



Australian Government

Department of Education, Employment and Workplace Relations

MEM18064B Maintain instrumentation system components

Release: 1

MEM18064B Maintain instrumentation system components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers maintaining instrument system components of a primarily mechanical nature. An understanding of instrumentation principles is required.
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Application of the Unit

Application of the unit	This unit applies to maintaining instrument system components for applications such as fixed and mobile plant and equipment, marine installations or machine and process operations. Application of this unit would involve identifying instrumentation system components as well as inspecting and assessing component condition/operation using instrumentation principles and methods. It would also involve the interpretation of information from data sheets and circuit diagrams in order to make repairs and replacements to predetermined site or manufacturer specifications. For straightforward removals/replacement of components from an instrumentation system, see Unit MEM18055B (Dismantle, replace and assemble engineering components). If higher level hydraulic and pneumatic systems knowledge is needed then Units MEM18018C (Maintain pneumatic system components) and MEM18020B (Maintain hydraulic system components) should also be selected. Band: A Unit Weight: 6
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12002B	Perform electrical/electronic measurement
	MEM12023A	Perform engineering measurements
	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. Check instrumentation system components	1.1. System components are identified correctly. 1.2. The characteristics and operational function of each system component are understood. 1.3. The operational function of each component is inspected and tested in accordance with standard operating procedures. 1.4. Operation of each component is assessed against specifications.
2. Identify, repair/replace faulty instrumentation system components	2.1. Faulty system components are localised/isolated and the malfunction is confirmed by inspection and testing using instrumentation principles, procedures and safety requirements. 2.2. Faulty system components are dismantled and repaired according to manufacturers'/site specifications and in accordance with standard operating procedures. 2.3. Replacement parts are selected from manufacturer catalogues and listings to required specifications. 2.4. System components are reassembled and tested for correct operation and assessment against specifications and in accordance with standard operating procedures. 2.5. Correct operation of the instrumentation system is confirmed according to standard operating procedures. 2.6. Appropriate follow-up procedures are adopted according to standard operating procedures. 2.7. Where appropriate, service reports are completed according to standard operating procedures.

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:

REQUIRED SKILLS AND KNOWLEDGE

- obtaining relevant data with respect to the operation of the instrumentation systems/equipment
- locating, inspecting and testing a range of instrumentation system components
- isolating instrumentation system/equipment
- obtaining and interpreting all relevant instrumentation circuits, drawings, instructions, manuals and data sheets
- checking the individual components within the instrumentation system for correct operation
- dismantling/repairing/reassembling faulty components
- selecting correct replacement parts from the manufacturer/supplier catalogues
- checking repaired/replaced instrumentation system components for correct operation
- completing service reports
- obtaining error code interpretation documents
- recording/documenting test results
- undertaking zero, span and range checks on instrumentation systems/equipment
- calibrating instrumentation system/equipment

Required knowledge

Look for evidence that confirms knowledge of:

- instrumentation principles such as controlling density, level, flow, temperature, composition of a range of materials
- effects of resistance, capacitance, inductance and impedance (R,L,C) upon electrical circuit
- interpretation requirements of schematic, wiring and block diagrams and circuits
- basic principles of hydraulic/pneumatic/electrical flow
- purpose and operational function of each system component
- procedures and equipment for inspecting and testing instrumentation system components
- instrumentation system component specifications
- deviations from specifications
- procedures for repairing faulty instrumentation system components
- dismantling, reassembly and testing techniques
- correct operation of the instrumentation system
- procedures for recording and completing service reports
- safe work practices and procedures
- relevant hazards and control measures

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 maintain instrumentation system components. 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 maintaining instrumentation system components, 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. 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.

Components

Include sensors, transmitters, converters, indicators, analysers, controllers, transducers, power supplies, removable circuit boards and sensor units associated with determining/controlling density, level, flow, temperature, composition etc. of a range of materials

Unit Sector(s)**Unit sector****Co-requisite units**

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
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