



Australian Government

AURLTX001 Diagnose and repair light vehicle manual transmissions

Release: 1

AURLTX001 Diagnose and repair light vehicle manual 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 the manual transmissions of light vehicles. 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 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.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Transmission

Elements and Performance Criteria

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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.

Elements Elements describe the essential outcomes.	Performance Criteria 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 light vehicle manual 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 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 manual transmission	2.1 Diagnostic tests are performed 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 are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair manual 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 transmission or vehicle 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 manual 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 manual transmission components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications - calculate gear ratios and torque reduction and multiplication.
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 precision measuring equipment, such as vernier calipers, micrometers and dial indicators.

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>Safety and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, 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.
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Unit Mapping Information

Equivalent to AURLTX3001 Repair transmissions - manual (light vehicle)

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 AURLTX001 Diagnose and repair light vehicle manual 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 two of the following faults in two different light vehicle manual transmissions, including faults in two of the following components:
 - 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.

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 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

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 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.

Links

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