



Australian Government

AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies

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 final drive assemblies of heavy commercial 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 who work 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.

Unit Sector

Mechanical – Heavy Vehicle Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENT	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 heavy commercial vehicle final drive assembly	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

ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy commercial vehicle final drive assembly	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 heavy commercial vehicle final drive assembly	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
Reading	Organises and interprets technical information from workplace procedures, manufacturer procedures and

SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures final drive assembly components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios and torque reduction
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTQ002 Diagnose and repair heavy commercial vehicle final drive assemblies.

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 AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies

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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 a fault in at least one heavy commercial vehicle final drive assembly and in the course of doing so:
 - 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

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 heavy commercial vehicle final drive assemblies, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy commercial vehicle final drive assemblies, including:
 - establishing serviceability of tools and equipment
 - documentation procedures
 - housekeeping procedures, including:
 - examination of tools and equipment
 - storage of equipment
 - identification, tagging and isolation of faulty equipment
 - disposal of excess materials
 - recycling procedures

- workplace health and safety (WHS) 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 relating to diagnosing and repairing heavy commercial vehicle final drive assemblies, including procedures for trapping, storing and disposing of oils 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
- 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 procedures for:
 - road testing procedures, including:
 - final drive assembly noise diagnostic
 - final drive assembly operation
 - pre-dismantling inspection procedures
- repair procedures for heavy commercial vehicle final drive assemblies, including procedures for:
 - dismantling final drive assemblies
 - inspecting final drive 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

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.

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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