Unit 206E: Understand how to inspect and test de-energised electrical circuits

# Delivery guide

Unit information

This unit covers the knowledge and understanding of the fundamental inspections and de-energised tests required for single phase circuits.

The learner will be able to comply with the processes and procedures for fundamental inspections and de-energised tests in accordance with the current versions of the appropriate industry standards and regulations, the specification and industry recognised working practices.

Learners may be introduced to this unit by asking themselves questions such as:

* Why is electrical work inspected and tested?
* Why is safe isolation essential?

**Guidance**: The emphasis in this unit is on the learner correctly carrying out fundamental inspections and de-energised tests on typical common circuits to include ring and radial final circuits and lighting circuits. Learners will be able to utilise test equipment, evaluate test results and record outcomes accurately.

Learning outcomes

1. Understand how to select the instruments to be used for carrying out relevant tests
2. Understand the methods and procedures for conducting a visual inspection on the enclosures cables, conductors and wiring systems
3. Understand the correct procedures for safe isolation
4. Understand the methods and processes to carry out correctly the tests that ensure safe and efficient operation of the electrical system
5. Understand methods for providing clear and accurate information to relevant people

Suggested resources

Regulations Guidance

* *BS 7671:2018* *Requirements for Electrical Installations, IET Wiring Regulations*,18th edition. London: Institution of Engineering and Technology. ISBN 978-1-78561-170-4
* *Guidance Note 3:* *Inspection and Testing (Electrical Regulations)*, 8th edition (2018). London: Institution of Engineering and Technology. ISBN 978-1-78561-452-1
* GS 38 *Electrical test equipment for use on low voltage electrical systems* (2015). 4th edition. The Health and Safety Executive.
* Electrical Safety First Best Practice Guide No. 2 (Issue 3) (2015) *Guidance on the management of electrical safety and safe* *isolation* *procedures for low voltage installations* (Free download) London: Electrical Safety First.

Website

* [YouTube | GSH Electrical Channel](https://www.youtube.com/channel/UCgtbE9w_d-u2AvPp3WBlPfQ)

Textbooks

* *IET On-Site Guide (BS 7671:2018) (Electrical Regulations)*, 7th edition. London: Institution of Engineering and Technology.

ISBN 978-1-78561-442-2

* Tanner, P. (2018) *The City & Guilds Textbook: Book 1 Electrical Installations for the Level 3 Apprenticeship (5357), Level 2 Technical Certificate (8202) & Level 2 Diploma (2365).*  London: Hodder Education. ISBN 978-1-51043-224-6

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
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| 1. Understand how to select the instruments to be used for carrying out relevant tests | * 1. The test instruments required for de-energised tests on standard single-phase circuits | * Learners to be shown examples of multi-function instruments and dedicated instruments including: * low resistance ohm-meter for continuity and polarity testing * insulation resistance tester for insulation resistance tests * instrument test leads meeting GS38 requirements and their associated accessories. * Learners to be shown the instruments needed to ensure installation is de-energised. * Learners to know the difference between low resistance continuity and high resistance insulation values and ranges required. |
|  | * 1. How to confirm that the test instruments are fit for purpose and have a current calibration certificate | * Learners to know how to ensure instruments are not damaged. * Learners to refer to both BS EN 61010 and BS EN 61557. * Learners to demonstrate good practice by showing that test leads meet GS38. * Learners to refer to *Guidance Note 3*, Ch4. * Learners to explain traceability and accuracy of results through calibration certificates. |
| 1. Understand the methods and procedures for conducting a visual inspection on the enclosures cables, conductors and wiring systems | * 1. How to confirm the installed electrical equipment is located and secured correctly and electrically and mechanically sound | * Learners to refer to Guidance Note 3, Section 2.5.3. * Learners to be able to verify the references in Guidance Note 3 to regulation numbers in BS 7671:2018. * Learners to be able to refer to and give examples of human senses that can be used in the inspection. |
|  | * 1. How to carry out a visual inspectionof themain/key aspects of standard single-phase circuits | * Learners to know the areas to be inspected using model forms of BS 7671:2018, Appendix 6. * Learners to show completed Schedule of Inspections from *Guidance Note 3*, Section 5. * Learners to understand and complete all forms relating to new installation, including Electrical Installation Certificates, Schedule of Inspections and Schedule of Test Results. * Learners to understand satisfactory or unsatisfactory results. |
| 1. Understand the correct procedures for safe isolation | * 1. The safe isolation procedure | * Learners to understand how to follow the two different approaches from the National Association of Professional Inspectors and Testers (NAPIT) and the National Inspection Council for Electrical Installation (NICEIC) using the Electrical Safety First Best Practice Guide No. 2 or other industry standard. * Learners to be familiar with the equipment used. * Learners to be shown a demonstration of the procedure, e.g. via live rig. |
| 1. Understand the methods and processes to carry out correctly the tests that ensure safe and efficient operation of the electrical system | * 1. How to carry out de-energised tests on standard single-phase circuits | * Learners to refer to *Guidance Note 3*, Section 2.6.4 for the sequence of dead testing and Section 2.6.5 onwards for the procedure of carrying out the following dead tests: * continuity of protective bonding conductors * continuity of circuit protective conductors * continuity of ring final circuit conductors * insulation resistance * polarity. * Learners to be shown a demonstration of the tests. * Learners to be shown YouTube videos demonstrating each test from the public domain. * Learners to know the reason and procedures for carrying out relevant tests and to be able to interpret the test results. * Learners will understand how and why to handle test equipment with care. |
| 1. Understand methods for providing clear and accurate information to relevant people | * 1. How to record outcomes from basic inspections and dead tests clearly and accurately | * Learners to understand how to formally record the results from both inspection and tests on electrical installation documentation. * Learners to understand who receives original documents and copies. * Learners to refer to BS 7671:2018, model forms Appendix 6 (schedule of test results, schedule of inspection). * Learners to refer to Guidance Note 3, section 5 (samples of completed schedule of test results and schedule of inspection) as well as Appendix G of the *IET On-Site Guide*. * Learners to know that IET model forms for practice are available free from the IET website. |