RING FINAL CIRCUITS, STEP 1: END TO END

WHAT SHOULD R1 AND RN AGREE WITHIN?

A ring final circuit gets its own three-step continuity procedure, and it takes longer than everything else on the board put together. Step 1 is three **end-to-end** tests.

TEST	BETWEEN
r1	**Line to line** — the two legs of the ring
rn	**Neutral to neutral**
r2	**CPC to CPC**

Disconnect the two legs from the protective device, the neutral bar and the earth bar, and **clip** onto each pair — far quicker than probing. Your leads are already nulled from the last test, so long as you haven't changed function.

≡ This is exactly an **R2 test**, done three times — two leads, one conductor, both ends. That's why "end to end" and "R2" are used interchangeably.

WHAT THE READINGS SHOULD LOOK LIKE

± Line and neutral are the **same size and the same length**, so **r1 and rn should agree within 0.05 Ω** of each other. That figure is in the **On-Site Guide**, 10.3.2 step 1 (p.127). Guidance Note 3's ring test (2.6.6, p.63) does not give it, and the On-Site Guide is not one of the exam books, so learn the number.

AND R2, FROM THE 1.67 RATIO

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2.5 mm² / 1.5 mm² twin & earth → ratio 1.67

r1 = 0.01 Ω
Expected r2 = 0.01 × 1.67 = 0.017 Ω
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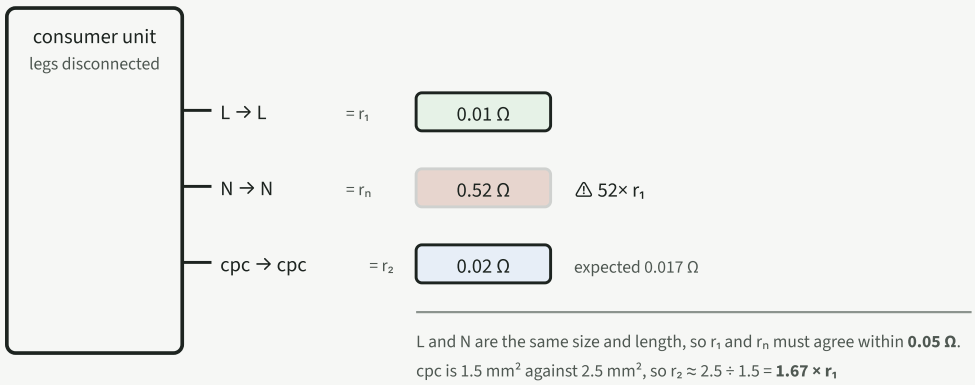
A real fault, worked through.

Say a ring gives r1 = 0.01 Ω but **rn = 0.52 Ω** — nowhere near the 0.05 Ω tolerance. Not an open circuit; there's still continuity. But a loose connection or a high-resistance joint somewhere on that neutral leg. This is exactly what step 1 exists to catch, and it threw every calculation that followed.

And say r2 measures 0.02 Ω
against an expected 0.017 Ω. That's as close as the meter can show — the CPC is sound. The neutral is the only leg with a problem.

GN3 · 2.6.6 · p.63 · ring final circuit continuity, step 1 ★

OSG · 10.3.2 · p.127 · ring final step 1 · the **0.05 Ω** tolerance



The worked example's readings. r_n of 0.52 Ω against an r_1 of 0.01 Ω is not a tolerance problem — it is a genuine fault on the neutral leg.

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