

BS 7375:2010



BSI Standards Publication

Distribution of electricity on construction and demolition sites – Code of practice

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Summary of pages

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Foreword

Publishing information

This British Standard is published by BSI and came into effect on 30 April 2010. It was prepared by Subcommittee PEL/17/3, *Low voltage switchgear and controlgear assemblies*, under the authority of Technical Committee PEL/17, *Switchgear, controlgear and HV-LV co-ordination*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 7375:1996, which is withdrawn.

Information about this document

This British Standard is intended to be read in conjunction with the relevant clauses of BS 7671.

This is a full revision of the standard, and introduces the following principal changes:

- updating of references to BS 7671 to take into account the publication of the Seventeenth Edition;
- updating of all other standards references;
- updating of style and structure to conform to current BSI drafting rules.

The use of reduced low voltage systems as recommended in this British Standard has made a major contribution to electrical safety on construction and demolition sites. However, for some site installations, by reason of their siting in relation to the available electricity supply, it might be necessary to use supplies at higher voltage.

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard gives recommendations for the distribution of electricity on construction and demolition sites, and gives guidance on the application of the requirements of BS 7671 on such sites. It is intended for use by builders, contractors, engineers and others concerned with the provision of electrical installation equipment suitable for individual site conditions.

This British Standard is limited to those supply systems operating at nominal voltages not exceeding 440 V a.c. between conductors, or 250 V a.c. between conductors and earth.

The following are outside the scope of this British Standard:

- a) high voltage incoming supplies and equipment;

NOTE 1 For some site installations, supplies at a higher voltage, e.g. 11 kV a.c. and 33 kV a.c., are used.

- b) underground mining operations;

- c) current-using equipment;

- d) output circuits of frequency changers (see Note 2).

NOTE 2 Where high frequency power tools are used, a frequency changer is necessary for their connection to a source of supply. This British Standard is applicable only to the input circuits of such devices.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications

BS 4363, *Specification for distribution assemblies for reduced low voltage electricity supplies for construction and building sites*

BS 5378-2, *Safety signs and colours – Part 2: Specification for colorimetric and photometric properties of materials*

BS 5499-1:2002, *Graphical symbols and signs – Safety signs, including fire safety signs – Part 1: Specification for geometric shapes, colours and layout*

BS 5467, *Electric cables – Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V*

BS 6708, *Flexible cables for use at mines and quarries*

BS 6724, *Electric cables – Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V, having low emission of smoke and corrosive gases when affected by fire*

BS 7430, *Code of practice for earthing*

BS 7671:2008, *Requirements for electrical installations – IEE Wiring Regulations – Seventeenth edition*

BS 7919:2001, *Electric cables – Flexible cables rated up to 450/750V, for use with appliances and equipment intended for industrial and similar environments*

BS EN 60079-14, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*

BS EN 60309-2, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories*

BS EN 60439-4, *Low-voltage switchgear and controlgear assemblies – Part 4: Particular requirements for assemblies for construction sites (ACS)*

BS EN 60529:1992, *Specification for degrees of protection provided by enclosures (IP code)*

BS EN 60947-2:2006, *Low-voltage switchgear and controlgear – Part 2: Circuit breakers*

BS EN 61008-1, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*

BS EN 61009 (all parts), *Specification for residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs)*

BS EN 61140:2002+A1:2006, *Protection against electric shock – Common aspects for installation and equipment*

BS EN 61558-2-6, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

BS EN 61558-2-23, *Safety of power transformers, power supply units and similar – Part 2-23: Particular requirements for transformers for construction sites*

BS EN 62305 (all parts), *Protection against lightning*

Other publications

HEALTH AND SAFETY EXECUTIVE. *Avoiding danger from underground services*. HSG47. Revised edition. Sudbury: HSE Books, 2000.

HEALTH AND SAFETY EXECUTIVE. *Avoidance of danger from overhead electric lines*. GS6. Sudbury: HSE Books, 1997.

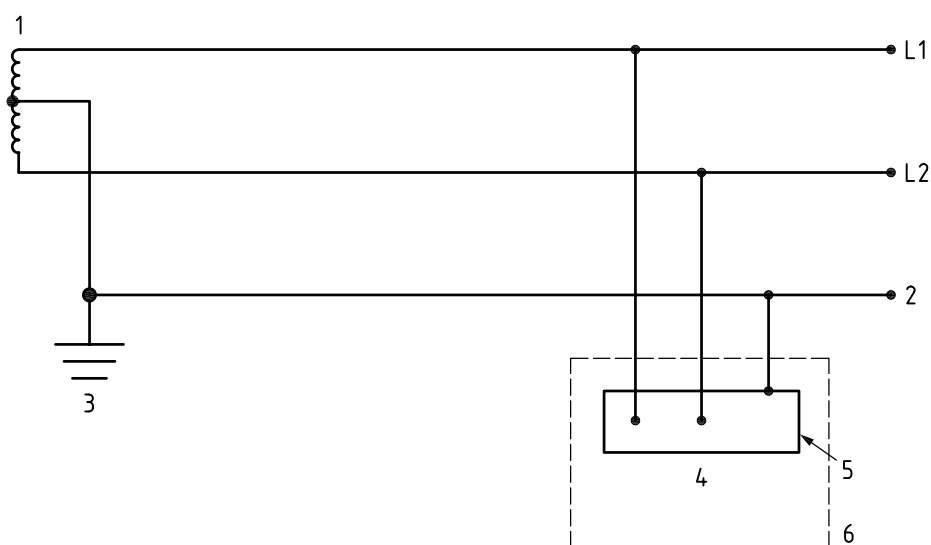
3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in BS 7671 and the following apply.

