



Australian Government

Assessment Requirements for AURHTE102 Diagnose and repair heavy vehicle compression ignition engines

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

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 two heavy vehicle compression ignition engines.

In the course of the above work, the candidate must:

- diagnose and repair a fault in:
 - an engine cylinder head, which must include removing the cylinder head from the engine
 - an engine bottom end, which must include removing the crankshaft, pistons and connecting rods from the engine
- dismantle and reassemble one of the above compression ignition engines, ensuring that the engine is running at the end of the repair.

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 vehicle compression ignition engines, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle compression ignition engines, 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 vehicle compression ignition engines, including procedures for:
 - isolating and stabilising heavy vehicles or machines
 - lifting and supporting heavy vehicle compression ignition engines
 - working with compression ignition engines
- environmental requirements relating to diagnosing and repairing heavy vehicle compression ignition engines, including procedures for trapping, storing and disposing of fluids released from compression ignition engines
- operating principles of heavy vehicle compression ignition engines, including:
 - combustion, including:
 - combustion cycles
 - swept volume and engine volume
 - compression ratio
 - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
 - torque and horsepower, including brake horsepower
- purpose and operation of heavy vehicle compression ignition engines and components, including:
 - lubrication system, cylinder blocks, cylinder liners, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, pistons, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for heavy vehicle compression ignition engines, including:
 - scan tool testing
 - engine compression tests
 - cylinder leakage tests
 - oil pressure tests
 - checking sources of fluid leaks
 - exhaust smoke diagnosis
 - checking abnormal engine noises
- dismantling, inspection and reassembly procedures for heavy vehicle compression ignition engines, including procedures for:
 - measuring clearances and tolerances, including:
 - crankshaft and camshaft bearings and journals
 - main bearing and connecting rod tunnels
 - cylinder bores and pistons
 - liner depths and protrusions

- cylinder heads
- inspecting components
- repair procedures for heavy vehicle compression ignition engines, including procedures for removing and refitting the:
 - cylinder head
 - piston and connecting rod
 - crankshaft
 - cylinder liner
- post-repair testing procedures for heavy vehicle compression ignition engines.

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 vehicle compression ignition engines 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 engine specifications
- two different heavy vehicle compression ignition engines with faults
- diagnostic equipment for heavy vehicle compression ignition engines
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle compression ignition engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>