

## Company Directive

### STANDARD TECHNIQUE: CA2S/4

#### Relating to E 5 Numbers for 11kV Cable Jointing Materials

##### Policy Summary

This ST document contains the jointing materials and their relevant E 5 item numbers required for 11kV Jointing.

Only materials stated in this ST are approved for use on WPD's 11kV Underground Cable System unless the Policy Manager, Avonbank, has granted prior permission.

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

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

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

**Author:** Richard Summers

**Implementation Date:** July 2021

**Approved by**



**Carl Ketley-Lowe**  
Engineering Policy Manager

**Date:** 1<sup>st</sup> July 2021

Target Staff Group	Network Services Staff
Impact of Change	Amber - The changes have an impact on current working practices - Communicate at next team meeting and <a href="#">Toolbox Briefing</a>
Planned Assurance checks	Checks to be carried out by Team Managers

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

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## **IMPLEMENTATION PLAN**

### **Introduction**

This updated Standard Technique defines all the standard 11kV items and their respective E 5 numbers which are available for use on the 11kV underground cable used within.

### **Main Changes**

Document updated to reflect the implementation of the Lovink silicone cable modules in straight joints. This involves the separation of universal cable modules into K series (straight joints) and M series (branch joint) modules and new E5 codes for these cable modules.

Extended joint shells used for 3c XLPE will now be supplied as base modules

### **Impact of Changes**

As part of this change E5 codes will be changing.

### **Implementation Actions**

Team Managers to ensure all of their 11kV Jointers are briefed on these changes

### **Implementation Timetable**

This Standard Technique will be required as soon as existing stocks are used.

## REVISION HISTORY

Document Revision & Review Table		
Date	Comments	Author
July 2021	<ul style="list-style-type: none"><li>Amended to reflect new cable modules in Lovink joints.</li></ul>	Richard Summers
May 2016	<ul style="list-style-type: none"><li>Document has been modified to take into account the WPD losses strategy and the harmonization of the 11kV cables within the company.</li><li>Minor changes in the E 5 lists to remove errors.</li></ul>	Peter White
April 2013	<ul style="list-style-type: none"><li>The changes that have been made to this document are the inclusion of all the 11kV cables and the associated general requirements which have over the years been used in the Midlands Areas and not used in the South Wales and South Western areas, thus providing a unified common document applicable to the whole company.</li><li>Rectification of known typographic errors.</li></ul>	Peter White

## **ST: CA2S/4 E 5 NUMBERS FOR 11kV CABLE JOINTING MATERIALS**

This ST document contains the jointing materials and their E 5 item numbers required for 11kV Jointing.

Only materials stated in this ST are approved for use on WPD's 11kV underground cable system unless the Policy Manager, Avonbank, has granted prior permission.

As from 1st March 2015 WPD have changed the specification of Approved cable sizes. These changes will affect all new installations and are aimed at reducing cable losses in accordance with the WPD Losses Strategy. This means that the 95mm<sup>2</sup> triplex and single core cables are now removed from general use, they can only be used for padmounts and the repair of faults in existing 95mm<sup>2</sup> circuits.

When selecting materials appropriate to the required joint/termination, it will be necessary to reference the material list found in the relevant Jointing Procedure.

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

<b>CONTENTS</b>	<b>Page</b>
4.1 Cables	6
4.2 Joint Base Modules	7
4.3 Joint Cable Depending Modules	8
4.4 Resin Modules	10
4.5 Termination Modules	11
4.6 Joint Connectors	12
4.7 Termination Connectors	13
4.8 Heat Shrink Items	14
4.9 Cold Shrink Items	14
4.10 Earthing Items	14

## **CONTENTS (continued)**

<b>Description</b>	<b>Page</b>
4.11 Pole Termination Miscellaneous Items	15
4.12 Cable Box Miscellaneous Items	15
4.13 Tapes	16
4.14 Miscellaneous Items	17
4.15 Cleaning/Degreasing Items	17

