



**Australian Government**

**Assessment Requirements for AURHTE002  
Diagnose and repair heavy vehicle  
compression ignition engines**

**Release: 1**

# Assessment Requirements for AURHTE002 Diagnose and repair heavy vehicle compression ignition engines

## Modification History

Release	Comment
Release 1	New unit of competency.

## 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 two different heavy vehicle compression ignition engines, including diagnosing and repairing 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 engine is running at the end of the repair.

## 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 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, including procedures for trapping, storing and disposing of oil and fluid released from compression ignition engines
- operating principles of heavy vehicle compression ignition engines and associated components, including:
  - combustion, including:

- combustion cycle
- swept volume and engine volume
- compression ratio
- valve timing
- engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
- torque and horsepower, including brake horsepower
- application, 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:
  - engine compression tests
  - cylinder leakage tests
  - oil pressure tests
  - source of fluid leak diagnosis
  - exhaust smoke diagnosis
  - abnormal engine noise diagnosis
- 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

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 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.

## Links

Companion Volume implementation guides are found in VETNet -

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

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