Australian Government

MEM09213 Produce schematic drawings for hydraulic and pneumatic fluid power systems

Release: 1

MEM09213 Produce schematic drawings for hydraulic and pneumatic fluid power systems

Modification History

Release 1. Supersedes and is equivalent to MEM09213A Produce schematic drawings for hydraulic and pneumatic fluid power systems.

Application

This unit of competency defines the skills and knowledge required to produce detailed engineering drawings for hydraulic and pneumatic fluid power systems to Australian Standard (AS) 1100.101 Technical drawing - General principles. Critical dimensions and specifications are predetermined, and drawings or models are developed with or without the use of computer-aided design (CAD) systems.

This unit is suitable for individuals undertaking drafting in manufacturing and other industries that use fluid power equipment and applies to preparing drawings of whole or part of the fluid power system.

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

Pre-requisite Unit

MEM09204 Produce basic engineering detail drawings

MEM09229 Read and interpret technical engineering drawings

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine schematic drawing requirement	1.1 Follow standard operating procedures (SOPs) and comply with work health and safety (WHS) requirements at all times 1.2 Determine purpose, scope and information requirements for drawing 1.3 Interpret available information relevant to project and work requirements, and identify and address further information needs 1.4 Identify and prepare equipment required to complete work

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.5 Identify and apply relevant codes, standards and symbols used in the mechanical services industry for installation drawings 1.6 Identify and access organisational files, templates and symbols required for work 1.7 Identify the features and operational function of basic pneumatic and hydraulic systems
2. Identify system components	2.1 Identify gas or fluid used in the fluid power system 2.2 Identify hydraulic system components and their function 2.3 Identify pneumatic system components and their function 2.4 Identify environmental implications of inefficient fluid power systems and strategies for minimising impact 2.5 Read and interpret the applicable sections of manufacturer's tables, charts, catalogues and specifications
3. Produce hydraulic and pneumatic system schematic drawing	3.1 Apply operating principles and specifications of hydraulic and pneumatic system and components to drawing work 3.2 Complete schematic drawing according to industry standard for hydraulic and pneumatic fluid power systems, including the use of accurate symbols and notations 3.3 Present schematic drawing according to organisational requirements 3.4 Store schematic drawings 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.

Available information includes one or more of the following:	• construction documents • building and coordination information • work specifications • information for plant services equipment • industry codes, standards and regulations • design brief.
Hydraulic components include one or more of the following:	• basic drive circuits • basic safety/relief circuits • programmable logic controllers (PLCs) • input/output circuitry • sensors • limit switches and stops • mnemonic coding and associated equipment • human interface equipment • fluid reservoirs • piping and hoses and associated fittings • pumps • filters • valves • control gear • drive/displacement units • filters and strainers • pressure and temperature gauges • liquid level gauges • thermometers • thermocouples • manometers • piezometers • pumps • motors/turbines • linear actuators.
Pneumatic components include one or more of the following:	• control system, including PLCs, other input/output circuitry, sensors, limit switches and stops, mnemonic coding and associated equipment, human interface equipment (terminals, keypads, levers, switches and buttons) • receivers and other reservoirs • interlocks • piping and tubing • pumps • compressors • strainers and filters • valves

	• drive/displacement units • pipes (rigid and flexible) • valves (types and functions) • filters (types and functions) • gauges and instruments including pressure and temperature gauges, liquid level gauges, thermometers, thermocouples, manometers and piezometers • pipe fittings (elbows/bends) • air motors • linear actuators.
Fluid power system diagrams include one or more of the following:	• basic drive circuits • basic safety/relief circuits • control circuits • pressure reducing volume/flow control • sensing circuits.
Appropriate personnel include one or more of the following:	• designer • engineer • supervisor.
Support services include one or more of the following:	• estimating department and personnel • engineering department and personnel • drafting department and personnel • project manager • factory manager or staff.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09213A Produce schematic drawings for hydraulic and pneumatic fluid power systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2