Electricity Specification 400J3
Issue 2 September 2005

Low Voltage Cable Joint Shells

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Approved for issue by the Technical Policy Panel

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## Amendment Summary

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<td>Minor text amendments. Joint shell 11 and temporary joint shell drawings added.</td>
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LOW VOLTAGE CABLE JOINT SHELLS

1. SCOPE

This specification covers the manufacture of low voltage cable joint shells suitable for use on Electricity North West Limited (hereinafter referred to as Electricity North West) low voltage distribution system.

2. DEFINITIONS

Approval: Sanction by the Engineer that specified criteria have been satisfied

Contract: The agreement between Electricity North West and the Contractor for the execution of the Works including therein all documents to which reference may properly be made in order to ascertain the rights and obligations of the parties under the said agreement.

Contractor: The person or person's firm or company, including personal representatives, successors and permitted assigns, whose tender has been accepted by Electricity North West.


Engineer: 'Electricity North West' Asset Policy and Standards Manager or his successor or such person specifically nominated on his behalf.

Specification: The Specification and schedules (if any) agreed by the parties for the purpose of the Contract.

Sub-Contractor: Any person (other than the Contractor) named in the Contract for any part of the Works or any person to whom any part of the Contract has been sub-let with the consent in writing of the Engineer, and the legal representatives, successors and assigns of such person.

Supplier: Any person or person’s firm or company who supply goods to Electricity North West or Electricity North West’ contractor.

Tender: An offer in writing to execute work or supply goods at a fixed price.

Tenderer: The person or person's firm or company, including personal representatives, successors and permitted assigns, invited by Electricity North West to submit a tender.

Work: All materials, labour and actions required to be provided or performed by the Contractor under the Contract.

Writing: Any manuscript, typewritten or printed statement under seal or hand as the case may be.

3. GENERAL REQUIREMENTS FOR APPROVALS AND TESTING

3.1 Product not to be changed

No change in the product, packaging or labelling shall be made after Approval has been granted without prior notice to the Engineer, and receipt of agreement from the Engineer, in writing, to the proposed change.

3.2 Electricity North West technical approval

3.2.1 The Tenderer shall submit, with this Tender, proposals for testing which will demonstrate, to the satisfaction of the Engineer, compliance with this Specification. Such tests shall be carried out without expense to Electricity North West.
3.2.2 Alternatively, the Tenderer may submit technical reports and other data that he considers will demonstrate, to the satisfaction of the Engineer, compliance with this Specification. Acceptance of this evidence shall be at the discretion of the Engineer but will not be unreasonably withheld.

3.2.3 Approval shall be ‘site specific’ and is not transferable to another site without the written approval of the Engineer.

3.2.4 The supplier and product shall comply with all the relevant requirements of Electricity North West’s documents EPD311 and CP311.

### 3.3 Quality assurance

3.3.1 The Tenderer shall confirm whether or not approval is held in accordance with a quality assurance scheme accredited under ISO 9000. If not, he shall submit a statement of the quality assurance procedures employed to control the quality of the product, including the performance of Suppliers and Sub-Contractors.

3.3.2 The right is reserved for the Engineer to require, from time to time, the repeat of such tests as he may deem to be reasonably necessary to demonstrate continued compliance with the Specification.

3.3.3 The Tenderer shall submit, with his Tender, a list of tests and inspections which are carried out on the product prior to despatch which shall demonstrate, to the satisfaction of the Engineer, fitness for installation and service.

3.3.4 The Tenderer shall provide free of charge to Electricity North West such samples as may, in the opinion of the Engineer, be reasonably required for inspection and/or retention as quality control samples. The Engineer will confirm the requirement for samples at the time of Tendering.

3.3.5 The right is reserved for the Engineer to make, from time to time, such inspections of the Tenderer’s facilities as he may deem to be reasonably necessary to ensure compliance with this Specification and any Contract of which it forms a part.

3.3.6 The Tenderer shall submit, with his Tender, such details of product packaging disposal, as will enable Electricity North West to comply with the requirements of BS EN ISO 14001: 1996 - Environmental Management Systems.

### 3.4 Formulation

The Tenderer shall submit, with his Tender, such details of the formulation and use of the product and associated substances as will enable Electricity North West to comply with the obligations of the Health and Safety at Work etc Act 1974 and the Control of Substances Hazardous to Health Regulations 1988, in the use, storage and disposal of the product. The Tenderer may stipulate, prior to submission of such information, that he requires it to remain confidential and the Engineer will, if requested, confirm his agreement to this prior to receipt of the information.

### 3.5 Identification markings

3.5.1 The Tenderer shall submit, with his Tender, details of markings which it is proposed to apply to the product or packaging to identify manufacturing batches or items. The forms and content of such markings shall be subject to the Approval of the Engineer, and shall in all cases include the Electricity North West Approved Description and Commodity Code Number.
3.5.2 The Tenderer shall submit, with his Tender, such details of marking gross weight on components, assemblies and packages, as will enable Electricity North West to comply with the Health and Safety Manual Handling Operation Regulations 1992, for components, assemblies and packages supplied with a gross weight over 1kg. The forms and content of such markings shall be subject to the Approval of the Engineer.

3.6 Minimum life expectancy

The minimum life expectancy of all products covered by this specification is 5 years.

3.7 Manufacturers already approved

Clauses 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.3.3 and 3.3.4 will be waived in the case of products already approved.

