

Guidance Note 3 (BS 7671:2018+A2:2022) Ninth Edition – Errata (November 2024)

This document contains corrections to the 2022 first printing of the Ninth Edition of Guidance Note 3 (BS 7671:2018+A2:2022) that were made in the 2022 reprint and is intended for immediate implementation. Where appropriate, deleted text has been ruled through and changes and additions shown in **red**. Sufficient existing text has been included to enable users to identify the nature and application of the change to each provision

Two equations in 2.6.6 have been amended.

References to Appendices D and E in 2.6.15 and 3.3.3 have been amended.

Table A5 has been amended.

2.6.6 Continuity of ring final circuit conductors

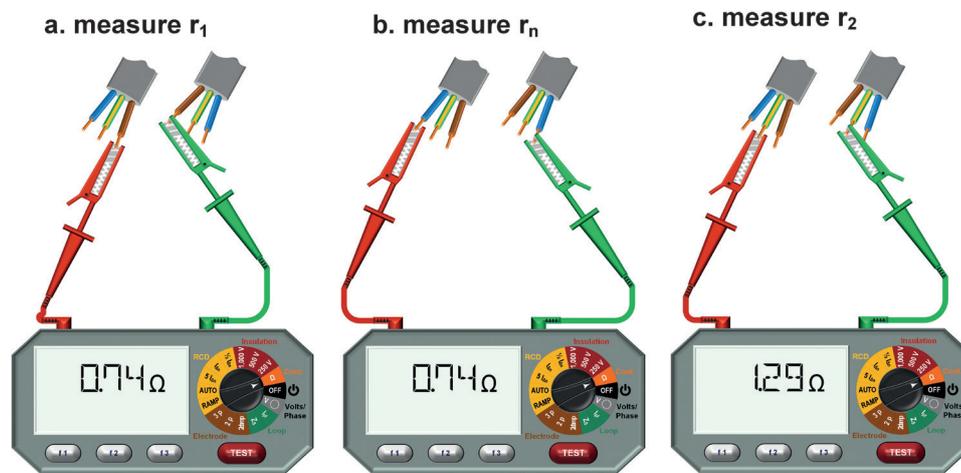
643.2.1 A three-step test is required to verify the continuity of the line, neutral and protective conductors and the correct wiring of every ring final circuit. The test results show if the ring has been interconnected to create an apparently continuous ring circuit, which is in fact broken or connected as a ‘figure of eight’ configuration.

Instrument: use a low-resistance ohmmeter for this test (see Section 4.3).

Step 1

The line, neutral and protective conductors are visually identified at the distribution board or consumer unit and the end-to-end resistance of each is measured separately (see Figure 2.17).

▼ Figure 2.17 Connections for ring final circuit continuity testing: step 1



These resistances are referred to as r_1 , r_n and r_2 , respectively. A reading that indicates an open circuit, or resistance higher than the continuity measurement range, shows there is likely to be a damaged conductor, or an issue with the integrity of connections or terminations, along the ring conductors under test. The resistance values obtained should be of the same order if the conductors are of the same length, csa and material. If the protective conductor has a reduced csa, the resistance r_2 of the protective conductor loop will be proportionally higher than that of the line or neutral loop. Because the resistance of a cable is inversely proportional to the area, we can calculate how much we have to multiply the measured value of r_1 by to obtain the expected value of r_2 using the following formula:

~~$$r_2 = \frac{1}{CSA_{cpc}} \times r_2 = \frac{CSA_{line}}{CSA_{cpc}} \times r_2$$

$$r_2 = \frac{1}{CSA_{cpc}} \times r_1 = \frac{CSA_{line}}{CSA_{cpc}} \times r_1$$~~

For example, for 2.5 mm²/1.5 mm² cable:

~~$$r_2 = \frac{2.5}{1.5} \times r_2 = 1.67 \times r_2$$

$$r_2 = \frac{2.5}{1.5} \times r_1 = 1.67 \times r_1$$~~

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Measurement of external EFLI (Z_e)

542.4.2 The external EFLI, Z_e , is measured using an EFLI tester at the origin of the installation.
643.7.3 The impedance measurement is made between the line conductor of the supply and the means of earthing **with the main switch open or with all the circuits isolated**. The means of earthing must be disconnected from the installation MET for the duration of the test, to remove parallel paths. Care should be taken to avoid any shock hazard to the testing personnel and other persons on the site, both whilst establishing contact and whilst performing the test. It is strongly recommended to check for diverted neutral currents where there is a TN-C or TN-C-S earthing arrangement, or where PME conditions apply (see Appendix **E D**).

