



Australian Government

Department of Education, Employment and Workplace Relations

MEM18032B Maintain induction/exhaust systems

Release: 1

MEM18032B Maintain induction/exhaust systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers assessing induction/exhaust system operation and repairing or replacing faulty components.
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Application of the Unit

Application of the unit	Testing procedures would typically require the person to understand the operation of the apparatus installed to balance fuel injection to boost pressure; and control devices installed to prevent excessive turbocharger RPM and/or boost pressure. Typical faults would be associated with excessive air inlet restrictions, excessive exhaust back pressures, too much/little boost pressure, ineffective inter/after cooling, etc. Band: A Unit Weight: 4
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools

Prerequisite units		
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components

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. Assess induction/exhaust system operation	1.1. Supercharging, filtering, inter/after cooling principles, terminology and applications are understood. 1.2. Relevant information is obtained and correctly interpreted prior to any testing. 1.3. Checks are undertaken safely and to prescribed procedures. 1.4. Flows, pressures and temperatures are correctly determined and recorded. 1.5. Faults are correctly isolated to component level and appropriate corrective action is determined. 1.6. Test instruments and equipment are used correctly.
2. Rectify faulty components	2.1. Component wear and clearances are correctly determined using manufacturers' recommendations. 2.2. Replacement components are correctly selected using manufacturers' data. 2.3. Components are removed and refitted to engine following prescribed procedures. 2.4. Test and rectification activities are accurately recorded. 2.5. Engine is free of air/exhaust leaks after repair work is carried out.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents • planning and sequencing operations • checking task-related information • checking for conformance to specification

REQUIRED SKILLS AND KNOWLEDGE

- identifying a variety of applications of supercharging, filtering inter and after cooling
- checking the induction/exhaust system for correct operation in accordance with standard operating procedures
- determining the flows, pressures and temperatures of the given induction/exhaust system using appropriate techniques and equipment
- isolating faulty component in accordance with standard operating procedures
- using all test instruments and equipment
- visually and dimensionally checking component parts for wear
- using supplier catalogues to select component parts
- removing components and fitting to engines
- recording all test and, where appropriate, repair activities
- checking the induction/exhaust system for leaks
- undertaking calculations and numerical operations within the scope of this unit

Required knowledge

Look for evidence that confirms knowledge of:

- the principles and terminology of supercharging, filtering, inter and after cooling
- the performance and operational specifications of the induction/exhaust system
- the procedures and safety precautions for testing induction/exhaust systems for correct operation
- the equipment and procedures necessary to test flows, pressures and temperatures associated with induction/exhaust systems
- the procedures for recording flows, pressures and temperatures
- common faults associated with induction/exhaust systems and causes of those faults
- the appropriate action and procedures for correcting common faults in induction/exhaust systems
- the component specifications/tolerances and actions to be taken if the components are outside of specification
- the action to be taken if the components are 'just' within specification
- the measuring instruments to be used to carry out dimensional checks on components
- the procedures and safety precautions for removing/fitting components to engines
- the procedures for recording test and repair activities undertaken on induction/exhaust systems
- the consequences of air/exhaust leaks on the safe operation of the induction/exhaust system and procedures for testing for leaks in induction/exhaust systems
- hazards and control measures associate with maintaining and rectifying induction/exhaust systems, including housekeeping
- safe work practices and 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, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to maintain and rectify induction/exhaust systems. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

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

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with maintaining and rectifying induction/exhaust systems, or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****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.

Supercharging

Supercharging apparatus includes turbo charging equipment

Unit Sector(s)**Unit sector****Co-requisite units****Co-requisite units**

Competency field

Competency field	Maintenance and diagnostics
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