



Australian Government

MEM10007 Modify control systems

Release: 2

MEM10007 Modify control systems

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM10007 Modify control systems (Release 1).

Release 1. Supersedes and is equivalent to MEM10007C Modify control systems.

Application

This unit of competency defines the skills and knowledge required to plan the commissioning procedure, assess the control system performance, adjust the control system and undertake commissioning modifications.

Some jurisdictions may require the holder of this unit using the refrigeration and air conditioning pathways to be licensed or certified and users should check with the relevant authorities.

Band: B

Unit Weight: 6

Pre-requisite Unit

Path 1	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12002	Perform electrical/electronic measurement
	MEM12003	Perform precision mechanical measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM12025	Use graphical techniques and perform simple statistical computations
	MEM13015	Work safely and effectively in manufacturing and engineering
	MEM14006	Plan work activities
	MEM16006	Organise and communicate information
	MEM16010	Write reports

	MEM18001	Use hand tools
	MEM18002	Use power tools/hand held operations
	MEM18003	Use tools for precision work
	MEM18006	Perform precision fitting of engineering components
	MEM18018	Maintain pneumatic system components
	MEM18019	Maintain pneumatic systems
	MEM18020	Maintain hydraulic system components
	MEM18021	Maintain hydraulic systems
	MEM18022	Maintain fluid power controls
	MEM18023	Modify fluid power system operation
	MEM18053	Modify fluid power control systems
	MEM18055	Dismantle, replace and assemble engineering components
Path 2	MEM05001	Perform manual soldering/desoldering - electrical/electronic components
	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12004	Perform precision electrical/electronic measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM13015	Work safely and effectively in manufacturing and engineering
	MEM14006	Plan work activities
	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
	MEM18057	Maintain/service analog/digital electronic equipment
	MEM18060	Maintain, repair control instrumentation - single and multiple loop control systems
	MEM18062	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements
	MEM18067	Tune control loops - multi controller or multi element systems
Path 3	MEM05001	Perform manual soldering/desoldering - electrical/electronic components
	MEM05002	Perform high reliability soldering and desoldering
	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12004	Perform precision electrical/electronic measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM13015	Work safely and effectively in manufacturing and engineering
	MEM14006	Plan work activities
	MEM16006	Organise and communicate information
	MEM18001	Use hand tools
	MEM18002	Use power tools/hand held operations
	MEM18056	Diagnose and repair analog equipment and components
	MEM18057	Maintain/service analog/digital electronic equipment
	MEM18058	Modify electronic equipment

	MEM18059	Modify electronic systems
	MEM18065	Diagnose and repair digital equipment and components
Path 4	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12002	Perform electrical/electronic measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM13015	Work safely and effectively in manufacturing and engineering
	MEM14006	Plan work activities
	MEM16006	Organise and communicate information
	MEM18001	Use hand tools
	MEM18002	Use power tools/hand held operations
	MEM18055	Dismantle, replace and assemble engineering components
	MEM18086	Test, recover, evacuate and charge refrigeration systems
	MEM18088	Maintain and repair commercial air conditioning systems and components
	MEM18092	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls
Path 5	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12002	Perform electrical/electronic measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM13015	Work safely and effectively in manufacturing and

		engineering
	MEM14006	Plan work activities
	MEM16006	Organise and communicate information
	MEM18001	Use hand tools
	MEM18002	Use power tools/hand held operations
	MEM18055	Dismantle, replace and assemble engineering components
	MEM18086	Test, recover, evacuate and charge refrigeration systems
	MEM18090	Maintain and repair industrial refrigeration systems and components
	MEM18092	Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls
Path 6	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12002	Perform electrical/electronic measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM13015	Work safely and effectively in manufacturing and engineering
	MEM14006	Plan work activities
	MEM16006	Organise and communicate information
	MEM18001	Use hand tools
	MEM18002	Use power tools/hand held operations
	MEM18055	Dismantle, replace and assemble engineering components
	MEM18086	Test, recover, evacuate and charge refrigeration systems
	MEM18089	Maintain and repair central air handling systems
	MEM18090	Maintain and repair industrial refrigeration systems and components

