



Australian Government

AURETU103 Service air conditioning and HVAC systems

Release: 1

AURETU103 Service air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery. It involves preparing for the task, carrying out performance testing and correct servicing procedures, performing post-service testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. Automotive air conditioners, in addition to HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery. It does not involve removing, replacing or topping up of refrigerant. The systems used vary depending on the work context.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority. An Australian Refrigeration Council accredited (ARCTick) Refrigerant Handling licence is required for those carrying out this work.

Unit Sector

Electrical Technical – Air Conditioning and HVAC

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to service system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information, including manufacturer specifications and Australian automotive code of practice 1.3 Identify servicing option required for the job 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace

ELEMENT	PERFORMANCE CRITERIA
	policies and procedures 1.5 Identify tools and equipment required for inspect and servicing activity and establish serviceability according to workplace procedures
2. Test operation of system and components	2.1 Visually check system and report extent of damage according to workplace procedures 2.2 Carry out system performance tests according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 2.3 Report findings and make recommendations for necessary repairs according to workplace procedures
3. Service system and components	3.1 Read and interpret Australian automotive code of practice regulations 3.2 Service system and components according to manufacturer specifications, workplace procedures and Australian automotive code of practice 3.3 Carry out post-service performance tests according to workplace procedures 3.4 Confirm and report service issue has been resolved according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete Australian Refrigeration Council accredited (ARCtick) service decal sticker and workplace documentation according to workplace procedures.

Foundation Skills

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

SKILLS	DESCRIPTION
Learning	Locates required sources of information efficiently
Reading	Interprets text, symbols and diagrams relating to service information in manufacturer specifications, and workplace instructions and procedures

SKILLS	DESCRIPTION
Oral communication	• Listens to workplace instructions and ask questions to clarify job requirements • Participates in verbal exchanges to report faults, diagnostic and test findings and service repair recommendations to relevant personnel
Numeracy	• Matches refrigerant types and identification numbers to workplace instructions, part lists, manufacturer specifications, and code of practice requirements • Interprets weight measurements, including tare and gross weights • Interprets readings on digital and analogue pressure gauges • Measures temperatures and pressures, and uses basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes. • Ensures tasks are completed within workplace timeframes
Technology	• Uses workplace technology and tools

Unit Mapping Information

Supersedes and is equivalent to AURETU003 Service air conditioning and HVAC systems.

Links

Companion Volume Implementation Guide is found on VETNet -

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

Assessment Requirements for AURETU103 Service air conditioning and HVAC systems

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service the air conditioning and HVAC systems of two different vehicles or machinery, in which the work must involve:
 - one air conditioning system, in which the work must include checking system pressure
 - one heating, ventilation and air conditioning (HVAC) system
- complete Australian Refrigeration Council accredited (ARCtick) service decal stickers for the above jobs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service air conditioning and HVAC systems, including:
 - air conditioning and HVAC system manufacturer specifications
 - Australian automotive code of practice: control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- workplace procedures required to service air conditioning and HVAC systems, including:
 - servicing air conditioning and HVAC system procedures
 - establishing the serviceability of tools and equipment
 - documentation procedures
 - housekeeping procedures, including:
 - examination of tools and equipment
 - storage of equipment
 - identification, tagging and isolation of faulty equipment
 - safe disposal of materials

- recycling procedures
- workplace health and safety (WHS) requirements relating to servicing air conditioning and HVAC systems, including procedures for:
 - working with refrigerants at boiling point given risk of frostbite
 - working with system lubricants, including carcinogenic oils
 - identifying flammable refrigerants
 - selecting and using personal protective equipment (PPE)
 - identifying firefighting equipment
- environmental requirements relating to servicing air conditioning and HVAC systems, including procedures for:
 - preventing loss of refrigerant to the atmosphere
 - handling materials and refrigerant recovery equipment
- identification and function of major air conditioning and HVAC system components, including:
 - compressor
 - condenser
 - receiver-dryer
 - expansion valve
 - evaporator
 - blower fan
- principles of operation of air conditioning and HVAC systems, including transferring heat from cabin to exterior using refrigerant gas
- workplace procedures for recording and reporting scan tool system data, including:
 - diagnostic trouble codes (DTCs)
 - live data
 - freeze frame data
 - waveforms
- types of air conditioning and HVAC systems, including:
 - single zone and multi-zone
 - climate control
- inspection procedures for air conditioning and HVAC systems, including:
 - conducting visual, aural and functional assessments for:
 - component damage and wear
 - component corrosion
 - vacuum and leaks
 - system performance testing, including:
 - checking blower fan output
 - checking engine fan output
 - checking filters
- service and adjustment procedures of air conditioning and HVAC systems, including:

- checking and adjusting compressor drive belts
- changing filters
- clearing evaporator water outlet
- cleaning condenser
- post-service testing procedures of air conditioning and HVAC systems, including:
 - system performance testing
 - using thermometers to check vent temperatures
- procedures for completing those components of the ARClick service decal sticker present in the air conditioning and HVAC systems of the vehicles or machinery described in the performance evidence, including:
 - name of service organisation
 - ARClick business authority number
 - quantity of refrigerant added
 - refrigerant and oil type
 - service date
 - technician name and licence number.

Assessment Conditions

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 air conditioning and HVAC systems that they have serviced, 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 service repair workplace or simulated workplace
- workplace instructions
- air conditioning and HVAC system manufacturer specifications
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- two different vehicles or machinery with air conditioning and HVAC systems requiring servicing
- tools, equipment and materials appropriate for servicing air conditioning and HVAC systems, including:
 - thermometer
 - manifold and gauge set.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

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