



Australian Government

MEM18054 Fault find, test and calibrate instrumentation systems and equipment

Release: 1

MEM18054 Fault find, test and calibrate instrumentation systems and equipment

Modification History

Release 1. Supersedes and is equivalent to MEM18054B Fault find, test and calibrate instrumentation systems and equipment

Application

This unit of competency defines the skills and knowledge required to test instrumentation systems and equipment, apply data collection techniques and pinpoint fault conditions, analyse and report test results, and calibrate instrumentation systems and components.

Where soldering/desoldering of electrical/electronic components is required unit MEM05001 Perform manual soldering/desoldering – electrical/electronic components and unit MEM05002 Perform high reliability soldering and desoldering, should also be selected as appropriate.

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

Band:

This unit has dual status and is to be regarded as both a Specialisation Band A unit and Specialisation Band B unit for progression to C7 (AQF level IV).

Unit Weight: 8

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

Plus, one or more of the following, including their prerequisites:

MEM18057 Maintain/service analog/digital electronic equipment

MEM18064 Maintain instrumentation system 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.

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|---|---|--|
| 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 | Test instrumentation systems and equipment | 2.1 Identify and define work/test requirements |
| | | 2.2 Observe and pinpoint device isolation methods/requirements |
| | | 2.3 Apply appropriate test procedures and application principles in assessing operation of instrumentation systems, equipment and components |
| | | 2.4 Apply normal operating characteristics of instrumentation systems, equipment/components to the level necessary to identify and pinpoint faults |
| | | 2.5 Apply characteristics/operational function assessment procedures according to safety and regulatory/site specifications |
| | | 2.6 Check and verify characteristics and operational function |

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
3	Apply data collection techniques and pinpoint fault conditions	3.1	Utilise drawings/diagrams and operational specifications in identifying and pinpointing fault conditions
		3.2	Examine and interpret built-in fault indicators and error codes and record results, where appropriate
		3.3	Pinpoint fault condition down to major component level using appropriate test equipment, procedures and techniques
4	Analyse and report test results	4.1	Analyse/verify test results against operational specifications and confirm faults
		4.2	Report potential and real faults in accordance with SOPs
		4.3	Evaluate faulty conditions and plan corrective action
		4.4	Record and document action plan in accordance with SOPs
5	Install replacement parts	5.1	Select replacement parts from catalogues
		5.2	Install replacement parts
		5.3	Check replacement parts for correct operation
6	Calibrate instrumentation equipment/components	6.1	Undertake zero, span and range checks on indicators/controllers using appropriate configuration
		6.2	Perform and document methods of adjustment using calibration devices to prescribed procedures and operational specifications, where applicable

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.

Instrumentation systems include the following:

- those made up of more than one interdependent component controlling and processing multiple inputs and/or outputs

Tasks are undertaken include one (1) or more of the following:

- workshop/site
- laboratory environments

Correct operational function determination includes the operational function of one (1) or more of the following:

- systems
- equipment
- components
- associated equipment

Systems, components, equipment and associated items include one (1) or more of the following:

- electrical
- electronic
- mechanical
- fluid power

Equipment includes one (1) or more of the following:

- process machines
- temperature control systems
- sterilisation units
- water cooling/filtration systems
- equipment utilising mechanical, pneumatic/electro-pneumatic or electronic (analog/digital) principles
- associated instruments measuring variables including level, pressure, light, flow, current, resistance, voltage, density and temperature

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.

Components include one (1) or more of the following:

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

Test equipment includes one (1) or more of the following:

- system calibrators
- manometers
- dead weight testers
- wheatstone bridge
- potentiometers
- frequency/signal generators
- logic probes
- multimeters (analog/digital)
- test gauges
- cathode ray oscilloscopes
- other associated equipment

Unit Mapping Information

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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>