Australian Government

AURETR048 Construct and test basic electronic circuits

Release: 1

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Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to construct and test basic electronic circuits using a small number of standard electronic components. It requires the learner to plan and prepare the task, select the correct equipment, construct and test electronic circuits, and check and store the electrical test equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to construct basic electronic circuit	1.1 ***Safety and environmental requirements*** are sourced and interpreted 1.2 Task instruction is interpreted and ***electronic circuit*** to be worked on is identified

ELEMENT	PERFORMANCE CRITERIA
	1.3 Manufacturer specifications and workplace procedures for electronic circuitry are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor
2. Draw circuit diagrams and identify equipment and materials to construct electronic circuit	2.1 Electronic circuit diagrams that accurately reflect the circuit specifications are drawn according to manufacturer specifications 2.2 Electronic components are depicted correctly in circuit diagram using standard symbols 2.3 Component and material requirements are identified from electronic circuit diagram and recorded
3. Construct electronic circuit	3.1 Tools, equipment and electronic components are sourced and selected according to manufacturer specifications and safety requirements 3.2 Component manufacturer installation and connection information is read, interpreted and applied 3.3 Circuit is constructed using ***electronic components*** according to manufacturer specifications and safety requirements
4. Test electronic circuit	4.1 Circuit fault testing equipment is identified and sourced according to workplace procedures, manufacturer specifications and safety requirements 4.2 Electronic circuit is tested according to workplace procedures, manufacturer specifications and safety requirements 4.3 Faults detected are corrected and circuit is re-tested to confirm their operation 4.4 Circuit testing procedures and outcomes are recorded
5. Complete work processes	5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and that electronic circuit is constructed ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of electronic circuit information and electrical test equipment operating procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures relating to constructing basic electronic circuits • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information imbedded in electronic components' identification codes • use basic mathematical operations, including addition, subtraction, multiplication and division, when using Ohm's law and Watt's law to calculate electrical voltage, current flow, resistance and power • read and interpret electrical test equipment correctly, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. Ω for ohms).
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to construct basic electronic circuits.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • use of personal protective equipment, including safety glasses
	  • use of tools
	  • identification of electrical hazards
	  • applying procedures for disposing of used electronic circuit components and materials.

Electronic circuit must include:	• printed circuit board.
Electronic components must include:	• heat sinks • electronic wiring • terminals • solders • switches • lamps • relays • diodes • resistors • capacitors • transistors.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1