NOTE 1 Most of the system types are illustrated in BS 7671, apart from reduced low voltage systems, which are illustrated in Figure 1 of this British Standard.

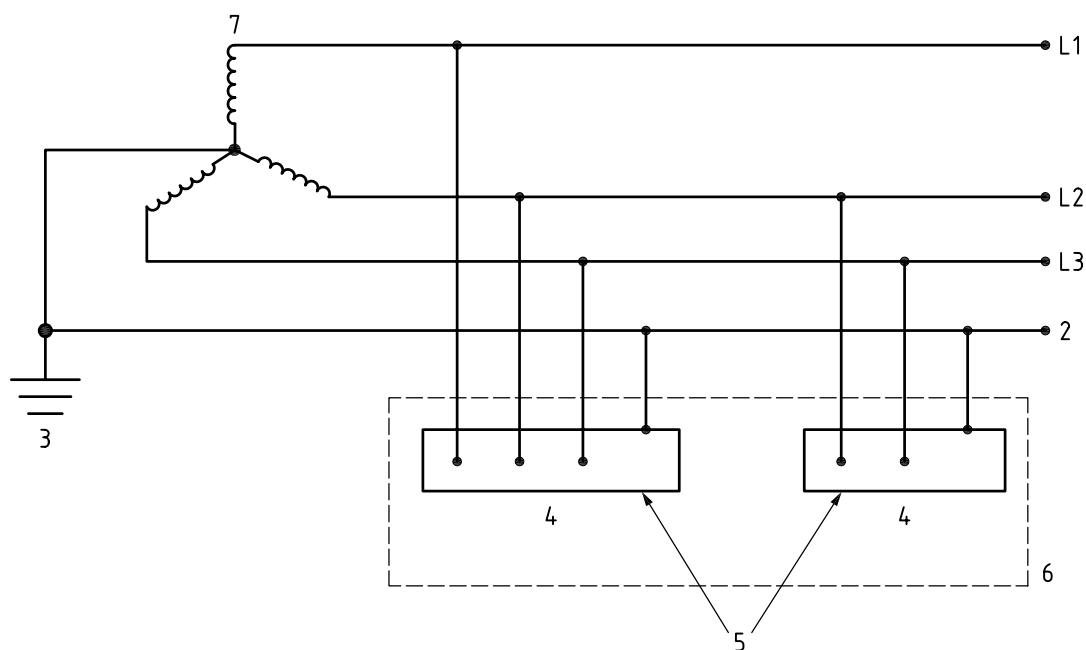
NOTE 2 All references throughout this British Standard to alternating current (a.c.) supplies relate to a frequency of 50 Hz unless otherwise stated. All references to alternating voltage and current relate to r.m.s. values unless otherwise stated.

Figure 1 Reduced low voltage systems



NOTE A system in which the nominal line-to-line voltage does not exceed 110 V and the nominal line-to-earth voltage does not exceed 55 V. All exposed-conductive-parts are connected to the protective conductor.

a) Single-phase source



NOTE A system in which the nominal line-to-line voltage does not exceed 110 V and the nominal line-to-earth voltage does not exceed 63.5 V. All exposed-conductive-parts are connected to the protective conductor.

b) Three-phase source

Key

- | | |
|---|--|
| 1 Reduced low voltage source – single-phase | 5 Exposed-conductive-parts |
| 2 Protective conductor | 6 Site installation |
| 3 Source earth | 7 Reduced low voltage source – three-phase |
| 4 Distribution equipment | |

3.1 site

area where any of the following works are undertaken/executed:

- a) construction work of new buildings;
- b) repair, alteration, extension, demolition of existing buildings or parts of existing buildings;
- c) engineering works;
- d) earthworks;
- e) work of similar nature

4 General

COMMENTARY ON CLAUSE 4

In Great Britain, electrical installations on construction and demolition sites are subject to the requirements of the Electricity at Work Regulations 1989 [1], on which guidance is given in HSE publication HSR25 [2]. The Electricity at Work Regulations 1989 include requirements concerning precautions to be taken against contact with overhead lines and underground cables encountered on site. See also 7.2 and 7.3.

