



Australian Government

AURHTD002 Diagnose and repair heavy commercial vehicle steering systems

Release: 1

AURHTD002 Diagnose and repair heavy commercial vehicle steering systems

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 steering systems 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 steering systems 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 - Steering and Suspension

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 a 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

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.
steering system	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 steering system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and <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, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair steering system	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 3.4 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 systems 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 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 steering system 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:	- understand steering system information in degrees, and metric and imperial units of measurement - measure steering system 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 measuring equipment, such as tape measures, rulers, vernier calipers, micrometers and hydraulic 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 and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high pressure steering systems - environmental requirements, including procedures for trapping, storing and disposing of power steering hydraulic fluid released from steering systems.
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Unit Mapping Information

Equivalent to AURHTD3002 Repair steering systems (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 AURHTD002 Diagnose and repair heavy commercial vehicle steering systems

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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 of the following heavy commercial vehicle steering systems:
 - electronically assisted steering
 - hydraulic power assisted steering
- diagnose and repair a fault in three of the following heavy commercial vehicle steering components:
 - power steering pump
 - hydraulic and electronic valves
 - tie rods and linkages
 - king pin
 - front wheel bearings.

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 steering systems, including procedures for working with high pressure steering systems
- environmental requirements, including procedures for trapping, storing and disposing of power steering hydraulic fluid released from steering systems
- operating principles of heavy commercial vehicle steering systems and associated components, including:
 - manual steering systems

- power assisted steering systems
- application, purpose and operation of heavy commercial vehicle steering systems and components, including:
 - manual steering systems, including:
 - steering box
 - steering column
 - tie rods and linkages
 - king pins
 - wheel bearings
 - hydraulic power assisted steering systems, including:
 - integral piston steering box
 - power steering pump
 - hydraulic and electronic valves
 - twin axle steering systems
 - electronically assisted steering systems
- identification, function and basic operating principles of steering angles, including:
 - Ackermann principle of steering
 - toe-in and toe-out
 - toe-out on turns
 - caster
 - camber
 - steering axis inclination
- diagnostic testing procedures for heavy commercial vehicle steering systems, including:
 - operational testing
 - hydraulic steering system testing
 - electronic and load sensing steering testing
 - analysing component wear analysis
- repair procedures for heavy commercial vehicle steering system components, including:
 - power steering pump
 - steering box
 - steering column
 - king pin
 - electronically assisted steering
 - tie rods and linkages
 - wheel bearings
- post-repair testing procedures for heavy commercial vehicle steering systems.

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 steering systems or components 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 steering system specifications
- heavy commercial vehicle with faults in the power assisted steering systems and components specified in the performance evidence
- diagnostic equipment for heavy commercial vehicle steering systems
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle steering systems.

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