SUPPORTS FOR CABLES

POCKET GUIDE 9

Mineral insulated copper sheathed (MICS) cable fixing

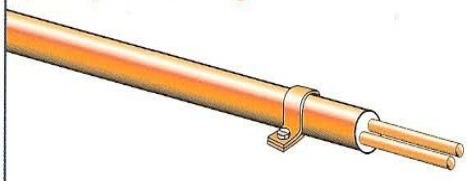


Table 3 - MICS cable maximum support spacing

Cable overall diameter mm	Maximum[b] support spacing	
	Horizontal[c] mm	Vertical[d] mm
Up to 9	600	800
Exceeding 9 but not exceeding 15	900	1,200
Exceeding 15 but not exceeding 20	1,500	2,000
Exceeding 20 but not exceeding 40	2,000	3,000

NOTES

(1) This guide provides a quick reference to spacings of cable support clips in accessible positions.

(2) The basic requirements for the support of cables are given in Regulations 522.8.4 and 522.8.5 of *BS 7671*.

(3) *BS 7671* requires the intervals between cable supports (as well as the means of support) to be such that cables do not suffer mechanical damage or strain. Tables 1, 2 and 3 of this guide give suggested maximum spacings between supports for both horizontal and vertical runs of accessible cable.

(4) The means of fixing a cable must be such as not to cause damaged to the cable.

(5) As *BS 7671* is principally concerned with the safety aspects of support systems, supports additional to those indicated in the tables are often needed to make the finished installation visually acceptable. Additional supports may also be needed in an installation subjected to vibration of medium or high severity, or where there is an increased risk of mechanical damage, such as by accidental snagging of the cable.

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC

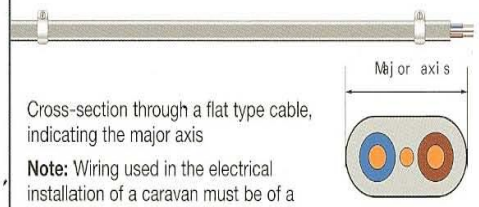
For further copies of this guide telephone 0870 0130382
or e-mail customerservice@niceic.com

www.niceicgroup.com

POCKET GUIDE 9

SUPPORTS FOR CABLES

Non-armoured cable fixing



Cross-section through a flat type cable, indicating the major axis

Note: Wiring used in the electrical installation of a caravan must be of a type listed in Regulation 721.521.2.

Table 1 - Non-armoured cable maximum support spacing

Cable overall diameter[a] mm	Maximum[b] support spacing			
	Horizontal[c] mm		Vertical[d] mm	
	Generally	In caravans	Generally	In c
Up to 9	250	250	400	400
Exceeding 9 but not exceeding 15	300	(all sizes)	400	(all sizes)
Exceeding 15 but not exceeding 20	350		450	
Exceeding 20 but not exceeding 40	400		550	

Armoured cable fixing

Table 2 - Armoured cable maximum support spacing

Cable overall diameter mm	Maximum[b] support spacing	
	Horizontal[c] mm	Vertical[d] mm
Exceeding 9 but not exceeding 15	350	450
Exceeding 15 but not exceeding 20	400	550
Exceeding 20 but not exceeding 40	450	600

FOOTNOTES FOR TABLES 1, 2 AND 3:

a For flat type cables, the cable overall diameter (shown in Table 1) refers to the major axis (see illustration).

b Spacings smaller than given in the tables will often be necessary for good workmanship/visual appearance.

c Horizontal spacings include for runs at an angle of more than 30° from the vertical.

d Vertical spacings include for runs at an angle of 30° or less from the vertical.

NICEIC

© Pocket Guide 9 rev 1 03/08

POCKET GUIDE 8

PART P - NOTIFIABLE OR NOT?

This guide provides a quick reference to whether certain common items of electrical installation work in a dwelling or associated garden, conservatory or outbuilding in England and Wales need to be notified to a building control body.

A company registered with a Part P self-certification scheme, such as the NICEIC Domestic Installer scheme, is not required to notify a building control body prior to carrying out 'notifiable work'. However, such a registered company would need to notify the self-certification scheme operator on completion of the notifiable work.

For items of work not covered here, see *Approved document P* to find out if they are notifiable. In cases of doubt, it may be simpler to notify the work.

The requirements of the *Building Regulations* and the issuing of electrical installation certification apply irrespective of whether an item of electrical work is notifiable or not.

EXAMPLES OF NOTIFIABLE WORK

Anywhere in a dwelling or its surroundings:

- a complete new installation or rewire
- changing a consumer unit
- installing:
  - a new final circuit (eg for lighting, heating, socket-outlets, a shower or a cooker)
  - extra-low voltage[1] lighting (other than pre-assembled CE marked sets)
  - a solar photovoltaic power supply
  - electric ceiling or floor heating
  - an electricity generator
  - power or control wiring for a new central heating system.

Within a kitchen[2] or special location[3]:

- modifying a final circuit (eg adding a lighting point, fused connection unit or socket-outlet).

Within a special location[3]:

- installing telephone or extra-low voltage[1] wiring and equipment for the purposes of communications, information technology, signalling, control or similar purposes
- installing a prefabricated equipment set (e.g. for lighting) and associated flexible leads with integral plug and socket connections[4].

Outdoors:

- installing garden lighting or power (eg a supply to a garden shed, detached garage, other outbuilding, electric gate or pond pump)
- installing a socket-outlet
- installing a lighting point or other fixed current-using equipment (eg an air conditioning unit or a radon fan)[5].

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

www.niceicgroup.com

Based on information as at January 2008

POCKET GUIDE 8

PART P - NOTIFIABLE OR NOT?

EXAMPLES OF NON-NOTIFIABLE WORK

Anywhere in a dwelling or its surroundings:

- installing prefabricated 'modular' wiring systems[4]
- replacing a damaged cable for a single circuit, on a like-for-like basis[6]
- replacing an accessory, such as a socket-outlet, control switch, ceiling rose or a fused connection unit
- providing mechanical protection to an existing fixed installation[7]
- installing or upgrading protective equipotential bonding
- fitting or replacing an item of current-using equipment (such as a cooker) to an existing suitable circuit.

Within a garden shed, detached garage, or other outbuilding:

- modifying a final circuit (eg adding a lighting point, fused connection unit or socket-outlet).

Footnotes for both NOTIFIABLE WORK (see overleaf) and NON-NOTIFIABLE WORK (see above)

1 Extra-low voltage is defined in *BS 7671* as 'normally not exceeding 50 V a.c. or 120 V ripple-free d.c., whether between conductors or to earth'.

2 A kitchen is defined in *The Building (Amendment) (No.3) Regulations 2004* as 'a room or part of a room which contains a sink and food preparation facilities'. (A utility room, though it may contain a sink, does not fall within the definition of a kitchen if it does not contain food preparation facilities.)

3 'Special locations' include locations containing a bath, shower, swimming pool, paddling pool or a hot air sauna.

4 The installation of prefabricated 'modular' systems (for example kitchen lighting systems and armoured garden cabling) linked by plug and socket connectors is not notifiable, provided that the products are CE-marked and that any final connection in a kitchen or special locations is made to an existing suitable connection unit or point.

5 Notification is not required if wiring to such outdoor equipment; (1) is not a new circuit, and (2) passes directly through an outside wall into the equipment, and (3) is not an extension to a special location or kitchen circuit.

6 A like-for-like basis includes the condition that the replacement cable has the same current-carrying capacity and follows the same route.

