AURETR053 Diagnose and repair mobile plant electronic management systems – FOR PUBLIC REVIEW (Friday 30th April 2021 – Monday 31st May 2021)

# Application

This unit describes the skills and knowledge required to diagnose and repair mobile plant electronic management systems. It involves preparing for the task, inspecting the systems and circuits, servicing, repairing and testing the systems, and completing workplace finalisation processes and documentation.

The unit applies to those who work in the service and repair industry, specifically with mobile plant. Mobile plant includes but is not limited to forklifts and telehandlers, elevating work platforms, cranes, earthmoving equipment and civil plant.

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

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| --- | --- |
| ELEMENT | PERFORMANCE CRITERIA |
| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element. |
| 1. Prepare to diagnose and repair faults in mobile plant electronic management systems | 1.1 Identify job requirements from workplace instructions  1.2 Identify information required for inspection, servicing and repair activities  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 electrical equipment required for diagnosis and establish serviceability according to workplace procedures |
| 2. Diagnose faults in mobile plant electronic management 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 according to workplace procedures  2.4 Develop and report recommendations for necessary repairs according to workplace procedures |
| 3. Repair mobile plant electronic management systems | 3.1 Identify information required for repair 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 according to workplace and manufacturer procedures, manufacturer component specifications, workplace health and safety and environmental requirements  3.4 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 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 electrical 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.

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| --- | --- |
| Skill | Description |
| Learning | * locates required sources of information efficiently * develops a sequenced plan for a specific task |
| 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 electrical components and part identification numbers to workplace instructions and component part lists, and manufacturer specifications * reads and interprets vehicle electrical measurements and readings on digital and analogue gauges * calculates deviations from manufacturer specifications |
| Teamwork | * applies knowledge of own role to effectively work with others and support team activities and tasks |
| Planning and organising | * plans own work requirements * prioritises actions to achieve required outcomes * completes tasks within workplace timeframes |
| Technology | * uses specialised diagnostic equipment |

# Unit Mapping Information

No equivalent unit. New 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 AURETR052 Diagnose and repair mobile plant electronic management systems – Public review (Friday 30th April 2021 – Monday 31st May 2021)

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 at least one fault in mobile plant electronic management systems.

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 work performed meets 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 and repair mobile plant electronic management systems, including:
* information provided by customers and supervisors
* manufacturer specifications and procedures or equivalent documentation
* methods of retrieving data from telematics systems, including:
* radar
* lidar
* global network satellite system (GNSS)
* ultrasonic
* optical
* in-vehicle monitoring systems (IVMS)
* electronic data interchange (EDI) systems
* workplace procedures required to diagnose and repair mobile plant electronic management 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 mobile plant electronic management 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 mobile plant electronic management systems components
* application of electronic tools and electrical test equipment used in diagnosis and repair of mobile plant electronic management systems, including:
* scan tools
* telematics programs
* multimeter
* operating principles of mobile plant electronic management systems, including:
* system overview
* global network satellite system (GNSS)
* electronic sensors and processors
* electrical actuators
* DC transitional states
* electrical principles, including:
* inductance
* capacitance
* impedance
* magnetism
* operation of different mobile plant electronic management systems and components, including:
* receivers
* displays
* electronic controllers
* steering actuators
* telematics
* connectors and harnesses
* inspection procedures, including:
* analysing system operation
* identifying software versions
* interrogating electronic fault codes
* methods of testing electrical systems, including procedures for accessing electrical terminals and using test probes and breakout harnesses 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
* post-repair testing procedures, including:
* knowledge to confirm that vehicle mobile plant electronic management systems are serviceable and operating to manufacturer specifications
* knowledge to confirm that no other problems are present as a result of the repair
* documenting preventive maintenance of mobile plant electronic management systems to help predict future component failure.

# 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 mobile plant electronic management 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:

* workplace instructions
* manufacturer specifications for mobile plant electronic management systems
* three types of mobile plant electronic management systems
* PPE, including clothing, and eye and hand protection
* machinery with mobile plant electronic management systems specified in the performance evidence requiring service or repair
* tools, equipment and materials appropriate for diagnosing and repairing mobile plant electronic management systems.

# Links

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