

## Overview

This standard identifies the competences you need to carry out corrective maintenance activities on fluid power equipment, on mobile or static plant, in accordance with approved procedures. This will involve dismantling, removing and replacing or repairing faulty components on hydraulic, pneumatic or vacuum equipment, and will include components such as pumps, valves, actuators, sensors, regulators, compressors, pipes and hoses, and other specific fluid power equipment.

You will be expected to cover a range of maintenance activities, such as draining and removing fluids, removing stored pressure, labelling/proof marking to aid reassembly, dismantling components to the required level, setting, checking components for serviceability, aligning and adjusting components, replacing 'lifer' items, tightening fasteners to the required torque and making 'off-load' checks, before starting up and testing the maintained equipment, using appropriate techniques and procedures.

Your responsibilities will require you to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with these activities, or with the tools and equipment used, that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work to instructions, alone or in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will provide an informed approach to applying maintenance procedures to fluid power equipment. You will have an understanding of dismantling and reassembly methods and procedures, and their application. You will know how the equipment functions, and the purpose of the individual components, in adequate depth to provide a sound basis for carrying out any repair or adjustment. In addition, you will have sufficient depth of knowledge of these components, to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

You will understand the safety precautions required when carrying out the maintenance activities, especially those for isolating the equipment, and for taking the necessary safeguards to protect yourself and others in the workplace. You will be required to demonstrate safe working practices throughout.

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Carrying out maintenance activities on fluid power equipment

### Performance criteria

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- You must be able to:*
- P1 work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
  - P2 follow the relevant maintenance schedules to carry out the required work
  - P3 carry out the maintenance activities within the limits of your personal authority
  - P4 carry out the maintenance activities in the specified sequence and in an agreed time scale
  - P5 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
  - P6 complete relevant maintenance records accurately and pass them on to the appropriate person
  - P7 dispose of waste materials in accordance with safe working practices and approved procedures

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### Knowledge and understanding

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*You need to know and understand:*

- K1 the health and safety requirements of the area in which the maintenance activity is to take place, and the responsibility these requirements place on you
- K2 the isolation procedure or permit-to-work procedure that applies
- K3 the specific health and safety precautions to be taken during the maintenance activities, and their effects on others
- K4 the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance activities
- K5 the importance of following the de-contamination procedure
- K6 the hazards associated with carrying out maintenance activities on fluid power equipment (such as handling fluids, stored pressure/force, misuse of tools), and how these can be minimised
- K7 regulations and codes of practice that apply to working with fluid power equipment
- K8 how to obtain and interpret information from job instructions, drawings, specifications, manufacturers' manuals and other documents needed in the maintenance process
- K9 the procedure for obtaining replacement parts, materials and other consumables necessary for the maintenance activities
- K10 recognition of contaminants, the problems they can create, and the effects and likely symptoms of contamination in the system
- K11 the techniques used to dismantle/assemble fluid power equipment (such as release of pressures/force, proof marking, extraction)
- K12 the need to establish the cleanliness level of oil in the hydraulic reservoirs
- K13 procedures to be followed to correctly fill hydraulic reservoirs
- K14 how to make adjustments to components/assemblies to ensure that they function correctly
- K15 the basic principles of how the fluid power equipment functions, and the operation and application, of the various units and components
- K16 how to check that tools and equipment are free from damage or defect, are in a safe and usable condition, and are configured correctly for the intended purpose
- K17 the generation of documentation and/or reports following the maintenance activity
- K18 equipment operating and control procedures to be applied during the maintenance activity
- K19 how to use lifting and handling equipment, safely and correctly in the maintenance activity
- K20 the problems associated with the maintenance activity, and how they can be overcome
- K21 the procedure to be adopted for the safe disposal of waste of all types of materials

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K22 the limit of your own authority and to whom you should report if you have  
a problem that you cannot resolve

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### Additional Information

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#### Scope/range related to performance criteria

*You must be able to:*

1. Carry out **all** of the following during the maintenance activity:
  - 1.1. undertake the maintenance activities to cause minimal disruption to normal working
  - 1.2. use the correct issue of maintenance documentation (such as drawings, manuals, maintenance records)
  - 1.3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
  - 1.4. adhere to company specific contamination and control procedures at all times
  - 1.5. ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
  - 1.6. ensure that safe access and working arrangements have been provided for the maintenance area
  - 1.7. carry out the fault location activities, using approved procedures
  - 1.8. identify the fault, and consider appropriate corrective action
  - 1.9. in conjunction with others, take actions to resolve the problem
  - 1.10. re-connect and return the equipment to service on completion of the maintenance activities
  - 1.11. dispose of waste items in a safe and environmentally acceptable manner
  - 1.12. leave the work area in a safe and tidy condition
  
2. Carry out maintenance activities on **one** of the following types of fluid power equipment:
  - 2.1. pneumatic
  - 2.2. hydraulic
  - 2.3. vacuum
  
3. Maintain and/or replace **six** of the following fluid power system components:
  - 3.1. pumps
  - 3.2. pistons
  - 3.3. spools
  - 3.4. valves
  - 3.5. actuators
  - 3.6. motors
  - 3.7. bearings
  - 3.8. reservoirs
  - 3.9. accumulators
  - 3.10. pressure intensifiers
  - 3.11. compressors
  - 3.12. receivers
  - 3.13. gaskets and seals

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- 3.14. pipework and hoses/tubing
  - 3.15. switches
  - 3.16. sensors
  - 3.17. lubricators/filters
  - 3.18. regulators
  - 3.19. valve solenoid
  - 3.20. other specific components
4. Carry out **eight** of the following maintenance activities, as applicable to the equipment being maintained:
- 4.1. chocking/supporting rams/components
  - 4.2. releasing stored pressure
  - 4.3. draining and removing fluids (as applicable)
  - 4.4. disconnecting/removing hoses, pipes and hoses/tubing
  - 4.5. proof marking/labelling of removed components
  - 4.6. removing and replacing units/components
  - 4.7. setting, aligning and adjusting replaced components
  - 4.8. making 'off-load' checks before re-pressurising the system
  - 4.9. functional/performance testing of the maintained system
  - 4.10. checking components for serviceability
  - 4.11. replacing all 'lived' items (such as seals, filters, gaskets, hoses)
  - 4.12. tightening fastenings to the required torque
  - 4.13. priming and bleeding the system (where applicable)
5. Maintain fluid power equipment, in accordance with **one** of the following:
- 5.1. organisational guidelines and codes of practice (such as BFPA guidance documentation)
  - 5.2. equipment manufacturers' operation range
  - 5.3. BS, ISO and/or BSEN standards
6. Complete **one** of the following maintenance records and pass it to the appropriate person:
- 6.1. job cards
  - 6.2. maintenance log and action report
  - 6.3. permit to work/formal risk assessment
  - 6.4. company-specific documentation

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| <b>Developed by</b>             | SEMTA   |
| <b>Version number</b>           | 2   |
| <b>Date approved</b>            | February 2015   |
| <b>Indicative review date</b>   | March 2018  |
| <b>Validity</b>                 | Current   |
| <b>Status</b>                   | Original  |
| <b>Originating organisation</b> | SEMTA   |
| <b>Original URN</b>             | SEMEMI2-17  |
| <b>Relevant occupations</b>     | Maintenance fitter  |
| <b>Suite</b>                    | Engineering Maintenance And Installation Suite 2  |
| <b>Key words</b>                | Engineering; manufacturing; maintenance; fluid power; pneumatic systems; hydraulic systems; vacuum systems; pumps; pipework |