## **4.1 CABLES**

### **EPR**

95mm <sup>2</sup> Al. EPR Triplex	41337
185mm <sup>2</sup> Al. EPR Triplex	41338
300mm <sup>2</sup> Al. EPR Triplex	41339
300mm <sup>2</sup> Cu. EPR Triplex	41340
400mm <sup>2</sup> Cu. EPR Triplex	60608
95mm <sup>2</sup> Al. EPR Single Core	40039
630mm <sup>2</sup> Cu. EPR Single Core	40043

As from 1st March 2015 WPD have changed the specification of Approved cable sizes. These changes will affect all new installations and are aimed at reducing cable losses in accordance with the WPD Losses Strategy. This means that the 95mm<sup>2</sup> triplex and single core cables are now removed from general use, they can only be used for padmounts and the repair of faults in existing 95mm<sup>2</sup> circuits.

## 4.2 JOINT BASE MODULES

### Lovink Joints

BM K75	630mm <sup>2</sup> EPR, 500/630mm <sup>2</sup> PILC	40633
BM K85	95/185mm <sup>2</sup> EPR, up to 185mm <sup>2</sup> PILC/PICAS/PISAS	40370
BM K105	up to 400mm <sup>2</sup> EPR/PILC/PICAS	40371
BM KB85	95/185mm <sup>2</sup> EPR, up to 185mm <sup>2</sup> PILC/PICAS/PISAS	40957
BM KB95	up to 400mm <sup>2</sup> EPR/PILC/PICAS	40958
BM K85X	95/185mm <sup>2</sup> <b>3 core XLPE or 3 core XLPE SWA</b> straight joint extended outer shell.	43447
BM K105X	up to 400mm <sup>2</sup> <b>3 core XLPE or 3 core XLPE SWA</b> straight joint extended outer shell.	43448
BM KB85X	95/185mm <sup>2</sup> <b>3 core XLPE or 3 core XLPE SWA</b> branch joint extended outer shell.	43449
BM KB95X	up to 400mm <sup>2</sup> <b>3 core XLPE or 3 core XLPE SWA</b> branch joint extended outer shell.	43450

### TYCO JOINTS (Single Core)

EJS CX11A-WPD	(95/185mm <sup>2</sup> EPR)	43441
EJS CX11B-WPD	(185/300mm <sup>2</sup> EPR)	43442

**Note: - Cable sizes shown are to aid modular selection, cable type and size combination are to the relevant Jointing Procedures.**

### TREFOIL BOND JOINTS

95, 185, 300 and 400mm <sup>2</sup> EPR Triplex Trefoil bond joint	60492
95, 185 and 300mm <sup>2</sup> PILC earth bond joint.	60493

### 4.3 JOINT CABLE DEPENDING MODULES - Lovink Joints

#### M85 – Straight Joints (M Series)

CM M85 11 3c 16/70 PILC	Belted	41009
CM M85 11 3c 95-185 PICAS/PILC	Belted	40375
CM M85 11 3c 120-185 PICAS/PILC	Belted	40376
CM M85 11 3c 35/70 PILC	Screened	63221
CM M85 11 3c 95 PICAS/PILC	Screened	43473
CM M85 11 3c 120/185 PICAS/PILC	Screened	43474
CM M85 11 Triplex 70 XLPE CWS	Triplex	63231
CM M85 11 XLPE 95/185 CWS	3c and Triplex	40374
CM M85 11 3c SWA XLPE 95/185	3c and Triplex	43479
CM M85 STOPEND		40380

#### M105 – Straight Joints (M Series)

CM M105 11 3c 35/70 PILC Scr	Screened or belted	63216
CM M105 11 3c 95 PICAS/PILC Scr	Screened	63218
CM M105 11 3c 120/185 PICAS/PILC Scr	Screened	63202
CM M105 11 3c 3/400 PICAS/PILC Scr	Screened	40379
CM M105 11 3c 35/70 PILC Scr	Screened or belted	63216
CM M105 11 3c 95 PILC/PICAS Belt	Belted	63219
CM M105 11 3c 120/185 PICAS/PILC Belt	Belted	63202
CM M105 11 3c 3/400 PICAS/PILC Belt	Belted	43475
CM M105 11 Triplex 70 XLPE CWS	Triplex	63232
CM M105 11 XLPE 95/185 CWS	3c or Triplex	63212
CM M105 11 XLPE 300/400 CWS	3c or Triplex	40378
CM M105 11 3c 95/185 XLPE SWA		63214
CM M105 11 3c 3/400 XLPE SWA		43480
CM M105 STOPEND		40381

