



Australian Government

MEM04003 Operate pressure die casting machine

Release: 1

MEM04003 Operate pressure die casting machine

Modification History

Release 1. Supersedes and is equivalent to MEM04003B Operate pressure die casting machine

Application

This unit of competency defines the skills and knowledge required to start, operate and shut down pressure die casting machines.

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

Where the selection and use of engineering measuring equipment 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

MEM11011	Undertake manual handling
MEM13004	Work safely with molten metals/glass
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Casting and moulding

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, job sheets or work instructions
2	Conduct pre-operational checks	2.1	Conduct start-up procedure
		2.2	Adjust the shot size if required
		2.3	Check nitrogen and/or vacuum systems if applicable
		2.4	Undertake a functional check of the picking robot, and adjust the component gripper if required
		2.5	Adjust die spray nozzles
		2.6	Carry out planning to ensure efficient flow of finished product
3	Operate machine to produce castings	3.1	Apply appropriate knowledge of die casting process to the operation, adjustment and monitoring of machine functions
		3.2	Operate a die casting machine to SOPs, including maintenance of liquid metal and die operating conditions
		3.3	Break runners off in an appropriate manner
		3.4	Inspect castings visually for defects
		3.5	Handle castings in a manner that minimises risk of damage to the casting and injury to personnel
		3.6	Produce first-off castings, inspect visually and submit for checking against job requirements

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|---|------------------------|-----|---|
| 4 | Monitor furnace | 4.1 | Maintain furnace at optimum operating condition |
| | | 4.2 | Shut down furnace following 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, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Plan for efficient flow of finished product includes one (1) or more of the following:

- breaking off runners
- stacking baskets
- bins
- conveyors

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

- porosity
- cracks
- tears
- splits
- sinks
- cold shuts
- tinning and die surface crazing

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM04003B Operate pressure die casting machine

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 MEM04003 Operate pressure die casting machine

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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 and interpreting specifications and other applicable reference documents for operating pressure die casting machine
- starting and operating pressure die casting machine, including conducting start-up procedures and all functions of the control panel
- operating machine to produce castings and carrying out visual inspection of first-off castings and submitting for checking against specifications
- maintaining furnace at optimum operating temperature
- completing shutdown procedures.

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)
- procedures for pre-start checks
- procedures for adjusting the shot size and the effect of incorrect shot size on the quality of the die casting
- procedures for starting up the die casting machine and adjustments to be made to ensure correct operation
- removing runners from the die casting
- common faults in die castings and their probable causes
- procedures for inspecting die castings for common faults and probable causes
- checking first-off castings for conformance to specification
- shutting down the machine
- function of nitrogen and vacuum systems in the die casting process and the procedures for checking and adjusting
- function of a picking robot and the component gripper and procedures for adjusting the picking robot and effects that this can cause

- reasons for spraying the die and procedures for adjusting the die spray nozzles
- operations to be performed subsequent to die casting the product
- tools and equipment used in die casting
- methods of transporting and conveying the die cast product
- die casting process, including the effects of the adjustment of each machine control has on the quality of the die casting produced
- die casting machine operation, including operating parameters and maintenance of liquid levels
- damage that can be caused to castings through inappropriate handling and storage
- specifications of the die cast product.

Assessment Conditions

- Assessors must:
 - have vocational competency in operating pressure die casting machines 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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