



Australian Government

Department of Education, Employment and Workplace Relations

AURM441438A Manage motorsport data acquisition

Release: 1

Modification History

Not applicable.

Unit Descriptor

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This unit covers the competence to inspect, test and adjust complex fuel systems, associated components and equipment. This includes testing, determining performance improvement strategies, carrying out adjustments and post-repair checks.

Prerequisite Unit(s)

(AURE321171A Service and repair electronic engine management systems
AURT203170B Service petrol fuel systems
AURT303166B Repair petrol fuel systems)

Unit Sector

No sector assigned

ELEMENT

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1. Identify and confirm the fault

PERFORMANCE CRITERIA

- 1.1 Controlling body rules, category regulations and team requirements specifications including configuration quantities
- 1.2 Benchmark specifications for a complete fuel system are accessed and interpreted
- 1.3 OH&S requirements, including regulatory equipment and system isolation requirements protection needs are observed throughout
- 1.4 The details of the fault are examined and information is documented
- 1.5 The effects of the fault are identified and/or indirect evidence
- 1.6 Possible safety impacts of the fault are identified to in accordance with regulatory and practices

2. Prepare for fault analysis

- 2.1 Possible causes of the fault, including identified from an analysis of technical available on-board diagnostic systems
- 2.2 The most appropriate analysis process and testing equipment are developed selected from the range of available
- 2.3 Test equipment is obtained and prepared in accordance with regulatory, manufacturer
- 2.4 Tooling and materials required to support are identified, selected and prepared

3. Analyse the fault and determine repair/performance enhancement strategies

- 3.1 The selected analysis process is followed technical specifications and directions authorised method
- 3.2 Test and testing equipment are applied regulatory requirements and manufacturer specifications
- 3.3 Test results and other diagnostic findings necessary by using reliable alternative
- 3.4 Authority is obtained to partly disassemble an accurate inspection of analysed fault
- 3.5 Valid conclusions are drawn about indirect consequences of the fault and evidence and documented to team members
- 3.6 Options for rectifying the fault/enhancement

- identified from research of technical options, the prevailing circumstances and team policies
- 3.8 The selected repairs/modifications are documented and communicated including the analysis outcome and
4. Conduct repairs/implement performance improvement strategies
- 4.1 Repairs and adjustments to components carried out in accordance with manufacturer specifications for methods, equipment relative to the system
- 4.2 Post-repair checks and vehicle start
5. Clean up work area and finalise documentation
- 5.1 Test equipment and tooling is returned and prepared ready for further use of manufacturer/component supplier specifications requirements
- 5.2 Surplus and unserviceable components in accordance with team procedures
- 5.3 Problems with the work area or the are identified and reported to appropriate
- 5.4 Recording of work/vehicle documentation completeness

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Unit scope

- Work includes the maintenance of the motorsport/performance enhancement system, which includes the operation and function of the system, components and systems, conduct of tests, analysis of test results in order to analyse faults, diagnosis of faults, systems, determining repair and/or replacement strategies, conducting repairs, adjustments and modifications
- A complex fuel system is defined as a motorsport/performance system including a fuel management/control system and a fuel supply system and injection or multiple configurations
- Fuel systems must cover sub-systems including fuel cells, pumps, pressure and/or flow control, fuel management/control system and injection components
- Diagnosis is to cover that for modules including related electrical, electronic, pneumatic and hydraulic systems
- Fuel system faults covered by this unit are limited to, rough running, under/over revving, poor performance, contamination and leakage
- Fuel system faults covered by this unit are not faults caused by the influence of external factors, which may not be faulty in their primary operation

