



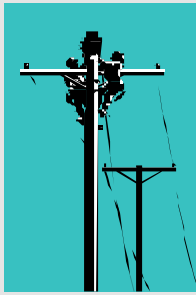
Technical issues – Tony Haggis Technology & Standards Manager

Tel 01332 393215

Quality and purchasing issues – Manjit Bilkhu, Operational Support Team

Tel 01332 393362

Other information



Engineering Bulletin

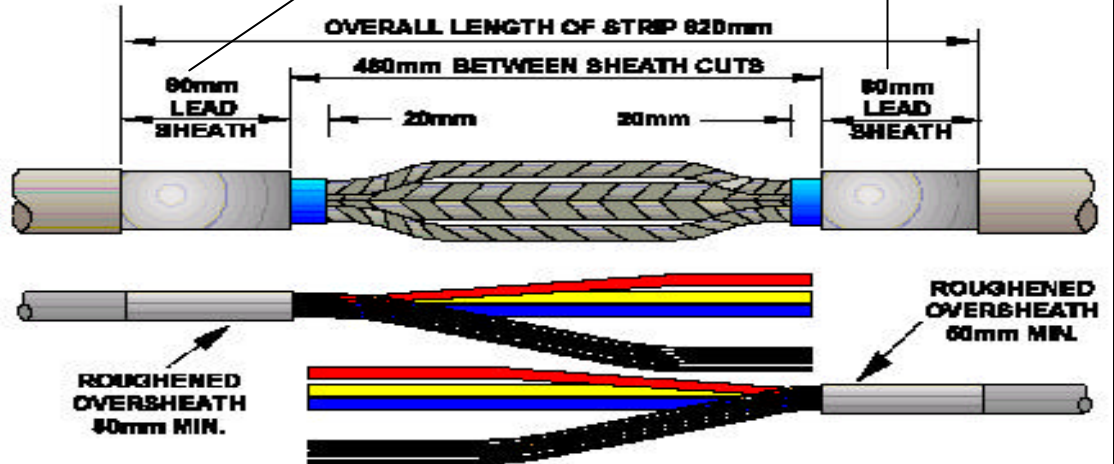
12 August 2003

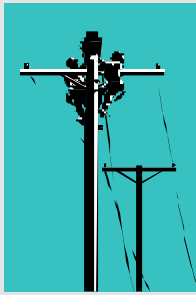
What ?	Changes to PILC service procedures/kit instructions SER 3.3.2 (1ph hybrid to PILC) & SER 7.3.2 (3ph 35mm Waveform to PILC)		
When ?	With immediate effect.		
Where ?	All Distribution Cabling Activities.		
Why ?	Original dimensions in kit instructions/manual resulted in the strip length between lead off positions being considered to be too short and consequently the cores too tight making application of piercing connectors difficult. These changes will give an extra 80mm lead strip, therefore exposing more core.		
Who ?	All East Midlands Electricity and ESP jointers & Band 5 tradesmen.		
How ?	Team Brief East Midlands Electricity & Direct e-mail to ESP's		
Other information	Kits affected:-		
	Item	Sicame Kit No	Commodity Code
	Procedure		
	1ph HYBRID SERVICE CABLE FROM PILC/PILCSTA CABLE UP TO 185 mm ²	MSJ185P / EME	5387460
	1ph HYBRID SERVICE CABLE FROM PILC/PILCSTA CABLE 185 TO 300 mm ²	MSJ300P / EME	5387470
	35mm ² WAVEFORM 3 PHASE SERVICE FROM PILC/PILCSTA UP TO 185mm ²	: MSJ185 P23 / EME	5387790
	35mm ² WAVEFORM 3 PHASE SERVICE FROM 185mm ² TO 300mm ² PILC/PILCSTA	MSJ300 P23/ EME	5387800
SER 3.3.2			
SER 3.3.2			
SER 7.3.2			
SER 7.3.2			
The Manual (CoP 15 – LV Jointing) and CD will be updated at the next issue (September 03)			
Kit instructions to be amended at next delivery.			
In the meantime the revised dimensions can be used in the existing kits (see next page).			
Any queries should be addressed either to the relevant Equipment Specialist within the Asset Development Technology & Standards Team (Terry Dutton) (01332 393212)			

Excerpt from SER 7.3.2

These dimensions changed
from 120mm to 80mm

Other
Information
(Continued)





Engineering Bulletin

28 August 2003

What ?	Introduction of:- Low voltage pole termination kits
When ?	From 1 st October 2003
Where ?	All Distribution Cable Activities
Why ?	Replacement of multiple separate items, with many possible options (very confusing), with one kit for each cable size (4 kits in total).
Who ?	All Jointers, Linesmen and Project Managers
How ?	Team Brief EME & Direct e-mail to ESP's

**Other
information**

Item	Kit ref:-	Commodity Codes	Code of Practice
35 mm ² hybrid pole termination	WPT5/EME	5387850	SER 8.3.1
35mm ² Waveform 3 phase pole termination	WPT6/EME	5387860	SER 8.4.1
95mm ² Waveform 3 phase pole termination	WPT7/EME	5387870	MAIN 8.3.1
185mm ² Waveform 3 phase pole termination	WPT8/EME	5387880	MAIN 8.3.1

Kits will contain ALL components necessary to complete pole termination apart from the connector between the jumper and the overhead line.

Kits will contain the relevant Code of Practice for that termination. The latest issue of Code of Practice 15 contains these procedures.

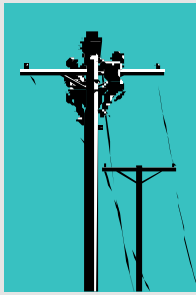
All kits are completely mechanical and contain ABC jumpers (each 1.2 metres long – with correct ribbing) to connect to overhead line.

These kits are suitable for connection to any configuration of overhead line from open wire to insulated to ABC.

The existing breakouts will remain on stock for cables into pole mounted fuses, pillars and out of cut-outs for flats.

No 300mm² Waveform kit exists as this size cable should not be used from a pole transformer, and if it is (e.g. a large service) then, a pole mounted cabinet is used.

Technical or quality issues should be addressed either to the relevant Equipment Specialist (Terry Dutton) within the Asset Development Technology & Standards Team or the Procurement Team Tel :- 01332 393212 (782-3212)



Engineering Bulletin

28 August 2003

What ?	Introduction of Cleats for 11kV and 33kV Triplex & Single Core cables
When ?	Immediately
Where ?	All Distribution Cabling Activities
Why ?	For information. There seems to be confusion as to the correct cable cleats to use while erecting triplex and single core 11 and 33kV cable up poles or structures
Who ?	All Jointers, Linesmen and Project Managers
How ?	Team Brief EME & Direct e-mail to ESP's

From code of practice 14 – Procedures HV 203-4 (11kV) and HV 304-5 (33kV)

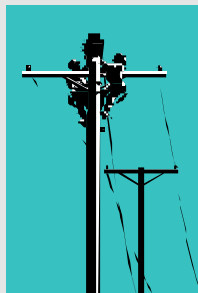
COMMODITY CODES FOR POLE CLEATS

Description	Commodity Code
Cable cleat with fixing for 70/150 triplex 11kV cable	5332100
Cable cleat with fixing for 185/300 triplex 11kV cable	5332110
Cable cleat with fixing for 150/400 triplex 33kV cable	5332120
Cable cleat with fixing for 400 single 33kV cable	5332130

Technical or quality issues should be addressed either to the relevant Equipment Specialist within the Asset Development Technology & Standards Team or the Procurement Team Include tel. numbers

Other information





Engineering Bulletin

10 September 2003

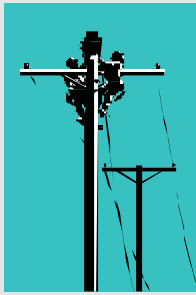
What ? Changes to Code of Practice 15 – LV Jointing

When ? Immediately

Changes Made in Version 9 September 2003

	Title	Notes about the change
Documents Removed		
None		
New Documents		
MAIN 8.3.1	95mm ² Waveform Terminated onto an Overhead Line (DEAD) Kit No: WPT7/EME	New Procedure & kit instruction
MAIN 8.3.1	185mm ² Waveform Terminated onto an Overhead Line (DEAD) Kit No: WPT8/EME	New Procedure & kit instruction
SER 5.3.2A	Fuse Busbar Extension to Domestic Single or Three Phase Cut - Out (Henley Series 7) LIVE	New Procedure
SER 5.3.2B	Link + Fuse busbar extension to domestic single phase cut out (Henley Series 7) LIVE	New Procedure
SER 8.3.1	35mm ² 1 Phase Hybrid Terminated onto an Overhead Line (DEAD) Kit No: WPT5/EME	New Procedure & kit instruction
SER 8.4.1	35mm ² 3 Phase Waveform Terminated Onto An Overhead Line (DEAD) Kit No: WPT6/EME	New Procedure & kit instruction
Amended Documents		
MAIN 4.1.1	Stop End With Earth Connection On 3 - Core Waveform (DEAD)	Revised procedure.
MAIN 4.1.2.	Stop End 70 - 300 mm On 3 - Core Waveform (LIVE) kit instructions (A3)	Revised procedure for kit instructions.

MAIN 4.2.1	Stop end 70 - 300mm PILC Sicame Kits SE12+SE13 (A4) (DEAD)	Revised procedure.
MAIN 4.2.2	Stop end 70 - 300mm PILC Sicame kits SE12+SE13 (A3) (LIVE)	Revised procedure for kit instructions.
SER 3.3.2	1ph hybrid service cable from PILC/PILCSTA cable up to 185 mm ² (LIVE)	Lead sheath stripping dimensions amended.
SER 3.3.2	1ph hybrid service cable from PILC/PILCSTA cable 185 to 300 mm ² (LIVE)	Lead sheath stripping dimensions amended.
SER 7.3.2	35mm ² waveform 3 phase service from PILC/PILCSTA up to 185mm ² (LIVE)	Lead sheath stripping dimensions amended.
SER7.3.2	35mm ² waveform 3 phase service from 185mm ² to 300mm ² PILC/PILCSTA (LIVE)	Lead sheath stripping dimensions amended.
SER 2.2.2	Service Branch Joint 25 Or 35mm ² Hybrid To 25 Or 35mm ² Hybrid kit SJ3 (A3) (LIVE)	Revised procedure for kit instructions
SER 3.2.2	Hybrid Branch to 2 - Core PILC/PILCSTA Cable Kit SJ4 (A3) (LIVE)	Revised procedure for kit instructions
SER 4.2.1	Stop End With Earth Connection On 2 - Core PILC/PILCSTA Service Up To 0.04sq.in (DEAD)	Revised procedure
SER 4.2.2	Stop End With Earth Connection On 2 - Core PILC/PILCSTA Service Up To 0.04sq.in kit SE14 (A3) (LIVE)	Revised procedure for kit instructions.
SER 4.3.1	Stop End On 25 Or 35mm ² 3 - Core Waveform Service Kit SE9 (A4) (DEAD)	Revised procedure for kit instructions.
SER 4.3.2	Stop end on 3c waveform service cable 25 or 35mm ² Kit No. SE9 (A3) (LIVE)	Revised procedure for kit instructions
SER 4.4.1	Stop End on 4-core PILC Service Cable up to 0.04 Sicame kit SE15/EME (A4) (DEAD)	Revised procedure.
SER 4.4.2	Stop End on 4-CORE PILC Service Cable up to 0.04 Sicame kit SE15/EME (A3) (LIVE)	Revised procedure for kit instructions.
SER 5.2.1	Instructions for 3 Phase Waveform Service Into 3 Phase 100A Henley Series 7 Cut Out Kit (DEAD)	Revised procedure for kit instructions.



Engineering Bulletin

1 October 2003

What ?	PODS - Power Outage Devices
When ?	October 2003
Where ?	Selected pole transformers downstream of OYT's and auto reclosing circuit breakers in secondary substations.
Why ?	You may come across some new equipment installed on some of our pole transformers that looks like this: These are 'Power Outage Devices' or PODs for short. What they do is monitor the supply from the transformer and in the event of a supply interruption they log the time, date and duration and then send a message to a computer in the IMC via the mobile phone network. We have installed these because we now have to inform Ofgem of all auto reclose operations as well as long duration interruptions. At Primary S/S and PMARs telecontrol monitors auto reclose operations. To get the same information from OYT's and secondary substation auto reclose CBs the PODs will do the counting for us. The white box contains the electronics and this is connected to the transformer tails via an ABC Network Switch fitted with a 10 amp DIN type fuse. We have connected these to the transformer side of the existing LV fuses so that only HV interruptions are recorded. If a POD is damaged or vandalised it can be made safe by opening the ABC network Switch (as shown above) to isolate it from the supply. If this action is required it MUST be reported to the Control team in the IMC. More over page.....
Who ?	<u>Linesmen, Project Managers, ESPs, Control Engineers, EmPower Training</u>
How ?	Team Brief EME & Direct e-mail to ESP's

Other information

Are there any special actions Linesmen must take? NO - but please don't open the ABC switch out of curiosity – it will cause a message to be sent that will mess up our Ofgem reports.

There is no need to open the POD's ABC switch to provide LV isolation during HV shutdown as there is no possible LV backfeed from the POD.

Also please don't remove the lid of the POD – there are some delicate electronics inside. The linemen installing the PODs have been given special training by the manufacturer.

Pulling the PC400 LV fuses will not operate the POD.

Where work is carried out that interrupts the HV system then Control will be aware of the interruption and will expect a POD message. The engineers in System Performance will be able to differentiate between HV shutdowns and interruptions.

IMPORTANT NOTE. We have made the connections to the transformer 120mm² and 70mm² double insulated PVC tails using Insulation Piercing Connectors.



This is not normally an approved method of connection as IPCs are not designed to fit transformer tails.

Special dispensation has been given by the Technology & Standards Manager for this application as the current taken by the POD is very low.

Also where the outer brown PVC has been stripped the red inner PVC has been protected by black tape to protect it from damage by Ultra Violet light.

A special procedure has been approved by the Asset Operations Manager for the live connection of PODs to transformer tails and the installation teams have been given training in the procedure.

This method **MUST NOT** be used to make connections to PVC transformer tails to supply customers – the IPC may burn out under high current. The above approval was given for PODs only.

Technical issues

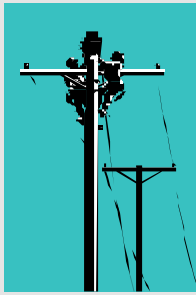
PODs - Ian Jacob, System Performance, Operational Review Engineer

Tel 01332 393826

ABC Network Switch / Fuses & Connectors – Tony Haggis, Technology & Standards Manager Tel 01332 393215

Safety Issues

Martyn Button - Operational Policy Engineer Tel 01332 393 840



Engineering Bulletin

01 October 2003

What ?	Introduction of Pirelli S-Z 11kV XLPE Triplex Cable
When ?	Immediate
Where ?	All East Midlands Electricity Cable Activities
Why ?	Pirelli Cables have introduced a new method of applying the copper earth screen wires to their 11kV XLPE Triplex cable.
Who ?	All East Midlands Electricity & ESP Jointers & Project managers.
How ?	Team Brief EME & Direct e-mail to ESP's
Other information	Pirelli Cables have introduced a new method of applying the copper earth screen wires to their 11kV XLPE Triplex cable. This is known as an S-Z cable, so called because the wires are wound helically in one direction for 4-6 turns and then in the opposite direction for 4-6 turns. Where the rotation changes direction, there is a short section where the earth wires are straight. The benefit is purely in manufacture as it enables Pirelli to use the winding machine used for Waveform cables to apply screen wires to 11kV cables as well, thus allowing greater manufacturing capacity. This change has <u>NO</u> effect on the use of the cable or jointing methods. Currently Pirelli only supply our 185mm² Triplex, but this cable may appear on the other sizes if supply of cable becomes a problem. Photographs on next page. Technical or quality issues should be addressed either to the relevant Equipment Specialist within the Asset Development Technology & Standards Team (Terry Dutton 01332 393212).

Pirelli S-Z 11kV XLPE Triplex Cable

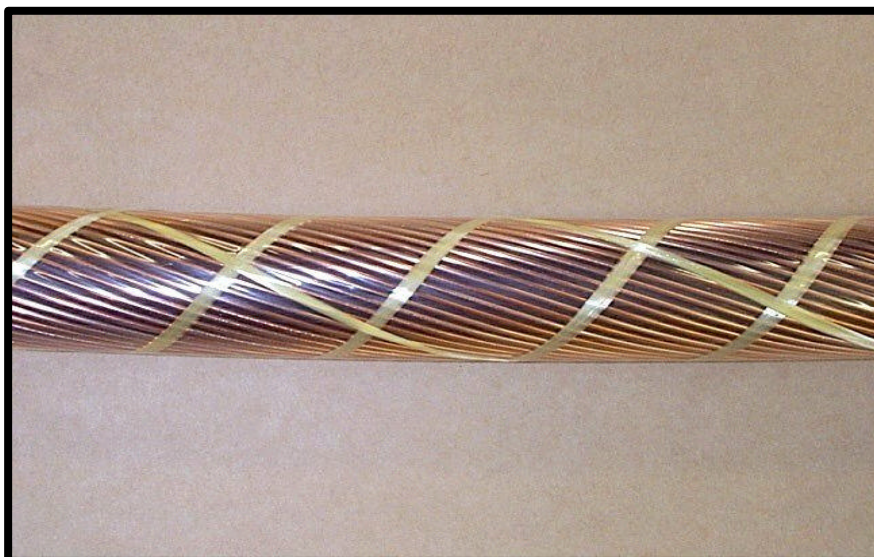
Change over section

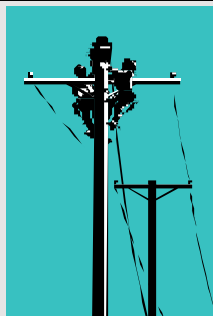


Straight Section



Helical Section





Engineering Bulletin

04/018

**Central
Networks**

A company of **e-on**

28 May 2004

What ?	Introduction of adapter plate and earth pins – O/H to U/G
When ?	Immediate
Where ?	All overhead and underground activities.
Why ?	Improve connection facilities of underground cables to overhead lines in order to facilitate connection, disconnection and earthing at pole/cable termination positions.
Who ?	All Central Networks East & ESP: Jointers, Linesmen & Project Managers.
How ?	Team Brief EME & Direct e-mail to ESP's

Other information

The introduction of the new adapter plate and earth pins is to facilitate connection, disconnection and earthing at pole/cable termination positions as per safety rule.

The adapter plate is manufactured for a 16mm (33kV) stud and comes with a brass bushing to accommodate a smaller 12mm (11kV) stud.

The adapter is plated and therefore compatible with both aluminium/copper overhead line and brass underground cable lugs.

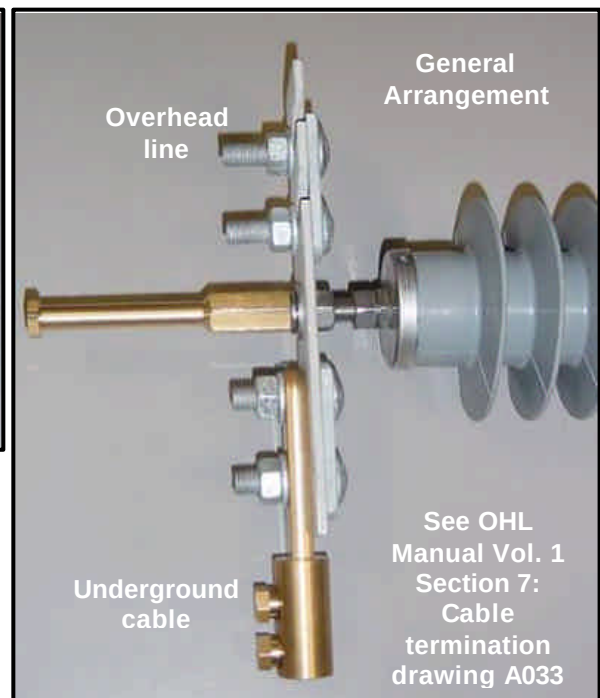
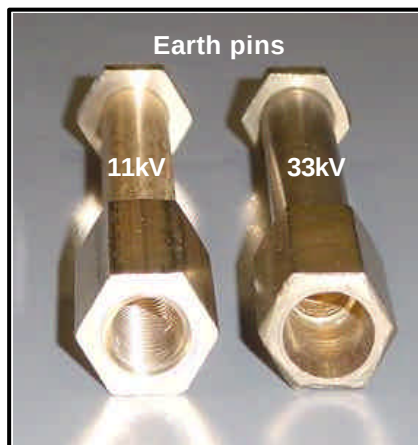
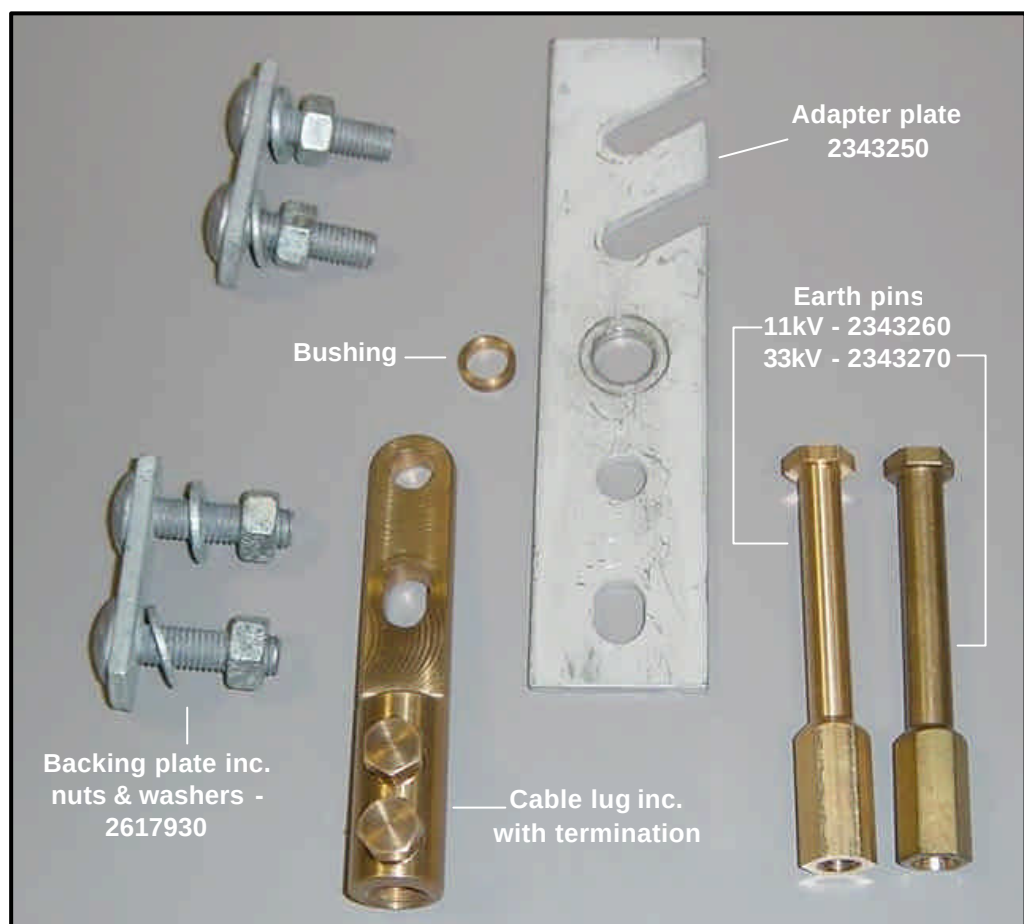
The earth pins come in 12mm (11kV) & 16mm (33kV) sizes.

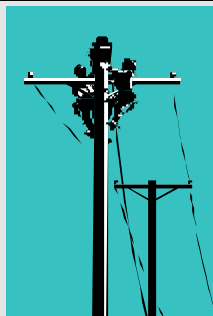
Item	Commodity Code	Tyco Code
Surge Arrester adaptor plate underground cable to overhead line 11kV or 33kV	2343250	BAH 03-810-0018
11 kV Earth Pin (M12)	2343260	TBC
33 kV Earth Pin (M16)	2343270	TBC

Photographs and arrangements can be found overleaf.

Technical or quality issues should be addressed either to the relevant Equipment Specialist within the Asset Development Technology & Standards Team (Terry Dutton 01332 393212).

**Other
information
(continued)**





Engineering Bulletin

Central Networks
A company of **e-on**

04/019

23 July 2004

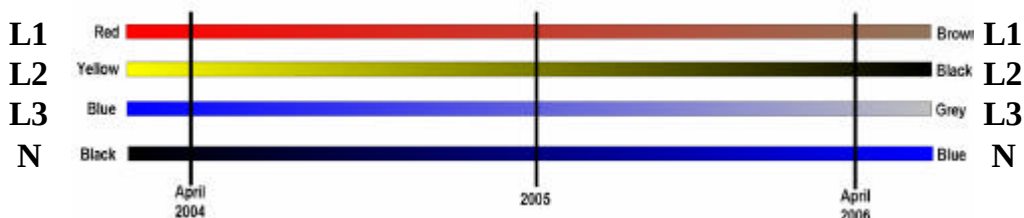
What ?	Introduction of:- New Harmonised Low Voltage Cable Colours
When ?	From April 2004 - although CN will not receive these cables until August 2004.
Where ?	Throughout the UK and Europe.
Why ?	Following many years (12) of negotiation the cable core colours have now been standardised in Europe. All European Countries will now have to adopt the new core colours by end March 2006
Who ?	All CN & ESP personnel working on the network
How ?	Team Brief for CN – East & Direct e-mail to ESP's

Other information

The new colours will change as follows:-

Existing colours on left.

New colours on right.



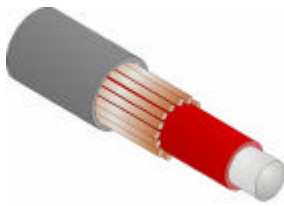
- It is our intention to follow the recommendation in BS7671 (IEE Wiring Reg's) and mark the old cables and new cables as **L1, L2, L3 & N** when jointing/terminating etc. This should avoid confusion at the interface with the customer's network or wiring as most electricians should already be working to this IEE recommendation.
- From April 2004 – March 2006 there will be a mix of RYB & BBG. .
- Although there are new colours in the cables, the rotation will still be known as red, yellow, blue, as at present.
- 33kV, 11kV & 6.6kV, should use red, yellow, blue rotation (no core colours) and L1, L2 & L3 at terminations (e.g. cable boxes). All red, yellow and blue markings on **new** equipment will be replaced with L1,L2,L3,N markings by the manufacturers.

Queries about this subject should be addressed to the relevant Equipment Specialist within the NS&R Assets Team (Terry Dutton 782 3212 or Tony Haggis 782-3215).

