# fixed wiring colourchange

## NEW FIXED WIRING COLOURS

*A practical guide*

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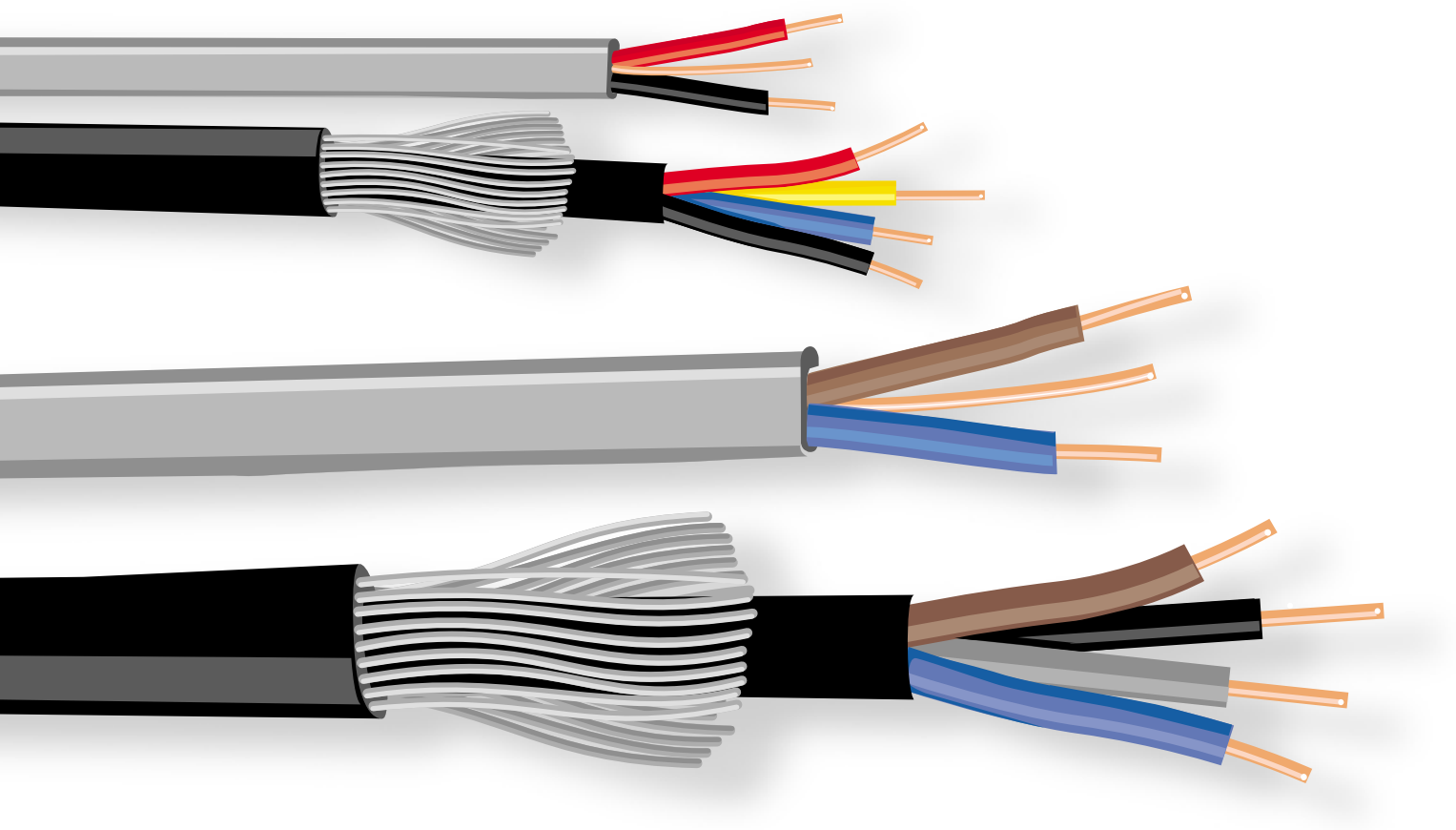
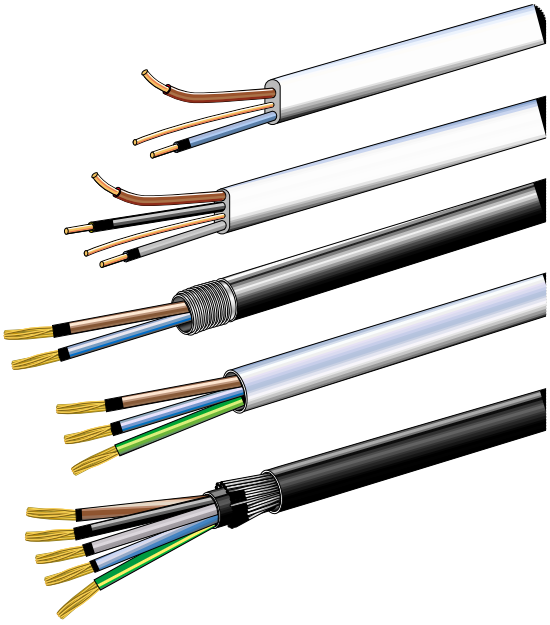


