



Australian Government

**Assessment Requirements for MEM27020
Apply knowledge of large combustion
engine operations to service and
maintenance tasks**

Release: 1

Assessment Requirements for MEM27020 Apply knowledge of large combustion engine operations to service and maintenance tasks

Modification History

Release 1: New unit

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following manufacturer and work instructions, standard operating procedures (SOPs) and safe work practices
- identifying appropriate sources of information on engine and equipment
- carrying out classification of large combustion engines from observation, manufacturer instructions and manuals and workplace records, including classification of:
 - engine type
 - engine features
 - engine systems
 - engine components
 - fuel type and fuel system
- assessing implications of engine and equipment service history and equipment operational records for service and maintenance tasks
- recording and reporting service activities in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- classification of combustion engines, including:
 - internal and external combustion
 - reciprocating and rotary engines
 - two and four stroke cycles
 - spark ignition and compression ignition
 - turbines
- engine features, including:
 - number and arrangement of cylinders
 - materials used for major components (e.g. steel, aluminium and ceramic)

- fuel types and implications for engine operation and maintenance (e.g. petrol, diesel, diesel/gas, gas (natural gas, biogases and special gases))
 - engine location:
 - front, mid or rear engine
 - longitudinal or transverse engine
 - ignition system, components and firing order
 - operational parameters, including:
 - bore and stroke
 - displacement
 - compression ratio
 - efficiency
 - torque, horsepower and brake horsepower
 - cycles of engine operation:
 - intake stroke
 - compression stroke
 - power stroke
 - exhaust stroke
- principles of operation of engine oil, fuel, lubrication and cooling systems, including:
 - function of filters
 - purpose of additives and correct proportions to be used
 - symptoms and effects of contamination, abnormal engine operation and extremes of weather
- role and operation of major engine components, 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
 - crankshaft and crankshaft pulleys, balancer and balance weights and bearing journals
 - flywheels
 - starter ring gear
 - engine block
 - pistons
 - connecting rods
- exhaust system and components.

Assessment Conditions

- Assessors must:

- have vocational competency in applying knowledge of large combustion engine operations to service and maintenance tasks at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>