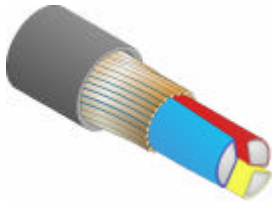
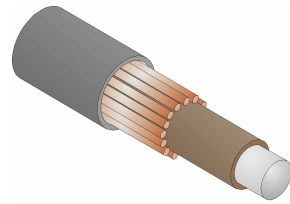
Existing and Harmonised Cable Identification

EXISTING

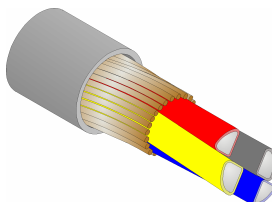
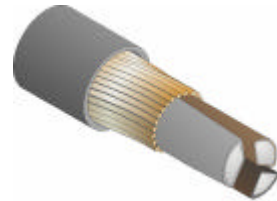
HARMONISED



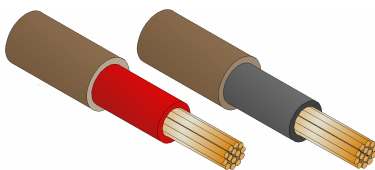
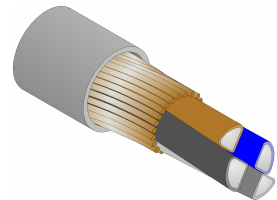
Hybrid service



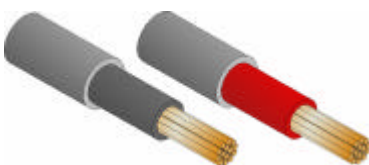
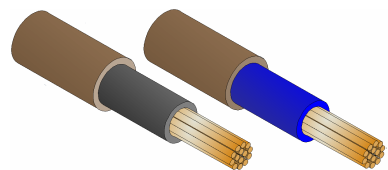
3c Waveform main



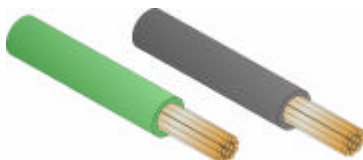
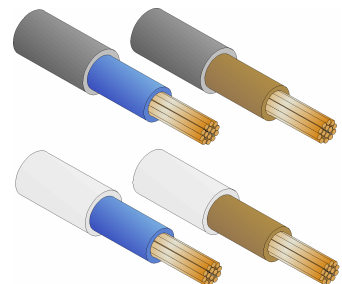
4c Waveform main



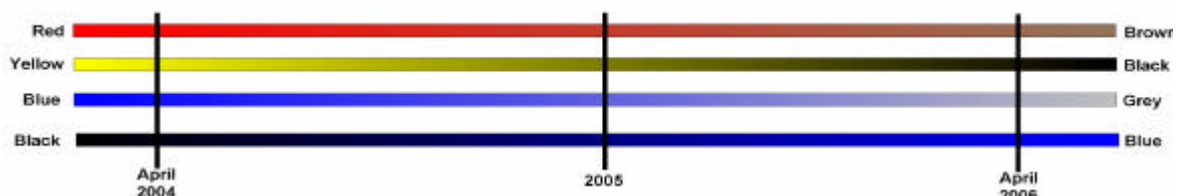
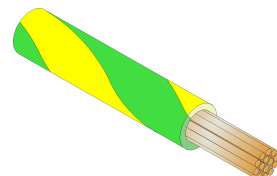
Pole Transformer tails



*Meter tails
(BS6004)*

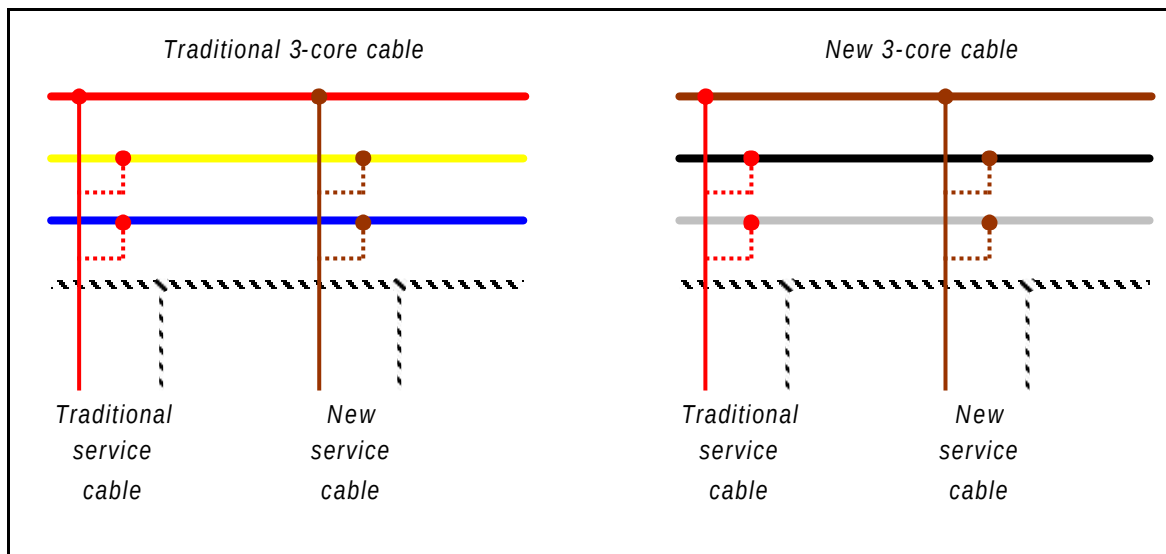


Earth conductor

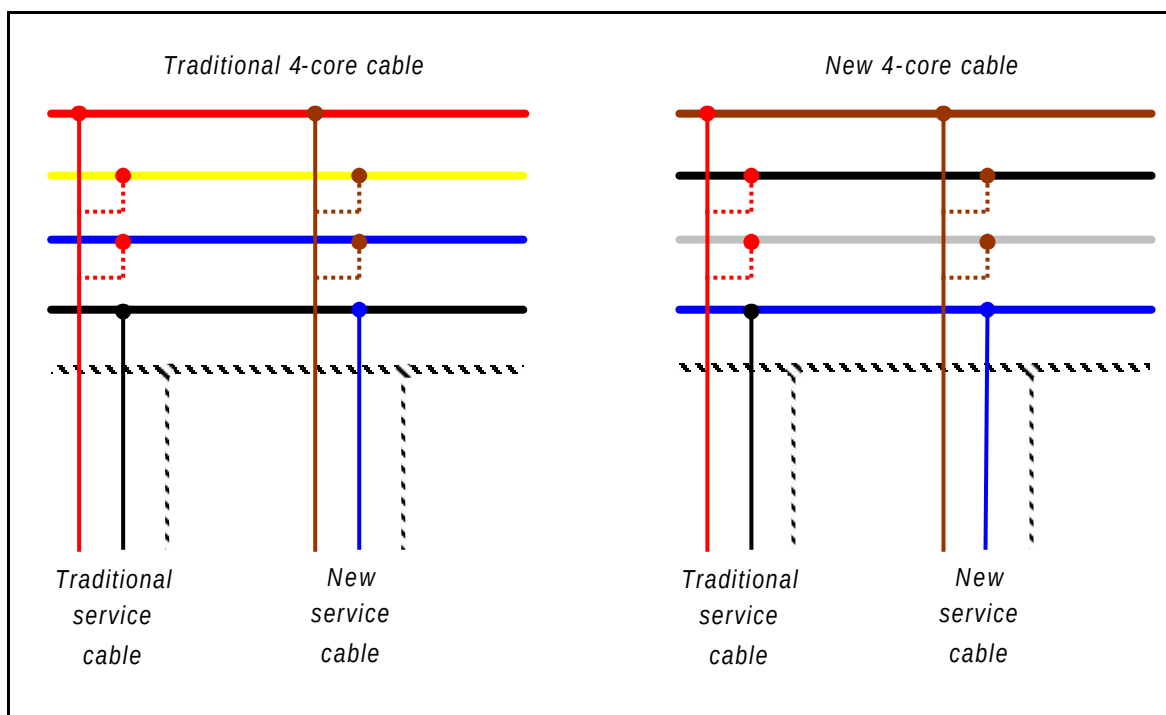


Connection of single phase cables to network.

Single phase service to 3-core cable



Single phase service to 4-core cable



Earth Wires





Engineering Bulletin

Central Networks

A company of **e-on**

04/021

05 August 2004

What?	Revision of COP 15 LV Cable Jointing
When?	Immediately
Why?	To inform Jointers that Central Networks COP 15: LV Cable Jointing has been updated with procedures for new LV Mains and Service Jointing Kits
Who?	All Central Networks' & ESP's Jointers & Project Managers
How?	Team Brief Central Networks & Direct e-mail to ESP's

Changes Made in Version 10 – July 2004

	Title	Notes about the change
Documents Removed		

None

New Documents		
MAIN 312	Transitional Straight Joint, 3c Waveform To 4c PILC / PILCSTA (LIVE) Kit No : SMJ95T / EME	• New kit • Neutral connector changed. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
MAIN 312	Transitional Straight Joint, 3c Waveform To 4c PILC / PILCSTA (LIVE) Kit No : SMJ185T / EME	• New kit • Neutral connector changed. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
MAIN 312	Transitional Straight Joint, 3c Waveform To 4c PILC / PILCSTA (LIVE) Kit No : SMJ300T / EME	• New kit • Neutral connector changed. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
SER 122	Hybrid Service Branch From Hybrid Service Cable (LIVE) Kit No : SJ3	• New kit • New connectors. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
SER 322	Hybrid Service Branch From PILC/PILCSTA 1ø Cable (LIVE) Kit No : SJ4	• New kit • New connectors • Existing kit to remain until stocks exhausted. • Commodity code remains the same.

SER 432	Stop End on 3c Waveform Service Cable 25 or 35mm ² (LIVE) KIT No : SE9/EME	• New procedure • Revised neutral connector • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
SER 612	3c Waveform Service Straight Joint (LIVE) Kit No : SJ5A	• New kit • Heatshrink joint • New connectors. • New commodity code (5387590).
SER 622	3c Waveform Service Branch (LIVE) Kit No : SJ5	• New kit. • New connectors. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
SER 712	3c Transitional Service Straight (LIVE) Kit No : SJ6	• New kit. • New connectors. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
SER 722	3c Transitional Service Branch (LIVE) Kit No : SJ7	• New kit. • New connectors. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
SER 741	Single Phase Hybrid to 4c PILC/PILCSTA up to 0.4 in ² Service Branch Joint Kit No : SJ9	• New kit. • New connectors. • Existing kit to remain until stocks exhausted. • Commodity code remains the same.
Amended Documents		
SER 112A	1 Phase Hybrid Service to 1 Phase Hybrid Service Straight Joint (LIVE) Kit No : SJ1	• Small changes to dimensions and drawings.
Contacts	Technical or quality issues should be addressed to the Asset Development Technology and Standards Team (Terry Dutton 01332 393212)	



Engineering Bulletin

Central Networks

A company of **e-on**

04/022

13 August 2004

What?	Introduction of revised low voltage jointing kits			
When?	From September 2004			
Where?	Central Networks East (Eventually to be migrated to Central Networks West)			
Why?	Improvement in connectors available and changes to joint shells			
Who?	All Central Networks East Jointing Staff, Project Managers and ESP's			
How?	By Team Brief to Central Networks & Direct e-mail to ESP's			
Other Information	Kit Ref	Code	Details of Modifications	Reason for Change
	SJ1	5387500	Change from MF4/2 and MF4/1 to MF4/7 and MF4/5 connectors H/S tube (2 off) increase in length to 120mm	Heat shrink section MF4 connectors
	SJ3	5387520	Change from 1 off P1(H) to 1 off SS35/4 IPC Add 2 off H/S tubing x 120mm Change from Joint Shell S01 to S05	Fully insulated joint with piercing connectors
	SJ4	5387530	NE20 replaced with NE21 (Brass N/E Connector) ME50 replaced with ME35	Smaller connectors and brass saddle
	SJ5	5387540	Change from 3 off P1(H) to 3 x SS35/4 IPC Add additional SNE x1 (NE21) Change from Joint Shell S01 to S04	Fully insulated joint with piercing connectors
	SJ5A	5387590	New Kit – 25/35 mm waveform 3ph straight joint Full heat shrink joint with tunnel type connectors	New kit
	SJ6	5387550	Change from 3 off MF4/13 & NE20 to 4 off MF4/7 connectors CR Shrouds replaced with 4 off H/S tubing x 120mm Add 1 off H/S tubing x 1500mm ME50 replaced with ME35	Allows parking of MF4 on CNE insulation and smaller brass saddle
	SJ7	5387560	NE20 replaced with NE21 (Brass N/E Connector) ME50 replaced with ME35	New connectors and brass saddle
	SJ9	5387580	NE20 replaced with NE21 (Brass N/E Connector) ME50 replaced with ME35	New connectors and brass saddle
	SMJ95T	5387600	US7/A replaced with UM95 style connector Increase size of CR patch to 165x165mm -	Jointer Preference
	SMJ185T	5387620	US13/A replaced with UM185 style connector Increase size of CR patch to 200x200mm -	Jointer Preference

Other Information (continued)	SMJ300T	5387630	US12/A replaced with UM185 style connector Increase size of CR patch to 250x250mm -	Jointer Preference
	SE10	5502660	Change Black insulated earth wire to green/yellow	Align with other kits
	SE11	5502670	Change Black insulated earth wire to green/yellow	Align with other kits
	WPT7	5387870	Universal socket shear screws replaced with standard hexagonal shear heads	Range taking not required
	WPT8	5387880	Universal socket shear screws replaced with standard hexagonal shear heads	Range taking not required
All these kits will be supplied with instruction in them that are a copy of the current Code of Practice (Code of Practice 15 – LV Jointing) These kits will exist alongside the existing stock until the old stock is exhausted. Only then will they be issued.				

Contacts	Technical or quality issues should be addressed to the Asset Development Technology and Standards Team (Terry Dutton 01332 393212)
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Engineering Bulletin

Central Networks

A company of **e-on**

04/023

24th August 2004

What?	Introduction of New Cable Joint Shell
When?	13 th September 2004
Where?	All Central Networks Distribution Jointing Areas
Why?	To improve the seal around the jointing shell
Who?	All Central Networks East, ESP's, Jointers and Project Managers
How?	Team Brief Central Networks & Direct e-mail to ESP's

Other information

The shell has been developed to incorporate a lip around the seals of the top and bottom half of the shell, to aid installation and location of the cable joint shell

Lips to aid in location of shells



New plastic sliders have also been design to replace the existing metal clips currently being used to connect both half's of the shell together.

Plastic sleeves to connect shells together



There will be no changes to any joining procedures.

The new design means that there should be no need to use the foam seals or masking tape around the sides of the shell but there will still be a need to apply the foam strip around the cable to ensure that there is a good seal where the cable enters the shell. The foam strip will be included with the kit.

Technical issues should be addressed to the Equipment Specialist - Terry Dutton 782 3212.

Quality issues should be addressed to the Operations Support Team - Manjit Bilkhu 782-3362.



Engineering Bulletin

Central Networks

A company of **e-on**

04/024

24th August 2004

What?	Revision of COP 15 LV Cable Jointing
When?	Immediately
Why?	To inform Jointers that Central Networks COP 15: LV Cable Jointing has been updated with procedures for new LV Mains and Service Jointing Kits
Who?	All Central Networks East, ESP's, Jointers & Project Managers
How?	Team Brief Central Networks & Direct e-mail to ESP's

Changes Made in Version 11 - August 2004

	Title	Notes about the change
Documents Removed		

None

New Documents		
SER 5.6.1	1 Phase Hybrid Service Cable into a Street Lighting Cut Out (DEAD) (A3)	New Procedure
SER 5.6.1	1 Phase Hybrid Service Cable into a Street Lighting Cut Out (DEAD) (A4)	New Procedure

Amended Documents		
SER 5.1.1	1 Phase Hybrid Service into Outdoor Meter Box with Slope Board (DEAD)	New cable colours added
SER 5.2.1	3 Phase Waveform Service into 3 Phase 100A Henley Series 7 Cut-Out on Meter Board (DEAD)	New cable colours added
SER 5.3.1	Busbar Extension to 100A Domestic Single Phase Cut Out (DEAD)	New cable colours added
SER 5.3.2A	Busbar Extension to 100A Single or Three Phase Henley Series 7 Cut Out (LIVE)	New cable colours added
SER 5.3.2B	Link + Fuse Busbar Extension to 100A Domestic Single Phase Cut Out (LIVE)	New cable colours added



Engineering Bulletin

Central Networks

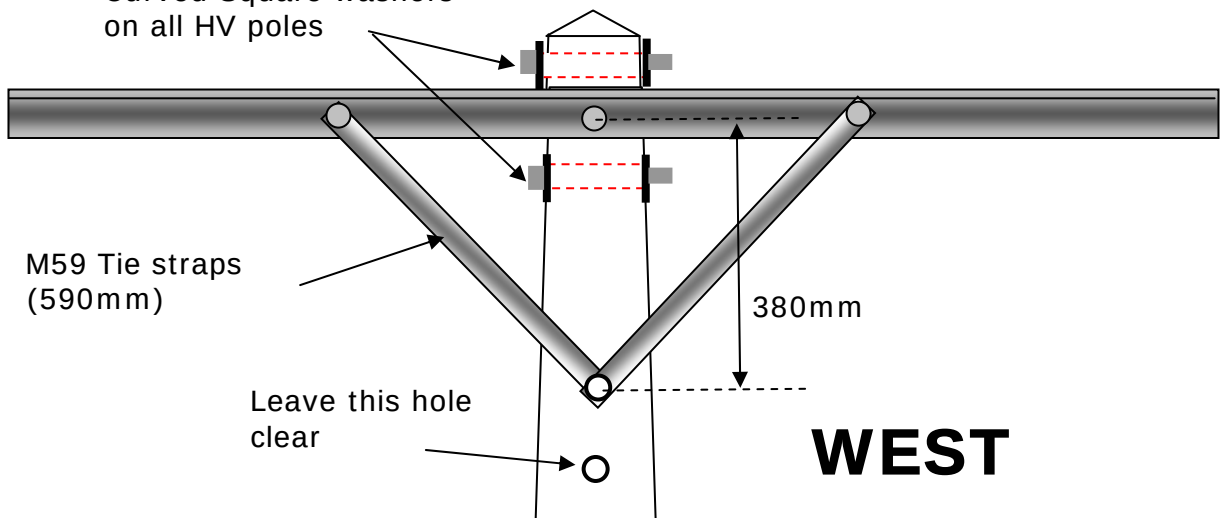
A company of **e-on**

026/04

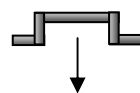
8 November 2004

What?	Changes to Standard Wood Pole Drillings
When?	New stock after December 2004
Where?	Central Networks East & West
Why?	To standardise on common wood poles supplied in to both East and West.
Who?	All Craftsmen and Project Managers and External Service Providers
How?	Team Brief & Direct e-mail to ESP's
Other information	To standardise on common wood poles supplied in to both East and West extra drillings will be added to the standard wood pole in order to accommodate the different 11kV steelwork arrangements currently used in the East and West. The method of marking the pole size / year will change from routed gouge marks to a stainless steel disc. West use crossarm tie straps (M59) that are 590 mm long based on the ENATS 43-10 overhead line standard. The tie strap hole is drilled 380mm below the crossarm bolt hole. East use crossarm tie straps (E230) that are 750 mm long based on the ENATS 43-95 overhead line standard. The tie strap hole is drilled 500 mm below the crossarm bolt hole. East also employ anti-split bolts either side of the crossarm bolt hole to reinforce the pole top for improved blizzard performance. NOTE (ENATS stands for Energy Networks Association Technical Standards which have replaced EATS and ESI Standards) This pole will be suitable for East & West - LV ABC West - 11kV - 50mm² Hazel light construction East - 11kV & 33kV - 50mm², 100mm², 150mm² & 300mm² construction West - Special fabrications can still be ordered to specific drawings as required (i.e. 100mm² & 200mm² lines using M5 ties straps and certain 33kV & 66kV poles) Actions Required East – Leave the unused tie strap hole clear. Continue to use anti-split bolts as normal. West – Anti Split Bolts need to be installed in the additional holes either side of the crossarm bolt hole. Leave the unused tie strap hole clear (See drawing overleaf). If there are any problems or if further information is required please contact Jon Knapper 07989 700069 or Tony Haggis 01332 393 215

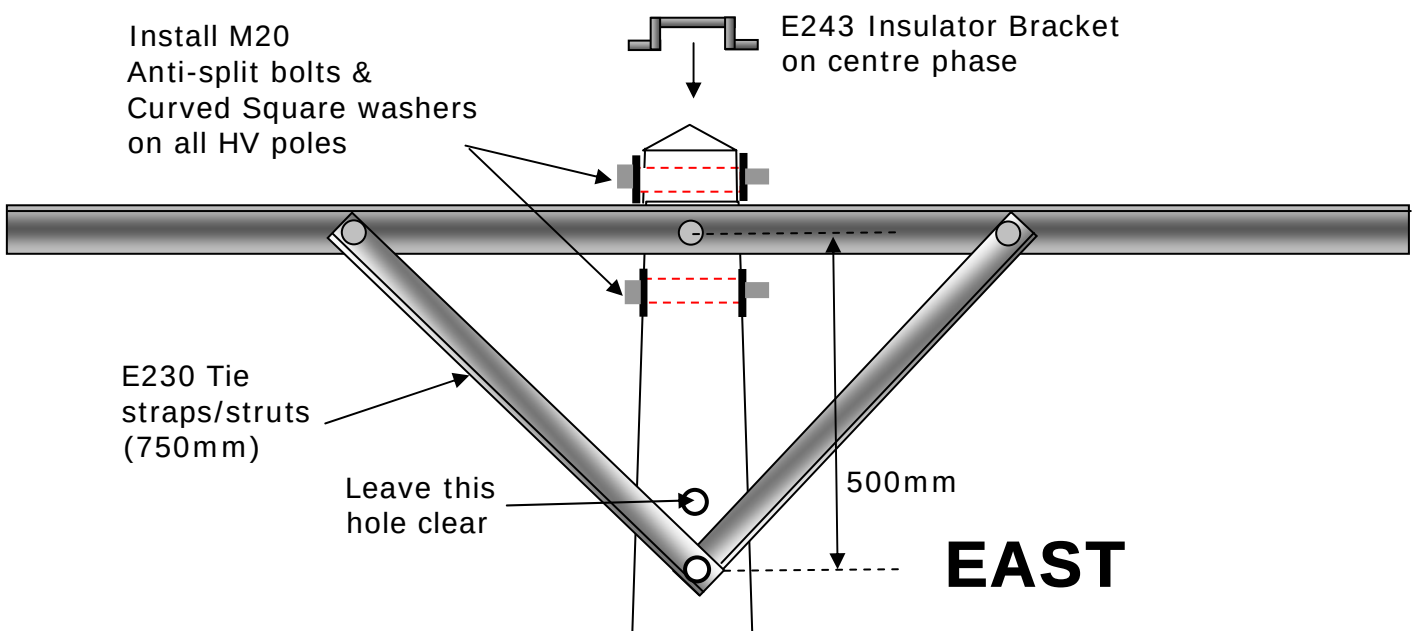
Install M20
Anti-split bolts &
Curved Square washers
on all HV poles



Install M20
Anti-split bolts &
Curved Square washers
on all HV poles

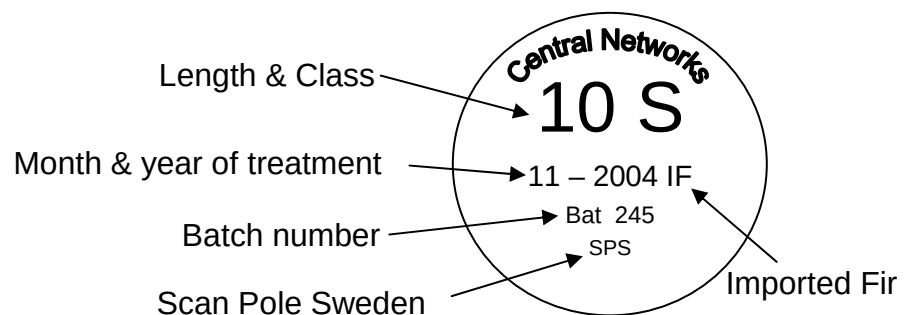


E243 Insulator Bracket
on centre phase



New Pole Markings

The traditional routed markings at the 3m mark will be replaced by a stainless steel disc set into the pole showing the information on the right





Engineering Bulletin

Central Networks

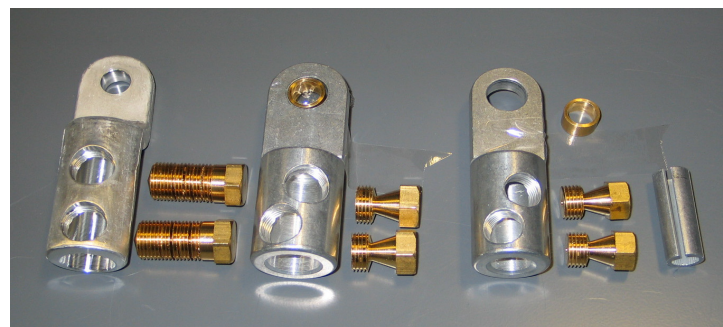
A company of **e-on**

04/027

01 December 2004

What?	Title:- Changes To 11kV Termination Kit Lugs
When?	Date:- 01 December 2004
Where?	Central Networks East & West (already implemented in West)
Why?	Description:- Revisions to lug design to use fewer lug types in termination kits
Who?	All Jointers, Project Managers and External Service Providers
How?	Team Brief Central Networks & by direct e-mail to ESP's

Other information



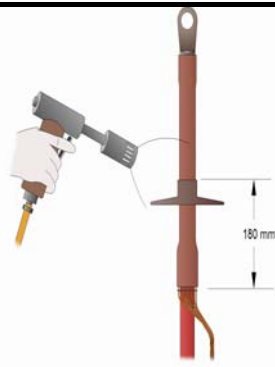
Above, on the left, is shown the existing shear bolt lug for a 300mm² 11kV cable. This is an offset palm lug and is fitted with multi-shear off bolts.

In the centre is shown the new equivalent lug that will appear in the termination kits. As you can see it is designed purely for a 300mm solid Aluminium (not stranded Copper) conductor. The palm is centred and the bolts are single shear off. The palm hole is 16mm diameter and the lug is supplied with a brass lug (fitted) to reduce the palm hole down to 12mm for use in modern switch gear.

On the right hand side is shown the 70/95/185mm lug. Again with a centre palm, 16mm palm hole, brass reducing bush (not fitted), and single shear off bolts. This lug is also supplied with a conductor sleeve (shown on the far right) and this is slipped over the 70 or 95mm conductor before the conductor is inserted into the lug. The sleeve will only fit one way, locating inside the lug with a raised rib that corresponds with a slot inside the lug. Once fitted the bolts can be sheared off as usual.

This feature has been replicated on the brass overhead lugs as well.

Should you have any queries regarding this matter, do not hesitate to contact Terry Dutton (782-3212 or Tony Haggis (782-3215) at Pegasus.



Engineering Bulletin

Central Networks

A company of **e-on**

04/028

01 December 2004

What?	Title:- Revisions to Codes of Practice 14 & 15 HV & LV Jointing (East only)
When?	Date:- 01 December 2004
Where?	Central Networks East
Why?	Description:- To inform of changes to manuals
Who?	All Jointers, Project Managers and External Service Providers
How?	Team Brief to Central Networks East & Direct e-mail to ESP's

Other information

The following have been revised in Code of Practice 14 – HV Jointing

Changes Made in Version 7 – November 2004

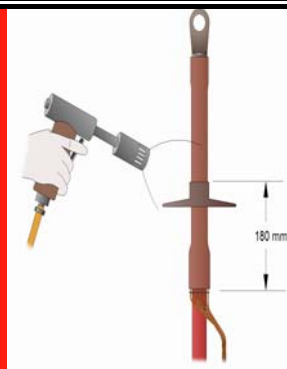
New Documents	Title	Notes about the change
Modules		
Module 18	Working with Concentric cable	New Document
Amended Documents		
33kV Procedures		
HV304 - 305	Raychem single core 33 kV cable terminations IXSU-F & OXSU-F	Step 1 - Dimension changed (Outdoor) - References to flexi-boots removed

Changes made to Code of Practice 15 LV Jointing

Changes Made in Version 13 - November 2004

New Documents	Title	Notes about the change
Module 18	Working with Concentric cable	New Document

Should you have any queries regarding this matter please contact Terry Dutton on 01332 393212 (782-3212).



