Australian Government

AURHTEX01 Remove and install heavy vehicle engine assemblies

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Release: 1

AURHTEX01 Remove and install heavy vehicle engine assemblies

Modification History

Release	Comments
1	This unit of competency was first released in AUR Automotive Retail, Service and Repair Training Package Release 11.0.

Application

This unit describes the performance outcomes required to remove and install engine assemblies fitted to heavy vehicles. It involves preparing for the task, removing and installing the engine assembly, performing post-installation testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The heavy vehicle engines include those of agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

Licensing/Regulatory Information

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

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

Mechanical - Heavy Vehicle

Unit sector(s)

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. 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.*

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1. Prepare to remove heavy vehicle engine assembly	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for engine removal and installation activity 1.3 Analyse engine removal options and select those most appropriate to the circumstances using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for engine removal and installation activity, including lifting equipment, and establish serviceability according to workplace procedures
2. Remove engine assembly	2.1 Remove engine assembly according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements.*** 2.2 Inspect engine assembly, components and systems, and report faults and recommendations for necessary repairs or adjustments according to workplace procedures
3. Install engine assembly	3.1 Analyse installation options and select those most appropriate to the circumstances using workplace and manufacturer procedures 3.2 Install engine assembly according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements.*** 3.3 *Carry out* ***post-installation checks, adjustments and tests*** according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle, machinery or vessel is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Check and store tools and equipment according to workplace procedures 4.4 Complete documentation according to workplace procedures

Foundation skills

This section describes the foundation skills essential to performance.

Skill	Description
Learning	• Locate manufacturer and workplace engine removal and installation information efficiently

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Reading	• Interpret manufacturer removal and installation procedures, specifications and lifting equipment information
Writing	• Record parts, fluids and materials used accurately in workplace documentation
Oral communication	• Clarify instructions and coordinates lifting tasks with other workers
Numeracy	• Measure components and calculates tolerances and deviations from manufacturer specifications • Calculate and adjusts lubricant and coolant volumes
Planning and organising	• Plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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 procedures for:
	  ○ isolating and stabilising vehicle or machinery
	  ○ using vehicle or machinery lifting devices and supporting equipment
	  ○ working with compression ignition engines
	• environmental requirements, including procedures for trapping, storing and disposing of oils, fluids, coolants and gases released during removal and installation of engine assemblies.

Post-installation checks, adjustments and tests must include:	• pre-start procedures • engine adjustments • throttle adjustments • coolant adjustments • ancillary engine systems • operational testing and run-in procedures.

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Assessment Requirements for AURHTEX01 Remove and install heavy vehicle engine assemblies

Performance Evidence

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

- remove and install engine assemblies on two different heavy vehicles, machinery or vessels, including:
    - removing and refitting ancillary components and systems
    - adjusting oil and fluid levels
    - post-installation adjustments
    - post-installation testing.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- methods to locate and interpret information required to remove and install heavy vehicle engine assemblies, including:
    - information provided by customers and supervisors
    - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to remove and install heavy vehicle engine assemblies, including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removal and installation of heavy vehicle engines, including procedures for:
    - isolating and stabilising vehicle or machinery
    - using vehicle or machinery lifting devices and supporting equipment
    - tilting and securely propping cabs

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    - working with compression ignition engines
- environmental requirements, including procedures for trapping, storing and disposing of oils, fluids, coolants and gases released during removal and installation of engine assemblies
- methods of disconnecting and reconnecting related systems, including:
    - air conditioning system
    - cooling system
    - electrical systems
    - exhaust system
    - fuel system
    - power steering system
    - hydraulic system
    - transmission systems, including:
        - automatic transmission
        - manual transmission
- removal procedures for heavy vehicle engine assemblies, including:
    - use of engine lifting devices and supporting equipment
    - item tagging procedures
- installation procedures for heavy vehicle engine assemblies
- post-installation testing and adjustment procedures for heavy vehicle engine assemblies, including:
    - engine pre-start procedures
    - operational testing and run-in procedures
    - engine adjustments and cylinder head bolt retensioning as required
    - throttle adjustments
    - coolant adjustments
    - ancillary engine systems.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- Assessment must include direct observation of tasks.
- Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle engine assemblies that they have removed and installed, e.g. repair orders.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- two different heavy vehicles, machinery or vessels requiring removal and installation of engine assemblies
- tools, equipment and materials appropriate for removing and replacing heavy vehicle engines, including engine lifting devices and supporting equipment.

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
AURHTE001 Remove and install heavy vehicle engine assemblies		Updates to Elements and Performance Criteria, Foundation Skills, Range of Conditions, Knowledge Evidence, Performance Evidence and Assessment Conditions. All Performance Criteria rewritten to active voice.

Links

Companion volumes, including implementation guides, are found on the national training register - https://training.gov.au/training/details/AUR.

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