



Australian Government

AURLTD005 Diagnose and repair light vehicle suspension systems

Release: 1

AURLTD005 Diagnose and repair light vehicle suspension 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 suspension systems of light 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 suspension systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

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

Competency Field

Mechanical - Light 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 light vehicle suspension system	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.
	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 suspension system	2.1 Diagnostic tests are performed according to workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair suspension 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 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or system 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 suspension 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 suspension system information in degrees and metric units of measurement - measure suspension 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 and vernier calipers.

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: - working with stored energy in springs and torsion bars, including when removing tension from suspension components - moving heavy suspension components.
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Unit Mapping Information

Equivalent to AURLTD3005 Repair suspension systems (light 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 AURLTD005 Diagnose and repair light vehicle suspension 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 a light vehicle MacPherson strut suspension system, in which the work must involve removing and refitting or replacing the MacPherson strut
- diagnose and repair a fault in a light vehicle coil spring suspension system, in which the work must involve removing and refitting or replacing the coil spring
- diagnose and repair a fault in one of the following suspension system components, in which the work must involve removing the spring component from the vehicle:
 - leaf spring suspension system
 - torsion bar suspension system
 - pneumatic suspension system.

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 light vehicle suspension systems, including procedures for:
 - working with stored energy in springs and torsion bars, including when removing tension from suspension components
 - moving heavy suspension components
- operating principles of light vehicle suspension systems and associated components, including:
 - rigid and independent suspensions
 - sprung and unsprung mass
 - ride and curb height

- application, purpose and operation of light vehicle suspension systems and components, including:
 - coil spring suspension, including:
 - types of coil springs and deflection rates
 - front coil spring suspension arrangements, including short arm and long arm suspension
 - rear coil spring suspension arrangements
 - strut or MacPherson suspension
 - leaf spring suspension
 - torsion bar suspension
 - multi-link suspension
 - hydraulic suspension
 - pneumatic suspension
 - suspension system components, including:
 - ball joint function and operation
 - stabiliser bar function and operation
 - Watts link and Panhard rod function and operation
 - independent rear suspension arrangements and operation
 - shock absorber function and operation, including:
 - gas-filled shock absorbers
 - strut or MacPherson shock absorbers
 - hub assemblies and bearing arrangements, including:
 - hubs with tapered roller bearings
 - hubs with unitised bearings
- diagnostic testing procedures for light vehicle suspension systems, including procedures for analysing:
 - component wear
 - abnormal system noise
- repair procedures for light vehicle suspension systems, including procedures for:
 - removing and replacing ball joints, suspension bushes, shock absorbers, MacPherson struts, coil springs, leaf springs and torsion bars
 - compressing coil springs
 - replacing and adjusting bearings for hubs with:
 - tapered roller bearings
 - unitised bearings
- post-repair testing procedures for light vehicle suspension 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 light vehicle suspension 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 suspension system specifications
- light vehicles with faults in the suspension systems specified in the performance evidence
- diagnostic equipment for light vehicle suspension systems
- tools, equipment and materials appropriate for repairing light vehicle suspension systems.

Links

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