



**Australian Government**

# **MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies**

**Release: 2**

# **MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies**

## **Modification History**

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies (Release 1).

Release 1. Supersedes and is equivalent to MEM18007B Maintain and repair mechanical drives and mechanical transmission assemblies.

## **Application**

This unit of competency defines the skills and knowledge required to undertake maintenance, diagnose faults and repair drives and transmission assemblies, and undertake final adjustment and commissioning on industrial machinery.

Where levelling and alignment of machines and engineering components is required unit MEM18009 Perform precision levelling and alignment of machines and engineering components should also be selected.

MEM27028 Diagnose and rectify manual transmissions, MEM27014 Diagnose and rectify automatic transmissions and MEM27015 Diagnose and rectify drive line and final drives define the skills and knowledge applicable to mobile plant.

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

**Band: A**

**Unit Weight: 4**

## **Pre-requisite Unit**

|          |                                                              |
|----------|--------------------------------------------------------------|
| MEM09002 | Interpret technical drawing                                  |
| MEM11011 | Undertake manual handling                                    |
| MEM12023 | Perform engineering measurements                             |
| MEM12024 | Perform computations                                         |
| MEM13015 | Work safely and effectively in manufacturing and engineering |
| MEM14006 | Plan work activities                                         |
| MEM16006 | Organise and communicate information                         |
| MEM18001 | Use hand tools                                               |

|          |                                                        |
|----------|--------------------------------------------------------|
| MEM18002 | Use power tools/hand held operations                   |
| MEM18003 | Use tools for precision work                           |
| MEM18006 | Perform precision fitting of engineering components    |
| MEM18055 | Dismantle, replace and assemble engineering components |

## Competency Field

Maintenance and diagnostics

## Elements and Performance Criteria

| Elements describe the essential outcomes.                                                         | Performance criteria describe the performance needed to demonstrate achievement of the element.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1 Determine job requirements</b>                                                               | <b>1.1</b> Follow standard operating procedures (SOPs)<br><b>1.2</b> Comply with work health and safety (WHS) requirements at all times<br><b>1.3</b> Use appropriate personal protective equipment (PPE) in accordance with SOPs<br><b>1.4</b> Identify job requirements from specifications, drawings, job sheets or work instructions                                                                                                                                                                                                                                                            |
| <b>2 Undertake maintenance checks of mechanical drives and mechanical transmission components</b> | <b>2.1</b> Apply principles of mechanical drives, mechanical transmission components and the function of the main parts of the designated mechanical drive/transmission assembly to undertake maintenance checks<br><b>2.2</b> Check mechanical drive/transmission components for wear, distortion, tensions, misalignment, fatigue, lubrication, slackness, tooth wear, breakages and other related malfunctions using appropriate maintenance principles, techniques, tools and equipment<br><b>2.3</b> Identify assembly requiring further diagnosis, repair or adjustment and document findings |

| Elements describe the essential outcomes. |                                                             | Performance criteria describe the performance needed to demonstrate achievement of the element. |                                                                                                                                                       |
|-------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3                                         | <b>Adjust mechanical drives and transmission assemblies</b> | 3.1                                                                                             | Determine a suitable adjustment method and requirements from manufacturers' instruction sheets, standard workshop manuals/procedures or similar means |
|                                           |                                                             | 3.2                                                                                             | Select adjustment tools and equipment according to the type of assembly being serviced                                                                |
|                                           |                                                             | 3.3                                                                                             | Tension, align, balance or adjust drives/transmission components to manufacturers'/site specifications                                                |
|                                           |                                                             | 3.4                                                                                             | Check drive/transmission assembly after adjustment for correct operation or identify for further diagnosis or repair                                  |
|                                           |                                                             | 3.5                                                                                             | Complete service report                                                                                                                               |
|                                           |                                                             | 3.6                                                                                             | Action further diagnosis or repair requirements                                                                                                       |
| 4                                         | <b>Diagnose faults</b>                                      | 4.1                                                                                             | Read service reports and undertake visual and sensory inspection of the drive/transmission assembly                                                   |
|                                           |                                                             | 4.2                                                                                             | Test diagnostic equipment drive/transmission assembly to manufacturers' specifications, where applicable                                              |
|                                           |                                                             | 4.3                                                                                             | Localise faults at the component level and identify for repair or replacement                                                                         |
|                                           |                                                             | 4.4                                                                                             | Analyse fault causes and develop preventative measures to avoid re-occurrence, document and action by appropriate means                               |
|                                           |                                                             | 4.5                                                                                             | Action requirements for repair or replacement                                                                                                         |
| 5                                         | <b>Repair mechanical drives/ transmission assemblies</b>    | 5.1                                                                                             | Ascertain task requirements                                                                                                                           |
|                                           |                                                             | 5.2                                                                                             | Select tools and equipment according to the type of assembly being serviced                                                                           |
|                                           |                                                             | 5.3                                                                                             | Dismantle mechanical drive/transmission using appropriate maintenance principles, techniques, tools, equipment and safe workshop practices            |
|                                           |                                                             | 5.4                                                                                             | Repair serviceable items to manufacturers' specifications                                                                                             |

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

and standard workshop practices

5.5 Select and obtain standard replaceable items from appropriate resources

5.6 Re-fit component parts to mechanical drive/transmission assembly in accordance with manufacturers'/site specifications

**6 Undertake final adjustment and commissioning**

6.1 Tension, balance, align or adjust drive/transmission components to suit specifications and operational requirements

6.2 Check drive/transmission assembly after adjustment and operational performance is analysed

6.3 Commission assembly to specifications

6.4 Complete service report

## Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

This field allows for different 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.

**Mechanical drive/transmission components include one (1) or more of the following:**

- worm and worm wheel
- line shafts
- plumber blocks
- pulleys
- sprockets
- belts

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- 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
- other associated drive components

**Sensory inspection  
includes one (1) or more  
of the following:**

- vibration
- heat
- smell
- sound
- sight

## Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies (Release 1).

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## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

# **Assessment Requirements for MEM18007 Maintain and repair mechanical drives and mechanical transmission assemblies**

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## **Performance Evidence**

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists and drawings to maintain and repair mechanical drives and transmission assemblies
- undertaking diagnosis and testing of mechanical drives/transmissions components for wear, lubrication, faults and malfunctions using appropriate tools, equipment and techniques
- identifying assemblies requiring further diagnosis/repair or adjustment and document findings
- determining adjustment requirements of mechanical drives and transmission assemblies from manufacturers' specifications and manuals
- carrying out adjustments to specifications and confirming correct operation
- interpreting service reports and carrying out inspection of drive/transmission assembly visually, sensory and use of diagnostic test equipment to localise faults down to component level and identify for repair or replacement
- dismantling mechanical drive/transmission using appropriate tools and equipment, repairing serviceable items and re-fitting component parts in accordance with manufacturers'/site specifications
- analysing fault causes and developing preventive measures to avoid re-occurrence
- making final adjustments and commissioning to specifications and completing service report.

## **Knowledge Evidence**

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- 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.

## Assessment Conditions

- Assessors must:
  - have vocational competency in maintaining and repairing mechanical drives and mechanical transmission assemblies at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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