



Australian Government

MEM06010 Perform hand forging

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Modification History

Release	Comments
1	This unit of competency was first released in MEM Manufacturing and Engineering Release 5.0.

Application

This unit of competency defines the skills and knowledge required to operate heating equipment to heat metal to forging temperatures and apply hand forging techniques, using hand tools, hand forming tools, anvil tools, and floor tools.

Where simple manual heating and bending is required, MEM05007 Perform manual heating and thermal cutting should also be selected.

Where the interpretation of technical drawings is required, MEM09002 Interpret technical drawings should also be selected.

Where the selection and use of engineering measurement is required, MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of power tools/hand held operations is required, MEM18002 Use power tools/hand held operations should also be selected.

Commonwealth and state/territory laws and regulations governing work and training environments must be complied with.

Band: A

Unit Weight: 4

Licensing/Regulatory Information

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

Pre-requisite unit(s)

MEM11011 Undertake manual handling

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

MEM18001 Use hand tools

Competency field(s)

Forging

Unit sector(s)

N/A

Elements and Performance Criteria

Elements	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 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications, sketches, job sheets or work instructions
2. Apply hand forging techniques	2.1 Select and use hand tools, hand forming tools, anvil tools, and floor tools for specific forging techniques 2.2 Select and apply appropriate hand forging techniques to meet specifications 2.3 Adhere to forging temperatures and heat specifications for various materials 2.4 Select appropriate volume of material to meet specifications, making allowances for material shrinkage and oxidation
3. Operate heating equipment	3.1 Set up and safely operate the heating equipment to meet job requirements 3.2 Operate heating equipment to minimise oxidation 3.3 Control heat to specified areas

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, accessibility of the item, and local industry and regional contexts) are included.	
Hand tools include one or more of the following:	• hand hammer • tongs • bending tools • drifts • punches (handheld, for hot work) • double callipers • twisting tools.
Forming tools include one or more of the following:	• flatters • set hammers • hot/cold sets • cupping tools • top swages • top fullers • punches • slitting chisels • slot punches • hammer eye punches • bob punches.
Anvil tools include one or more of the following:	• bottom swages • bottom fullers • fork tools • cut-off hardies • cupping tools • hold fast • cutting plates • anvil blocks • punching plates

	• bolsters • mandrel/cone.
Floor tools include one or more of the following:	• anvil • mandrel/cone • post vice • swage block • upsetting block • bending slabs • surface plates.
Hand forging techniques include one or more of the following:	• drawing • tapering • swaging • bending • upsetting • spreading • punching • drifting • twisting • scarf preparation and fire welding • forming • offsetting.
Materials include one or more of the following:	• low to medium carbon steels • low to medium alloy steels.
Heating equipment includes one or more of the following:	• diesel equipment • electrical equipment • induction-forging equipment • gas equipment • solid-fuel equipment • ceramic-chip equipment • oxy-fuel equipment.

Unit Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM06010 Perform hand forging	MEM06001 Perform hand forging	Superseded	Equivalent

Assessment Requirements for MEM06010 Perform hand forging

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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 and include the ability to:

- follow work instructions, standard operating procedures (SOPs) and safe work practices
- select and use hand tools, forming tools, anvil tools, and floor tools
- select and apply hand forging techniques
- determine correct forging temperatures
- operate heating equipment safely and effectively to hand forge materials to meet job requirements.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

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 and use of the range of hand tools, forming tools, anvil tools, and floor tools used in hand forging
- hand forging techniques, including drawing, tapering, swaging, bending, upsetting, spreading, punching, drifting, twisting, forming, offsetting, and scarf preparation and fire welding
- calculations used to determine mean diameter, length and circumference
- sources of information on forging temperatures
- heat specifications for various materials
- effects of and allowances for material shrinkage and oxidation
- principles, safety considerations and basic operation of diesel, electric, induction, gas, solid-fuel, oil-fuel, ceramic-chip, and oxy-fuel heating equipment.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing hand forging 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.

Link

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>.