RCD TESTING: THE TESTS YOU DO, AND WHAT TO RECORD

HALF TIMES, ONE TIMES, FIVE TIMES. WHAT SHOULD EACH DO?

RCD TESTING: THE TESTS YOU ACTUALLY DO

Guidance Note 3 · 2.6.18 · p.95 . First, the device ratings — and do not confuse them with circuit breaker ratings:

`30, 100, 300 and 500 milliamps`

TEST	CURRENT	EXPECTED RESULT
Half times (½ IΔn)	15 mA on a 30 mA device	Should **not** trip — proves it is not over-sensitive · *recommended*
One times (IΔn)	30 mA on a 30 mA device	Must trip, within **300 ms** (non-delayed; 500 ms for an S-type) · *recommended, and the one BS 7671 requires*
Five times (5 IΔn)	150 mA on a 30 mA device	Within **40 ms** (150 ms for an S-type) · *optional*

! **BS 7671 only requires the one-times test**, with the instrument on Type AC and the result recorded on the Schedule of Test Results. Guidance Note 3 **recommends** half times and one times (Table 2.18(a) · p.96).

The five times test is the optional one (Table 2.18(b) · p.96). It is for fault-finding only and is not a BS 7671 requirement — and the optional tests shorten the RCD's life. Where it is done, a non-delayed RCD of 30 mA or less should trip within **40 ms**.

✋ **Do not confuse 300 ms with 0.4 s.** 0.4 s is a disconnection time for circuit breakers on TN systems. 300 ms is the RCD's trip time. It is easy to mix these up.

RUNNING THE TEST, AND WHAT TO RECORD

✋ **The test button comes first.** Guidance Note 3 has you press the RCD's own test button and watch it trip before you use the test instrument. If the button does not work, nothing else you measure matters. The earth fault loop impedance has already been tested by now — it comes before the RCD tests.

Then set up. The **main switch on**, the circuit breaker on, the RCD on. At a socket you use a **plug-in adapter**; on a lighting circuit you go up to the point.

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WHY THE INSTRUMENT RUNS SIX TESTS, NOT THREE

Half times   →  at 0° and 180°  = 2
One times    →  at 0° and 180°  = 2
Five times   →  at 0° and 180°  = 2   (optional, Table 2.18(b))
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                                   6
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Alternating current completes fifty cycles a second, flowing one way then the other in each cycle, so each test is run on **both halves of the sine wave**. The instrument shows a small sine wave icon, and it **flips direction** when it changes from 0° to 180° — that is how you know which half it is on.

Auto mode cycles the lot.
Then use the RCD recall button to scroll back through every result.

`Record the slowest trip time from the one-times tests — column 28 of the Schedule of Test Results`

A way of remembering it.
Not the sprinter's personal best — the **worst** time, because that is the one that has to be inside 300 ms.

You do not have to change the test setting.

Guidance Note 3

· Table 2.18(a) · p.96 gives the recommended tests for all RCD types — AC, A, F, B and the S time-delayed type — with the instrument on Type AC. The Type A, F and B settings belong to the optional tests in Table 2.18(b). Instruments default to **AC**, and that is correct whatever type is installed.

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