Engineering Bulletin

Central Networks

A company of **e-on**

05/030

6th January 2005

What?	Title:- New Mini Wedge for Hybrid Cables
When?	Available now
Where?	Central Networks
Why?	Description:- New tool available in stores for jointers
Who?	All Jointers & Project Managers
How?	By Team Brief to Central Networks.

This wedge has been developed in conjunction with our tool suppliers to make cutting of the neutral wires on a hybrid cable easier. The shape of the end of the wedge with the groove along it make it easier to get underneath the neutral wires and to cut them using side cutters.

There was concern that these wires were being raised for cutting by using other tools with the potential to make contact with a live phase conductor.

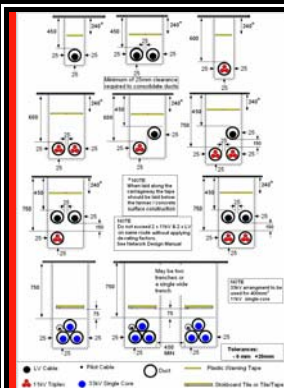
Commodity Code
5888310

Description
Hybrid mini wedge

Other information



Queries should be addressed to Terry Dutton, Cables Specialist, Network Strategy & Regulation on 01332 393212 (782-3212).



Engineering Bulletin

Central Networks

A company of **e-on**

05/034

February 2005

What?	Revision of Cables and Cable Laying Accessories Manual		
When?	February 2005		
Where?	Central Networks East & West		
Why?	Document modified to reflect adoption of ducting all cables		
Who?	All Craftsmen and Project Managers and External Service Providers		
How?	Team Brief EME & Direct e-mail to ESP's		
Other information	Changes made in version 5		
	Date	Section	Notes about the change
	18/02/2005	31.2	Reference included to PPG3 residential sites
		32.3	Requirements for spacing between ducts for blinding / consolidation explained.
	10/11/2004	Appendix A & C	Appendix A changed to read 'Cables Laid Along Footpaths and PPG 3 Road/Footpaths' Appendix C changed to read 'Cables Laid Across and Along Roads'
		Section	Document modified to reflect adoption of ducting all cables Duct cable drawings added to appendices A,B,C Appendix H added showing spacing of 11kV transformer tails
If you require further information please contact Tony Haggis on 782 3215 or 01332 393215.			



Engineering Bulletin

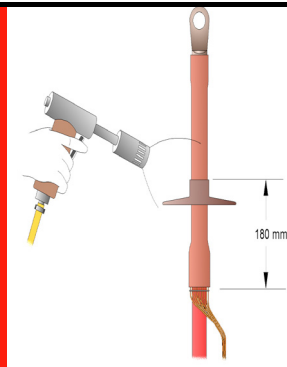
Central Networks

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04/035

November 2004

What?	Guidance for Supplies to Telecomms Installations located within Distribution Substations & Guidance for Supplies to Telecomms Installations located within Primary/Grid Substations
When?	November 2004
Where?	Central Networks East & West
Why?	These guidance documents details the requirements of earthing and providing LV supplies to Telecomms masts located within the Company's Distribution Substations & Primary/Grid Substations
Who?	All Craftsmen and Project Managers and External Service Providers
How?	Team Brief EME & Direct e-mail to ESP's
Other information	The documents will be stored on Documentum under Cabinets/Central Networks/Engineering Manuals & COPs/COMBINED Central Networks/Guidance Documents as well as being available on the CROG download. If you require further information please contact Nigel Johnson, Earthing Specialist on 01332 393800 or 07989700262.



Engineering Bulletin

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05/036

February 2005

What?	West HV Joint Materials List
When?	Immediately
Where?	Central Networks - West
Why?	Due to difficulty in obtaining the correct items from store
Who?	All Jointers, Project Managers and ESP's working in the West of Central Networks.
How?	By Team Brief to Central Networks and e-mail to ESP's
Other information	Due to difficulties reported in obtaining the correct materials for West joints from Huithwaite stores a crib sheet has been created for the most frequently used West HV Joints. The sheet shows the materials required for each joint kit with the old Vixen code and the new Commodity Code. Queries should be addressed to Terry Dutton, Cables Specialist 01332 393212 (782-3212) or Nicola Cotton, Document Technician, Network Strategy & Regulation on 01332 393458 (782-3458).



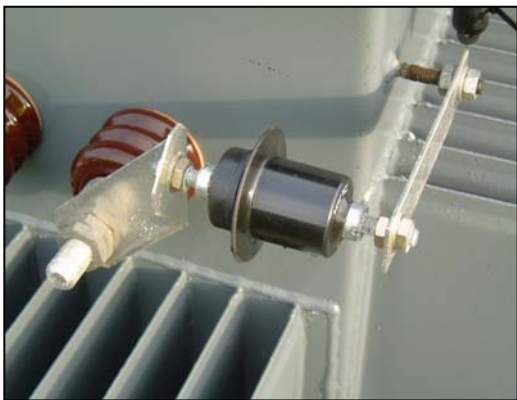
Engineering Bulletin

Central Networks

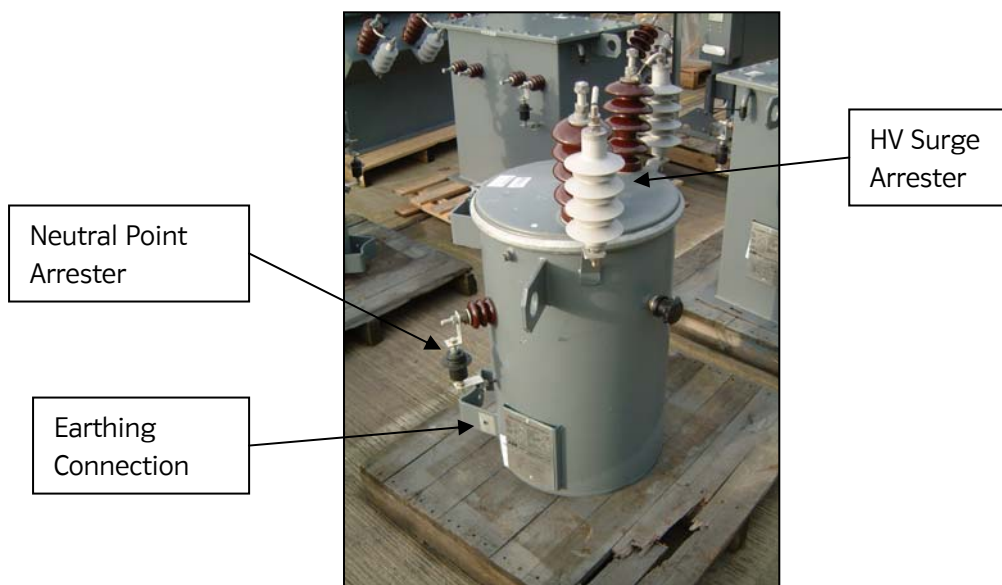
A company of **e-on**

05/039

13th April 2005

What?	Pole Mounted Transformers fitted with HV & Neutral Point Surge Arresters
When?	13 th April 2005
Where?	Central Networks West
Why?	To standardise on transformer specification and improve lightning protection.
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Other information	All new pole mounted transformers shall shortly be arriving factory fitted with HV Surge arresters and one LV Neutral point surge arrester (or transient voltage clamber) to improve the lightning protection and reduce the amount of pole transformer failures.  High Voltage Surge Arresters  Neutral Point LV Surge Arrester Mode of Operation The HV Surge Arresters operate in the usual manner to clamp the voltage at a predetermined level before the BIL (Basic Insulation Level) of the transformer is exceeded. These afford more protection and operate more efficiently than the conventional Duplex arcing gaps. The Neutral point arrester acts to limit the effects of the voltage rise on the transformer tank due to the HV Surge Arrester Operation. This prevents a flashover across the LV bushings to the earthed neutral connection. The surge arresters are earthed on to the transformer tank so it is essential that a sound earth connection is made on to the tank

Connections are made in the usual manner to the transformer bushings; please ensure all the connections to the surge arresters are secure.



Note: There is no change to the HV steelwork arrangement except the conductor shall be free of any sharp bends

For information the standard Pole Transformers are available on the following Commodity Codes.

Transformer	Commodity Code
16kVA Single Phase	4300410
25kVA Single Phase	4300420
50kVA Single Phase	4300430
50kVA Three Phase	4300440
100kVA Three Phase	4300450
200kVA Three Phase	4300460
315kVA Three Phase	4300470

Note that Special 125kV BIL Pole Transformers for G78 Mobile Phone Base Station supplies are available on the following Commodity Code.

Transformer	Commodity Code
100kVA Three Phase 125kV BIL	4300230

Please contact Jon Knapper (07989 700069) or Steve Horsley (07710 155747) within the Assets Management Team with any queries.



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05/040

18 April 2005

What?	Central Networks – Reclaimed Insulating Oil (to BS 148: 1998 Class 1) for Transformers & Switchgear Maintenance Activity. New 3 year supply contract awarded to Electrical Oil Services (E.O.S).								
When?	01 April 2005								
Where?	Central Networks East & West								
Why?	The integration of East Midlands and Aquila's Insulating Oil Requirements. Previously CN West's policy was to purchase new oil from Grosvenor with CN East using reclaimed oil from EOS, but based upon the instability in the crude oil market, lower prices, CN East's past experience and the environmental considerations, the decision has been made to standardise on one type/source of supply, i.e for reclaimed oil from EOS.								
Who?	All Craftsmen, Project Managers and External Service Providers								
How?	Team Brief Central Networks & Direct e-mail to ESP's								
Other information	Supplier :- Electrical Oil Services (EOS) i) Bulk Oil supplied in:- <table border="0"> <tr> <td>2,500 to 5,000 litre loads</td><td>– no commodity codes</td></tr> <tr> <td>5,001 to 10,000 litre loads</td><td>– “ “ “</td></tr> <tr> <td>10,001 to 20,000 litre loads</td><td>– “ “ “</td></tr> <tr> <td>20,001 to 26,000 litre loads</td><td>– “ “ “</td></tr> </table> ii) 205 litre drums - commodity code 4550020, iii) 25 litre drums - commodity code 4550060, iv) * Used empty 205 litre drums - commodity code 4550200. *It should be noted the supply of reclaimed oil is dependant on Central Networks returning used/dirty oil to EOS. This reclaimed oil policy 'fits' within the new I&M policy which combines best practice from East and West for all the Inspection and Maintenance requirements at all voltages. EOS. contact :- Andy Bartram tel: 07966 437567, e-mail: bartrama@eosl.co.uk Technical queries :- Steve Horsley, NS&R, Pegasus tel: 01332 393216 Procurement Buyer :- Ian Alexander, Procurement, Pegasus tel: 01332 393359	2,500 to 5,000 litre loads	– no commodity codes	5,001 to 10,000 litre loads	– “ “ “	10,001 to 20,000 litre loads	– “ “ “	20,001 to 26,000 litre loads	– “ “ “
2,500 to 5,000 litre loads	– no commodity codes								
5,001 to 10,000 litre loads	– “ “ “								
10,001 to 20,000 litre loads	– “ “ “								
20,001 to 26,000 litre loads	– “ “ “								



Engineering Bulletin

Central Networks

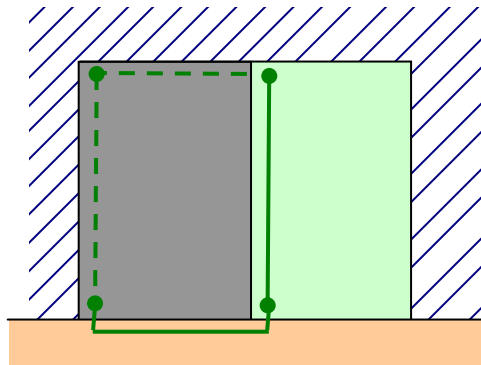
A company of **e-on**

05/041

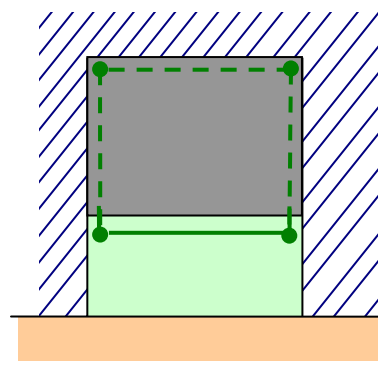
20 April 2005

What?	Perimeter HV Earthing around Brick-Built 11kV Substations
When?	Immediate
Where?	Central Networks East & West
Why?	The standard earth design for 11kV substations requires a buried perimeter electrode with 2.4m earth rods installed in the corners. With new or existing indoor or brick-built substations there may be some difficulty in achieving this where third party properties immediately adjoin our substation building. This guidance shows the principles to be adopted to achieve a satisfactory electrode arrangement.
Who?	All Fitting and Civil Craftsmen, Project Designers & Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
General Guidance	Where the perimeter electrode must be installed within the substation building then this shall preferably be buried in the concrete floor or if this is impractical it shall be pinned at low level to the brickwork such that copper tape is in direct contact with the building. Where rebar is present under the floor of the building then this shall be connected to the earth electrode system wherever possible. Any existing metal trench covers shall also be bonded to the earth electrode system (for new installations, cable trench covers shall be non-metallic). At some point in the substation an earth bar shall be positioned to allow convenient connection to the HV switchgear (this may be on the switchgear itself). This shall have two independent connections to the perimeter electrode. If the perimeter electrode has been pinned to the wall then this could act as the earth bar connection point for the switchgear. Where the internal earth tape crosses access doors then the tape shall be buried in the floor to avoid tripping hazards. Where the corner earth rods must be installed within the building then a connection pit will be required at each rod position to provide access to the earth rod connection to allow for future testing. In larger substations the earth rods shall be no further apart than 7m and shall only be installed on the substation site and not in public or third party land. It is permissible to install the perimeter electrode on public land (but not third party). Hot sites:- If the substation is a hot site then the LV electrode shall be segregated from the HV earth in the manner described in the Central Networks East earth manual. If our substation forms part of a larger building complex, then it is important to ensure that our HV earth system is segregated from the rest of the building to prevent transfer voltages appearing on customers installations. If this is difficult or impossible to achieve then a specialist earthing study will be required.

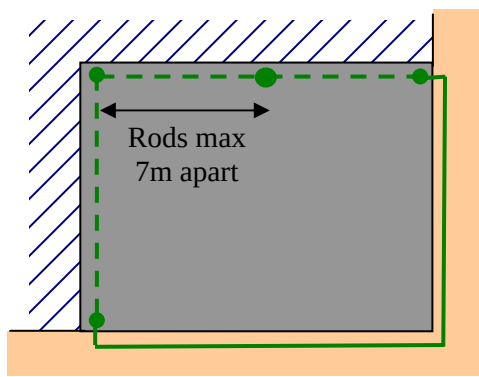
Typical Examples of Perimeter Electrode Arrangements for Brick Built Substations



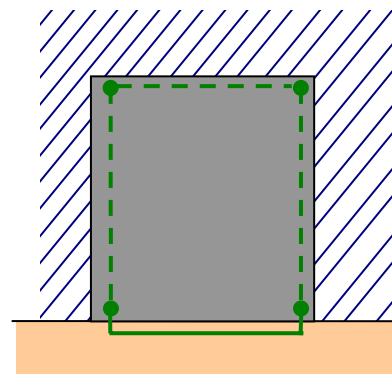
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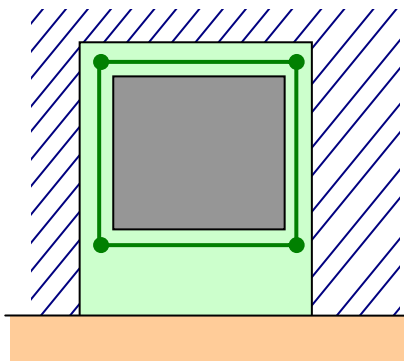
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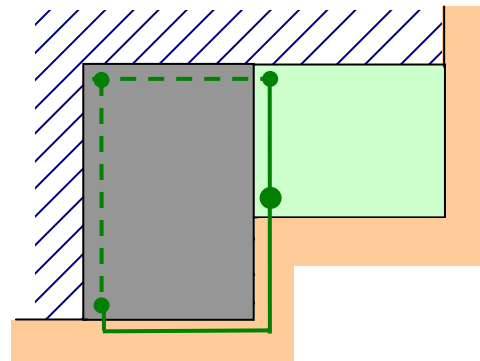
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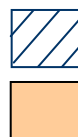
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Key:-



Brick Built Substation

Outdoor Land Owned by CN



Third Party or Private Land

Public Land (e.g. Footpath)

— Perimeter Buried Earth Conductor (Note- **not** to be installed on private land)

- - - Earthtape inside building (ideally sunk into concrete wherever possible or if not possible then it should be directly fixed/pinned to the brick wall)

● 2.4m Corner Earth Rods (Note- Only to be installed on Company land and rods inside building must be no further than 7m apart)

Further information please contact Nigel Johnson 07989 700262 (or 7775020), Network Strategy & Regulation, Pegasus.



Engineering Bulletin

Central Networks

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05/042

5th May 2005

What?	Earthing at Ground Mounted Distribution Substations
When?	Immediate
Where?	Central Networks East & West
Why?	11kV ground mounted substations must be assessed to determine whether they are Hot or Cold (i.e. if during a fault, the Rise of Earth Potential {RoEP} exceeds 430volts). This determines whether the HV & LV earths can be combined. Central Networks policy states if the substation is fed via a continuous cable network back to the primary then the substation can be assumed to be Cold. However, overhead backfeeds to the substation shall also be considered, as it is possible they could make it Hot if fed abnormally. If a distribution substation is assumed or shown to be Hot then it is Central Networks' policy to separate the HV and LV earths in accordance with the Central Networks East Earthing Manual. A flow chart has been included on the last page of this bulletin to assist in determining the arrangement to be adopted.
Who?	Project Manager, Designers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Procedure	At a potentially Hot site where it is not possible to achieve the required segregation of the HV & LV earths then a study must be carried out to determine the actual RoEP voltage. This requires an earth resistance measurement of the substation to be made (or an estimation of the resistance based on actual soil resistivity values and the size of the proposed earth grid). The RoEP can now be calculated using this resistance and the calculated earth fault current when fed from the overhead route(s). The earth measurement can also include the contribution of Central Networks' interconnected earthing system. Any calculated resistance used at the design stage must be checked by an actual reading when the substation earth grid has been installed. The site can be treated as Cold if the calculated RoEP is below 430volts. The calculation may indicate that the site is still Hot but that the standard separation distances can be modified or that additional earthing is required to achieve the segregation distances available.

Procedure (cont.)

Customer Substations

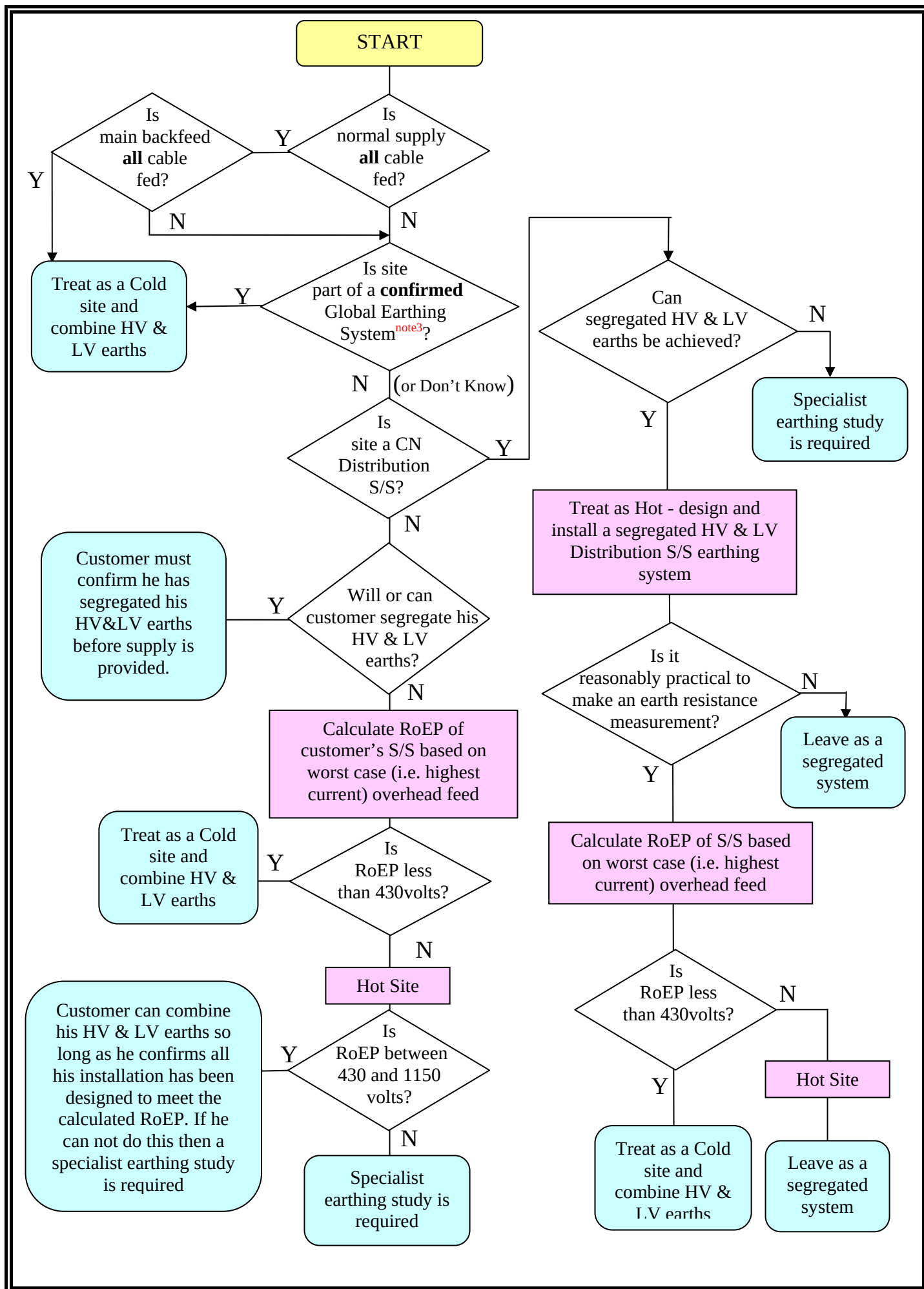
Customer substations need special attention since Central Networks is not directly responsible for the customer's earthing arrangement. If the substation is definitely Cold then we will inform the customer of this fact. If the substation is possibly or likely to be Hot then the customer shall initially be advised to segregate his HV and LV earths. However, the customer may not wish or can not easily segregate his HV and LV earths. In which case the RoEP for the substation shall be calculated. This will be based on a measured or proposed earth value for the customer's installation and the likely earth fault current when fed via the overhead route. It is permissible to include the contribution from both Central Networks' earthing system and the customer's building (e.g. footings of steel frames, foundations and reinforcing bars) in this calculation. If the RoEP is below 430volts then the substation can be declared Cold and treated as such. If the RoEP is between 430 and 1150volts then special precautions are necessary. In this case the customer shall be advised of the expected RoEP and he shall then confirm his installation is designed to maintain safety for this voltage ^{Note 1}. If a calculated resistance has been used then on completion of the work a resistance measurement shall be carried out to confirm the actual RoEP. If the RoEP is in excess of 1150volts ^{Note 2} then a specialist earthing study shall be required. In all cases the customer's HV earth and the Company's HV earth will be combined unless a specialist study indicates otherwise.

Note 1:- It is expected that a modern building with a damp proof membrane and equipotential bonding to the current IEE wiring Regs. is likely to be satisfactory. However, if the building contains showers, swimming pools or has extraneous earthed metalwork then the customer may need to take additional precautions to make his installation safe.

Note 2:- 1150volts is the maximum acceptable RoEP voltage for normal telecommunications equipment.

Note 3:- Global Earthing System is defined as an extensive cable connected network which has sufficiently low resistance to limit the RoEP to below 430 volts

For further information please contact: Nigel Johnson, Earthing Specialist, Assets Team, Network Strategy & Regulation on 07989 700262.





Engineering Bulletin

Central Networks

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05/043

12th May 2005

What?	Application Guide to Supplies to Mobile Phone Base Stations mounted on EHV Towers (G78 Installations)
When?	Immediate
Where?	NGC 275 & 400kV Towers and Central Network's 132 and 33kV Towers
Why?	The Electricity Networks Association has developed an Engineering Recommendation G78 which sets out safe methods of providing LV supplies to the Mobile Phone Base Stations (MPBS) that protect our customers and staff from the high voltage system on the towers. There are some special precautions to be taken when working on 11kV & LV equipment supplying these sites and a new section of the Operations Manual has been developed to deal with this. The Application Guide to Supplies to Mobile Phone Base Stations mounted on EHV Towers (G78 Installations) offers additional guidance for planners and designers for G78 sites and seeks to bring together the East and West designs for supplies to G78 installations.
Who?	All operational staff (East & West) including 132kV tower staff, Network Designers & ESPs.
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESPs
Contacts	Technical issues should be addressed to Nigel Johnson & Tony Haggis, Asset Management NS&R; Andrew Ridley, Telecommunications Business or Martyn Button, Operational Safety.
Other Information	This Bulletin and the Application Guide are available at the following locations:- Engineering Manuals & Codes of Practice folder in Documentum; on the ESP CD reference documents; on the CROG reference documents. This Bulletin updates the previous bulletin 003/03.



Engineering Bulletin

Central Networks

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05/045

4th May 2005

What?	Neutral Earth Resistor Guidance
When?	Immediate
Where?	Central Networks East & West
Why?	Neutral Earth Resistors limit the maximum system Earth Fault currents. NER values are specified for the following reasons :- a) To allow sufficient E/f current to enable protection equipment to operate at all positions on the network - In particular HV fuses and remote positions on overhead networks will dictate the minimum NER current rating allowed on 11kV or 6.6kV systems. b) To prevent damage to equipment during a sustained earth fault - This is normally achieved by limiting the NER current rating to the full load current capacity of the source transformer. c) To reduce to the Rise of Earth Potential on associated earth electrode systems - by keeping the maximum E/f Current as low as practical. d) To allow standard equipment to be used through out Central Networks. In addition the future installation of multiple NERs at a single site (on systems that can be paralleled) shall no longer be accepted, since the value of the E/f current will change depending on the running arrangement. This can result in higher than necessary E/f currents and can also cause protection mal grading.
Who?	All Network Designers, Project Designers & Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Requirements	New 66kV and 33kV Systems Transformers with secondary voltages above 11kV shall have individual NER's. They shall be designed on an individual basis to meet the requirements of the site. Normally each NER shall be designed to match the Full Load Current of its associated transformer. New 11kV and 6.6kV Systems Transformers at the same site, having either 11kV or 6.6kV secondary windings and supplied from the same primary voltage shall share a single NER (i.e. one for each secondary voltage level).

