



Australian Government

AURTTX006 Diagnose and repair hydrostatic transmissions

Release: 1

AURTTX006 Diagnose and repair hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in hydrostatic transmissions and their associated components. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The unit applies to hydrostatic transmissions in agricultural machinery, mobile plant machinery or outdoor power equipment.

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

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair hydrostatic transmission	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose hydrostatic transmission	2.1 <i>Diagnostic tests</i> are carried out according to workplace procedures, <i>safety and environmental requirements</i> 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair hydrostatic transmission	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

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

Skills	Description
Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	interpret information from manufacturer and workshop literature when seeking hydrostatic transmission specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	- clarify instructions - report diagnostic findings and make repair recommendations.
Numeracy skills to:	measure hydrostatic transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distance, volume, pressure, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	use hydrostatic transmission diagnostic equipment and measuring equipment, such as vernier calipers and micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Diagnostic tests must include:</i>	- using pressure gauges and flow meters to diagnose hydrostatic transmissions, including taking pressure readings of the following systems: - charge - pilot - hot oil - main hydrostatic loop.
<i>Safety and environmental requirements must include:</i>	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: - working with high pressure and stored energy hazards - isolating and stabilising machines - environmental requirements, including procedures for trapping,

	storing and disposing of fluids released from hydrostatic transmissions.
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Unit Mapping Information

Equivalent to AURTTX3006 Repair transmissions (hydrostatic)

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for AURTTX006 Diagnose and repair hydrostatic transmissions

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the hydrostatic transmission systems of two different vehicles or machinery, including in three of the following components:
 - charge pump
 - main pump
 - drive motor
 - hydraulic lines
 - heat exchanger
 - control valve.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing hydrostatic transmissions, including procedures for:
 - working with high pressure and stored energy hazards
 - isolating and stabilising machines
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydrostatic transmissions
- operating principles of hydrostatic transmissions and associated components, including:
 - closed loop
 - charge circuitry
 - flushing circuit

- application, purpose and operation of hydrostatic transmissions and components, including:
 - charge pump
 - main pump, including pilot control systems
 - drive motor, including control systems
 - filtering
 - hydraulic lines
 - heat exchanger
 - reservoir
- diagnostic testing procedures for hydrostatic transmissions, including:
 - testing charging system
 - testing closed loop system
 - testing flushing system
 - measuring case drains
 - testing internal and external fluid leaks
 - checking abnormal noises and operation
 - using scan tools and multimeter
- repair procedures for hydrostatic transmissions, including procedures for:
 - isolating faults
 - dismantling components and parts
 - inspecting and evaluating worn components
 - repairing and replacing parts
- post-repair flow and pressure testing procedures for hydrostatic transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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 hydrostatic transmissions 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 specifications for hydrostatic transmissions

- two different vehicles or machinery with faults in the hydrostatic transmission components specified in the performance evidence
- diagnostic equipment for hydrostatic transmissions
- tools, equipment and materials appropriate for repairing and adjusting hydrostatic transmissions.

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