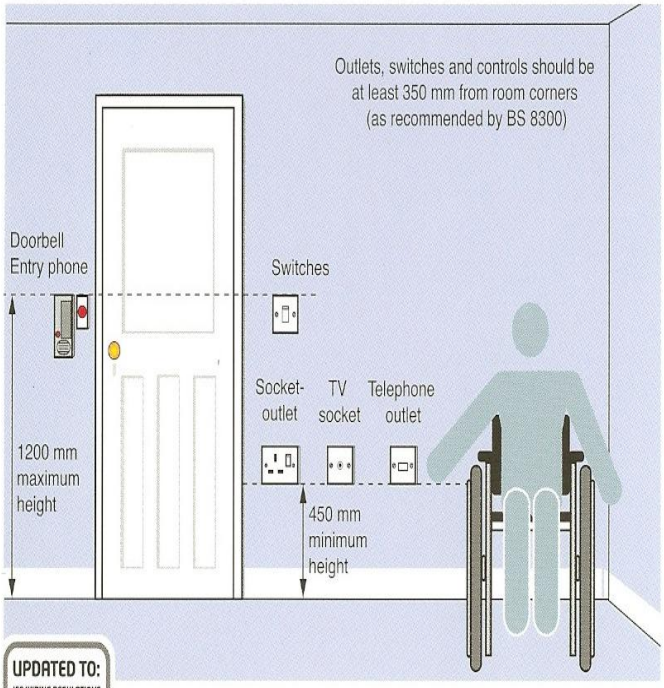
7 If the circuit protective measures and current-carrying capacity of conductors are unaffected by increased thermal insulation.

www.niceicgroup.com

For further copies of this guide
telephone 0870 0130382 or e-mail customerservice@niceic.com

© Pocket Guide 8 rev 2 03/08

MOUNTING HEIGHTS OF ELECTRICAL EQUIPMENT IN DWELLINGS



UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC www.niceicgroup.com

NOTES (continued overleaf)

(1) This guide explains the requirements of *BS 7671* and Part M of the Building Regulations for England and Wales relating to the mounting heights of equipment in dwellings.

(2) Part M requires reasonable provision to be made for people to gain access to, and use a building and its facilities. Guidance on meeting the requirements of Part M is given in Approved Document M.

(3) Section 8 of Approved Document M, which applies to new dwellings, includes the objective of assisting people whose reach is limited to use the dwelling more easily by locating wall-mounted switches and socket outlets at suitable heights.

(4) A way of satisfying the above objective, as suggested in Approved Document M, is to provide switches and socket-outlets for lighting and other equipment in habitable rooms at appropriate heights between 450 mm and 1200 mm from finished floor level (see diagram).

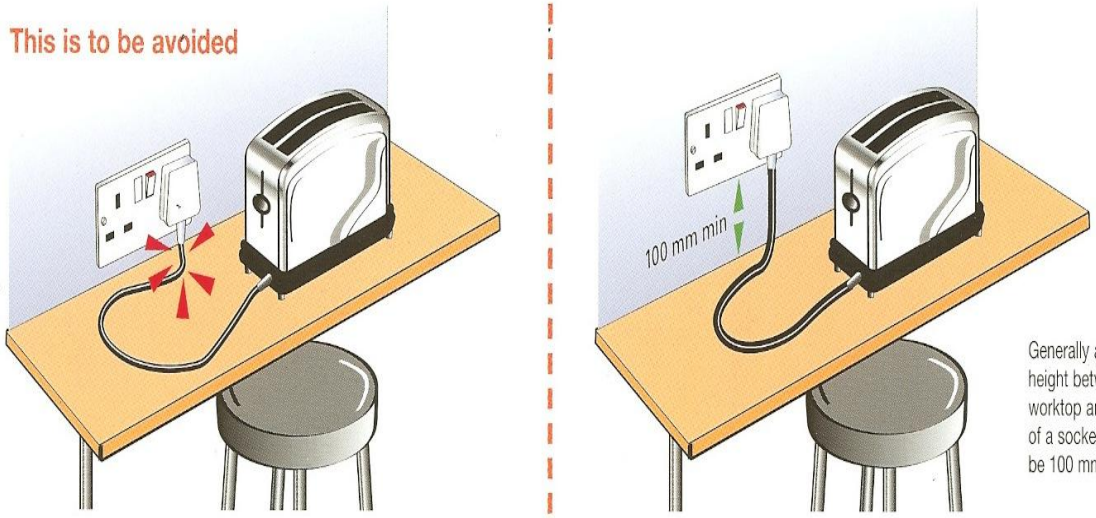
(5) Additionally, the mounting height of wall-mounted socket-outlets and other accessories is required to be sufficient to avoid them suffering wetting or impact, such as may result from floor cleaning. Regulation Groups 522.3 and 522.6 of *BS 7671* refer.

For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

POCKET GUIDE 7

POCKET GUIDE 7

MOUNTING HEIGHTS OF ELECTRICAL EQUIPMENT IN DWELLINGS



Generally a sufficient height between a worktop and the bottom of a socket-outlet would be 100 mm

NOTES (continued from overleaf)

(6) Regulation 553.1.6 requires that a wall mounted socket-outlet is at a sufficient height above the floor or any working surface to minimize the risk of mechanical damage to the socket-outlet or to an associated plug and flexible cord during insertion, use or withdrawal of the plug. See illustrations above regarding socket-outlets above working surfaces. The minimum height above the floor to the bottom of a socket-outlet is 450 mm (see note 4 and diagram overleaf).

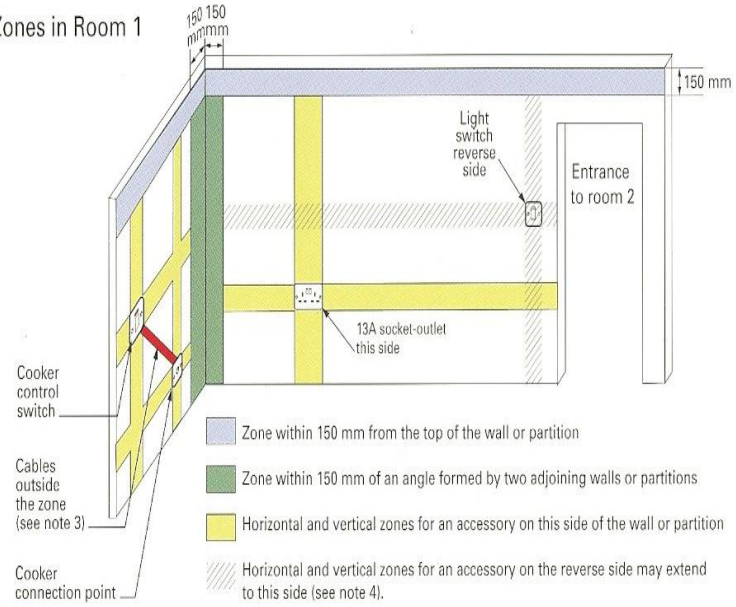
(7) If a dwelling is rewired there is no requirement to provide the measures described in note 4; however, it would be desirable

NICEIC

© Pocket Guide **7** rev 2 03/08

PERMITTED CABLE ROUTE ZONES

Zones in Room 1



Notes (continued overleaf)

(1) This guide applies to cables concealed in a wall or partition at a depth of less than 50 mm from the surfaces of a wall or partition. The guide is not intended to replace the requirements of Regulation 522.6.6 in *BS 7671: 2008*.

(2) The example illustrated shows zones for concealed cables in a wall or partition between Rooms 1 and 2.

(3) Concealed cables at a depth of less than 50 mm from the surface of the wall or partition must not be routed outside the zones illustrated, except where protected as described in Regulation 522.6.6 (i) to (iv) (for example, earthed metallic covering or enclosure, or mechanical protection). Cable capping is unlikely to be suitable.

(4) The doorway between Rooms 1 and 2 allows the location of an accessory on one side of the wall to be determined from the reverse side. If the wall or partition is 100 mm or less, the zones created due to the accessory extend to the reverse side.

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC www.niceicgroup.com

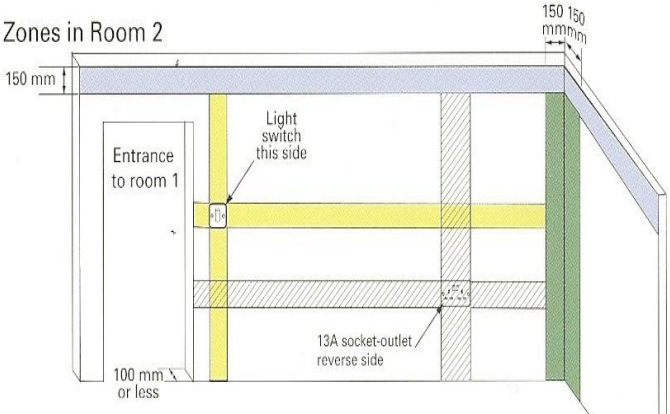
For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

POCKET GUIDE 6

POCKET GUIDE 6

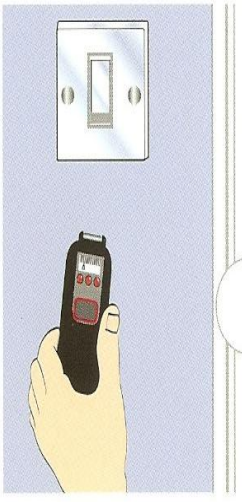
PERMITTED CABLE ROUTE ZONES

Zones in Room 2



See overleaf for the key to the above illustration.

