



Australian Government

AURHTQ002 Diagnose and repair heavy commercial vehicle final drive assemblies

Release: 1

AURHTQ002 Diagnose and repair heavy commercial vehicle final drive assemblies

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 final drive assemblies of heavy commercial 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 final drive assemblies include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

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

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
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.
1. Prepare to diagnose and repair heavy commercial vehicle	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

final drive assembly	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 final drive assembly	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair final drive assembly	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 according to manufacturer procedures 3.3 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 systems 3.4 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 vehicle or assembly 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
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Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	interpret information from manufacturer and workshop literature when seeking drive assembly 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 final drive components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
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, dial indicator gauges and spring gauges.

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 requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: - isolating and stabilising vehicles - lifting and supporting final drive assemblies.
<i>Environmental requirements</i> must include:	procedures for trapping, storing and disposing of oil released from final drive assemblies.

Unit Mapping Information

Equivalent to AURHTQ3002 Repair final drive assemblies (heavy 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 AURHTQ002 Diagnose and repair heavy commercial vehicle final drive assemblies

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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 a fault in one heavy commercial vehicle final drive assembly and:
 - undertake a complete dismantle and reassembly of a crown wheel and pinion final drive assembly
 - remove, refit or replace one final drive assembly
 - remove, refit or replace one rear axle wheel bearing assembly.

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 heavy commercial vehicle final drive assemblies, including procedures for:
 - isolating and stabilising vehicles
 - lifting and supporting final drive assemblies
- environmental requirements, including procedures for trapping, storing and disposing of oil released from final drive assemblies
- operating principles of heavy commercial vehicle final drive assemblies and associated components, including:
 - final drive gears, including:
 - gear types
 - gear ratios and torque reduction and multiplication
 - differential function

- application, purpose and operation of heavy commercial vehicle final drive assemblies and components, including:
 - single reduction
 - two-speed reduction
 - double reduction
 - tandem drive
 - power divider
 - differentials, including limited slip differentials
 - axle shafts and bearings
- diagnostic testing procedures for heavy commercial vehicle final drive assemblies, including:
 - road-testing procedures, including:
 - final drive assembly noise diagnosis
 - final drive assembly operation
 - pre-dismantling inspection procedures
- repair procedures for heavy commercial vehicle final drive assemblies, including procedures for:
 - dismantling assemblies
 - inspecting assemblies
 - reassembling and adjusting the following components:
 - pinion depth
 - pinion bearing preload
 - crown wheel and pinion backlash
 - side bearing preload
 - crown wheel and pinion tooth contact
- post-repair testing procedures for heavy commercial vehicle final drive assemblies.

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 heavy commercial vehicle final drive assemblies 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:

- mechanical repair workplace or simulated workplace

- workplace instructions
- manufacturer final drive assembly specifications
- heavy commercial vehicle crown wheel and pinion final drive assembly with faults
- diagnostic equipment for heavy commercial vehicle final drive assemblies
- tools, equipment and materials appropriate for repairing and adjusting heavy commercial vehicle final drive assemblies.

Links

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