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Guidance on the management of fused neutral cut outs

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Foreword

This Engineering Recommendation (ER) is published by the Energy Networks Association (ENA) and comes into effect from the date of publication. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the ENA Electricity Networks and Futures Group (ENFG). The approved abbreviated title of this engineering document is "ER G93/1".

This is the first issue and does not cancel or replace any other document.

All Distribution Network Operators (DNOs) in Great Britain (GB) are required to comply Regulation 7 (2) of the Electricity, Safety, Quality and Continuity Regulations 2002[1], which stipulates that:

"…no generator or distributor shall introduce or retain any protective device in any supply neutral conductor or any earthing connection of a low voltage network which he owns or operates."

In addition correspondence received by all GB DNOs from the Health and Safety Executive in December 2012[2] places additional requirements on GB DNOs with respect to the actions to be taken following the DNO receiving notice of a fused neutral cut out[3] at a particular location.

This document has been prepared by a Task Group comprising representatives from all GB DNOs. It has been developed through a process of debate and discussion between those DNOs which has identified and promoted best practice in maintaining regulatory compliance in this area.

This document is intended for policy staff within GB DNOs, who are tasked with maintaining compliance with legislation.

Where the term "should" is used in this document it means the provision is a recommendation. The term "may" is used to express permission.

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[1] See Appendix A

[2] See Appendix C

[3] See Appendix D

Introduction

Most domestic and small commercial properties in GB that receive an electricity supply have a cut out (see Figure 1 below) which forms the final part of the public electricity supply system (owned and operated by the local DNO) before it is connected into the suppliers meter and then to the customers domestic wiring. In normal circumstances only the live conductor in this cut out will be fused, however prior to 1936 some cut outs were installed in GB properties in which the neutral conductor was also fused. This practice was explicitly prohibited in the Electricity Supply Regulations passed in 1937.[4]