Always check for concealed cables, or gas or water pipes before drilling holes or driving a nail or screw etc. into a wall or partition. A cable/pipe detector should help to identify the presence of concealed cables or pipes. Where possible detection should start at an accessory and end where drilling etc. is intended.



NOTES (continued from overleaf)

(5) Where cables are **not** protected as described in Regulation 522.6.6 (i) to (iv), and the installation is **not** under the supervision of a skilled or instructed person, additional protection by RCD is necessary (Regulation 522.6.7).

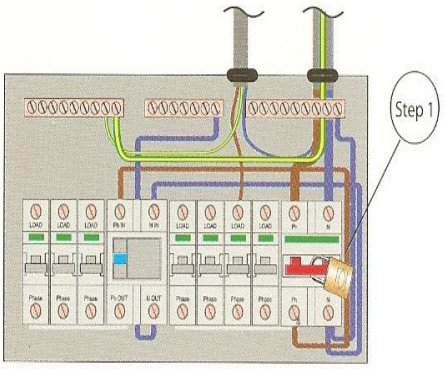
(6) For a cable concealed in a wall or partition having internal metallic parts (except nails or screws, etc), Regulation 522.6.8 also applies, unless the installation is supervised by skilled or instructed persons. Irrespective of the cable's buried depth, additional protection by RCD is required, or protection by one of the other means given in the regulation (such as earthed steel conduit). Note 5 also applies if the depth is less than 50 mm.

(7) RCDs used for additional protection, must have a rated residual operating current ($I_{\Delta n}$) not exceeding 30 mA and an operating time not exceeding 40 ms at a residual current of $5I_{\Delta n}$ (Regulation 415.1.1).

(8) The contractor should make the client aware of the permitted cable route zones.

NICEIC

GUIDE TO ISOLATION PROCEDURE



Step 1

Check it is safe and acceptable (with the occupier/user) to isolate. If the isolator is an off-load device, remove the load. Open the means of isolation for the circuit(s) to be isolated and secure the isolating device in the open position with a lock or other suitable means.

Step 2

Prove the correct operation of a suitable voltage detection instrument, see note (5), against a known voltage source, such as that illustrated.

Steps 3 and 4 are shown overleaf

Notes (also see notes overleaf)

(1) This guide gives information on safe working procedures for the isolation of the supply of electrical energy to electrical equipment.

(2) The example illustrated shows the minimum steps required to isolate the final circuits supplied by a single-phase consumer unit. The consumer unit includes an isolator and circuit-breakers.

(3) When circuits are protected by fuses enclosed in a distribution board, remote isolation of the supply to the distribution board may be required.

(4) *HSG85 Electricity at work safe working practices* gives detailed guidance on devising safe working practices for people who carry out work on or near electrical equipment.

(5) Guidance on voltage detection instruments is given in *HSE Guidance Note GS 38 – Electrical test equipment for use by electricians*.

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC www.niceicgroup.com

For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

POCKET GUIDE 5

POCKET GUIDE 5

GUIDE TO ISOLATION PROCEDURE (continued)

Step 3

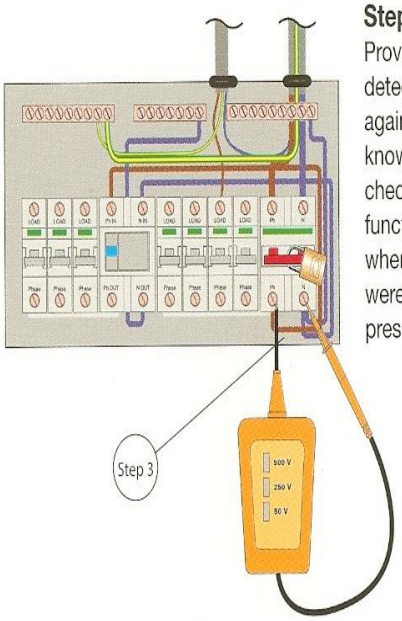
(steps 1 and 2 are shown overleaf)

Using a voltage detection instrument, check that there is no dangerous voltage present on any circuit conductor to be worked on. It is important to confirm that conductors are **not** energized, for example, due to a wiring fault. Check terminal voltages between: (1) earth and line, (2) neutral and line (as shown) and (3) earth and neutral.

Notes:

a. In practice the equipment being worked on is likely to be remote from the consumer unit, for example, a socket-outlet located remotely from the means of isolation. In this case it is necessary to check that all the socket-outlet contact terminals are **dead**.

b. When checking for a voltage between an earth terminal and live (including neutral) terminals, the test probe should make contact with the earth terminal first, to reduce the risk of the remaining probe becoming live.



Step 4

Prove the voltage detection instrument again against the known source to check that it was functioning correctly when the circuit(s) were tested for the presence of voltage.

NOTES (also see notes overleaf)

(6) The *Electricity at Work Regulations 1989* require precautions to be taken against the risk of death or personal injury from electricity in work activities. Regulation 12 requires that, where necessary to prevent **danger**: a suitable means is available for cutting off the supply of electrical energy to any electrical equipment, and isolation of any electrical equipment.

(7) The Health and Safety Executive booklet *HSR25 - Memorandum of guidance on the Electricity at Work Regulations 1989* is intended to help duty holders meet the requirements of the Regulations.

NICEIC

GUIDE TO FIXED WIRING THREE-PHASE CABLE COLOUR CHANGES

Fixed wiring colours of red, yellow and blue for the line conductors and black for the neutral conductor are replaced by brown, black and grey for the line conductors and blue for the neutral conductor respectively. The colour of the circuit protective conductor remains green-and-yellow.

	OLD Was permitted until 31 March 2006	Alphanumeric identification	HARMONIZED Was required from 1 April 2006
Red	Line 1	L1	Line 1 Brown
Yellow	Line 2	L2	Line 2 Black
Blue	Line 3	L3	Line 3 Grey
Black	Neutral	N	Neutral Blue

An example of colour core changes in a five-core armoured cable:

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

Notes (also see notes overleaf)

(1) This guide applies to three-phase cable harmonized colour changes. Reference should be made to Regulation Group 514 and Appendix 7 of *BS 7671: 2008*.

(2) Use of the old colours of cables was required in installation work commencing on site before 31 March 2004, and was still permitted in installation work commencing on site up until 31 March 2006.

(3) Use of the harmonized colours of cables was permitted for installation work commencing on site after 31 March 2004 and was required for installation work commencing on site after 31 March 2006.

For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

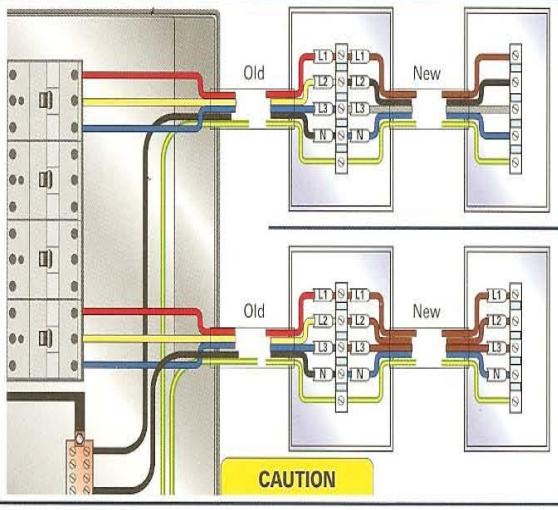
www.niceicgroup.com

POCKET GUIDE 4

POCKET GUIDE 4

GUIDE TO FIXED WIRING THREE-PHASE CABLE COLOUR CHANGES

Examples of an extension or alteration to an existing three-phase installation



New wired in harmonized colours brown, black, grey line conductors, blue neutral and a green-and-yellow circuit protective conductor.

