



**Australian Government**

**MEM05074 Perform advanced welding  
using gas tungsten arc welding process**

**Release: 1**

# MEM05074 Perform advanced welding using gas tungsten arc welding process

## Modification History

Release 1. Unit code changed. Changes to prerequisites, performance evidence and knowledge evidence. Supersedes and is not equivalent to MEM05020 Perform advanced welding using gas tungsten arc welding process.

## Application

This unit of competency has been developed for engineering fabrication trade training and the recognition of trade skills in advanced welding using manual metal arc welding.

It defines the skills and knowledge required to plan, prepare for, and carry out advanced welding using gas tungsten arc welding (GTAW) where the weld would be required to conform to AS 1554 Structural Purpose (SP) or equivalent national or international standards or codes as defined in the unit in combination with its prerequisites.

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. Where the welding associated with this unit also requires the application of welding codes and standards, the unit MEM05062 Apply welding and welding related codes and standards must also be selected. Where the welding associated with this unit also requires the welding to be undertaken according to a formal welding procedure specification, the unit MEM05068 Apply welding procedure specifications must also be selected. Where formal weld records associated with the application of this unit are required to be maintained, the unit MEM05065 Maintain weld records must also be selected.

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

Band: A

Unit Weight: 4

## Pre-requisite Unit

MEM05007 Perform manual heating and thermal cutting

MEM05049 Perform routine gas tungsten arc welding

MEM05052 Apply safe welding practices

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)<br>1.2 Comply with work health and safety (WHS) requirements at all times<br>1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs<br>1.4 Identify job requirements including relevant standards and codes from specifications, drawings, job sheets or work instructions |
| 2. Prepare materials for welding                                 | 2.1 Prepare materials to achieve required weld requirements<br>2.2 Assemble and/or align materials to specification, where required   |
| 3. Select, assemble and set up welding equipment and consumables | 3.1 Identify and select welding equipment and electrodes, accessories and consumables appropriate to the material<br>3.2 Assemble and set up alternating current (AC) or direct Current (DC) welding equipment  |
| 4. Weld joints to specifications using GTAW                      | 4.1 Apply appropriate distortion prevention measures<br>4.2 Ensure weld deposit is to specifications<br>4.3 Clean joints to specifications<br>4.4 Rectify any distortion using appropriate techniques   |
| 5. Ensure weld conformance                                       | 5.1 Inspect weld joints visually for conformance to specifications<br>5.2 Rectify any weld crack or defect with minimum loss of sound metal using correct techniques and tools  |

| Elements                                  | Performance Criteria  |
|---|---|
| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element. |
|   | 5.3 Complete weld records in accordance with 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. |  |
| Welds include:  | <ul style="list-style-type: none"> <li>• GTAW fillet and butt welds carried out in all positions.</li> </ul>   |
| Materials include one or more of the following:   | <ul style="list-style-type: none"> <li>• low carbon</li> <li>• cast iron</li> <li>• stainless and low alloy steel</li> <li>• aluminium.</li> </ul>   |
| Welding equipment includes:   | <ul style="list-style-type: none"> <li>• settings, electrodes, gases and related equipment selected in accordance with welding procedure.</li> </ul> |
| Preparation includes one or more of the following:  | <ul style="list-style-type: none"> <li>• pre-heating</li> <li>• setting up of jigs, fixtures and clamps</li> <li>• joint preparation.</li> </ul>     |
| Distortion prevention measures include one or more of the following:  | <ul style="list-style-type: none"> <li>• pre-heating</li> <li>• setting up of jigs</li> <li>• fixtures and clamps.</li> </ul>                        |
| Rectify includes the use of one or more of the following:   | <ul style="list-style-type: none"> <li>• oxy acetylene</li> <li>• air arc equipment</li> <li>• grinding devices.</li> </ul>                          |
| Weld cracks or defects include one or more of the   | <ul style="list-style-type: none"> <li>• porosity</li> <li>• slag inclusions</li> </ul>  |

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following:

- discontinuities
- lack of penetration
- undercut.

## 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>