The changes to the colour identification of conductors in fixed wiring are introduced, amongst other things, by Amendment No 2: 2004 to BS 7671: 2001 issued on 31 March 2004. The new colours are the European harmonized colours. Installations commencing on site after 31 March 2006 are to comply with Section 514 and, as appropriate, cores are to be identified with the harmonized colours. Installations commencing on site after 31 March 2004 and before 1 April 2006 may be installed in accordance with Amendment No. 2: 2004 or Amendment No 1: 2002; that is they may use the harmonized colours or the old colours but NOT both. This guidance is based on the use of the new colours.

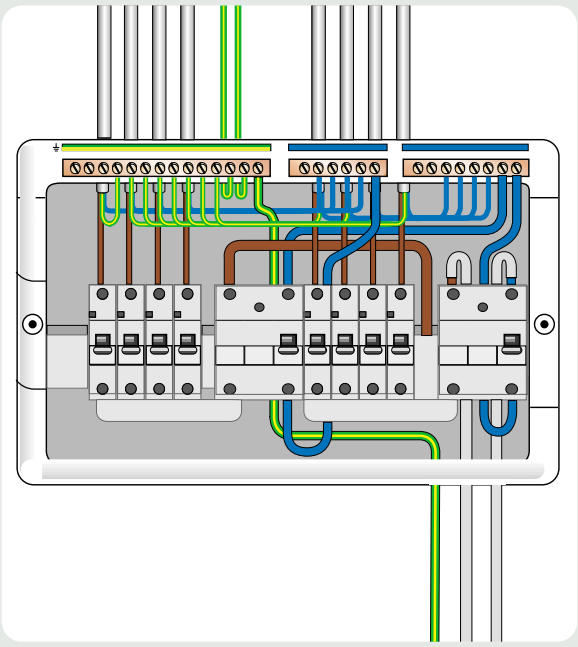
# SINGLE-PHASE INSTALLATIONS

The traditional colours of red and black for the phase and neutral conductors are replaced by the familiar colours of brown and blue (Regulation 514-03-01 refers). A neutral conductor, where identified by colour, must be identified by the colour blue (Regulation 514-04-01). Protective conductors remain green-and-yellow (Regulation 514-04-02).



