ALEXANDER BONHILL

Fixed Electrical Installations

Inspection & Testing

INTRODUCTION

One of the most common causes of fire in the workplace is the failure of fixed electrical installations. Serious injury or fatality can also result from poor maintenance, in appropriate use and general inadequacy of fixed electrical installations and equipment.

This can have a catastrophic effect on a business with subsequent interruption to the business and possible loss of customers or reputation. The potential for long term damage to the business should not be underestimated.

THE LAW

The Electricity at Work Regulations 1989 places a general duty of care on employers that all electrical systems are to be maintained in a safe condition. Electrical systems include wiring, switchgear, distribution boards and all fixed equipment (including motors, heaters, compressors etc.) installed within a workplace. This will also include yard installations and the like.

These regulations do not specify how frequently such installations should be maintained but compliance with IEE Wiring Regulations BS 7671:2018 Requirements for Electrical Installations and specifically Part 6 (inspection & testing) issued by the Institution of Engineering and Technology is generally accepted as likely to achieve compliance with the 1989 Regulations.

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PROACTIVE ACTION NOW IS BETTER THAN REACTIVE ACTION WHEN IT'S TOO LATE

Periodic inspection and testing of these fixed electrical installations by a suitably qualified (to IEE 18th Edition) electrician should be carried. The electrician or contractor should preferably be a member of the National Council for Electrical Installation Contracting (NICEIC), Electrical Contractors Association (ECA) or approved by a UKAS/ISO17020 accredited organisation.

The maximum period between inspections and testing varies depending on the type of workplace, with more frequent inspections/ testing necessary if installations are assessed to be subject to unusual or significant wear factors. In addition, many organisations now utilise Thermographic Imaging as a tool to assist in planned preventative maintenance of machinery and fixed equipment.

GUIDANCE ON FREQUENCY OF PERIODIC INSPECTIONS AND TESTING

Type of Workplace	Frequency of Inspection & Testing
Commercial	5 years
Industrial	3 years
Retail	5 years
Office	10 years
Cinema & Theatre	3 years
Restaurant & Hotel	5 years
Public Entertainment Venue	3 years
Public House	5 years
Educational	5 years
Leisure Complex (excluding Swimming Pool)	3 years

Type of Workplace	Frequency of Inspection & Testing
Swimming Pool	1 year
Petrol Filling Station	1 year
Fish Farm	1 year
Caravan Park	1 year
Laboratory	5 years
Construction Site	3 months
Emergency Lighting	3 years
Fire Alarm	1 year
Domestic	10 years

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A REPRESENTATIVE IEE INSPECTION AND TEST WILL INCLUDE THE FOLLOWING:

Main Switchgear and Circuits

- 100% of main switchgear is inspected internally
- 20% of all circuits leading from main switchgear to distribution boards or specific equipment are inspected and tested for insulation resistance, earth loop impedance and prospective short circuit current are measured and cable sizes are confirmed for current carrying capacity

Distribution Boards and Circuits

- 100% of distribution boards are visually inspected and tested for earth loop impedance and prospective short circuit current
- 20% of power circuits are tested for insulation resistance
- 10% of lighting circuits are tested for insulation resistance
- 10% of final ring circuits are tested for insulation resistance

Lighting

- 10% of lighting circuits are tested for insulation resistance and earth loop impedance at the outermost position of the circuit
- One lighting fitting from each circuit is internally inspected and tested for insulation resistance
- A further 5% of all light fittings are tested for earth loop impedance

Fixed Equipment (without control panels)

- 100% are inspected externally with 10% inspected internally
- 100% are tested for earth loop impedance
- 10% are tested for insulation resistance

Fixed Equipment (with control panels)

- 100% of control panels are inspected internally
- 100% of control panels and equipment led from the control panel are tested for earth loop impedance
- 10% of electrical terminations within the control panel are checked to ensure they are tight

Mains Sockets

- 100% are inspected externally
- 100% are tested for earth loop impedance and polarity

Residual Current Devices (RCDs)

- 100% are tested for tripping time at half, full and five times the rated tripping current, across positive and negative cycles