(An alternative arrangement)* New wired in three brown line conductors, blue neutral and a green-and-yellow circuit protective conductor.

Unambiguous identification is provided by lettering and numbering.

A warning label is required

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.

NOTES (also see notes overleaf)

(4) Except where there is no possibility of confusion, unambiguous marking needs to be provided at the interface between conductors.

(5) Cores of cables should be identified by colour and/or lettering and/or numbering (as shown above).

(6) *Another alternative arrangement of marking connections between existing and new cables is by using coloured sleeves.

(7) If wiring alterations are made to an installation using cables with the harmonized cable colours but there is also wiring to previous versions of the Regulations, a warning label must be affixed at or near the appropriate distribution board with the wording as shown above.

© Pocket Guide **4** rev 2 03/08

GUIDE TO FIXED WIRING THREE-PHASE CABLE COLOUR CHANGES

Fixed wiring colours of red, yellow and blue for the line conductors and black for the neutral conductor are replaced by brown, black and grey for the line conductors and blue for the neutral conductor respectively. The colour of the circuit protective conductor remains green-and-yellow.

	OLD Was permitted until 31 March 2006	Alphanumeric identification	HARMONIZED Was required from 1 April 2006	
Line 1	Red	L1	Line 1	Brown
Line 2	Yellow	L2	Line 2	Black
Line 3	Blue	L3	Line 3	Grey
Neutral	Black	N	Neutral	Blue

An example of colour core changes in a five-core armoured cable:

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

Notes (also see notes overleaf)

(1) This guide applies to three-phase cable harmonized colour changes. Reference should be made to Regulation Group 514 and Appendix 7 of *BS 7671: 2008*.

(2) Use of the old colours of cables was required in installation work commencing on site before 31 March 2004, and was still permitted in installation work commencing on site up until 31 March 2006.

(3) Use of the harmonized colours of cables was permitted for installation work commencing on site after 31 March 2004 and was required for installation work commencing on site after 31 March 2006.

For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

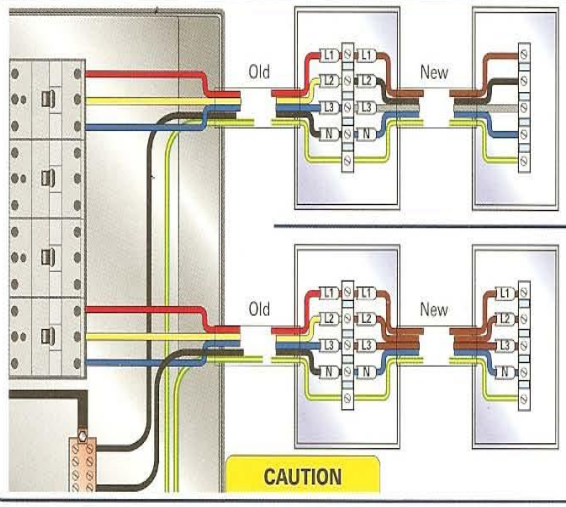
www.niceicgroup.com

POCKET GUIDE 4

POCKET GUIDE 4

GUIDE TO FIXED WIRING THREE-PHASE CABLE COLOUR CHANGES

Examples of an extension or alteration to an existing three-phase installation



New wired in harmonized colours brown, black, grey line conductors, blue neutral and a green-and-yellow circuit protective conductor.

(An alternative arrangement)* New wired in three brown line conductors, blue neutral and a green-and-yellow circuit protective conductor.

Unambiguous identification is provided by lettering and numbering.

A warning label is required

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.

NOTES (also see notes overleaf)

(4) Except where there is no possibility of confusion, unambiguous marking needs to be provided at the interface between conductors.

(5) Cores of cables should be identified by colour and/or lettering and/or numbering (as shown above).

(6) *Another alternative arrangement of marking connections between existing and new cables is by using coloured sleeves.

(7) If wiring alterations are made to an installation using cables with the harmonized cable colours but there is also wiring to previous versions of the Regulations, a warning label must be affixed at or near the appropriate distribution board with the wording as shown above.

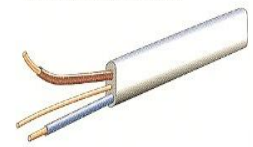
© Pocket Guide **4** rev 2 03/08

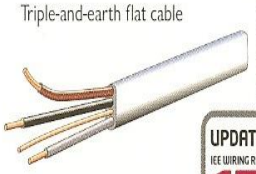
POCKET GUIDE 3

GUIDE TO FIXED WIRING SINGLE-PHASE CABLE COLOUR CHANGES

Fixed wiring colours of red line and black neutral are replaced by brown line and blue neutral, respectively. The colour of the circuit protective conductor remains green-and-yellow.

	OLD Was permitted until 31 March 2006	HARMONIZED Was required from 1 April 2006
Examples of core colour changes are:		
Twin-and-earth flat cable	Line Red	Line Brown
	Neutral Black	Neutral Blue
Triple-and-earth flat cable	Line Red	Line Brown
	Line Yellow	Line Black
	Line Blue	Line Grey





Notes (also see notes overleaf)

(1) This guide applies to single-phase cable harmonized colour changes. Reference should be made to Regulation Group 514 and Appendix 7 of *BS 7671: 2008*.

(2) Use of the old colours of cables was required in installation work commencing on site before 31 March 2004, and was still permitted in installation work commencing on site up until 31 March 2006.

(3) Use of the harmonized colours of cables was permitted for installation work commencing on site after 31 March 2004 and was required for installation work commencing on site after 31 March 2006.

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC

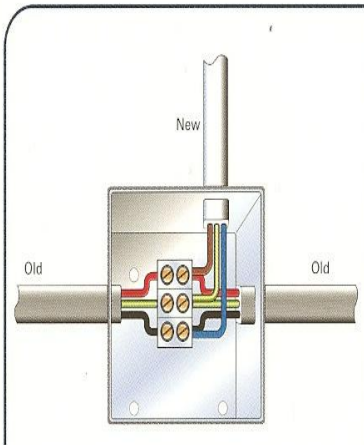
For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

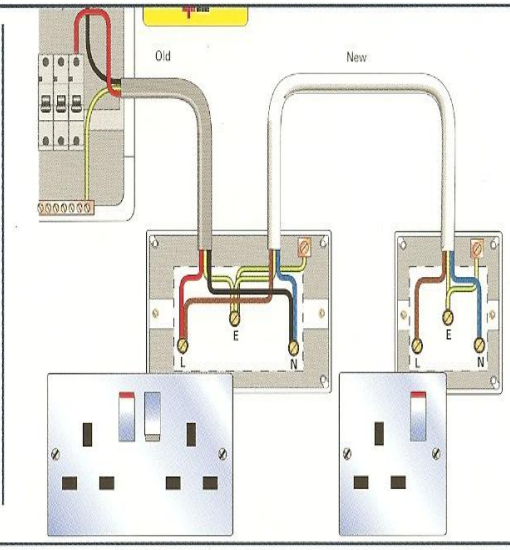
www.niceicgroup.com

POCKET GUIDE 3

GUIDE TO FIXED WIRING SINGLE-PHASE CABLE COLOUR CHANGES

Typical examples of extensions or alterations to existing single-phase installations





A warning label is required

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.

NICEIC

NOTES (also see notes overleaf)

(4) Except where there is no possibility of confusion, unambiguous marking needs to be provided at the interface between conductors.

(5) Except where identification is not required, cores of cables should be identified by colour (as shown above) or lettering and/or numbering.

(6) If wiring alterations are made to an installation using cables with the harmonized colours but there is also old coloured wiring (to previous versions of the Regulations), a warning label must be affixed at or near the appropriate distribution board with the wording as shown above.

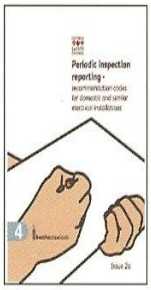
NICEIC

© Pocket Guide **3** rev 2 03/08

POCKET GUIDE 17

PIR Recommendation Codes

This guide gives basic information about Periodic Inspection Report (PIR) Recommendation Codes. It is based on information given in the Electrical Safety Council's *Best Practice Guide 4 – Periodic inspection reporting – recommendation codes for domestic and similar electrical installations,* which is available as a free download from **www.esc.org.uk**



The aim of *Best Practice Guide 4*, and this pocket guide, is to provide guidance on the use of Recommendation Codes for competent persons (as defined in *Best Practice Guide 4*) producing PIRs.

