



Australian Government

MEM21010 Service watch power generating systems

Release: 1

MEM21010 Service watch power generating systems

Modification History

Release 1. Supersedes and is equivalent to MEM21010A Service watch power generating systems

Application

This unit of competency defines the skills and knowledge required to service and repair mechanical self-winding (automatic) watches and quartz watch power generating systems, service components, and adjust and test mechanisms for optimum performance.

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

Band: A

Unit weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM21008	Service mechanical watches
MEM21009	Inspect, diagnose, adjust and repair mechanical 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	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS)

Elements describe the essential outcomes.

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

	liaise with customer		requirements at all times
		1.3	Inspect watch condition and performance concerns
		1.4	Prepare written and verbal quotations
		1.5	Agree with customer on recommended service procedures to remedy faults
		1.6	Identify mechanical self-winding or quartz generating system type
		1.7	Prepare watch for handover
		1.8	Record and document repair process
2	Disassemble and reassemble self-winding or quartz generating mechanisms	2.1	Establish an appropriate clean and safe work environment
		2.2	Select and use appropriate personal protective equipment (PPE) in accordance with SOPs
		2.3	Open and close self-winding or quartz generating watch cases
		2.4	Use hand tools and equipment in safe and correct manner
		2.5	Remove and replace case components, dial and hands, movements and sub-assemblies in correct sequence without damaging or marking
		2.6	Verify condition of case pushbuttons and gaskets and replace, as required
		2.7	Clean cases and bands, as required
		2.8	Apply dismantling and assembly precautions
3	Service and adjust self-winding or quartz generating watch	3.1	Inspect condition of self-winding or quartz generating watch mechanisms
		3.2	Lubricate components and sub-assemblies according to manufacturer specification

Elements describe the essential outcomes.

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

	mechanisms	3.3	Replace faulty or worn component parts
		3.4	Clean self-winding or quartz generating watch mechanism components
		3.5	Inspect self-winding or quartz generating mechanism for cleanliness and rectify imperfections or faults
		3.6	Adjust self-winding or quartz generating mechanism components for correct operation, end shake and clearances
4	Test and adjust self-winding or quartz generating mechanism function and performance	4.1	Perform pre-service inspection and fault finding of self-winding or quartz generating mechanism action, function and wrist sensitivity
		4.2	Verify watch performance/rate testing and amplitude
		4.3	Perform simulated wear and power generation tests, as appropriate

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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System type and construction include one (1) or more of the following:

- mechanical self-winding
- quartz watch power generation, including:
 - kinetic quartz
 - auto quartz
- types of construction, including:
 - rotor
 - buffer
 - pedometer
 - case winding
- features of construction, including:
 - single-way winding
 - two-way winding
- performance characteristics (constant motive force)

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

Dismantling and assembly precautions include one (1) or more of the following:

- sequence of inspection and adjustment of self-winding or quartz generating mechanism
- verification of correct operation of oscillating weight, reversing wheel and mainspring slipping device
- correct selection, application and amount of lubrication for self-winding or quartz generating mechanism

Faulty or worn component parts include one (1) or more of the following:

- oscillating weight ball bearings
- rotor posts
- reversing wheel pivots
- clicks
- slipping bridle
- driving gear
- friction clutch
- generating rotor

Self-winding or quartz generating components include one (1) or more of the following:

- oscillating weights and rotor
- transmissions, reverser wheels and wig wag
- mainspring and barrel
- slipping devices

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

- beat error diagnosis and adjustment
- rate adjustment
- amplitude

Wear and power generation tests include one (1) or more of the following:

- machine simulation wear test
- testing by wrist wearing
- kinetic voltage test

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

- timing machine
- mainspring winders
- cyclomat
- case opening and closing tools

Appropriate working environment includes the following:

- clean bench and working area
- adequate lighting and ventilation
- organised tools and equipment
- ergonomic seating

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 MEM21010 Service watch power generating 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 mechanical self-winding or quartz generating system type
- liaising with customer, verifying condition and performance, and identifying repair costs
- selecting and using appropriate tools and equipment in a clean and safe environment
- identifying and naming the components of a self-winding or quartz generating mechanism
- dismantling and assembling self-winding or quartz generating mechanisms using correct techniques and precautions
- inspecting, fault finding and replacing faulty or worn components
- cleaning components and applying lubricants correctly in an appropriate work environment
- servicing barrel and mainspring slipping device in accordance with procedures
- undertaking function and watch performance and rate tests
- performing wear and power generation tests
- 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)
- types of self-winding or quartz generating watch
- components of a self-winding or quartz generating mechanism
- inspection and fault-finding procedures of self-winding or quartz generating mechanisms
- lubrication techniques of self-winding or quartz generating mechanisms
- function of the barrel and mainspring slipping device
- performance tests for self-winding or quartz generating mechanisms.

Assessment Conditions

- Assessors must:
 - have vocational competency in servicing watch power generating 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
- 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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