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3.3.3 Diverted neutral currents

Installations in which PME conditions apply can carry diverted neutral currents caused by open-circuit protective earth and neutral (PEN) conductor faults. Diverted neutral currents may also be experienced in installations which share extraneous-conductive-parts, such as conductive gas or water service pipes, or structural steelwork, with installations in which PME conditions apply. As a safety precaution for those carrying out inspection and testing, these types of installations should be checked before inspection and testing commences, to determine to if diverted neutral currents are present.

Appendix **E D** describes a safety check procedure to identify diverted neutral currents.

▼ **Table A5** Circuit-breakers. Maximum measured EFLI (in Ω) at ambient temperature where the overcurrent device is a circuit-breaker to BS 3871 or BS EN 60898 or RCBO to BS EN 61009

For 0.1 to 5 s disconnection times (includes 0.4 s disconnection time)													
Circuit-breaker type	Circuit-breaker rating (amps)												
	3	5	6	10	16	20	25	32	40	45	50	63	100
1	14.56	8.74	7.28	4.4	2.76	2.2	1.76	1.38	1.1	0.98	0.88	0.7	0.44
1 new	14.57		7.29	4.37	2.74	2.19	1.75	1.37	1.10			0.70	
2	8.4	5.0	4.2	2.5	1.58	1.25	1.0	0.79	0.63	0.56	0.5	0.4	0.25
2 new	8.33	5.00	4.17	2.50	1.57		1.00				0.50	0.40	
B	11.65	7.0	5.82	3.5	2.15	1.75	1.4	1.1	0.87	0.78	0.7	0.55	0.35
B new	11.66	7.00	5.83	3.50	2.19		1.40	1.10	0.88		0.70	0.56	
C & 3	5.82	3.49	2.91	1.75	1.10	0.87	0.7	0.54	0.44	0.38	0.35	0.28	0.18
C and 3 new	5.83	3.50	2.92			0.88	0.70	0.55		0.39			

Circuit-breakers. Maximum measured EFLI (in Ω) at ambient temperature where the overcurrent device is a circuit-breaker to BS EN 60898 type D or RCBO to BS EN 61009 type D										
Circuit-breaker type	Circuit-breaker rating (amps)									
	6	10	16	20	25	32	40	50	63	100
D 0.4 sec	1.46	0.87	0.55	0.44	0.35	0.28	-	-	-	-
D (0.4 s) new		0.88								
D 5 sec	2.91	1.75	1.09	0.87	0.7	0.55	0.44	0.35	0.28	0.17
D (5 s) new	2.92		1.10	0.88	0.70					0.18

Regulation 434.5.2 of BS 7671:2018 requires that the protective conductor csa meets the requirements of BS EN 60898-1-2 or BS EN 61009-1, or the minimum quoted by the manufacturer. The sizes given in Table A6 are for energy-limiting Class 3, Types B and C devices only.

▼ **Table A5** Circuit-breakers. Maximum measured EFLI (in Ω) at ambient temperature where the overcurrent device is a circuit-breaker to BS 3871 or BS EN 60898 or RCBO to BS EN 61009

For 0.1 to 5 s disconnection times (includes 0.4 s disconnection time)

Circuit-breaker type	Circuit-breaker rating (amps)														
	3	5	6	10	15	16	20	25	30	32	40	45	50	63	100
1	14.57	8.74	7.29	4.37	2.92	2.74	2.19	1.75	1.46	1.37	1.10	0.98	0.88	0.70	0.44
2	8.33	5.00	4.17	2.50	1.67	1.57	1.25	1.00	0.84	0.79	0.63	0.56	0.50	0.40	0.25
B	11.66	7.00	5.83	3.50	2.34	2.19	1.75	1.40	1.17	1.10	0.88	0.78	0.70	0.56	0.35
C and 3	5.83	3.50	2.92	1.75	1.17	1.10	0.88	0.70	0.59	0.55	0.44	0.39	0.35	0.28	0.18
D (0.4 s)			1.46	0.88		0.55	0.44	0.35		0.28	-	-	-	-	-
D (5 s)			2.92	1.75		1.10	0.88	0.70		0.55	0.44		0.35	0.28	0.18

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