



Australian Government

AURETH109 Diagnose and repair DC to DC converters in battery electric vehicles

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

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the high voltage (HV) direct current (DC) to low voltage (LV) DC of battery electric vehicles (BEVs). The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry. HV DC to LV DC converters include circuits in BEVs.

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

Pre-requisite Unit

AURETH101 Depower and reinitialise battery electric vehicles

AURETR125 Test, charge and replace batteries and jump-start vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

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 diagnose and repair DC to DC	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity

ELEMENT	PERFORMANCE CRITERIA
converters in battery electric vehicle	1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose DC to DC converters in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair DC to DC converters in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
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 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.

SKILL	DESCRIPTION
Learning	- Locates required sources of information efficiently - Develops a sequenced plan for a specific task.
Reading	- Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications - Interprets symbols and wiring diagrams.
Oral communication	- Clarifies instructions - Obtains information from customers and supervisors.
Numeracy	- Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications - Interprets vehicle electrical measurements - Measures voltage, current and resistance - Uses mathematical operations - Calculates 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 specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH009 Diagnose and repair DC to DC converters in battery electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet -

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