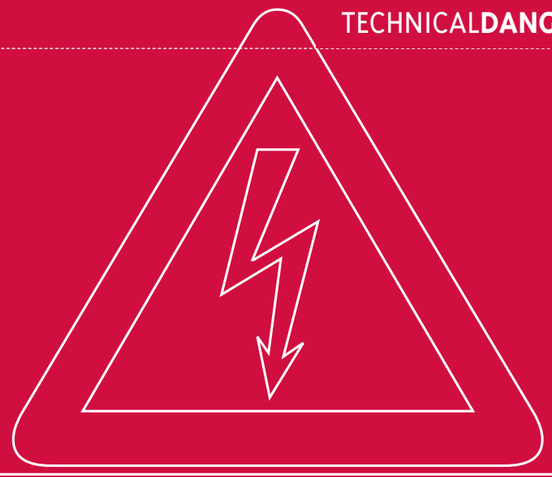
TECHNICALDANGERS!



THE DANGERS OF LIVE PARTS IN TRUNKING AND DISTRIBUTION BOARDS

Trunking systems and distribution boards contain live parts, and control measures must be taken so that electrical operatives are not subject to the risk of electric shock.

Accidents have arisen through contact with exposed live parts when working in trunking and distribution boards.

One fatal occurred in 1999 resulted when a contractor's employee made direct contact with 40 mm of an uninsulated live cable at an in-line connector joint. He was removing a redundant cable from a trunking. The subsequent HSE prosecution in 2003 resulted in a fine of £220,000 and £30,000 costs to the company ordering the work for (i) not ensuring that the subcontractor was sufficiently competent to perform such work and (ii) not ensuring a safe system of work was in place. The subcontractor who employed the electrician was also fined £25,000 for not ensuring a safe system of work was in place.

Another fatal accident occurred when an employee of a lift company working in a hotel knelt down to work inside a control cabinet and came into contact with a live terminal. The power to the lift had been isolated but a signal transformer inside the cabinet remained live. The court fined the lift company £50,000 for a breach of section 2.1 of the Health and Safety at Work Act 1974, and the hotel chain was fined £30,000 under regulation 3.1 of the Management of Health and Safety at Work Regulations 1999. A suitable risk assessment on the lift motor room had not been performed.

Regulation 4(3) of the Electricity at Work Regulations (1989) requires that every work activity, including operation, use and maintenance of a system and work near a system shall be carried out in such a manner as not to give rise, so far as is reasonably practicable, to danger.

Where electrical work is to be performed on a trunking system or distribution board, all conductors should be made dead. This will normally be accomplished by a safe system of work which includes the secure isolation of all conductors, which will subsequently be proven dead. Such work must be carried out by competent persons only.

Regulations 12, 13, 14 and 16 of the EWR are likely to be relevant. Regulation 12 gives requirements for cutting off the supply and for isolation, regulation 13 gives precautions to be taken for work on equipment which has been made dead and regulation 14 deals with work on or near live conductors. Regulation 16 requires persons working on electrical systems to be competent to prevent danger and injury.

'Absolute' and 'So far as is reasonably practicable'

If the requirement in a regulation is 'absolute', for example if the requirement is not qualified by the words 'so far as is reasonably practicable', the requirement must be met regardless of cost or any other consideration. Someone who is required to do something 'so far as is reasonably practicable' must assess, on the one hand, the magnitude of the risks of a particular work activity or environment and, on the other hand, the costs in terms of the physical difficulty, time and trouble and expense which would be involved in taking steps to eliminate or minimize those risks. The greater the degree of risk, the less weight that can be given to the cost of the measures needed to prevent that risk. The risk, in the context of the EWR, is very often that of death by electrocution and where the precautions which can be taken are so very often simple and cheap, the level of duty to prevent that danger approaches that of an absolute duty.

Risk assessment and safe system of work

It is foreseeable that when accessing inside a trunking or a distribution board there may be exposed live parts posing a serious risk of electric shock. The level of risk increases for a poorly maintained or unknown installation.

In a trunking there may be exposed live parts resulting from deficiencies such as damaged cable insulation, defective joints or cut off cable ends. The deficiencies may not be immediately apparent when the trunking lid is first removed.

In a distribution board, once again, there may be exposed live parts such as terminals, bars and links which may be able to be touched. The risk is greater for older distribution boards or poorly maintained distribution boards where internal covers may be broken or missing or not provided in the first place.

All electrical contractors should undertake and provide a written risk assessment, which is likely to require a safe system of work to be provided regarding access into trunking and distribution boards. The risk assessment and safe working procedure should be supplemented by attention to conditions existing on the particular site. Issues to be resolved include:

- The number, type, condition and state (energized or not) of all conductors and equipment likely to be encountered within the trunking or distribution board should be established
- All conductors, including live conductors, neutral conductors and any other conductors, and equipment should be made dead and securely isolated before entry
- It should be able to be verified that all conductors and equipment are dead before and immediately after gaining entry and will remain dead during the period of the work
- If it is not reasonably practicable to make all conductors or equipment dead, then the conductors to be worked on should be made and proven dead and adequate control measures put in place to prevent danger from any other live or unknown conductors or equipment in the trunking or distribution board.
- Additional risks existing at the particular location such as poor access requiring the need to use steps, a scaffold or ladders; poor lighting requiring additional lighting be provided; or an installation that is not documented and, effectively, unknown requiring careful assessment, probably with all or parts of the installation isolated, by the most experienced and qualified members of staff.
- Competence of the person performing the work. The Manager should assess the likely scope of the work and then ensure that the operative(s) are suitably experienced, qualified and, if necessary, supervised so that persons, including the operative(s) themselves, will not be put at risk.

Other precautions may need to be put in place, such as the provision of personal protective equipment (PPE) to protect against electric shock and flashover burns, the use of non-conducting steps and ladders and insulating matting. Persons may need to be accompanied. Persons may also need to be trained in first aid and resuscitation techniques. Tools should be in serviceable condition.

Further information is included in:

The Memorandum of guidance to the Electricity at Work Regulations 1989 (HSR25) /(HSA55 N. Ireland)

Electricity at work - Safe working practices (HSG 85)

Statutory legislation includes that contained in:

The Health and Safety at Work Act Sections 2(1) and or 3(1)

The Electricity at Work regulations- Regulations 4(3) and 14

The Management of Health and Safety at Work Regulations - Regulation 3(1)