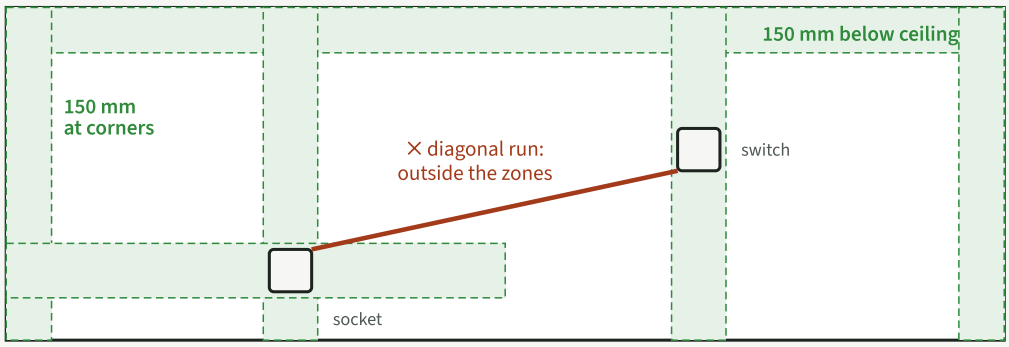
SAFE ZONES, DEPTH AND METAL STUD WALLS

WHERE CAN A CABLE RUN IN A WALL WITHOUT EXTRA PROTECTION?



Green = permitted zones: in line (vertically or horizontally) with an accessory, within 150 mm of the ceiling, or within 150 mm of a corner.

Cables concealed in a wall less than 50 mm deep must be protected in one of these ways:

1. An **earthed metallic covering**, or enclosed in **earthed metal** conduit, trunking or ducting.
2. **Mechanical protection** against penetration by nails and screws.
3. Run **in the permitted zones**. This also needs **30 mA RCD** additional protection.
4. Part of a **SELV/PELV** circuit (extra-low voltage, covered later).

- **Why the zones?** Nobody is likely to hang a picture 150 mm from the ceiling or right in a corner. Cables in line with an accessory are where people expect them.
- Running across into a different room through a partition isn't "in line with an accessory", so it needs extra protection.
- **Metal or plastic capping** over cables in a chase is good practice, because it stops nails and screws. Capping doesn't count as conduit or trunking.
- **Under floors and in ceilings:** unarmoured cables through joists must be at least **50 mm from the top or bottom** of the joist, or be protected (earthed steel conduit, etc.). This is **Reg 522.6.201**. Where an old, thin joist can't give 50 mm top and bottom, the cable must meet **522.6.204** instead.

Electrician's Guide to the Building Regs · Permitted cable routes / safe zones figure and <50 mm depth rules · **p.43**

Metal stud walls: Reg 522.6.203 If a circuit is installed in a **stud wall made mainly of metal**, a **30 mA RCD is required**, **unless Reg 522.6.204** is followed. That means the cable has an earthed metallic covering, is in earthed conduit or trunking, has mechanical protection against penetration, or is part of SELV/PELV.
The RCD **doesn't stop the cable being damaged**. It protects **the person** from a shock if a screw or nail goes through it.

BS 7671 · Reg 522.6.201: cables through joists · **p.151**

BS 7671 · Regs 522.6.202, 522.6.203, 522.6.204: cables in walls and metal stud partitions · **p.152**

IN THE 18TH EDITION EXAM YOU FIND REGS BY NUMBER, NOT PAGE. PRACTISE.

Resistance, length and size
Resistance is **directly proportional to length**: double the length, double the resistance. It's **inversely proportional to CSA**: a bigger cable has lower resistance. Going from 4 mm^2 to 10 mm^2 (2.5× bigger) cuts resistance by 2.5×. Adding cable to a circuit raises its resistance, so test readings change.

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