



**Australian Government**

# **AURLTX104 Diagnose complex faults in light vehicle automatic transmission and driveline systems**

**Release: 1**

# AURLTX104 Diagnose complex faults in light vehicle automatic transmission and driveline systems

## 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 complex faults in light vehicle automatic transmission and driveline systems, including drive shafts and final drives, and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

This unit applies to those in the automotive service and repair industry. The transmission and driveline systems include those of light vehicles or light commercial vehicles.

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. Identify and confirm the work requirement     | 1.1 Determine nature and objective of diagnostic requirements from workplace instructions<br>1.2 Confirm existence of fault in light vehicle automatic transmission or driveline system from direct or indirect evidence<br>1.3 Identify hazards associated with the work and manage |

| ELEMENTS                              | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | risks according to workplace procedures, and safety and environmental requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2. Prepare to diagnose complex faults | 2.1 Access and interpret manufacturer specifications and other technical information for automatic transmission or driveline system<br>2.2 Identify diagnostic procedures and options<br>2.3 Identify and select diagnostic method sequence, tests and testing processes from the range of available options<br>2.4 Obtain and prepare testing equipment according to manufacturer specifications and workplace procedures<br>2.5 Identify, select and prepare tools, equipment and materials required to support the diagnostic process for use |
| 3. Apply diagnostic procedures        | 3.1 Follow selected diagnostic process and carry out testing according to manufacturer specifications, workplace procedures, and safety and environmental requirements<br>3.2 Verify diagnostic findings, as required, by using alternative or optional process according to manufacturer specifications and workplace procedures<br>3.3 Draw conclusions from findings and document according to workplace procedures<br>3.4 Provide conclusions to required personnel or customer to confirm further action to be taken                        |
| 4. Complete work processes            | 4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use<br>4.2 Clear work area and dispose of or recycle materials according to workplace procedures<br>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 | <ul style="list-style-type: none"> <li>Locates required sources of information efficiently</li> <li>Applies diagnostic skills to different vehicles.</li> </ul>        |
| Numeracy | <ul style="list-style-type: none"> <li>Measures transmission and driveline system components and uses basic mathematical operations, including addition and</li> </ul> |

| SKILL                   | DESCRIPTION                                                                                                                                                                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <ul style="list-style-type: none"><li>subtraction</li><li>Calculates deviations and tolerances from manufacturer specifications.</li></ul>                                                                                                                 |
| Oral communication      | <ul style="list-style-type: none"><li>Clarifies instructions</li><li>Obtains information from customers and supervisors.</li></ul>                                                                                                                         |
| Reading                 | <ul style="list-style-type: none"><li>Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking light vehicle automatic transmission and driveline system specifications and procedures.</li></ul> |
| Planning and organising | <ul style="list-style-type: none"><li>Plans own work requirements</li><li>Prioritises actions to achieve required outcomes</li><li>Ensures tasks are completed within workplace timeframes.</li></ul>                                                      |
| Technology              | <ul style="list-style-type: none"><li>Uses precision measuring equipment</li><li>Uses specialised diagnostic equipment.</li></ul>                                                                                                                          |

## Unit Mapping Information

Supersedes and is equivalent to AURLTX004 Diagnose complex faults in light vehicle automatic transmission and driveline systems.

## 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 AURLTX104 Diagnose complex faults in light vehicle automatic transmission and driveline systems

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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 a complex fault in each of the following:
  - automatic transmission of a light vehicle
  - driveline system of a different light vehicle
  - electronically controlled automatic transmission or driveline system of a third light vehicle
- the above diagnosis must involve at least two of the following types of complex faults, each in a different vehicle:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

## 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 complex faults in light vehicle automatic transmission and driveline systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose complex faults in light vehicle automatic transmission and driveline systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures including:
    - recommendations for necessary repairs
  - 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 complex faults in light vehicle automatic transmission and driveline systems, including procedures for lifting, supporting and manually handling light vehicle automatic transmission and driveline systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmission and driveline systems
- types of complex faults relating to light vehicle automatic transmission and driveline systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types, function and operation of light vehicle automatic transmission and driveline systems, including:
  - electronically controlled automatic transmissions
  - continuously variable transmissions (CVTs)
  - constant velocity joints
  - Hooke's-type joints
  - rear wheel drive shafts
  - rear wheel drive final drives
  - front wheel drive final drives
- testing procedures for light vehicle automatic transmission and driveline systems, including:
  - test drive procedures
  - abnormal noise analysis
  - transmission oil pressure tests
  - sources of fluid leaks
  - driveline angle measurement
- types and key features of diagnostic testing equipment required to diagnose complex faults in light vehicle automatic transmission and driveline systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - waveforms

- vehicle continuous and non-continuous monitored systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

## 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 transmission and driveline systems 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 and driveline system specifications
- three different light vehicles with complex faults in their automatic transmission or driveline systems, including one vehicle with an electronically controlled automatic transmission
- automatic transmission and driveline system diagnostic equipment, including:
  - oil pressure gauge
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in the automatic transmission and driveline systems of light vehicles.

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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