



**Australian Government**

# **AURHTX3004 Diagnose and repair heavy vehicle clutch systems**

**Release 1**

## AURHTX3004 Diagnose and repair heavy vehicle clutch systems

### Modification History

| Release   | Comment                                                                                                                                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Release 1 | Replaces AURT306170A Inspect, service and/or repair clutch assemblies and associated operating system components<br><br>Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies |

### Unit Descriptor

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit descriptor | <p>This unit describes the performance outcomes required to diagnose and repair clutch systems fitted to heavy vehicles. It involves diagnosing deviations from correct operation, repair operations of the clutch system and associated components, and post-repair testing procedures.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p> |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Application of the Unit

|                         |                                                                                                                                  |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Application of the unit | Work applies to the clutch systems of heavy vehicles in the road transport, mining, construction, and agricultural environments. |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------|

### Licensing/Regulatory Information

Not applicable.

### Pre-Requisites

Not applicable.

## Employability Skills Information

|                             |                                          |
|-----------------------------|------------------------------------------|
| <b>Employability skills</b> | This unit contains employability skills. |
|-----------------------------|------------------------------------------|

## Elements and Performance Criteria Pre-Content

|                                                                   |                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide. |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Elements and Performance Criteria

| ELEMENT                                                         | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Prepare to diagnose and repair a heavy vehicle clutch system | <p>1.1. <b>Workplace instructions</b> are used to determine <b>job requirements</b></p> <p>1.2. <b>Workplace health and safety (WHS) requirements</b> are observed and applied throughout the work</p> <p>1.3. <b>Procedures and information</b> are sourced and interpreted</p> <p>1.4. Diagnosis options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate diagnostic tools and equipment are selected and prepared</p>                                                                     |
| 2. Diagnose a heavy vehicle clutch system                       | <p>2.1. <b>Diagnostic tests</b> are performed according to workplace procedures and without causing damage to components or systems</p> <p>2.2. <b>Faults</b> are identified from diagnostic test results and causes of faults are determined</p> <p>2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments</p>                                                                                                                                               |
| 3. Repair a heavy vehicle clutch system                         | <p>3.1. <b>Repair options</b> are analysed and those most appropriate to the circumstances are selected</p> <p>3.2. Appropriate tooling, techniques and materials are selected and prepared</p> <p>3.3. Repairs and component replacements and adjustments are carried out without causing damage to components or systems and according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.4. <b>Post-repair testing</b> is carried out according to workplace procedures and relevant legislation.</p> |
| 4. Clean up work area and finalise work processes               | <p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace procedures</p> <p>4.3. Workplace documentation is processed according to workplace procedures</p>                                                                                                                                                                                                                                           |

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communication skills to:
  - clarify workplace instructions and determine job requirements
  - gain information from appropriate persons and assistance as required
- initiative and enterprise to adapt to new and emerging situations in the workplace
- learning skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
  - understand quality procedures
  - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
  - obtain and record measurements
  - document repairs and parts required
- numeracy skills to:
  - carry out measurements
  - assess tolerances and apply accurate measurements and adjustments
- planning and organising skills to:
  - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
  - identify risk factors and take action to minimise risk
- problem-solving skills to:
  - determine the underlining causes of faults
  - recognise a workplace problem or a potential problem and take action
  - refer problems outside area of responsibility to appropriate person and suggest possible causes
  - seek information and assistance as required to solve problems
- self-management skills to:
  - select and use appropriate equipment, materials, processes and procedures
  - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the repair of heavy vehicle clutch systems, including the use of:
  - specialised tools and equipment
  - measuring equipment
- technology skills to:

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

- operate diagnostic and test equipment
- use technology to collect, analyse and provide information.

