



Australian Government

MEM18069 Maintain, repair instrumentation process control analysers

Release: 1

MEM18069 Maintain, repair instrumentation process control analysers

Modification History

Release 1. Supersedes and is equivalent to MEM18069B Maintain, repair instrumentation process control analysers

Application

This unit of competency defines the skills and knowledge required to perform preventative maintenance on process control analysers; complete fault documentation; plan corrective action; repair, replace, overhaul, calibrate and test; re-install and recommission process control analysers and applies to the use of electrical and electronic test equipment for transmission and signal measurement.

Central to the task is the interpretation of electrical and electronic circuit diagrams and the interpretation of calibration and analysis data and procedures in accordance with manufacturers' data sheets.

Where soldering of components is required to advanced or military specifications, where the reliability of electrical connections is critical, or where surface mounted devices are being soldered/desoldered then unit MEM05002 Perform high reliability soldering and desoldering should also be selected.

Where diagnosis and repair of electronic equipment is undertaken to component level then unit MEM18056 Diagnose and repair analog equipment and components and unit MEM18065 Diagnose and repair digital equipment and components, should also be selected as appropriate.

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

Band: B

Unit Weight: 6

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
MEM18054	Fault find, test and calibrate instrumentation systems and equipment
MEM18055	Dismantle, replace and assemble engineering components

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

MEM18062	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements
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.

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	Perform preventative maintenance on process control analysers	2.1	Determine specification requirements from manufacturers' manuals, maintenance schedules and other relevant documents
		2.2	Interpret and define specification requirements by applying principles of operation and process control analyser characteristics

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	2.3 Perform preventative maintenance schedules on process control analysers to service and maintain analysers within defined specifications 2.4 Diagnose specified process control analysers within the system or within the laboratory to determine correct operation or malfunction using appropriate electrical and electronic test equipment, techniques, data and procedures 2.5 Identify and confirm faults and malfunctions
3 Complete fault documentation and plan corrective action	3.1 Document or report faults and malfunctions according to SOPs 3.2 Plan corrective action autonomously or in consultation with appropriate personnel and action
4 Repair, replace, overhaul process control analysers	4.1 Examine process control analysers and verify for repair, replacement or overhaul 4.2 Select replacement items from manufacturers' parts lists or catalogues according to specifications 4.3 Repair or overhaul faulty items using appropriate principles, techniques, tools, equipment and procedures 4.4 Refit repaired, overhauled and replacement process control analysers 4.5 Prepare refitted process control analysers for testing and calibration
5 Calibrate and test process control analysers	5.1 Calibrate process control analysers against appropriate physical standards using correct calibration devices, equipment, techniques and procedures 5.2 Test calibrated process control analysers using appropriate test equipment

Elements describe the essential outcomes.

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

- 5.3 Collect and interpret calibration and analysis data
- 5.4 Assess calibration and analysis data in accordance with manufacturers' data sheets, codes of practice and safety procedures

6 Re-install and recommission process control analysers

- 6.1 Put process control analysers into service to specifications with due regard to process requirements, codes of practice, safety, commissioning procedures and techniques
- 6.2 Complete service reports in accordance with 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.

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

- hygrometers
- wet and dry bulb
- calibration of gas cylinders and gas supply equipment
- the use of chemical calibration solutions
- the use of special calibration devices specific to chemical detectors
- gas analysis devices
- liquid analysis devices

Safety codes of practice includes one (1) or more

- identification handling and appropriate use of high pressure gas cylinders

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.

of the following:

- equipment
- chemical solutions

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18069B Maintain, repair instrumentation process control analysers

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 MEM18069 Maintain, repair instrumentation process control analysers

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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 engineering specifications, technical information, circuit diagrams, engineering drawings, manufacturers' manuals and supplier catalogues and obtaining relevant data with respect to maintaining, repairing instrumentation process control analysers
- performing scheduled/preventative maintenance and determining correct function or the malfunction of process control analysers and recording test results
- identifying, monitoring and localising faults by confirming correct action of process control analysers using a structured diagnostic approach, recording/reporting faults and malfunctions and preparing sequential action plan to correct faults
- checking process control analysers and marking for replacement, repair or overhaul
- repairing/overhauling faulty items using appropriate tools, equipment, techniques and procedures to manufacturers' specifications
- refitting process control analysers and preparing for testing and calibration
- calibrating process control analysers against appropriate physical standards using appropriate calibration devices, equipment and techniques
- testing calibrated process control analysers using appropriate equipment by interpreting relevant calibration and analysis data with respect to the given process controller
- recommissioning process control analysers
- completing all service reports according to 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)
- specifications for the process control analyser to be installed
- maintenance to be undertaken and the frequency at which process control analysers are to be maintained
- procedures for:

- maintaining process control analysers
- determining correct function or the malfunction of process control analysers
- recording test results and procedures for monitoring apparent faults detected from test results
- reporting/recording faults and/or malfunctions in process control analysers
- fitting/refitting process control analysers including preparing items
- calibrating and recommissioning process control analysers
- reporting/recording service undertaken on process control analysers and reasons for recording service undertaken
- test equipment and diagnostic techniques required to determine correct function or malfunction of process control analysers
- probable causes of variations between test results and specifications
- action to be taken to return the process control analysers to specification and reasons for undertaking the proposed actions
- persons to be consulted in planning the corrective action and sequence of actions to be taken
- tools, equipment and techniques required to test components and reasons for marking components for repair, replacement and/or overhaul
- specifications for the component(s) to be replaced
- preparation requirements of items to be fitted/refitted
- tools, techniques and equipment required to repair/overhaul and fit/refit process control analysers
- preparation requirements of process control analysers prior to testing and calibration
- physical standards against which process control analysers are to be calibrated
- devices, equipment and techniques required to calibrate process control analysers
- equipment and procedures for testing calibrated process control analysers
- probable causes of any variations/deviations detected
- action to be taken to return the process control analyser to specification and reasons for undertaking the proposed action(s)
- appropriate measuring techniques, tools and equipment.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining, repairing instrumentation process control analysers 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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