**Other
information**

The rating of the NER shall depend on the rating of the smallest associated secondary winding on the substation site, and shall be chosen from the criteria below:-

a) If the smallest secondary is greater than or equal to 30MVA, the NER shall be rated at 1500amps (i.e. for 11kV systems shall have a nominal dc resistance of 4.23 ohms).

b) If the smallest 11kV secondary is less than 30MVA, the NER shall be rated at 1000amps (i.e. for 11kV systems shall have a nominal dc resistance of 6.35 ohms).

Existing Systems

All existing NER arrangements will be reviewed on an individual site basis and a programme of remedial actions issued. Where minor changes are required this shall be carried out during the next maintenance.

Extensions to Existing Systems

Whenever existing NER arrangements are being modified or new transformers / NERs are being installed, the opportunity shall be taken to bring the complete arrangement into line with the policy for New Systems.

Physical Arrangement of Shared NERs

The shared NER shall be connected to the 11kV or 6.6kV neutrals (direct from the neutral points of star secondary windings or from derived neutrals of earthing transformers).

Each transformer 11kV or 6.6kV neutral shall have a NER isolator to disconnect it from the NER and another switch to directly earth the neutral. The isolator and switch shall be interlocked on a 'make before break' principle, such that the direct earth switch must be closed before the NER isolator is opened, and in the reverse sequence, the NER isolator must be closed before the direct earth switch is opened.

A NER earth switch shall be provided to enable the NER isolators to be maintained.

NER Specification

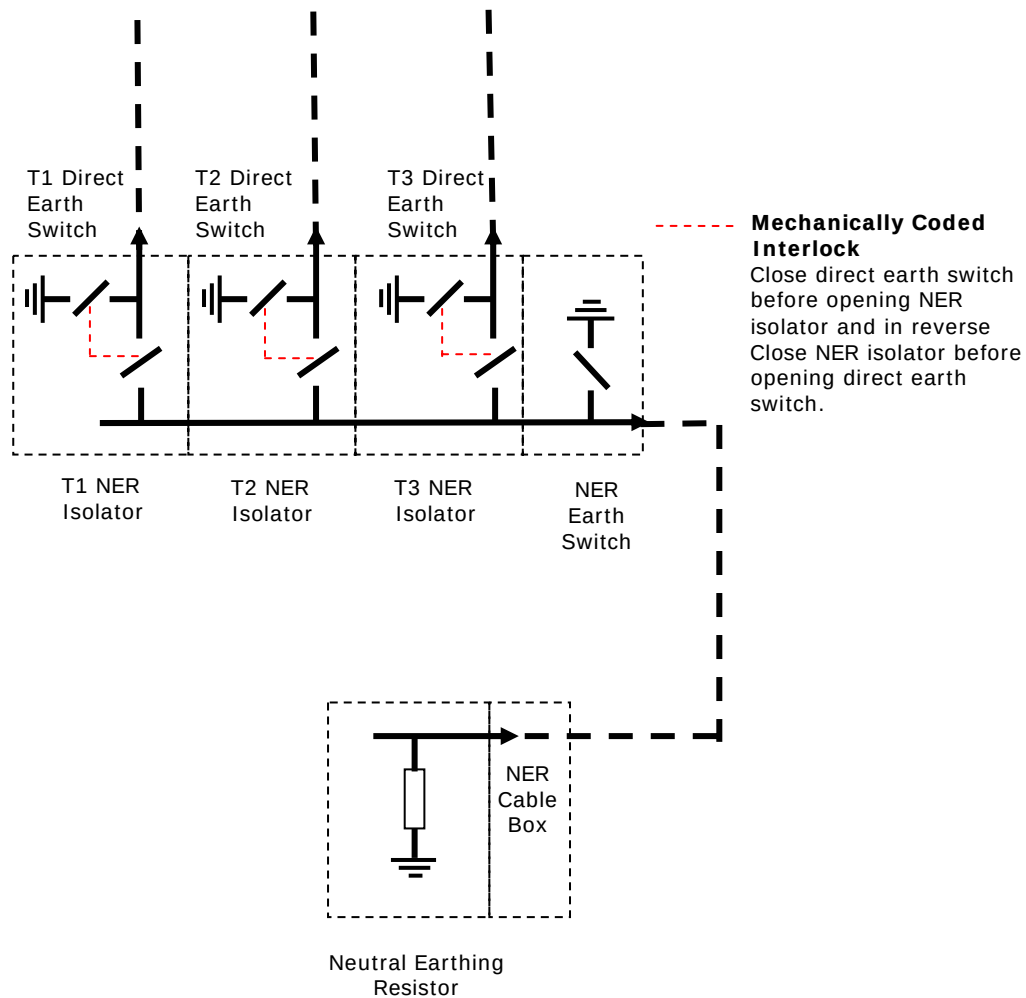
The switchgear and NER shall have a BIL of 95kV and shall be rated at the specified current rating (e.g. 1500 or 1000amps) for 20 seconds followed by 100amps continuous. At any point during the continuous period the NER shall be capable of withstanding the specified current for a further 20 seconds. (Note - Normally all new NERs shall be of the Air Cooled type, where a liquid NER is specified these above ratings shall be increased to 30 seconds).

The NER isolators, NER earth switch and direct earth switches need not have any assigned fault making or current breaking capacity, but shall have a minimum short time rating of 1500A for 20 seconds and a continuous rating of 100A.

For further information please contact Bob Ferris, Protection & Automation Manager, Assets Management, Network Strategy & Regulation on (777-4954) 07989 700225.

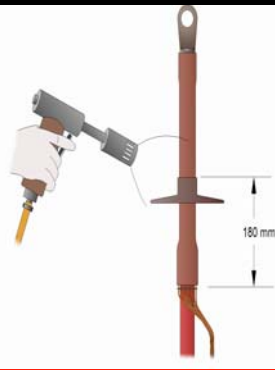
Arrangement for Switching Neutrals to a Common Neutral Earthing Resistor

Neutrals from Main Transformer Secondary
Star Points or from Earthing Transformer Star
Points.



The NER size shall be 1000Amps if transformer rating is less than 30MVA. If the transformer is 30MVA or greater then the NER shall be 1500Amp rated. With double secondary transformers the rating to be considered is the secondary winding rating

Copies of this and other Bulletins are available from the Engineering Manuals & Codes of Practice folder in Documentum; on the ESP CD under Reference Documents; on the CROG download under Reference Documents.



Engineering Bulletin

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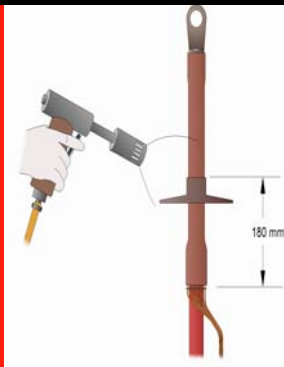
05/047

09 June 2005

What?	Changes to Standard Cables Used in Central Networks
When?	Effectively immediately
Where?	Central Networks East & West
Why?	To standardise and rationalise the cables used across Central Networks
Who?	Jointers, Project Managers & ESP's
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Other information	As part of the standardisation of cable sizes throughout Central Networks the list of cables are all that will be available has been rationalised. Fortunately, both halves of the Company use similar cables. The main change is to 11kV & 33kV cables in the East which will be supplied with a bonded semi-conducting screen instead of the strippable one at present. At low voltage the number of copper cables used by the West has been reduced and the 4 core waveform cables have been reduced to just two sizes. Existing cables not on this list will be made Cat 3 (i.e. not re-ordered once stock exhausted). The full list is overleaf however this is likely to be further rationalised as further integration takes place. For further information please contact:- Terry Dutton – 782-3212 Manjit Bilkhu-Smith (Procurement) – 782-3362 Dave Harvey (Huthwaite) - 782 3284 or 777-3395

Cable	Commodity Code	Use	Supplier
Service Cables			
25mm ² 1ph SAC hybrid	4015	Street lighting service	Copper Cable Co
35mm ² 1ph SAC hybrid	4025	Domestic single phase service	Copper Cable Co
35mm ² 1ph Copper	3035	Overhead aerial span and under eaves WEST ONLY	Copper Cable Co
35mm ² 1ph SAC split Concentric SNE	3085	Replace for non-PME service repair only	Likely to be Tratos
35mm ² 3ph SAC CNE Waveform	3115	3 phase service up to 100A/70kVA (note change to Waveform for West)	Copper Cable Co
35mm ² 3ph SAC SNE Split Concentric	3315	Replace for non-PME service repair only (West)	Likely to be Tratos
LV Mains Cables			
95mm ² 3 core SAC CNE Waveform	3155	Mains cable for use as per Network Design Manual	Copper Cable Co
185mm ² 3 core SAC CNE Waveform	3225	Mains cable for use as per Network Design Manual	Pirelli
300mm ² 3 core SAC CNE Waveform	3265	Mains cable for use as per Network Design Manual	Pirelli
185mm ² 4 core SAC SNE Waveform	3335	Mains cable for repairs only in non-PME area (West use only)	Pirelli (TBC)
600mm ² (4x150) sectoral single core aluminium strip/wire armour	6405	Low voltage single core tails from transformer	Pirelli
11kV Cables			
70mm ² SAC Triplex	417225	Spur cable and for pad mount transformers (East)	Copper Cable Co
95mm ² SAC Triplex	4713290	Spur Cable (West)	Copper Cable Co
185mm ² SAC Triplex	417245	Spinal main circuit cable	Pirelli
300mm ² SAC Triplex	417255	First leg out of Primary or inter-connector	Pirelli
300mm ² Stranded Copper Triplex	4713330	First leg out of Primary or inter-connector very heavy loaded circuits	Pirelli
400mm ² Stranded Copper single core	417285	11kV transformer tail	Pirelli
630mm ² Stranded Copper single core	417305	11kV transformer tail	Pirelli
33kV Cables			
150mm ² Stranded Copper single core	506855	33kV circuit up to 24 MVA	Tratos
400mm ² Stranded Copper single core	506885	33kV circuit up to 40 MVA	Tratos
Telephone/Pilot Cables			
37 pair >5kV impulse	3045375	Pilot cable where impulse level is below 5KV	Copper Cable Co
61 pair >5kV impulse	3045615	Pilot cable where impulse level is below 5KV	Copper Cable Co
7 pair >15kV impulse	3043225		
19 pair >15kV impulse	3043295		
Aerial Bundle Conductor (ABC)			
2x35mm ²	895355		General Cables
2x50mm ²	895515		Copper Cable Co
2x95mm ²	895955		Copper Cable Co
4x35mm ²	894355		General Cables
4x50mm ²	894515		Copper Cable Co
4x95mm ²	894955		General Cables
4x120mm ²	894975		Copper Cable Co

Cable	Commodity Code	Use	Supplier
General Wiring			
6491X			
16mm ² H.D. Cu. Green/Yellow	807785		Tratos
50mm ² Cu Green/Yellow	807815		Tratos
2.5mm ² Cu Black	807795		Tratos
2.5mm ² Cu Grey	807875		Tratos
2.5mm ² Cu Green/Yellow	807565		Tratos
6mm ² Cu Green/Yellow	807875		Tratos
6181Y			
25mm ² Brown/White	807745	Meter tails (Phase)	Tratos
25mm ² Blue/White	807715	Meter tails (Neutral)	Tratos
70mm ² Black/Brown	808055	Pole transformer LV tails (Phase)	Tratos
70mm ² Blue/Brown	807455	Pole transformer LV tails (Neutral)	Tratos
120mm ² Black/Brown	808115	Pole transformer LV tails (Phase)	Tratos
120mm ² Blue/Brown	807465	Pole transformer LV tails (Neutral)	Tratos
Abbreviations			
SAC	Solid Aluminium Conductor		
SNE	Separate Neutral Earth		
CNE	Combined Neutral Earth		
>	Up to		
Cu	Copper		



Engineering Bulletin

Central Networks

A company of **e-on**

05/048

06 June 2005

What?	Introduction of LV Joint Kitting System across Central Networks
When?	Effective from 20 th June 2005
Where?	Central Networks East & West
Why?	To Standardise and Rationalise the LV joints used across Central Networks
Who?	Jointers, Project Managers, Managers & ESP's
How?	Via e-mail to Engineering Bulletin Distribution Group, by hand to Jointers, by Direct e-mail to ESP's & Jointer Roadshows.
Other information	Following scrutiny into jointing practices in the East and West, not surprisingly there are considerable similarities between the two. In order to maximise the advantages of this, and also to standardise and rationalise the jointing systems, it is proposed to introduce the jointing kitting system across Central Networks. As you may be aware, joint kits have been used in the East for approximately 4 years, but this system does not cover some of the cables and practices carried out in the West. Therefore, the best practices of both halves of the Company have been combined to produce a standard CN kitting system. A procedure for the joint will be included in the kit and this will be an exact copy of the manual procedure. NB:- A kitting system can never cover all possible jointing scenarios. Therefore joints not covered by a kit will have to be completed as at present. However, more new kits to address some of these areas will be being introduced over time. The main changes to note are:- • In the West – new connectors, piercing connectors, heat shrinking and horizontally split joint boxes. • In the East – armour bonds, Waveform core seals, channel connectors in Waveform Straight joints. These changes are not anticipated to have any training requirements. A kit for a joint will contain everything (bar tape and resin) to complete the joint. Additionally, significant savings in resin use are expected and further savings in picking, ordering and purchasing as well as a reduction in the chances of wrong components being received on site. A full list of all kits available is attached. For further information please contact:- Terry Dutton – 782-3212, Manjit Bilkhu-Smith (Procurement) – 782-3362 or Dave Harvey (Huthwaite) - 782 3284 or 777-3395

Low Voltage Joint Kits Currently Available					
ITEM COMM. CODE	DESCRIPTION	Sicame Kit Name	Resin QTY litres	Comments	Procedure No.
Transition Straight Joint Kits					
5387600	95 transition straight	SMJ95T/CN	10	Channel Connectors inc. one service insert	MAIN 3.1.2
5387620	185 transition straight	SMJ185T/CN	12	Channel Connectors inc. one service insert	MAIN 3.1.2
5387630	300 transition straight	SMJ300T/CN	18	Channel Connectors inc. one service insert	MAIN 3.1.2
Service Inserts (one ea. in above kit)					
5387310	95 Service bridge insert	UM95SB	0	Use with straight joint channel connector only	N/A
5387320	185 Service bridge insert	UM185SB	0	Use with straight joint channel connector only	N/A
5387330	300 Service bridge insert	UM300SB	0	Use with straight joint channel connector only	N/A
Transition Branch Joint Kits					
5387710	95 transition branch (CNE to PILC main)	BMJ95T/CN	10	JAWS Connectors	MAIN 3.2.2
5387720	185 transition branch (CNE to PILC main)	BMJ185J/CN	20	JAWS Connectors	MAIN 3.2.2
5387730	300 transition branch (CNE to PILC main)	BMJ300J/CN	24	JAWS Connectors	MAIN 3.2.2
Transition Branch Joint Kits					
5387660	95 trans branch (PILC to CNE main)	BMJ95PT/CN	10	JAWS Connectors	MAIN 3.3.2
5387680	185 trans branch (PILC to CNE main)	BMJ185PT/CN	20	JAWS Connectors	MAIN 3.3.2
5387690	300 trans branch (PILC to CNE main)	BMJ300PT/CN	24	JAWS Connectors	MAIN 3.3.2
Service Joint Kits					
5387500	single phase CNE straight	SJ1/CN	0	Heat Shrink	SER 1.1.2A
5387510	single phase trans straight	SJ2/CN	4		SER 3.1.2
5387520	single phase CNE branch	SJ3/CN	4		SER 1.2.2
5387530	single phase trans branch	SJ4/CN	4		SER 3.2.2
5387590	three phase CNE straight joint	SJ5A/CN	0	Heat shrink	SER 6.1.2
5387540	three phase CNE branch	SJ5/CN	6		SER 6.2.2
5387550	three phase trans straight	SJ6/CN	6		SER 7.1.2
5387560	three phase transition branch	SJ7/CN	6		SER 7.2.2
5387570	single/three phase service cut out change (to re-connect service)	SJ8/CN	2		
5387580	single phase trans branch off 0.04 PILC	SJ9/CN	6		SER 7.4.1
Straight Joint Kits					
5385860	95 CNE straight	SMJ95W/CN	8	Channel Connectors Inc. one service insert	MAIN 1.1.2
5385870	185 CNE straight	SMJ185W/CN	10	Channel Connectors Inc. one service insert	MAIN 1.1.2
5385880	300 CNE straight	SMJ300W/CN	14	Channel Connectors Inc. one service insert	MAIN 1.1.2
Transition Straight Joint Kits (4C waveform)					
5387830	95 to 300 4C waveform to 3C waveform/4C PILC	SMJ300T34/CN	18	Channel Connectors Inc. one service insert	MAIN xxx
Branch Joint Kits					
5385920	95 CNE branch	BMJ95W/CN	8	JAWS Connectors	MAIN 1.2.2
5385930	185 CNE branch	BMJ185W/CN	16	JAWS Connectors	MAIN 1.2.2
5385940	300 CNE branch	BMJ300W/CN	22	JAWS Connectors	MAIN 1.2.2
Mains Service Joint Kits (Waveform)					
5387480	up to 185 CNE mains service	MSJ185W/CN	8	One deferred service connector	SER 1.3.2

Low Voltage Joint Kits Currently Available					
ITEM COMM. CODE	DESCRIPTION	Sicame Kit Name	Resin QTY litres	Comments	Procedure No.
5387490	300 CNE mains service	MSJ300W/CN	8	One deferred service connector	SER 1.3.2
Mains 3ph Service Joint Kits (Waveform) up to 2 Services					
5387770	up to 185 CNE mains service	MSJ185W23/CN	10	three deferred double service connector	SER 6.3.2
5387780	300 CNE mains service	MSJ300W23/CN	14	three deferred double service connector	SER 6.3.2
Mains Service Joint Kits (PILC)					
5387460	up to 185 CNE mains service	MSJ185P/CN	12	One deferred service connector	SER 3.3.2
5387470	300 CNE mains service	MSJ300P/CN	12	One deferred service connector	SER 3.3.2
MAINS 3PH SERVICE JOINT KITS (PILC) up to 2 Services					
5387790	up to 185 PILC mains service	MSJ185P23/CN	10	three deferred double service connector	SER 7.3.2
5387800	300 PILC mains service	MSJ300P23/CN	12	three deferred double service connector	SER 7.3.2
CONSAC Joint Kits					
5387200	Up to 95 mains service	MSJ185CT/CN		One deferred service connector	SER 10.2.2
5387210	120 to 240 mains service	MSJ240CT/CN		One deferred service connector	SER 10.2.2
5387220	Up to 150 CONSAC - 185 Waveform mains straight	SMJ185CT/CN		Channel Connectors inc. one service insert	MAIN 10.1.2
5387230	Up to 240 CONSAC - 300 Waveform mains straight	SMJ300CT/CN		Channel Connectors inc. one service insert	MAIN 10.1.2
5387240	Up to 150 CONSAC - 185 Waveform mains branch	BMJ185CT/CN		JAWS Connectors	MAIN 10.2.2
5387250	Up to 240 CONSAC - 300 Waveform mains branch	BMJ300CT/CN		JAWS Connectors	MAIN 10.2.2
Stop End Kits					
xxxxxx	single phase hybrid stop end	SE1/CN	0	New kit - yet to be approved	SER 4.1.2
5502500	three phase service CNE stop end	SE9/CN	0	Heat shrink	SER 4.3.2
5502460	single phase PILC stop end	SE14/CN	0	Heat shrink	SER 4.2.2
5502470	three phase PILC stop end	SE15/CN	0	Heat shrink	SER 4.4.2
5502660	70 to 120 CNE stop end	SE10/CN	0	Heat shrink	MAIN 4.1.2
5502670	185 to 300 CNE stop end	SE11/CN	0	Heat shrink	MAIN 4.1.2
5502480	50 to 95 PILC stop end	SE12/CN	0	Heat shrink	MAIN 4.2.2
5502490	120 to 300 PILC stop end	SE13/CN	0	Heat shrink	MAIN 4.2.2
5387260	Up to 150 CONSAC stop end	SE16/CN	0	Under Development	
5387270	150 to 300 CONSAC stop end	SE17/CN	0	Under Development	
Mains Service Joint Modules					
5387440	up to 185 mains service module	MSM185/CN	0	Use with service joint kits for extra services	
5387450	240 to 300 mains service module	MSM300/CN	0	Use with service joint kits for extra services	
Cut & Test Joint Kits					
5387340	cut and test (Waveform) up to 95mm	WCT3/CN	8	Kit for faults	
5387350	cut and test (Waveform) up to 185mm	WCT4/CN	8	Kit for faults	
5387380	cut and test (Waveform) up to 300mm	WCT1/CN	10	Kit for faults	
5387360	cut and test (PILC) up to 95mm	WCT5/CN	10	Kit for faults	
5387370	cut and test (PILC) up to 185mm	WCT6/CN	12	Kit for faults	
5387390	cut and test (PILC) up to 300mm	WCT2/CN	12	Kit for faults	

Low Voltage Joint Kits Currently Available					
ITEM COMM. CODE	DESCRIPTION	Sicame Kit Name	Resin QTY litres	Comments	Procedure No.

3- Ended Branch Joint Modules

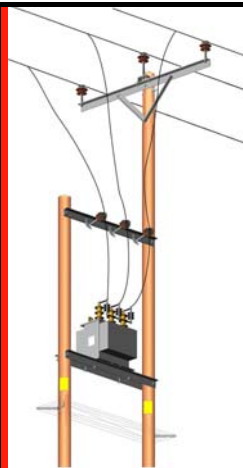
5387410	95 3 ended branch (connectors only)	B3M95/CN	0	not used currently	
5387420	185 3 ended branch (connectors only)	B3M185/CN	0	not used currently	
5387430	300 3 ended branch (connectors only)	B3M300/CN	0	not used currently	

Pole Termination Kits (to Pole Mounted Fuses)

xxxxxxx	35mm 1ph hybrid pole termination inc lugs			Under development	
xxxxxxx	35mm 3ph Waveform pole termination inc lugs			Under development	
xxxxxxx	95mm 3ph Waveform pole termination inc lugs			Under development	
xxxxxxx	185mm 3ph Waveform pole termination inc lugs			Under development	

Pole Termination Kits (to Overhead Line inc. Transition Conductor)

5387850	35mm 1ph hybrid pole termination	WPT5/CN	0	Includes connectors and transition ABC Conductors	SER 8.3.1
5387860	35mm 3ph Waveform pole termination	WPT6/CN	0	Includes connectors and transition ABC Conductors	SER 8.4.1
5387870	95mm 3ph Waveform pole termination	WPT7/CN	0	Includes connectors and transition ABC Conductors	MAIN 8.3.1
5387880	185mm 3ph Waveform pole termination	WPT8/CN	0	Includes connectors and transition ABC Conductors	MAIN 8.3.1
5387890	300mm 3ph Waveform pole termination	WPT9/CN	0	Includes connectors and transition ABC Conductors	MAIN 8.3.1



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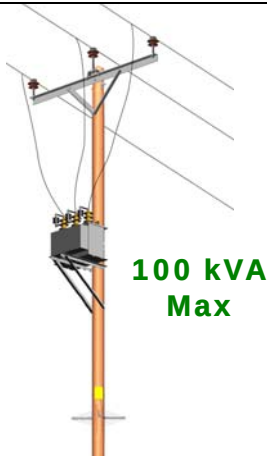
Central Networks

A company of **e-on**

04/050

June 2005

What?	Pole Transformer Platforms								
When?	Immediately								
Where?	Central Networks West								
Why?	To align Central Networks East & West pole transformer installation standards								
Who?	Linesmen, Project Manager, Wayleave Officers, New Connections Designers & Estimators and External Service Providers								
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's								
Other information	Present West practice: - Single poles – currently limited to transformers up to 50 kVA - In-line 'H' poles to drawings OHL2 - MS2/31, 33 & 34. currently use an intermediate crossarm on the in-line pole. Future combined Central Networks East & West practice: - Singles poles – transformers up to 100 kVA - In-line 'H' poles – the intermediate crossarm is to be omitted to produce a 'stub leg' or 'lame leg' form of construction. See overleaf for more details. All other aspects of materials and construction (i.e. support transformer /pilot pin steelwork, pole diameters etc) shall remain as per the respective East & West Overhead Line Manuals until the combined Central Networks Overhead Line Manual is published. Important – DO NOT cut the top off a full sized pole to produce the stub leg as the unprotected end will rot prematurely. Short poles of the following sizes are available from stores; <table> <tr> <td>8.5m Stout cc 1320850</td><td>8.5m Extra Stout cc 1330850</td></tr> <tr> <td>9.0m Stout cc 1320900</td><td>9.0m Extra Stout cc 1330900</td></tr> <tr> <td>9.5m Stout cc 1320950</td><td>9.5m Extra Stout cc 1330950</td></tr> <tr> <td>10.0m Stout cc 1321000</td><td>10.0m Extra Stout cc 1331000</td></tr> </table> For further information please contact: Tony Haggis, Lines & Cables Manager on 01332 393215 or 07710 155 706	8.5m Stout cc 1320850	8.5m Extra Stout cc 1330850	9.0m Stout cc 1320900	9.0m Extra Stout cc 1330900	9.5m Stout cc 1320950	9.5m Extra Stout cc 1330950	10.0m Stout cc 1321000	10.0m Extra Stout cc 1331000
8.5m Stout cc 1320850	8.5m Extra Stout cc 1330850								
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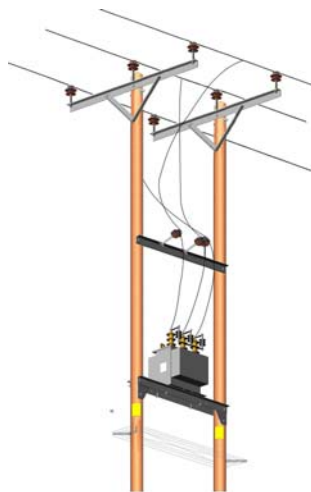


The single pole transformer platform can support a maximum load of 1000 kg.

Traditionally this limited it's application to 50 kVA transformers.

However, all 100 kVA transformers manufactured for the last 30 years weigh under 1000 kg and can therefore be supported on a single pole.

Therefore 'H' poles are no longer to be used for 100 kVA transformers unless the line construction requires an 'H' pole. e.g. terminal pole on heavy construction.



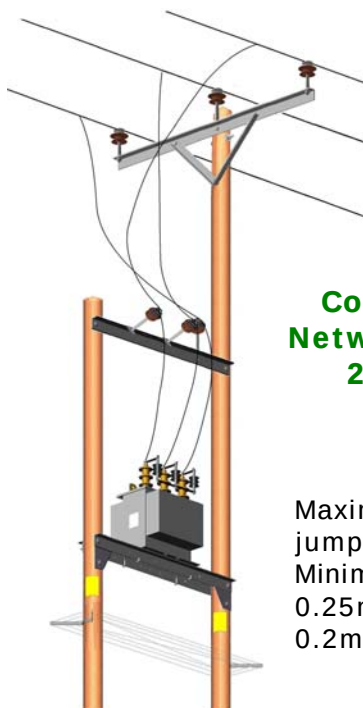
Discontinued

This form of construction is to be discontinued due to cost and the requirement for a supply interruption to install the second pole and crossarm.

The 'stub leg' (lame leg) form of construction shall be used in future across Central Networks West as well as the East.

