



Australian Government

AURKTA109 Diagnose complex faults in mobile plant hydraulic systems

Release: 1

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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 complex faults in mobile plant hydraulic systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The hydraulic systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

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

Unit Sector

Mechanical Mobile Plant Technical

Elements and Performance Criteria

ELEMENTS	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	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	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 required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.

SKILL	DESCRIPTION
Reading	Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking mobile plant hydraulic system specifications and procedures.
Oral communication	- Clarifies instructions - Obtains information from customers and supervisors.
Numeracy	- Measures hydraulic system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications - Uses gauges and interpret units, including kilopascals and pounds per square inch (PSI).
Planning and organising	- Plans own work requirements - Prioritises and sequences actions to achieve required outcomes - Ensures tasks are completed within workplace timeframes.
Technology	- Uses precision measuring equipment - Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTA009 Diagnose complex faults in mobile plant hydraulic systems.

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 AURKTA109 Diagnose complex faults in mobile plant hydraulic systems

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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 a complex fault in the hydraulic systems of three different mobile plant machinery
- develop a testing strategy in the course of the above work to diagnose the cause of at least two of the following complex faults:
 - an intermittent fault
 - a fault that affects more than one system
 - a fault introduced as a result of a system repair
 - an indirect fault caused by the influence of external systems.

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 in mobile plant hydraulic systems, including:
 - heavy commercial vehicle hydraulic system manufacturer specifications
 - requirements of Australian Standard 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- workplace procedures required to diagnose complex faults in mobile plant hydraulic systems, 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 faults in mobile plant hydraulic systems, including procedures for:
 - managing stored energy in springs and accumulators
 - working with high pressure fluid hazards
 - tagging out and isolating machines, and wheel chocking
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from hydraulic systems
- types of complex faults relating to mobile plant hydraulic systems, including:
 - intermittent
 - multi-system
 - introduced as a result of system repair
 - indirect, caused by the influence of external systems
- types, functions and operation of mobile plant hydraulic systems, including:
 - reservoirs
 - accumulators
 - pumps
 - valves
 - actuators
 - motors
 - filters
 - conductors and connectors
- testing procedures for mobile plant hydraulic systems, including procedures for:
 - abnormal noise analysis
 - implement creep
 - oil flow and pressure testing
 - excessive internal leakage in both actuators and pumps
 - component failure analysis
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in mobile plant hydraulic systems, including:
 - scan tool
 - oil pressure gauge
 - temperature measuring equipment
 - flow meter
- procedures for accessing and interpreting scan tool system data, including:
 - diagnostic trouble codes (DTCs), including:
 - conditions that set the DTCs
 - conditions for running DTCs
 - live data

- waveforms
- vehicle continuous and non-continuous monitored systems.

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 mobile plant hydraulic systems that they have worked on, 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 mobile plant hydraulic system specifications
- hydraulic systems of three different mobile plant machinery with complex faults
- mobile plant hydraulic system diagnostic equipment, including:
 - scan tool
 - flow meter
 - oil pressure gauge
 - temperature measuring equipment
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for diagnosing complex faults in mobile plant hydraulic systems.

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

Links

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