



Australian Government

MEM30009 Contribute to the design of basic mechanical systems

Release: 1

MEM30009 Contribute to the design of basic mechanical systems

Modification History

Release 1. Supersedes and is equivalent to MEM30009A Contribute to the design of basic mechanical systems.

Application

This unit of competency defines the skills and knowledge required to contribute to basic mechanical system design. It includes the research of equipment functions and operational requirements, the preparation of preliminary documentation and the selection of components such as shafts, seals, bearings, fasteners, splines, cam, lifting systems, pneumatic circuits, hydraulic circuits, piping systems and mechanical features required to perform simple functions.

The unit applies to engineering or related activities and is suitable for people giving technical support in manufacturing or engineering operations and those pursuing technical qualifications and careers at paraprofessional or technician level. All work is carried out under supervision.

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

Pre-requisite Unit

MEM16008 Interact with computing technology

MEM30032 Produce basic engineering drawings

Competency Field

Engineering technician

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. Research equipment function and operational requirements	1.1 Follow standard operating procedures (SOPs) and comply with work health and safety (WHS) requirements at all times 1.2 Identify and obtain information required for design development 1.3 Consult appropriate personnel to determine requirements 1.4 Interpret information collected, prepare draft functional and

Elements	Performance Criteria
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	operational requirements and verify with supervisor or design team
2. Prepare preliminary design documentation	2.1 Select appropriate components, assemblies and fasteners to perform the required function 2.2 Select components and/or materials from supplier or manufacturer catalogues as required 2.3 Apply appropriate and relevant codes to documentation 2.4 Refer documentation to a higher authority for approval
3. File and issue completed documentation	3.1. Store and file approved documentation in accordance with SOPs 3.2. Issue approved documentation to relevant personnel

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.

Information and preliminary design documentation includes one or more of the following:	• drawings • sketches • specifications • manuals.
Mechanical components include:	• shafts • seals • bearings • fasteners, thread systems • splines • cams.

Drive components include:	• electric motors • internal combustion engines • brakes • clutches • belts and pulleys • chains and sprockets • gears • couplings • universal joints.
Mechanical systems include:	• lifting systems: • lifting jacks • hoists • winch equipment • pneumatic systems • hydraulic systems • pumps and piping system.
Pneumatic systems include:	• compressors • pneumatic components • typical circuits and applications • electrical control.
Hydraulic systems include:	• power packs • pumps and other components • typical circuits and applications • electrical control.
Pumping systems include:	• pumps and piping system • purpose of pumps and piping systems • pumps, valves, pipes and other components.

Unit Mapping Information

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Links

Companion Volume Implementation Guides are available on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>