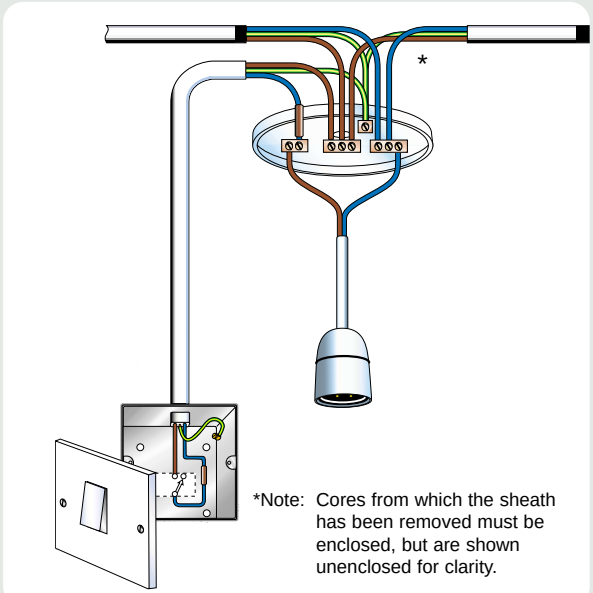
## New single-phase installations

The circuits of a new installation should be wired in the colours of brown, blue, and green-and-yellow.



## Switch wires

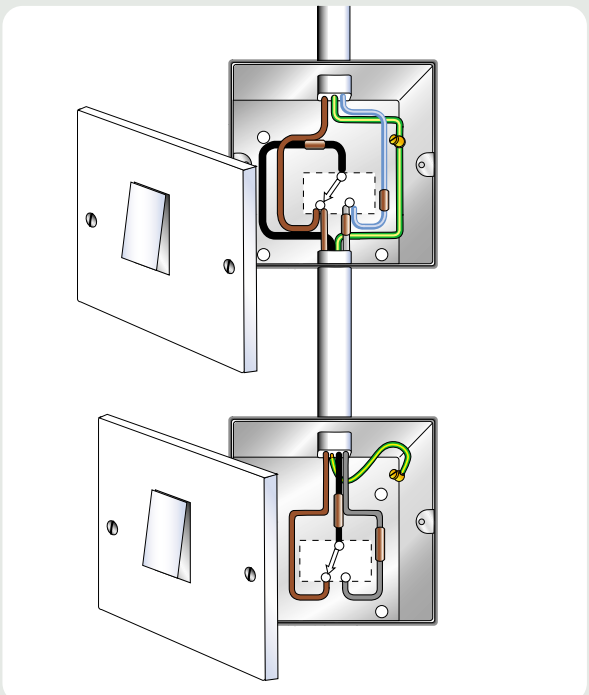
Where a two-core cable with a brown and blue conductor is used as a switch wire, both conductors are phase conductors and the blue conductor must be suitably marked at its terminations. Such marking will normally be accomplished by brown sleeving.




*Note: Cores from which the sheath has been removed must be enclosed, but are shown unenclosed for clarity.

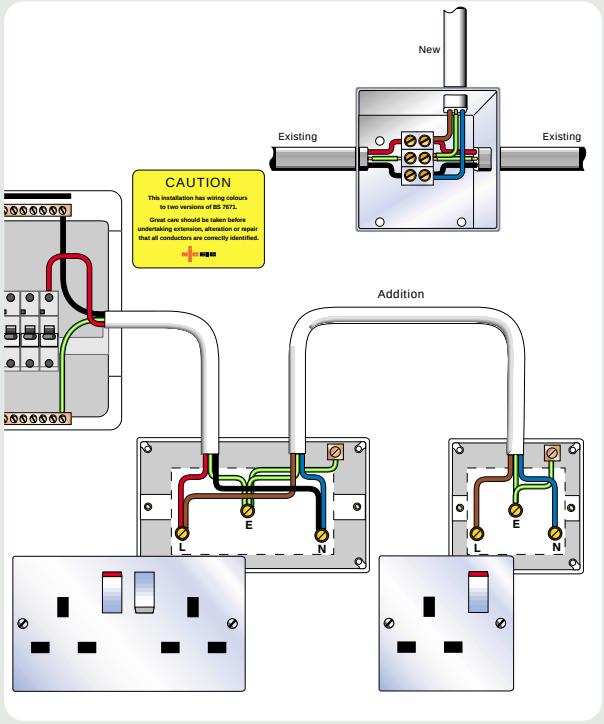
## Intermediate and two-way switch wires

Where a flat three-core and earth cable with cores coloured brown, black and grey is used as a switch wire and all three conductors are phase conductors, the black and grey conductors must, once again, be suitably marked and this will normally be accomplished by brown sleeving.



