Electricity Distribution

nationalgrid

Company Directive

STANDARD TECHNIQUE: CA2A/3

Relating to Jointing Configurations for 11kV Cables

Policy Summary
This Standard Technique document details the Jointing Configurations required for jointing 11kV Cables.

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: **Marco Williams**

Implementation Date: **January 2025**

Approved by

Andrew Reynolds
Engineering Policy Manager

Date: **9th January 2025**

Target Staff Group	**Network Services Staff**
Impact of Change	**Green – The changes have a minor impact on the documents contents in order to simplify information.**
Planned Assurance checks	**Checks to be carried out by Team Managers**

IMPLEMENTATION PLAN

Introduction

This updated Standard Technique defines all of the 11kV jointing and termination Standard Techniques.

Main Changes

Document updated to reflect changes to 11kV jointing procedures.

Impact of Changes

None.

Implementation Actions

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

Implementation Timetable

This Standard Technique can be implemented with immediate effect.

REVISION HISTORY

Document Revision & Review Table		
Date	**Comments**	**Author**
January 2025	• Document updated to simplify Standard Technique referral for types of joints and terminations and their relevant ST.	Marco Williams
May 2016	• Losses strategy added to the document. Plus the various number ST documents added to the different joint types e.g. Straight joints – ST: CA2V/3.	Peter White
March 2013	• 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. • Rectification of known typographic errors.	Peter White

Contents

ST: CA2A 11kV CABLE JOINTING CONFIGURATIONS

This Standard Technique document details the various jointing configurations which are possible within the NGED standard practices for 11kV jointing. It should be noted that because of the need to ensure adequate clearances in joints, the materials must not be used in any other manner than those laid down.

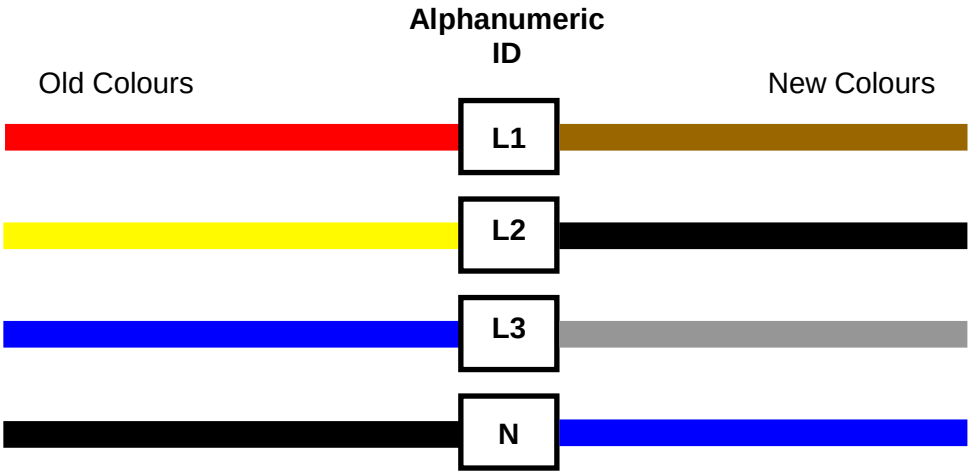
If a jointing procedure not covered in the 11kV Jointing Manual is required, advice should be obtained from the Policy Manager, Avonbank, Bristol.

As from 1st March 2015 NGED 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 NGED 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 95mm² circuits.

This Standard Technique document is an overview of the jointing configurations and for details of an individual joint, the appropriate jointing procedure should be consulted.

