Australian Government

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.

Application

This unit describes the performance outcomes required to dismantle and evaluate an engine block and its sub-assemblies as part of an engine repair or reconditioning process. It involves preparing for the task, dismantling and evaluating the engine blocks and sub-assemblies, determining required repair action, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine blocks and sub-assemblies include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle engine block and sub-assembly	1.1 Job requirements are determined from workplace instructions 1.2 Engine block and sub assembly dismantling information is sourced and interpreted 1.3 Tools and measuring equipment are selected and checked for

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Engine is set up for dismantling using appropriate lifting equipment and avoiding fluid spillage according to ***safety and environmental requirements*** 1.6 Engine block and sub-assembly are cleaned according to safety and environmental procedures and relevant Australian standards, and positions of auxiliary equipment are ***recorded, including*** photographic evidence
2. Dismantle engine block and sub-assembly	2.1 Covers and ancillary components are removed, cleaned and stored according to workshop procedures 2.2 Engine block and sub-assembly are dismantled according to safety requirements and laid out in a logical order using approved methods, tools and equipment 2.3 Component parts are cleaned using appropriate cleaning agents for the type of material and kept in a logical order in preparation for evaluation
3. Determine repair procedures	3.1 Engine block and sub-assembly are ***inspected, measured and tested*** against manufacturer specifications and tolerances and according to workplace procedures and safety requirements 3.2 Engine block and sub-assembly are evaluated and repair requirements are determined and reported according to workplace procedures
4. Complete dismantle and evaluation processes	4.1 Final inspection is made to ensure finished work complies with workplace requirements 4.2 Bright surfaces are treated with rust prevention solution and engine block and sub-assembly are prepared for further process or storage according to workplace procedures 4.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• identify and interpret engine component specifications from workshop literature • interpret safe operating procedures for engine component rebuild machinery from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when making recommendations.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best tooling option for the work and sequence components to reduce time and material wastage.
Technology skills to:	• use metric and imperial precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, 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.

Inspecting, measuring and testing must include:	• applying surface finishes and wear patterns 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:
	  • connecting rods
	  • crankshaft
	  • camshaft
	  • cylinder block surface
	  • camshaft and main bearing tunnels
	  • main bearing caps
	• hardness testing:
	  • alloy cylinder blocks, pistons, crankshaft journals and camshaft followers
	• checking 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
	• checking:
	  • 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 upper and lower parts of cylinder block
	  • oil pump for serviceability
	  • idler gear hub to bearing clearance.

Unit Mapping Information

Equivalent to AURTTM3008 Dismantle and evaluate 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