Best Practice Guide 4, and this pocket guide, are limited to the range of observations associated with domestic and similar electrical installations, and take into account the requirements of *BS 7671: 2008*.

Each observation entered by the competent person in the PIR must be given an appropriate Recommendation Code 1, 2, 3 or 4. This is for the benefit of the person ordering the report, and of persons subsequently involved in additional or remedial work, or further inspections. Each Recommendation Code has a particular meaning as shown in Table 1.

Table 1

Description and meaning of Recommendation Codes

Code	Description	Meaning
1	Requires urgent attention	This part of the installation has an immediate danger to the occupier or user and should be rectified or made safe without delay.
2	Requires improvement	This part of the installation has a potential danger to the occupier or user, which should be rectified as soon as possible.
3	Requires further investigation	The condition of this part of the installation cannot be determined without a more in-depth inspection, which could reveal that a Recommendation Code 1 or 2 is applicable.
4	Does **not** comply with the current edition of *BS 7671* as amended. This does not imply that the electrical installation is unsafe.	This part of the installation complies with a previous edition of the Wiring Regulations and no remedial action is recommended in this report.

Where a real and immediate danger is observed that puts the safety of those using the installation at risk, a Recommendation Code 1 must be given, **and that danger should be removed without delay.**

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC www.niceicgroup.com

POCKET GUIDE 17

PIR Recommendation Codes

If more than one Recommendation Code could be applied to an observation, only the most serious one should be applied (Code 1 being the most serious).

It would **not** be reasonable for the competent person to indicate in the summary of a PIR that the installation is 'satisfactory' if any observation is given a **Code 1** or **Code 2** recommendation.

Examples of the use of Recommendation Codes are shown in Table 2. However, it is the competent person carrying out the inspection and testing who needs to decide on the Recommendation Code to be entered against each observation in the report. The person(s) signing the report is fully responsible for its content and accuracy.

Table 2

Examples of Recommendation Codes applied to observations

Code	Observation
1	a) Exposed live parts that are accessible to touch, such as where live conductors have **no** (or damaged) insulation. b) Incorrect polarity, or protective device in neutral conductor only. c) Absence of RCD protection for socket-outlets in bathrooms or shower rooms, other than SELV or shaver socket-outlets.
2	a) A 30/32 A ring final circuit discontinuous or cross-connected with another circuit. b) Separate protective devices in line and neutral conductors (for example, double-pole fusing). c) A metallic pipe for gases or flammable liquids, or the metallic pipe of a water utility supply, being used as the means of earthing.
3	a) Unable to trace final circuits. b) Unable to access equipment or connections needing to be inspected that are known to exist but have been boxed in such as by panels or boards that cannot be easily removed without causing damage to decorations. c) Insulation resistance of less than 1 Megohm between live conductors connected together and Earth, when measured at the consumers unit with all final circuits connected.
4	a) Absence of 'Safety Electrical Connection – Do Not Remove' notice. b) Absence of a notice indicating that the installation has wiring colours to two versions of *BS 7671*. c) Absence of RCD periodic test notice.

Note: The examples listed in Table 2 are not exhaustive. *Best Practice Guide 4* gives further examples.

Certain observations may be noted on the PIR, but should **not** be given a Recommendation Code, such as the absence of a fire detection and alarm system.

Observations that are **not** departures from *BS 7671*, such as use of *BS 3871* circuit breakers, do **not** need to be noted on the report.

NICEIC www.niceicgroup.com

Based on information as at October 2008

For further copies of this guide
telephone 0870 0130382 or e-mail customerservice@niceic.com

© Pocket Guide 17 09/09

SECOND NUMBER OF IP CODE (TABLE 2)

2ND NUMBER	Protection of equipment inside the enclosure against ingress of water
0	No protection
1	Vertically falling water drops, such as from condensation from surfaces above the enclosure
2	Vertically falling water drops when the enclosure is tilted at any angle up to 15 ° from the vertical
3	Water sprayed at any angle up to 60 ° on either side of the vertical
4	Water splashed against the enclosure from any direction
5	Water jets projected against the enclosure from any direction, such as from hosepipes
6	Powerful water jets projected against the enclosure from any direction, such as from power jet sprays, or sea waves
7	'Temporary' immersion of enclosure in water under specified conditions
8	'Continuous' immersion of enclosure under specified conditions

Equipment enclosures of an installation need to be correctly selected, installed and maintained to meet the requirements of *BS 7671*, and the manufacturer. For example, an enclosure needs to have an appropriate IP code, and impact resistance against any likely mechanical damage. Cable glands fitted to an enclosure also need to have an IP code at least equal to that of the enclosure.

Covers of an enclosure need to be securely fixed, and access doors left tightly shut.

ADDITIONAL LETTER OF IP CODE (TABLE 3)

Protection of persons against access to hazardous (live or moving) parts inside the enclosure	
LETTER	LETTER
A Back of hand (50 mm diameter)	B Standard jointed test finger (12 mm diameter, 80 mm length)
C Tool 2.5 mm diameter, 100 mm length	D Wire 1.0 mm diameter, 100 mm length

POCKET GUIDE 16

IP codes

This guide gives basic information about the IP (International Protection)[1] code, based on information given in '*BS EN 60529: 1992 – Specification for degrees of protection provided by enclosures (IP code)*', where you can find further details if necessary.

BS EN 60529 describes a system for classifying the degree of protection given by enclosures of electrical equipment. This is to protect:

a) **persons** against 'access to hazardous parts inside an enclosure', and

b) **equipment** inside an enclosure against the 'ingress of solid foreign objects or dust' and 'the harmful effects from ingress of water or moisture'.

Electrical equipment enclosures are specified in the form **IPXX**. As appropriate, the 'first' and/or 'second' X is replaced by a number as shown in Tables 1 and 2, respectively, of this guide.

As an example, for **IP2X**, the 2 (from Table 1) defines an enclosure giving protection against ingress of solid foreign objects with a diameter of 12.5 mm, and from a finger being inserted and accessing hazardous parts; the X means there is no protection against ingress of water specified.

A letter A, B, C or D, as shown in Table 3, is sometimes added after XX. As an example, **IPXXB**, the XX means that the first and second numbers are **not** specified, and the B means finger protection is provided against any hazard in the enclosure.

FIRST NUMBER OF IP CODE (TABLE 1)

1ST NUMBER	Protection of equipment inside the enclosure against ingress of solid objects or dust	Protection of persons against access to hazardous (live or moving) parts inside the enclosure
0	No protection	No protection
1	50 mm diameter solid foreign object	Back of hand
2	12.5 mm diameter solid foreign object	Finger standard jointed test (12 mm diameter, 80 mm length)
3	2.5 mm diameter solid foreign object	Tool
4	1.0 mm diameter solid foreign object	Wire
5	Dust-protected (Ingress of dust not totally prevented, but must not interfere with satisfactory operation of equipment or reduce safety)	Wire
6	Dust-tight (No ingress of dust)	Wire

[1] Sometimes the term IP is used as an abbreviation for 'Ingress Protection'

Determining the values of fault current (I) and time (t)

The value of fault current (I) used in the adiabatic equation is normally determined by calculation, from the following formula:

$$I = \frac{U_0}{Z_S}$$

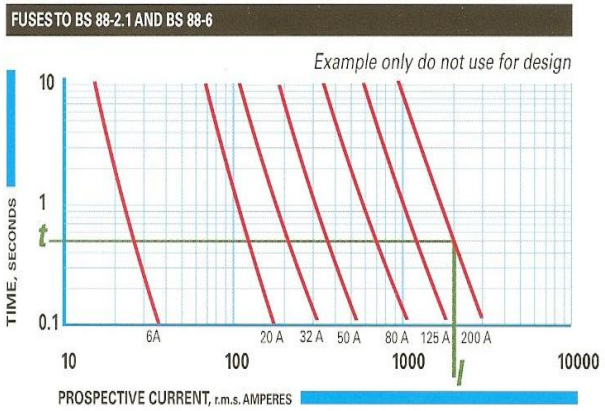
Where:

I the fault current (I) at the furthest point in the circuit.