## Extensions, alterations or repairs to an existing single-phase installation

An extension, alteration or repair to an existing single-phase installation should be wired in the colours of brown, blue, and green-and-yellow.




## Marking requirements - single-phase installation

At the wiring interface(s), providing

- the existing cables are correctly identified by the colours of red for phase conductor and black for neutral conductor, and,
- the new cables are correctly identified by the colours of brown for phase conductor and blue for neutral conductor,

then the extension, alteration or repair can be considered to be unambiguously marked and further marking at the interface is not necessary. (Regulation 514-01-03 refers).

## At the distribution board/consumer unit

If an extension, alteration or repair is made to an installation such that both brown & blue and red & black cables are present, a warning notice must be affixed at or near the appropriate distribution board or consumer unit. (Regulation 514-14-01 refers).

**CAUTION**

**This installation has wiring colours to two versions of BS 7671.**

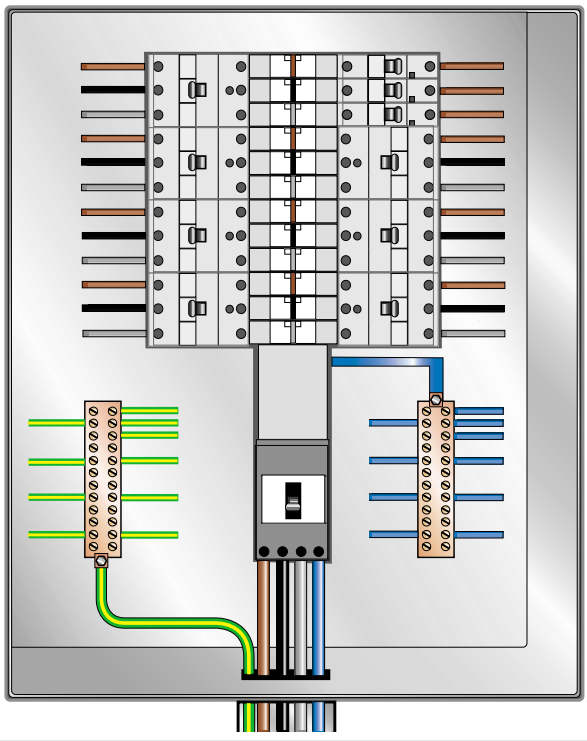
**Great care should be taken before undertaking extension, alteration or repair that all conductors are correctly identified.**

# THREE-PHASE INSTALLATIONS

The traditional colours of red, yellow and blue for the phase conductors and black for the neutral conductor are replaced by the colours of brown, black and grey for the phase conductors and blue for the neutral conductor. (Regulations 514-03-01 and 514-04-01 refer). Protective conductors remain green-and-yellow. (Regulation 514-04-02 refers).

## New three-phase installations

The circuits of a new installation should be wired in the colours of brown, black and grey for the phase conductors and blue for the neutral conductor. The protective conductors remain green-and-yellow.

