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| Title | Draw and interpret diagrams of electrical appliances | | |
| Level | 3 | Credits | 4 |

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| Purpose | <p>This unit standard covers drawing and interpretation of schematic, wiring, block, and timing diagrams of electrical appliances, and is intended for use in the training of electrical technicians and service persons.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of electrical symbols, components, subcircuits, and terminology; – identify the purpose and features of diagrams used in appliance servicing; – explain the operation of an electrical appliance with reference to its diagrams and identified components; and – develop a wiring diagram from a schematic diagram by tracing the wiring. |
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| Classification | Electrical Engineering > Electrical Appliance Servicing |
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| Available grade | Achieved |
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Guidance Information

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 Reference
Useful information, particularly with respect to symbols, is contained in the publication SAA/SNZ HB3:1996 – *Electrical and electronic drawing practice for students*, available from Standards New Zealand, Private Bag 2439, Wellington 6140.
- 3 Definition
Electrical technicians and service persons – for the purposes of this unit standard means, people who hold or who are working towards electrical registration as an Electrical Service Technician, Electrical Appliance Serviceperson (endorsed to disconnect and connect), or Electrical Appliance Serviceperson.
- 4 Range
This unit standard is intended for people training to become electrical appliance servicing technicians. The assessment should therefore concentrate not so much on draughting technique, as on the understanding of circuitry and the ability to use and sketch electrically and logically correct diagrams.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of electrical symbols, components, subcircuits, and terminology.

Performance criteria

1.1 Electrical drawing symbols, components, and subcircuits are identified from diagrams.

Range devices and components – cable and conductor connecting devices; resistor, inductor, capacitor; solenoid, coil, motor, motor windings, transformer windings; normally-open, normally-closed, change-over and delayed contacts; push-buttons; fuses, circuit-breakers, relays, contactors, overload elements, thermal overload relays, thermal protective devices; indicating lamps and displays; manually, mechanically, pneumatically, hydraulically, thermally, and time actuated switches; fan, pump, mechanical drives and links, valves;
subcircuits – timing, speed control, suppression.

1.2 Control circuit terminology is defined according to industry practice.

Range normal position, energised position, normally-open, normally-closed, change-over and delayed contacts, manual, automatic, semiautomatic.

Outcome 2

Identify the purpose and features of diagrams used in appliance servicing.

Performance criteria

2.1 Purpose and key features of schematic diagrams are identified in accordance with industry practice.

2.2 Purpose and key features of wiring diagrams are identified in accordance with industry practice.

2.3 Purpose and key features of block diagrams are identified in accordance with industry practice.

2.4 Purpose and key features of timing diagrams are identified in accordance with industry practice.

Outcome 3

Explain the operation of an electrical appliance with reference to its diagrams and identified components.

Range diagrams – schematic diagram, wiring diagram, block diagram, timing diagram;
appliance – any appliance for which the four types of diagrams are significant.

Performance criteria

3.1 Circuit operation is explained logically, with reference to the purpose of each component, subcircuit, and the sequence of events for full cycle of operation of the appliance.

Outcome 4

Develop a wiring diagram from a schematic diagram by tracing the wiring.

Performance criteria

4.1 A wiring diagram is accurately sketched from given schematic diagram and by tracing the wiring, is electrically functional and in accordance with industry practice.

Range logical layout of components with respect to appliance, components labelled, component terminals shown as per physical layout and labelled, wires shown with numbers and/or colours, wire sizes included by wire or by note.

4.2 A legend of symbols is provided in accordance with industry practice.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

| Process | Version | Date | Last Date for Assessment |
|-----------------------|---------|-------------------|--------------------------|
| Registration | 1 | 28 January 2001 | 31 December 2013 |
| Revision | 2 | 3 April 2001 | 31 December 2013 |
| Review | 3 | 20 June 2006 | 31 December 2022 |
| Rollover and Revision | 4 | 20 September 2012 | 31 December 2022 |
| Revision | 5 | 15 January 2014 | 31 December 2022 |
| Review | 6 | 28 January 2021 | 31 December 2022 |

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| Consent and Moderation Requirements (CMR) reference | 0003 |
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.