**Required knowledge**

- WHS regulations, requirements, equipment, material and personal safety requirements, relating to the diagnosing and repairing heavy vehicle clutch systems
- dangers of working with heavy vehicle clutch systems
- application, purpose and operating principles of heavy vehicle clutch systems, including:
  - single-disc clutch assemblies
  - two-disc clutch assemblies
  - coil spring clutches
  - diaphragm spring clutches
- maintenance procedures of heavy vehicle clutch systems
- testing procedures of heavy vehicle clutch systems
- repair procedures of heavy vehicle clutch systems
- post-repair testing procedures of heavy vehicle clutch systems

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- complete preparatory activity in a systematic manner
- diagnose and repair a range of heavy vehicle clutch systems relative to the qualification being sought
- diagnose and repair heavy vehicle clutch systems according to workplace, manufacturer and component supplier requirements
- present vehicle in a condition that complies with workplace requirements.

#### Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- heavy vehicles with clutch system faults relevant to the qualification being sought
- equipment appropriate for the testing of heavy vehicle clutch systems

## EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

### Overview of assessment

- specifications and workplace instructions
- tools appropriate for the repair, replacement and adjustment of heavy vehicle clutch systems.

### Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of an holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Workplace instructions</b> may include:            | <ul style="list-style-type: none"> <li>• computer-generated instructions</li> <li>• verbal instructions</li> <li>• written instructions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Job requirements</b> may include:                  | <ul style="list-style-type: none"> <li>• heavy vehicle clutch systems diagnosis and repair methods, processes and equipment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Workplace Health and Safety (WHS) requirements</b> | <ul style="list-style-type: none"> <li>• are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures</li> <li>• may include: <ul style="list-style-type: none"> <li>• protective clothing and equipment</li> <li>• use of tools and equipment</li> <li>• handling of material</li> <li>• use of fire-fighting equipment</li> <li>• first aid equipment</li> </ul> </li> <li>• hazard control, including control of hazardous materials and toxic substances.</li> </ul>                                                                                                                                                                                                                                                                                                               |
| <b>Procedures and information</b> may include:        | <ul style="list-style-type: none"> <li>• verbal, written and graphical instructions</li> <li>• signage</li> <li>• work schedules, plans and specifications</li> <li>• work bulletins or memos</li> <li>• material safety data sheets (MSDS)</li> <li>• diagrams or sketches</li> <li>• safe work procedures relating to the repair and replacement of heavy vehicle clutch systems</li> <li>• regulatory and legislative requirements relating to the automotive industry</li> <li>• Australian Design Rules</li> <li>• Engineer's design specifications and instructions</li> <li>• organisational work specifications and requirements</li> <li>• instructions issued by authorised workplace or external persons</li> <li>• Australian standards</li> <li>• heavy vehicle clutch service requirements and repair manuals.</li> </ul> |
| <b>Diagnosis tests</b> may include:                   | <ul style="list-style-type: none"> <li>• component inspection and evaluation.</li> <li>• hydraulic and mechanical systems</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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|                                                |                                                                                                                                                                                                                                                              |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>Faults</i></b> may include:              | <ul style="list-style-type: none"><li>• clutch slippage</li><li>• clutch drag and binding</li><li>• clutch chatter</li><li>• clutch pedal pulsation</li><li>• clutch vibration</li><li>• clutch system noise.</li></ul>                                      |
| <b><i>Repair options</i></b> may include:      | <ul style="list-style-type: none"><li>• component repair procedures, including<ul style="list-style-type: none"><li>• removal, replacement and adjustment procedures</li><li>• dismantle, repair, re-assembly and adjustment procedures.</li></ul></li></ul> |
| <b><i>Post-repair testing</i></b> may include: | <ul style="list-style-type: none"><li>• mobile or stationary tests to evaluate clutch performance</li></ul>                                                                                                                                                  |

**Unit Sector(s)**

Not applicable.

**Custom Content Section**

|                         |                            |
|-------------------------|----------------------------|
| <b>Competency field</b> | Mechanical - Heavy Vehicle |
| <b>Unit sector</b>      | Technical - Transmission   |