3.8 Product conformity

Preference will be given to those suppliers who can provide suitable Product Conformity Certification to a recognised or specified standard, or an equivalent certification.

4. CONSTRUCTIONAL REQUIREMENTS

4.1 System

The low voltage cable joint shells when filled with Polyurethane resin are for use on the 230/400 volt single and three phase, 50Hz alternating current, standard and non-standard phase sequence distribution systems.

4.2 General Specification

4.2.1 The joint shells shall be moulded plastic suitable for polyurethane resin. Accessories such as connectors, bonding leads etc are not required.

4.2.2 The joint shells shall comply with the requirements of Clause 4.3 of this specification.

4.2.3 The joint shells shall be suitable for use with the cables listed in Clause 4.4 of this specification.

4.2.4 The manufacturers joint shell measurements shall assume that 50mm of outer sheath under compound is required for each cable within the shell unless the manufacturer can substantiate an alternative measurement.

4.3 Joint Shells

4.3.1 The joint shells shall be manufactured from a plastic material such as High Impact Polystyrene, PVC, Acrylonitrile Butadiene Styrene (ABS) or other similar material suitable for use with Polyurethane resin. The joint shells may be manufactured from sheet material vacuum forming methods, in which case the mould shall be suitably contoured and free from sharp edges which may give rise to undue thinning of the material.

4.3.2 Joint shells shall be manufactured in two halves, vertically split, unless agreed otherwise incorporate an opening or openings of sufficient size to allow the shell to be readily filled with compound. The openings shall be covered by suitable lids to provide strength at these positions incorporating a recess to accept a 25mm metal jointer identification disc and remain in place during backfilling operations.
4.3.3 The joint shells supplied shall be manufactured using material of sufficient wall thickness and formed using adequate reinforcing (ribbing) to withstand the encapsulating weight of compound without significant deformation.

The joint shell shall be suitable to withstand the forces endured from immediate reinstatement of the joint hole.

The Tenderer shall supply additional information to indicate required design and material changes to those offered where these are unsuitable for immediate reinstatement, including compaction.

4.3.4 All joint shells supplied for range taking applications shall be provided with stepped entry positions for cables. This is to minimise cable movement and strengthen entry positions.

4.3.5 The outline dimensions for each shell type are detailed in Appendix 'A' for Tender purposes.

4.3.6 The joint shells shall be supplied with suitable accessories to enable the two halves of the shell to be securely clipped or bolted together so that a leak-proof joint is ensured when filled with polyurethane resin, the fixing accessories shall be suitable to enable the shell to be backfilled immediately.

4.3.7 Joint shells shall also have the manufacturer's reference number stamped on one or both of the two halves.

4.4 Cables

4.4.1 The shells shall be suitable for use with the following types of cables and their combinations:

(i) Paper-insulated, lead sheathed cables to BS 6480.
(ii) Paper-insulated, aluminium sheathed Consac cables to ENATS 09-8.
(iii) PVC-insulated concentric cables to BS7870.
(iv) PVC-insulated split concentric cables to BS7870.
(v) Waveform polymeric insulated CNE cables to BS7870 with concentric copper waveform wires.
(vi) Waveform polymeric insulated 4-core cables generally to BS7870 with concentric copper waveform wires.

4.5 Information with Tender

Unless having done so, for an earlier tender for identical shells, the manufacturer shall furnish the following information:

(i) Up-to-date drawings giving front elevation, plan and relevant cross-sectional views, complete with dimensions for every joint shell offered.
(ii) Details of requirements as detailed in 4.3.3 and 4.3.5 above.
(iii) Details of the joint/cable configurations, which can be accommodated in each joint shell, offered.
(iv) Details of the packaging for each type of joint shell.
(v) Details of any special tools or equipment necessary to attach both sides of the shell together.

4.6 Packaging

Joint shells shall preferably be supplied in kit form ie including accessories (see 4.3.6) and the components despatched in the following manner:

Shells including accessories shall be individually packed in suitable strong containers in order to prevent damage, labelled to indicate the volume of polyurethane resin required to fill the shell with the smallest cable configuration catered for by that shell.

4.7 Quality System and Inspection

4.7.1 The Tenderer shall submit evidence to demonstrate that quality system and inspection procedures are such as to ensure compliance with this specification.

4.8 Samples

The manufacturer, if requested, shall submit in support of his Tender, samples of each type and size of joint shell offered.

5. DOCUMENTS REFERENCED

5.1 Control of Substances Hazardous to Health (COSHH) Regulations: 1988.
5.4 ISO 9000 Quality Management & Quality Assurance Standards.
5.5 BS EN ISO 14001 1996 Environmental Management Systems.
5.6 BS 6480:1988 Specification for impregnated paper-insulated lead or lead alloy sheathed electric cables of rated voltages up to and including 33000V.
5.7 BS 7870 Part 3 XLPE Insulated Split Concentric Cables with Copper or Aluminium Conductors.
5.8 BS 7870 Part 3 XLPE Insulated CNE Copper Wire Concentric Cables with Copper or Aluminium Conductors.
5.9 ENATS 09-8 Impregnated paper insulated 600/1000V cable with three solid aluminium phase conductors and aluminium sheath/neutral conductor (Consac).

6. KEYWORDS

Cable, shell, insulated, jointer.
**APPENDIX 'A'
JOINT SHELL DRAWINGS**

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NOTE: ALL JOINT SHELLS TO HAVE LIDS

LID DIMENSIONS TO SUIT JOIN SHELL TOP APERTURE