General Wiring

- Where possible, 100% of general circuit wiring is visually inspected

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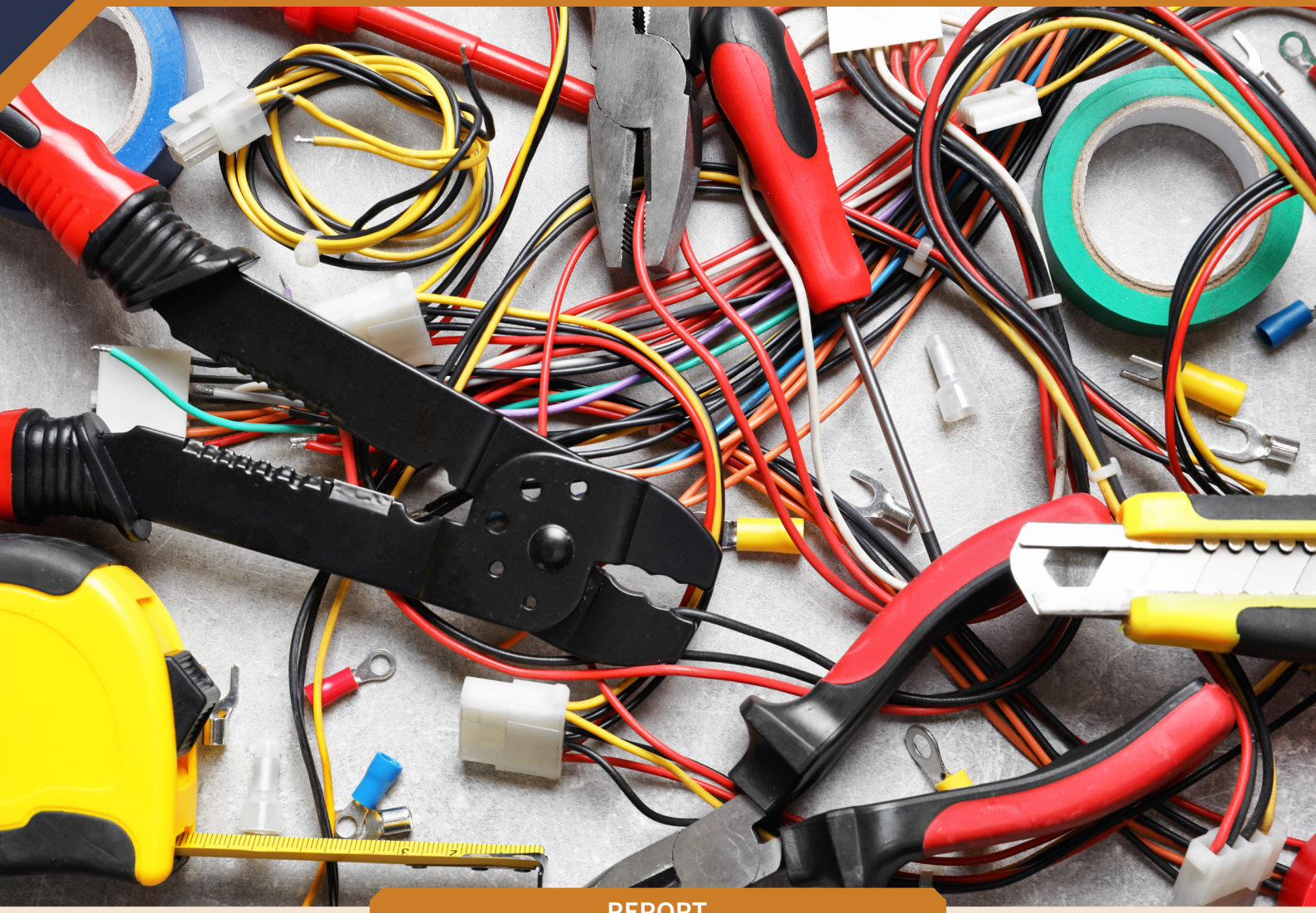

REPORT

Any remedial works arising from the inspection and test will be detailed in an EIC Report categorising each item requiring attention:

CODE 1	CODE 2	CODE 3
Danger present	Potentially dangerous	Improvement recommended

It is important that remedial works are dealt with in the timescales stated – Code 1 and 2 faults are particularly important. Once remedial works are complete, the electrician will issue an Electrical Installation Condition Report (EICR).

FURTHER GUIDANCE

The Institution of Engineering & Technology www.theiet.org

The Electrical Contractors Association www.eca.co.uk

National Inspection Council for Electrical Contracting www.niceic.org.uk

Scotland's Electrical Trade Association www.select.org.uk