CABLE CALCULATION: THE REGULATIONS TO CHECK FIRST

CAN THE EXISTING INSTALLATION TAKE A NEW CIRCUIT?

Part 1 is "the regs". Part 1 sets out each requirement. The remaining parts are guidance on how to meet those requirements. That's a useful way to think of it.

Reg 132.16: additions and alterations Before adding a circuit, make sure the **existing installation** can take it. Check the **consumer's equipment** and the **DNO equipment** (size of the main fuse, general condition), and that the **earthing and bonding** are adequate. That means main bonding to every extraneous-conductive-part, sized correctly. Most dwellings have 16 mm^2 or 25 mm^2 tails, so the main bonding would usually be **10 mm^2** from the MET. In this scenario we're told earthing and bonding are adequate.

BS 7671 · Reg 132.16 · additions and alterations · **p.29**

Reg 411.3.3: 30 mA RCD for socket-outlets Socket-outlets must have additional protection by a **30 mA RCD**. Our circuit has a socket on the cooker switch, so it needs one.

Watch out: the exception The exception is often described as sockets used only by **BA4** (instructed) or **BA5** (skilled) persons, backed by a risk assessment. That isn't how BS 7671:2018+A4:2026 words it. Under A4 the RCD can only be left off for socket-outlets in locations where they **aren't liable to be used by ordinary persons (BA1) or children (BA2)**, where a **suitably documented risk assessment, done with a skilled person (electrically) involved**, decides it isn't necessary, and the risk assessment goes **with the certificate**. A home never qualifies in practice. The point stands: almost every socket needs it (one example of an exception is a socket under a board in a locked switchroom).

BS 7671 · Reg 411.3.3 · additional protection for socket-outlets · **p.72**

Reg 522.6.202: cables buried in walls Our cable is chased into the wall at **30 mm**. So:

- It must run in a **safe zone**: horizontally or vertically in line with an accessory, or within **150 mm** of the top of the wall (the ceiling) or of a corner. Ours runs straight down to the switch and straight down to the outlet, so it's in a safe zone.
- A cable **less than 50 mm** deep also needs **30 mA RCD** protection.

So there are **two** reasons this circuit needs an RCD: the socket, and the buried cable. With no socket and the cable in trunking all the way, you could leave the RCD off.

> **Burying a cable without an RCD**
> Reg 522.6.204 lists ways to conceal a cable without RCD protection: a cable with an **earthed metallic covering** (e.g. SWA), **earthed conduit**, **earthed trunking**, **mechanical protection** (such as a metal plate over the chase against nails and screws), or the circuit being part of a **SELV or PELV** system.

BS 7671 · Reg 522.6.202 · cables concealed in walls (safe zones, < 50 mm) · **p.152**

BS 7671 · Reg 522.6.204 · the alternatives to an RCD · **p.152**

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DEVICE DECISION SO FAR
Socket-outlet           → Reg 411.3.3   → 30 mA RCD
Buried < 50 mm in wall  → Reg 522.6.202 → 30 mA RCD
Socket circuit in an HMO → Reg 421.1.7   → AFDD

→ a 30 mA RCBO with AFDD (about £140)
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