



Australian Government

MEM06005 Perform drop and upset forging

Release: 1

MEM06005 Perform drop and upset forging

Modification History

Release 1. Supersedes and is equivalent to MEM06005B Perform drop and upset forging

Application

This unit of competency defines the skills and knowledge required to select, set up and operate drop and upset forging equipment where material is forged to specified dimensional accuracy and finish.

Where routine, repetitive cold upset forging is required unit MEM07024 Operate and monitor machine and process should be selected.

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

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

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

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

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM06002	Perform hammer forging
MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Forging

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 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 | Identify and select drop and upset forging equipment and tools for specific operation | 2.1 | Select appropriate equipment suitable for the size of material and forging procedures |
| | | 2.2 | Select dies and punches for specific operations and equipment |
| | | 2.3 | Determine die replacement with regard to relief allowances, cracking and dimensions |
| | | | |
| 3 | Set up and operate drop and upset forging equipment | 3.1 | Set up equipment, adjust and operate |
| | | 3.2 | Apply correct die setting techniques in setting appropriate die and punch alignment |
| | | 3.3 | Apply correct die preheating procedures |
| | | | |
| 4 | Prepare material | 4.1 | Prepare materials and heat in accordance with job requirements and/or specifications |
| | | | |
| 5 | Drop and upset forge material | 5.1 | Calculate material amounts with allowance for heat wastage and flash or fin |
| | | 5.2 | Drop forge material using the correct procedures and techniques |
| | | 5.3 | Apply correct lubricant for die wear and forging release |

Elements describe the essential outcomes.

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

- 5.4 Determine correct grain flow
- 5.5 Identify and correct galls, folds and cracks
- 5.6 Carry out removal of flash or fin in accordance with SOPs

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.

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

- drop forging hammer/press
- open die forging hammer using closed loose die or horizontal upsetting machine (heading machine)

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

- ferrous materials (steel)
- non-ferrous material (copper and aluminium bronze)

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

- graphite bearing oils/greases
- cellulose granules
- waxes

Correct removal includes one (1) or more of the following:

- ejector pins
- drafts in die (angle)

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM06005B Perform drop and upset forging

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 MEM06005 Perform drop and upset 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 on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- setting up and using a range of drop forging and upset (and cold upset) forging equipment
- performing preparation and forging of materials using drop and upset methods, including using lubricants for forged material release
- performing material finishing and correction of forging galls, folds and cracks as necessary.

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)
- drop or upset forging techniques
- characteristics of forging equipment
- reasons and remedies for incorrect/correct alignment of dies and punches
- preparation of dies (pre-heating, preparation, lubrication, defects, conformance and replacement)
- techniques for materials pre-heating
- relevant forging tools, techniques and equipment
- techniques for setting, adjusting and operating forging equipment
- features of defects in drop/upset forged articles, including galls, folds, cracks and ways of correcting defects and removing flash, fins from drop/upset forged articles
- calculations for material volume, weight, allowances, heat wastage and flash/fin.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing drop and upset 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.

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