



Australian Government

AURTTA113 Diagnose and repair hydraulic systems

Release: 1

AURTTA113 Diagnose and repair hydraulic systems

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 and repair hydraulic systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The hydraulic systems include those in heavy commercial vehicles, marine vessels or outdoor power equipment. This unit does not apply to agricultural or mobile plant machinery.

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

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. Prepare to diagnose and repair hydraulic system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose hydraulic system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair hydraulic system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle or machinery is ready for use 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 a sequenced plan for a specific task.
Reading	- Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications - Interprets hydraulic symbols and circuits.

SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures hydraulic system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates hydraulic system pressures, forces, distances and temperature • Interprets precision measuring equipment.
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.

Unit Mapping Information

Supersedes and is equivalent to AURTTA013 Diagnose and repair 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 AURTTA113 Diagnose and repair 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 and repair a fault in at least two different hydraulic systems, in which the work must involve removing and refitting or replacing three of the following in each:
 - hydraulic cylinder
 - hydraulic pump
 - hydraulic motor
 - hydraulic valves
 - hydraulic hose.

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 and repair hydraulic systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
 - Australian Standard 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- workplace procedures required to diagnose and repair hydraulic systems, including:
 - establishing 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
 - disposal of excess materials

- recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing hydraulic systems, including procedures for:
 - using raising, lowering and supporting equipment
 - working with fluids under pressure
 - working with stored pressure hazards
 - working with hot fluid hazards
 - isolating and stabilising machines or vehicles
- environmental requirements relating to diagnosing and repairing hydraulic systems, including procedures for trapping, storing and disposing of hydraulic fluid released from hydraulic systems
- operating principles of hydraulic systems and associated components, including:
 - transmission of energy by hydraulic fluid
 - mechanical advantage
 - hydraulic circuits, including open and closed centred systems
 - temperature, force, pressure, area and flow
- purpose and operation of systems and components, including:
 - reservoirs
 - gas loaded accumulators
 - pumps, including gear and piston
 - valves, including:
 - directional control
 - pressure control
 - flow control
 - linear and rotary actuators
 - hoses, pipes fittings and couplings
 - heat exchangers
 - hydraulic fluids
 - hydraulic symbols and system schematics
- diagnostic testing procedures for hydraulic systems, including:
 - applying and using a flow meter to diagnose faults by carrying out an in-line, bypass or Tee test to evaluate system components
 - visually inspecting hoses, pipes and connectors
 - oil sampling and contamination control
- repair procedures for hydraulic systems, including procedures for removing, replacing, repairing and adjusting hydraulic system components
- post-repair testing procedures for hydraulic systems, including:
 - operational functionality
 - flow testing.

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 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 hydraulic system specifications
- two hydraulic systems with faults in the components specified in the performance evidence
- diagnostic tools and equipment for hydraulic systems, including pressure gauges or flow meters
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for repairing and adjusting 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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