



**Australian Government**

# **AURTTE2004 Inspect and service engines**

**Release 1**

## AURTTE2004 Inspect and service engines

### Modification History

Release	Comment
Release 1	Replaces AURT201170A Inspect and service engines Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation Licensing statement added to unit descriptor

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit covers the competence required to carry out the inspection and service of two and four stroke spark ignition and two and four stroke compression ignition engines.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
------------------------	--

### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, inspection and servicing of engines and completion of work finalisation processes, including clean-up and documentation.</p> <p>For service of outdoor power equipment engines and associated components see AURPTE2002 Service engines and associated engine components (outdoor power equipment).</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment within the scope of this unit. This includes an understanding of the level of work to be performed.</p>
--------------------------------	--

## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
-----------------------------	--

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
---	--

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake the inspection of engines	1.1.Nature and scope of work requirements are identified and confirmed 1.2.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3.Procedures and information such as workshop manuals and specifications, and tooling required, are sourced 1.4.Methods appropriate to the circumstances are selected and prepared in accordance with standard operating procedures 1.5.Resources required for inspection of engine systems are sourced and support equipment is identified and prepared 1.6.Warnings in relation to working with engine systems are observed
2. Conduct engine system inspections and analyse results	2.1.Engine systems inspections are implemented in accordance with workplace procedures and manufacturer/component supplier specifications for engine servicing 2.2.Engines are started and run up to operating temperature and inspected for leaks, abnormal noises and pressures 2.3.Analysis results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.4.Results are documented with evidence and supporting information and recommendation(s) are made 2.5.Report is processed in accordance with workplace procedures
3. Prepare to service engines	3.1.WHS requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 3.2.Procedures and information required are identified and sourced 3.3.Resources required for servicing are identified and support equipment is identified and prepared
4. Carry out servicing	4.1.Service is implemented in accordance with workplace procedures and manufacturer/component

ELEMENT	PERFORMANCE CRITERIA
	supplier specifications 4.2.Adjustments made during the service are in accordance with manufacturer/component supplier specifications
5. Prepare vehicle for use or storage	5.1.Servicing schedule documentation is completed 5.2.Final inspection is made to ensure protective guards, safety features and cowlings are in place 5.3.Final inspection is made to ensure work is to workplace expectations 5.4.Vehicle is cleaned for use or storage to workplace expectations 5.5.Job card is processed in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills required for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to inspection and servicing of engines, including the use of tooling, manual and computerised, measuring equipment, servicing tooling and equipment and communication devices and the reporting/ documenting of results

#### Required knowledge

A working knowledge of:

- WHS and environmental regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Measures for Diesel Vehicles as applicable to tasks
- dangers of working with engines
- operating principles of engines, lubrication, cooling and fuel systems and their relationship to each other
- types and layout of service/repair manuals (hard copy and electronic)

**REQUIRED SKILLS AND KNOWLEDGE**

- inspection procedures
- service procedures
- enterprise quality procedures
- work organisation and planning processes

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

##### Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- accurately inspecting and documenting and interpreting analysis results
- conducting inspection and servicing of a range of engines in accordance with workplace and manufacturer/component supplier requirements and specifications
- completing the work within workplace timeframes
- equipment is presented to customer in compliance with workplace requirements

##### Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite

Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints

Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the inspection and servicing of engines
- equipment, hand and power tooling appropriate to the inspection and servicing of engines
- activities covering mandatory task requirements
- specifications and work instructions

#### Method of assessment

Assessment must satisfy the endorsed assessment guidelines



**EVIDENCE GUIDE**

	<p>of the automotive industry's RS&amp;R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
<b>Guidance information for assessment</b>	

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

**Inspection and servicing of engines**

- Inspection and servicing of engines includes the assessment and adjustment/replacement of components in accordance with specifications including those associated with light vehicles, heavy vehicles, motorcycle and marine craft

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>It includes four stroke spark ignition, two stroke spark ignition and four stroke compression ignition</li> </ul>
<b>WHS</b>	WHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, electrical safety, manual lifting and shifting, working in proximity to others and site visitors
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include, but are not limited to operating safely in the event of fires, enterprise first aid requirements and site evacuation
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
<b>Tooling and equipment</b>	Tooling and equipment may include hand tooling, meters, gauges, load testing devices and oil sample analysis equipment

<b>RANGE STATEMENT</b>	
<b>Materials</b>	Material may include oils, lubricants and cleaning materials
<b>Communications</b>	Communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
<b>Information</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to inspection and servicing of engines</li> <li>• regulatory/legislative requirements pertaining to the automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• Instructions issued by authorised enterprise or external persons</li> <li>• Australian Standards</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Mechanical Miscellaneous
--------------------	--------------------------

## Co-requisite units

Not applicable.

## Competency field

Competency field	Technical - Engines
------------------	---------------------