#### KB85 – Branch Joints (K Series)

CM KB85 11 3c 16/70 PILC Belt	Belted	63201
CM KB85 11 3c 95PILC/PICASBelt	Belted	63196
CM KB85 11 3c 120-185PILC/PICASBelt	Belted	63194
CM KB85 3c 35/70 PILC Scr	Screened	63234
CM KB85 11 3c 95 PILC/PICAS Scr	Screened	63203
CM KB85 11 3c 120/185 PILC/PICAS Scr	Screened	63204



CM KB85 11 Triplex 70 XLPE CWS	Triplex	63233
CM KB85 11 XLPE 95/185 CWS	3c or Triplex	63195

CM KB85 11 3c 95/185 XLPE SWA		63208
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CM KB85 STOPEND		63199
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#### **KB95 – Branch Joints (K Series)**

CM KB95 11 3c 35/70 PILC/PICAS Scr	Screened or Belted	63215
CM KB95 11 3c 95/185 PILC/PICAS Scr	Screened or Belted	63217
CM KB95 11 3c 300 PILC/PICAS Scr	Screened	63205
CM KB95 11 3c 300 PILC/PICAS Belt	Belted	63198

CM KB95 11 XLPE 95/185 CWS	3c or Triplex	63211
CM KB95 11 XLPE 300 CWS	3c or Triplex	63197

CM KB95 11 3c 95/185 XLPE SWA		63213
CM KB95 11 3c 300 XLPE SWA		63209

CM KB95	STOPEND	63200
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#### **TYCO Build-up & Stop end modules**

MF14304-95-WPD	70mm <sup>2</sup> EPR Build up Module	43453
EPERS CX11A-WPD	95/185mm <sup>2</sup> EPR Stop End Module	43454
EPERS CX11B-WPD	185/300mm <sup>2</sup> Stop End Module	43454

#### **4.4 RESIN MODULES**

##### **Lovink Joints**

RM – B	(K75, K85, K95, KB85, KB95 Base Modules)	40372
RM – C	(K95 Base Module)	40373
RM – D	Additional resin module for KB85/95 branch joints	40955
RM – G	Top-up. Extended Shells	43526
Silicon Compound	(4.7 litres)	40383
500mL Lovisil	Topping up bottle	41253

**Note: - Some Base Modules take a combination of these Resin Modules, and are to be checked in the relevant Jointing Procedure.**

##### **RESIN 3 Part Polyurethane (Tyco or W T Henley)**

5.0 Litres	31095
6.5 Litres	31096

## 4.5 TERMINATION MODULES

### TYCO

CSTI-3121-GB01	70 to 95mm <sup>2</sup> EPR (Indoor set of 3)	43439
CSTI-3131-GB01	185/300mm <sup>2</sup> EPR (Indoor set of 3)	43438
CSTI-3141-GB01	400/630mm <sup>2</sup> EPR (Indoor set of 3)	43440
CSTO-3121-GB01	70 to 95mm <sup>2</sup> EPR (Outdoor set of 3)	43435
CSTO-3131-GB01	185 to 300mm <sup>2</sup> EPR (Outdoor set of 3)	43436
CSTO-3141-GB01	400 to 630mm <sup>2</sup> EPR (Outdoor set of 3)	43437
SMOE-62803	95/185/300mm <sup>2</sup> Bushing Boots (set of 3)	43455

