



Australian Government

Department of Education, Employment and Workplace Relations

MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies

Release: 1

MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers diagnosing faults and repairing drives and transmission assemblies, and undertaking final adjustment and commissioning.
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Application of the Unit

Application of the unit	<p>This unit applies to diagnostics and maintenance, repair, adjustment and commissioning of mechanical drives and mechanical transmission assemblies.</p> <p>This unit should not be selected where either Unit MEM18042C (Diagnose and rectify manual transmissions), or Unit MEM18043C (Diagnose and rectify automatic transmissions) or Unit MEM18044C (Diagnose and rectify drive line and final drives) are also selected.</p> <p>Band: A Unit Weight: 4</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements

Prerequisite units	
	MEM18001C Use hand tools
	MEM18002B Use power tools/hand held operations
	MEM18003C Use tools for precision work
	MEM18006C Repair and fit engineering components
	MEM18009B Perform levelling and alignment of machines and engineering components
	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
<p>1. Undertake maintenance checks of mechanical drives and mechanical transmission components</p>	<p>1.1. Principles of mechanical drives and mechanical transmission components are understood.</p> <p>1.2. The function of the main parts of the designated mechanical drive/transmission assembly is understood.</p> <p>1.3. Appropriate maintenance principles, techniques, tools and equipment, mechanical drive/transmission components are used to check for wear, distortion, tensions, misalignment, fatigue, lubrication, slackness, tooth wear, breakages and other related malfunctions.</p> <p>1.4. Assembly requiring further diagnosis, repair or adjustment is identified and findings are documented.</p>
<p>2. Adjust mechanical drives and transmission assemblies</p>	<p>2.1. Adjustment requirements are determined.</p> <p>2.2. A suitable adjustment method is determined from manufacturers' instruction sheets, standard workshop manuals/procedures or other means.</p> <p>2.3. Adjustment tools and equipment are selected according to the type of assembly being serviced.</p> <p>2.4. Appropriate maintenance principles, techniques, tools and equipment are used, and drives/transmission components are tensioned, aligned balanced or adjusted to manufacturers'/site specifications according to safe workshop practices.</p> <p>2.5. Drive/transmission assembly is checked after adjustment for correct operation or identified for further diagnosis or repair.</p> <p>2.6. Service report is completed.</p> <p>2.7. Further diagnosis or repair requirements are actioned.</p>
<p>3. Diagnose faults</p>	<p>3.1. Service reports are read and visual and sensory inspection of the drive/transmission assembly is undertaken.</p> <p>3.2. Given manufacturers' specifications, and where applicable, diagnostic equipment drive/transmission assembly is tested using sound maintenance principles and procedures.</p> <p>3.3. Faults are localised at the component level and identified for repair or replacement.</p> <p>3.4. Fault causes are analysed and preventative measures to avoid re-occurrence are developed, documented and actioned by appropriate means.</p>

ELEMENT	PERFORMANCE CRITERIA
	3.5. Requirements for repair or replacement are actioned.

ELEMENT	PERFORMANCE CRITERIA
4. Repair mechanical drives/transmission assemblies	4.1. Service reports are read and visual and sensory inspection of the drive/transmission assembly is undertaken. 4.2. Task requirements are ascertained. 4.3. Tools and equipment are selected according to the type of assembly being serviced. 4.4. Mechanical drive/transmission assembly is dismantled using appropriate maintenance principles, techniques, tools, equipment and safe workshop practices. 4.5. Serviceable items are repaired using appropriate maintenance procedures according to manufacturers' specifications and standard workshop practices. 4.6. Standard replaceable items are selected and obtained using manufacturers' catalogues, spare parts lists, engineering specifications. 4.7. Component parts are refitted to mechanical drive/transmission assembly using sound maintenance principles, techniques, tools and equipment in accordance with manufacturers'/site specifications.
5. Final adjustment and commissioning	5.1. Using applicable maintenance principles and procedures, drive/transmission components are tensioned, balanced, aligned or adjusted to suit specifications and operational requirements. 5.2. Drive/transmission assembly is checked after adjustment and operational performance is analysed. 5.3. Assembly is commissioned to specifications. 5.4. Service report is completed.

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:

- locating, reading and interpreting information on written job instructions, specifications, manufacturers' instructions, standard workshop manuals/procedures, drawings, charts, lists and other reference documentation

REQUIRED SKILLS AND KNOWLEDGE

- checking and clarifying task-related information
- interpreting manufacturers' catalogues or engineering specifications
- undertaking diagnostic and testing
- analysing operational performance
- planning and sequencing operations
- completing proformas, standard workplace forms and short reports using relevant terminology
- checking for conformance to specifications
- measuring components to specified tolerances
- undertaking calculations for determining cutting parameters and checking tolerances
- undertaking numerical operations and engineering calculations/formulae within the scope of this unit
- following verbal instructions
- orally reporting information

Required knowledge

Look for evidence that confirms knowledge of:

- uses and characteristics of lubricants
- principles of operation of a range of mechanical drives and transmissions
- techniques, tools and equipment to measure components
- common malfunctions in mechanical drives, transmissions and their components
- procedures for checking and adjusting mechanical drives, transmissions and their components
- preventative measures that can be undertaken to avoid recurrence of the fault/failure
- any applicable industry standards, national/Australian standards, NOHSC guidelines, State/Territory regulatory codes of practice/standards
- use and application of personal protective equipment
- safe work practices and procedures
- hazards and control measures associated with maintaining and repairing mechanical drives and mechanical transmission assemblies

Evidence Guide

EVIDENCE GUIDE	
<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>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to diagnose faults and repair drives and transmission assemblies and undertake final adjustment and commissioning. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</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>Context of and specific resources for assessment</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 maintaining/repairing mechanical drives and mechanical transmission assemblies or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p>Method of assessment</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,</p>

EVIDENCE GUIDE	
	standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
<p>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.</p>	
Mechanical drive/transmission	Worm and worm wheel, line shafts, plumber blocks, pulleys, sprockets, belts, taper bush assemblies, roller chains, chain drives, mechanical and hydraulic couplings, compression couplings, disc type flexible couplings, spider type, chain couplings, universal joints, bevel gearing, rack and pinion gearing, dog toothed clutches, cone type clutches, expanding shoe type clutches, friction/plate type clutches, centrifugal clutches, toggle action linkages, magnetic clutches, sprag clutches, band type brakes and other associated drive components.
Service reports	According to workplace procedures
Sensory inspection	Vibration, heat, smell, sound, sight
Commissioned	Confirming readiness for use or return to service

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
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