Australian Government

Assessment Requirements for AURTTM008 Dismantle and evaluate 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:

- dismantle and evaluate the following three different engine blocks and their sub-assemblies:
  - in-line engine block
  - V configuration engine block
  - diesel engine block with sleeves.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to dismantling and evaluating engine blocks and sub-assemblies, including operational risk assessment and treatments associated with:
  - electrical equipment used in dismantling and evaluating engine blocks and sub-assemblies
  - manual and mechanical lifting and shifting equipment
  - toxic cleaning substances
- environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids released during the process
- manual handling techniques, including those relating to:
  - using machinery for lifting engine blocks and engine components
  - using slings, chains and other lifting equipment according to safe work practices
- dismantling methods and procedures, including:
  - reasons for selecting chosen tools, techniques and equipment

- hazards and fluid control measures associated with removal of engines and engine components, including housekeeping
- procedures for recording positions of components, including photographic evidence
- pre-evaluation checks to determine suitability of component to be re-used
- reasons for checking end float before disassembly
- cleaning solutions and cleaning procedures for components
- use of pullers, presses and specialised tools, and application of heat to dismantle components, including gears, pulleys and dowels
- procedures for recording facing directions of pistons, connecting rods, main and big end caps, and positions of removable counterweights and counterweight shaft assemblies
- precautions to be used when removing connecting rod cap
- removing crankshaft and identifying main bearing caps that have lost register
- removing dry and wet sleeves
- dismantling pistons from connecting rods
- removing camshaft bearings and balance/idler shaft bearings
- removing welsh plugs and oil gallery plugs
- removing diesel injection pumps
- dismantling components that have seized, bent or broken, including seized stud and bolt removal

- inspection, measurement and testing procedures, including:
  - characteristics of surface finishes and wear patterns as applied to:
    - cylinder bores, crankshafts, pistons, gears, cam followers, and camshafts
    - bearings and bushes
    - block facings
    - parting faces of connecting rod
    - main bearing caps
  - crack testing components
  - testing hardness of alloy cylinder blocks, pistons, crankshaft journals and camshaft followers
  - straightness of shafts
  - taper, ovality and wear of:
    - crankshaft and camshaft journals
    - main bearing and connecting rod tunnels
    - cylinder bores in conventional engine blocks and parent bores of engine blocks with dry sleeves
  - camshaft lobe lift
  - straightness of shafts
  - main bearing tunnels for alignment
  - connecting rod alignment and little end bore size
  - cylinder block flatness and deck height

  - piston ring land clearance, piston skirt wear and gudgeon pin to piston clearance
  - cylinder liner register in both the upper and lower parts of the cylinder block
  - oil pump for serviceability
  - idler gear hub to bearing clearance
- 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 blocks and sub-assemblies that they have dismantled and evaluated, 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
- 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
- three different multi-cylinder engine blocks specified in the performance evidence
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicators
  - inside and outside metric and imperial micrometers
- fixed and portable hand, air and power tools and lifting equipment suitable for dismantling and evaluating engine blocks and sub-assemblies.

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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