**Note: - 300 Cu EPR Triplex will require the use of item 43438 or 43436.**

### LIVE BREAK SEPARABLE CONNECTORS - Euromold (Nexans)

1601A4	Bushing Well Insert	40234
166LR-B	Live Break Elbow	40235

### OUTER CONE SEPARABLE CONNECTORS INTERFACE C - Euromold

K430TB	630A Truncated Separable Connector - (set of 3)	41826
300PB-18-95.240-14-5	Piggy backed 630A Truncated Separable Connector (set of 3)	Special order
(K) 400TB/G-25-TMBC120-300MWS	630A 300mm <sup>2</sup> Separable connector – each	42015
(K) 440TB/G-32-TMBC400-630-MWS	1250A 630mm <sup>2</sup> Separable connector – each	42016
(K) 440TB/G-P2-32-TMBC400-630-MWS	1250A 630mm <sup>2</sup> double sep connector /phase	42017
400PB-10SA-11N	Surge diverter separable connector (Rest of WPD)	Special order
400PB-10SA-15N	Surge diverter separable connector (Cornwall)	Special order

#### 4.6 JOINT CONNECTORS

MSFE-0009-0035/0185	(16-185mm <sup>2</sup> Straight)	40408
MSFE-0010-0035/0300	(16-300mm <sup>2</sup> Straight)	40407
BAH-02-211-0098	(300-400mm <sup>2</sup> Straight)	40434
VTPC33UTB	(400-630mm <sup>2</sup> Straight)	40416
HVBRM18SPUTC	(16-185mm <sup>2</sup> Branch)	40412
HVBRM22SPUTC	(16-300mm <sup>2</sup> Branch)	40413
HVBRM18SOUTC	(16-185mm <sup>2</sup> Loop)	40414
HVBRM22SOUTC	(16-300mm <sup>2</sup> Loop)	40415

**Note: - Item 40434 is only to be used on 300 & 400mm<sup>2</sup> Cu. EPR & 400mm<sup>2</sup> PICAS.**

#### 4.7 TERMINATION CONNECTORS (LUGS)

BAH-0240930119	95mm <sup>2</sup> Live break Connector <sup>#</sup>	42021
BAH-02-403-0127	(95/185mm <sup>2</sup> EPR Indoor)	40409
BAH-02-403-0100	(300mm <sup>2</sup> EPR Indoor)	40410
BAH-02-403-0128	(95/185mm <sup>2</sup> EPR Outdoor)	40419
BAH-02-403-0129	(300mm <sup>2</sup> EPR Outdoor)	40411
VETB33-12UTB	(400/630mm <sup>2</sup> EPR Indoor)	34255
VETC33OHUTB	(400/630mm <sup>2</sup> EPR Outdoor)	40417
VETB28-12/16 UTB	(300/400mm <sup>2</sup> Cu EPR Indoor)	34413
VETB28-OHUTB	(300/400mm <sup>2</sup> Cu EPR Outdoor)	30874
BAH-0221307	(70/95mm <sup>2</sup> EPR Indoor Pin)	*
VETB21 PxxDyy-UTB	(185mm <sup>2</sup> EPR Indoor Pin)	*
VETB28 PxxDyy-UTB	(300mm <sup>2</sup> EPR Indoor Pin)	*
VETB33 PxxDyy-UTB	(400/630mm <sup>2</sup> EPR Indoor Pin)	*
VETB33 PxxDyy-UTB	(400/630mm <sup>2</sup> EPR Indoor Pin)	*

**Note: - Items 34413 and 30874 are to be used only on 300mm<sup>2</sup> Cu EPR**

**\* Asterisk marked connectors are direct order from connector manufacturer (Tyco).**

**<sup>#</sup> Live break connectors can only be used on 95mm<sup>2</sup> SAC single core or triplex EPR.**

#### **4.8 HEATSHRINK ITEMS**

##### **End Caps**

11kV Conductive end caps (set of 3)	63107
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##### **Breakout**

402W248/S	40694
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##### **Sealing Sleeves**

WCSM 120/40 x 350	31170
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SMOE 28003 (set of 3)	40395
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##### **Repair Sleeve**

CRSM 53/13-1500	31217
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CRSM 84/20-1500	31218
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#### **4.9 COLD SHRINK ITEMS**

##### **3M End Caps**

11 - 20mm Ø	EC 1	41693
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15.9 – 30.1mm Ø	EC 2	41692
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26 – 49.2mm Ø	EC 3	41691
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45.5 – 84.3mm Ø	EC 4	41690
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#### **4.10 EARTHING ITEMS**