U_0 the nominal voltage.

Z_S the measured value of earth fault loop impedance corrected to allow for the circuit conductors being at their normal operating temperature.

The value of operating time (t) for the disconnecting device, for use in the adiabatic equation, can often be found from the time/current characteristic for the device. An example of determining t is given below.



For instance, it can be seen from the time/current characteristic of the 200 A BS 88 fuse (above) that, with a fault current (I) of 2000 A, the protective device has an operating time (t) of 0.5 seconds.

However, where the value of I is so high that the corresponding value of t is not shown in the time/current characteristic for the disconnecting device, the value of energy let-through (I^2t) should be obtained from the device manufacturer and substituted into the adiabatic equation.

The use of a value of I^2t obtained from the manufacturer may also be necessary in the following circumstances:

- for operating times (less than 0.1 s) where asymmetry of current is significant, such as for a protective device close to the output terminals of a generator or transformer
- where the protective device is a current limiting circuit-breaker or fuse that will 'cut off' or limit the current during prospective earth fault conditions.

Value of k for use in the adiabatic equation

Values of k for protective conductors for use in the adiabatic equation, may be obtained from Tables 54.2, 54.3, 54.4, 54.5 and 54.6 data from which are reproduced in Pocket Guide 14.

POCKET GUIDE 15

Sizing of protective conductors by calculation

Regulation Group 543.1 of *BS 7671* requires that a protective conductor other than an protective bonding conductor is sized either by calculation or selection. This guide covers the sizing of protective conductors by calculation, which uses the adiabatic equation, as explained later.

A protective conductor must always be sized by calculation where the line conductor has been sized by considerations of short-circuit current or where the earth fault current is expected to be less than the short-circuit current.

Lower limits of csa

Certain lower limits apply to the cross-sectional-area (csa) of the protective conductor. The size of the protective conductor used must not be less than the limiting values given in paragraphs 2, 3 and 4 of Pocket Guide 14 'Lower limits of csa'.

Calculating the size of the protective conductor

The csa of the protective conductor, where calculated, is to be no less than the determined value (S) from the adiabatic equation[1].

$$S = \frac{\sqrt{I^2t}}{k}$$

Where:

S is the nominal csa of the protective conductor in mm^2.

I is the value in amperes (rms for a.c.) of the fault current for a fault of negligible impedance, which can flow through the associated protective device, due account being taken of the current limiting effect of the circuit impedances and the limiting capability (I^2t) of that protective device[1]. Account is also to be taken of the effect on the resistance of circuit conductors of their temperature rise as a result of load current (Appendix 14 of *BS 7671* refers).

t is the operating time of the disconnecting device in seconds corresponding to the fault current I in amperes.

k is a factor taking account of the resistivity, temperature coefficient and heat capacity of the conductor material, and the appropriate initial and final temperatures of the conductors.

Where a non-standard size is calculated, a conductor having the nearest larger standard csa should be used[1].

Where the protective conductor is common to several circuits, the calculation process should be based on the most onerous values of fault current (I) and operating time (t) (or energy let-through (I^2t)) encountered in each of the circuits[2].

[1] Regulation 543.1.3 [2] Regulation 543.1.2

see overleaf

Where row **B** is used (overleaf), the values of k_1 for the line conductor and k_2 for the protective conductor are required. Value of k_1 can normally be determined from Table 43.1 of *BS 7671*, and values of k_2 from Tables 54.2 to 54.6, as applicable. (Data reproduced in part below.) For situations not covered by those tables, information and guidance is available in the Electrical Safety Council's Technical Manual.

Data from TABLE 43.1 Values of *k* for common conductors

Conductor	Insulation material	*K*
Copper	70 °C thermoplastic (general purpose pvc)	115/103*
	90 °C thermoplastic (pvc)	100/86*
	60 °C thermosetting (rubber)	141
	85 °C thermosetting (rubber)	134
	90 °C thermosetting	143
Copper	Mineral	
	- plastic covered or exposed to touch	115
	- bare and neither exposed to touch nor in contact with combustible materials	135

* indicates a conductor of greater than 300 mm²

Data from TABLES 54.2 to 54.6

Material of conductor	Insulation of protective conductor or cable covering			
	70 °C thermoplastic (general purpose pvc)	80 °C thermoplastic (pvc)	85 °C thermosetting (rubber)	90 °C thermosetting
54.2 Values of *k* for insulated protective conductor not incorporated in a cable and not bunched with cables, or for separate bare protective conductor in contact with cable covering but not bunched with cables.				
Copper	143/133*	143/133*	166	176
Aluminium	95/88*	95/88*	110	116
Steel	52	52	60	64
54.3 Values of *k* for protective conductor incorporated in a cable or bunched with cables, where the assumed initial temperature is 70 °C or greater.				
Copper	115/103*	100/86*	134	143
Aluminium	76/68*	66/57*	89	94
54.4 Values of *k* for protective conductor as a sheath or armour of a cable.				
Aluminium	93	85	93	85
Steel	51	46	51	46
Lead	26	23	26	23
54.5 Values of *k* for steel conduit, ducting and trunking as the protective conductor.				
Steel conduit, ducting and trunking	47	44	54	58

* indicates a conductor of greater than 300 mm²

54.6 The data from Table 54.6 is not available in this pocket guide and can be found in the Electrical Safety Council's Technical Manual.

POCKET GUIDE 14

Sizing of protective conductors by selection

Regulation Group 543.1 of *BS 7671* requires that a protective conductor other than protective bonding conductor is sized either by calculation or selection. This guide covers the sizing of protective conductors by selection, which uses Table 54.7 of *BS 7671*, as explained later.

It should be noted, however, that where the choice of the csa of the line conductors has been determined by considerations of short-circuit current, or where the earth fault current is expected to be less than the short-circuit current, the csa of the protective conductor must be calculated[1].

Lower limits of csa

Certain lower limits apply to the csa of a protective conductor. The size of the protective conductor used must be not less than the appropriate limiting value (see below) and not less that that determined by selection (see later).

Where a protective conductor is not: an integral part of a cable (such as a 'twin & earth' cable or an armoured cable); or formed by conduit, ducting or trunking; or contained in an enclosure formed by a wiring system, the csa of the protective conductor is to be not less than 2.5 mm² copper equivalent if protection against mechanical damage is provided (such as by a sheath), and not less than 4 mm² copper equivalent if protection against mechanical damage is not provided[1].

Where PME conditions apply, a protective conductor used as an earthing conductor must have a csa not less than that required by Regulation 544.1.1 for a main protective bonding conductor of the installation (refer to NICEIC Pocket Guide 13).

A protective conductor buried in the ground must have a csa not less than required for an earthing conductor by Table 54.1 of *BS 7671*.

Selecting the size of the protective conductor

The process of selection uses the csa (*S*) of the associated line conductor and Table 54.7 of *BS 7671*. (Data reproduced below in part.) Where the protective conductor is common to several circuits, its csa should be based on the csa of the largest line conductor of the circuits[2]. Where selection produces a non-standard size, a conductor having the nearest larger standard csa should be used.

Data from TABLE 54.7 of *BS 7671*

Minimum csa of protective conductor in relation to the csa of associated line conductor.

CSA of line conductor *S* (mm²)		$S \le 16$	$16 < S \le 35$	$S > 35$
Minimum csa of the corresponding protective conductor (mm²)	A	S	16	$\frac{S}{2}$
	B	$\frac{k_1}{k_2} \times S$	$\frac{k_1}{k_2} \times 16$	$\frac{k_1}{k_2} \times \frac{S}{2}$

The csa of the protective conductor must be not less than required by Row A or Row B of the above table, as applicable.

Row **A** should be used where the protective conductor is of the same material as the associated line conductor.

Row **B** should be used where the protective conductor is not of the same material as the associated line conductor.

[1] Regulation 543.1.1 [2] Regulation 543.1.2

POCKET GUIDE 13

SIZING MAIN PROTECTIVE BONDING CONDUCTORS

Where PME conditions apply

Where PME conditions apply, Regulation 544.1.1 requires the main protective bonding conductors to be selected in accordance with the size of the neutral conductor of the supply and Table 54.8 (data reproduced below for reference).

