



Australian Government

MEM19032 Design and implement mechanisms in jewellery items

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM19032A Design and implement mechanisms in jewellery items.

Application

This unit of competency defines the skills and knowledge required to design and manufacture a range of common jewellery mechanisms for brooches.

It includes development of design specifications and application of required fabrication techniques and applies to new and existing items which can include single and multi-component pieces.

This unit applies to individuals involved in jewellery design or manufacture in a small or large-scale production context. They use and adapt creative and technical skills and knowledge to produce work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

Competency Field

Jewellery

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications
2. Assess mechanism	2.1 Assess design requirements for mechanism from brief and

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
design	identify factors and conditions affecting the design 2.2 Conduct further research or design development to meet specifications 2.3 Select components and materials that meet design requirements 2.4 Determine mechanism options and select the most appropriate to suit client requirements
3. Design mechanism	3.1 Determine specifications for manufacturing the mechanism based on chosen design 3.2 Produce illustrations or renderings showing key features of mechanism design 3.3 Confirm final design against specifications 3.4 Complete documentation of mechanism design and production specifications with all required measurements
4. Manufacture mechanism	4.1 Plan stages for manufacture of the mechanism based on specifications 4.2 Select and use tools and equipment in accordance with WHS and SOPs 4.3 Produce components using appropriate fabrication techniques 4.4 Minimise waste and ensure environmental requirements are adhered to in work practice 4.5 Ensure components conform to design specifications and are produced to correct tolerances 4.6 Ensure all moving parts operate in a smooth, straight manner without jamming or excess play

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.	
Specifications include one or more of the following:	• job sheets • sketches • work instructions.
Mechanisms include one or more of the following:	• brooch pins • brooch joints • brooch catches.
Factors and conditions include one or more of the following:	• item designs and types • compatibility with existing materials • functionality and practicality • aesthetics • available resources • client requests • time • cost.
Tools and equipment include one or more of the following:	• drawing and illustrating equipment and media • draw bench and plates • soldering torches • 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 include one or more of the following:	• cutting • folding • bending • curving • dapping • drawing • rolling • doming

	• annealing • melting • granulation • casting • pressing • stamping • laser cutting • soldering • riveting • fitting.
Environmental requirements include one or more of the following:	• liquid waste • solid waste • emissions (gas, fumes, vapour, smoke, fugitive emissions or dust) • excessive energy and water use • excessive noise.
Fabrication techniques include one or more of the following:	• drawing wire • rolling • bending • drilling • cutting • hardening • filing • soldering • reaming • emerying • polishing.
Components include one or more of the following:	• pins (bent end for rivet and leg for spring, soldered pin dot, soldered chenier rivet carrier or double pin with chenier carrier) • joints (bent up U joint or chenier joint) • catches (figure 8, or other simple catches to suit joints and pins).

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM19032A Design and implement mechanisms in jewellery items.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM19032 Design and implement mechanisms in jewellery items

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- determining mechanism requirements and developing design and production specifications
- identifying factors and conditions affecting the design
- selecting components and materials to meet design requirements on at least two occasions
- producing illustrations or renderings and confirming final design
- manufacturing mechanisms on at least two occasions using appropriate tools, equipment and fabrication techniques according to SOPs
- ensuring all components and moving parts conform to design specifications.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- types and applications of mechanisms
- components of mechanisms
- materials and factors affecting selection of materials
- production and fabrication techniques for manufacturing a range of pins, joints and catches
- tools and equipment used for manufacturing mechanisms
- environmental requirements for work.
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Assessment Conditions

- Assessors must:

- have vocational competency in designing and implementing mechanisms in jewellery items at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate
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