

Company Directive

STANDARD TECHNIQUE: CA2S/3

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: Peter White

Implementation Date: May 2016

Approved by:

Policy Manager

Date:

17 May 2016

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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 has been modified to take into account the WPD losses strategy and the harmonization of the 11kV cables within the company.

Impact of Changes

None.

Implementation Actions

Team managers to disseminate the information to their respective 11kV Joints.

Implementation Timetable

This Standard Technique can be implemented with immediate effect.

Document Revision & Review Table		
Date	Comments	Author
May 2016	<p>Document has been modified to take into account the WPD losses strategy and the harmonization of the 11kV cables within the company.</p> <p>Minor changes in the E 5 lists to remove errors.</p>	Peter White
April 2013	<p>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.</p> <p>Rectification of known typographic errors.</p>	Peter White

ST: CA2S/3 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 95mm² triplex and single core cables are now removed from general use, they can only be used for padmounts and the repair of faults in existing 95mm² circuits.

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.

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4.1 CABLES

EPR

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

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4.2 JOINT BASE MODULES

Lovink Joints

BM K75	630mm ² EPR, 500/630mm ² PILC	40633
BM K85	95/185mm ² EPR, up to 185mm ² PILC/PICAS/PISAS	40370
BM K95	up to 400mm ² EPR/PILC/PICAS	40371
BM KB85	95/185mm ² EPR, up to 185mm ² PILC/PICAS/PISAS	40957
BM KB95	up to 400mm ² EPR/PILC/PICAS	40958
BM K85X	95/185mm ² 3 core XLPE or 3 core XLPE SWA straight joint extended outer shell.	43447
BM K95X	up to 400mm ² 3 core XLPE or 3 core XLPE SWA straight joint extended outer shell.	43448
BM KB85X	95/185mm ² 3 core XLPE or 3 core XLPE SWA branch joint extended outer shell.	43449
BM KB95X	up to 400mm ² 3 core XLPE or 3 core XLPE SWA branch joint extended outer shell.	43450

TYCO JOINTS (Single Core)

EJS CX11A-WPD	(95/185mm ² EPR)	43441
EJS CX11B-WPD	(185/300mm ² 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 ² EPR Triplex Trefoil bond joint	60492
95, 185 and 300mm ² PILC earth bond joint.	60493

4.3 JOINT CABLE DEPENDING MODULES - Lovink Joints

CDM K85/K95-A	16-50mm ² belted PILC	41009
CDM K85/K95-B	70-150mm ² belted PILC and 95mm ² belted PICAS/PISAS	40375
CDM K85-C	185mm ² belted PILC and 185mm ² belted PICAS/PISAS	40376
CDM K85/K95-D	95/185mm ² EPR	40374
CDM K95-E	185/300mm ² belted PILC and 185/300mm ² belted PICAS, 185mm ² PISAS	40379
CDM K95-F	300mm ² EPR	40378
CDM K95-G	185mm ² PILC 'H' Type 33kV	41010
CDM K95-H	400mm ² belted PICAS	41011
CDM K85/K95-J	70mm ² EPR	41107
CDM KG85-K	95mm ² screened PICAS/PILC95	43473
CDM KG85-L	185mm ² screened PICAS/PISAS	43474
CDM KG95-M	300mm ² screened PICAS/PISAS	43475
CDM KX85-N	95/185mm ² 3 Core XLPE	43477
CDM KX95-O	300/400mm ² 3 Core XLPE	43478
CDM KX85-P	95/185mm ² 3 Core SWA XLPE	43479
CDM KX95-R	300/400mm ² 3 Core SWA XLPE	43480
FBTM	Foam Build up Tape Module	40753
SCM 95/185	95/185mm ² EPR Stress cone	41014
SCM 300	300/400mm ² EPR Stress cone	41013
SCM 630	630mm ² EPR Stress cone	40634
ABM STA/SWA	Armour Bonding Module	40382
SEM K85	Stop End Module	40380
SEM K95	Stop End Module	40381

TYCO Build-up & Stop end modules

MF14304-95-WPD	70mm ² EPR Build up Module	43453
EPERS CX11A-WPD	95/185mm ² EPR Stop End Module	43454
EPERS CX11B-WPD	185/300mm ² 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 ² EPR (Indoor set of 3)	43439
CSTI-3131-GB01	185/300mm ² EPR (Indoor set of 3)	43438
CSTI-3141-GB01	400/630mm ² EPR (Indoor set of 3)	43440
CSTO-3121-GB01	70 to 95mm ² EPR (Outdoor set of 3)	43435
CSTO-3131-GB01	185 to 300mm ² EPR (Outdoor set of 3)	43436
CSTO-3141-GB01	400 to 630mm ² EPR (Outdoor set of 3)	43437
SMOE-62803	95/185/300mm ² 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 ² Separable connector – each	42015
(K) 440TB/G-32-TMBC400-630-MWS	1250A 630mm ² Separable connector – each	42016
(K) 440TB/G-P2-32-TMBC400-630-MWS	1250A 630mm ² 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 ² Straight)	40408
MSFE-0010-0035/0300	(16-300mm ² Straight)	40407
BAH-02-211-0098	(300-400mm ² Straight)	40434
VTPC33UTB	(400-630mm ² Straight)	40416
HVBRM18SPUTC	(16-185mm ² Branch)	40412
HVBRM22SPUTC	(16-300mm ² Branch)	40413
HVBRM18SOUTC	(16-185mm ² Loop)	40414
HVBRM22SOUTC	(16-300mm ² Loop)	40415

Note: - Item 40434 is only to be used on 300 & 400mm² Cu. EPR & 400mm² PICAS.

4.7 TERMINATION CONNECTORS (LUGS)

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

Note: - Items 34413 and 30874 are to be used only on 300mm² Cu EPR

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

[#] Live break connectors can only be used on 95mm² SAC single core or triplex EPR.

4.8 HEATSHRINK ITEMS

End Caps

95-115mm Ø	31185
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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 COLDSHRINK 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 ² EPR Triplex	40438
Cable Cleat 185mm ² EPR Triplex	40439
Cable Cleat 300mm ² EPR Triplex	40440

4.12 CABLE BOX MISCELLANEOUS ITEMS

Polyamide Cable Gland PG42	(95/185/300mm ² EPR)	41265
Brass Cable Gland G2½	(630mm ² EPR)	41264
Lock nut for G2½ (2031212)	Special order from Cembre	
Brass Cable Gland G2 (200120041)	(400mm ² 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 Scotch 5313	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 “ Scotch 70 ”	41194
Semi-conducting EPR tape Scotch 13 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 2.5mm² 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 is a revision of document ST: CA2S/2 dated April 2013 and replaces that document.

APPENDIX B

ASSOCIATED DOCUMENTATION

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

APPENDIX C

IMPACT ON COMPANY POLICY

None, as this document has just been updated to incorporate losses strategy.

APPENDIX D

IMPLEMENTATION OF POLICY

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

Independent Connection Providers (ICPs) shall follow the requirements of ST: CA2S/3 or of this document (ST: CA2S/2) for a period of up to 3 months from the issue of this document. After this date, all jointing works shall comply with ST: CA2S/3.

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

APPENDIX E

KEY WORDS

E 5 numbers for 11kV jointing materials.