



Australian Government

AURTTA121 Diagnose complex system faults

Release: 1

AURTTA121 Diagnose complex system faults

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose faults in complex vehicle, vessels or machinery systems to determine the repair action necessary to restore system performance. It involves confirming the existence of a complex system fault, developing a diagnostic testing strategy, diagnosing the cause of the fault reporting conclusions, and making repair recommendations. A complex system integrates two or more automotive systems, or incorporates three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems. Examples include electronically controlled automatic transmissions, anti-lock braking systems, and engine management systems integrating ignition, fuel and transmission control systems.

The unit applies to those who work in the automotive service and repair industry.

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

Unit Sector

Mechanical Miscellaneous - Technical

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify and confirm the work requirement regarding complex system fault	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify function and correct operation of system with fault 1.4 Identify other systems affected by fault
2. Develop testing strategy	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing

ELEMENT	PERFORMANCE CRITERIA
	processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures 2.4 Identify hazards and environmental issues associated with diagnosis activity, assess potential risks and implement control measures in line with workplace policies and procedures
3. Perform diagnosis	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures.

Foundation Skills

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

SKILL	DESCRIPTION
Learning	- Locates and evaluates required sources of information efficiently - Develops own approach to a task, including steps to confirm findings
Reading	Organises and interprets technical information from manufacturer and workshop literature when seeking specifications and procedures

SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors • Reports diagnostic findings, and makes repair recommendations
Numeracy	• Measures components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses specialised integrated system diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTA021 Diagnose complex system faults.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Assessment Requirements for AURTTA121 Diagnose complex system faults

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex system faults on three different vehicles, machinery or vessels in which the work must involve the following complex faults, each on a separate vehicle, piece of machinery or vessel:
 - one fault that is in a complex system that integrates two or more automotive systems
 - one fault that incorporates three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems
- develop a testing strategy to diagnose the cause of the complex faults in the work above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults, including:
 - manufacturer specifications and other technical information
- workplace procedures required to diagnose complex faults, including:
 - establishing the serviceability of tools and equipment
 - documentation procedures
 - housekeeping procedures, including:
 - examination of tools and equipment
 - storage of equipment
 - identification, tagging and isolation of faulty equipment
 - safe disposal of materials
 - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex system faults in vehicles, vessels or machinery, including:

- working safely with the systems being tested
- selecting and using personal protective equipment (PPE)
- safely using tools and equipment
- types and operation of complex systems, including:
 - systems that integrates two or more automotive systems
 - systems that incorporate three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems
- diagnostic procedures for complex systems, including stages within the diagnostic procedure
- methods of gathering information on complex system faults, including:
 - customer questioning techniques to provide a full overview of all faults and conditions under which they occur
- types and applications of diagnostic flow charts
- key features and limitations of diagnostic tools, including:
 - multimeters
 - scan tools, including:
 - diagnosis trouble codes (DTC) and the conditions that caused the code to be set
 - live data
 - snap shots
 - oscilloscopes
 - mechanical, hydraulic and pneumatic test equipment
- methods of differentiating between fault symptoms and fault cause.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or machinery complex system faults that they have diagnosed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer system specifications
- three different vehicles, vessels or machinery that have the complex system faults specified in the performance evidence
- tools, equipment and materials appropriate for diagnosing complex system faults in vehicles, vessels or machinery.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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