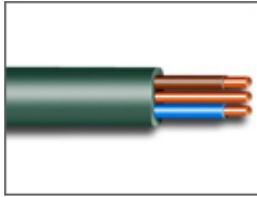


Fixed Wiring Tests & Procedures

Visual Inspection:



(i) Joints and Connections It is not practicable to inspect every joint and termination in an electrical installation. Nevertheless a sample inspection should be made. An inspection should be made of all accessible part of the electrical installation e.g. switchgear, distribution boards, and a sample of luminaire points and socket-outlets to ensure that all terminal connections of the conductors are properly installed and secured. Any signs of overheating and conductors, terminations or equipment should be thoroughly investigated and included in the Report.

Switching Devices:

It is recommended that a random sample of a minimum of 20 per cent of all switching devices is given a thorough internal visual inspection of accessible parts to assess their electrical and mechanical conditions.

Protective Devices:

The presence, accessibility, marking and condition of devices for electrical protection, isolation and switching should be verified. It should be established that each circuit is adequately protected with the correct type, size and rating of fuse or circuit-breaker. The suitability of each protective and monitoring device and its overload setting should be checked.

Conductors:

The means of identification of each conductor, including protective conductors, should be verified. The deterioration of, or damage to, conductors and their insulation, and their protective coverings, if any, should be noted.

Marking and Labelling:

The labelling of each circuit should be verified. Notices or labels are required at the following points and equipment within an installation:

- (i) at the origin of every installation
- (ii) where different voltages are present
- (iii) earthing and bonding connections
- (iv) Residual Current Devices (r.c.d.'s)

Continuity of Protective Conductors and Earthed Equipotential Bonding:

If any electrical installation can be isolated from the supply it is permissible to disconnect the protective and equipotential conductors from the main earthing terminal in order to verify their continuity. The sequence of operation needed for initial testing can be carried out safely on an existing installation if it is isolated from the supply. Where an electrical installation cannot be isolated from the supply the protective equipotential conductors must NOT be disconnected as, under fault conditions, the exposed and extraneous-conductive-parts could be raised to a dangerous level above earth potential.

The 'combined' integrity of the conductors shall be established by continuity/earth fault loop impedance tests. The former to establish continuity of conductors and the latter to establish and confirm an appropriate disconnection time in the event of an earth fault.

Polarity Test:

Test shall be made to verify that:

- (i) the polarity is correct at the meter and consumer unit/distribution board
- (ii) single-pole control and protective devices are connected in the phase conductor only
- (iii) conductors are correctly connected to socket-outlets and other accessories/equipment
- (iv) centre-contact bayonet and Edison-type screw lamp-holders have their outer or screwed contacts connected to the earthed neutral conductor
- (v) all multi-pole devices are correctly installed

Earth Fault Loop Impedance:

Where protective measures are used which require a knowledge of earth fault loop impedance, the relevant impedance shall be measured, or determined by an equally effective method.

Earth fault loop impedance tests are carried out at the locations indicated below:

- (i) at the origin of each installation and at each Distribution Board
- (ii) fixed equipment and socket-outlets
- (iii) 10 per cent (on a random basis) of all luminaires, with a minimum of one luminaire, preferably the further one from the consumer units, for each circuit of any building
- (iv) at any location which may be exposed to exceptional damage or deterioration or represent a special hazard at the furthest point of every radial circuit.

Where the installation incorporates an R.C.D., the value of earth fault loop impedance obtained in the test should be related to the nominal residual operating device.

Insulation Resistance:

Insulation resistance tests should be made on a dead circuit and any electronic equipment which might be damaged by application of the test voltage must be disconnected or isolated. The insulation resistance should be measured between each live conductor and earth and should not be less than 0.5 megohm. Where practicable the tests are applied to the whole of the installation with all fuse links in place and all switches closed. Alternatively, the installation may be tested in parts.

Operation of Devices for Isolation and Switching:

Where means are provided in accordance with the requirements of the Regulations for isolation and switching, a 10 per cent sample shall be operated to verify their effectiveness and checked to ensure adequate and correct labelling.

Operation of Residual Current Devices to B 4293:

Where protection is provided by an R.C.D., the effective operation of each R.C.D. shall be verified by a test simulating an appropriate fault condition independent of any test facility incorporated in the device, followed by operation of the integral test device. The nominal rated tripping current for protection of a socket-outlet for use with equipment outdoors or physically installed outside the general installation equipotential zone must not exceed 30 mA (0.03 amp). In certain situations such as high risk areas, 10 mA RCD's may be appropriate for the particular installation.