



Australian Government

AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems

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 mechanically controlled diesel fuel injection systems of light 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 working in the automotive service and repair industry. The diesel fuel injection systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant or outdoor power equipment.

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

Unit Sector

Mechanical Light Vehicle Technical – Fuel Systems

Elements and Performance Criteria

ELEMENTS	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 light vehicle diesel fuel injection system	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

ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle diesel fuel injection system	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 light vehicle diesel fuel injection system	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 diesel fuel injection system components • Uses mathematical operations • Calculates distances and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTF002 Diagnose and repair light vehicle diesel fuel injection systems.

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 AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems

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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 two different light vehicles with diesel engines, over the course of which the work must involve:
 - removing, refitting and timing a diesel high pressure pump
 - removing, refitting and testing injectors
 - bleeding a diesel fuel injection system
 - removing and refitting a low pressure fuel pump
- carry out a diagnostic test in the course of the above for at least one of the following faults:
 - low fuel pump pressure
 - leaking injectors.

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 light vehicle diesel fuel injection systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle diesel fuel injection systems, 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 light vehicle diesel fuel injection systems, including procedures for working with high pressure fuel systems
- environmental requirements relating to diagnosing and repairing light vehicle diesel fuel injection systems, including procedures for trapping, storing and disposing of fluids released from fuel system
- operating principles of light vehicle diesel fuel injection systems, including:
 - phases of combustion
 - composition of diesel fuel, including cetane and sulphur content
- purpose and operation of light vehicle diesel fuel injection systems and components, including:
 - high pressure injection pump systems
 - distributor pumps, including axial and radial types
 - in-line injection pump systems
 - mechanically controlled unit type systems
- diagnostic testing procedures for light vehicle diesel fuel injection systems, including procedures for:
 - assessing exhaust smoke
 - testing low fuel pressure pump
 - testing injector opening pressure and spray pattern
 - testing injector for back leakage and nozzle leakage
 - assessing and testing air induction system
 - assessing and testing engine performance
- repair procedures for light vehicle diesel fuel injection systems, including procedures for:
 - dismantling, cleaning, adjusting and reassembling conventional and two-spring injectors
 - removing, installing and timing high pressure injection pumps
 - bleeding fuel systems
- post-repair testing procedures for light vehicle diesel fuel injection systems, including assessing:
 - system leakage
 - engine performance.

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 light vehicle diesel fuel injection 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 light vehicle diesel fuel injection specifications
- two different light vehicles with diesel engines with faults
- diagnostic equipment for diesel fuel injection systems
- tools, equipment and materials appropriate for repairing diesel fuel injection systems.

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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