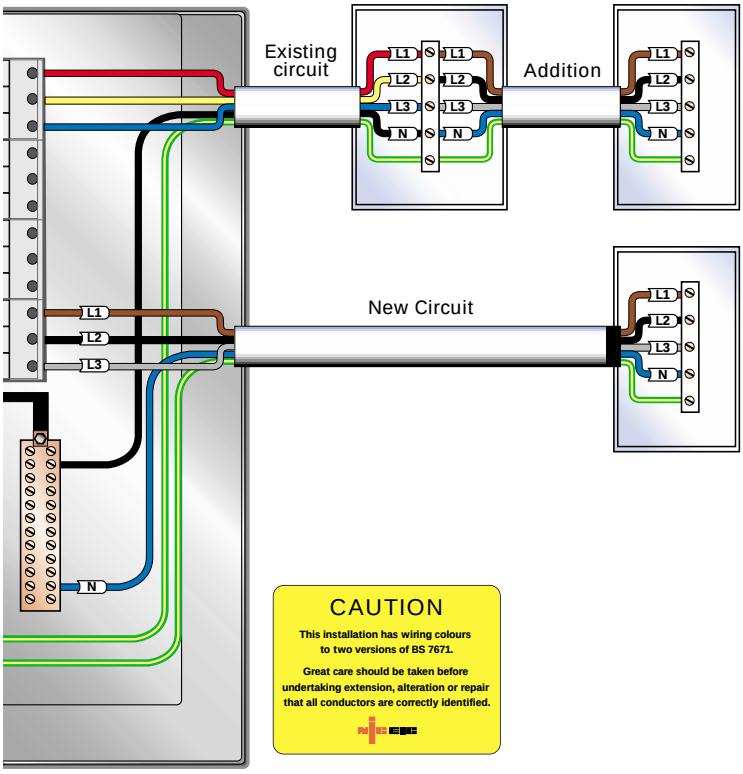


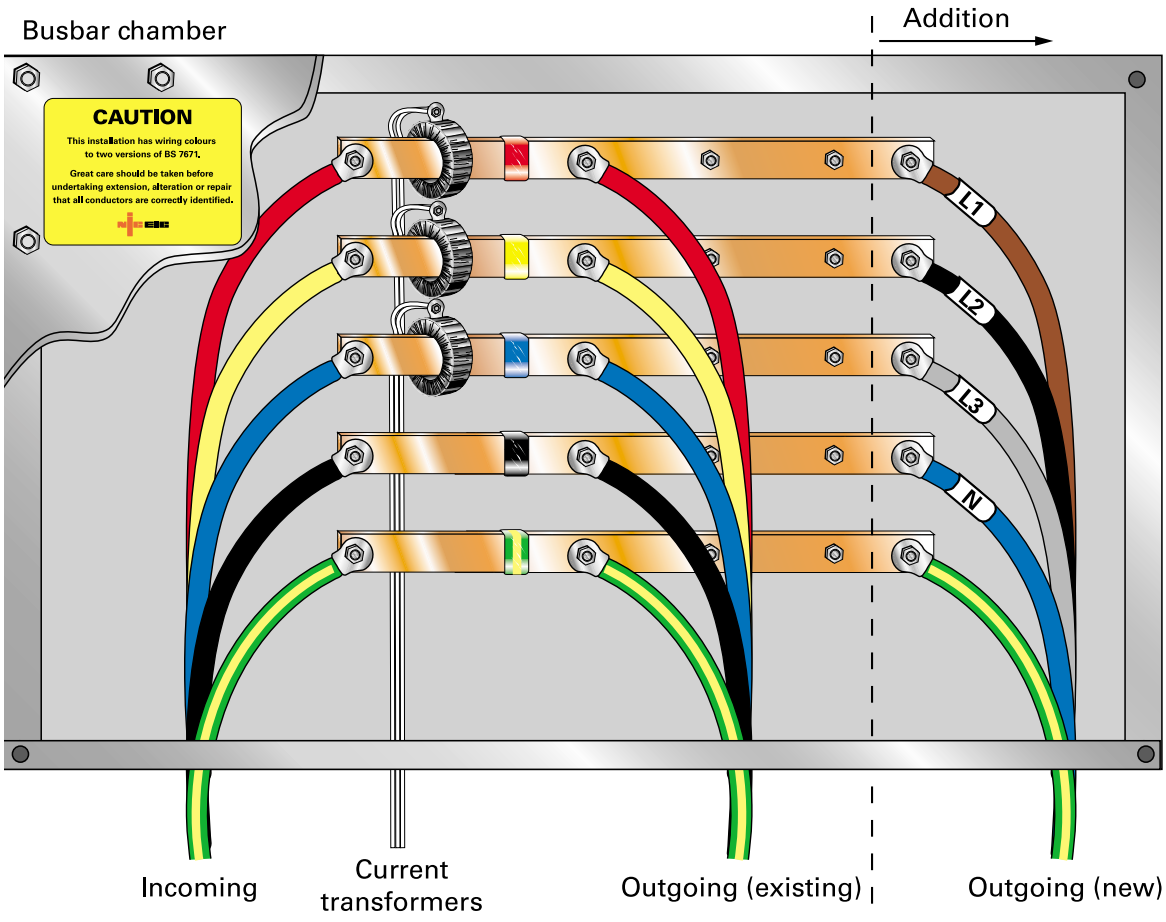
## Extensions, alterations or repairs to an existing three-phase installation

