



Australian Government

Assessment Requirements for AURRTE007 Diagnose and repair marine inboard engines

Release: 1

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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 three different marine inboard engines, including:
 - a fault in an engine cylinder head, in which the work must involve removing the cylinder head from the engine
 - a fault in two of the following components, in which the work must involve removing the components from the engine:
 - engine valve timing belt
 - engine valve timing chain
 - engine valve lifters
 - cylinder head valve stem seals
 - camshaft
 - camshaft bearings
 - crankshaft
 - balance shaft or its bearings
 - pistons and connecting rods
 - cylinder block sleeves
 - main bearings and big-end bearings
 - internal oil pump
- dismantle and reassemble one marine inboard engine.

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 inboard engines, including procedures for lifting and supporting inboard engines
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- operating principles of inboard engines and associated components, including:
 - combustion, including:
 - air-fuel ratios and combustion cycles
 - direct injection
 - detonation
 - engine measurement and performance, including:
 - swept volume and engine volume
 - compression ratio
 - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
 - torque and horsepower, including brake horsepower
- application, purpose and operation of inboard engines and components, including:
 - lubrication systems, cylinder blocks, cylinders, pistons, cylinder heads, engine valves, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for inboard engines, including:
 - wet and dry compression tests
 - cylinder leakage tests
 - oil pressure tests
 - sources of water ingress
 - checking sources of fluid leaks
 - exhaust smoke diagnosis
 - checking abnormal engine noises
- dismantling procedures for inboard engines, including procedures for:
 - measuring clearances and tolerances
 - inspecting components
- repair procedures for inboard engines, including procedures for repairing cylinder blocks and cylinder heads
- assembly procedures for inboard engines, including procedures for fitting components and obtaining clearances and tolerances
- post-repair testing procedures for inboard engines, including:
 - load testing engines
 - water testing 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 marine inboard 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:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer inboard engine specifications
- three different marine inboard engines with the faults specified in the performance evidence
- diagnostic equipment for inboard engines
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine inboard engines.

Links

Companion Volume implementation guides are found in VETNet -

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

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