	MEM18093	Maintain and repair integrated industrial refrigeration and/or large air handling system controls
Path 7	MEM09002	Interpret technical drawing
	MEM11011	Undertake manual handling
	MEM12002	Perform electrical/electronic measurement
	MEM12023	Perform engineering measurements
	MEM12024	Perform computations
	MEM13015	Work safely and effectively in manufacturing and engineering
	MEM14006	Plan work activities
	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
	MEM18060	Maintain, repair control instrumentation - single and multiple loop control systems
	MEM18062	Install, maintain and calibrate instrumentation sensors, transmitters and final control elements
	MEM18064	Maintain instrumentation system components
	MEM18067	Tune control loops - multi controller or multi element systems

Competency Field

Installation and commissioning

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	Plan commissioning procedure	2.1	Determine control system format and understand operational intent
		2.2	Sequence commissioning procedures effectively to meet requirement of components and control application
3	Check control system installation	3.1	Verify correct installation of system components against specifications
		3.2	Ensure appropriate test equipment is functional and calibrated before use
		3.3	Ensure components or control loop/system is powered up and checked for correct supply in accordance with specifications
		3.4	Ensure all readings/measurements are obtained, interpreted and recorded
4	Adjust control system and assess performance	4.1	Adjust control loop/system components to meet control characteristics, application and process specifications utilising appropriate techniques
		4.2	Make final verifications including any operational adjustments to ensure required performance

Elements describe the essential outcomes.

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

5	Commission modifications	5.1	Ensure necessary modifications to change performance in order to meet manufacturers' or operational specifications or safety and legislative requirements are undertaken or actioned
		5.2	Provide reports on system/process characteristics for warranty, handover and legislative purposes
		5.3	Document all modifications and record result according to 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.

Commissioning includes:

- the development of a commissioning procedure, testing of operation and adjustment to conform to specification

Control system includes:

- closed or open on continuous or step process control systems. Loop/system control can incorporate the use of pneumatics, electrical, electronics, hydraulics or a combination

System components include one (1) or more of the following:

- all instruments and devices which make up or control a loop/system, including:
 - sensing devices
 - control devices
 - actuators
 - transducers

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM10007 Modify control systems (Release 1).

Release 1. Supersedes and is equivalent to MEM10007C Modify control systems.

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 MEM10007 Modify control systems

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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 specifications and drawings for determining control system to meet specifications and control application
- planning commissioning procedure involving the development of a commissioning procedure, testing of operation and adjustment to conform to specification
- verifying control system components, including all instruments and devices which make up or control a loop/system against specifications
- using appropriate test equipment to check control system installation in accordance with specifications in a safe and effective manner
- adjusting control loop/system components and making final verifications to ensure required performance of control application
- making modifications to change performance to meet specifications and safety and legislative requirements
- providing reports where required and documenting all modifications in accordance with 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)
- control system format
- operational intent of the processes being controlled by the control system
- specifications of the control system and the processes being controlled
- regulatory and legislative requirements associated with the commissioning procedure
- procedures for commissioning the control system
- procedures for ensuring that control characteristics, application and process specifications are achieved
- components of the operational processes

- installation specifications for each component of the operational processes
- measuring techniques and equipment appropriate to the measurements to be taken
- test equipment and techniques appropriate to the commissioning of the control
- calibration procedures for the selected test equipment
- procedures for energising components and/or the control loop/system
- supply requirements of components and the control loop/system
- recording requirements for readings/measurements taken
- adjustments that can be made to the control loop/system components and effects of adjustments on the control characteristics and operational processes
- measurements/tests to be undertaken to verify control system and process operation and reasons for selecting the chosen measurements/tests
- procedures to be followed if the operational specifications of the control system and/or process cannot be achieved
- effect of changes to control system components on system performance
- appropriate authority to approve any modifications
- reporting requirements associated with the commissioning of control systems
- requirements and reasons for recording modifications.

Assessment Conditions

- Assessors must:
 - have vocational competency in modifying control systems 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.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including 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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