



Australian Government

AURPTA011 Diagnose and repair pumping systems

Release: 1

AURPTA011 Diagnose and repair pumping systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the pumping systems of outdoor power equipment according to manufacturer specifications. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The pumping systems are those of outdoor power equipment and include:

- centrifugal pumps used for firefighting, irrigation and water transfer
- diaphragm pumps used in orchard spraying
- high pressure piston pumps used for pressure cleaners

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

Competency Field

Outdoor Power Equipment

Unit Sector

Technical

Elements and Performance Criteria

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair outdoor power equipment pumping system	1.1 Job requirements are determined from workplace instructions 1.2 <i>Diagnostic information</i> is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose pumping system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and <i>safety requirements</i> 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures 2.4 Obtain authorisation to proceed according to workplace procedures
3. Repair pumping system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 <i>Post-repair testing</i> is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use, including protective guards, cowlings and safety features 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	interpret information from manufacturer and workshop literature when seeking pumping system specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	- clarify instructions - report diagnostic findings and make repair recommendations.
Numeracy skills to:	- measure pumping system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, tolerances and deviations from manufacturer specifications - interpret pressure and flow volumes for pumping systems.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	use pressure gauges to test pumping systems.

Range of Conditions

This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Diagnostic information</i> must include procedures relating to:	- isolating faults, including internal and external leakage - dismantling, inspecting and evaluating pumping system components - testing pumping system for pressure, suction and discharge.
<i>Safety requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: - starting and operating pumping systems

	• working with exhaust fume hazards • working with 240 volt equipment.
<i>Post-repair testing</i> must include:	• running pumping system and checking operation against manufacturer specifications, workplace procedures, and safety and environmental requirements • making final adjustments and re-testing as required.

Unit Mapping Information

Equivalent to AURPTA3011 Repair pumping systems

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Assessment Requirements for AURPTA011 Diagnose and repair pumping systems

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the following three pumping systems:
 - one centrifugal pumping system
 - one high pressure piston pumping system
 - one diaphragm pumping system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing pumping systems, including procedures for:
 - starting and operating pumping systems
 - working with exhaust fume hazards
 - working with 240 volt equipment
- operating principles of positive and non-positive displacement pumping systems and associated components
- application, purpose and operation of the following pumping systems and components, including:
 - centrifugal pumps used for firefighting, irrigation and water transfer
 - high pressure piston pumps used in pressure cleaners
 - diaphragm pumps used in orchard spraying
- types of lubricants, and associated application and methods of lubrication
- diagnostic testing procedures for pumping systems, including:
 - testing system for pressure, suction and discharge

- isolating faults, including internal and external leakage
- repair procedures for pumping systems, including:
 - dismantling, inspecting and evaluating, replacing and adjusting the following pumping system components:
 - filters and strainers
 - hose and pipe fittings and attachments
 - overload devices
 - protective guards and cowlings
 - handle assembly
 - lubrication systems
 - drive systems
 - mounting brackets and frame
 - assembling pumping system and completing operational tests
- post-repair testing procedures for pumping systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the pumping systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for pumping systems
- area for safely testing pumping systems
- pressure gauge
- three pumping systems specified in the performance evidence with faults
- tools, equipment and materials appropriate for diagnosing and repairing pumping systems.

Links

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