



Australian Government

AURLTX101 Diagnose and repair light vehicle manual 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 manual 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 manual 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 manual 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

ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose manual 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 manual 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.
Numeracy	Measures manual transmission components and uses mathematical operations

SKILL	DESCRIPTION
	• Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios and torque reduction and multiplication.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking manual transmission specifications and procedures.
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 AURLTX001 Diagnose and repair light vehicle manual 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 AURLTX101 Diagnose and repair light vehicle manual 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 faults in two different light vehicle manual transmissions, including faults in a different component from among the following for each vehicle:
 - input or primary shaft gear or bearing
 - secondary shaft or main shaft gear or bearing
 - synchroniser assembly
 - shift rail, shift fork, interlock and detent mechanisms
 - counter shaft gear or bearing
- remove, refit or replace one manual transmission in a light vehicle
- carry out a diagnostic test in the course of the above work for at least one of the following faults:
 - abnormal or irregular noises
 - faulty shifts
 - mechanical malfunctions.

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 manual transmissions, including:
 - information provided by customer and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle manual 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 manual transmissions, including procedures for lifting, supporting and manual handling light vehicle manual transmissions
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles light vehicle manual transmissions, including:
 - gear types
 - gear ratios and torque reduction and multiplication
 - simple gear trains
 - compound gear trains
 - lubricant types
- application, purpose and operation of light vehicle manual transmissions and components, including:
 - power flows, including:
 - longitudinal manual transmissions
 - transaxles
 - transfer cases
 - synchromesh operation
 - gearshift mechanisms
 - transfer cases, including:
 - part-time four wheel drives
 - full-time four wheel drives
 - all-wheel drives
- diagnostic testing procedures for light vehicle manual transmissions, including:
 - abnormal noise diagnosis
 - shift diagnosis
- repair procedures for light vehicle manual transmissions, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle manual 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 manual 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 manual transmission specifications
- two different light vehicles with faults in the manual transmission components specified in the performance evidence
- diagnostic equipment for light vehicle manual transmissions
- tools, equipment and materials appropriate for repairing light vehicle manual transmissions.

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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