RING FINAL PRACTICAL, STEP 1: END TO END

LINE AND NEUTRAL READ 0.06 AND 0.15. PROBLEM?

Three separate readings, each one conductor from one end of the ring to the other. Clip onto each pair — far quicker and steadier than probing.

r_1	r_n	r_2
line to line	neutral to neutral	CPC to CPC
2.5 mm²	same size, same length	1.5 mm² · smaller, so higher
0.06 Ω	**0.07 Ω**	**≈ 1.67 × r_1**

Example readings from a very short test ring. Line and neutral are the same size and length, so r_1 and r_n should agree within 0.05 Ω. The CPC is smaller, so r_2 should be bigger.

KNOW WHAT TO EXPECT BEFORE YOU PRESS TEST

- **r_1 and r_n should agree within 0.05 Ω** of each other. A neutral reading well above the line — 0.15 Ω against 0.06, say — points to a loose termination somewhere on the neutral, or a screw clamped on insulation instead of copper.
- **r_2 comes from the ratio.** Twin and earth is the only common cable with a smaller CPC: 2.5 mm² line with a 1.5 mm² CPC. 2.5 ÷ 1.5 = **1.67**, and because the CPC is **smaller** its resistance is **1.67 times bigger**.

THE EXPECTED R_2

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r₁ = 0.06 Ω   (rₙ 0.07 Ω agrees with it)
r₂ ≈ 0.06 × 1.67 = 0.10 Ω
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✋ **1.67 times bigger, not smaller.** Less copper, more resistance. It's an easy one to say backwards.

On a very short ring, the ratio won't hold.

A metre or two of cable is a few hundredths of an ohm, and connections dominate. On a real circuit the numbers line up; what matters on a short one is that nothing is wildly high.

The three readings go in the r_1, r_n and r_2 columns of the schedule of test results — columns 18, 19 and 20.

TWIN AND EARTH	CPC
1 mm²	1 mm²
1.5 mm²	1 mm²
2.5 mm²	1.5 mm²
4 mm²	1.5 mm²
6 mm²	2.5 mm²
10 mm²	4 mm²
16 mm²	6 mm²

Guidance Note 3 · 2.6.6 step 1 · p.63

On-Site Guide · 10.3.2 step 1 · p.127 · the 0.05 Ω between r_1 and r_n

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