



Australian Government

MEM06017 Perform press forging of complex shapes

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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 forge complex shapes using a forging press where specialised methods of holding, positioning and lifting complex forgings are required.

Where basic use of a power hammer is required, MEM06002 Perform hammer forging should also be selected.

Where the interpretation of technical drawings is required, MEM09002 Interpret technical drawing 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 tools is required, MEM18001 Use hand tools and MEM18002 Use power tools/hand-held operations should also be selected as appropriate.

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)

MEM06016 Perform press forging

MEM11011 Undertake manual handling

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

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. Select materials	2.1 Select material for use with specific press work 2.2 Make material calculations using volumes and weights and including allowances for thermal expansion/contraction, oxidation, and shrinkage
3. Use forging press for complex shapes	3.1 Operate press to meet job requirements in accordance with SOPs 3.2 Select and use complex tooling following safe operating procedures. 3.3 Set up tooling in conjunction with complex forging techniques
4. Forge complex shapes to specifications	4.1 Position the material to be forged in the forming equipment following SOPs 4.2 Mark and measure hot forgings to meet specifications making allowance for material shrinkage and oxidation 4.3 Use mandrels and fixtures attached to the press 4.4 Check forging to ensure conformance to tolerances and specifications 4.5 Handle forgings in accordance with WHS requirements and SOPs
5. Heat complex forgings	5.1 Operate the heating equipment to meet job requirements 5.2 Apply safe technique to heat complex forgings

	5.3 Perform preheating and post-forging heat treatment in accordance with procedures 5.4 Apply correct techniques for handling hot metal, including balancing and pivoting
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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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.	
Forging includes one or more of the following:	• forging using a mandrel • forging a boss • forging a ring or bush • forging a crankshaft • three-way forging • punching and opening of a large diameter hole.
Material calculations include one or more of the following:	• thermal expansion/contraction • material wastage • oxidation and shrinkage allowance.
Heat treatment processes include one or more of the following:	• annealing • stress relieving.

Unit Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM06017 Perform press forging of complex shapes		This unit has been created to address a skill or task required	Newly created

		by industry that is not covered by an existing unit of competency	
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Assessment Requirements for MEM06017 Perform press forging of complex shapes

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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 (SOP) and safe work practices
- select and use measuring guides
- set up and safely operate press equipment
- select and use complex tooling following procedures
- use appropriate and safe methods for holding, positioning and lifting complex-shaped forged material, including hot materials
- perform press forging to forge shapes to meet job requirements
- select and operate heating equipment to preheat and apply heat treatment to complex forgings.

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 safe operating procedures (SOP) and use of personal protective equipment (PPE)
- press forming tools and their application to produce a range of pressed forgings
- press forging and punching techniques
- calculations and formulas for determining the volume and weight of material
- effects of material shrinkage and oxidation on the dimensions of the forged article
- methods of overcoming/allowing for the effects of shrinkage and oxidation when press forging articles

- procedures for safe handling of material
- preheating and post-forging heat treatment processes.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing press forging of complex shapes 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>.