Australian Government

Assessment Requirements for AURETU106 Diagnose complex faults in air conditioning and HVAC systems

Release: 1

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Modification History

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

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:

- diagnose a complex fault in the air conditioning and heating, ventilation and air conditioning (HVAC) systems of two different vehicles, vessels or machinery in which the work must involve developing a testing strategy to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop testing strategies in the course of the above work for faults in the following systems:
  - multiple zone systems
  - electric controlled compressor systems.

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 diagnose complex faults in 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, procedures for preventing loss of refrigerant to atmosphere
  - communicating with customers and supervisors
- workplace procedures required to diagnose complex faults in air conditioning and HVAC systems, including:

  - 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 diagnosing complex faults in air conditioning and HVAC systems, including procedures for:
  - identifying hazards and controlling risks associated with wearing jewellery while working around high electrical currents
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - selecting and using personal protective equipment (PPE)
  - emergency procedures and incident management requirements and procedures
  - handling flammable refrigerants
  - preventing loss of refrigerant to environment
  - identifying and using fire safety equipment
- environmental requirements relating to air conditioning and HVAC systems, including procedures for:
  - preventing loss of refrigerant to the atmosphere
  - handling materials and refrigerant recovery equipment
- types of complex faults relating to air conditioning and HVAC systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types and function of air conditioning and HVAC systems, including:
  - climate control systems
  - single and dual zone systems
  - electric controlled compressor systems
- testing procedures for air conditioning and HVAC systems, including:
  - vehicle HVAC performance testing
  - component failure analysis
  - vehicle continuous and non-continuous monitored systems
- procedures for using testing and diagnostic tools and equipment, including:
  - scan tools
  - oscilloscopes
  - manifold and gauge sets

  - vacuum pumps
  - leak detectors
  - nitrogen cylinder and regulators
  - digital vacuum gauges (vacrometer)
  - digital multimeters
  - infra-red thermometers (pyrometer)
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in vehicle air conditioning and HVAC systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms.

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 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 air conditioning and HVAC system specifications
- two different vehicles, vessels or machinery with complex faults in their air conditioning and HVAC systems
- testing and diagnostic tools and equipment appropriate for diagnosing and repairing complex faults in air conditioning and HVAC systems, including:
  - manifold and gauge sets
  - leak detectors
  - digital multimeters
  - thermometers
  - tools, equipment and materials appropriate for diagnosing complex faults in air conditioning and HVAC systems.

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.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1