TABLE 54.8 of *BS 7671*
Minimum csa of the main protective bonding conductor in relation to the neutral of the supply

NOTE: Local electricity distributor's network conditions may require a larger conductor.

Copper equivalent csa of the supply neutral conductor	Minimum copper equivalent* csa of the main protective bonding conductor
35 mm^2 or less	10 mm^2
over 35 mm^2 up to 50 mm^2	16 mm^2
over 50 mm^2 up to 95 mm^2	25 mm^2
over 95 mm^2 up to 150 mm^2	35 mm^2
over 150 mm^2	50 mm^2

* The minimum copper equivalent csa is given by a copper bonding conductor of the tabulated csa or a bonding conductor of another metal affording equivalent conductance.

Note 1

Table 54.8 should be used as a **guide** only, and the specific requirements of the electricity distributor should always be obtained with regard to the selection of main protective bonding conductors.

Note 2

The 'supply neutral conductor' referred to in Table 54.8 is the neutral conductor of the electricity distributor's low voltage network (otherwise known as the combined protective and neutral (PEN) conductor). It is **not** the neutral conductor on the consumer's side of the supply terminals, which may have a different csa.

Further information on calculating the minimum csa of a main protective bonding conductor in a metal other than copper can be found in the Electrical Safety Council's Technical Manual.

The advice of the electricity distributor should always be obtained where it is proposed to use a main protective bonding conductor of a metal other than copper.

NICEIC www.niceicgroup.com

For further copies of this guide
telephone 0870 0130382 or e-mail customerservice@niceic.com

POCKET GUIDE 13

SIZING MAIN PROTECTIVE BONDING CONDUCTORS

This guide gives information on the sizing of main protective bonding conductors, based on the requirements given in Regulation Group 544.1 of *BS 7671*.

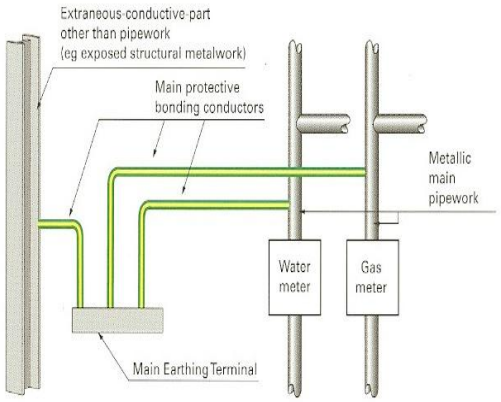
Protective equipotential bonding is a provision under the requirements for fault protection for protection against electric shock where the protective measure is Automatic Disconnection of Supply (ADS).

Arrangement of protective equipotential bonding

Where the protective measure is ADS, in each installation main protective bonding conductors complying with Section 547 of *BS 7671* are required to connect to the main earthing terminal the extraneous-conductive-parts of that installation including:

- water installation pipes
- gas installation pipes
- other installation pipework and ducting
- central heating and air conditioning systems
- exposed metallic structural parts of the building.

To meet the requirements of Regulation 411.3.1.2 the connection of a lightning protection system to the protective equipotential bonding must be made in accordance with *BS EN 62305–3*.



Where Protective Multiple Earthing (PME) conditions do NOT apply

Where PME conditions do **not** apply, Regulation 544.1.1 requires a main protective bonding conductor to have a cross-sectional area (csa) of **not less than half csa required for the earthing conductor** of the installation, and **not less than 6 mm^2.** The csa **need not exceed 25 mm^2** if the bonding conductor is of copper, or a csa affording equivalent conductance in other metals.

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

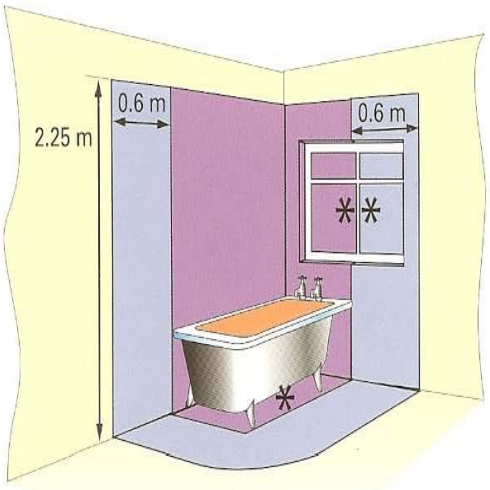
NICEIC www.niceicgroup.com

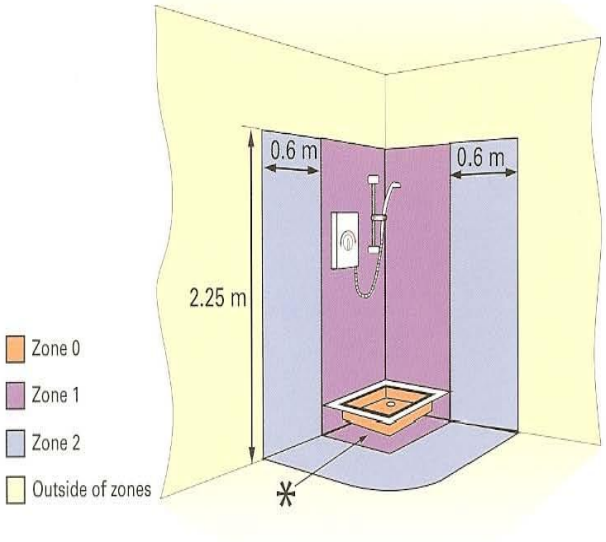
Based on information as at January 2008

© Pocket Guide 13 rev 1 03/08

POCKET GUIDE 1-2

GUIDE TO SITING EQUIPMENT IN A LOCATION CONTAINING A BATH OR SHOWER





* Zone 1 if the space is accessible without the use of a tool
Spaces under the bath or shower tray accessible only with the use of a tool are outside the zones

** Window recess Zone 2

Notes:

- All circuits of the location must have additional protection provided by one or more RCDs that have a rated residual operating current ($I_{\Delta n}$) not exceeding 30 mA and an operating time not exceeding 40 ms at a residual current of 5 $I_{\Delta n}$ (701.411.3.3).
- Providing all final circuits of the location have additional protection, meet the requirements for automatic disconnection and the installation is fitted with effective protective main equipotential bonding, then supplementary equipotential bonding may be omitted (701.415.2).

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

Pocket Guide 1-2 replaces Pocket Guides 1 & 2

NICEIC www.niceicgroup.com

POCKET GUIDE 1-2

GUIDE TO SITING EQUIPMENT IN A LOCATION CONTAINING A BATH OR SHOWER

ZONE	OUTSIDE OF ZONES Note 5	2 Note 6 IPX4†	1 Note 6 IPX4†	0 Note 6 IPX7††
230 V wall mounted plate switch		✗	✗	✗
Luminaire			Note 3	✗
SELV or PELV safety source		✗	✗	✗
Shaver supply unit		Note 2	✗	✗
Ventilation equipment			Note 3	✗
Pull cord switch mechanism		✗	✗	✗
Insulated pull cord				
SELV switches/socket-outlets		Note 8	Note 7	✗
Switches or controls in fixed current-using equipment suitable for use in the zone				
Whirlpool unit, electric shower, shower pump, towel rail or water heating appliance			Note 3	✗
Equipment, such as a fan or light, protected by SELV or PELV at a nominal voltage not exceeding 25 V a.c. rms or 60 V ripple-free d.c.			Note 3	✗
Equipment, such as a light, protected by SELV at a nominal voltage not exceeding 12 V a.c. rms or 30 V ripple-free d.c.				Note 4
230 V socket-outlet	Note 1	✗	✗	✗

Note 1 Prohibited within a distance of 3 m horizontally from the boundary of zone 1.

Note 2 A shaver supply unit must be to BS EN 61558-2-5. The requirement for a degree of protection of a minimum of IPX4 in zone 2 does not apply to shaver units situated where direct spray from showers is unlikely.

Note 3 Equipment must be fixed, permanently connected, and suitable for zone 1 according to the manufacturer's instructions.

Note 4 Equipment must be fixed, permanently connected, and suitable for zone 0 according to the manufacturer's instructions.

Note 5 The general requirements in Parts 1 to 6 of the Regulations are applicable outside of the zones including Regulation 512.2.1, which requires equipment to be of a design appropriate to the situation in which it is to be used or its mode of installation must take account of the conditions likely to be encountered.

