



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM18035B Diagnose and rectify braking systems**

**Release: 1**

## MEM18035B Diagnose and rectify braking systems

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers checking and assessing braking systems, and replacing/repairing/overhauling braking system components.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit covers braking systems associated with mobile equipment including mechanical, hydraulic, air and electrically operated types.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 6</b></p>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		
<b>Path 1</b>	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

<b>Prerequisite units</b>		
	MEM18055B	Dismantle, replace and assemble engineering components

## Employability Skills Information

<b>Employability skills</b>	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. Check and assess braking system	1.1. Friction and heat principles, braking system types, arrangements, components including anti-lock systems, functions, and applications are understood. 1.2. Braking system is assessed for compliance with ADR regulations of appropriate standard. 1.3. Serviceability of friction materials is correctly assessed. 1.4. Braking system control devices are assessed for compliance with specifications. 1.5. Minimum operating dimensions are measured, recorded and corrective action is determined. 1.6. Faults are correctly diagnosed to component level and appropriate corrective action is determined.
2. Rectify and overhaul braking system components	2.1. Characteristics of surface finishes and wear patterns associated with braking components are understood and measurements and part condition are correctly interpreted when determining reuse/replacement. 2.2. Braking system components are removed, disassembled and handled correctly. 2.3. Components are cleaned using appropriate fluid and procedure. 2.4. Friction material to reaction member clearance is adjusted to specification. 2.5. Tooling and equipment are correctly applied. 2.6. Hydraulic/air/vacuum system is free of leaks/restrictions after repair work. 2.7. All levers, linkages and pedal clearances are adjusted to specifications. 2.8. Braking system is recommissioned and tested according to manufacturers' recommendations or appropriate standard/regulation.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

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

**REQUIRED SKILLS AND KNOWLEDGE****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
- checking the braking system for compliance with ADR regulations
- checking friction materials and identifying as being serviceable or to be replaced
- measuring and recording brake operating dimensions
- identifying variation of brake operating measurement from specification
- checking the operation of the braking system for conformance to specification
- identifying faulty braking system components
- identifying given components for reuse/replacement
- removing, dismantling and handling braking system components
- cleaning braking system components using appropriate solutions
- adjusting brake clearance
- using tools and equipment
- adjusting levers, linkages and pedal clearances
- testing the braking system for conformance with specifications/regulations
- recommissioning the braking system
- undertaking calculations and numerical operations within the scope of this unit

**Required knowledge**

Look for evidence that confirms knowledge of:

- the principles of friction and heat as applied to braking systems
- the function of the components of a variety of braking system types and arrangements
- typical applications of different types of braking systems
- the requirements of the relevant Australian Design Rule applying to brakes
- the procedures for checking braking systems for compliance with ADR regulations
- examples of worn and defective friction materials identified from given samples
- the specifications of the braking system
- the procedures, tools, techniques and equipment for measuring brake operating dimensions
- the procedures for recording brake operating dimensions
- the corrective action to be taken when brake operating measurement varies from specification

**REQUIRED SKILLS AND KNOWLEDGE**

- the corrective action to be taken when faulty braking system components are identified
- the procedures for checking braking system operation
- the characteristics of surface finishes and wear patterns as applied to braking system components
- the specifications of the braking system
- the reasons for identifying the components for reuse or replacement
- the procedures, tools, techniques and equipment for removing and dismantling braking system components
- the precautions to be taken when handling braking systems components
- the reasons for selecting the chosen tools, techniques and equipment
- the procedures and solutions for cleaning braking system components
- the procedure for adjusting brake clearances
- the procedures for checking for hydraulic, air and vacuum system leaks and restrictions
- the procedures for adjusting levers, linkages and pedal clearances
- the procedures for recommissioning the braking system
- the procedures for testing braking systems
- the tests to be carried out on the braking system
- the tools, techniques and equipment required to test the braking system
- the reasons for selecting the chosen tools, techniques and equipment
- hazards and control measures associate with testing and rectifying braking systems, including housekeeping
- safe work practices and procedures

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>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.</p>	
<p><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to diagnose and repair braking systems. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>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.</p>
<p><b>Context of and specific resources for assessment</b></p>	<p>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.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with diagnosing and rectifying braking systems, or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p><b>Method of assessment</b></p>	<p>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.</p>

**EVIDENCE GUIDE**

<b>Guidance information for assessment</b>	
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**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.

**Braking system**

Arrangements may include air, hydraulic, mechanical, electric, disc, operated wet disc drum, wheel/track brakes; anti-locking braking systems; transmission brakes and service; park and emergency brakes

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>		

## Competency field

Competency field	Maintenance and diagnostics
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