



Australian Government

Department of Education, Employment and Workplace Relations

MEM19032A Design and implement mechanisms in jewellery items

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the skills and knowledge required to design and manufacture a range of common jewellery mechanisms. It includes development of design specifications and application of required fabrication techniques.

Application of the Unit

This unit applies to enterprises where one-off, single and multi-component jewellery/3D objects are produced.

Applications of this unit include manufacturing mechanisms for brooches, either existing or new.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 Determine mechanism design requirements | <ul style="list-style-type: none">1.1 Establish design requirements for mechanism from source documentation, items/samples and appropriate persons, as required1.2 Identify factors and conditions affecting the design and conduct further research/design development, as required1.3 Select components and materials to meet design requirements1.4 Determine various options and select the most appropriate option to suit client requirements |
| 2 Design mechanism | <ul style="list-style-type: none">2.1 Determine specifications for manufacturing the mechanism2.2 Produce illustrations and/or renderings, if necessary2.3 Confirm final design with appropriate persons, if required2.4 Complete documentation of mechanism design and production specifications |
| 3 Manufacture mechanism | <ul style="list-style-type: none">3.1 Establish and adhere to occupational health and safety (OHS) and environmental requirements for carrying out work3.2 Plan steps/stages for manufacture of the mechanism3.3 Select and use tools and equipment in accordance with safe working practices3.4 Produce components using appropriate fabrication techniques3.5 Minimise waste and ensure environmental requirements are adhered to in work practice3.6 Ensure components conform to design specifications and are produced to correct tolerances3.7 Ensure all moving parts operate in a smooth, straight manner without jamming or excess play |

Required Skills and Knowledge

Required knowledge includes:

- types and applications of mechanisms
- components of mechanisms
- materials and factors affecting selection of materials
- techniques for manufacturing a range of pins, joints and catches
- tools and equipment used for manufacturing mechanisms
- OHS and environmental requirements
- safety equipment and safe working practices

Required skills include:

- communicating effectively
- selecting components and materials
- producing designs
- planning steps/stages of manufacture
- using tools and equipment
- fabricating mechanism components to specification

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to design and implement mechanisms in jewellery.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • implement OHS workplace procedures and practices, including the use of risk control measures • determine mechanism requirements and develop design and production specifications • manufacture mechanisms according to specifications.
Context of and specific resources for assessment	• Assessment may occur on the job or in an appropriately simulated environment. Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure its correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances. • Assessment may be in conjunction with assessment

	of other units of competency where required.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

OHS requirements	OHS requirements may include: • legislative and regulatory requirements • protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures
Mechanisms	Mechanisms may include: • brooch pins • brooch joints • brooch catches
Factors and conditions	Factors and conditions may include: • item design and type • compatibility with existing materials • functionality/practicality/aesthetics • available resources • client request • time • cost
Appropriate persons	Appropriate persons may include: • supervisor • manager • trainer • mentor • teacher • team member • customer
Tools and equipment	Tools and equipment may include: • drawing/illustrating equipment and media • draw bench and plates • soldering torch • heating equipment • pickling equipment • flexible drive with drill bits • rolling mills • measuring and marking out equipment • bench files • tapered reamers

	• polishing equipment • hand tools • consumables • protective clothing and equipment
Production techniques and processes	Production techniques and processes may include advanced techniques of: • cutting, folding, bending, curving, dapping, drawing, rolling, doming, annealing, melting, granulation, casting, pressing, stamping and laser cutting • soldering, riveting and/or fitting Objects may require a combination of advanced techniques, materials and processes
Environmental requirements	Environmental requirements may relate to: • liquid waste • solid waste • gas, fumes, vapour, smoke emissions, including fugitive emissions, and dust • excessive energy and water use • excessive noise
Components	Components may include: • pins (bent end for rivet and leg for spring, soldered pin dot, soldered chenier rivet carrier, and double pin with chenier carrier) • joints (bent up U joint and chenier joint) • catches (figure 8, and other simple catches to suit joints and pins)
Fabrication techniques	Fabrication techniques may include: • drawing wire • rolling • bending • drilling • cutting • hardening • filing • soldering • reaming • emerying • polishing

Unit Sector(s)

Jewellery and horological

Custom Content Section

Not applicable.