



Australian Government

Department of Education, Employment and Workplace Relations

MEM12007C Mark off/out structural fabrications and shapes

Release: 1

MEM12007C Mark off/out structural fabrications and shapes

Modification History

There are no notes for this unit.

Unit Descriptor

This unit covers transferring the dimensions from the detail drawing to work, making templates as required, developing patterns and or transferring measurements to structures, interpreting relevant codes, standards and symbols and estimating quantities of material from drawings.

Application of the Unit

The unit applies to the marking off/out of general fabrications and shapes using appropriate tools and equipment.

All work and work practices are carried out to industry, regulatory and legislative requirements. The task may be performed in the workshop or in-situ.

Templates and patterns are produced as required.

In a marine setting, it includes basic lofting/set out for construction of marine vessels and may include items such as stem and transom development and use of tables of offsets that reflect chine and hull configuration. This may include lofting surfaces, straightedges, stringlines, French curves, templates, etc. Marking out techniques may apply to a range of materials and shapes.

Licensing/Regulatory Information

Pre-Requisites

Path 1

MEM12023A Perform engineering measurements

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 Transfer dimensions from a detail drawing to work or surface	1.1 Specifications and work requirements are determined and understood using correct and appropriate calculations.
	1.2 Marking out is carried out to specifications or standard operating procedures using appropriate tools and equipment .
	1.3 Datum points are established.
2 Make templates/patterns as required	2.1 Appropriate template/pattern material is chosen when required.
	2.2 Required templates are produced to specifications.
	2.3 Correct storage procedures are followed including labelling and identification to standard operating procedures.
3 Develop patterns and/or transfer measurements to structures	3.1 Most appropriate development and/or measurement sequence is chosen and applied.
	3.2 Allowances for fabrication and assembly are correctly determined and transferred.
	3.3 Measurement transfer/layout of components is checked to ensure accuracy/set out.
4 Interpret relevant codes, standards and symbols	4.1 Relevant standards/codes and symbols are interpreted.
	4.2 Requirements of standards/codes are interpreted and applied to materials and processes.

5 Estimate quantities of materials from detail drawings

5.1 Materials are correctly identified.

5.2 Quantities are estimated from drawing.

5.3 Material wastage is minimised.

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 mark off/out structural fabrications and shapes. 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 marking off/out structural fabrications and shapes 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:

reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents

undertaking numerical operations, geometry and calculations/formulae within the scope of this unit

planning and sequencing operations

using techniques and equipment required for marking off/out and developing patterns

checking for conformance to specifications

establishing and marking datum points

developing patterns according to specification

determining fabrication and assembly allowances and transferring to the pattern

where applicable, applying the requirements of the codes/standards during the geometric development/marking off/out process

determining material and component quantities from drawings and job specifications

minimising material wastage

Required knowledge

Look for evidence that confirms knowledge of:

procedures for marking off/out and pattern development

the tools and equipment to be used in the preparation of the marking off/out

the datum points

materials that can be used for the preparation of templates and their application

the manufacturing allowances that have to be considered when developing patterns

template labelling and identification procedures

storage requirements of templates

the appropriate method(s) of development/marketing off/out of a range of given objects

the appropriate fabrication and assembly allowances

the effects of material type and thickness on fabrication and assembly allowances

the sources of data on fabrication and assembly allowances

all relevant standards and codes and the meaning of symbols used

the requirements of the codes/standards applicable to the work to be done

the material(s) from which the component/assembly is to be manufactured

the benefits of minimising material wastage

any applicable industry standards, national/Australian standards, NOHSC guides, State/Territory regulatory codes of

practice/standards

safe work practices and procedures

relevant hazards and control measures
related to the competency

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

Equipment

Marking out tools as required

Unit Sector(s)

Unit Weight

4

Competency field

Measurement

Band

A

Related units

Where more extensive lofting practices are used, Unit MEM09021B (Interpret and produce curved 3 dimensional shapes) should be considered.

For marking out general engineering components, refer to Unit MEM12006B (Mark off/out [general engineering]).