There are two advantages to this design

- The stub leg can be erected with the line live.
- The position of the stub leg need not be in-line with the main line conductors. It can also be placed at right angles to the line or any angle between e.g. to fit the existing fence line.



In-line Stub Leg



Stub Leg set at a right angle (or at any angle to suit to the situation)

**Combined Central
Networks East / West
200 & 315 kVA
standard**

NOTE

Maximum unsupported
jumper length 2.5m
Minimum jumper clearances
0.25m phase to phase
0.2m phase to earth.

The stub leg can also be used on angle, section and terminal poles.



Engineering Bulletin

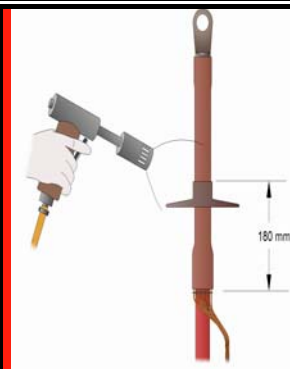
Central Networks

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05/052

August 2005

What?	Installation of Equipotential earth mat gratings in all Primary/Grid sites
When?	Immediate
Where?	Central Networks East & West
Why?	To improve the safety for operational staff within Primary/Grid sites when using handle operated switchgear
Who?	All Project Designers & Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Policy	To improve operator safety it is Company policy to install earth mat gratings at all outdoor handle operated switchgear positions, where the existing mat or grating is either non-existent or inadequate. This work will be completed in accordance with the 'Application Guide for Equipotential Earth Mat Installation on Substation Structure Mounted Switches' re-issued May 2005. The gratings are to be fitted at all isolator, disconnector and earth switch positions as well as fault thrower locations. The earth grating installation ensures the operator can visually confirm that his hands and feet are at the same potential in the event of an earth fault occurring on the structure he is operating at (i.e. touch potential will be zero, irrespective of other conditions at the site). As part of the installation work the switch handle will also be tested to confirm it is bonded to the substation's main earth grid. In order for this work to be completed as quickly as possible, every opportunity shall be taken to include this work in any new or existing projects. Designers shall ensure that earth gratings are fitted to any equipment that falls under their scope of works. Designers should also liaise with Adrian George since he has overall responsibility for implementing the work programme. This policy is not intended to remove the need for remedial works of existing earth systems at primary/grid sites, but it is to facilitate a safety improvement that can be implemented relatively quickly across the Company. It is still Company policy to review the whole earthing systems of all primary and grid sites and to bring them into line with company design policy where necessary. For Site specific issues please liaise with Adrian George, Tipton (07989 700244) For further information please contact Nigel Johnson of Network Strategy & Regulation on Tipton 05-2143, 07989 700262 (or 7775020).



Engineering Bulletin

Central Networks

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05/054

16 November 2005

What?	Revised Method Of Terminating Triplex Cables Into Cable Boxes
When?	Effective immediately
Where?	Central Networks
Why?	The new switch gear contract features a revised method of bringing cables into the cable boxes to increase the separation between cores
Who?	Jointers, Project Managers, Managers & ESP's
How?	Via team brief, e-mail to Engineering Bulletin Distribution Group, by hand to Jointers, by Direct e-mail to ESP's.

Other information

As a consequence of the new switchgear contract, the gland plate in the cable box has been substituted for one that allows the single cores to be taken into the box straight and through a plate that is split (to avoid acting as a CT and overheating).

The new glanding arrangement uses 3 plastic stuffing glands in the base plate.



Split Gland Plate and Plastic Glands with Locking Rings

Important – Before installing the triplex cable you will have to untwist the Triplex for between 1.5 and 2.0 metres outside the box in order to get the cables straight.

Ensure that the glands and locking rings are fitted over the cable before you make the termination (as they do not fit over the lugs).

P.T.O.



Completed installation (termination or earthing not shown)

This arrangement allows the cores to be interchanged to obtain correct phasing.

The CTs for the Earth Fault Indicator are built into the switchgear and tested by the manufacturer. Therefore there is no need to install the usual core balance CT around the 11kV cables.

The kits affected are:-

West Kits	Tyco Kit Code	Commodity Code
Indoor termination s/c poly 95-185mm ²		5503200
Indoor termination s/c poly 300mm ²		5503210
East Kits		
Indoor termination s/c poly 70mm ² complete with gland and boots	IXSU-F3121-GB02	5503100
Indoor termination s/c poly 185mm ² complete with gland and boots	IXSU-F3131-GB02	5503110
Indoor termination s/c poly 300mm ² complete with gland and boots	IXSU-F3141-GB02	5503120

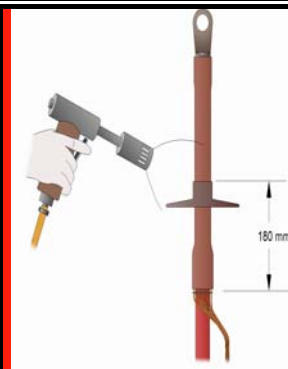
When the 70mm² cable is being used it is close to the bottom of the range of the gland and it may be necessary, in some instances, to fit a wrap of VM tape.

For the time being glands will be sent out with the switchgear along with a shortened version of this bulletin.

As soon as we are able the glands will be included in the termination kits, again with a shortened version of this bulletin, until the procedure is revised. This includes the kits currently in stock at Huthwaite.

Once all switchgear is supplied with the split 3 hole plates, the "top hat" glands and breakout tubes in the East Kits will be removed.

If you have any queries please contact Terry Dutton on 777 1444 (07860 684288) or Nicola Cotton on 782 3458 (01332 393458).



Engineering Bulletin

Central Networks

A company of **e-on**

05/055

17 November 2005

What?	Changes to 33kV termination kits
When?	Effective immediately
Where?	Central Networks East
Why?	Product defect identified by manufacturer (Tyco)
Who?	Jointers, Project Managers, Managers & ESP's
How?	Via team brief, e-mail to Engineering Bulletin Distribution Group, by hand to Jointers, by Direct e-mail to ESP's.

Further to several faults experienced by Central Networks and other DNO's, the following 33kV terminations have been embargoed.

The terminations affected are:-

Item	Tyco Code	Comm Code
33kV s/c XLPE indoor terminations		
150mm ²	IXSU-F6141-GB01	5213000
400mm ²	IXSU-F6151-GB01	5213030
33kV s/c XLPE outdoor terminations		
150mm ²	OXSU-F6141-GB01	5213200
400mm ²	OXSU-F6151-GB01	5213230

Other information

These terminations are being replaced by EPKT kits.

For the time being you will need to order the EPKT kits & connectors directly from Tyco through Huthwaite (see next page). NOTE - connectors are not included and need to be ordered separately.

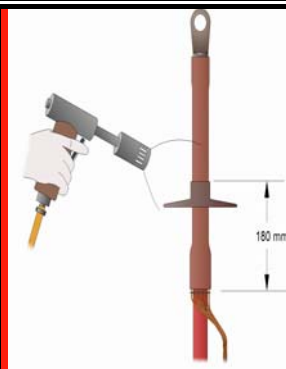
Tyco are currently in the process of making EPKT terminations into kits. These will use the same commodity codes as the old, embargoed, termination kits. The revised kits will contain the lugs and connectors you need along with a Tyco installation sheet. The embargo will be removed once the new kits are in store.

P.T.O.

The information you need to quote for the EPKT terminations is as follows:-

Indoor (sets of three)	Connectors (Indoor 12mm or 16mm fixing hole)
EPKT 36D 1X I 120mm – 185mm	VETB21 - 12UTB 50mm – 185mm
EPKT 36E 1X I 240mm – 500mm	VETB28 - 12UTB 185mm – 400mm
EPKT 36F 1X I 630mm – 1000mm	VETC33 - 12UTB 400mm – 630mm
Outdoor (sets of three)	Connectors (Outdoor double hole palm)
EPKT 36D 1XO 120mm – 185mm	VETB21 - OHUTB 50mm – 185mm
EPKT 36E 1XO 240mm – 500mm	VETB28 - OHUTB 185mm – 400mm
EPKT 36F 1XO 630mm – 1000mm	
	Shield Connector
	BET 35 -12 (35mm ² , 12mm fixing hole)

If you have any queries please contact Terry Dutton on 777 1444 (07860 684288) or Nicola Cotton on 782 3458 (01332 393458).



Engineering Bulletin

Central Networks

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05/056

November 2005

What?	Changes to Components contained in West LV Jointing Tasks on SAP	
When?	Effective from:- see dates below	
Where?	Central Networks West	
Why?	To standardise and rationalise the LV joints used across Central Networks	
Who?	Jointers, Project Managers, Managers & ESP's	
How?	Via team brief, e-mail to Engineering Bulletin Distribution Group, by hand to Jointers, by Direct e-mail to ESP's.	
Other information	This bulletin is to inform you of changes to the components contained in the West LV Jointing tasks on SAP.	
	As per bulletin 05/048 issued in June the individual components attached to West tasks will be replaced by kit component numbers. Some tasks have already been updated; the rest will be updated throughout December as per the schedule below:-	
	Tasks already updated with kit component numbers	Various Main Breeches, Service Breeches & Pot Ends
	Tasks to be updated on 2 December 2005	Remaining Mains Breeches and Service Breeches
	Tasks to be updated on 12 December 2005	Straight Joints
	Tasks to be updated on 21 December 2005	Remaining Pot End/Pillars/Pole Terms
	Existing orders will be filled using individual components. New orders will be filled using kits.	
	There will be some exceptions:- - Where kits do not exist the tasks will remain unchanged for the time being until kits are produced if there is sufficient demand (shown in black). - Where the task does not comply with the Network Design Manual the task will be withdrawn (shown in grey).	
	Instructions are included in the kits. The Central Networks Low Voltage Jointing Procedures Manual is being produced and will be published as soon as reviews have been completed.	
	If you have any queries please contact Nicola Cotton on 782 3458 (01332 393458) or Terry Dutton on 777 1444 or 07860 684288.	

BREECHES JOINTS				BRANCH CABLE							
				PILC	PILC	PILC	PILC	3cAWC	3cAWC	3cAWC	4cAWC
				<95	95	185	300	95	185	300	95
				ST0	ST1	ST2	ST3	3W1	3W2	3W3	4W1
THROUGH CABLE	PILC	<95	ST0	NOT SUPPORTED				JLVBREST03W1	JLVBREST03W2	JLVBREST03W3	JLVBREST04W1
	PILC	95	ST1					JLVBREST13W1	JLVBREST13W2	JLVBREST13W3	JLVBREST14W1
	PILC	120-185	ST2					JLVBREST23W1	JLVBREST23W2	JLVBREST23W3	JLVBREST24W1
	PILC	>185	ST3					JLVBREST33W1	JLVBREST33W2	JLVBREST33W3	JLVBREST34W1
	3cAWC	95	3W1					JLVBRE3W13W1	JLVBRE3W13W2	JLVBRE3W13W3	
	3cAWC	185	3W2					JLVBRE3W23W1	JLVBRE3W23W2	JLVBRE3W23W3	
	3cAWC	300	3W3					JLVBRE3W33W1	JLVBRE3W33W2	JLVBRE3W33W3	
	4cAWC	95	4W1								
	4cAWC	185	4W2								
	4cAWC	300	4W3								
	Consac	70-120	CN1					JLVBREC13W1	JLVBREC13W2	JLVBREC13W3	
	Consac	150	CN2					JLVBREC23W1	JLVBREC23W2	JLVBREC23W3	
	Consac	185	CN3					JLVBREC33W1	JLVBREC33W2	JLVBREC33W3	
	Consac	240	CN4					JLVBREC43W1	JLVBREC43W2	JLVBREC43W3	
	Plastic										

MULTI-SERVICE BREECHES JOINTS		Up to 3 phase connections
PILC	95	JLVMSBST-95
PILC	120-150	JLVMSBST150
PILC	185+	JLVMSBST185
3cAWC	95	JLVMSB3W-95
3cAWC	185	JLVMSB3W185
3cAWC	300	JLVMSB3W300
4cAWC	95	JLVMSB4W95
4cAWC	185	JLVMSB4W185
4cAWC	300	JLVMSB4W300
Consac	70	JLVMSBCN70
Consac	95	JLVMSBCN95
Consac	120	JLVMSBCN120
Consac	150	JLVMSBCN150
Consac	185	JLVMSBCN185
Consac	240	JLVMSBCN240
Plastic		

POT ENDS			
PILC	<95	ST0	JLVP/E---ST0
PILC	95	ST1	JLVP/E---ST1
PILC	120-185	ST2	JLVP/E---ST2
PILC	>185	ST3	JLVP/E---ST3
3cAWC	95	3W1	JLVP/E---3W1
3cAWC	185	3W2	JLVP/E---3W2
3cAWC	300	3W3	JLVP/E---3W3
4cAWC	95	4W1	JLVP/E---4W1
4cAWC	185	4W2	JLVP/E---4W2
4cAWC	300	4W3	JLVP/E---4W3
Consac	70-120	CN1	JLVP/E---CN1
Consac	150	CN2	JLVP/E---CN2
Consac	185	CN3	JLVP/E---CN3
Consac	240	CN4	JLVP/E---CN4

The maximum number of single phase service connections from a mains service branch is 4 (3 from a CONSAC).

STRAIGHT JOINTS				CABLE TWO									
				PILC	PILC	PILC	PILC	3cAWC	3cAWC	3cAWC	4cAWC	4cAWC	4cAWC
				<95	95	185	300	95	185	300	95	185	300
				ST0	ST1	ST2	ST3	3W1	3W2	3W3	4W1	4W2	4W3
CABLE ONE	PILC	<95	ST0		JLVSTRST0ST1	JLVSTRST0ST2	JLVSTRST0ST3	JLVSTRST03W1	JLVSTRST03W2	JLVSTRST03W3	JLVSTRST04W1	JLVSTRST04W2	JLVSTRST04W3
	PILC	95	ST1		JLVSTRST1ST1	JLVSTRST1ST2	JLVSTRST1ST3	JLVSTRST13W1	JLVSTRST13W2	JLVSTRST13W3	JLVSTRST14W1	JLVSTRST14W2	JLVSTRST14W3
	PILC	120-185	ST2		JLVSTRST2ST1	JLVSTRST2ST2	JLVSTRST2ST3	JLVSTRST23W1	JLVSTRST23W2	JLVSTRST23W3	JLVSTRST24W1	JLVSTRST24W2	JLVSTRST24W3
	PILC	>185	ST3		JLVSTRST3ST1	JLVSTRST3ST2	JLVSTRST3ST3	JLVSTRST33W1	JLVSTRST33W2	JLVSTRST33W3	JLVSTRST34W1	JLVSTRST34W2	JLVSTRST34W3
	3cAWC	95	3W1					JLVSTR3W13W1	JLVSTR3W13W2	JLVSTR3W13W3			
	3cAWC	185	3W2						JLVSTR3W23W2	JLVSTR3W23W3			
	3cAWC	300	3W3							JLVSTR3W33W3			
	4cAWC	95	4W1										
	4cAWC	185	4W2										
	4cAWC	300	4W3										
	Consac	70-120	CN1					JLVSTRCN13W1	JLVSTRCN13W2	JLVSTRCN13W3			
	Consac	150	CN2					JLVSTRCN23W1	JLVSTRCN23W2	JLVSTRCN23W3			
	Consac	185	CN3					JLVSTRCN33W1	JLVSTRCN33W2	JLVSTRCN33W3			
	Consac	240	CN4					JLVSTRCN43W1	JLVSTRCN43W2	JLVSTRCN43W3			
	Plastic												



Engineering Bulletin

Central Networks

A company of **e-on**

05/057

December 2005

What?	Withdrawal from use of earth rod clamp - Commodity Code 235 6020	
When?	Immediate	
Where?	Central Networks West & East	
Why?	Failures of earth rod clamp	
Who?	All Primary designers, planners, construction staff & ESPs	
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESPs	
Other information	Faulty clamp - WITHDRAWN Commodity Code 235 6020 (old West MIN No. 345 0942)  We have received reports from field staff that this copper coloured clamp from ERICO has cracked and failed on a number of occasions, often after installation is complete. There are also concerns over the durability of the securing bolt. This clamp has therefore been withdrawn from use and replaced by the higher quality clamp shown below.	
	Replacement Clamp Commodity Code 235 6120   This ERICO clamp (GUV16070) is now the Central Networks approved clamp for securing the earth conductor to the earth rods on all distribution earthing installations. The clamp is also used for bonding mesh re-bar sections in distribution substation plinths.	
	An additional advantage of this clamp is that it can be applied at any point along the earth conductor without having to feed it down the whole length. The old clamp encouraged the bad practice of cutting the horizontal earth conductor at each rod with the resulting risk of the conductor becoming open circuit should the clamp fail. Where joining conductor runs is unavoidable a compression connector must be used.	
	For further information please contact: Nigel Johnson, Earthing Specialist, Network Strategy & Regulation 07989 700262	



Engineering Bulletin

Central Networks

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06/058

April 2006

What?	WEST SUBSTATION ACCESS LOCKING
When?	March 2006
Where?	Central Networks West
Why?	Update on Current Locking Products
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group

Other information

The project to replace all the West substation access locks is continuing with the Distribution substations due for completion in 2006, and the Consumer substations in 2007. This bulletin gives a summary of the various locks and cylinders available from the Central Store at Huthwaite. The following items are all part of the new locking suite from Yale that uses the new style key known as the Prokey.



Keys are available from Delivery Centre operational staff on production of appropriate authorisation certificates. Contacts are:

Stoke	Jackie Tudor
Tipton	Dawn Cuerden
Worcester	Nigel Sweet
Gloucester	Bev Halford

The standard products available from Huthwaite and their associated Commodity Codes are:

Standard Security Padlock (Yale 850)

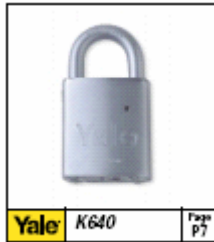


Keying

To fit A key, no keys supplied	5061330
A1 lock, complete with 2 unique keys	5061350
To fit B key, no keys supplied	5061380
B1 lock, complete with 2 unique keys	5061360
To fit C key, no keys supplied	5061900

Commodity Code

High Security Padlock (Yale K640)



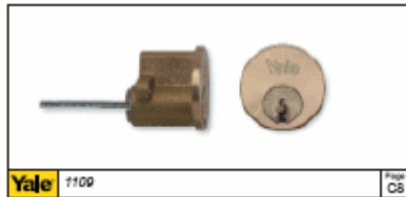
Keying

To fit A key, no keys supplied
To fit B key, no keys supplied

Commodity Code

5061340
5061390

Nightlatch Cylinder (Yale 1109)



Keying

To fit A key, no keys supplied	4715370
A1 cylinder, complete with 2 unique keys	5061430
To fit B key, no keys supplied	5061400
B1 cylinder, complete with 2 unique keys	5061440
To fit C key, no keys supplied	5061930

Commodity Code

Mortice Screw In Cylinder (Yale 1133)



Keying

To fit A key, no keys supplied	4715380
A1 cylinder, complete with 2 unique keys	5061450
To fit B key, no keys supplied	5061410
B1 cylinder, complete with 2 unique keys	5061460
To fit C key, no keys supplied	5061950

Commodity Code

Europrofile Cylinder

Standard length of these cylinders is '35-35' which has an overall length of 70mm excluding the thumbturn. For thicker doors on some Primary sites, '40-40' cylinders of overall length 80mm (excluding thumbturn) are available



Keying

To fit A key, no keys supplied - 3535	5061840
A1 cylinder, complete with 2 unique keys - 3535	5061850
To fit B key, no keys supplied - 3535	5061860
B1 cylinder, complete with 2 unique keys - 3535	5061870
To fit C key, no keys supplied - 3535	5061880
To fit A key, no keys supplied - 4040	5061820
To fit B key, no keys supplied - 4040	5061830

Commodity Code

For details of the actual use of the various key levels please refer to the policy for West Substation Locking on Documentum or CROG under: Engineering Manuals and COPs / West Central Networks / West Locking Policy.

For further information please contact: Keith Nutter on 07989 700220.



Engineering Bulletin

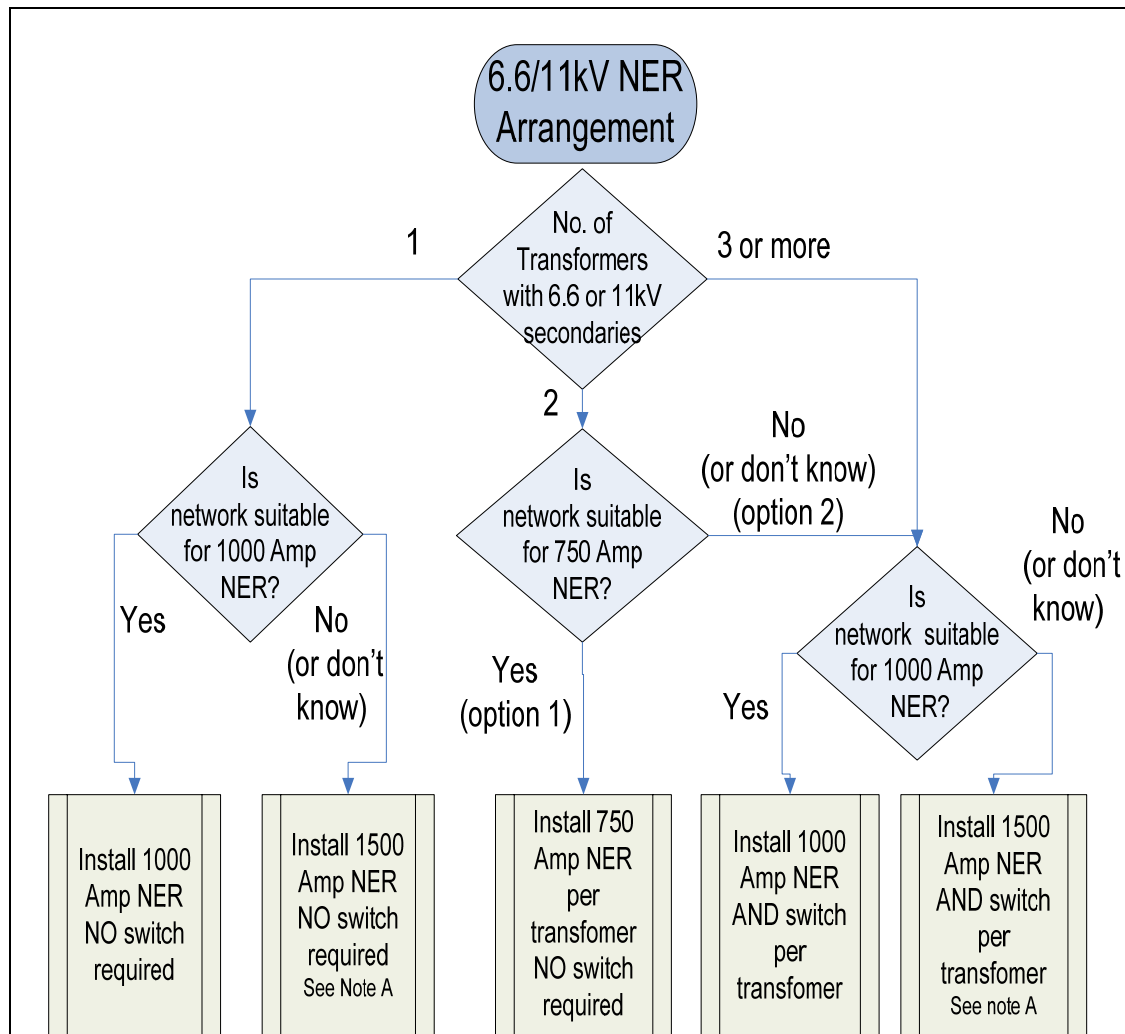
e-on | Central Networks

06/059

September 2006

What?	Primary Transformer Neutral Earthing Policy
When?	Immediate
Where?	Central Networks East & West
Why?	To rationalise the Company policy on Primary Transformer Neutral Earthing arrangements and to limit the prospective earth fault current to 1500 Amps or below for 11kV networks. In the East the standard arrangement at 11kV is to provide a 1000 Amp NER per transformer. In the West the standard arrangement is to share a common NER between transformers. Each of these arrangements has drawbacks. The East arrangement can cause the earth fault current to exceed 1500 Amps if the transformers are run in parallel. The West arrangement means a transformer must run with a direct earth connection when the NER is maintained.
Who?	All Network Designers, Project Designers & Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group, by e-mail subscription to Engineering Manuals & Procedures, by hand to Industrial Staff
Policy	An accompanying Application Guide gives greater detail on this policy. This policy seeks to provide a number of neutral earthing options depending on how many transformers exist at the site. The policy also considers the protection implications on the existing 11kV network. The flow chart on the following page shows the process in deciding which 11kV neutral earthing arrangement to adopt. In general for single transformer sites then a single dedicated 1000 Amp NER is used. At two transformer sites there are two options, the first has dedicated 750 Amp NERs per transformer. If the network protection is unsuitable for operating with 750 Amp earth fault currents then switching cubicles and NERs are installed for each transformer. Three transformer sites also have switching cubicles and NERs installed for each transformer. 33 & 66kV neutral earthing remains similar to present policy. However, the previous practice of using a low impedance earthing transformer together with a NER has been modified. In future the earthing transformer will be high impedance, matched to the continuous full load current of the associated power transformer with no need for an NER.

11kV NER Process Flow Chart



6.6/11kV NER Philosophy

The philosophy of the NER policy is influenced by a number of considerations :-

- 1) to ensure that for normal running the maximum 6.6/11kV earth fault current per site is limited to 1500 Amps.
- 2) to ensure there is sufficient earth fault current at remote ends of feeders to operate protection correctly irrespective of the transformer running arrangements.
- 3) to ensure that the network is not run solidly earthed at any time.
- 4) to minimise the number of installations that require the switching cubicle whilst still ensuring items 1, 2 and 3 are complied with.

Additional Notes

- A) If any transformer has a nominal continuous rating less than 30MVA then all the NERs must have a rating no greater than 1000Amps.
- B) The network suitability question involves an assessment in the practicability of modifying existing protection settings to the the maximum earth fault current of the proposed NER bearing in mind the requirements of Note A above. Whatever NER value is finally used, the network earth fault protection shall take into account the maximum prospective current.
- C) It is accepted that in some cases that the existing NER may require changing if additional transformers are installed at the site in the future.
- D) Transformers with double secondary windings will require special attention. For delta connected secondaries Thompson Straps may be required to minimise the number of earthing transformers, NERs and switching cubicles.



