



Australian Government

MEM27024 Diagnose and rectify mobile plant hydrostatic systems

Release: 1

MEM27024 Diagnose and rectify mobile plant hydrostatic systems

Modification History

Release 1: New unit

Application

This unit of competency defines the skills and knowledge required to assess converter/transmission operation, and repair or replace faulty components.

It applies to hydrostatic systems used in mobile plant applications, including steering, transmissions and other closed circuit systems. It provides additional specialist skills and knowledge in hydrostatics and is designed to complement the MEM units relevant to the particular equipment systems.

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

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components
MEM27017	Maintain, fault find and rectify hydraulic systems for mobile plant

Competency Field

Fixed and Mobile Plant

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|--|--|
| 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, drawings, job sheets or work instructions |
| 2 | Identify and assess the function and operation of hydrostatic system components | 2.1 Identify motor and pump configurations used on equipment |
| | | 2.2 Identify pump types and control methods |
| | | 2.3 Check pump prime mover and alignment |
| | | 2.4 Identify charge pumps and assess operation against specifications |
| | | 2.5 Identify control valves and functions, including special control features |
| | | 2.6 Identify load sensors, other sensors, control modules, fieldbus circuits and other electrical or electronic components |
| | | 2.7 Locate and check filters, hydraulic lines, heat exchangers and reservoirs |
| | | 2.8 Test system operation and integrity according to manufacturer specifications |
| 3 | Repair/replace faulty components | 3.1 Interpret test results and determine components requiring repairs or replacement |
| | | 3.2 Determine component wear and clearances using appropriate test equipment and manufacturer recommendations |
| | | 3.3 Select replacement components using manufacturer's data |
| | | 3.4 Remove and refit components to hydrostatic system using appropriate tools, equipment and techniques |
| | | 3.5 Test performance of hydrostatic system against specification |

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

3.6 Record all test and rectification activities

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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.

Hydrostatic motor and pump configuration includes one (1) or more of the following:

- close coupled (motor and pump back to back units)
- split units (separate motor and pump) single and double
- multiple pump/motor layouts
- series and parallel operation
- fixed and variable displacement pumps

Control valves include one (1) or more of the following:

- hot oil shuttle valves
- cross-line relief valves
- counterbalance valves
- bypass valves
- differential lock valves
- parking brake valves

Hydrostatic special control features include one (1) or more of the following:

- inch control
- creep speed
- brake defeat function
- hydrostatic braking

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>

Assessment Requirements for MEM27024 Diagnose and rectify mobile plant hydrostatic systems

Modification History

Release 1: New unit

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions using different types of mobile plant hydrostatic systems and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings, design rules and other applicable reference documents to mobile plant hydrostatic systems
- performing diagnostic testing procedures for hydrostatic transmissions, including:
 - flow and pressure testing
 - measuring case drains
 - internal and external fluid leaks
 - abnormal noises and operation
 - scan tools and/or multimeter testing
- undertaking calculation and numerical operations associated with diagnosing and rectifying closed circuit fluid power systems
- checking hydrostatic system components for wear and clearance
- removing, refitting, adjusting and aligning hydrostatic system components
- selecting and using appropriate test equipment to test components for compliance to specifications
- interpreting fault codes and data from test equipment and control modules
- identifying faulty components visually and by using and adapting appropriate testing equipment and identifying components for reuse or replacement
- removing and refitting components to hydrostatic assembly and selecting replacement parts using manufacturer catalogues and data
- adjusting components using appropriate tools, techniques and equipment
- recording/reporting all service/work activities in accordance with SOPs.

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)
- different pump and motor configurations and their advantages and disadvantages in mobile applications, including:

- close coupled (motor and pump back to back units)
- split units (separate motor and pump) single and double
- multiple pump/motor layouts
- method of operation and assembly/disassembly procedures for axial, bent axis and radial pumps
- pump control methods, including:
 - mechanical
 - mechanical servo
 - pilot pressure
 - electronic servo
 - pressure/limitation and displacement control
- operating principles of charge pumps, including construction, circuitry, case flushing and cooling and heating functions
- functions and types of control valves used in hydrostatic/closed circuit systems
- flow amplifiers and functions
- effect of engine speed and performance on hydrostatic system
- methods for checking hydrostatic system components for wear and clearance
- procedures used to remove, refit, adjust and align hydrostatic system components
- recording requirements for test and rectification activities
- appropriate action to correct the faulty components
- test equipment to be used in checking/testing mobile plant hydrostatic systems for correct operation and reasons for selection
- tools, techniques and equipment used in maintaining and repair hydrostatic system assemblies.

Assessment Conditions

- Assessors must:
 - have vocational competency in diagnosing and rectifying mobile plant hydrostatic systems 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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