Australian Government

AURETA006 Analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems

Release: 1

AURETA006 Analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in embedded network air conditioning and heating, ventilation and air conditioning (HVAC) systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on the air conditioning and HVAC systems of vehicles or machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority.

Competency Field

Electrical

Unit Sector

Technical

Elements and Performance Criteria

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. Identify and confirm the	1.1 Objective of the analysis and evaluation is determined from

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work requirement	workplace instructions 1.2 Specifications for embedded network air conditioning and HVAC system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Air conditioning and HVAC system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, ***regulatory and licensing requirements***, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method

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5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 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:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to air conditioning and HVAC systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
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 specialised air conditioning and HVAC system diagnostic 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.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants
	  • using personal protective equipment
	  • identifying fire safety equipment
	• environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.
Regulatory and licensing requirements must include those of:	• Australian Refrigeration Council (ARCtick) • Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners • Australian Design Rules (ADRs).

Unit Mapping Information

Equivalent to AURETA5006 Analyse and evaluate electrical and electronic faults in climate-control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1