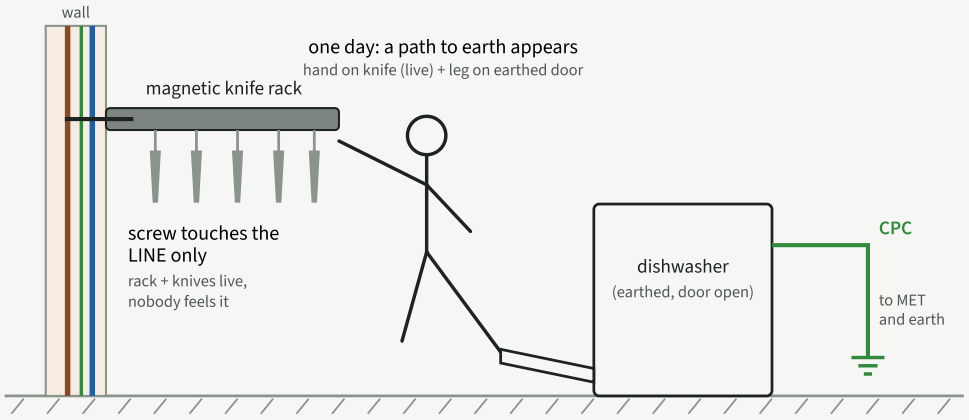
WHY EARTHING AND BONDING MATTER: THE KNIFE RACK

WHY DID NOBODY FEEL THE LIVE KNIFE RACK?

Start with an example, because it explains what earthing is all about. In a house, a **magnetic knife rack** was screwed to the kitchen wall. A cable in the wall behind it hadn't been run in a **safe zone**, and one screw went through the cable, touching **only the line conductor**.

- If the screw had touched **line and CPC** (half a millimetre to one side), it would have been an **earth fault**, and the circuit breaker, fuse or RCD would have tripped.
- If it had touched **line and neutral**, it would have been a **short circuit**, and again the protection would have operated.
- Touching line **only**, nothing tripped. The whole rack, and every knife on it, was **live**, possibly for months or years.

Nobody noticed, because **it's all about potential**. If your body isn't in contact with earth, touching something live just brings you up to the same voltage. Nothing moves through you, so you feel nothing. Anyone in the house could take knives off that rack every day and feel nothing.



Drawn for these notes. The dishwasher was correctly earthed through its CPC, and that's exactly what gave the current a path through her to earth.

Then one day the **dishwasher door was open**. Someone holding the knife rack touched the dishwasher door with her leg. The dishwasher was **earthed** through the CPC of its supply cable, so now there was a **path to earth** through her body. A shock along that path can kill.

Sparky's point

The irony is that the dishwasher being earthed is what completed the path. That doesn't mean earthing is bad. It shows that **voltage always looks for a path to a different potential**. The real fault was a **cable installed outside the safe zones**. Every part of earthing and bonding is about controlling those paths and potentials.

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