Australian Government

Department of Education, Employment and Workplace Relations

MEM05011D Assemble fabricated components

Release: 1

MEM05011D Assemble fabricated components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency covers the assembly of general fabricated components in plate, pipe and section or sheet either on-site or in a typical fabrication workplace by an Engineering Tradesperson - Fabrication. Assembly is performed according to specifications or drawings. The unit covers trade level assembly techniques requiring the use of jigs, fixtures and tools.

Application of the Unit

Application of the unit	This unit of competency applies to assembly of ferrous and non-ferrous fabrications to specifications including use of joining techniques. Skills covered by this unit are generally applied in occupational and work situations associated with steel fabrication, boilermaking or sheet metal work. This unit has been developed for Engineering Tradesperson - Fabrication apprenticeship training and the recognition of trade skills in assembly of fabricated components. Typical applications are transitions, pipeworks and structural fabrication, ductwork, general jobbing work, fired and unfired pressure vessels. Work may be undertaken in plant or on-site, and as part of a team in many instances in cooperation with those with rigging/dogging skills where necessary. This unit does not cover the skills for the assembly of fabricated engineering components. These skills are covered by MEM18006C Repair and fit engineering components. Assembly using pre-constructed jigs is covered by MEM03001B Perform manual production assembly or MEM03003B Perform sheet and plate assembly. Where welds are required to meet legislative or regulatory requirements, then appropriate welding units should also be selected. **Band**: **A**

	Unit Weight: **8**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05005B	Carry out mechanical cutting
	MEM05007C	Perform manual heating and thermal cutting
	MEM05012C	Perform routine manual metal arc welding
	MEM05015D	Weld using manual metal arc welding process
	MEM05051A	Select welding processes
	MEM05052A	Apply safe welding practices
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
Path 2	MEM05005B	Carry out mechanical cutting
	MEM05007C	Perform manual heating and thermal cutting
	MEM05019D	Weld using gas tungsten arc welding process
	MEM05049B	Perform routine gas tungsten arc welding

Prerequisite units		
	MEM05051A	Select welding processes
	MEM05052A	Apply safe welding practices
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
Path 3	MEM05004C	Perform routine oxy acetylene welding
	MEM05005B	Carry out mechanical cutting
	MEM05007C	Perform manual heating and thermal cutting
	MEM05022C	Perform advanced welding using oxy acetylene welding process
	MEM05051A	Select welding processes
	MEM05052A	Apply safe welding practices
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
Path 4	MEM05005B	Carry out mechanical cutting
	MEM05007C	Perform manual heating and thermal cutting
	MEM05017D	Weld using gas metal arc welding process
	MEM05050B	Perform routine gas metal arc welding

Prerequisite units		
	MEM05051A	Select welding processes
	MEM05052A	Apply safe welding practices
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify assembly method and construct jigs if required	1.1. Method is identified and jigs are constructed from engineering drawings or according to workshop practice 1.2. Distortion prevention/control techniques are correctly applied
2. Ensure all components for assembly are available	2.1. All components are checked against drawings and material list
3. Select tools and fixtures for fabrication assembly	3.1. Most appropriate equipment is selected
4. Assemble fabricated components	4.1. Material and/or fabricated components are correctly positioned 4.2. Jigs, fixtures, tools and measuring equipment are correctly adjusted and applied 4.3. Datum line is correctly determined if necessary 4.4. Assembled components are checked for position including squareness, level and alignment to specification 4.5. Fixing/joining techniques are applied as necessary according to standard operating procedures 4.6. Assembly is checked for compliance with drawing 4.7. Codes/standards are interpreted and applied

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Required skills include: • constructing jigs where appropriate • applying distortion prevention/control techniques • positioning components in accordance with drawing/specifications • using jigs, fixtures, tools and equipment

REQUIRED SKILLS AND KNOWLEDGE
• correctly marking the datum line • checking the position of all assembled components visually and dimensionally • using appropriate fixing/joining techniques
Required knowledge
Required knowledge includes: • methods for assembly of fabricated components • jigs construction • effects of distortion of fabricated components • distortion prevention techniques • drawing and material list • characteristics of relevant tools and equipment squareness, level and alignment • function of datum lines • variety of fixing/joining techniques • defects associated with the assembly of fabricated components • methods of rectification of defects by rework or adjustment • requirements of relevant codes/standards

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to safely assemble general fabricated components in plate, pipe and section or sheet to specifications and drawings using accepted engineering trade techniques, practices, processes and workplace procedures. Competency in this unit cannot be awarded until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include: • planning assembly tasks and sequences • determining and implementing appropriate distortion control techniques • assembling general fabricated components in plate, pipe,section or sheet to specifications, codes, occupational health and safety (OHS) regulations and standard operating procedures • demonstrating safe working practices at all times • ability to assemble components in a workshop and site environment
Context of and specific resources for assessment	This unit has been developed to support training in and recognition of trade level competency in assembly of fabricated components as applied to a sheet metal or metal fabrication environment. Assessment should emphasise a workplace context and procedures found in the candidate's workplace. The competencies covered by this unit can be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
Method of assessment	Typically, persons engaged in Engineering Tradesperson - Fabrication work are required to use their fabricated assembly skills and techniques across a range of jobs and specifications.

EVIDENCE GUIDE	
	A single assessment event is not appropriate. On the job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. 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.
Guidance information for assessment	This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the assembly of fabricated components or other units requiring the exercise of the skills and knowledge covered by this unit. 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.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

RANGE STATEMENT	
regional contexts) may also be included.	
Distortion prevention/control techniques	Distortion prevention/control techniques may include: • jigs • fixtures • heat • clamps
Components	Components may include general fabricated components in either plate, pipe and section or sheet
Alignment	Alignment may include typical structural alignment and levelling using planes and line straight edges, spirit levels, line levels and squares
Fixing/joining techniques	Fixing/joining techniques may include: • welding • adhesives • fasteners • rivets
Codes/standards	All work carried out in accordance with legislative and regulatory requirements

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Fabrication