



Australian Government

**Assessment Requirements for AURETR135
Apply knowledge of petrol and diesel engine
operation**

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:

- apply knowledge of petrol and diesel engine operation during the testing and repair of three different vehicle, vessel or machinery electrical systems
- evaluate and expand knowledge of petrol and diesel engine operation, including demonstrating knowledge of one of the following:
 - a new automotive petrol and diesel engine testing procedure
 - a new automotive petrol and diesel engine repair procedure
 - a new automotive petrol and diesel engine technology.

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 sources of technical information relevant to automotive electrical systems, including:
 - workplace service information
 - automotive engine mechanical texts
 - vehicle workshop manuals
 - service bulletins
 - technical articles
 - automotive textbooks
- classifications of engines, including:
 - internal combustion
 - reciprocating and rotary engines
 - spark ignition engines
 - compression ignition engines

- engine cylinder arrangements
- engine configurations, including:
 - inline engines, V type engines and slant cylinder engines
 - opposed cylinder engines
- camshaft and valve locations, including:
 - overhead cam (OHC)
 - overhead valve (OHV)
- engine operating principles, including:
 - two-stroke cycles
 - four-stroke cycles
- engine measurement and performance ratings
- operating performance of engines, including:
 - petrol engines
 - diesel engines
- petrol and diesel engine operation, including:
 - engine construction
 - engine types and configuration
 - two-stroke and four-stroke
 - cycles of engine operation, including:
 - intake stroke
 - compression stroke
 - power stroke
 - exhaust stroke
 - firing orders
 - ignition types, including:
 - spark
 - compression
 - engine mounting location, including:
 - front longitudinal
 - front transverse
 - mid transverse
 - measurement and performance, including:
 - bore and stroke
 - displacement
 - compression ratio
 - engine efficiency
 - torque versus horsepower
- engine components, including:
 - top of engine, including:
 - timing belt or chain

- camshaft timing pulley
- camshaft single and dual
- rocker arms and shafts
- intake valves and springs
- exhaust valves and springs
- cylinder head
- front of engine, including:
 - crankshaft
 - crankshaft timing pulley
 - crankshaft pulley and balancer
- rear of engine, including:
 - flywheel
 - starter ring gear
- bottom of engine, including:
 - engine block
 - crankshaft
 - crankshaft balance weights
 - crankshaft main bearing journals
 - pistons
 - connecting rods
- relationships between electrical systems and engine performance, including:
 - ignition system and engine power and torque, including:
 - ignition timing
 - combustion stroke pressure
 - diesel injection system and engine power and torque, including:
 - injection timing
 - combustion stroke pressure
 - starter motor system, including:
 - current draw of starting system of high compression engines
 - types of batteries and starter motors for petrol and diesel engines
 - wiring requirements of starter motor systems for petrol and diesel engines
 - charging system, including system requirements for low and high-speed 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 having applied knowledge of petrol and diesel engine systems and components to the vehicles and machinery that they have worked on, e.g. work 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:

- technical information relating to petrol and diesel engines
- automotive tools and electrical test equipment relating to the system being tested or repaired
- three different vehicles, vessels or machinery with functional electrical systems.

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>