



Australian Government

MEM05077 Perform welding inspection

Release: 1

MEM05077 Perform welding inspection

Modification History

Release 1. Unit code and title changed. Changes to prerequisites, elements and performance criteria, performance evidence and knowledge evidence. Supersedes and is not equivalent to MEM05025 Perform welding/fabrication inspection.

Application

This unit of competency has been developed for post trade engineering fabrication training and the recognition of post trade skills in welding inspection.

It defines the skills and knowledge required to perform welding inspections, organise appropriate non-destructive tests (NDTs), validate welding procedure specifications (WPS), ensuring that quality assurance is carried out and monitoring procedures are undertaken, as defined in the unit in conjunction with its prerequisites.

Competency in this unit is based on broad knowledge of metallurgy associated with welding, mechanical properties of welded joints, heat treatment procedures and national and international welding and related standards. Test procedures and the scope of this unit of competency are determined by applicable Australian and/or international standards.

Where the conduct of destructive and/or non-destructive testing is required the appropriate test units must also be selected.

This unit must be selected in combination with one of the MEM coded welding units and their prerequisites. These units include:

MEM05060 Perform welds to code standards using submerged arc welding process

MEM05079 Perform welds to code standards using flux core arc welding process

MEM05080 Perform welds to code standards using gas metal arc welding process

MEM05081 Perform welds to code standards using gas tungsten arc welding process

MEM05082 Perform pipe welds to code standards using manual metal arc welding process

MEM05083 Perform welds to code standards using manual metal arc welding process

MEM05088 Perform welds to code standards using oxy fuel gas welding process.

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

Band: B

Unit Weight: 10

Pre-requisite Unit

MEM05061 Apply basic metallurgy principles to coded welding

MEM05062 Apply welding and welding related codes and standards

MEM05065 Maintain weld records
MEM05066 Develop and maintain welding procedures
MEM05068 Apply welding procedure specifications
MEM05078 Apply welding principles
MEM05085 Select welding processes
MEM09002 Interpret technical drawing
MEM11011 Undertake manual handling
MEM12023 Perform engineering measurements
MEM12024 Perform computations
MEM13015 Work safely and effectively in manufacturing and engineering
MEM14006 Plan work activities
MEM16006 Organise and communicate information

Competency Field

Fabrication

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 scope of required welding inspection	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify welding inspection requirements from specifications, drawings, job sheets or work instructions
2. Confirm materials are to specification	2.1 Check markings and other manufacturers information against specifications 2.2 Select appropriate non-destructive tests and organise and/or conduct in accordance with SOPs or job specifications 2.3 Check if results of previous testing procedures are available and verify results as relevant to required welding inspection 2.4 Confirm suitability of materials for required welding
3. Review and validate welding procedure	3.1 Interpret joint design specification and review welding parameters 3.2 Review WPS and other document procedures

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	3.3 Organise preparation of production test piece or sample material 3.4 Arrange relevant destructive or non-destructive tests 3.5 Interpret test results and prepare report identifying required action
4. Ensure quality assurance procedures are carried out and confirm compliance	4.1 Check documentation for evidence of welder qualification against WPS 4.2 Check material identification is correct 4.3 Document movement of material through workshop site 4.4 Witness transferring material test certification numbers 4.5 Perform identification of consumables in accordance with welding procedures 4.6 Monitor storage and use of consumables and confirm compliance 4.7 Maintain and review welding inspection records to ensure traceability and compliance with requirements
5. Check fabrication for compliance with specifications	5.1 Check material forming against job requirements 5.2 Carry out dimensional checks against specifications 5.3 Make final inspection against specifications

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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.

Welding inspection:	welding inspection may be performed on behalf of an inspecting authority, a principal, or in-house for a fabricator as part of quality control. In all cases the welding inspector acts independent of the welding supervisor or welding engineer
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	responsible for developing the welding procedure specification.
Welding inspection scope includes verification of:	• material preparation • selection and use of consumables • welding of base metal to welding procedure specification • keeping of appropriate welding records • production of test pieces and sample material • NDT and other tests are commissioned in accordance with customer requirements, WPS and relevant codes and standards • fabrication dimensions and forming are consistent with specifications and where required • pre and post heat application.
Standards and codes include Australian or international standards and codes covering the following:	• welding processes • welding consumables • materials used in fabrication related projects or products • destructive and non-destructive testing of welds • qualifying of welders, welding inspectors and welding supervisors.
Welding procedure specification (WPS) format	the WPS can vary in format depending on fabricator and customer requirements and may be recorded and distributed electronically or on paper.
Non-destructive tests include one or more of the following:	• visual inspection • dye penetrant • magnetic particle • radiographic • ultrasound.
Welding procedure parameters include one or more of the following:	• material specification and grade • material preparation • joint details • position • run sequence and pass number • welding process • filler material • material diameter • current • voltage • polarity

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.

- wire feed speed where relevant
- travel speed
- pre and post heat input where required.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>