



Australian Government

MEM07044 Test a new aluminium extrusion die

Release: 1

MEM07044 Test a new aluminium extrusion die

Modification History

Release 1. Supersedes and is equivalent to MEM07044A Test a new aluminium extrusion die

Application

This unit of competency defines the skills and knowledge required for die correctors working in an aluminium extrusion workplace who are required to undertake the initial testing of new extrusion solid and hollow dies. It includes liaison with die designers and makers on the performance of the new die and making corrections to the die to ensure optimal performance.

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

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07043	Identify causes of faulty aluminium extrusions
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Machine and process operations

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, drawings, job sheets or work instructions |
| | | | |
| 2 | Interpret die drawing and die specifications relevant to die trial | 2.1 | Identify regulatory requirements and risk management requirements associated with extruder operation and die handling |
| | | 2.2 | Identify layout and pre-forming of die apertures |
| | | 2.3 | Identify bearing and pocket design/specification |
| | | 2.4 | Identify measurements and tolerances for bearings, die components and die support system |
| | | 2.5 | Identify bolster and spacer specification for die |
| | | 2.6 | Identify press specifications |
| | | 2.7 | Identify speed estimate for die |
| | | 2.8 | Identify ports and bridges for hollow dies |
| | | | |
| 3 | Liaise with die designer | 3.1 | Clarify die drawing and die specifications with die designer where design information is not clear |
| | | 3.2 | Determine if die requires finishing off and clarify final design measurements, tolerances and speed specifications |
| | | 3.3 | Obtain any special instructions from die designer for conduct of test extrusions |

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
4	Finish off die, if required	4.1	Finish lands and bearings to specified tolerances
		4.2	Finish ports, bridges and mandrels of hollow dies, if required
		4.3	Undertake any final polishing
		4.4	Confirm all measurements are to design specification after finishing off
5	Analyse trial extrusions	5.1	Check extruder and surrounds for compliance with operation safety requirements
		5.2	Operate or supervise operation of extrusion press to produce trial extrusions
		5.3	Check hot extrusions for shape distortion
		5.4	Check thickness of extrusions are to specification
		5.5	Check surface finish of extrusions
		5.6	Identify whether faults apply from the start to the end of the run-out of the extrusions
		5.7	Conduct additional trial extrusions to confirm extrusion faults occur consistently
		5.8	Record extruder settings for each trial extrusion
6	Identify appropriate remedy for out-of-specification results	6.1	Examine faulty extrusions and determine if fault relates to die design, incorrect process or temperature settings, or faulty die support system
		6.2	Determine fault is die related and able to be eliminated through correction of die
		6.3	Determine if fault can be corrected through adjustments to die supports
		6.4	Determine if fault can be eliminated through adjusted process control or billet heating

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| | | 6.5 | Recommend either return of die for re-design or manufacture of a new die where faults are unable to be corrected |
| 7 | Re-test die after correction | 7.1 | Conduct trial extrusions after correction of die, die support adjustment or process or temperature adjustment |
| | | 7.2 | Return die to die manufacturer if faulty extrusions persist |
| | | 7.3 | Record adjustments to die on die design drawings ensuring correct feedback codes are used |
| | | 7.4 | Record adjustments made to die support system, process and temperature settings |

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.

Unit Mapping Information

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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 MEM07044 Test a new aluminium extrusion die

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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
- complying with relevant work health and safety (WHS), regulatory requirements and risk management
- identifying bearings, apertures, and critical measurements and tolerances on die drawing
- supervising and conducting trial extrusions
- using workshop machines and hand tools to finish off a die to design specifications
- identifying cause of extrusion faults from both hollow and solid die extrusions
- identifying appropriate action to take to remedy extrusion faults
- reporting and documenting results.

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)
- aluminium extrusion die construction and the extrusion process
- effects of nitriding and re-nitriding on tool performance
- requirements of AS/NZS 1866:1997 Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
- techniques for correcting solid and hollow dies
- die support system, including role and types of feeder plates, bakers, bolsters and spacers
- characteristics and use of extruder components, including:
 - container
 - container liner
 - billet
 - die slide
 - pressure rings
 - platen
- characteristics and use of hollow die components, including:

- weld chamber
- mandrel
- die holder
- weld feeds
- bridges
- ports
- die and extruder performance and adjustment records.

Assessment Conditions

- Assessors must:
 - have vocational competency in testing new aluminium extrusion dies 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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