



Australian Government

Assessment Requirements for AURTTM004 Assemble engine blocks and sub-assemblies

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:

- assemble two different engine blocks, one of which must be a V configuration engine block, and the sub-assemblies of those engine blocks, in which the work must involve:
 - a multi-cylinder diesel engine
 - a multi-cylinder petrol 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 assembling engine blocks and sub-assemblies, including procedures for:
 - selecting and using personal protective equipment (PPE) for handling engine blocks and sub-assemblies and using chemical cleaning agents
 - correctly operating specialised equipment, including heating torches, ovens and presses
 - handling freezing substances, including liquid nitrogen
 - manual handling techniques, including:
 - using machinery for lifting engine blocks and engine components
 - using slings, chains and other lifting equipment according to safe work practices
- environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids released during the assembly process
- procedures for clearance testing and adjusting or machining components, including:
 - piston to connecting rod big end alignment
 - big end and main bearing crush with bearing blue

- piston ring end gap, back clearance and side clearance
- bearing to crankshaft clearances with plastigage and measuring and calculating clearances
- semi-flanged thrust bearings
- finished camshaft bearings and measuring clearances
- camshafts and cam followers
- camshaft end float
- crankshaft end float
- gear backlash
- oil pump sealing and pick-up oil piping
- component assembly procedures and processes, including:
 - pre-assembly wash procedures for components
 - welsh plugs and oil gallery plugs
 - piston and connecting rod assemblies
 - big end bearings
 - piston rings to pistons, including procedures for using ring compressors
 - main bearings and thrust washers
 - semi-flanged thrust bearings
 - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
 - finished camshaft bearings
 - camshafts and cam followers
 - timing gears
 - chains and tensioners
 - oil pumps, oil squirters and oil pump pick-ups
 - balance shafts
 - fitting ancillary components, including:
 - covers and seals
 - housings
 - diesel fuel injection pumps
 - oil coolers
 - crankshaft pulleys
 - flywheels
 - bell housings
- requirements of Australian standards relevant to engine reconditioning, including:
 - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
 - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating 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 engine block and sub-assemblies that they have assembled, 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
- engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- two different multi-cylinder engine blocks, including:
 - in-line engine blocks
 - V configuration engine blocks
- full gasket and seal set for the engine block
- fixed and portable hand, air and power tools, lifting equipment, torque wrench and material suitable for assembling engine block
- precision measuring equipment, including:
 - dial bore gauges
 - dial indicators
 - inside and outside metric and imperial micrometers.

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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