



Australian Government

MEM21013 Service, test and adjust watch escapements

Release: 1

MEM21013 Service, test and adjust watch escapements

Modification History

Release 1. Supersedes and is equivalent to MEM21013A Service, test and adjust watch escapements

Application

This unit of competency defines the skills and knowledge required to inspect watch escapement components and operation, diagnose and rectify faults, replace components and adjust action to achieve optimum timekeeping performance for a watch escapement.

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

Band: A

Unit weight: 4

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
MEM21012	Service and repair mechanical watch oscillating systems

Competency Field

Horology

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	1.1	Follow standard operating procedures (SOPs)
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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	requirements	1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Select and use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	Inspect watch escapement condition	2.1	Identify escapement type and construction
		2.2	Inspect escapement components and condition
		2.3	Observe escapement action for faults
		2.4	Perform and confirm safety test action
		2.5	Record and document repair process
3	Repair, replace and adjust watch escapement components	3.1	Establish an appropriate clean and safe work environment
		3.2	Use hand tools and equipment in safe and correct manner
		3.3	Handle components without damaging or marking
		3.4	Adjust or replace components, as necessary
		3.5	Adjust pallet stones and banking pins for optimum performance
		3.6	Reconfirm safety test action
4	Test and adjust escapement function and performance	4.1	Verify and confirm escapement function and lubrication
		4.2	Confirm escapement performance by assessing oscillator amplitude to manufacturer specifications
		4.3	Reconfirm safety test action
		4.4	Assess watch in various states of winding and position

Elements describe the essential outcomes.

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

- 4.5 Make adjustments to achieve performance within specification, as necessary

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.

Equipment type and construction includes one (1) or more of the following:

- recoil
- frictional rest
- detached
- lever (Swiss or English)
- co-axial
- dual direct
- chronometer (spring or pivoted detent)
- cylinder
- pin pallet
- verge
- duplex
- semi-tangential
- equidistant
- circular

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.

Escapement components and conditions include one (1) or more of the following:

- escape wheel
- lever
- jewel pallet stones
- fork
- guard pin
- roller and jewel
- banking pins
- alignment, division and end shake of escapement components

Safety test action includes one (1) or more of the following:

- clearance of horns
- clearance of guard pin

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

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

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

- escapemeter
- pallet stone warmer (spirit lamp or electric warmer)
- shellac
- banking pin adjusting tools
- timing machine
- staking tool
- watch servicing hand tools:
 - roller remover
 - escapement files
 - burnishers
 - levers

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.

Appropriate working environment includes the following:

- clean bench and working area
- adequate lighting and ventilation
- tools and equipment are organised and in good condition
- ergonomic seating
- ventilation

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM21013A Service, test and adjust watch escapements

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 MEM21013 Service, test and adjust watch escapements

Modification History

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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 escapement type and construction
- liaising with customer, verifying condition and performance, and identifying repair costs
- establishing a clean and safe work environment
- identifying faults in escapement components and condition
- rectifying escapement action by replacement and adjustment using appropriate hand tools and equipment
- servicing/lubricating escapement in accordance with manufacturer's specifications
- reconfirming safety test action including clearance of horns and clearance of guard pin and assessing watch in various states of winding and position
- 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 construction
- historic development and common types of escapements
- lever escapement function, operation, action, inspection and adjustment
- escapement safety tests
- techniques for replacement/adjustment of pallet stones
- techniques for assessing watch escapement performance/timekeeping.

Assessment Conditions

- Assessors must:
 - have vocational competency in servicing, testing and adjusting watch escapements 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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