Note 6 The general requirements in Parts 1 to 6 of the Regulations are applicable within the zones of a location containing a bath or shower but are supplemented by the additional requirements in Part 701 of BS 7671.

Note 7 Only SELV switches permitted, which must be supplied at a nominal voltage not exceeding 12 V a.c. rms or 30 V ripple-free d.c.

Note 8 SELV switches and socket-outlets permitted.

† Equipment must have protection of at least IPX4 (IPX5 if water jets are likely).

†† Equipment must have protection of at least IPX7.

NICEIC www.niceicgroup.com

For further copies of this guide
telephone 0870 0130382 or e-mail customerservice@niceic.com

© Pocket Guide 1-2 01/08

POCKET GUIDE 11

INITIAL VERIFICATION, ORDER OF TESTS

Notes

1 This guide gives information on the order of tests for the initial verification of an installation as required by Regulation 612.1 of *BS 7671*, which also requires that:

a. the test results are compared with relevant criteria

b. any test that indicates a failure to comply with the criteria is repeated after the fault is rectified, together with any preceding test influenced by the fault.

2 Tests must NOT be carried out until inspection has been completed, as required by Regulation 611.1.

3 Precautions shall be taken to avoid danger to persons and to avoid damage to property and installed equipment during testing.

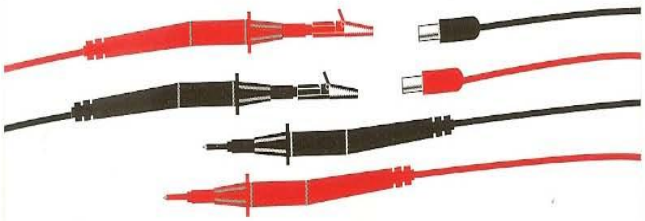
4 Reference should be made to the NICEIC Pocket Guides 5 *Guide to isolation procedure* and 12 *Test instrument leads* BEFORE carrying out any tests.

5 For further information on testing, reference should be made to the NICEIC books *Inspection, Testing and Certification* and *Domestic Periodic Inspection, Testing and Reporting.*

6 Table 1 lists the order of tests (where relevant) to be carried out before the supply is connected or with the supply disconnected as appropriate.

7 Table 2 lists the order of tests (where relevant) to be carried out AFTER the tests in Table 1 have been completed and the supply connected.

See tables overleaf



UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

www.niceicgroup.com

Megger.

Based on information as at January 2008

POCKET GUIDE 11

INITIAL VERIFICATION, ORDER OF TESTS

Table 1 – Order of tests to be carried out with the supply DISCONNECTED (AFTER the completion of inspection)

Order	Test	Regulation
1	Continuity of protective conductors including main and supplementary bonding	612.2.1
2	Continuity of ring final circuit conductors	612.2.2
3	Insulation resistance	612.3
4	Protection by SELV, PELV or by electrical separation	612.4
5	Basic protection by a barrier or enclosure provided during erection (generally determined by visual inspection)	612.4.5
6	Insulation resistance/impedance of floors and walls	612.5
7	Polarity (for example, at lighting switches)	612.6
8	Earth electrode resistance* (where the electrode is part of the installation)	612.7

* Alternatively for a TT system the installation earth electrode resistance may be approximately measured with the incoming supply energized and the main switch OFF, using an earth fault loop impedance test instrument.

Table 2 – Order of tests to be carried out with the supply CONNECTED (AFTER the completion of the tests in Table 1)

Order	Test	Regulation
9	Polarity (for example, at socket-outlets)	612.6
10	Earth fault loop impedance	612.9
11	RCDs used for: (1) protection against fire, (2) fault protection, or (3) additional protection.	 612.8 612.8.1 (a)(2) and (b)(2) 612.10
12	Prospective fault current	612.11
13	Phase sequence maintained for multiphase circuits	612.12
14	Functional testing of RCD (using test facility in device)	612.13.1
15	Functional testing of switchgear and controlgear assemblies, drives, controls and interlocks	612.13.2
16	Verification of voltage drop (Note: this is not normally required during initial verification)	612.14

www.niceicgroup.com Megger.

For further copies of this guide
telephone 0870 0130382 or e-mail customerservice@niceic.com

POCKET GUIDE 10

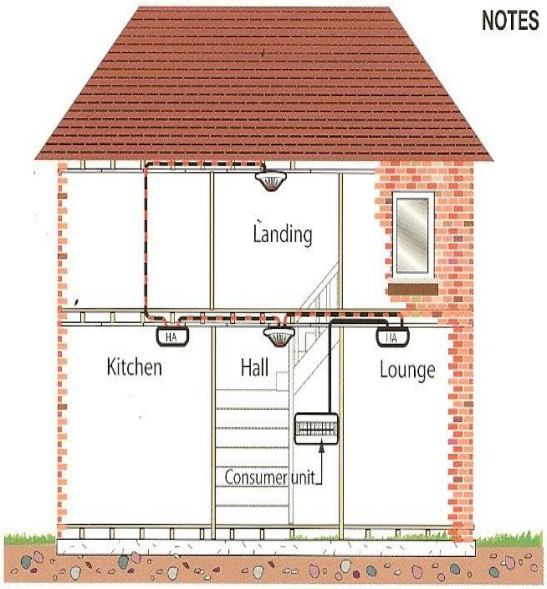
FIRE ALARMS IN DWELLINGS

Table 1 - *BS 5839-6: 2004* Grade D and E systems

Grade of system	Summary of equipment incorporated
Grade D	A system of one or more mains-powered smoke alarms, each with an integral standby supply. (The system may, in addition, incorporate one or more mains-powered heat alarms, each with an integral standby supply.)
Grade E	A system of one or more mains-powered smoke alarms with no standby supply. (The system may, in addition, incorporate one or more heat alarms, with or without standby supplies.)

Category of system	Principles of operation
Category LD	A fire detection and fire alarm system intended for the protection of life.
Category PD	A fire detection and fire alarm system intended for the protection of property.
Note: the above Categories are further subdivided, risk for example LD2	An LD2 system incorporates detectors in all circulation spaces that form part of the escape routes from the dwelling, and in all rooms or areas that present a high fire to the occupants.

FIRE ALARMS IN DWELLINGS



HA Heat alarm — Smoke alarm

Mains power and interconnecting* wiring — Mains power supply

* Interconnection provided, so that all devices give a warning if a fire is detected

Example of a Grade D or E, Category LD2 fire detection and alarm system

NOTES

(1) This guide addresses some of the recommendations in *BS 5839-6: 2004 – Fire detection and alarm systems for buildings, Code of practice for the design, installation and maintenance of fire detection and fire alarm systems in dwellings*.

(2) The minimum standard of protection recommended in the 2004 edition of *BS 5839-6* is, for new dwellings, that **smoke alarms** should be provided within the circulation areas of most single-family dwellings and small houses in multiple occupation (HMOs), and that **heat alarms** should be provided in the kitchen and the principal habitable room (eg, the lounge).

(3) The Standard recommends that smoke alarms and heat alarms installed within new single-family dwellings and small HMOs are mains powered with, in addition, a standby power supply in the form of a battery or capacitor.

(4) There are six Grades of system in the Standard. The Grades identify the equipment incorporated. Grades A, B and C are systems that include fire detectors, alarm devices and central control equipment. Grades D and E are mains-powered smoke alarm systems (as summarised in Table 1). A Grade F system includes a battery-powered smoke alarm.

(5) Categories of system (used to describe the principles of operation) in the Standard are summarised in Table 2.

(6) In the context of fire detection and alarm systems in dwellings, attention is drawn to the relevant requirements of national building regulations and, in the case of small HMOs, to the relevant housing legislation.

(7) Guidance on fire alarm requirements in building regulations is given in *Approved Document B* in England and Wales, the *Technical Standards* that support the relevant building regulations in Scotland, and in *Technical Booklet E* in Northern Ireland.

UPDATED TO: IEE WIRING REGULATIONS 17TH EDITION BS7671:2008

NICEIC www.niceicgroup.com

For further copies of this guide telephone 0870 0130382 or e-mail customerservice@niceic.com

© Pocket Guide **10** rev 1 03/08

POCKET GUIDE 10