1.0 BACKGROUND

Since 01/04/06 the British Standards BS EN 60446 document dictating the phase colours used in the various LV Mains cables has changed, this change is mandatory, the old and new colours along with the associated alphanumeric are shown on the graphic below: -



These new colours apply to all electrical industries, including the electrical utilities, it should be noted that the old colours are no longer allowed to be purchased and used on the NGED system. Therefore when working on the existing “old colours” care shall be taken in jointing the new colours to the old. To avoid confusion when jointing the existing old colour red shall be marked with the alphanumeric tape L1 and the new colour brown shall also be marked with alphanumeric tape L1 and then the two L1’s shall be jointed together; to avoid confusion when jointing the existing old colour yellow shall be marked with the alphanumeric tape L2 and the new colour black shall also be marked with alphanumeric tape L2 and then the two L2’s shall be jointed together; to avoid confusion when jointing the existing old colour blue shall be marked with the alphanumeric tape L3 and the new colour grey shall also be marked with alphanumeric tape L3 and then the two L3’s shall be jointed together. This will ensure colour true jointing with no inadvertent crosses.

Any 11kV single core circuit that is laid shall be laid in a touching trefoil group of L1, L2 and L3, the three cables shall be cable tied or two complete turns of Gorilla gaffer (E 5 number 60928) taped every 1.5m in a straight run and every 1m when going around a corner, the cable ties to be used are E 5 number 35370.

If a second circuit is being laid in the same trench then there shall be a minimum centre to centre spacing of 300mm between the two touching trefoil groups of circuits, at no time shall a phase of one trefoil group be laid with the second trefoil group and visa versa.

BS EN 60446 - ***Basic and Safety Principals for Man-Machine Interface, Marking and Identification (2007)*** – Quote: - "The identification by colours, for identification of conductors, the following colours are permitted: - black, brown, red, orange, yellow, green, blue, violet, grey, white, pink, turquoise.

The identification by colour shall be used at terminations and preferably throughout the length of the conductor either by colour of the insulation or by colour markers. Additional marking, for example alphanumerical or numerals, are allowed, provided that the colour identification remains unambiguous."

Therefore at all times Jointers shall joint 'colour true', or if there is a mixture of old and new phase colours jointing shall be as indicated in the coloured graphic on page 2 of this document. The only dispensation for this is unless the Jointer has been instructed to do otherwise by their Team Manager.

2.0 STRAIGHT JOINTS – ST: CA2V.

Straight joints for all cables normally found on the NGED 11kV network are included.

3.0 BRANCH JOINTS – ST: CA2M.

Branch joints for all cables normally found on the NGED 11kV network are included.

4.0 STOP ENDS – ST: CA2N.

Stop Ends for all cables normally found on the NGED 11kV network are included.

5.0 TERMINATIONS – ST: CA2U.

Terminations for the following applications are included: -

(i) Indoor termination for dry cable boxes.
(ii) Outdoor pole and open busbar terminations.
(iii) Elbow disconnecting terminations ("Live break").
(iv) Compound filled cable box terminations.
(v) Outer cone separable connectors (Euromold interface C).

Note: - If an existing cable termination is compound filled then it should be noted that that compound cable termination can only be replaced by a Lovisil compound replacement as detailed in relevant Jointing Procedures within ST: CA2U. The use of Guroflex or other methods is not Approved.

6.0 LOOP JOINTS – ST: CA2O.

Loop joints for all cables normally found on the NGED 11kV network are included.

APPENDIX A

SUPERSEDED DOCUMENTATION

This Standard Technique is a revision of document ST: CA2A/2 dated May 2016 and replaces that document.

APPENDIX B

RECORD OF COMMENT DURING CONSULTATION

Comments – ST: CA2A/3

APPENDIX C

ASSOCIATED DOCUMENTATION

ST: CA2C, ST: CA2M, ST: CA2N, ST: CA2O, ST: CA2S, ST: CA2T, ST: CA2U, ST: CA2V.

APPENDIX D

IMPACT ON COMPANY POLICY

None, as this document just references relevant Standard Techniques.

APPENDIX E

IMPLEMENTATION OF POLICY

For NGED 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 area of NGED 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.

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 F

KEY WORDS

Jointing configurations for 11kV, 11kV jointing STs