

Periodic Inspection & Testing of Fixed 'Low Voltage' Electrical Installations

1 General

All Periodic Electrical Inspection & Testing must be carried out in accordance with the requirements of IEE Guidance Note 3 – Inspection & Testing.

The Inspector must always additionally consult BS 7671 – Requirements for Electrical Installations, to confirm compliance.

2 Content of LV testing

Periodic Testing consists of the following tests:

- External earth loop impedance;
- Installation earth electrode resistance;
- Continuity of protective conductor;
- Continuity of ring final conductor;
- Insulation resistance between live conductors;
- Insulation resistance between live conductors & earth;
- Site applied insulation;
- Protection by separation of circuits;
- Protection against direct contact by barrier or enclosure provided during construction;
- Insulation of non-conducting floors or walls;
- Polarity;
- Earth fault loop impedance;
- Operation of protective devices (i.e. RCD's); and
- Functional test of assemblies

3 Frequency

The frequency of Periodic Electrical Inspection & Testing is determined by the recommendation of the Electrical Installation Certificate or the latest Periodic Electrical Inspection & Testing Report.

NOTE Table 3.2 (within Guidance Note 3) provides recommended frequencies. However, interpretation for railway specific equipment is provided by RT/E/P/40042 (Network Rail Company Standard) and therefore takes precedence.

Periodic Inspection & Testing of Fixed 'Low Voltage' Electrical Installations

4 Requirements

To verify safety, a thorough visual inspection of the installation shall be carried out before any testing or opening/removal of covers etc. commences.

A check shall be made to locate any previous records.

A testing plan shall be compiled, based on:

- Age of equipment;
- Operational requirements/limitations;
- Existing records;
- Visual inspection; and
- Minimum of 10% sample size.

INSPECTION shall be performed before any TESTING.

BS7671 requires inspection comprising of careful scrutiny of the installation without dismantling, or with partial dismantling as required. For this reason, in some cases, it may only be appropriate to perform a sample inspection of those parts of the installation that require dismantling.

With regard to 'Accessories and Switchgear' (refer to sec. 3.9.1 (d) within Guidance Note 3) it is recommended that a random sample of at least 10% be given a thorough internal inspection of accessible parts. The inspection must be extended to include every switching device if results are found to be significantly adverse (refer again to Guidance Note 3).

Inspection shall include verification of all identification, maintenance, warning and safety labels/notices.

BS 7671 requires testing to be carried out on installations where practicable. The same range and level of testing as for an initial inspection & test is not necessarily required, or indeed possible. Also, installations that have been previously tested and for which there are comprehensive records of test results may not need the same degree of testing as installations for which there are no records of testing.

NOTE Section 2.7 (within Guidance Note 3) provides references for methods of testing.

Sample testing may be carried out at the discretion of the tester (to a minimum of 10%). Sample testing must be increased if results are found to be significantly adverse (refer to Guidance Note 3).