



Australian Government

MEM21006 Service quartz watches

Release: 1

MEM21006 Service quartz watches

Modification History

Release 1. Supersedes and is equivalent to MEM21006A Service quartz watches

Application

This unit of competency defines the skills and knowledge required to service quartz analog and digital display watches, including modules and case components.

This unit is a common servicing requirement for watch repairers and can extend, in some cases, to the work of service technicians.

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

Band: A

Unit weight: 4

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM21001	Replace watch batteries, capacitors and bands
MEM21002	Perform watch movement exchange
MEM21005	Diagnose faults in quartz watches

Competency Field

Horology

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine servicing requirements and liaise with	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times

Elements describe the essential outcomes.

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

	customer	1.3	Identify watch functions and features
		1.4	Prepare written quotation and inform customer of watch condition and performance concerns
		1.5	Outline recommended service procedures to be undertaken to remedy identified faults
		1.6	Verify and agree on servicing requirements with customer
		1.7	Prepare watch for handover
		1.8	Record and document repair process
2	Disassemble watch case and movement components for servicing	2.1	Establish appropriate working environment
		2.2	Select and use appropriate personal protective equipment (PPE) in accordance with SOPs
		2.3	Select and use appropriate workshop tools and equipment
		2.4	Open and close watch cases
		2.5	Remove case movement and components without damaging or marking
		2.6	Verify gasket condition and replace, as required
		2.7	Clean cases and bands, as required
3	Service watch case and movement components	3.1	Inspect condition of watch case and movement components
		3.2	Confirm servicing requirements
		3.3	Replace faulty or worn component parts
		3.4	Clean components and parts
		3.5	Inspect watch case and movement components for cleanliness and rectify imperfections/faults

Elements describe the essential outcomes.

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

		3.6	Use correct tools and equipment for handling and servicing
4	Reassemble and test watch case and movement components	4.1	Reassemble watch case and movement components according to manufacturer specifications
		4.2	Confirm correct assembly of gear train and other components
		4.3	Use correct types and amounts of lubricant according to manufacturer specifications
		4.4	Use tools and equipment appropriately taking precautions for correct reassembly
		4.5	Verify/confirm watch functioning according to manufacturer specifications
		4.6	Verify watch performance including rate testing and adjust according to manufacturer specifications, as required

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.

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Watch functions and features include one (1) or more of the following:

- quartz oscillating stage
- dividing stage
- motor drive output pulses
- capacitive output signals
- current consumption
- pulse generation
- lower working limit test
- gear train freedom

Record and document repair process includes one (1) or more of the following:

- extent and date of repair
- cost of replacement part
- time spent on procedure

Appropriate working environment includes the following:

- suitable watchmakers' bench
- clean and orderly work area (precautions taken to minimise dust)
- adequate lighting and ventilation
- ergonomic chair with adjustable height

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

- timing machine
- multimeter
- pulse generator
- watch repair hand tools
- case opening and closing tools
- cleaning media
- cleaning machines
- lubricants
- PPE

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Movement and case components include one (1) or more of the following:

- quartz crystal
- electronic circuits
- coils
- mechanical gear train
- liquid crystal displays
- watch glasses
- case back
- bezel (rotating)
- crown
- pendant
- pushbuttons

Watch performance/rate testing includes one (1) or more of the following:

- current consumption according to manufacturer specifications
- rate testing (seconds/day)

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>

Assessment Requirements for MEM21006 Service quartz watches

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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
- liaising with customer and verifying condition and performance, identifying service costs, and recording and documenting repair process
- diagnosing and fault finding quartz analog and digital watches in an appropriate work environment
- dismantling and reassembling quartz watch digital modules, movements, gear trains and sub-assemblies using appropriate workshop tools and equipment
- using appropriate watch movement/components cleaning techniques without damage or marking to case movement and components
- applying correct type and amount of lubrication according to manufacturers' specifications
- performing watch function and electrical performance testing, including current consumption, according to manufacturer specifications and rate testing.

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)
- quartz watch construction and components (i.e. analog, digital and duo displays)
- quartz watch operating principles (analog and digital)
- quartz watch lubrication techniques
- watch case and band construction and components
- testing procedures to confirm watch function
- watch servicing requirements
- repair process recording procedures
- watch handover procedures
- client liaison techniques
- power sources
- power cells, batteries, capacitors and electronic storage units.

Assessment Conditions

- Assessors must:
 - have vocational competency in servicing quartz watches 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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