



Australian Government

AURLTA1001 Apply automotive mechanical system fundamentals

Release 1

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Modification History

Release	Comment
Release 1	New unit of competency

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes required to demonstrate basic knowledge and awareness of automotive terminology and mechanical terms and principles as they apply to vehicle mechanical systems, components and technologies found in modern motor vehicles. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	Work applies to light vehicles and is based on demonstrating knowledge of systems and components function, location and operation, as well as an understanding of basic automotive mechanical terminology. Applying knowledge of fundamental operating principles of vehicular mechanical systems, including internal combustion engines, vehicular drivetrain, braking, suspension and steering systems and technologies forms the basis of this unit.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify mechanical fundamentals	1.1.Suitable relevant <i>sources of information</i> are located to assist with mechanical fundamentals research 1.2.General automotive mechanical system fundamentals are identified in relation to modern vehicle platforms 1.3.Mechanical terminology and operating principles of systems and components are referred to and identified for a particular application
2. Identify operation of system or component	2.1.Component or system to be researched is identified 2.2.Information is researched to ensure sufficient understanding of component or system to assist with its further identification and application 2.3.Potential for unsafe conditions or <i>safety hazards</i> is identified
3. Locate system or component on vehicle	3.1.Suitable <i>automotive systems and components</i> are sourced to assist with task 3.2.Location of system or component is confirmed in relation to modern vehicle configuration
4. Apply mechanical fundamentals	4.1.<i>Workplace health and safety (WHS) requirements</i> are observed and applied throughout the work 4.2.System or component is examined and sub-assembly components are identified 4.3.Method of operation is determined to confirm principles of system or component function 4.4.System or component relationship to light vehicle operation is determined 4.5.Potential <i>common faults</i> with system or component are identified

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- communication skills to:
 - communicate ideas and information in verbal and written report
 - use questioning and active listening skills, e.g. when clarifying information
- initiative and enterprise skills to identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
 - understand workplace safety-related procedures
 - read and follow information in written instructions, specifications and other applicable reference documents
- numeracy skills to use and communicate basic mathematical ideas and techniques that relate to automotive systems and components
- planning and organising skills to:
 - identify risk factors
 - plan and organise activities that implement and follow standard procedures
- problem-solving skills to:
 - recognise a workplace problem or a potential problem
 - refer problems outside area of responsibility to appropriate person
- self-management skills to:
 - recognise limitations and seek timely advice
 - follow workplace documentation, such as workplace safe operating procedures
- technical skills to:
 - collect, organise and understand technical information relating to:
 - recognising and reporting unsafe situations
 - automotive components and systems identification, location and function
 - select tools and equipment appropriate to the task
 - safely use workplace tools and equipment when applying mechanical fundamentals
- technology skills to use information technology equipment to assist with research

Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- methods of sourcing information relevant to mechanical systems
- types, functions, location and basic operation of major vehicle systems and components, including basic automotive mechanical terminology
- common faults of major vehicle systems and components

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

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- identify automotive mechanical systems and components
- source relevant technical information
- locate mechanical systems and components on modern motor vehicles
- explain the function of at least three major systems of a modern motor vehicle
- demonstrate basic knowledge of possible causes of faults or problems with vehicle systems.

Context of and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- technical reference information
- a range of functioning automotive systems and components
- vehicles relevant to the qualification being sought
- automotive tools and equipment

EVIDENCE GUIDE

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Overview of assessment

- personal protective equipment and workplace safety equipment.

Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

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.

Sources of information may include:

- vehicle workshop manuals
- service bulletins
- automotive texts
- magazine technical articles
- written instructions
- documented workplace procedures.

Safety hazards may include:

- electricity and water
- toxic substances
- broken or damaged equipment
- flammable materials and fire hazards
- lifting practices
- spillages.

Automotive systems and components may include:

- engine systems
- transmissions and drivetrains
- steering and suspension systems
- fuel systems
- cooling systems
- braking systems
- exhaust systems.

Workplace health and safety (WHS) requirements:

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
 - protective clothing and equipment
 - use of tools and equipment
 - handling of material
 - use of fire-fighting equipment
 - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

Hand tools and equipment may include:

- hammers
- screwdrivers
- wrenches
- sockets and accessories

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	• pliers • specialist tools for component removal or adjustment.
<i>Common faults</i> may include:	• failure to achieve ignition and power • failure to achieve fuel flow • excessive exhaust smoke or noise • unusual engine noises or vibrations • excessive play or vibration through steering • loss of coolant • slow response or excessive pedal travel when braking • system or component fluid or gas leakage.

Unit Sector(s)

Competency field	Mechanical –Light Vehicle
Unit sector	Technical

Custom Content Section

Not applicable.