



Australian Government

AURLTX102 Diagnose and repair light vehicle automatic transmissions

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 and repair faults in the automatic transmissions of light 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 working in the automotive service and repair industry. The automatic transmissions include those in light vehicles or light commercial vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

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

Unit Sector

Mechanical - Light Vehicle Technical - Transmission

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 light vehicle automatic transmission	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret diagnostic information 1.3 Analyse diagnostic options and source testing strategy, selecting those required for the circumstances 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check diagnostic tools and equipment required for testing strategy for serviceability
2. Diagnose automatic	2.1 Perform diagnostic tests set out in testing strategy

ELEMENTS	PERFORMANCE CRITERIA
transmission	according to workplace procedures and safety requirements 2.2 Identify faults from diagnostic test results and determine causes of faults 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for required repairs according to workplace procedures
3. Repair automatic transmission	3.1 Source and interpret repair information 3.2 Analyse repair options and select those required for the circumstances 3.3 Select and check repair tools, equipment and materials 3.4 Carry out repairs and component replacements and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 3.5 Carry out post-repair testing according to workplace procedures to confirm fault rectification, and rectify any further problems detected as having been introduced during the repair process
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.
Numeracy	- Measures automatic transmission components and uses mathematical operations - Calculates deviations and tolerances from manufacturer specifications - Calculates gear ratios and torque reduction and multiplication.

SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking automatic transmission specifications and procedures • Interprets automatic transmission hydraulic and electrical circuit diagrams.
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 AURLTX002 Diagnose and repair light 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 AURLTX102 Diagnose and repair light vehicle automatic transmissions

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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 two different light vehicles with different automatic transmissions, in which the fault in each must involve a different component from the following:
 - torque converter
 - transmission oil pump
 - front pump seal
 - valve body
 - shift or pressure solenoid
 - clutch pack
 - brake band
 - brake band servo
 - one-way clutch
 - planetary gear set
 - continuously variable transmission (CVT) belt or pulley
 - internal bearings or thrust washers
- in course of the above, remove, refit or replace one of the light vehicle automatic transmissions
- carry out a diagnostic test in the course of the above work for at least one of the following faults:
 - abnormal or irregular noises
 - leaking fluid pressure
 - damaged solenoids, connectors or wiring.

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 light vehicle automatic transmissions, including:
 - information provided by customer and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle automatic transmissions, including:
 - establishing serviceability of tools and equipment
 - documentation and diagnosis reporting procedures, including:
 - recommendations for required repairs or adjustments
 - housekeeping procedures, including:
 - examination of tools and equipment
 - storage of equipment
 - identification, tagging and isolation of faulty equipment
 - disposal of excess materials
 - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing light vehicle automatic transmissions, including procedures for lifting, supporting and manual handling light vehicle automatic transmissions
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from light vehicle automatic transmissions
- operating principles of light vehicle automatic transmissions and associated components, including:
 - fluid couplings
 - planetary gears, including:
 - single planetary gear operation
 - types of compound planetary gears, including Ravigneaux and Simpson planetary gear sets
 - gear ratios and torque reduction and multiplication
 - lubricant types and properties
- application, and key features of light 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 brake bands, clutch packs, one-way clutches, and compound planetary gear sets
 - power flows, including:
 - longitudinal automatic transmissions

- automatic transaxles
- automatic transmission hydraulic components and hydraulic control components, including:
 - oil pumps
 - hydraulic valves, including pressure regulating valves, manual valves, shift valves, governor valves and throttle pressure valves
- automatic transmission electronic components, including:
 - electronic control module
 - input sensors, including vehicle speed sensor, throttle position sensor, mass air flow (MAF) sensor, manifold absolute pressure (MAP) sensor, transmission range sensor, engine speed sensor and temperature sensor
 - electronic control module outputs, including indicator lamps, shift solenoids, pressure control solenoids and torque converter clutch solenoids
- continuously variable transmissions, including operating principles of belts and pulleys
- diagnostic testing procedures for light vehicle automatic transmissions, including procedures for:
 - stall tests
 - pressure test
 - using scan tools when testing
- repair procedures for light vehicle automatic transmissions, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light 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 light 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 light vehicle automatic transmission specifications
- two different light vehicles with faults in the automatic transmission components specified in the performance evidence
- diagnostic equipment for light vehicle automatic transmissions
- tools, equipment and materials appropriate for repairing light vehicle automatic transmissions.

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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