An extension, alteration or repair to an existing installation should be wired in the colours of brown, black, grey & blue, and green-and-yellow.

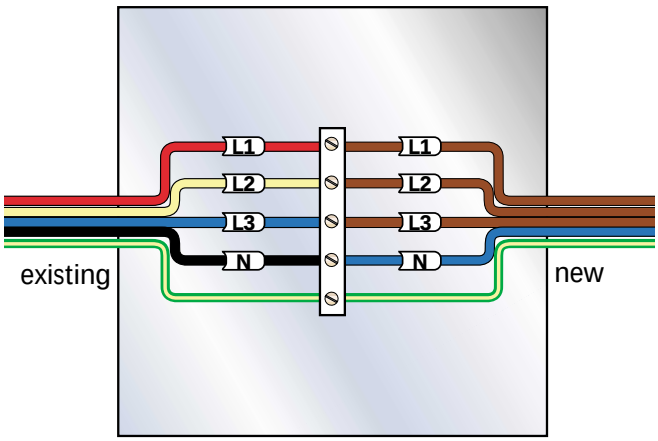
## Identification requirements - three-phase installations

At the wiring interface(s) where an extension, alteration or repair is made with cable to the new colours to a three-phase installation wired in the old colours, unambiguous identification is required at the interface. Neutral conductors, where identified by colour, must be identified by the colour blue. Old and new phase conductors should be fitted with sleeves marked L1, L2 and L3, and neutral conductors should be fitted with sleeves marked N to avoid any possibility of confusion.



A permitted alternative arrangement is to use three single cores with insulation of the same colour, but unambiguous identification must be provided at the terminations. This could be achieved by using numbering or lettering.




## At the distribution board

If an extension, alteration or repair is made to an installation such that both red, yellow, blue & black, and brown, black, grey & blue cores are present, a warning notice must be affixed at or near the appropriate distribution board or consumer unit with the following wording:

**CAUTION**

**This installation has wiring colours to two versions of BS 7671.**

**Great care should be taken before undertaking extension, alteration or repair that all conductors are correctly identified.**

## Amended Regulations 514 referred to in this guidance

**Regulation 514-01-03**

Except where there is no possibility of confusion, unambiguous marking shall be provided at the interface between conductors identified in accordance with these Regulations and conductors identified to previous versions of the Regulations. Appendix 7 gives guidance on how this can be achieved.

**Regulation 514-03-01**

Except where identification is not required by Regulation 514-06, cores of cables shall be identified by:

(i) colour as required by Regulation 514-04 and/or

(ii) lettering and/or numbering as required by Regulation 514-05.

**Regulation 514-03-02**

Every core of a cable shall be identifiable at its terminations and preferably throughout its length.

Binding and sleeves for identification purposes shall comply with BS 3858 where appropriate.

## Amended Regulations 514 referred to in this supplement

**Regulation 514-04-01**

Where a circuit includes a neutral or mid-point conductor identified by colour, the colour used shall be blue.

