Title	**Demonstrate knowledge of complex automotive wiring diagrams and circuitry**		
Level	**5**	**Credits**	**6**

Purpose	People credited with this unit standard are able to: demonstrate knowledge of types and features of complex automotive wiring diagrams; and complex automotive wiring diagrams and circuitry.

Classification	Motor Industry > Automotive Electrical and Electronics

Available grade	Achieved

Guidance Information

1 It is recommended that people hold credit for Unit 898, *Identify an automotive wiring diagram and translate information to a circuit* before being assessed against this unit standard.

2 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, and company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

3 Performance of the outcomes of this unit standard must comply with the following: Health and Safety at Work Act 2015.

4 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

5 Definitions
Company requirements refer to instructions to staff on policy and procedures that are available in the workplace. These requirements may include – company policies and procedures, work instructions, product quality specifications and legislative requirements.
Complex automotive wiring diagrams, *circuits*, and *systems* means a number of interacting electrical and electronic circuits an/or systems in diagrammatic form that may or may not be interrelated. Complex diagrams will show internal circuits of electrical and electronic components.
Service information refers to technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.

Suitable tools and equipment means industry approved tools and equipment that are recognised within the industry as being the most suited to complete the task in a professional and competent manner with due regard to safe working practices.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of types and features of complex automotive wiring diagrams.

Performance criteria

1.1 The information that a complex wiring diagram provides as a diagnostic guide is identified.

Range relationships of circuits to one another, what type of test to perform, what type of signals to expect, how a particular system is designed to work.

1.2 Methods used by manufacturers to simplify complex diagrams are identified.

Range symbols, colour code markers to represent different circuit conditions, dividing diagrams into manageable sections, common grounds, service manual contents pages and descriptions, block diagrams, centralised test points.

1.3 Sources of diagrams used for complex circuits are identified.

Range workshop manuals, CDs and/or DVDs, on-line diagnostic systems and/or services.

1.4 The features of system circuit diagrams that improve the interpretation of complex systems are described and reviewed according to the vehicle manufacturers' manual instructions.

Range graphic symbols, colour coded and/or shading, special notes, junction blocks, relay blocks, component identification, pin number identification, harness-to-harness connectors, switch bus bars, shielding, splice points, power and ground distribution.

1.5 System outlines of complex circuit diagrams are reviewed in terms of a diagnostic resource tool.

Range operation of circuits, maps path of current flow for each mode of operation.

1.6 The use of manufacturer's service hints as an aid to the interpretation of complex circuit diagrams are identified.

Range service hints include – providing pin voltages and/or component resistance values.

Outcome 2

Demonstrate knowledge of complex automotive wiring diagrams and circuitry.

Performance criteria

2.1 The wiring diagram for a particular automotive application is identified.

2.2 A circuit is traced from a complex wiring diagram that isolates particular given electrical faults and their causes.

Range given faults include – resistance in a multi-pole switch, internal malfunctioning of an electronic component, intermittent open ground point shared with other circuits.

2.3 Operations of components are explained with reference to internal component wiring diagrams.

Range components include – Electronic Control Modules (ECMs), sensors, electronic actuators.

2.4 Locations of components within a vehicle or machine are identified by reference to wiring diagram information.

2.5 The test procedure and suitable test equipment to trace faults in complex circuits are identified by reference to wiring diagram information.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 December 2004	31 December 2022
Review	2	25 March 2021	N/A

Consent and Moderation Requirements (CMR) reference	0014

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.