



Australian Government

MEM04027 Develop and manufacture bevel gear patterns

Release: 1

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Modification History

Release 1. Supersedes but is not equivalent to MEM04017 Develop and manufacture gear, conveyor screw and propeller patterns.

Application

This unit of competency defines the skills and knowledge required to manufacture patterns for cast bevel gears. Bevel gear patterns may be segmented or any other method used to minimise material shrinkage or warpage to achieve the required strength.

It covers timber, epoxy and composite constructions incorporating appropriate pattern making principles and techniques. Patterns may be set up on a joint board or plated for ease of moulding.

Where the assembly of plated patterns is required, unit MEM04039 Assemble plated patterns should also be selected.

Where the selection and use of precision measurement is required, unit MEM12003 Perform precision mechanical measurement should also be selected.

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

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM04018 Perform general woodworking machine operations

MEM09002 Interpret technical drawing

MEM11011 Undertake manual handling

MEM12006 Mark off/out (general engineering)

MEM12023 Perform engineering measurements

MEM12024 Perform computations

MEM12026 Perform advanced trade calculations in a manufacturing, engineering or related environment

MEM13015 Work safely and effectively in manufacturing and engineering

MEM14006 Plan work activities

MEM16006 Organise and communicate information

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

Competency Field

Casting and moulding

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 appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications
2. Develop and lay out bevel gear patterns	2.1 Determine type of pattern through application of moulding or casting techniques and foundry processes 2.2 Select material to meet specifications 2.3 Calculate pattern parameters based on specifications 2.4 Lay out pattern to specifications, showing tapers, machining allowances, core prints and method of construction 2.5 Develop and manufacture jigs or fixtures that aid the manufacture of the pattern form
3. Manufacture pattern	3.1 Mark out material and develop construction to meet specifications 3.2 Produce pattern or pattern component parts to size and shape using appropriate hand and hand-held power tools, techniques and procedures 3.3 Check pattern or pattern component parts for compliance with specifications 3.4 Join and fix pattern component parts to meet specifications 3.5 Colour code, mark or label pattern in accordance with SOPs

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:	• drawings • job sheets • work instructions.
Material includes one or more of the following:	• hardwood • softwood • epoxy resins • composites.
Pattern parameters include one or more of the following:	• pressure angles • pitch circles • tooth form • left and right-hand flight helix • pitch axial dimensions • angles • tapers • clearances • contraction allowances.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

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