



Australian Government

MEM18067 Tune control loops - multi controller or multi element systems

Release: 1

MEM18067 Tune control loops - multi controller or multi element systems

Modification History

Release 1. Supersedes and is equivalent to MEM18067B Tune control loops – multi controller or multi-element systems

Application

This unit of competency defines the skills and knowledge required to determine and record control loop responses in open and closed loop modes, tune control loops and complete service records.

Included is the application of step response (open loop tuning calculations and closed loop ultimate sensitivity trials) to achieve specified loop characteristics in conformance to operational specifications.

Where fault-finding is required to electronic component level unit MEM18056 Diagnose and repair analog equipment and components should also be selected.

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.

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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 Determine control loop characteristics | 2.1 Examine engineering specifications, technical information and historical process, records and trends for relevant data |
| | 2.2 Carry out consultation with system operators and other relevant plant personnel and extract relevant data and document to procedures |
| | 2.3 Read programmed maintenance/service reports and note relevant data |
| | 2.4 Analyse data and ascertain control loop characteristics |
| 3 Record control loop responses | 3.1 Record control loop responses in open and closed loop mode using chart recorders and data loggers |

Elements describe the essential outcomes.

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

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|---|---------------------------------|-----|---|
| | | 3.2 | Test unit for tuning using appropriate diagnostic techniques |
| | | 3.3 | Analyse diagnostic results against specifications |
| 4 | Tune control loops | 4.1 | Perform tuning operations by applying control loop device characteristics, controller mode principles and adjustment methods using appropriate equipment, procedures and techniques |
| | | 4.2 | Monitor and adjust control loop components during controller tuning operation using test recording equipment |
| | | 4.3 | Apply step response – open loop tuning calculations to achieve specified loop characteristics |
| | | 4.4 | Use closed loop tuning methods incorporating ultimate sensitivity and systematic trials to achieve specified loop characteristics |
| | | 4.5 | Use correct sequence of tuning on multi controllers and/or multi element systems to achieve specified characteristics |
| | | 4.6 | Tune control loops to optimum mode settings |
| | | 4.7 | Recommission process control loop to specifications |
| 5 | Complete service reports | 5.1 | Adopt appropriate follow-up procedures |
| | | 5.2 | Complete service reports 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.

Historical trends

include one (1) or more of the following:

- supervisory control and data acquisition (SCADA)
- charts
- chart recorders and data loggers
- equipment conditioning monitoring

An open and closed loop system includes:

- final control elements
- process measuring devices
- converters
- controllers
- process signals

Test and recording equipment for the monitoring and adjustment of control loop tuning includes the use of one (1) or more of the following:

- pneumatic
- analog electronic
- digital electronic

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18067B Tune control loops – multi controller or multi-element systems

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>