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Central Networks

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06/060

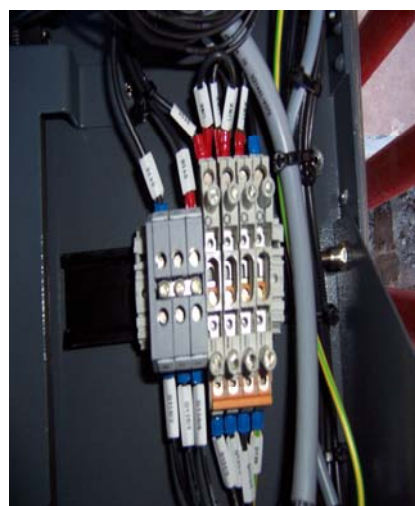
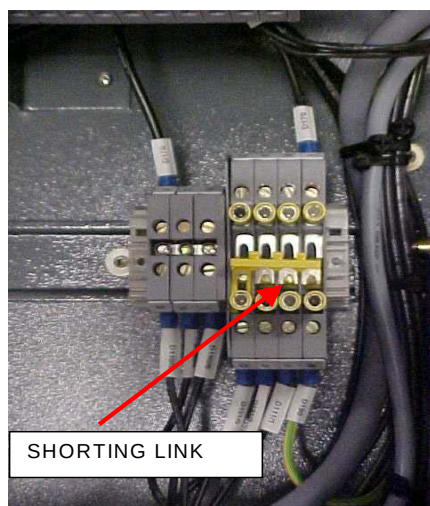
April 2006

What?	Integrated EFI in new RMU and single hole cable gland for consumer's 3 core cables
When?	Immediately
Where?	Central Networks East & West
Why?	(1) To introduce the method of secondary wiring termination for new RMU with integrated EFI (Schneider RN2c and Lucy VRN2a); (2) Removal of Lucy VRN2a front cross brace legs; (3) To clarify the arrangement for consumer's 3 core cable termination by using Lucy single hole cable gland
Who?	Delivery Centre staff, Huthwaite Refurbishment Service Workshop, Project Managers & ESP's
How?	Via e-mail to Engineering Bulletin Distribution Group. Further information will be available to internal customers (Engineers) about the products available, and the contractual compliance that must be achieved (Engineering Bulletin, Lucy Product 'Road show', Implementation/Roll-out meetings etc).

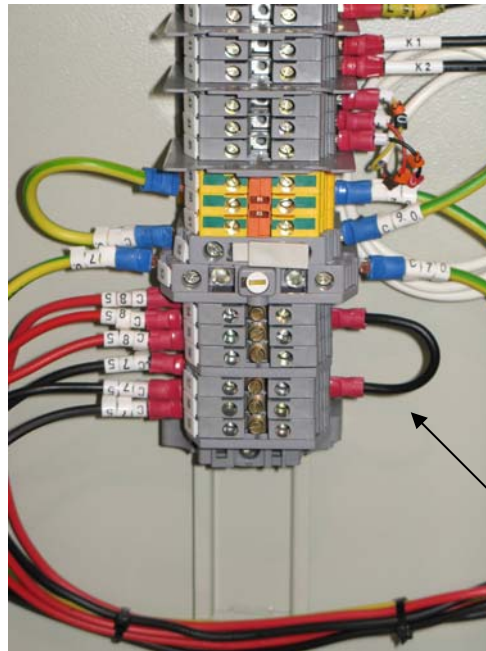
Other information

(1) Method of secondary wiring termination for new RMU with integrated EFI

For Schneider RN2c: The standard RN2c unit is fitted with a Nortech FIND EFI. If the Talus CT's are not being connected to an EFI or T200E, please ensure that the yellow link bar shorts out terminals 53, 54, 55 & 56.

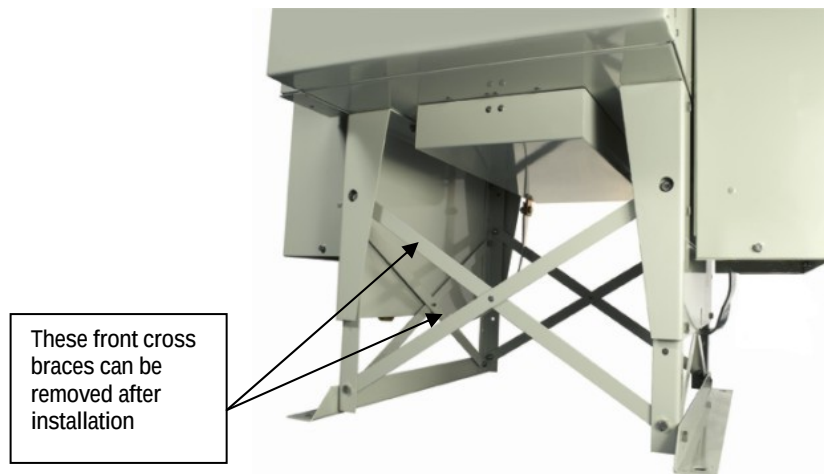


For Lucy VRN2a: The standard Lucy SabreVRN2a unit is fitted with a Nortech FIND EFI, however if the CT's are not being connected to a Nortech FIND EFI, please ensure that a link is connected between cables C75 and C85.



(2) Lucy VRN2a Front Leg Cross Braces

Once the VRN2a unit has been securely bolted to the floor or transformer mounted the two stand front cross braces can be removed to give better access to the cable test access area. Rear cross braces are to remain in position.



(3) Consumer's 3 core cable termination

For a metering unit connection the CN standard is a three hole split gland plate for single core cable connection. Where Consumers install a 3 core cable a single hole gland plate and gland is available from Huthwaite stores, commodity code 3715030.

For further information please contact: Zhao Ma 782-3665 (07989700217); Terry Dutton 782-3212 (07860 684288); Simon Gallier (Huthwaite) 777-5149 (07989700759).



Engineering Bulletin

Central Networks

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06/061

17 May 2006

What?	Construction of Distribution and HV Consumer Substations
When?	Effective Immediately
Where?	Central Networks East & West
Why?	Update of Existing Documents
Who?	All persons involved with design and construction of Distribution and Consumers substations, including Infrastructure Services, Energy Services and External Service Providers.
How?	Via e-mail to Engineering Bulletin Distribution Group
Other information	The documents and drawings relating to the construction of distribution and Consumer substations have been updated. Additional drawings are now also available for the standard GRP housings. These documents can now be found on Documentum and the CROG Reference Documents under:- Engineering Manuals & COPs , COMBINED Central Networks, Engineering Manuals & COPs, Civil Manual, Distribution & HV Consumer Substations General Civil Construction Requirements Guidance Notes - document re-written Unit Substation in GRP Housing Drawing STND/001/035E - minor amendments to drawing Guidance Notes - minor amendments Unit Substation in Brick Housing Drawing STND/001/036D - minor amendments to drawing Guidance notes - minor amendments Typical Brick Housing Drawing STND/001/037 - minor amendments to drawing HV Consumer Substation in GRP Housing Drawing STND/001/038D - minor amendments to drawing Guidance Notes - document re-written

HV Consumer Substation in Brick Housing

Drawing STND/001/039D - minor amendments to drawing
Guidance Notes - document re-written

Combined HV Consumer and Customers Substation

Drawing STND/001/040B - new issue

Foundation for Ring Main Unit in GRP Housing

Drawing STND/001/041 - new issue

Foundation for Schneider Combined RN2/RN6 Ring Main Units

Drawing STND/001/042 - new issue

GRP Housing Drawings

Standard Housing for Unit Substations – Envico Drawing EE712

Mini Substation Housing – Envico Drawing EE646

Ring Main Unit Housing – Envico Drawing EE658/1

Fault Thrower Housing – Envico Drawing EE05/0101/1

Combined Schneider RN2/RN6 Housing – Envico Drawing ESM/0000/A3/0000/DWG

For further information please contact: Keith Nutter, Plant Manager, Assets
Management team on 782 3699 or 07989 700220



Engineering Bulletin

Central Networks

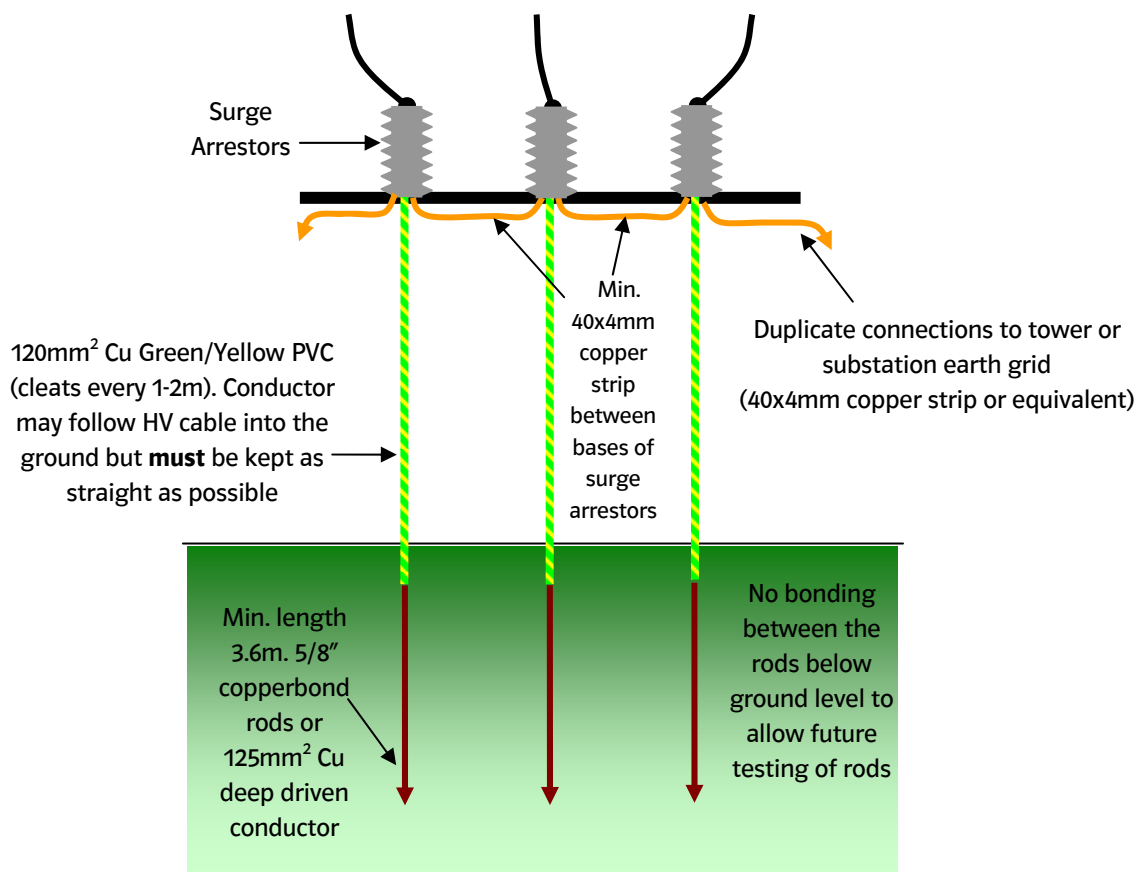
A company of **e-on**

06/064

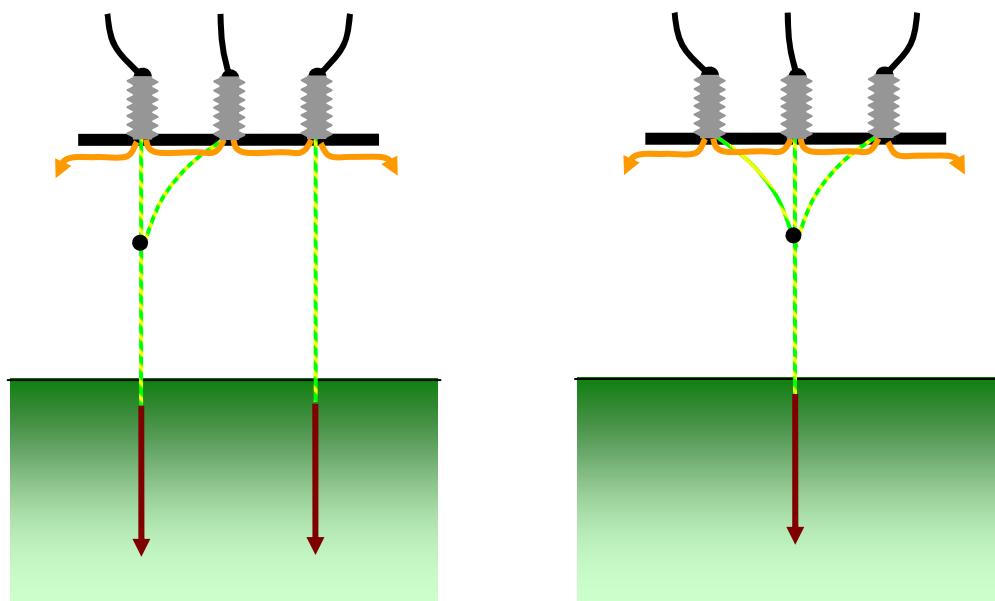
July 2006

What?	Earthing of Surge Arrestors associated with cable terminations on 132, 66 and 33kV networks																		
When?	Immediate																		
Where?	Central Networks East & West																		
Why?	Update of previous bulletin 05/044. Earthing of cable sealing ends and associated surge arrestors needs special attention to ensure the surge arrester operation is effective during a surge.																		
Who?	All Primary designers, planners, construction staff & ESPs																		
How?	Via e-mail to Engineering Bulletin Distribution Group																		
Other information	Surge arresters shall be mounted as close as possible to the equipment they are to protect, such that the connections to the protected equipment are kept as short and straight as possible. Because surge arresters need to disperse lightning (high frequency) currents, then deep driven electrodes are required in addition to the usual connection to the earth grid system. These additional deep driven electrodes shall be at least a 3.6 metre earth rod or bare deep driven copper conductor, which is installed vertically in the ground as near to the base of each surge arrester as possible. The surge arrester downlead conductor must not be installed within any circular metallic support tubes because of the risk of increasing the impedance of the conductor (because of the high frequency currents present). Each conductor is to be kept as short and straight as possible. It is particularly important to avoid sharp bends as this again adds significant impedance to the conductor when carrying high frequency currents. 33 & 66kV Installations At the present time, specific construction drawings are available (via Documentum) in the East's Overhead manual, Volume 1, Section 7, Part 6 (see drawings:- A013, A026, A027 and A033) and the West's OHL4a. These manuals will be standardised in the near future. If the 33 or 66kV termination falls within a Primary or Grid substation compound then the design with regards to earth connections should follow the guidance for 132kV terminations shown below. 132kV Installations There shall be a min. 40x4mm Cu strip with duplicate connections from the base of the surge arrestors to the main substation earth grid or tower structure. These connections are to provide alternative earth paths in the event of a power system fault. If only a single connection is made to the tower or earth grid, then the strip shall be 50x6mm in size. The drawings on the following pages show a typical 132kV arrangement. To aid future testing, the surge arrester deep driven electrodes shall not be bonded together below ground level. At wood pole structures, not associated with substations, then a 10 ohm HV earth electrode must also be installed which is bonded to the surge arrester earth above the ACD. Central Network Commodity Codes:- <table><tr><td>509 3315</td><td>40x4mm SD copper strip</td><td>509 3365</td><td>50x6mm SD copper strip</td></tr><tr><td>080 7945</td><td>120mm² PVC covered Conductor</td><td>080 2315</td><td>125mm² Bare Hard Drawn Copper Conductor</td></tr><tr><td>235 6040</td><td>5/8" Ext. Copper Clad Rod</td><td>235 6060</td><td>5/8" Earth Rod Coupling</td></tr><tr><td>235 6070</td><td>5/8" Driving Stud</td><td>235 6120</td><td>Earth Rod to Conductor U-bolt clamp</td></tr></table>			509 3315	40x4mm SD copper strip	509 3365	50x6mm SD copper strip	080 7945	120mm ² PVC covered Conductor	080 2315	125mm ² Bare Hard Drawn Copper Conductor	235 6040	5/8" Ext. Copper Clad Rod	235 6060	5/8" Earth Rod Coupling	235 6070	5/8" Driving Stud	235 6120	Earth Rod to Conductor U-bolt clamp
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235 6070	5/8" Driving Stud	235 6120	Earth Rod to Conductor U-bolt clamp																

Drawings



Ideal arrangement



Alternative arrangements (depending on cable and terminal structure construction)

General arrangements of 132kV surge arrester earthing at cable sealing end positions

If there are any queries with this engineering bulletin please contact Nigel Johnson on 07989 700262

- Surge arrestors must be bonded together at their bases by a min. of 40x4mm copper strip which must then be bonded to the tower steelwork (duplicate connection required unless using 50x6mmmm strip).
- Earth terminations on the tower or structural steelwork must use existing bolt holes. A larger size strip or plate brazed on to the 40x4mm strip may be required as any holes drilled in the strip must be less than $\frac{1}{3}^{rd}$ the width of the strip.
- Surge arrestor earth rods must not be bonded together below ground level or to the buried perimeter electrode. This enables clamp-on CT testers to be used to prove the integrity of the deep driven electrodes during future inspections.
- The 120mm² PVC earth conductor to the deep drive electrode can be secured to the EHV cable or positioned within a steel lattice structure (but not positioned within any metallic tube). In any event the conductor must be able to be clamped from ground level with a 32mm dia. CT earth tester.
- It is permissible to continue the PVC conductor below ground level and use as the deep electrode, but this will require the removal of the PVC insulation.
- No test pits are required on the deep drive surge arrestor earth connections as this may introduce unnecessary bends.
- All strip to strip joints will be brazed.
- Any exposed bare copper conductor/strip will be painted with black or grey bitumastic paint to deter theft.
- Any jumper down lead ground anchors must be bonded to the tower earth electrode or substation earth grid.
- If the tower is external to a substation but has its own perimeter palisade or metallic fence then this fence should be positioned at least 2m from the perimeter electrode and earthed separately from the tower.

The diagram illustrates a lightning protection system for a tower. It shows vertical conductors (120mm² PVC Green/Yellow covered copper earth conductors) running up the tower, connected to surge arrestors. A horizontal conductor (120mm² cu PVC Green/Yellow covered copper earth conductors) runs along the tower's base, connected to a sealing end and a surge arrestor. The system is grounded by deep drive electrodes (125mm² bare HD copper conductor or min. 5/8" copperbond earth rods) and a perimeter electrode (125mm² bare HD copper conductor or 40x4mm copper strip) buried 0.6m deep. The perimeter electrode is positioned 1m horizontally from exposed metalwork. The diagram also shows a 120mm² cu PVC conductor to a cable sheath link box and a 120mm² cu PVC Green/Yellow covered copper earth conductors to a deep drive electrode.

Labels in the diagram include:

- Surge Arrestors
- 120mm² PVC Green/Yellow covered copper earth conductors. Must be able to be clamped by a CT clamp-on earth tester.
- Ground level
- 0.6m
- Min 3.6m
- Deep drive electrodes are 125mm² bare HD copper conductor or min. 5/8" copperbond earth rods.
- Perimeter electrode is 125mm² bare HD copper conductor (or 40x4mm copper strip) and buried 0.6m deep. This is positioned 1m horizontally from exposed metalwork
- Sealing end
- Surge arrestor
- Min. 40x4mm cu strip to adjacent surge arrestors and tower structural steelwork
- 120mm² cu PVC conductor to cable sheath link box
- 120mm² cu PVC Green/Yellow covered copper earth conductors to deep drive electrode
- 1m

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Not to Scale

Scale	N.T.S.	Class-
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Drawing created

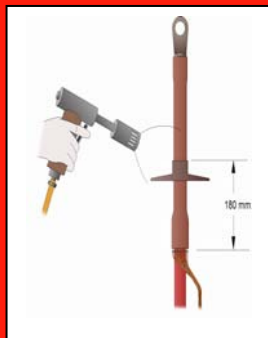
	NJ March 2006
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DRAWN BY

	CAD INPUT
	CHECKED BY

APPROVED BY

132kV sealing end and surge arrester earthing



Engineering Bulletin

e-on | Central Networks

06/069

October 2006

What?	Reminder/revision of Joint Shell Sealing Practice
When?	Immediately
Where?	Central Networks East & West
Why?	To address the problem of cold pour resin leaking out of joint shells.
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group
Other information	Recently the UK cold pour resin specification has been aligned with European standards. This enables European electricity companies to purchase resin from any European manufacturer. These resins are thinner and therefore more searching than the traditional UK resin. This is a desirable feature for the joint as it ensures that voids are not left inside the shell which is a common cause of failure. However, this thinner resin is more difficult to keep inside the joint shell whilst it sets. This searching ability seeks out any small gaps left in the joint shell seals that would normally have been sealed by a thicker resin. The attached procedure is a reminder for West jointers, and a revised procedure for the East jointers. There are however no significant changes to good jointing practice East or West. IT MUST BE EMPHASISED THAT JOINT SHELLS SHOULD BE SUPPORTED USING BRICK OR SLABS AND NOT THE RESIN BOXES. THE USE OF RESIN BOXES AS A SUPPORT HAS LED TO REINSTATEMENT FAILURES UNDER NRSWA For further information please contact Terry Dutton – O&AM.....782 3212

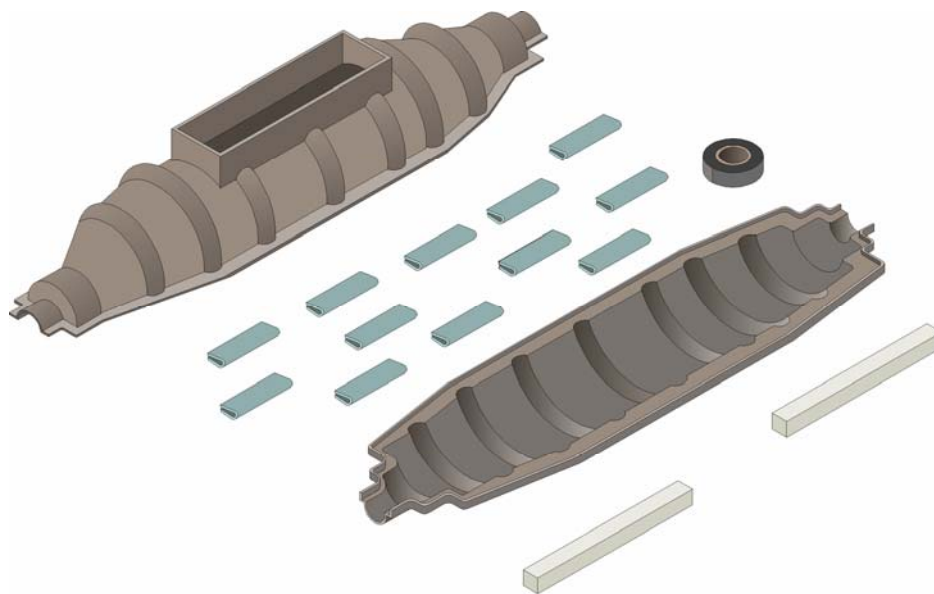
CHANGES TO JOINT SHELL PREPARATION, FITTING, SEALING, SUPPORT AND FILLING

In addition to the current vacuum formed joint shells, new injection moulded joint shells are being introduced which are thicker and stronger than the previous vacuum formed designs.

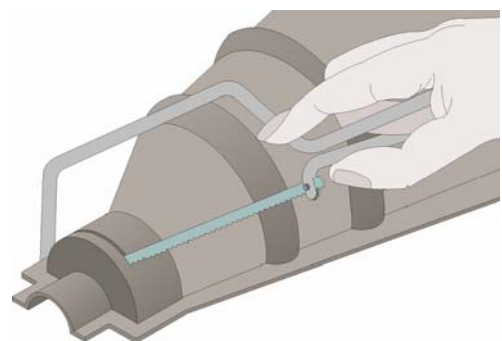
Therefore the opportunity is being taken to introduce a revised application technique for all joint shells. A revised basic procedure (CJP/Module) as part of the new LV jointing manual will be issued to support this change.

The required materials will either be supplied as part of the joint kit or as part of the Bill of Materials (BOM) for the joint.

In addition you will require Blackley tape (cc 5510550) and Masking tape (cc 5511850).

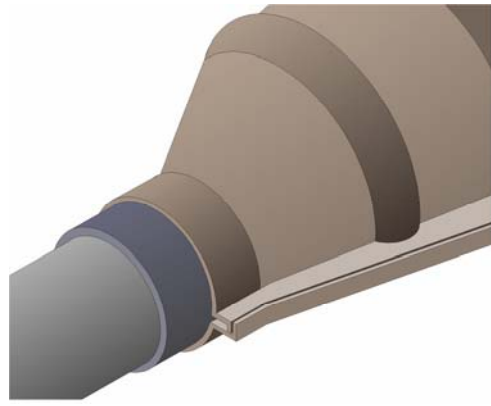


Step 1 Begin fitting the shells by cutting the end diameters to fit the cable – a hacksaw will be required for this task on injection moulded shells.

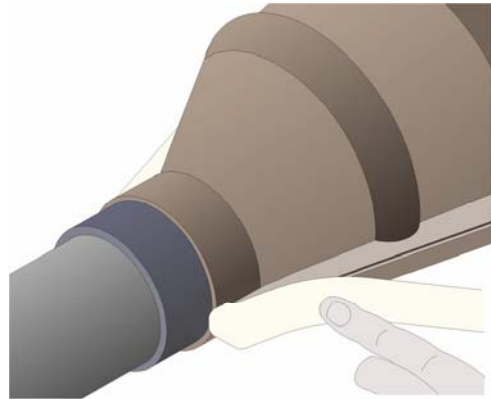


Step 2 Wind on Blackley tape (cc 5510550) over the cable at each cable exit, sufficient to give a slight compression.

Then fit the upper and lower shells. On moulded shells the upper shell should locate inside the lower shell.

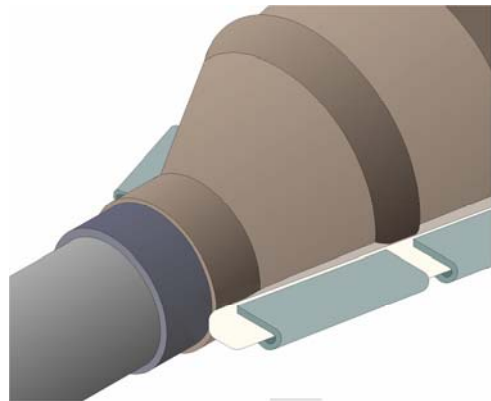


Step 3 Apply masking tape (cc 5511850) over the box edges fully covering the lengthwise seam on both sides – this tape is intended to prevent compound leakage.



Step 4 Push on the clips or sliders over the masking tape seals to secure the upper and lower shells together – use all the clips provided.

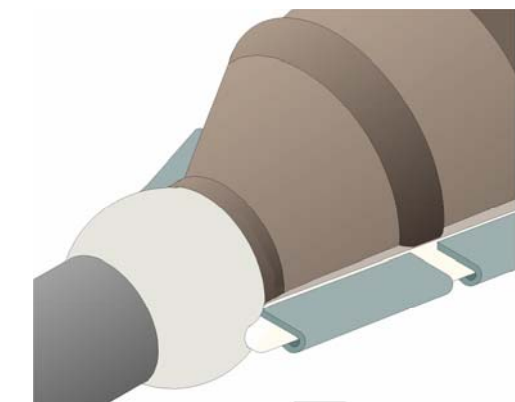
You can cut the sliders to length if required.



Step 5 Finally apply the sealing putty over the cable exits.

Fit a **BRICK** or similar solid support below the lower shell. Do **NOT** use the resin box for this purpose.

The joint shell is now ready for filling.





