



Australian Government

Department of Education, Employment and Workplace Relations

MEM05017C Weld using gas metal arc welding process

Release: 1

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Modification History

There are no notes for this unit.

Unit Descriptor

This unit covers preparing materials, selecting and setting up gas metal arc welding equipment, carrying out the welding, visually inspecting welds and correcting defects.

Application of the Unit

Welds are associated with heavy or light fabrication. Welds include fillet and butt welds in all positions on a range of materials that may include carbon steel or stainless steel or aluminium. Weld quality would typically conform to Australian Standard 1554 General Purpose, American Bureau of Shipping (ABS) or equivalent.

Licensing/Regulatory Information

Pre-Requisites

Path 1

MEM05050B Perform routine gas metal arc welding

MEM05051A Select welding processes

MEM05052A Apply safe welding practices

MEM12023A Perform engineering measurements

MEM18001C Use hand tools

MEM18002B Use power tools/hand held operations

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements are the essential outcomes of the unit of competency.

Together, performance criteria specify the requirements for competent performance. Text in italics is explained in the range statement following.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Prepare materials for gas metal arc welding (GMAW)	1.1 Weld requirements are identified from specifications and/or drawings.
	1.2 Material is correctly prepared .
	1.3 Materials are assembled/aligned to specification where required.
2 Select welding components	2.1 Welding machine settings accessories and consumables are identified.
3 Assemble and set up welding equipment	3.1 Welding equipment is assembled and set up.
4 Minimise and rectify distortion	4.1 Distortion prevention measures are selected appropriate to material and process.
	4.2 Distortion is rectified .
5 Weld to job specification using GMAW	5.1 Weld deposit is to specifications.
	5.2 Joints are cleaned to specifications.
6 Ensure weld conformance	6.1 Weld joints are visually inspected for conformance to specifications.
	6.2 Defects are removed with minimum loss of sound metal using correct and appropriate techniques and tools.
7 Maintain weld records as required	7.1 Weld records are completed correctly.

Required Skills and Knowledge

Evidence Guide

The evidence guide specifies the evidence required to demonstrate achievement in the unit of competency as a whole. It must be read in conjunction with the unit descriptor, performance criteria, range statement and the assessment guidelines for the Metal and Engineering Training Package

Overview of assessment requirements

A person who demonstrates competency in this unit must be able to prepare materials, select and set up the welding equipment, carry out GMAW welding and inspect for and correct defects. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Context of assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

Interdependent assessment

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with welding using gas metal arc welding process or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and

documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Consistency of performance

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Required skills

Look for evidence that confirms skills in:

identifying and interpreting appropriate standard e.g. Australian Standard 1554 General Purpose, American Bureau of Shipping (ABS) or equivalent

selecting and using appropriate tools and equipment

using a variety of welding machines and electrodes

identifying and rectifying weld defects

applying techniques for distortion prevention and rectification

cleaning welds

reading and interpreting information on written job instructions, specifications, standard operating procedures and drawings

recording routine information related to GMAW onto proformas and standard workplace forms

following oral instructions

measurement skills relating to joint preparation and GMAW

Required knowledge

Look for evidence that confirms knowledge of:

types of gases and their uses

the relationships between amperage/wire feed, voltage, gas flow, electrode and material

the application of weld metal transfer (short arc, spray etc.)

correct welding machine, leads, hand pieces and electrodes

material preparation

joint preparations

electrode classification

causes of distortion for materials within the scope of this unit

safe welding practices

use and application of personal protective equipment for GMAW

Range Statement

The range statement provides information about the context in which the unit of competency is carried out. The variables and scope cater for different work requirements, work practices and knowledge between States, Territories and the Commonwealth, and between organisations and workplaces. The range statement relates to the unit as a whole and provides a focus for assessment. Text in **italics** in the performance criteria is explained here.

The following variables may be present and may include, but are not limited to, the examples listed under the scope. All work is undertaken to relevant legislative requirements, where applicable

Variable	Scope
Weld	Fillet and butt in all positions, vertical, horizontal, overhead
Prepared	Preparation of materials including preheating, setting up of jigs, fixtures, clamps, etc., joint preparation e.g. bevelling
Equipment	AC or DC welding machines
Distortion prevention measures	Distortion prevention including preheating, setting up of jigs, fixtures, clamps, etc.
Rectified	Oxy acetylene, air arc equipment and grinding devices
Defects	Porosity, slag inclusions, discontinuities, lack of penetration, undercut

Unit Sector(s)

Unit Weight

4

Band

A

Related units

Where thermal processes are required, the appropriate specialisation units should be selected.

Competency field

Fabrication