



Australian Government

AURETR051 Diagnose, repair and replace precision agriculture systems

Release: 1

AURETR051 Diagnose, repair and replace precision agriculture systems

Modification History

Release	Comments
Release 1	This version first released with the Automotive Retail, Service and Repair Training Package Version 7.0. Newly created unit.

Application

This unit describes the skills and knowledge required to diagnose, repair and replace precision agriculture systems. It involves preparing for the task, inspecting the systems and circuits, servicing, repairing, replacing and testing the systems, and completing workplace finalisation processes and documentation.

It applies to individuals who work in the service and repair industry, specifically within precision agriculture.

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

Unit Sector

Technical - Electrical and Electronic

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, repair and replace precision agriculture systems	1.1 Identify job requirements from workplace instructions 1.2 Identify information required for diagnosing, repairing and replacing activities from customers and supervisors 1.3 Identify hazards and environmental issues associated with the activity, assess potential risks and implement control measures according to workplace policies and procedures 1.4 Identify tools and equipment required for diagnosis and establish serviceability according to workplace procedures

2. Diagnose precision agriculture systems	2.1 Implement diagnostic tests according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Analyse diagnostic test results and identify cause of fault 2.3 Confirm and report cause of fault to supervisor according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair and replace precision agriculture systems	3.1 Identify information required for repair and replacement activity 3.2 Identify required tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs and replacement according to workplace and manufacturer procedures, manufacturer component specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair and replacement testing according to workplace procedures, workplace health and safety and environmental requirements and verify that calibrations and operational set up is complete
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle has safety features and cowlings in place and systems are ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Check tools and equipment and tag and isolate any faulty equipment according to workplace procedures 4.4 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
Reading	interprets text, symbols and wiring diagrams in manufacturer specifications and workplace procedures
Writing	completes workplace documentation when reporting diagnostic findings, making repair recommendations and recording parts and

	material used
Oral communication	• clarifies instructions • obtains information from customers and supervisors • reports inspection findings to supervisors
Numeracy	• matches components and part identification numbers to workplace instructions and component part lists, and manufacturer specifications • reads and interprets vehicle measurements and readings on digital and analogue gauges • calculates deviations from manufacturer specifications
Planning and organising	• plans own work requirements • prioritises actions to achieve required outcomes • completes tasks within workplace timeframes • develops a sequenced plan for a specific task
Technology	• uses specialised diagnostic equipment

Unit Mapping Information

Newly created unit.

Links

Companion Volume Implementation Guides is found on VETNet -

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

Assessment Requirements for AURETR051 Diagnose, repair and replace precision agriculture systems

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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, repair and replace at least two of the following precision agriculture systems:
 - autoguidance
 - application and machine control
 - satellite constellation.

In the course of the above, the candidate must:

- test circuits according to workplace procedures and without causing damage to components or systems
- test performance of systems and make any final adjustments as required
- confirm systems are operating to manufacturer specifications and workplace requirements
- confirm any reported problems are resolved and no other problems are present
- confirm vehicle has protective guards, safety features and cowlings in place.

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, repair and replace precision agriculture systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- types, uses and operation of precision agriculture systems, including:
 - global network satellite system (GNSS)
 - in-vehicle monitoring systems (IVMS)

- electronic data interchange (EDI) systems
- mobile phone technologies & satellite telecommunications
- cloud-based portals
- workplace procedures required to diagnose, repair and replace precision agriculture systems, including:
 - establishing serviceability of tools and equipment
 - documentation procedures
 - housekeeping procedures, including:
 - examination of tools and equipment
 - identification, tagging and isolation of faulty equipment
- work health and safety (WHS) requirements relating to diagnosing and repairing precision agriculture systems, including procedures for identifying hazards and controlling risks associated with:
 - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
 - working with high current electrical systems
- environmental requirements, including procedures:
 - found in safety data sheets (SDS) relating to toxic and corrosive substances
 - for recycling and disposing of replaced precision agriculture system components
- application and purpose of electronic tools and test equipment used in diagnosis and repair of precision agriculture systems, including:
 - scan tools
 - hydraulic circuit testing system
 - electrical testing system
 - handheld multimeter
 - onboard diagnostic systems
- operating procedures of precision agriculture systems, including:
 - system overview
 - global network satellite system (GNSS)
 - mobile phone technologies
 - electronic sensors and processors
 - electrical actuators
 - hydraulic systems and sensors
 - receivers
 - displays
 - electronic controllers
 - steering actuators
 - hydraulic systems and controllers
 - telematics
 - connectors and harnesses
- electronic components and units, including:

- universal control module (UCM)
- electronic diesel controller (EDC17)
- body control module (BCM)
- immobilizer module (IM)
- armrest control module (ACM)
- driveline electronic controller (DEC)
- instrument control module (ICM)
- advanced steering technology (AST)
- cab suspension module (CSM) procedures, including:
 - analysing system operation
 - identifying software versions
 - interrogating electronic fault codes
 - methods of testing electronic communication systems and operations, including procedures for accessing terminals and using test probes without damaging connectors, fuse holders or wiring
- service and repair procedures, including:
 - component removal and replacement procedures
 - downloading and installing relevant component software
 - component and associated system adjustment and calibration procedures to include variable operating conditions
 - calibration of components and systems
- post-repair testing procedures, including:
 - confirming that vehicle precision agriculture systems are serviceable and operating to manufacturer specifications
 - confirming that no other problems are present as a result of the repair.

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 precision agriculture system 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:

- workplace instructions
- manufacturer specifications for precision agriculture systems
- precision agriculture systems
- PPE, including clothing, and eye and hand protection

- equipment with precision agriculture systems specified in the performance evidence requiring service or repair
- tools, equipment and materials for diagnosing and repairing precision agriculture systems.

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

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