Australian Government

Assessment Requirements for AURETR129 Diagnose and repair charging 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 and repair a fault in at least two of the following charging system components, each in a different vehicle, vessel or piece of machinery:
  - alternator stator or rotor circuit
  - alternator internal regulator control circuit
  - external regulator battery management system circuit
  - battery to alternator wiring and earthing system circuit
  - DC – DC charging system circuit
  - machinery charging system circuit
  - solar charging system circuit
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - loose or damaged connectors or wiring
  - shorted system components.

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 and repair charging systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair charging systems, including:
  - establishing 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
  - disposal of excess materials
  - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing charging systems, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- operating principles of charging systems and associated components, including:
  - charging batteries with direct current
  - vehicle system power and electrical current requirements
  - generating principles, including Faraday's law and inducing an electromotive force (EMF)
  - producing direct current (DC) EMF
  - producing alternating current (AC) EMF
  - changing AC to DC, including half-wave and full-wave rectification
- purpose and operation of charging systems and components, including:
  - alternators, including:
    - internal component function and operation
    - external components and drive function and operation
    - star-connected and delta-connected stator windings
    - regulation of output voltage, including zener diodes and exciter diodes
  - battery management systems
  - solar
- diagnostic testing procedures for charging systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - load testing charging systems

    - resistance, current flow and voltage drop checks of charging system circuits
- repair procedures for charging systems, including:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
- post-repair testing procedures for charging systems, including:
    - DTC checking procedures
    - checking for electrical connector mating
    - static and dynamic performance tests of charging systems.

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 charging 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 vehicle, vessel or machinery charging systems
- two different vehicles, vessels or machinery with charging system faults
- diagnostic equipment for vehicle, vessel or machinery charging systems, including:
    - multimeter
    - scan tool
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery charging systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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