



Australian Government

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

Release: 1

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Modification History

Release 1. Unit code changed. Changes to prerequisites, performance evidence and knowledge evidence. Supersedes and is not equivalent to MEM05044 Perform welds to code standards using gas tungsten arc welding process.

Application

This unit of competency has been developed for post trade engineering fabrication training and the recognition of post trade skills in performing welds to code standards using gas tungsten arc welding.

It defines the skills and knowledge required to prepare and produce welds to code standards using gas tungsten arc welding (GTAW) on different types of materials. Welds covered by this unit include butt and fillet welds in the flat, horizontal, vertical and overhead positions to meet AS 1210 Pressure vessels, AS 4041 Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent national and international standards.

This unit, together with units MEM05061 Apply basic metallurgy principles to coded welding, MEM05062 Apply welding and welding related codes and standards and MEM05068 Apply welding procedure specifications may satisfy the requirements of AS 1796 Certification of welders and welding supervisors or equivalent national and international standards.

Where the welding associated with this unit also requires advanced manual thermal cutting, gouging and shaping, the unit MEM05071 Perform advanced manual thermal cutting, gouging and shaping must also be selected.

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

Band: B

Unit Weight: 8

Pre-requisite Unit

MEM05007 Perform manual heating and thermal cutting

MEM05049 Perform routine gas tungsten arc welding

MEM05052 Apply safe welding practices

MEM05061 Apply basic metallurgy principles to welding applications

MEM05062 Apply welding and welding related codes and standards

MEM05065 Maintain weld records

MEM05068 Apply welding procedure specifications

MEM05074 Perform advanced welding using gas tungsten arc welding process

MEM05078 Apply welding principles
 MEM05085 Select welding processes
 MEM05092 Weld using gas tungsten arc welding process
 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
 MEM18001 Use hand tools
 MEM18002 Use power tools/hand held operations

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 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 weld procedure specifications (WPS), customer requirements, drawings, job sheets or work instructions 1.5 Obtain WPS clarification or approval of variation to WPS from appropriate person as required
2. Prepare welding materials and equipment for GTAW welding to code standard	2.1 Prepare materials to produce weld to code standard 2.2 Perform routine maintenance on welding equipment 2.3 Set up welding equipment 2.4 Select consumables in accordance with WPS
3. Weld joints using GTAW to procedure	3.1 Weld materials in accordance with WPS

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
specifications	3.2 Apply post-welding heat treatment where specified 3.3 Inspect welded joints visually for conformance to specifications 3.4 Rectify discontinuities to ensure compliance to code requirements 3.5 Maintain weld records according to SOPs

Foundation Skills

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

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.	
Routine maintenance includes:	Ensuring leads and hand pieces are in good condition and the correct current carrying capacity.
Preparation includes one or more of the following:	• cleaning and preparation of base material • flame cut and ground or machined edge preparation • pre-heating • setting up of jigs, fixtures and clamps.
Materials include one or more of the following:	• carbon/manganese steel • stainless steel • low alloy steel.
Rectify includes the use of one or more of the following:	• oxy acetylene • air arc equipment • grinding devices.

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Defects include one or more of the following:

- cracks
- craters
- inclusions
- porosity
- lack of penetration or fusion
- imperfect weld size and/or shape
- undercut
- incorrect fabrication dimension
- distortion
- excess penetration
- excess weld reinforcement
- excess weld metal
- arc strikes.

Welding procedure parameters include one or more of the following:

- material specification and grade
- material preparation
- joint details
- process type
- position
- run sequence and pass number
- welding process
- filler material
- material diameter
- current
- voltage
- polarity
- travel speed
- pre and post heat input.

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>