Engineering Bulletin

e-on | Central Networks

06/070

October 2005

What?	Revision & Rationalisation of Overhead Line Helical Fittings (Preforms) for CN
When?	With immediate effect
Where?	Central Networks East & West
Why?	To standardise Helical fittings currently used & remove from contract those which are rarely ordered or no longer required
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group
Other information	The Helical fittings stored at Huithwaite have been rationalised with items which are rarely used being removed from stock. A list of items being removed from stock is attached along with alternatives where appropriate. A full list of Helical (Preform) fittings available from store can be found on the PLP Contract list or on the Engineering Manuals & Procedures Page. Some of the items being removed may be required on an ad-hoc basis in the future. These may be ordered from Preformed Line Products by contacting them direct: PREFORMED LINE PRODUCTS (GB) LTD EAST PORTWAY ANDOVER HAMPSHIRE SP10 3LH Tel: 01264-366234 Fax: 01264-356714 Email: plp@preformed-gb.com www.preformed-gb.com For further information please contact: Richard Wood (OHL Specialist) - O&AM..... 782 3701 Manjit Bilkhu-Smith - Procurement782 3362

Comm Code	Description	Comment
2354810	175MM ACSR / 200AAAC SIDE TIE	Replaced by 2355520 200AAAC bare Kit 3x fittings78mmInsNeck
2354820	25MM AAAC DOUBLE TOP TIE	Single top ties should only be necessary use 2355020 25MM AAAC SINGLE TOP TIE
2354830	40MM AAAC/ACSR DOUBLE TOP TIE FTING	Use single top ties 2355440 Top Tie - 40mm ACSR/AI Bare Code Red. If required in future order direct from PLP quoting ref DDT 5070722RP FERRET / FIR
2355140	16MM CU CCN SRVCE CABLE TERMINAL TIE	Not required - 16mm CCN no longer used
2355710	STAY TOP MALE 7/4.00MM	Replaced by 2336580 STAY KIT 7/4.0MM(7/8)
2355720	STAY TOP MALE 7/3.25MM	Replaced by 2336570 STAY KIT 7/3.25MM(7/10)
2883100	Repair Sleeve For 50mm ² ACSR Conductor	Special item - if required order direct from PLP stock quoting ref RS 5303101R
2883110	Repair Sleeve For 100mm ² ACSR Conductor	Special item - if required order direct from PLP stock quoting ref RS 5303144R
2883140	Repair Sleeve For 0.05 HDC 8.05mm Dia	Special item - if required order direct from PLP stock quoting ref LS 2707018R
2883150	Repair Sleeve For 0.1 HDC 10.4mm Dia	Special item - if required order direct from PLP stock quoting ref LSDB 2707024R
4701810	ARMOUR SPLICE-19/118 CD CU	No stock and no recent stock movement records.
4701560	TOP TIE 14MM COPPER BARE	Special item - if required order direct from PLP stock quoting ref DT 5670714RP



Engineering Bulletin

e-on | Central Networks

07/074

23 January 2007

What?	Lucy LV Fuse cabinet
When?	Immediately
Where?	Central Networks East & West
Why?	To detail the measures to remove some problems with installation, operation and testing of Lucy LV fuse cabinets
Who?	All Craftsmen, DC Project Managers, Design and Construction staff for CN, ES & ESPs
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Other information	1 Fuse Carrier Three Risk watches have reported intermittent difficulties in inserting and withdrawing Fuse Carriers, loaded with a fuse, into and out of Lucy LV Fuse Cabinets, Feeder Pillars and Indoor Fuse Boards. Following a number of internal discussions and meetings with Lucy Switchgear, several trials were undertaken to prove the methodology of Lucy Switchgear's recommended procedure to load and insert a Fuse Carrier Handle. Lucy Switchgear is now able to replicate the reported situation and duly issued an extract from the operating manual to be placed within each Fused Distribution Cabinet, detailing the recommended procedure to load and insert a Fuse Carrier Handle. Please see attached. 2 Test Probe CN Operation Engineers were issued with Drummond Test Lamps. It has been found that the Fuse Carrier Handles of the Lucy Distribution Fuse Cabinets, Feeder Pillars and Indoor Fuse Boards foul the flash guard of the Drummond Test lamps when attempting to insert the test probes into the test probe access holes. Following a manual modification trial, which was proved successful, Lucy Switchgear proposed that the test probe access holes should be relocated to the right of the Fuse Carrier handle through grip by approximately 10mm centre to centre. Lucy have proposed a lead time of twelve weeks to introduce the modification and commence delivery of the modified carriers. If the lead time is greater than twelve weeks Lucy Switchgear will modify existing units in the delivery chain to provide a second test probe access hole. Some carriers with two test holes may therefore be received. The extract from the manual supplied with each unit will be modified to show realigned test probe access points. For further information please contact: Zhao Ma, Switchgear Specialist, 07989 700217



Trifca Unit

Lid Removal*

1. Remove lid bolts either side.



2. Push back, hinge up and lift clear.



3. When replacing lid, ensure rear location pegs are fully engaged each side.



Operating Isolators

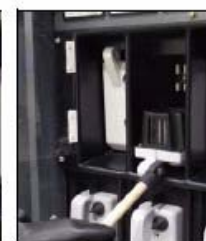
1. Using operating tool, rotate locking screws anti-clockwise.



2. Using the opposite end of operating tool, hook the top of isolator.



3. Firmly pull the isolator down.



4. Refit of isolator is the complete reverse operation.

Open Isolator Shielding Using Padlock

Transparent Shield

2 - Way Only



3, 4, 5 & 6 - Way

Padlock



Removed Fuse Links Shielding

Shield fitted using padlock.



Fuse link handles stored on shield.



Trifca Unit

Removal/Refit Fuse Links

1. Using operating tool, rotate locking screws anti-clockwise.
2. Firmly grab the fuse link handle.
3. Hinge down and then pull away.



4. Refit of fuse link is the complete reverse operation.



Ensure fuse handle is fully inserted before tightening.
Only use supplied tool for tightening locking screws.

When handle is tight, play will still exist between the handle moulding and locking screw, care must be taken not to over tighten the locking screws.

Hand Locking Screws

If the hand locking screw version handles are fitted (as shown), then the locking screws are to be tightened by hand only.

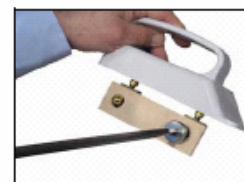
Test Probe Access

Two test probe holes in the front of the fuse link handle moulding give access to the fuse. Insert the test probes as shown.

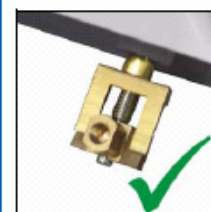


Fuse Installation

1. Remove both retaining screws.
2. Remove the blank link.



3. Ensure both wedges are in there 'fully released' position.



4. Locate fuse on both wedges as shown..



NOTE. Fitting the fuse with wedges in there 'clamped' position can cause difficulty when refitting the fuse handle.

5. Secure



C.T. Ratio Changeover and Fuse Access

1. Remove the two meter panel fixing screws.
2. Pull the meter panel away and unplug the three jack plugs.



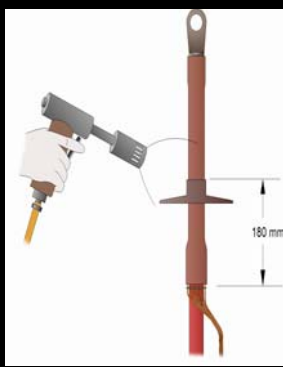
C.T. Changeover and Fuses



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E-Mail: switchgear.service@lucyswitchgear.com
Internet: www.lucyswitchgear.com



Engineering Bulletin

e-on | Central Networks

07/076

February 2007

What?	Rationalisation of MV joints
When?	Immediately
Where?	Central Networks East & West
Why?	To standardise across Central Networks the XLPE-XLPE joints and terminations
Who?	Jointers, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Other information	The recent Delivery Centre road shows for Central Networks East demonstrated the following revised MV joints from Tyco:- 11kV Straight Joints MXSU-3111-GB01 MXSU-3131-GB02 MXSU-3141-GB01 11kV Branch Joints EPKB 12B-1XU-2XU-GB01 EPKB 12C 1XU-2XU-GB05 EPKB 12C 1XU-2XU-GB04 The attached spreadsheet shows the list of rationalised joints now available. A training DVD highlighting the use of plastic cable glands, the application of flexi-boots and some small issues associated with terminations will be issued. The DVD will be available from your Resource Manager. You can select on the DVD the items you need know for your region. Items relevant to the West:- • Use of plastic cable glands • Application of flexi-boots (previously heat shrink) • Termination issues Items relevant to the East:- • Termination issues • New straight and branch joints If you have any queries please contact Terry Dutton, Cables Specialist, Asset Management 07860 684288.

OLD PRODUCT DESCRIPTION	PHASES IN OLD KIT	ORIGIN	OLD CN COM CODE	OLD TYCO PART CODE	NEW TYCO PART CODE	NEW SAP DESCRIPTION	PHASES IN NEW KIT	NEW CN COM CODE
11kv poly straight joints (All new kits are per phase)								
Single Core Poly Straight Joint 70sqmm	1	East	5320150	SXSU-4111-GB02	MXSU-3111-GB01	KIT ST JT H/S 1C 35-95 XLPE	1	5321010
Single Core Poly Straight Joint 185sqmm	1	East	5320220	SXSU-4131-GB04	MXSU-3131-GB02	KIT ST JT H/S 1C 70-300 XLPE	1	5321030
Single Core Poly Straight Joint 300sqmm	1	East	5320190	SXSU-4131-GB03				
Single Core Poly Straight Joint 95-300sqmm	1	West	5388800	SMOE63187				
Single Core Poly Straight Joint 185-400sqmm Cu/Al		Both	N/A	MXSU-3141	MXSU-3141-GB01	KIT ST JT H/S 1C 185-400 XLPE	1	5321050
Triplex Resin Filled Straight Joint 95-300sqmm	3	West	5388550	SMOE63188				N/A
11kV Poly Branch joints (All new kits are per phase)								
s/c branch joint 70-150sqmm	3	East	5320030	SMOE62701	EPKB 12B-1XU-2XU-GB01	KIT 11 KV BR JT H/S 1C 95-185 XLPE	1	5321100
s/c branch joint 185sqmm and 95sqmm	3	West	5388650	SMOE63185	EPKB 12C 1XU-2XU-GB05	KIT 11KV BR JT H/S 1C 300/95 XLPE	1	5321140
s/c branch joint 300sqmm main and 95sqmm branch	3	West	5388780	SMOE63291				
s/c branch joint 150-300sqmm	1	East	5320050	SMOE62702				
s/c branch joint 300sqmm main and 185sqmm branch	3	West	5388620	SMOE63190	EPKB 12C 1XU-2XU-GB04	KIT 11KV BR JT H/S 1C 300/185 XLPE	1	5321170
11kV Terminations								
Indoor term kit 70sqmm (lugs/bkout)	3	East	5502960	IXSU-F3121-GB01	IXSU-F3121-GB04	KIT 11KV TERM INDOOR RETRO 3X1C 70/95	3	5321200
Indoor term kit 95-185sqmm (lugs)	3	West	5503200	IXSU-F3131-GB06	IXSU-F3131-GB09	KIT 11KV TERM INDOOR RETRO 3X1C 185/300	3	5321240
Indoor term kit 185sqmm (lugs/bkout)	3	East	5502940	IXSU-F3131-GB01				
Indoor term kit 185-300sqmm (lugs)	3	West	5503210	IXSU-F3131-GB07				
Indoor term kit 300sqmm (lugs/bkout)	3	East	5503000	IXSU-F3141-GB01				
Indoor term kit 70sqmm (lugs/bkout/glands/boots)	3	East	5503100	IXSU-F3121-GB02	IXSU-F3121-GB03	KIT 11KV TERM INDOOR NEW S/G 3X1C 70/95	3	5321270
Indoor term kit 185sqmm (lugs/bkout/glands/boots)	3	East	5503110	IXSU-F3131-GB02	IXSU-F3131-GB08	KIT 11KVTERM INDOOR NEW S/G 3X1C 185/300	3	5321290
Indoor term kit 300sqmm (lugs/bkout/glands/boots)	3	East	5503120	IXSU-F3141-GB02				
Indoor term kit 240-500sqmm		West	N/A	IXSU-F3141	IXSU-F3141-GB03	KIT 11KVTERM INDOOR NEW S/G 3X1C 240/400	3	5321310
Indoor term kit 500-800sqmm		West	N/A	IXSU-F3151	IXSU-F3151-GB01	KIT 11KVTERM INDOOR NEW S/G 3X1C 500/800	3	5321330
Outdoor term kit 70sqmm (lugs)	3	East	5502980	OXSU-F3121-GB01	OXSU-F3121-GB02	KIT 11KV TERM OUTDOOR 3X1C 70/95	3	5321350
Outdoor term kit 95-185sqmm (lugs)	3	West	5503300	OXSU-F3131-GB04	OXSU-F3131-GB06	KIT 11KV TERM OUTDOOR 3X1C 185/300	3	5321380
Outdoor term kit 185sqmm (lugs)	3	East	5502950	OXSU-F3131-GB01				
Outdoor term kit 185-300sqmm (lugs)	3	West	5503310	OXSU-F3131-GB05				
Outdoor term kit 300sqmm (lugs)	3	East	5503010	OXSU-F3141-GB01				
Outdoor term kit 240-500sqmm		New	TBA	OXSU-F3141	OXSU-F3141-GB02	KIT 11KV TERM OUTDOOR 3X1C 240/400	3	5321400
Outdoor term kit 500-800sqmm		New	TBA	OXSU-F3151	OXSU-F3151-GB01	KIT 11KV TERM OUTDOOR 3X1C 500/800	3	5321420
33kv poly straight joints								
s/c poly straight joint upto 150sqmm	1	East	5211810	EPKJ-36C-1XU-1XU-GB05	MXSU-6131-GB02		1	5211870
s/c poly straight joint 150-240sqmm	1			EPKJ-36C1XU1XU-GB06	MXSU-6141-GB03		1	5211850
s/c XLPE 150-400sqmm	1	East	5211830					
s/c poly straight joint 185-400sqmm lead sheath	1	West	4700670	EPKJ-36C/1XU-1XUGB02			1	5211880
s/c poly straight joint 300-400sqmm	1				MXSU-6141-GB02		1	5211880
s/c poly to 3 core poly straight joint 185-240sqmm	3				EPKJ36C1XU-3XU-GB01		3	5211890
3 core XLPE to 3 s/c XLPE 150-400	3	East	5211900					
33KV SC ST SHIELD BREAK JT - XLPE/XLPE 185MM - 400MM2	1	East	5212010	SMOE63504				NO CHANGE
33kV Poly Terminations								
S/C POLY INDOOR TERMINATION 120-185sqmm	3	East	5213000	EPKT-36D1XI-GB02	EPKT-36D1XI-GB02			NO CHANGE
S/C POLY INDOOR TERMINATION 240-500sqmm	3	East	5213030	EPKT-36E1XI-GB01	EPKT-36E1XI-GB01			NO CHANGE
S/C POLY OUTDOOR TERMINATION 120-185sqmm	3	East	5213200	EPKT-36D1XO-GB02	EPKT-36D1XO-GB02			NO CHANGE
S/C POLY OUTDOOR TERMINATION 240-500sqmm	3	East	5213230	EPKT-36E1XO-GB01	EPKT-36E1XO-GB01			NO CHANGE
33KV TERM S/C XLPE O/DOOR 240MM - 500MM2	3	N/C	4700830	EPKT-36E1XO				NO CHANGE



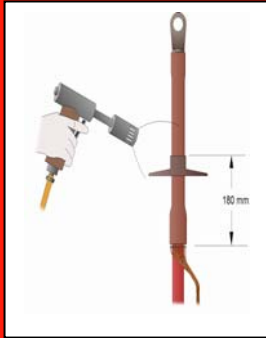
Engineering Bulletin

e-on | Central Networks

06/077

March 2007

What?	Danger of Death Sign for Wood Poles
When?	With immediate effect
Where?	Central Networks East & West
Why?	The danger of death sign is to be standardised across CN
Who?	Linesmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group
Other information	The old East and West danger of death pole signs featured the company name and a telephone number to call in case of Emergency. The Electricity Safety Quality and Continuity Regulations 2002 do not require the inclusion of a company name or emergency telephones number on danger signs intended for pole mounted equipment. The decision was made to run down the stock of the existing signs and to standardise to the sign pictured below (com code 5136400).  Stock of the West sign is nearly out so be aware that you will receive the new sign above. There is still plenty of stock of the East sign which can continued to be used for poles with equipment mounted on it as per previous guidelines but once stock is out these too will be replaced by the sign above. All relevant Bills of Materials will be updated to reflect the change. If you have any queries please contact Tony Haggis on 782-3215 or 07710 155706 or Stephen Hennell on 782 3847 or 07885 249100.



Engineering Bulletin



07/081

April 2007

What?	New style Heavy Duty Cut-Outs from Lucy		
When?	With the next Month		
Where?	Central Networks East & West		
Why?	Following a 2 year development Lucy have introduced new Heavy Duty Cut-Outs		
Who?	All Craftsmen, Project Managers and External Service Providers		
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's		
Other information	New Heavy Duty Cut-Outs from Lucy are about to be introduced in Central Networks. This is due to a product re-design in conjunction with all the Electricity Companies and their customers. The new designs incorporate many new features to assist in installation, although the general principles of installation remain the same. No training requirements are anticipated. The new 400A & 600A Heavy Duty Cut-Outs are a direct replacement for the existing units and are both the same size. They incorporate mechanical connectors for the incoming cables. They are also supplied with clear polycarbonate covers over the fuses and neutral. All the new Heavy Duty Cut-Outs can be used for PME or SNE installations by moving the earth bar on the left hand side of the box. The standard set up is for PME. <u>NOTE: THE NEW HDCO'S DO NOT FIT INTO THE EXISTING MULTI SERVICE DISTRIBUTION BOARDS</u> Lucy are making Central Networks a set of linking bus-bars as a short term measure, but the Multi Service Distribution Boards are about to be replaced with new ones which will incorporate the cut-out in the MSDB unit. Another Bulletin will be issued before they are introduced. <u>Codes for the new items are as follows although they will be blocked until the old stock has been exhausted</u>		
	Item	New Commodity Code	Replaces item No.
	Lucy 200A Heavy Duty Cut Out PME & SNE shear bolt connection	1433710	REPLACEMENT ONLY. NOT TO BE USED ON NEW INSTALLATION
	Lucy 400A Heavy Duty Cut Out PME & SNE shear bolt connection	1433720	1434610 (E) & 1433970 (W)
	Lucy 600A Heavy Duty Cut Out PME & SNE shear bolt connection	1433730	1434920 (E) & 1433980 (W)
	Lucy Extended Cable Trough (400A/600A)	1433750	N/A

Pictures of the New Units**400A Unit****600A Unit**

The dimensions of the two units are as follows:-

400A
600A

634mmH x 549mmW x 250mmD
736mmH x 549mmW x 250mmD

The bottom chambers are interchangeable and also fit on the top of the Heavy Duty Cut-Outs to enable a cable to be taken upstairs e.g. in a flats installation.

For further information please contact Terry Dutton on 07860 684288



Engineering Bulletin

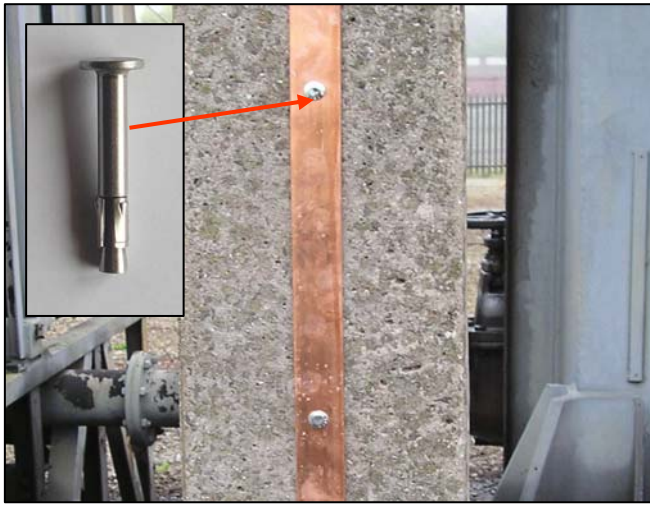
Central Networks

A company of **e-on**

07/084

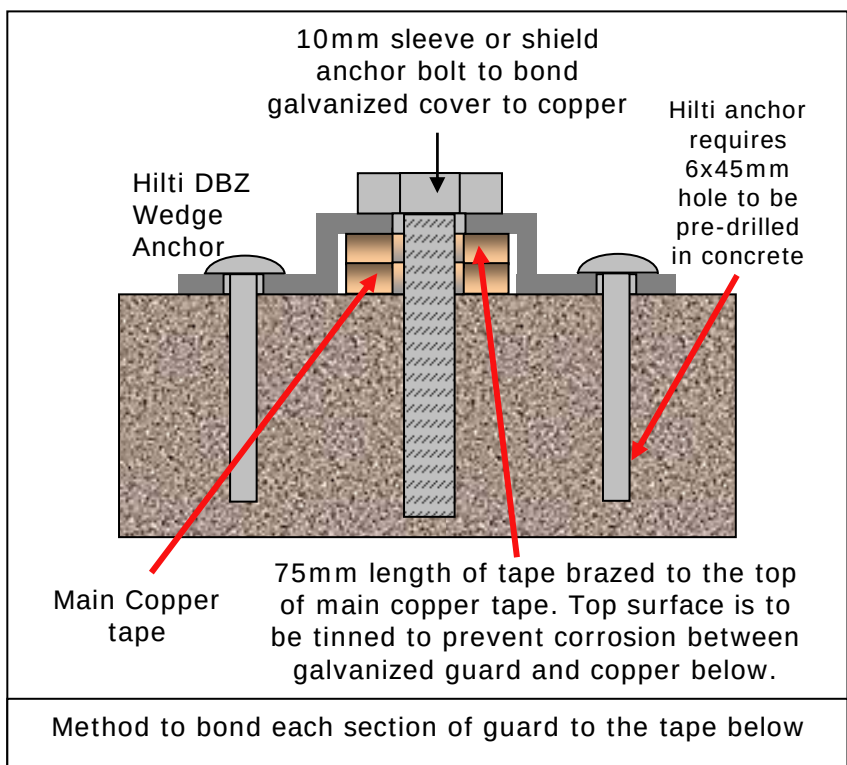
June 2006

What?	Copper Tape Anti-Theft Procedures (Revised materials)
When?	Work Programme to start immediately
Where?	All Primary and Grid Sites
Why?	To minimise risk of theft to copper earth tape.
Who?	All primary project managers, designers and construction staff, CN IS & ES, ESPs
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESPs
Requirements	This bulletin details the methods and materials to secure copper earth tape to concrete structures and bases, to minimise the risk of theft. Existing Sites (where no theft has occurred) - Sites in areas of known copper theft are to be secured first. - All sites will have the copper tape directly pinned to the concrete structures and bases using a stainless steel anchor. - The tape shall be secured to the maximum height that is reasonably practicable without the need for an outage and without infringing safety clearances. - A galvanised steel cover guard shall be fitted over the secured tape to a min. height of 2m again without infringing safety distances. This shall be secured using the galvanised Hilti wedge anchor. - The cover guard shall extend to approx.150mm below ground level. - The standard cover guard accommodates copper tape sizes up to 45mm in width. Tape with a greater width should be fixed at intervals of no more than 300mm and shall also be painted with anti-vandal paint. - The cover guard shall be bonded to the underlying copper tape (details shown on the next page). - When installing cover guards, provision where necessary, must be made to allow for the future application of portable safety earth clamps. This may require a small section of the tape to be left uncapped to cater for the 'jug handle'. - No hole is to be drilled closer than 50mm to the edge of any vertical support structure. New Sites (or sites where copper theft has already occurred) The installation requirements detailed above still apply, but in addition:- - All new tape fitted to concrete structures shall be secured throughout its entire length and a cover guard fitted to the increased height of 3m where possible. - Those parts of any new tape not covered by a cover guard shall also be painted with anti-vandal paint. - Where theft has already occurred and where it is not possible to firmly secure the copper to the support structure (e.g. where this is steel or aluminium) then it is permissible to use the equivalent rated aluminium tape instead, installed to within 150mm of ground level. It will be necessary to replace the whole length of copper tape on the structure with aluminium to prevent the aluminium from being corroded by electrolytic action from the copper above. - When replacing stolen tape the copper tape sizes to be used are:- - Standard tape size is 40x4mm, with duplicate tape connections to all main items of plant. - Use 50x6mm where it is only possible to install a single connection to the equipment. - Use 25x3mm for single connections to ancillary equipment. If you have any queries on this bulletin please contact Nigel Johnson on 07989 700262



Secure the copper tape directly to the concrete structure at no more than 300mm spacings using a stainless steel anchor. Secure galvanised cover guard directly over the tape using DBZ 6/4.5 Hilti wedge anchors. Every fixing hole in the cover guard is to be used as this minimises the chances of the cover guard being levered off. Each section of guard must be bonded to the copper tape – details shown below. Tape that cannot be pinned or capped shall be painted with anti-vandal paint.

