



Australian Government

AURETR136 Diagnose and repair electronically controlled suspension systems

Release: 1

AURETR136 Diagnose and repair electronically controlled suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to diagnose and repair faults in electronically controlled suspension systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits in the embedded network electronic control system of a vehicle or machinery. 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.

This unit applies to those working within the automotive service and repair industry. The electronically controlled suspension systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or motorcycles.

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

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Diagnose electronically controlled suspension system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret diagnostic information in order to identify diagnostic options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify diagnostic tools and equipment required for the job and examine for serviceability 1.5 Perform diagnostic tests according to workplace procedures and

	workplace health and safety requirements 1.6 Examine diagnostic test results to identify causes of faults, report findings and make recommendations for necessary repairs or adjustments according to workplace procedures
2. Repair and test electronically controlled suspension system	2.1 Obtain and interpret repair information in order to identify repair options required for the job 2.2 Identify repair tools, equipment and materials for the job and examine for serviceability 2.3 Carry out repairs or component replacements and adjustments according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and vehicle or machinery is ready for use 3.2 Clear work area and dispose of waste or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment, ensuring faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.3 Complete documentation 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 relevant sources of electronically controlled suspension system information efficiently
Reading skills to:	read and interpret information from workplace procedures and documentation when seeking electronically controlled 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 - make repair recommendations
Numeracy skills to:	use basic mathematical operations, including addition and

	subtraction - calculate deviations from manufacturer specifications - match electronically controlled suspension system components and part identification numbers to workplace instructions, vehicle or machinery component part lists, and manufacturer specifications - measure voltage, current and resistance - interpret vehicle or machinery electrical measurements and readings
Planning and organising skills to:	- plan own work requirements - prioritise actions to achieve required outcomes - ensure tasks are completed within workplace timeframes
Technology skills to:	- use specialised equipment, including multimeters - use diagnostic scan tools

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURETR136 Diagnose and repair electronically controlled suspension systems (Release 1)	AURETR036 Diagnose and repair electronically controlled suspension systems (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Combination of performance elements to create three performance criteria. Removal of references to OHS requirements. Removal of range of conditions. Explicit reference to the use of diagnostic scan tools in foundation skills. Addition of minor elements to knowledge evidence. Addition of assessor	Equivalent

		requirements.	
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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 AURETR136 Diagnose and repair electronically controlled suspension systems

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Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate a diagnosis and repair of electronically controlled suspension systems that safely follows workplace procedures to meet required outcomes. This includes:

- diagnosis and repair of a fault within the following electronically controlled suspension system components of two different vehicles or machinery:
 - ride height sensor circuits
 - wheel speed sensor circuits
 - steering rate sensor circuits
 - ride height control relay circuits
 - air compressor motor control circuits
 - air spring fill-vent solenoid control valve circuits
- diagnosis and repair of one electronically controlled steering system in which the work must include removing, refitting or replacing and re-testing one of the following components:
 - solenoid actuated shock absorber
 - load sensing shock absorber
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Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the diagnosis, testing and repair of electronically controlled suspension systems including:

- how to locate and interpret manufacturers specifications or equivalent documentation and workplace procedures for the diagnosis and repair of electronically controlled suspension systems
- the following workplace health and safety requirements for diagnosis and repair of electronically controlled suspension systems:

- procedures for using specialised tools and equipment
- knowledge of the appropriate personal protective equipment (PPE)
- identifying hazards and controlling risks associated with working with stored energy in springs and torsion bars
- procedures for removing tension from suspension components
- identifying hazards and controlling risks associated with manual handling heavy suspension system components
- environmental procedures for diagnosis, testing and repair of electronically controlled suspension systems
- the following diagnostic testing procedures for electronically controlled suspension systems:
 - accessing and interpreting scan tool system data, including:
 - diagnostic trouble codes (DTCs)
 - live data
 - freeze frame data
 - waveforms
 - using diagnostic flow charts
- the following electrical systems testing procedures:
 - accessing electrical terminals
 - using test probes without damaging connectors, fuse holders or wiring
 - undertaking resistance tests
 - undertaking voltage drop tests
 - testing open circuits
 - testing short circuits
 - checking shorts to signal, power circuits and grounds
- the following repair procedures for electronically controlled suspension systems:
 - removing and replacing system components
- the following post-repair testing procedures for electronically controlled suspension systems:
 - DTC clearing procedures
 - static and dynamic performance tests of suspension system
- workplace housekeeping and documentation procedures

Electronically controlled suspension system information, including:

- the operating principles of:
 - vehicle ride and handling
 - typical vehicle or machinery equipped with electronically controlled suspension systems
- the purpose and operation of the following electronically controlled suspension systems and components:

- adaptive suspension control module
- control sensors and actuators
- the purpose and operation of the following suspension control module functions within electronically controlled suspension systems:
 - control of air spring settings
 - shock damper settings
 - air compressor operation
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Assessment Conditions

Mandatory conditions for the assessment of this unit are stipulated below.

The assessment must:

- include access to:
 - automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
 - repair orders and workplace instructions relating to diagnosis and repair activity
 - workplace procedures relating to diagnosis and repair activity
 - manufacturer electronically controlled suspension systems specifications and procedures of equivalent documentation to complete diagnose and repair activity
 - two different vehicles or machinery with faults in the electronically controlled suspension system components specified in the performance evidence
 - diagnostic equipment for electronically controlled steering systems, including:
 - multimeter
 - scan tool
 - tools, equipment and materials suitable for repairing electronically controlled suspension systems of vehicle and machinery
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards

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