BET 60-12	39109
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BET 120-12	39110
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BCNE-3 UTB	39089
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Brass tunnel connector	(BTC 360)	42959
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#### **4.11 POLE TERMINATION MISCELLANEOUS ITEMS**

Crucifix Bracket	40423
Crucifix Earth Strap	40422
Surge Diverter (set off 3)	50412
Surge Diverter Adaptor Plate	50415
Cable Cleat 95mm <sup>2</sup> EPR Triplex	40438
Cable Cleat 185mm <sup>2</sup> EPR Triplex	40439
Cable Cleat 300mm <sup>2</sup> EPR Triplex	40440

#### **4.12 CABLE BOX MISCELLANEOUS ITEMS**

Polyamide Cable Gland PG42	(95/185/300mm <sup>2</sup> EPR)	41265
Brass Cable Gland G2½	(630mm <sup>2</sup> EPR)	41264
Lock nut for G2½ (2031212)	Special order from Cembre	
Brass Cable Gland G2 (200120041)	(400mm <sup>2</sup> EPR) - Special order from Cembre	
Lock nut for G2 (2031200)	Special order from Cembre	
Aluminium Cable Gland EAKT 1608	(set of 3)	41266
Y Gland (Top hat)		41400
Insulated Earth Stud		41409
Sili gasket 2		42350

#### 4.13 TAPES

Black Cotton	32667
PVC 'Scotch 35' Brown	38954
PVC 'Scotch 88' Black	35830
PVC 'Scotch 35' Grey	41195
PVC 'Scotch 35' Blue	38953
PVC 'Scotch 1500' Green/Yellow	32652
PVC 'Scotch 35' White	38955
Scotch '1700P' Temflex L1	41322
Scotch '1700P' Temflex L2	41323
Scotch '1700P' Temflex L3	41324
Scotch '1700P' Temflex L	41327
Scotch '1700P' Temflex N	41325
Scotchfil Putty	31360
Denso 50mm x 10m	32656
Black Mastic Water Blocking <b>Scotch 5313</b>	39124
Cable Marker (English)	31352
Cable Marker (Welsh)	37145
ABB Rulle	40232
"VM" (19 Wide)	31350
"VM" (100 Wide)	31347
Self-Fusing Silicone Rubber Electrical " <b>Scotch 70</b> "	41194
Semi-conducting EPR tape <b>Scotch 13</b> tape	42423
Gorilla Gaffer/Duct Tape	60928



#### **4.14 MISCELLANEOUS ITEMS**

Cable Ties (Narrow)	32644
Cable Ties (Large)	35370
Sealing Putty	31093
Whipping Thread	33625
20 swg Tinned Copper Binding Wire	32176
16 swg Tinned Copper Binding Wire	32174
Paraffin Wax (1kg bag)	39009
Emery Cloth Grade 2 (Naylor's)	31997
150 Grit Aluminium Oxide Cloth	36970
320 Grit Aluminium Oxide Cloth	36971
400 Grit Aluminium Oxide Cloth	36972
Copaslip Paste	37244
Kevlar String	36499

#### **Additional items to be purchased from Radio Spares when jointing Live Break Elbows.**

Terminal block 20A black PVC - Radio Spares part No. 423-544  
Green / Yellow 2.5mm<sup>2</sup> wire - Radio Spares part No. 364-590.

#### **4.15 CLEANING/DEGREASING ITEMS**

De-solvit 1000	(5 litres)	31955
De-solvit 1000 FD	(1 litre)	31954
Workhorse Dry Wipes (Box of 152)		32596

## **APPENDIX A**

### **SUPERSEDED DOCUMENTATION**

This Standard Technique supersedes ST: CA2S/3 dated May 2016 which has now been withdrawn.

## **APPENDIX B**

### **ASSOCIATED DOCUMENTATION**

ST:CA2A, ST:CA2C, ST:CA2M, ST:CA2N, ST:CA2O, ST:CA2T, ST:CA2U, ST:CA2V.

## **APPENDIX C**

### **RECORD OF COMMENT DURING CONSULTATION**

No comments received.

## **APPENDIX D**

### **KEY WORDS**

E 5 numbers for 11kV jointing materials.