



Australian Government

AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

Release: 1

AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

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 faults in the automatic transmissions of heavy vehicles. 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 who work in the automotive service and repair industry. The automatic transmissions include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery. The unit does not apply to electronically controlled drive management systems or power shift transmissions.

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

Unit Sector

Mechanical – Heavy Vehicle Technical – Transmissions

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. Prepare to diagnose and repair heavy vehicle automatic transmission	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

ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle automatic transmission	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 heavy vehicle automatic transmission	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 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

SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures automatic transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios • Calculates torque reduction and multiplication
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 diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTX003 Diagnose and repair heavy vehicle automatic transmissions.

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 AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

Modification History

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

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:

- disassemble and reassemble one heavy vehicle automatic transmission
- diagnose and repair a fault in two of the following components of a heavy vehicle automatic transmission:
 - torque converter
 - transmission oil pump
 - front pump seal
 - valve body
 - shift or pressure solenoid
 - clutch pack
 - one-way clutch
 - planetary gear set
 - internal bearings or thrust washers
 - gasket and seal leaks
 - sensors
 - heat exchanger
- remove, refit or replace a heavy vehicle automatic transmission.

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 heavy vehicle automatic transmissions, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation

- workplace procedures required to diagnose and repair heavy vehicle automatic transmissions, 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 heavy vehicle automatic transmissions, including procedures for:
 - using transmission lifting and supporting equipment
 - isolating and stabilising vehicles
- environmental requirements relating to diagnosing and repairing heavy vehicle automatic transmissions, including procedures for trapping, storing and disposing of oils and fluids released from automatic transmissions
- operating principles of heavy vehicle automatic transmissions and associated components, including:
 - fluid couplings
 - mechanical systems, including:
 - gear types
 - gear ratios and torque
 - simple and compound planetary gear trains
 - gear range and transfer case power flows
 - hydraulic systems
 - electronic systems, including:
 - electronic control unit (ECU)
 - electronic sensors
 - solenoids
- purpose and operation of heavy vehicle automatic transmissions and components, including:
 - torque converters, including:
 - impeller, stator, one-way clutch and turbine operation
 - lock-up torque converters
 - automatic transmission mechanical components, including:
 - clutch packs, one-way clutches, simple and compound planetary gear sets, and transfer case
 - power flows, including:
 - longitudinal automatic transmissions
 - transfer case

- power take-off
- automatic transmission hydraulic components and hydraulic control components, including:
 - oil pumps
 - valve body and hydraulic valves
 - heat exchanger
- automatic transmission electronic components, including:
 - ECU input sensors
 - ECU outputs
- diagnostic testing procedures for heavy vehicle automatic transmissions, including:
 - stall tests
 - pressure test
 - using scan tools when testing
- repair procedures for heavy vehicle automatic transmissions, including for hydraulic, mechanical and electrical components
- dismantling procedures for heavy vehicle automatic transmissions, including:
 - measuring clearances and tolerances
 - inspecting components
- post-repair testing procedures for heavy vehicle automatic transmissions.

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 heavy vehicle automatic 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 automatic transmission specifications
- one heavy vehicle with faults in its automatic transmission
- diagnostic equipment for heavy vehicle automatic transmissions
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle automatic transmissions.

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

Links

Companion Volume Implementation Guide is found on VETNet -

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