**Regulation 514-04-02**

The bi-colour combination green-and-yellow shall be used exclusively for identification of a protective conductor and this combination shall not be used for any other purposes.

Single core cables that are coloured green-and-yellow throughout their length shall only be used as a protective conductor and shall not be over-marked at their terminations, except as permitted by Regulation 514-04-03.

In this combination one of the colours shall cover at least 30% and at most 70% of the surface being coloured, while the other colour shall cover the remainder of the surface.

A bare conductor or busbar used as a protective conductor shall be identified, where necessary, by equal green-and-yellow stripes, each not less than 15 mm and not more than 100 mm wide, close together, either throughout the length of the conductor or in each compartment and unit and at each accessible position. If adhesive tape is used, it shall be bi-coloured.

**Regulation 514-04-04**

Other conductors shall be identified by colour in accordance with Table 51.

**Regulation 514-05-01**

The lettering or numbering system applies to identification of individual conductors and of conductors in a group. The identification shall be clearly legible and durable. All numerals shall be in strong contrast to the colour of the insulation. The identification shall be given in letters or Arabic numerals. In order to avoid confusion, unattached numerals 6 and 9 shall be underlined.

**Regulation 514-06-01**

Identification by colour or marking is not required for:

(i) concentric conductors of cables

(ii) metal sheath or armour of cables when used as a protective conductor

(iii) bare conductors where permanent identification is not practicable

(iv) extraneous-conductive-parts used as a protective conductor

(v) exposed-conductive-parts used as a protective conductor.

**Regulation 514-14-01**

If wiring alterations or additions are made to an installation such that some of the wiring complies with Regulation 514-04 but there is also wiring to previous versions of these Regulations, a warning notice shall be affixed at or near the appropriate distribution board with the following wording:

> CAUTION
>
> This installation has wiring colours to two versions of BS 7671.
> Great care should be taken before undertaking extension,
> alteration or repair that all conductors are correctly identified.

# TABLE 51 - Identification of conductors

| Function | Alpha numeric | Colour |
|---|---|---|
| Protective conductors | | Green-and-yellow |
| Functional earthing conductor | | Cream |
| **a.c. power circuit**[1] | | |
| Phase of single-phase circuit | L | Brown |
| Neutral of single- or three-phase circuit | N | Blue |
| Phase 1 of three-phase circuit | L1 | Brown |
| Phase 2 of three-phase circuit | L2 | Black |
| Phase 3 of three-phase circuit | L3 | Grey |
| **Two-wire unearthed d.c. power circuit** | | |
| Positive of two-wire circuit | L+ | Brown |
| Negative of two-wire circuit | L- | Grey |
| **Two-wire earthed d.c. power circuit** | | |
| Positive (of negative earthed) circuit | L+ | Brown |
| Negative (of negative earthed) circuit[2] | M | Blue |
| Positive (of positive earthed) circuit[2] | M | Blue |
| Negative (of positive earthed) circuit | L- | Grey |
| **Three-wire d.c. power circuit** | | |
| Outer positive of two-wire circuit derived from three-wire system | L+ | Brown |
| Outer negative of two-wire circuit derived from three-wire system | L- | Grey |
| Positive of three-wire circuit | L+ | Brown |
| Mid-wire of three-wire circuit[2][3] | M | Blue |
| Negative of three-wire circuit | L- | Grey |
| **Control circuits, ELV and other applications** | | |
| Phase conductor | L | Brown |
| | | Black |
| | | Red |
| | | Orange |
| | | Yellow |
| | | Violet |
| | | Grey |
| | | White |
| | | Pink, or |
| | | Turquoise |
| Neutral or mid-wire[4] | N or M | Blue |

**NOTES:**

(1) Power circuits include lighting circuits.

(2) M identifies either the mid-wire of a three-wire d.c. circuit, or the earthed conductor of a two-wire earthed d.c. circuit.

(3) Only the middle wire of three-wire circuits may be earthed.

(4) An earthed PELV conductor is blue.