



Australian Government

AURHTE2001 Remove and install heavy vehicle engine assemblies

Release 1

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Modification History

Release	Comment
Release 1	Replaces AURT201164A Remove and install engine assemblies Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect modern heavy vehicle technologies

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes required to remove and install engine assemblies fitted to heavy vehicles. It involves the identification of work requirements, preparation for work, removal of assemblies, installation of engine assemblies and completion of work finalisation processes, including cleaning and documentation, and post-installation testing procedures. Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.
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Application of the Unit

Application of the unit	Work applies to the removal and installation of engine assemblies of heavy vehicles in the road transport, mining, construction, agricultural and marine environments.
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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 required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or 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. Prepare to remove heavy vehicle engine assemblies	1.1. Workplace instructions are used to determine job requirements relating to removing heavy vehicle engine assemblies 1.2. Workplace health and safety (WHS) requirements are observed and applied throughout the work 1.3. Procedures and information are sourced and interpreted 1.4. Removal options are analysed and those most appropriate to the circumstances are selected 1.5. Warnings in relation to working with lifting and jacking equipment are observed
2. Carry out the removal of heavy vehicle engine assemblies	2.1. Engine assembly is removed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems 2.2. Observations are noted and documented during the removal of engine assembly
3. Install heavy vehicle engine assemblies	3.1. Installation options are analysed and those most appropriate to the circumstances are selected 3.2. Appropriate tools and equipment are selected and prepared 3.3. Engine assembly is installed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems
4. Carry out post-installation tests and adjustments	4.1. Post-installation adjustments are carried out according to workplace procedures and manufacturer and component supplier specifications 4.2. Post-installation tests are carried out according to workplace procedures and manufacturer and component supplier specifications
5. Clean up work area and finalise work processes	5.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 5.2. Tools and equipment are checked and stored according to workplace expectations 5.3. Workplace documentation is completed according to workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- communication skills to:
 - clarify workplace instructions and determine job requirements
 - gain information from appropriate persons and assistance as required
- learning skills to identify sources of information, assistance and expert knowledge
- literacy skills to
 - read, interpret and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
 - follow workplace documentation, such as codes of practice or operating procedures
 - document work performed during inspection and servicing operations
- numeracy skills to:
 - assess tolerances and apply accurate measurements and adjustments
 - interpret gauges, instruments and measuring equipment
- planning and organising skills to ensure tasks are completed within an acceptable timeframe
- problem-solving skills to seek information and assistance as required to solve problems
- self-management skills to:
 - select and use appropriate equipment, materials, processes and procedures
 - follow workplace documentation, such as codes of practice or operating procedures
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools and equipment relating to the removal and installation of heavy vehicle engine assemblies
- technology skills to use technology to collect and provide information

Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements
- dangers of working with lifting and jacking equipment
- methods of disconnecting related systems, including:
 - air conditioning system
 - cooling system
 - electrical systems
 - exhaust system
 - fuel system
 - power steering system
 - transmission systems, including:
 - automatic transmission

REQUIRED SKILLS AND KNOWLEDGE

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

- manual transmission
- removal procedures for heavy vehicle engine assemblies, including:
 - correct use of lifting and supporting equipment
 - item tagging procedures
 - correct disposal methods of hazardous substances
- installation procedures for heavy vehicle engine assemblies
- post-installation testing and adjustment procedures for heavy vehicle engine assemblies, including:
 - pre-start procedures
 - operational testing and run-in procedures

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, the 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:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- remove and install a range of heavy vehicle engine assemblies according to workplace, manufacturer and component supplier requirements
- present heavy vehicle in a condition that complies with workplace requirements.

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
- heavy vehicles and heavy vehicle engine assemblies
- tools and equipment appropriate for the removal and installation of heavy vehicle engine assemblies
- specifications and workplace instructions.

Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

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, 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.

Workplace instructions may include:	• computer-generated instructions • verbal instructions • written instructions.
Job requirements may include:	• removal and installation methods, processes and equipment.
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.
Procedures and information may include:	• safe work procedures relating to the removal and installation of heavy vehicle engine assemblies • verbal, written and graphical instructions • signage • work schedules, plans and specifications • work bulletins or memos • material safety data sheets (MSDS) • diagrams or sketches • regulatory and legislative requirements relating to the automotive industry • Australian Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • Australian Standards • heavy vehicle service requirements and repair manuals.
Removal options may	• removal of the engine assembly alone or with the transmission assembly

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include:	removal with the engine attached to chassis.
Observations may include:	- routing of system components - damaged or faulty components - components and parts required for engine installation.
Installation options may include:	- installation of the engine assembly alone or with the transmission assembly - installation with the engine attached to chassis.
Post-installation adjustments may include:	- throttle adjustments - coolant replacement - oil replacement - tappet adjustment - re-tensioning of cylinder head bolts.
Post-installation tests may include:	- stationary and mobile engine performance tests - testing of associated systems, including: - air conditioning system - cooling system - power steering system - ancillary systems - transmission system.

Unit Sector(s)

Competency field	Mechanical – Heavy Vehicle
Unit sector	Technical - Engines

Custom Content Section

Not applicable.