MAIN PROTECTIVE BONDING: THE CLAMP, THE CONDUCTOR AND THE MET

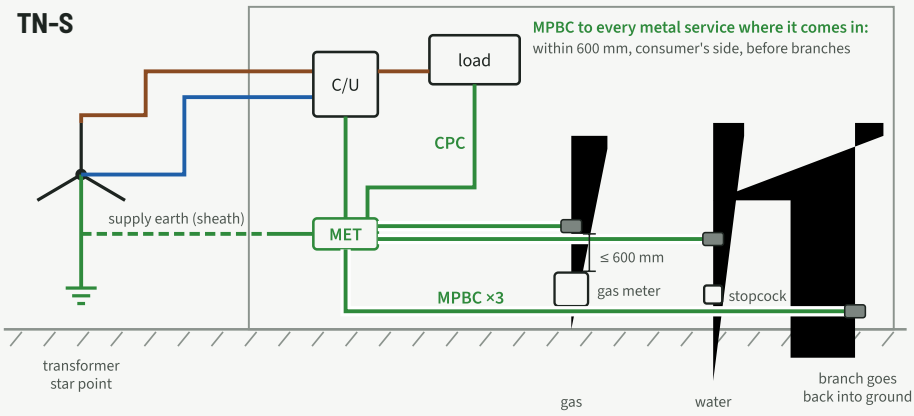
WHERE MUST MAIN BONDING BE CLAMPED?

To stop this happening, we **bond** the extraneous conductive parts to the MET with **main protective bonding conductors (MPBC)**.

- Connect them with an **earth clamp to BS 951**. It's a strap that wraps around the pipe and screws tight, with a **separate terminal** for the conductor.
- Don't strip a bonding conductor and wrap it around the pipe held on with tape. It does get done, but it's **not the right way**.
- Every time a metal pipe **comes up out of the ground** inside the premises, it's an extraneous conductive part and needs its own bond. In our drawing the water pipe splits, goes back under the ground and comes up elsewhere, so the installation needs **three** MPBCs: gas, water, and the re-emerging branch.

> **Where the MPBC goes (Reg 544.1.2)**Main protective bonding conductors should be terminated **within 600 mm** on the **consumer's side** of valves and meters, or **where the service enters the building**, and **before any branch pipework**.

- **Gas meter outside** in a box on the wall (common in houses)? Bond where the gas pipe **comes into the building**, within 600 mm.
- **Never on the supplier's side.** That pipework belongs to the supplier, who could alter it and disconnect your bond.
- **Before any branch.** Every cut, fitting and soldered joint adds resistance, and the whole point is the **lowest possible resistance** between the pipe and the MET.



Three MPBCs from the MET. The star point, MET, load and bonded pipes are circled in red to show that they all "belong to the same club": they're all at the same potential.

Bonding makes the extraneous conductive parts the **same potential as the MET**. The MET is connected to the exposed conductive parts and to the star point, so everything is at the same potential. Before bonding, the potential difference between the faulty exposed part and the pipe was **230 V**. After bonding, it's (near enough) **gone**. Put the person back in the drawing and they **feel nothing**.

> **What bonding does**It **minimises the risk of electric shock** by **reducing the potential difference** between exposed and extraneous conductive parts. It does this by raising them all to the **same potential** using heavy copper bonding conductors.

- **BS 951** · earth clamp standard
- **BS 7671** · Reg 544.1.2 location of main bonding connections (600 mm, consumer's side, before branches) · check your copy for the page

REG NUMBER ADDED FOR REFERENCE

- **Electrician's Guide to the Building Regs** · 3.3.2 list of services to bond
- **Electrician's Guide to the Building Regs** · plastic pipes, bonding within 600 mm · **p.59**
- **On-Site Guide** · Section 4 earthing and main bonding figure

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