Photos below show some methods to cater for awkward locations



Materials

Ancillary Equipment Tape Size -25x3mm Cu Tape

(CC - 509 3135)

Standard Tape Size - 40x4mm Cu Tape

(CC - 509 3315)

For Single Connections to Main Items of Plant - 50x6mm Cu Tape

(CC - 509 3365)

Fryolux Tinning Paint

(CC - 509 3710)

1.1m Galvanised Cover Guard

(CC - 509 3720)

Galvanised Hilti Wedge Anchor for fixing cover guard (DBZ 6/4.5mm)

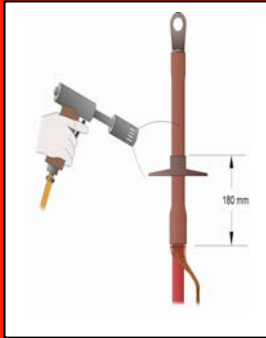
(CC - 509 3730)

Stainless Steel Anchor for fixing copper tape

(CC - 509 3750)

No flux Copper-Flo Brazing Rods

(CC - 509 3740)



Engineering Bulletin

e-on | Central Networks

07/085

September 2007

What?	Series 5, 6 & 7 Cut-Out Standardisation & Rationalisation
When?	Immediately
Where?	Central Networks East & West
Why?	Cut-out Rationalisation & Standardisation
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's
Other information	The attached list shows the rationalised and standardised Series 5, 6 & 7 Cut-Out Ranges. A number of items which have similar functions have been standardised and some duplicate items have been rationalised. Please ensure you use the rationalised list when ordering materials. <i>*The 22mm barrel 80 amp fuse will be replaced by a 30mm barrel 80 amp fuse. This will enable us to standardise the fuse carriers for 80 and 100 amp fuses. The cut out kits will also be standardised and labels will be included to label them with the appropriate fuse size. A separate bulletin will be issued to detail these changes.</i> For further information please contact Terry Dutton on (06) 185782 or 07860 684288

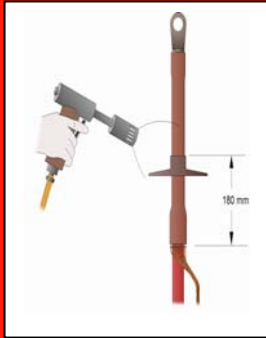
SAP Description/Use	Comm Code	Additional Description (Order Text)	Comments
Series 5 Cut-outs (Replacement - Paper Cables PME or SNE)			
SERIES 5 REFURB KIT <i>Repair Kit</i>	1422040	Includes base, fuse & cover	
C/OUT-3P+N-100A-GEC5- COMP FILL <i>3 phase replacement reversible cut-out</i>	1433960		Duplicate Now withdrawn Replaced by 1434530
B10-CUTOUT 100A TP&N REVERSIBLE,3 X F/C <i>3 phase replacement reversible cut-out</i>	1434530	B10-100A Triple Pole And Neutral Cut-out Base With Phase And Neutral Positions Reversible And With Sealing Chamber And Carriers & Fixing Screws	Replaces 1433960
C/OUT-1P+N-100A-GEC5- COMP FILL <i>Single Phase Replacement Reversible Cut-Out</i>	1433920		Duplicate Now withdrawn Replaced by 1427900
B9-CUTOUT 100A SP&N REVERSIBLE,F/C <i>Single Phase Replacement Reversible Cut-Out</i>	1427900	100 Amp Single Pole and Neutral Cut-out Base with Phase and Neutral Positions Reversible and with Fuse Carrier, Cable Cover & Fixing Screws	Replaces 1433920
C/OUT FUSE CARRIER SERIES 5 FOR 60/80AMP FUSES <i>Replacement Carrier</i>	*1421700	FOR USE WITH THE 60AMP & 80AMP FUSES (22mm fuse barrel)	To be withdrawn To be replaced by 1422090
FUSE CARRIER SERIES 5 100A (30MM BARREL) Replacement Carrier	*1422090	Separate 100AMP Fuse Carrier for Series 5 (30mm fuse barrel)	Will replace 1421700

SAP Description/Use	Comm Code	Additional Description (Order Text)	Comments
Series 6 (Replacement - Plastic Split Concentric Cable - SNE)			
C/OUT SERIES 6 FUSE CARRIER <i>Replacement Fuse Carrier</i>	1422070		Description change only
C/OUT SERIES 6 1PH SNE <i>1ph SNE Cut-Out</i>	1433950		Description change only
C/OUT SERIES 6 1PH CABLE COVER <i>Cable cover, needed for all Series 6 1PH cut-outs or a repair</i>	1434010		Description change only
C/OUT SERIES 6 S/P 100A BASE & CARRIER SNE <i>Cut-Out Base & Carrier</i>	1421750	100 Amp Single Pole Cut-out Base Plus Fuse Carrier & Fixing Screws	New product – coming soon
C/OUT SERIES 6 3PH CABLE COVER FOR TP&N <i>Cable cover, needed for all Series 6 3PH cut-outs or a repair</i>	1421770		New product for 3 phase cut-outs – coming soon
Series 7 (New/Replacement - Hybrid Cable - PME Only)			
C/OUT-1P+CNE-100A-GEC7 <i>Single phase PME Cut Out</i>	1433930		Duplicate Now withdrawn Replaced by 1428960
CUTOUT KIT 100A 1C CNE COMPLETE	*1428960	100A SINGLE POLE CUT OUT KIT WITH INTEGRAL COMBINED NEUTRAL & EARTH BLOCK, FUSE CARRIER,CABLE COVER & FIXING SCREWS	Replaces 1433930 Will be withdrawn shortly and replaced by a universal cut-out kit Separate Bulletin to follow
80A CUT OUT KIT INC. CARRIER & FUSE <i>Cut Out Kit & "Testing" Fuse Carrier</i>	*1428980	80A Cut-Out kit including Series 7 Cut-Out, Fuse Carrier, Fuse, Cable Cover, Jointing Instructions & Labels	Will be withdrawn shortly and replaced by a universal cut-out kit Separate Bulletin to follow

SAP Description/Use	Comm Code	Additional Description (Order Text)	Comments
Series 7 (New/Replacement - Hybrid Cable - PME Only) continued			
C/OUT SERIES 7 1PH CLOSE COUPLED <i>Security Cut-out</i>	1433940	C/COUPLED 100 AMP SECURITY C/O	Description change only
CABLE CVR FOR SERIES 7 100A 3PH C/OUT	1434030		Description change only
CUTOOUT KIT 100A 3C CNE COMPLETE	*1434550	3 PHASE 100A CUT-OUT KIT TP & CNE INCLUDING 3 x FUSE CARRIERS , 3 x 100A FUSE LINKS, CABLE COVER AND FIXING SCREWS	Will be withdrawn shortly and replaced by a universal cut-out kit Separate Bulletin to follow
C/OUT-1P-100A-GEC7-FUSE/BASE	1433900	Single phase PME Cut-Out Base & Carrier	Duplicate Now withdrawn Replaced by 1500560
C/OUT SERIES 7 1PH BASE & CARRIER <i>Single phase PME Cut-Out Base & Carrier</i>	1500560	100 Amp Single Pole Cut-out Base Plus Fuse Carrier & Fixing Screws	Description changed. Replaces 1433900
FUSE CARRIER 60/80 Amp Henley	*1512150	60/80A Fuse Carrier with 22mm Barrel for alternative to 100A Carrier in Series 7 Cut-out	Will be replaced by a generic 100A max 30mm large barrel fuse carrier 1512170 shortly
GEC HRC FUSEHOLDER <i>Spare fuse Carrier for Series 7 Cut-Out</i>	1422030		Duplicate Now withdrawn Replaced by 1512170
100A FUSE CARRIER SERIES 7 C/OUT Spare fuse Carrier for Series 7 Cut-Out 30mm barrel	1512170	100 Amp Fuse Carrier	Description changed. Replaces 1422030
CAB CVR-C/OUT-100A-1P+CNE-HEN7 Cable Cover for base Series 7 cut out	1434020		Duplicate Now withdrawn Replaced by 1512800
C/OUT CABLE COVER SERIES 7 1P Cable Cover for base Series 7 cut out	1512800	CABLE COVER STEPPED FOR USE WITH SER 7 SP & NE DMC	Description changed. Replaces 1434020

SAP Description/Use	Comm Code	Additional Description (Order Text)	Comments
Accessories			
MC300 NEUTRAL LINK	1421850		Duplicate Now withdrawn Replaced by 1421860
MC300 NEUTRAL LINK	1421860		Replaces 1421850
TERMINAL BLOCK 5 WAY INSULATED <i>Terminal block for meter tails etc</i>	1502020	.	No change
BUS-BAR WAY FOR SERIES 7 1PH & 3PH C/OUT <i>Bus-bar for connecting additional fused way (e.g.- flat supply) to Series7 1ph or 3ph cut-outs</i>	1510620	B7- 2 Way Bus-bar SUITABLE FOR CONNECTING ITEM B1 TO B4 OR ITEM B3 TO B4	Description change only
LUCY FUSE CARRIER-MJW3	1421840		Duplicate Now withdrawn Replaced by 1512250
E3-300A UNSHROUDED F/CARRIER (MJW3) GRP	1512250		Replaces 1421840
Fuses & Links			
CARTRIDGE FUSE FOR SERIES 5 80A HRC 22MM BARREL	*1542250		Will be replaced by 30mm large barrel 80A fuse 1422100 in future
FUSE FOR SERIES 5 80A (30MM BARREL) <i>Replacement Carrier (as supplied to metering services)</i>	1422100	Separate 30mm Barrel 80 AMP Fuse Carrier for Series 5	Coming soon to replace 1542250

Fuses & Links continued			
SAP Description/Use	Comm Code	Additional Description (Order Text)	Comments
CUTOUT CARTRIDGE FUSE 100A HRC <i>Fuse for 100A cut out 30mm barrel</i>	1542710	Type 11B 100 AMP. 30mm barrel	
HOUSE SERVICE FUSE 60AMP <i>Fuse for 60A cut out 22mm barrel</i>	1542240	Type 11A 60 AMP. 22mm barrel	
HOUSE SERVICE FUSE 60AMP <i>Fuse for 60A cut out 30mm barrel</i>	*New Code	GEC 6-RED SLD LK CARRIER	New 30mm barrel fuse Will replace 1542240
GEC 6-RED SLD LK CARRIER <i>Series 6 Red Solid Link for use in place of fuse-link for flats</i>	1422050	GEC 6-RED SLD LK CARRIER-54365-05	NOT TO BE USED IN SERIES 7 CUT OUT
SERIES 7 RED CARRIER SOLID LINK <i>Series 7 Red Solid Link for use in place of fuse-link for flats</i>	1512970		Duplicate Now withdrawn Replaced by 1422060
GEC 7-RED SLD LK CARRIER <i>Series 7 Red Solid Link for use in place of fuse-link for flats</i>	1422060	Suitable for B1, B3 & B4.	NOT TO BE USED IN SERIES 6 CUT



Engineering Bulletin

e-on | Central Networks

07/086

August 2007

What?	SJ1 & SJ1A LV / Street Lighting Jointing Kits
When?	Immediately
Where?	Central Networks East & West
Why?	To clarify which joint to use for which application
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's

Other information

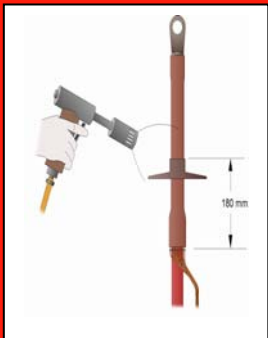
After problems reported regarding the SJ1 kit a new kit has been created for Street Lighting and other smaller cable joints.

You **must** use the appropriate joint as listed below:

Item	Commodity Code	Use
KIT ST JT S/LIGHT 4-35 IC HYB SJ1A/CN	5387810	Hybrid 4-35mm to Hybrid 4-35mm 1ph straight joints
STR.JT. 1PH HYB/HYB SJ1/CN SICAME KIT	5387500	25-35mm joints only ie it is not suitable for the smaller street lighting joints

THE SJ1 KIT 5387500 SHOULD NOT BE USED FOR JOINTING CABLES LESS THAN 25MM.

For further information please contact Terry Dutton on (06) 185782 or 07860 684288



Engineering Bulletin

07/087

August 2007

What?	Failures of Insulation Piercing Connectors
When?	Effective immediately
Where?	Central Networks East & West / Energy Services / Service Providers
Why?	To reduce the number of failures associated with piercing connectors
Who?	All Craftsmen, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group, team brief & direct e-mail to ESP's
Other information	This bulletin is aimed at reducing the number of failures affecting Sicame insulation piercing connectors. Below are some of the factors that are affecting the fitting and reliability of these connections:- ◦ The correct size of connector must be used – the MSD 185 covers 70-185mm² and the MSD 300 covers 240-300mm² ◦ The holding tool must be used – without this the connector always twists, reducing contact area. If you don't have one, get one from the stores (5873990) ◦ Connectors must be tightened using the insulated ratchet – the use of the izumi impact wrench will result in premature shearing of the nylon caps and reduce penetration. ◦ When making the connection, always connect the connector to the main before connecting the service. This allows you to check that the connector is live before connecting the service and allows you to pick up load on the service side of the connector (the main side contacts are not designed to pick up load) (Pictures overleaf)



4 even connection marks
resulting from the use of the
holding tool



An identical connection without
the use of the holding tool.
Note the reduced uneven
amount of 'bite'



The use of the holding tool is a
must

Where these failures are encountered they must be removed from the network and returned to the Network Development Centre at Tipton. They must not be pot ended, even if there is no apparent damage to the outside of the joint. Investigations show that when these connections fail there is a large amount of internal damage.



A section through a typical
failed joint. Note the large
area of damage and the crack
in the resin. This will allow
water to enter the joint and
result in failure of the main if
this joint remains on the
network

For further information please contact:
Paul Bennett - Development & Quality Engineer 02476187770 or
Richard Summers - Cable Specialist 07989700687 or
Terry Dutton - Senior Cable Specialist 07860 684288



Engineering Bulletin

e-on | Central Networks

07/088

October 2007

What?	Distribution Substation Switchgear changes
When?	October 2007
Where?	Central Networks East & West
Why?	To align maintenance time frequencies of all Distribution Switchgear on one site when changing the HV switchgear
Who?	All Craftsmen, Project Managers, Planning Managers, Planning Engineers, SAP Maintenance Planning, CNDS and External Service Providers involved in planning distribution switchgear changes, installing replacement switchgear, maintaining distribution switchgear and data recording. L&SC Tipton for Information
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's, by direct and team briefings.
Other information	This Engineering Bulletin is to clarify CN policy on maintaining all auxiliary switchgear when replacing the HV switchgear at a Distribution site. When changing the switchgear at a Distribution site and the transformer and/or LV pillar are not being replaced at the same time then the transformer and/or the LV Pillar and any other related equipment on site, will be maintained at the same time to realign the maintenance time intervals. If this is an outdoor site then there is also a requirement to cover the new switchgear with a full enclosure, bespoke switchgear covers or a 'bike shed' arrangement. This maintenance requirement should be included as part of the capital switchgear replacement scheme and be carried out by the Engineer and Craftsmen who change the switchgear. Records of the maintenance will be required by filling in the relevant maintenance MR document, and returned along with the new switchgear ADD documents to CNDS at Tipton. The existing (pillar and/or transformer) equipment record must also be checked on SAP for accuracy. If the data is inaccurate or incomplete, then additional ADD documents must be filled in and also sent to CNDS at Tipton. A copy of all the documentation must be sent to the SAP Maintenance Planning Team, Infrastructure Services at Pegasus. For further information please contact: John C Clark, I&M Policy Manager, Network Engineering, Operations and Asset Management. Telephone (06) 185780 int or 02476 185780 ext



Engineering Bulletin

e-on | Central Networks

07/089

October 2007

What?	Lucy 15/24/30 Way Multi Service Distribution Board
When?	Immediately
Where?	Central Networks East & West
Why?	Introduction of New Products
Who?	Craftsmen, Designers, Project Managers and External Service Providers
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESP's

Other information

The new MSDB's from Lucy are about to be introduced into Central Networks. The new design incorporates many new features to assist in the installation; these include the ability to convert the standard CNE units to SNE (with the use of a separate conversion kit) and they also remove the requirement for a separate cut-out below the MSDB.

As these MSDB's are fully insulated metering staff will be able to enter the boards to connect meter tails which will remove, where practical, the need to connect service cable sub mains and remote cut-outs

As the general principles for connecting cables into these units remain unchanged no training requirements are anticipated although attention should be drawn to the attached work instruction when installing 300mm 4c cables.

Commodity Codes

OLD ITEM	NEW ITEM	NOTES
10w MSDB - 1424100	10w MSDB - 1424100	Unchanged (Fibreglass)
	15w MSDB - 1424370	No separate cut-out req.
24w MSDB - 1424240	24w MSDB - 1424320	No separate cut-out req.
30w MSDB - 1424300	30w MSDB - 1424350	No separate cut-out req.
SNE Earth Kit	1424500	To convert the 15w, 24w + 30w units for installing 4 core cables

For further information contact: Terry Dutton (06) 185782 or 07860 684288, Richard Summers 07989700687 or Paul Bennett (06) 187770 or 07989700781

	Central Networks	WORK INSTRUCTION FOR LUCY 15/24/30 Way Multi Service Distribution Panel (MSDB)	REF:- MSDB 1J-15/24/30W
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Scope:- 95mm², 185mm² and 300mm² 3 core (CNE) and 4 core (SNE) Waveform Cables

Commodity Codes: 1424370 (15w; available shortly), 1424320 (24w), 1424350 (30w)

Notes:

- ° All work **MUST** be carried out in accordance with CN Distribution Safety Rules
- ° This procedure **MUST NOT** be carried out with the cable live
- ° Check your job instruction form
- ° Make sure that the site is safe and work in accordance with your on site Risk Assessment
- ° When working on live cables you must be accompanied
- ° If in doubt about any aspect of your work, contact your supervisor
- ° Ensure you are wearing the correct PPE for the task being carried out
- ° Certain components in this procedure are subject to COSHH Regulations. Make sure you are familiar with them

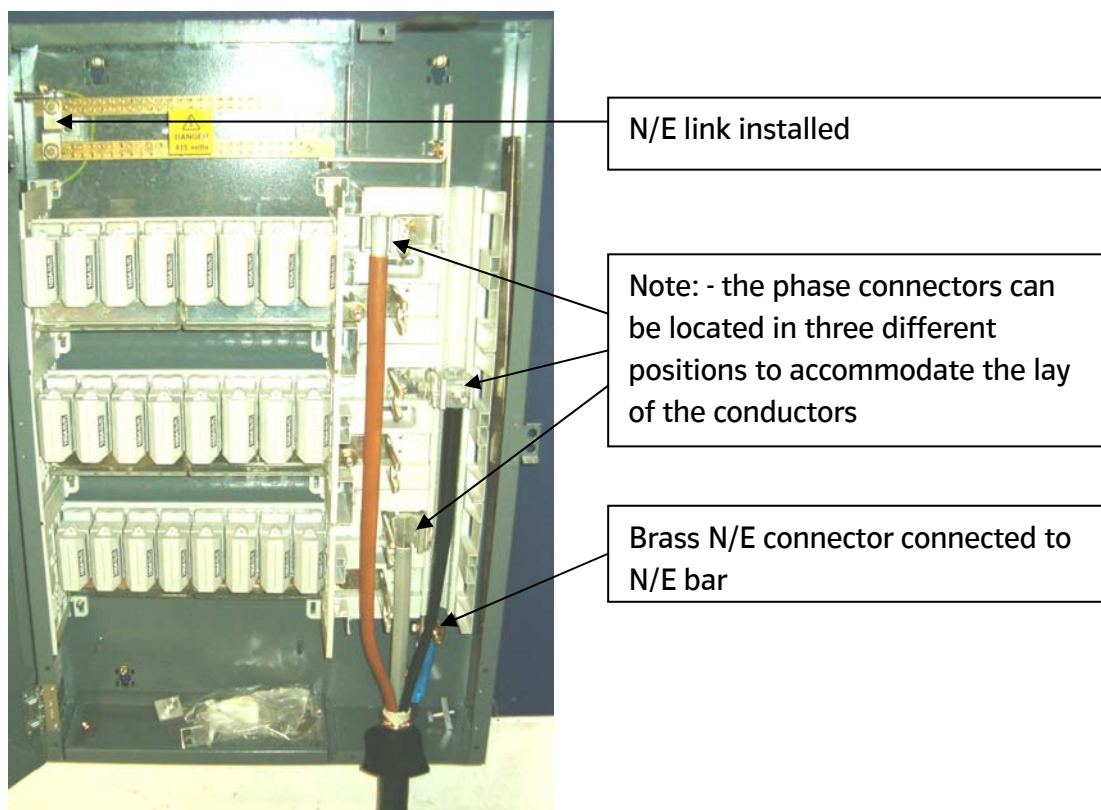
Joining Instructions:

Modules / CJP Used

- | | |
|---|---------------------------|
| 1. Fit the multi-service panel to wall remove all phase barriers and prepare for connecting | |
| 2. Install the SNE connecting bar if required | |
| 3. Remove the PVC sheath | Module 03
CJP 302, 303 |
| 4. Prepare the Neutral/Earth conductors | Module 03
CJP 378 |
| 5. Prepare the phase conductors | Module 03
CJP 372, 335 |
| 6. Make phase and neutral connections | Module 06
CJP 457, 701 |
| 7. Refit all phase and neutral phase barriers | |
| 8. Check polarity on consumer's installation | Module 12 |
| 9. Refit covers and install security seals to the individual fuses and the panel door | |

CENTRAL NETWORK LV JOINTING		REF:- MSDB 1J-15/24/30W
Page 1 of 3	©  Central Networks	Version: 1 Date: 23.10.07 Written by: R Summers

Arrangement For CNE/PME Services

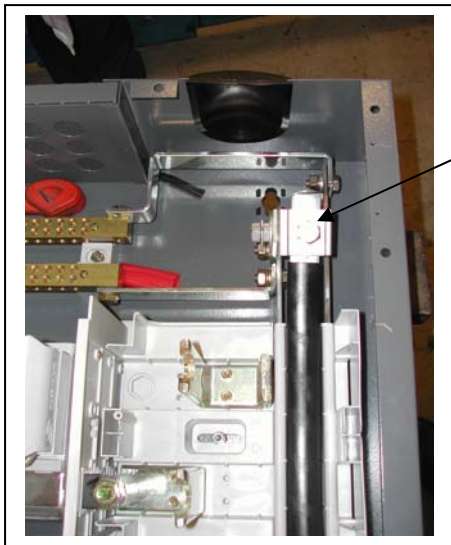


Arrangement for SNE 4c Cables

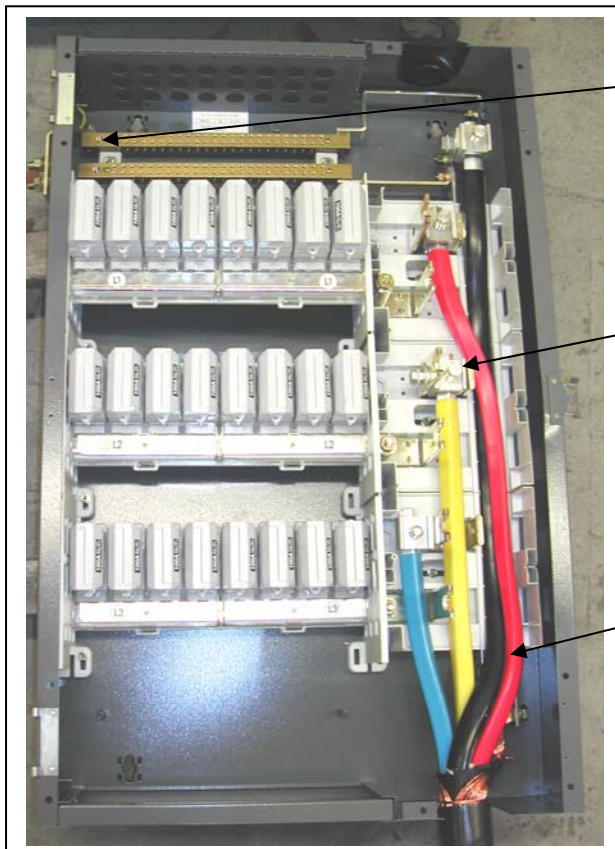
To enable 4c Wavecon to be installed into these panels a SNE adaptor kit must be installed in accordance with the manufacturers instructions (COM CODE 1424500). The bar connecting the Neutral and Earth terminal blocks must also be removed

WHEN INSTALLING 300mm 4c INTO THESE PANELS THE FOLLOWING MUST BE CONSIDERED OTHERWISE THE CABLE AND OR THE MOLDED SHROUDS WILL NOT FIT

1. DO NOT SHEAR ANY BOLTS UNTIL ALL CABLES HAVE BEEN FITTED INTO THE CONNECTORS
2. When fitting the neutral connector to the bar it must be set at an angle to allow the core to connect without requiring a double set (see photo)
3. The neutral MUST always be positioned in the channel and be connected first otherwise it will interfere with the connection on another phases
4. The cores MUST go into the connectors with the delta down otherwise the bolts will shear high and prevent the fitting of the grey shrouds (in other situations the connectors will accept cores delta up or delta down)
5. Where the cores separate as the crutch, any crossing of the conductors MUST be kept as low as possible otherwise the grey shrouds will not fit correctly



Neutral core positioned in channel and located into the connector first. Note angle of connector



Neutral Earth
link removed



Delta
down

When crossing cores, the cross must be kept below the top of the moulding otherwise the shrouds will not fit correctly – to enable this, the neutral must enter the cable channel as soon as possible



Engineering Bulletin

Central Networks

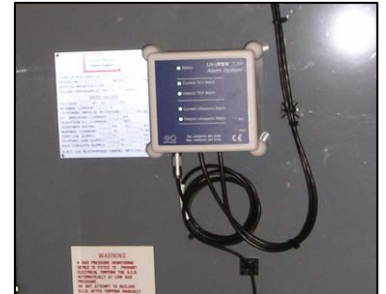
A company of **e-on**

07/090

December 2007

What?	UltraTEV Partial Discharge Monitoring Equipment
When?	Ongoing Trial until December 2008
Where?	Selected East and West Primary/Grid Sites
Why?	To monitor for partial discharge activity at suspect sites
Who?	All staff who may access Primary/Grid indoor Switchrooms
How?	Via e-mail to Engineering Bulletin Distribution Group & Direct e-mail to ESPs
Requirements	UltraTEV partial discharge monitoring equipment has been installed at eleven selected primary substations in both the East and West areas. The sensors are fitted to the either the 11 or 33kV metal-clad switchgear to continually monitor for any discharge activity. The equipment checks for ultrasonic and electromagnetic (TEV) discharge and is remotely monitored by specialists via a GPRS radio comms link. In the event of discharge activity being identified, the specialists will carry out detailed checks on site. A wall-mounted unit in each substation also provides a visual indication of any existing or historic activity. A positive indication on the unit is not necessarily a sign that discharge is actually taking place, as the equipment can detect spurious signals such as jangling keys. Control should be contacted only if there are other physical signs of discharge activity occurring. The magnetically attached units can be temporarily moved to allow the switchgear to be withdrawn for isolation purposes. If it is necessary to move the equipment then please let Paul Gidden know by e-mail, the dates and times, so any spurious indications can be eliminated. The eleven sites where the UltraTEV units are located are shown below but the equipment may be moved to alternative sites later in the trial. CN(East) Willoughby 33kV – Reyrolle L800T / L1000T Chilwell 11kV – Brush VMV12 Westwood 11kV – GEC VMX Wellington Street 11kV – GEC VMX Lawford 11kV – GEC VMX Warwick Grid 33kV – Reyrolle SMS Rugby Grid 33kV – SWS HG36 (indoor) CN(West) Woodside 11kV– SWS HG12 Black Lake 11kV Sections Y and Z – SWS C6X Bushbury Grid 33kV – SWS HG36 (indoor) Wolverhampton Grid 33kV – SWS HG36 Example fitting and removal instructions are shown on the next page.

1. **UltraTEV Alarm Hub** – This unit is fixed to a suitable interior wall, close to a 240v power supply. All other modules are connected to it via small wiring. The Hub has 5 LEDs on the front panel; one status LED indicating that the unit is operating correctly and four LEDs indicating existing and historic discharge activity.
2. **UltraTEV Alarm Nodes** – The node is housed in a moulded plastic case. It is attached to the switchgear housing or circuit breaker moving portion using built in magnets. The nodes are connected via small wiring in a daisy chain fashion back to the alarm hub. This unit detects any electromagnetic discharge activity as well as providing a connection point for the associated ultrasonic detector. 4 LEDs on the node indicate any discharge activity.
3. **UltraTEV Alarm Ultrasonic Sensors** – The ultrasonic sensor is housed in a plastic unit similar in size to a key fob. This sensor is mounted via a goose-neck arrangement to a magnetic base and is attached to the switchgear housing or circuit breaker moving portion. A connecting cable plugs into the ultrasonic unit and associated alarm node. The ultrasonic sensor is directed to any air path leading to likely discharge sites i.e. circuit breaker spouts, cable end boxes.



The installation of the above equipment will in some instances hinder the isolation and withdrawal of the circuit breaker moving portion.

No attempt should be made to isolate or withdraw the CB moving portion without first removing the associated UltraTEV alarm node and UltraTEV alarm ultrasonic sensor. Do not disconnect any small fixed wiring to the UltraTEV alarm node. However, the ultrasonic sensor can be unplugged from the alarm node. Then gently pull the units away to break the magnetic hold. Mount the sensors in a temporary location on the associated fixed housing. Once the CB is returned to a service or circuit earth position replace the alarm node & ultrasonic sensor in their original positions.

The correct positioning of these units can be determined from an adjacent CB.



Bushbury 33kv (example)

1. Cut zip ties securing small wiring as necessary.
2. Unplug cable between alarm node & ultrasonic sensor.
3. Apply a pull-away pressure to ultrasonic magnetic base and remove.
4. Apply a pull-away pressure to the alarm node and reposition on fixed housing above.
5. Proceed to isolate & withdraw CB.



Westwood 11kv (example)

1. Cut zip ties securing small wiring as necessary
2. Apply a pull-away pressure to the alarm node and the ultrasonic magnetic bases and temporary reposition on to the fixed housing above.
3. Proceed to isolate & withdraw CB.