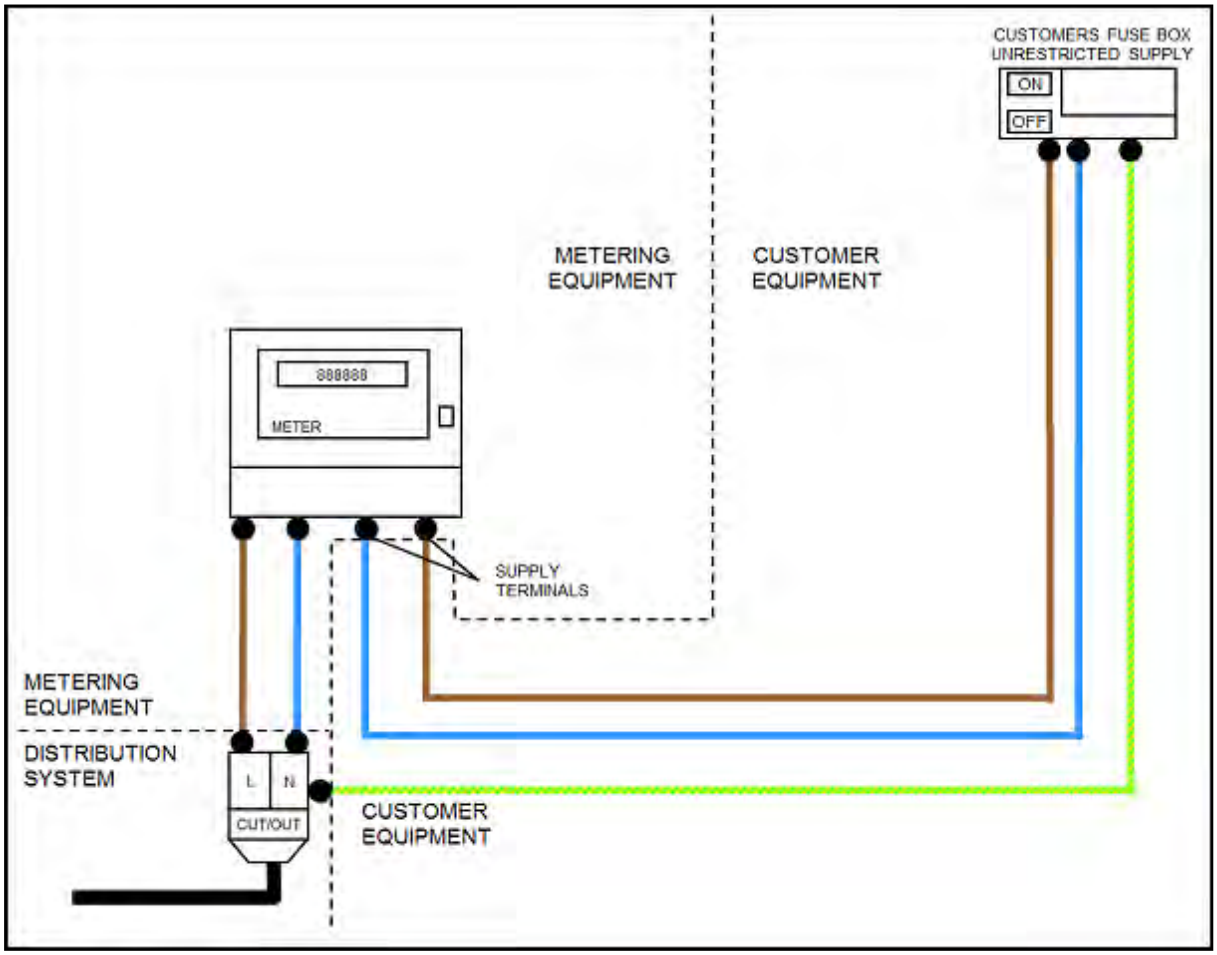

Figure 1 - Typical domestic electrical service position layout[5]

1 Scope

This document provides recommendations for maintaining compliance with the Electricity Safety, Quality and Continuity Regulation (ESQCRs) 7 (2), as well as the requirements of the HSE letter to GB DNOs of December 2012.

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[4] See Appendix B

[5] Please note that this diagram is included to illustrate the division of responsibilities between DNO, Supplier and Customer at a typical service position. It is not intended to represent the likely layout at a service position containing a fused neutral cut out.

2 Public risk posed by fused neutral cut outs in domestic and small commercial premises in GB

UK DNOs have extensive knowledge and experience of the current and past operational incidents on their networks. Based upon this knowledge and experience DNOs are aware of virtually no reports in the recent or medium past of the operation of fuses in the neutral conductor of fused neutral cut outs. This suggests that the actual risk posed by those few fused neutral cut outs still present on the public electricity system is low and therefore the approach to achieving compliance outlined below in the 'Future compliance' section is appropriate. Furthermore DNOs are of the view that, based upon their experience of the historic risk posed, a more rapid, proactive programme of identification and removal of fused neutral cut outs would not materially reduce the overall risk to safety presented by this equipment to the general public.

3 Current best practice with respect to removal of fused neutral cut outs

DNOs are in agreement that the likely size of the current population of fused neutral cut outs still in operation is very small, with small clusters probably existing in certain locations. It is the case that remaining units are difficult to identify purely by visual inspection.

When a fused neutral cut out is identified by DNO staff each DNO shall have in place internal systems to allow their staff to quickly and effectively report and record the existence of said fused neutral cut out and take action to remove it.

For third parties working on or around the supply terminals (typically meter operators or private electricians) all DNOs shall have in place systems by which fused neutral cut outs can be immediately notified to them. This is achieved through telephone contact with the appropriate DNO call centre or via an industry agreed data flow process.

When fused neutral cut outs are identified (typically via a report from a supplier's agent engaged in meter replacement activity) all DNOs shall make all reasonable endeavours to remove these from the system within 28 days of notification, subject to appropriate risk assessment of the existing asset condition. It should be noted that arranging for access to customers' premises to carry out work is not always straightforward or timely.

Where the DNO is relying on third parties (e.g. Meter Operators, etc) to notify them of such equipment, the DNO must have arrangements with those third parties to ensure that:

i. the third party is competent to identify such equipment, and

ii. aware of the notification arrangements.

Where a fused neutral is identified, the DNO shall make arrangements to inspect similar properties in the locality, on a sample basis, to test whether the presence of fused neutrals is a widespread issue.

The DNO shall have arrangements in place to report to the HSE the numbers of fused-neutral equipment found and replaced. The first reporting period was the 31st January 2013 to 31st March 2013, with further reports made quarterly thereafter. These reports shall be provided to the DNO's principle HSE contact.

4 Future compliance

The electricity industry is in the process of preparing for the roll out of smart metering to all domestic properties in GB. This programme is currently scheduled to begin in earnest in October 2015 and conclude by the 31st December 2020.

During this programme every domestic property will be visited by a smart meter installer who is trained to identify and report any fused neutral cut outs they encounter. The process by which these reports will be made is as per the Master Registration Agreement (MRA) Data Transfer Catalogue (DTC)[6], by which the identification of a fused neutral cut out will be reported as a category 'B' defect[7]. The practical effect of this will be that the smart meter installation cannot be completed until the DNO has attended site and replaced the fused neutral cut out.

DNOs therefore expect that the smart meter roll out programme will identify all remaining fused neutral cut outs on their networks and require them to remove and replace them to enable the fitting of a smart meter. By the conclusion of the roll out programme DNOs will be able to demonstrate full compliance with the ESQCR 7(2).

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6 Codes D0126 and D0135 specifically.

7 As per *MOCOPA Guidance for Service Termination Asset Reporting,* developed by the ENA Smart Metering Operations Group (SMOG) and available from the MOCOPA website (see http://www.mocopa.org.uk).