Unit context

- OH&S requirements include State/Territory legislation, material safety management system requirements, body requirements, manufacturer specifications and operating procedures
- Work is carried out in accordance with the relevant standards (including environmental requirements, safety, manual handling procedures and testing procedures)
- Work requires individuals to demonstrate technical, organisational ability, judgement and communication skills in the analysis and maintenance of complex systems
- Competence may be demonstrated by the successful completion of the unit

	design, development, manufacture of performance vehicles and/or performance and assemblies used in motorsport
Tooling and equipment	• Tooling and equipment may include and power tooling, vacuum/pressure exhaust analysers, multimeters, engine hardware and software
Components	• Components may include, but is not limited to: • rollover valves • fuel cells • fuel lines • breathers • pickup pumps • main pumps • filters • fuel pots/surge tanks/collector tanks • pressure and temperature sensors • injectors • carburettors • hoses and fittings • refuelling equipment including chucks, hoses and fittings • Personal protective equipment is to meet manufacturer specifications, legislative requirements, enterprise policies and practices
Information and procedures	• Controlling body rules, category regulations • Team procedures relating to applying and maintaining complex fuel systems • Task instructions including worksheets, drawings and designs • Team procedures relating to reporting • Team procedures relating to the use of equipment • Manufacturer/component supplier specifications • procedures for test equipment and measurement • Australian Design Rules (where applicable)

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects of evidence

- Interpret and apply team requirements, category rules and supplementary rules
- Apply safety requirements including the use of personal protective equipment
- Follow task instructions, operating processes to:
 - minimise the risk of injury to self
 - prevent damage to competition vehicles
 - achieve required outcomes with minimum standards
- Correctly analyse, repair and conduct a minimum of three (3) fuel system faults (system type) and involve :
 - rough running, under/over fuelling, performance, contamination or leaks
 - at least one fault having possible causes involved in the sub-systems (fuel delivery and/or flow regulation, management of injection or multiple carburetion)
 - the scope of the faults necessitating testing equipment
- Work effectively with others
- Modify activities to cater for variations in environment

Underpinning knowledge

- Workplace safety policies and procedures
- Types, function, operations and limitations of fuel system and components
- Properties of fuels used in the motorsport and compatibility with fuel system components
- Complex fuel systems layouts
- Diagnosis and testing procedures and equipment
- Symptom and cause differentiation
- Repair and/or performance improvement
- Removal, replacement and repair, and check procedures
- Diagnosis theory including concepts
- Record keeping procedures
- Procedures for reporting equipment faults
- Team guidelines regarding acceptable

levels

- Equipment safety requirements
- OH&S policies and procedures

Specific key competencies, underpinning and employability skills required to achieve the performance criteria

These include a number of processes that are required in work and life, which are required in most of the tasks covered by the national key competency standards, although others may be added. The details of these competencies are to be applied in the context of the Application of the key competencies in the context of the nominated level in which:

- Level 1 - relates to working effectively in the workplace processes;
- Level 2 - relates to the management of the workplace processes; and
- Level 3 - relates to the design, development and implementation of conditions or process.

How will the candidate apply the following competencies in the unit? The candidate will need to:

Collect, analyse and organise information

Collect, analyse, organise and understand the data for a complex fuel system analysis and repair

(Level 2)

Communicate ideas and information

Communicate ideas and information to the team, including requirements, coordination of work with other technicians and workers and reporting on progress and problems

(Level 2)

Plan and organise activities

Plan and organise activities including the work area and obtaining equipment, materials, backtracking, workflow interruptions or delays

(Level 2)

Work with others and in a team

Work with others and in a team by recording and using cooperative approaches to optimise the work process

(Level 2)

Use mathematical ideas and techniques

Use mathematical ideas and techniques to calculate results in order to determine required adjustments to fuel systems

(Level 2)

Solve problems

Use pre-checking and inspection techniques to identify maintenance and repair problems, avoid unnecessary wastage

(Level 2)

Use technology

Use workplace technology related to computerised tooling equipment, calculators and measurement

(Level 2)

Resource implications

- Access to tooling, equipment and facilities
Range Statement including technical specifications

Method of assessment

- Assessment methods must confirm competence over time and in a range of workplace contexts
- Assessment should be by direct observation and questioning on underpinning knowledge
- Assessment should be conducted over a range of circumstances in conjunction with assessment of other competencies

Context of assessment

- Assessment may occur on the job or in a simulated facility with process equipment, materials and deadlines