



Australian Government

Department of Education, Employment and Workplace Relations

MEM18005B Perform fault diagnosis, installation and removal of bearings

Release: 1

MEM18005B Perform fault diagnosis, installation and removal of bearings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers performing routine bearing checks during operations and non-operation, diagnosing bearing faults, identifying bearing requirements for replacement or installation, and removing and installing bearings.
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Application of the Unit

Application of the unit	<p>This unit involves using acceptable engineering principles, correct tools and equipment to undertake routine static and dynamic bearing checks; bearing fault diagnostics; and bearing removal, replacement, installation and lubrication. All bearing replacements are selected from spare parts lists, manufacturers' catalogues, engineering drawings and data sheets.</p> <p>Mounting/dismounting methods may include the use of press, dowel, keys, keeper plate, heat, shrink, hydraulic and mechanical mounting and dismounting tools and associated methods etc.</p> <p>Industry and enterprise standards of quality and safety are used to install and replace plain, ball and roller bearings. Where diagnostic skills are not required and where straightforward removal and replacement of pre-manufactured bearings is undertaken, Unit MEM18055B (Dismantle, replace and assemble engineering components) should be regarded as sufficient.</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
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18003C	Use tools for precision work
	MEM18006C	Repair and fit engineering components
	MEM18055B	Dismantle, replace and assemble engineering components
	MEM12023A	Perform engineering measurements

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. Perform routine bearing checks during operation and non-operation	1.1. Bearing installation is inspected and task requirements are determined by the most appropriate means. 1.2. Bearing installation is checked during operation using standard procedures of listening, feeling, observing and by using test equipment appropriate to the installation. 1.3. Seal condition is checked for seal and wear leaks using correct and appropriate means. 1.4. Lubricating devices are checked for correct operation using tools and techniques appropriate to the task.
2. Diagnose bearing faults	2.1. Visual and sensory inspection of bearing arrangement is performed. 2.2. Bearings are tested for correct operation and malfunction using manufacturers' specifications and diagnostic equipment appropriate to the task. 2.3. Faulty bearings are identified for replacement using relevant engineering principles. 2.4. Causes of failure are identified using techniques and equipment appropriate to the task. 2.5. Corrective action to avoid recurrences is taken where necessary.
3. Identify bearing requirements for replacement or installation	3.1. Bearing installation is inspected and task requirements are determined. 3.2. Operational function of bearings to be installed or replaced is determined using bearing and engineering principles.
4. Remove bearings	4.1. Bearing removal techniques and tools are determined for the task. 4.2. Bearings are removed from shafts or bearing housings with minimal damage to components. 4.3. Condition of serviceable items is inspected using measuring and test equipment appropriate to the task. 4.4. Serviceable items are repaired using engineering, techniques, tools and equipment appropriate to the task.
5. Install plain bearings	5.1. Standard replaceable items for plain, wrapped, flanged, split bush and thrust bearings are selected from manufacturers' parts lists, catalogues or engineering drawings. 5.2. Installation techniques and tools are selected

ELEMENT	PERFORMANCE CRITERIA
	<p>appropriate to the task.</p> <p>5.3. Bearings are sized to correct clearance.</p> <p>5.4. Lubrication requirements are catered for to meet specification and/or application requirements.</p> <p>5.5. Bearings are fitted correctly.</p> <p>5.6. Bearings are tensioned down and run according to standard operating procedures or manufacturers' recommendations.</p> <p>5.7. Final clearance, adjustments and lubrication are checked and corrective action taken if necessary.</p>

ELEMENT	PERFORMANCE CRITERIA
6. Install anti-friction bearings	<p>6.1. Standard replaceable ball and roller anti-friction bearings are selected from manufacturers' catalogues, spare parts lists or interpreted from engineering drawing to meet specifications.</p> <p>6.2. Bearing inside/outside diameters are determined from specifications or manufacturers' catalogue and checked using measuring instruments appropriate to the task.</p> <p>6.3. Shafts and housings size are checked for correct fit and clearances.</p> <p>6.4. Installation techniques are selected appropriate to the task.</p> <p>6.5. Bearings are fitted to shafts or housings using engineering principles and tools, equipment, techniques appropriate to the task.</p> <p>6.6. Bearing are sealed and, where required, capped, to specifications.</p>

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:

- reading, interpreting and following information on standard operating procedures, manufacturer specifications, and other applicable reference documents
- planning and sequencing operations
- checking and clarifying task-related information
- measuring bearings and components to specified tolerances
- numerical operations and calculations/formulae within the scope of this unit
- performing routine bearing checks including of seals, lubrication and lubrication devices
- diagnosing bearing faults
- identifying bearing requirements for replacement or installation
- removing bearings
- installing bearings
- checking for conformance to specifications

Required knowledge

REQUIRED SKILLS AND KNOWLEDGE

Look for evidence that confirms knowledge of:

- procedures for checking bearings and seals
- procedures for checking bearing lubrication/lubrication devices
- manufacturer specifications
- engineering principles relating to fault diagnosis, installation and removal of bearings
- reasons for deciding to replace/not replace given bearings
- common causes of bearing failure and their indicators
- procedures for determining the appropriate clearances for a range of plain bearings
- procedures for 'sizing' plain bearings
- lubricants and lubrication requirements within the scope of this unit
- hazards and control measures associated with fault diagnosis, installation and removal of bearings
- use and application of personal protective equipment
- safe work practices and procedures

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 perform fault diagnosis, installation and removal of bearings. 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 fault diagnosis, installation and removal of bearings 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, standards, manuals and reference materials.</p>

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.

Plain bearings

Rotational plain bearings:

- plain bush, wrapped bush, flanged bush, split bush, self-lubricating and thrust bearings for radial, thrust and combination radial and thrust loading applications.

Anti-friction bearings

Ball and roller bearings (anti-friction or rolling element bearings):

- self-aligning ball bearings with cylindrical bore, taper bore (and adaptor sleeve), taper bore (and unthreaded adaptor sleeve); single row deep groove ball bearings; magneto bearings (separable ball bearings); single row angular contact ball bearings; double row angular contact ball bearings; spherical roller bearings, including narrow type and C design; spherical roller bearings (NV, N NS Type); double row cylindrical roller bearings; linear ball bearings; needle roller bearings; taper roller bearings; single thrust ball bearings; double thrust ball bearings; single thrust ball bearings with spherical housing washer and seating ring; spherical roller thrust bearings; radial bearings with cylindrical, tapered bore (and adaptor or withdrawal sleeve); and associated bearings for radial, axial and combination radial and axial applications

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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