BS 7671:2008, Section 704 specifies requirements for the supply of electricity on construction and demolition sites. Electrical installations of offices, cloakrooms, meeting rooms, canteens, restaurants, dormitories, toilets etc. on construction and demolition sites are covered by the general requirements of BS 7671:2008, Parts 1 to 6.

Guidance on earthing is given in BS 7430. Guidance on the installation and use of welding equipment is given in BS 638.

4.1 Specialist advice

Because of variations in local circumstances of different construction and demolition sites, this British Standard gives general guidance only. It is important that, for each site, advice is sought from a competent electrical engineer regarding the details of the electrical installation most suitable for that site.

4.2 Early notification of requirements

It is essential that where a supply connection is to be obtained from an electricity distributor, the local office of the distributor is informed as soon as a future construction or demolition activity is considered, and certainly not later than the planning application stage.

Discussions should also take place as soon as possible between the main contractor and those who are to carry out the installation.

The electricity distributor should be informed of the following:

- a) precisely when and where the supply will be required;
- b) the maximum demand load in kVA or amperes (and the nature of the load) which will be required for building construction; and
- c) the installed load, which is expected when the site is ultimately developed.

It is essential to identify and take the necessary precautions to avoid damage to, or accidental contact with, existing overhead lines, underground cables and other services.

The following should be discussed in the preliminary negotiations with the electricity distributor:

- 1) whether the electrical supply intended for the building or other construction could be made available for site supply purposes in its final position, and if not, what would be involved in providing an alternative supply;
- 2) the necessary supply voltage based on the maximum expected demand;

NOTE This can take the voltage outside the scope of this British Standard.

- 3) the metering arrangements;
- 4) the anticipated connection date;
- 5) supply system details;
- 6) whether an earth connection will be provided by the electricity distributor;
- 7) the location of the main distribution point;
- 8) precautions to be taken with regard to existing or proposed overhead lines (see 7.2), underground cables (see 7.3) and other services;
- 9) details of on-site electrical generation (see 6.3).

5 Materials, appliances and components

Site distribution units for electricity supplies should conform to BS 4363 and/or BS EN 60439-4. These units are described briefly in Annex A.

All materials, appliances and components should conform to the appropriate British Standard.

NOTE Examples of relevant standards are given in Annex B. This list is not exhaustive, as there might be other suitable materials that are not mentioned.

6 Design considerations

6.1 Planning

The provision of an electrical supply to a site needs advance planning. It is essential that the requirements for a site are considered and plenty of warning given to the electricity distributor, for logistic and safety reasons. The electricity distributor needs secure accommodation for metering and other equipment, and, if possible, this should be on the periphery of the site where it is unlikely to be damaged.

Information should be obtained from the electricity distributor concerning earthing requirements (see 6.5.4) and the fault level (prospective short-circuit current and prospective earth fault current) at the point of supply (see 6.5.1).

NOTE Where the electricity distributor has a protective multiple earth (PME) system (in which the neutral and earth are combined), the Electricity Safety, Quality and Continuity Regulations 2002 [3] require that all metalwork, including structural metalwork, be bonded together. As this is difficult to achieve on a site where steelwork is being added in the course of the work, most electricity distributors do not connect the site electrical system unless there is an adequate alternative earth. On most sites, therefore, it is necessary to install earth electrodes to ensure that fuses etc. will operate in the event of a fault.

BS 7430 contains guidance on earthing. However, additional specialist advice on the subject of earthing might be necessary to ensure that there is adequate electrical protection in the event of a fault in the electrical system.

In many cases, highly sensitive earth leakage protection might be necessary. Where residual current devices (RCDs) are used for this purpose, devices conforming to BS EN 61008-1, BS EN 61009, or BS EN 60947-2:2006, Annex B or Annex M should be used.

It is important to locate services at the planning stage of a demolition project. All electricity supplies should be cut off before demolition commences, and should be proved dead by a competent person. Demolition plans should be discussed with the owners of both overhead and underground cables in case they are intending to reuse these cables in subsequent redevelopment.

Where the demolition process itself requires the supply of electricity, this should preferably be independent of any electrical apparatus in the demolition area.

6.2 Selection of equipment

Electrical equipment, which includes cabling and wiring, in site installations can be subjected to extreme abuse, and the use of equipment which can withstand particularly adverse conditions is essential. The importance of correct circuit protection, earthing arrangements and frequent inspection and testing cannot be overemphasized.

Fixed installations on site are limited to the assembly of the main switchgear and protective devices.

The metering equipment and switchgear at the supply point should be protected against damage and against adverse environmental conditions. All switchgear should be installed in a position where it is easily accessible (in case of emergency) and not likely to be obstructed as construction progresses.

The site distribution should be via a means of isolation for all circuit conductors which can be locked in the "off" position (but not in the "on" position). Electrical equipment should be provided with a means for disconnection in an emergency.

NOTE 1 This may be a plug and socket conforming to BS EN 60309-2 if the rated current does not exceed 16 A.