



Australian Government

MEM21001 Replace watch batteries, capacitors and bands

Release: 1

MEM21001 Replace watch batteries, capacitors and bands

Modification History

Release 1. Supersedes and is equivalent to MEM21001A Replace watch batteries, capacitors and bands

Application

This unit of competency defines the skills and knowledge required to select and replace electronic watch power sources and bands and includes conducting any required water-resistance testing.

It applies to work conducted in a watch service and repair workshop, kiosk or jewellery store with access to the appropriate equipment.

Where additional servicing of watch cases is to be performed unit MEM21003 Perform watch case servicing, repair and refurbishment should also be selected.

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

Band: A

Unit weight: 2

Pre-requisite Unit

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

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 job requirements	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.	
2	Establish servicing requirements and liaise with customer	1.3	Select and use appropriate personal protective equipment (PPE) in accordance with standard operating procedures
		1.4	Identify job requirements from specifications, job sheets or work instructions
		2.1	Inspect watch condition and type and discuss performance concerns with customer
		2.2	Verify and agree on servicing requirements with customer
		2.3	Carry out pre-repair tests to verify water resistance
3	Open and close watch cases	2.4	Prepare watch for handover
		2.5	Record and document repair process
		3.1	Select and use appropriate workshop tools and equipment
		3.2	Identify watch and band construction and components
		3.3	Open and close watch cases
4	Select and replace power sources	3.4	Inspect parts and report and record results
		3.5	Verify gasket condition and replace, as required
		3.6	Clean cases and bands, as required, during and after repair
		4.1	Remove power sources using appropriate tools and equipment
		4.2	Inspect watch for battery leakage damage and clean or refer for further service, as appropriate
		4.3	Assess physical condition of existing cell and its operation under load
		4.4	Select, replace and secure appropriate replacement power

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		sources	
		4.5	Perform integrated circuit resetting or all clear operations, as required
		4.6	Handle, store and dispose of power sources in accordance with environmental guidelines
5	Perform electrical testing	5.1	Set up and use multimeters in a correct manner
		5.2	Test cell terminal voltage under load using correct methods and equipment
		5.3	Test watch circuitry for current consumption using correct methods and equipment
		5.4	Confirm results against manufacturer specifications
6	Select and replace bands	6.1	Identify band attachment and removal method
		6.2	Remove and replace bands and components, as necessary, using appropriate methods, tools and equipment
		6.3	Determine dimensions and type of replacement bands/components required
7	Conduct water-resistance testing	7.1	Identify watches requiring water-resistance or pressure testing
		7.2	Select appropriate water-resistance testing methods and equipment according to watch type
		7.3	Set up and use equipment to verify results

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.

- | | |
|--|---|
| Preparing watch for handover includes one (1) or more of the following: | <ul style="list-style-type: none">• confirming watch keeping on time• function checking (calendar, light, chronograph and alarm)• confirming display setting (time, calendar and other multi-functions) |
| The time keeping element in electronic watches includes one (1) or more of the following: | <ul style="list-style-type: none">• quartz crystal• kinetic mechanism• tuning fork• electronic balance |
| Watch construction and components include one (1) or more of the following: | <ul style="list-style-type: none">• mechanical• electronic• digital• analog• duo• kinetic• auto quartz |
| Band construction and components include one (1) or more of the following: | <ul style="list-style-type: none">• bracelets• bands• clasps• straps |

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.

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

- hand tools appropriate to watch case construction and repair of watches
- PPE
- non-conductive tweezers
- case opening and closing tools
- glass and case press
- plastic sheet protection
- cleaning brushes
- rodico

Power sources include one (1) or more of the following:

- primary and secondary cells
- silver oxide cells, including high, low and multi-drain types
- capacitors
- lithium batteries

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

- date and extent of repairs completed
- cost of components replaced or used
- time spent on procedure
- marking the date of fitting for replacement cell/code
- electrical testing results (current consumption/ running time calculated)
- water-resistance test results

Band attachment and removal includes one (1) or more of the following:

- springlug
- tapered pin
- cotter pin
- screwed

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

- analog
- digital
- external power supplies
- ampere
- volts
- Ohms

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.

Water-resistance testing methods include one (1) or more of the following:

- Australian Standard for watches and water-resistant/divers watches
- vacuum or over pressure
- air leak
- water immersion
- condensation test

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM21001A Replace watch batteries, capacitors and bands

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 MEM21001 Replace watch batteries, capacitors and bands

Modification History

Release 1. Supersedes and is equivalent to MEM21001A Replace watch batteries, capacitors and bands

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 carrying out pre-repair tests on watches, and recording and documenting repair process
- opening and closing watch cases using appropriate watch repairers' tools and confirming watch movement's performance
- identifying, handling and storing power cells
- performing electrical testing using electrical test equipment and confirming results against manufacturers' specifications
- removing bands and band attachments using appropriate methods, tools and equipment
- determining dimensions of band width
- applying water-resistance testing methods and verifying results
- recording and documenting repairs.

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)
- watch and band construction, components and materials
- operating principles of power cells, batteries, capacitors and voltages (1.55v d.c. – 3v d.c.)
- methods of identifying watches requiring water-resistance or pressure testing
- how to confirm battery capacity
- handling, storage and disposal procedures for watch power sources
- removal procedures for watch glasses, gaskets and other components
- environmental guidelines and regulations relevant to the disposal of watch power sources
- multimeter types and how to set up, use and record values
- Australian Standards for water-resistant watches
- methods of identifying watches requiring water-resistance or pressure testing

- methods of water-resistance testing for watches and advantages and disadvantages of each method.

Assessment Conditions

- Assessors must:
 - have vocational competency in replacing watch batteries, capacitors and bands 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.

Links

Companion Volume implementation guides are found in VETNet -

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