

snags and solutions

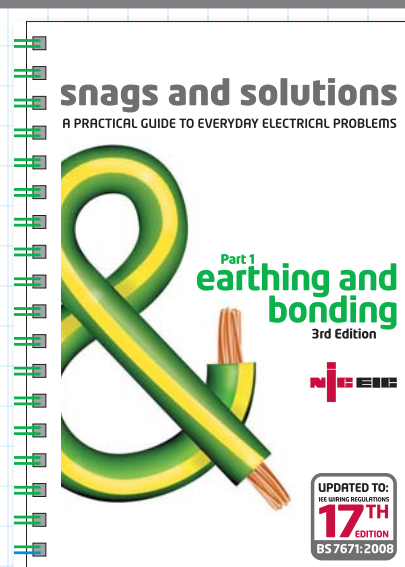
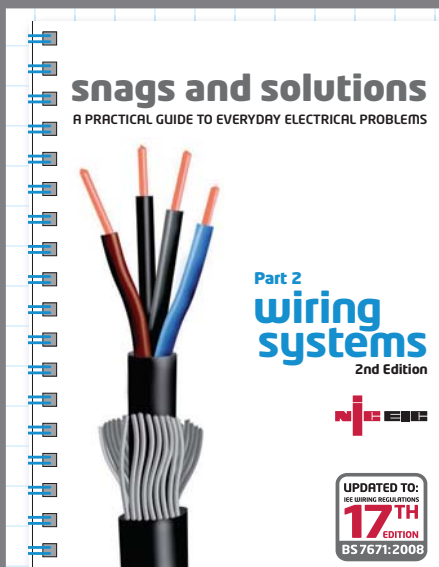
A practical guide to everyday electrical problems

snags and solutions, the NICEIC's problem solving book, is available in two volumes which cover many commonly-encountered electrical installation problems. Both volumes have been updated and incorporate the requirements of BS 7671: 2008 (17th edition of the IEE Wiring Regulations), where appropriate.

Part 1 addresses 53 problems relating to earthing and bonding, whilst Part 2 covers 55 problems relating to wiring systems (as well as giving guidance on the application of the harmonized wiring colours).

Each book, available from NICEIC Sales, costs only £15.

To give an indication of the value of these books, a snag and solution is being covered in each issue of *Connections*. This issue addresses a snag from Part 2, relating to cutting out of cable strands.



Snag 26

Cutting out of cable strands

Cable strands should not be cut out in order to engage the conductor in a terminal.

It is poor practice to cut strands as shown when connecting a stranded cable to a terminal, as this can lead to an intermittent connection with a risk of fire.

The cable in question may be intended to supply a distant load and since the voltage drop is the dominant factor in determining the cable csa, a larger csa than that required from current considerations alone may have been selected.

A problem can arise with switchgear where the terminals may be sized on the basis of current-carrying requirements only.

Solution

Where the csa of the conductors of the cable needs to be reduced, this must not be achieved by cutting out strands which could cause hot spots leading to premature failure of the cable. Cutting out of strands would be considered contrary to Regulation 526.1 relating to durable electrical continuity and adequate mechanical strength and would also contravene Regulation 526.2 relating to the selection of the means of connection.

A method of csa reduction that does not cause damage must be employed such as:

- terminating the cable in an appropriate accessory and connecting to the switchgear using smaller cables, sized on current-carrying requirements, or
- using some form of reducing 'pin lug' crimped or soldered on to the conductor, or
- soldering or brazing the strands together.

Regulation 526.1

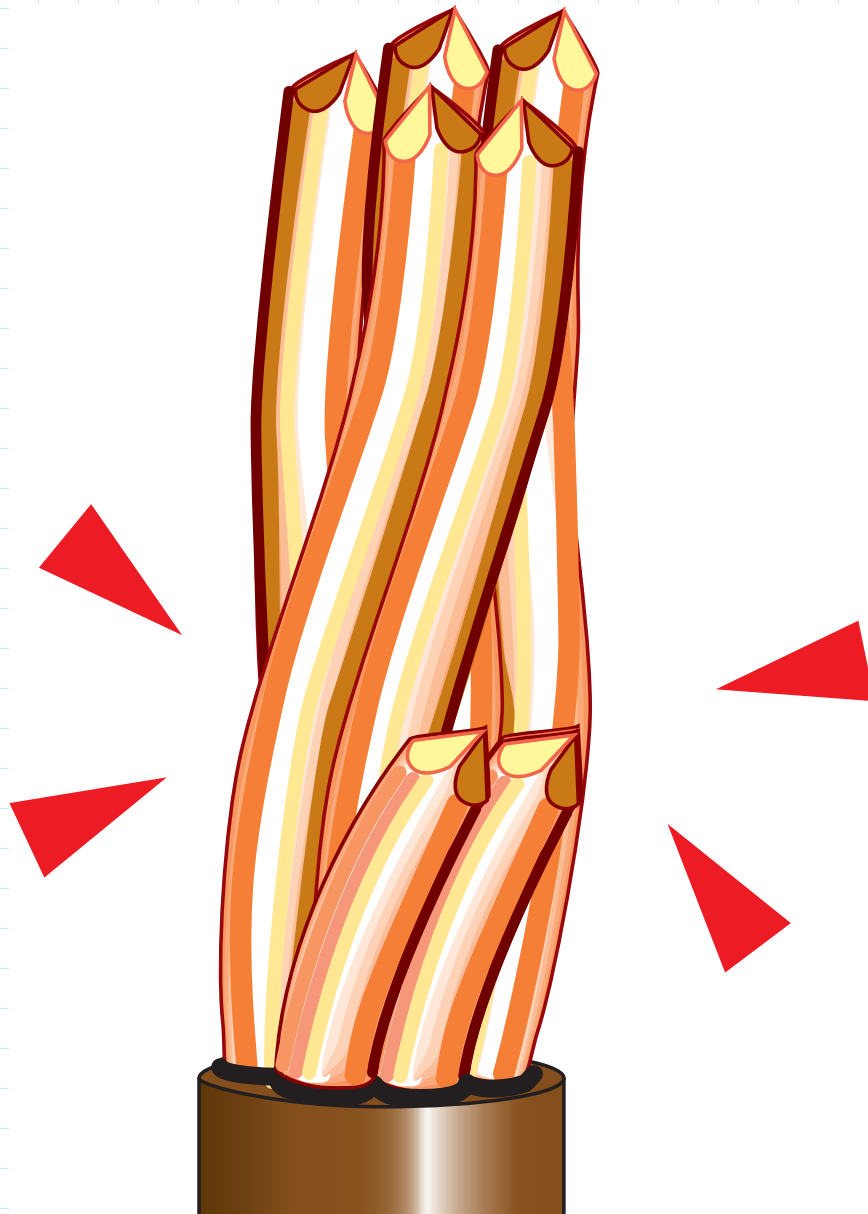
Every connection between conductors or between a conductor and other equipment shall provide durable electrical continuity and adequate mechanical strength and protection.

NOTE: See Regulation 522.8 – other mechanical stresses.

Regulation 526.2

The selection of the means of connection shall take account, as appropriate, of:

- (i) the material of the conductor and its insulation
- (ii) the number and shape of the wires forming the conductor
- (iii) the cross-sectional area of the conductor



- (iv) the number of conductors to be connected together
- (v) the temperature attained at the terminals in normal service such that the effectiveness of the insulation of the conductors connected to them is not impaired
- (vi) the provision of adequate locking arrangements in situations subject to vibration or thermal cycling.

Where a soldered connection is used the design shall take account of creep, mechanical stress and temperature rise under fault current conditions.