



Australian Government

**AURETR054 Diagnose and repair
Advanced Driver Assistance Systems
(ADAS) and components in vehicles**

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Modification History

Release	Comments
1	This unit of competency was first released in AUR Automotive Retail, Service and Repair Training Package Release 9.0.

Application

This unit describes the skills and knowledge required to diagnose and repair Advanced Driver Assistance Systems (ADAS) components in vehicles in the automotive electrical and mechanical service and repair industry.

It involves preparing for the task, carrying out diagnosis, repairing or replacing faulty ADAS components, calibrating and programming ADAS systems, and completing workplace processes and documentation.

The unit applies to those who work in an automotive service and repair environment and who are responsible for diagnosing and repairing complex vehicle electronic systems. This unit does not apply to job roles limited to carrying out basic servicing, inspection or calibration of ADAS in vehicles.

It requires individuals to demonstrate judgement and problem-solving skills in identifying, repairing and verifying ADAS faults according to manufacturer specifications, workplace procedures, and safety requirements.

Licensing/Regulatory Information

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

Pre-requisite unit(s)

AURETR249 - Scan and calibrate Advanced Driver Assistance Systems (ADAS)

Competency field(s)

N/A

Unit sector(s)

N/A

Elements and Performance Criteria

Elements	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 ADAS components	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic and testing options 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 diagnostic tools and calibration equipment required for ADAS diagnosis and establish serviceability according to workplace procedures
2. Diagnose ADAS component faults	2.1 Perform diagnostic scan on ADAS components according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault in ADAS through analysis of scan results 2.3 Perform system checks to confirm interaction between ADAS and related vehicle control systems 2.4 Report cause of fault and recommendations for necessary repairs or replacements according to workplace procedures
3. Carry out repairs to ADAS components	3.1 Identify required information, tools, equipment and material for repair activity 3.2 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, and workplace health and safety requirements 3.3 Calibrate and program ADAS components to manufacturer specification 3.4 Carry out post-repair scan and testing according to manufacturer specification, workplace procedures, and workplace health and safety requirements
4. Complete repair process	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
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Foundation skills

Learning	Locates required sources of information Develops a sequenced plan for a specific task
Numeracy	Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications Interprets electrical measurements and readings Uses mathematical operations according to Original Equipment Manufacturer (OEM) specifications
Oral communication	Uses clear and direct communication to confirm instructions and report diagnostic outcomes
Problem solving	Identifies and addresses factors that may impact diagnostic accuracy
Reading	Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Technology	Operates diagnostic scanning tools, calibration equipment, and related software in accordance with manufacturer and workplace instructions
Writing	Completes reports, documentation, and workplace forms

Range of conditions

N/A

Assessment Requirements for AURETR054 Diagnose and repair Advanced Driver Assistance Systems (ADAS) and components in vehicles

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 two faults in the ADAS of two different vehicles, where each vehicle is fitted with a different system type, including:
 - a camera or radar single-sensor system
 - a camera and radar sensor-fusion system
- carry out the repair of faults identified from diagnostic tests

In the course of the above, the candidate must:

- carry out diagnostic scans to the system
- locate and identify the ADAS components and system
- diagnose faults at the both the component and system level
- calibrate and program the repaired component
- verify system functionality through post-repair scans.

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:

- manufacturer specifications, Australian Design Rules, technical service bulletins (TSBs), and technical data related to ADAS
- work health and safety (WHS) requirements relating to ADAS, including procedures for:
 - using specialised tools and equipment
 - selecting and using personal protective equipment (PPE)
 - identifying hazards and controlling risks associated with wearing jewellery while working around electrical systems
- workplace procedures for:
 - accessing and inspecting ADAS components
 - interpreting and using service information
- operating principles of ADAS components and features, including:
 - types of ADAS components, including:

- forward-facing cameras
 - Global Positioning System (GPS)
 - Light Detection and Ranging (LiDAR) sensors
 - radar sensors
 - reversing cameras
 - 360° camera
 - ultrasonic sensors
- types of ADAS features, including:
 - adaptive cruise control
 - adaptive headlights
 - automatic emergency braking (AEB)
 - blind spot monitoring (BSM)
 - collision avoidance and warnings
 - driver monitoring systems (DMS)
 - emergency lane keeping systems (ELKS)
 - lane keep assist (LKA)
 - lane departure warning (LDW)
 - parking assist systems
 - rear cross traffic alert
 - traffic sign recognition (TSR)
- how ADAS systems interact with each other and other vehicle control systems, including braking, steering and suspension
- communication networks used by ADAS components, including CAN bus, ethernet, local interconnect network (LIN)
- function of electronic control modules or units (ECUs) in ADAS and how they communicate with sensors and vehicle networks
- diagnostic requirements for ADAS components, including:
 - use of scan tools, manufacturer software, and calibration devices in testing ADAS components
 - accessing secure gateways
 - interpreting fault codes and diagnostic trouble codes (DTCs), live data and freeze-frame data from ADAS systems
 - common faults and failure modes of ADAS sensors, cameras, radar, LiDAR, wiring and connectors
 - impact of environmental and physical conditions on ADAS operation

- common types of faults, including:
 - bent brackets
 - component damage
 - connector damage
 - incorrect fitment
- repair and replacement procedures for ADAS components, including:
 - removal, installation, alignment and secure mounting of ADAS sensors cameras and radar units
 - electrical and electronic testing of wiring, connectors and power supplies
 - software and firmware updates for ADAS components
 - manufacturer procedures for programming and initialising new ADAS components
- calibration and post-repair verification of ADAS systems, including:
 - static and dynamic calibration methods
 - use of manufacturer-specified calibration targets and equipment
 - post-repair testing to confirm integration with related vehicle systems
 - confirming driver assistance functions operate according to manufacturer specifications

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 advanced driver assistance 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 and OEM repair data for ADAS in vehicles
- two different vehicles with different system types, including:
 - a single-sensor system
 - a sensor-fusion system
- ADAS diagnostic and calibration equipment, including:

- OEM or licensed scan tool
- calibration rig and targets
- multimeter
- oscilloscope
- tools, equipment and materials required for repairing ADAS components.

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

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
	Newly created	This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency

Links

Companion volumes, including implementation guides, are found on the national training register - <https://training.gov.au/training/details/AUR>.