



Australian Government

MEM19020 Fault find and maintain micro-mechanisms

Release: 1

MEM19020 Fault find and maintain micro-mechanisms

Modification History

Release 1. Supersedes and is equivalent to MEM19020B Fault-find and maintain micro-mechanisms

Application

This unit of competency defines the skills and knowledge required to fault find and maintains micro-mechanisms, and applies to watch and clock servicing and repair work within retail and manufacturer servicing environments.

This unit does not extend to adjusting indexing system for acoustic resonator watches, chronometer escapements and chronograph mechanisms.

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

Band: A

Unit Weight: 4

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

Competency Field

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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 | Dismantle and assess components | 2.1 | Dismantle micro-mechanism components for inspection using techniques and principles appropriate to the task |
| | | 2.2 | Assess overall condition of micro-mechanism |
| | | 2.3 | Inspect physical condition and operational functioning of components and verify with appropriate persons, as necessary |
| | | 2.4 | Identify faults, damage and non-serviceable components using tools, equipment and techniques appropriate to the task |
| | | | |
| 3 | Carry out maintenance | 3.1 | Lubricate and clean components to specification |
| | | 3.2 | Assemble, replace and install components to specification |
| | | 3.3 | Check components for correct operation and make required operational adjustments |

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.

Micro-mechanisms

include one (1) or more of the following:

- mechanical watches
- electric watches
- clocks of recent manufacture
- restoration pieces
- day and date systems
- automatic winding systems
- generating systems
- alarm mechanisms
- striking mechanisms
- chiming mechanisms

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

- power source
- wheel trains
- mechanical oscillating systems
- motion work
- calendar systems
- balance assembly
- bridges
- mainspring
- barrel
- winding mechanism
- canon pinion
- drive train
- shock resist system
- endshake
- sideshake
- escapement
- bearing surfaces
- electronic circuit
- power reserve

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Inspection includes observations of one (1) or more of the following:

- clearances
- fits and adjustments
- functioning
- operation of systems
- performance analysis
- overall condition and damage to case
- evidence of toxic contamination, pollution, chemical waste and other contaminants

Operational adjustments include one (1) or more of the following:

- regulation
- beat
- balance amplitude
- rate
- power supply

Appropriate persons include one (1) or more of the following:

- customers
- supervisors
- managers
- suppliers
- technical experts
- colleagues

Tools and equipment include one (1) or more of the following:

- mechanical hand tools
- electronic equipment to measure amplitude and rate
- electronic timing equipment
- diagnostic equipment and tools

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM19020B Fault-find and maintain micro-mechanisms

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 MEM19020 Fault find and maintain micro-mechanisms

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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
- dismantling and removing components using appropriate hand tools and reassembling components in correct sequence to required position without damage
- inspecting timepiece to check operation and determine faults, damage and unserviceable components
- cleaning and maintaining components using appropriate tools and techniques
- verifying operation of components and assemblies
- adjusting components, assemblies and mechanisms to ensure correct operation.

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)
- features, nomenclature and operation of components and assemblies
- techniques, tools and procedures for handling, dismantling, removing, assembling and installing components
- common faults and maintenance requirements for timepieces
- impact of faults and maintenance requirements on performance
- required checks and verification processes to assess condition of components
- fault-finding procedures
- typical contaminants and their effects on operation of components
- lubricants and lubrication techniques
- cleaning requirements for ensuring correct operation
- procedures and techniques for adjusting components and operational specification for components and assemblies.

Assessment Conditions

- Assessors must:
 - have vocational competency in fault-finding and maintaining micro-mechanisms 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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