



Australian Government

MEM27028 Diagnose and rectify manual transmissions

Release: 1

MEM27028 Diagnose and rectify manual transmissions

Modification History

Release 1. Supersedes and is equivalent to MEM18042C Diagnose and rectify manual transmissions

Application

This unit of competency defines the skills and knowledge required to assess clutch and transmission operation, and repair or replace faulty components.

Testing and assessment of performance would typically require operation of the plant or equipment. A licence may be required and users should check with the relevant authorities.

Where hydraulic clutch assembly is used then unit MEM18020 Maintain hydraulic system components should also be selected.

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
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
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.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Assess clutch/transmission operation	2.1	Apply principles of clutch and release mechanism types, power flows, gear types and ratios, torque multiplication, synchronising and shifting to assess operation of clutch/transmission assembly
		2.2	Obtain and interpret relevant information prior to any testing
		2.3	Undertake preliminary checks safely to prescribed procedures
		2.4	Isolate faults to component level and determine appropriate corrective action
		2.5	Use test equipment in accordance with SOPs
		2.6	Assess component parts for reuse or replacement
3	Repair/replace faulty components	3.1	Determine component wear and clearances using appropriate test equipment and manufacturer recommendations
		3.2	Select replacement components using manufacturers' data
		3.3	Remove and refit components to clutch/transmission assembly using appropriate tools, equipment and techniques
		3.4	Make adjustments using appropriate tooling/equipment and manufacturers' data
		3.5	Verify clutch/transmission assembly is free of excessive noise and operates to specification after work is carried

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

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- 3.6 Record all test and rectification activities according to SOPs

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.

Manual transmissions include one (1) or more of the following:

- single/multi-plate type
- clutch assemblies
- counter shaft transmissions
- power take-offs
- transfer cases

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18042C Diagnose and rectify manual transmissions

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 MEM27028 Diagnose and rectify manual transmissions

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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, drawings and other applicable reference documents to diagnose and rectify manual transmissions
- checking manual transmission for compliance with specifications using appropriate tools, techniques and test equipment
- undertaking calculation and numerical operations associated with diagnosing and rectifying manual transmissions
- testing the clutch/transmission components for compliance to specifications and identifying faulty components by using appropriate testing equipment and identifying components for reuse or replacement
- removing and refitting components to clutch/transmission assemblies and selecting replacement parts using manufacturer catalogues and data
- adjusting clutch and transmission components using appropriate tools, techniques and equipment
- operating the clutch/transmission assembly free of excessive noise and in compliance with specifications
- recording/reporting all service/work activities in accordance with SOPs.

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)
- principles of operation of a variety of clutches
- functions of the components of a variety of clutches
- principles of operation of manual transmissions
- concepts of gear ratios, torque multiplication and synchronisation
- procedures for:
 - checking clutches and transmissions for correct operation

- testing clutches and transmissions
- checking clutch and transmission components for wear and clearance
- removing, refitting and adjusting clutch and transmission components
- recording test and repair activities
- appropriate action to correct the faulty component(s)
- test equipment to be used in checking/testing clutches and transmissions for correct operation and reasons for selection
- tools, techniques and equipment to be used to determine component wear and clearance
- tools, techniques and equipment to be used to maintain and repair clutch and transmission assemblies
- effects of the adjustments on clutch and transmission operation
- clutch/transmission assembly specifications.

Assessment Conditions

- Assessors must:
 - have vocational competency in diagnosing and rectifying manual transmissions 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
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, 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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