



Australian Government

AURPTE004 Overhaul outdoor power equipment engines

Release: 1

AURPTE004 Overhaul outdoor power equipment engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return outdoor power equipment engines to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the engine, carrying out the overhaul procedures, reassembling and testing the engine, and completing workplace processes and documentation.

It applies to those working in the outdoor power equipment and the engines may be two and four stroke spark ignition and four stroke compression ignition engines. The unit does not apply to light or heavy vehicle engines. This unit does not apply to light or heavy vehicle engines.

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

Competency Field

Outdoor Power Equipment

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	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 outdoor power equipment engine	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to

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.
	the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate engine and components	2.1 Engine and relevant components are dismantled in a logical sequence according to manufacturer and workplace procedures, and <i>safety and environmental requirements</i>, and without causing unnecessary damage to components or systems 2.2 Components are cleaned ready for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced 2.6 Authorisation to proceed is obtained according to workplace procedures
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble engine and components	4.1 Engine is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of engine is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified

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5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use or storage, including protective guards, cowlings and safety features 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 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 engine overhaul procedures and specifications - use websites to download owner manuals, workshop literature and service bulletins.
Reading skills to:	interpret and assess information from manufacturer and workshop literature when seeking engine specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	measure engine components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Skills	Description
Technology skills to:	• use precision measuring equipment, such as micrometers and dial bore gauges • use specialised engine overhaul equipment, such as: • hones • valve and valve seat cutting 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.

<i>Safety and environmental requirements</i> must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • operating specialised engine overhaul tools, equipment and machinery • using cleaning chemicals and toxic substances • environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released from engines.
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Unit Mapping Information

Equivalent to AURPTE4004 Overhaul engines and engine components (outdoor power equipment)

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for AURPTE004 Overhaul outdoor power equipment engines

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul two different outdoor power equipment engines as follows:
 - one four-stroke spark ignition engine
 - one of the following:
 - two-stroke spark ignition engine
 - four-stroke compression ignition 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 overhauling engines and associated engine components, including procedures for:
 - operating specialised engine overhaul tools, equipment and machinery
 - using cleaning chemicals and toxic substances
- environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released from engines
- types, characteristics and operating principles of outdoor power equipment engines and associated engine components
- outdoor power equipment engine overhaul procedures, including:
 - methods for cleaning and preparing an engine for overhaul
 - engine dismantling procedures
 - engine component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances

- engine and engine component repair and adjustment procedures, including:
 - engine cylinder head and cylinder block
 - engine crankshaft and camshaft
 - engine cylinder and engine sleeve fitting, boring and honing
 - engine bearing tunnel and connecting rod repair
- engine assembly and adjustment procedures for achieving component tolerances, including:
 - piston to connecting rod big-end alignment
 - big-end bearing to crankshaft journal clearance
 - big-end bearing crush with bearing blue
 - piston ring end gap, back clearance and side clearance
 - main bearing to crankshaft journal clearance
 - cylinder head, valves, guides and seats
 - camshafts and cam followers
 - camshaft end float
 - crankshaft end float
 - gear backlash
 - governors
 - oil pump sealing and pick-up oil piping
- component assembly procedures and processes, including:
 - welsh plugs and oil gallery plugs
 - piston and connecting rod assemblies
 - big-end bearings
 - piston rings to pistons
 - main bearings and thrust washers
 - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
 - finished camshaft bearings
 - cylinder head and components
 - camshafts and cam followers
 - timing gears
 - oil pumps, oil squirters, oil splashers, and oil pump pick-ups
 - governors
 - balance shafts
 - fitting ancillary components, including covers and cowlings, seals, housings, crankshaft pulleys and flywheels
- post-overhaul testing procedures for engines, including:
 - fuel system adjustments
 - governor speed adjustments
 - engine protection devices.

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 outdoor power equipment 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:

- automotive workplace or simulated workplace
- workplace instructions
- manufacturer outdoor power equipment engine specifications
- two different outdoor power equipment engines requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting outdoor power equipment engines.

Links

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