



Australian Government

Department of Education, Employment and Workplace Relations

MEM18042C Diagnose and rectify manual transmissions

Release: 1

MEM18042C Diagnose and rectify manual transmissions

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers assessing clutch and transmission operation, and repairing or replacing faulty components.
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Application of the Unit

Application of the unit	The unit applies to diagnosis and repair activities associated with single/multi plate type, clutch assemblies, counter shaft transmissions, power take-offs and transfer cases. Testing and assessment of performance would typically require operation of the plant or equipment. If hydraulic clutch assembly is used, then competency Unit MEM18018C (Maintain pneumatic system components) may need to be accessed. 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

Prerequisite units		
	MEM18001C	Use hand tools
	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 clutch/transmission operation	1.1.Clutch and release mechanism types and principles of operation are understood. 1.2.Power flows, gear types and ratios, torque multiplication, synchronising and shifting principles are understood. 1.3.Relevant information is obtained and correctly interpreted prior to any testing. 1.4.Preliminary checks are undertaken safely and to prescribed procedures. 1.5.Faults are correctly isolated to component level and appropriate corrective action is determined. 1.6.Test equipment is adapted and used correctly. 1.7.Component parts are correctly assessed for reuse or replacement.
2. Repair/replace faulty components	2.1.Component wear and clearances are correctly determined using appropriate test equipment and manufacturers' recommendations. 2.2.Replacement components are correctly selected using manufacturers' data. 2.3.Components are removed and refitted to clutch/transmission assembly following prescribed procedures. 2.4.Adjustments are made correctly using appropriate tooling/equipment and manufacturers' data. 2.5.Test and rectification activities are accurately recorded. 2.6.Clutch/transmission assembly is free of excessive noise and operates to specification after 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

REQUIRED SKILLS AND KNOWLEDGE

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
- identifying faulty clutch and/or transmission components
- checking task-related information
- checking for conformance to specification
- checking the clutch and transmission for correct operation
- using test equipment correctly
- testing the clutch/transmission components for conformance to specification
- identifying component parts for reuse or replacement
- removing and refitting components to clutch/transmission assemblies
- adjusting clutch and transmission components using appropriate tools, techniques and equipment
- recording test and rectification activities
- identifying replacement components using manufacturers' data
- operating the clutch/transmission assembly free of excessive noise and in conformance to specifications
- undertaking calculations and numerical operations within the scope of this unit

Required knowledge

Look for evidence that confirms knowledge of:

- the principles of operation of a variety of clutches
- the functions of the components of a variety of clutches
- the principles of operation of manual transmissions
- the concepts of gear ratios, torque multiplication and synchronisation
- the procedures for checking clutches and transmissions for correct operation
- the appropriate action to correct the faulty component(s)
- the test equipment to be used in checking/testing clutches and transmissions for correct operation
- the reasons for selecting the chosen test equipment
- the procedures for testing clutches and transmissions, including any necessary adaptation of test equipment
- the procedures for checking clutch and transmission components for wear and clearance
- the tools, techniques and equipment to be used to determine component wear and clearance
- procedures for removing and refitting clutch and transmission components
- the procedures for adjusting clutch and transmission components

REQUIRED SKILLS AND KNOWLEDGE

- the tools, techniques and equipment to be used to maintain and repair clutch and transmission assemblies
- the effects of the adjustments on clutch and transmission operation
- the procedures for recording test and repair activities
- the clutch/transmission assembly specifications
- hazards and control measures associated with testing and rectifying manual transmissions, 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 diagnose and rectify manual transmissions. 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 diagnosing and rectifying manual transmissions 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.

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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