



Australian Government

Department of Education, Employment and Workplace Relations

CPCPCM2028A Cut and join sheet metal

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to cut and join sheet metal associated with the fabrication, installation and repair functions of the plumbing sector.

Application of the Unit

Application of the unit This unit of competency supports metal fabrication work used in plumbing applications.

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure or fitting being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCPCM2023A

Carry out OHS requirements

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. Prepare for work.	1.1. Plans, drawings and specifications are obtained from supervisor for planned work activity. 1.2. Safety (OHS) requirements associated with cutting and joining sheet metal and workplace environmental requirements are adhered to throughout the work. 1.3. Quality assurance requirements are identified and adhered to in accordance with workplace requirements. 1.4. Tasks are planned and sequenced in conjunction with others involved in or affected by the work. 1.5. Tools and equipment , including personal protective equipment, are selected and checked for serviceability. 1.6. Work area is prepared to support efficient cutting and joining of sheet metal.
2. Identify joining requirements.	2.1. Selected sheet metal is checked for compliance with plans and specifications. 2.2. Joining materials are selected to comply with plans and specifications. 2.3. Sealants, fixing materials and sheet metal materials are checked for compatibility and are appropriate for the job.
3. Cut and join sheet metal.	3.1. Sheet metal is marked out in accordance with plans and specifications. 3.2. Sheet metal is cut to pattern using appropriate cutting tool. 3.3. Laps are measured and shaped for joining using appropriate tools and equipment in accordance with plans and specifications. 3.4. Surface is prepared and cleaned of grease and other contaminants. 3.5. Sheet metal is joined to comply with plans and specifications, avoiding damage to surrounding surfaces. 3.6. Joins are cleaned and visually inspected ensuring materials are correctly aligned, joined and sealed. 3.7. Sustainability principles and concepts are applied throughout the cutting and joining process.
4. Clean up.	4.1. Work area is cleared and materials disposed of or

ELEMENT**PERFORMANCE CRITERIA**

recycled in accordance with state or territory *statutory and regulatory authority* legislation and workplace procedures.

4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and workplace procedures.

4.3. Information is accessed and documentation completed in accordance with workplace requirements.

Required Skills and Knowledge**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
 - access information
 - complete workplace documentation
 - determine requirements
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow instructions
 - plan and sequence tasks with others
 - read and interpret:
 - drawings and specifications
 - documentation from a variety of sources
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- cutting and joining sheet metal in the fabrication of plumbing components and selecting suitable joins and sealants for the application and material
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a

REQUIRED SKILLS AND KNOWLEDGE

range of cultural and ethnic backgrounds and with varying physical and mental abilities

- technological skills to:
 - access and understand site-specific instructions in a variety of media
 - use mobile communication technology.

Required knowledge

Required knowledge for this unit is:

- appropriateness of different fastening methods for different applications
- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- characteristics of various metal materials and their compatibility with different joining methods
- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- organisational quality procedures and processes within the context of cutting and joining of sheet metal
- SI system of measurement
- workplace and equipment safety requirements, including relevant statutory regulations, codes and 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

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for cutting and joining sheet metal

EVIDENCE GUIDE

- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum the ability to, given the plans and specifications:
 - cut and join items of sheet metal demonstrating a range of commonly used joining techniques and the use of approved sealants
 - plan the layout, fabricate and assemble a sheet metal product incorporating at least three joining techniques, ensuring:
 - application of sustainability principles and concepts
 - correct identification of requirements and details of proposed joins and assemblies
 - correct selection and use of appropriate processes, tools and equipment
 - completion of all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
 - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and

EVIDENCE GUIDE

emergencies

- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

EVIDENCE GUIDE

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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 regional contexts) may also be included.

Safety (OHS) is to be in accordance with commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control and hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- guillotines
- hand and power tools
- measuring equipment
- other special joining tools and machines
- soldering equipment

RANGE STATEMENT

Materials may include:

- tin snips.
- rivets
- self-drilling and tapping fasteners
- sheet metal, including:
 - colour coated
 - copper
 - galvanised
 - zincalume
 - aluminium
 - lead
 - zinc

Types of *joins* may include:

- silicon and other sealants.
- grooved seam
- knock up
- lap
- Pittsburgh lock
- resistance (spot) weld
- riveted and screwed
- solder.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
 - selecting appropriate components and material
 - choosing efficient products
 - using material efficiently.

Statutory and regulatory authorities include:

- state or territory statutory authority
- statutory plumbing authority.

Unit Sector(s)

Unit sector Plumbing and services

Co-requisite units

Co-requisite units Nil

Functional area

Functional area