



Australian Government

AURTTC001 Inspect and service cooling systems

Release: 1

AURTTC001 Inspect and service cooling systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service air and liquid cooling systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, reporting the inspection findings, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The cooling systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycle or outdoor power equipment.

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

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Cooling Systems

Elements and Performance Criteria

Elements	Performance Criteria
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.
1. Prepare to inspect and service cooling system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed

Elements	Performance Criteria
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.
	1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect cooling system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and <i>safety and environmental requirements</i> 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service cooling system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or equipment is presented ready for use 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 service procedures and specifications relating to cooling systems.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and

Skills	Description
	recording parts and material used.
Oral communication skills to:	- clarify instructions - report inspection findings and make repair recommendations.
Numeracy skills to:	- calculate and adjust coolant volumes and ratios using basic mathematical operations, including addition, subtraction, multiplication and division - determine cooling system pressures for comparison to specifications.
Technology skills to:	use cooling system test equipment.

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>Safety and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with: - hot pressurised cooling systems - rotating fans, belts and pulleys - coolant additives - environmental requirements, including procedures for trapping, storing and disposing of fluids released from cooling systems.
---	---

Unit Mapping Information

Equivalent to AURTTC2001 Inspect and service cooling 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 AURTTC001 Inspect and service cooling systems

Modification History

Release	Comment
Release 1	New unit of competency.

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:

- inspect and service the cooling systems of two different vehicles or machinery
- undertake post-service testing of above systems, which must include:
 - pressure testing
 - testing and adjusting coolant additives.

Knowledge Evidence

- Individuals must be able to demonstrate knowledge of:
- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing cooling systems, including procedures for working with:
 - hot pressurised cooling systems
 - rotating fans, belts and pulleys
 - coolant additives
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from cooling systems
- identification, function and basic operation of liquid cooling system, including:
 - engine coolant additives
 - water pumps
 - filters
 - thermostats
 - mechanical, hydraulic and electric fans
 - radiators and radiator caps

- heater core and heater valve
- expansion tanks
- heat exchangers
- core plugs
- hoses
- drive belts
- temperature sensors and gauges
- keel cooling, heat exchanger, raw water cooling and sacrificial anodes
- identification, function and basic operation of air cooling system, including:
 - cooling system controls, fans, fins and cowlings
- types, quantities and applications of coolant additives, including coolant concentration
- inspection procedures for cooling systems, including:
 - coolant concentration test
 - transient voltage test
 - cooling system components
 - cooling system pressure testing
- service and adjustment procedures for cooling systems, including:
 - system cleaning
 - coolant replacement
 - cooling system bleeding
- post-service testing procedures for cooling 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 cooling 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 cooling system specifications
- two different vehicles or machinery with cooling systems requiring servicing
- cooling system test equipment
- tools, equipment and materials appropriate for inspecting and servicing cooling systems.

Links

Companion Volume implementation guides are found in VETNet -

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

Companion Volume implementation guides are found in VETNet -

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