SERVICE VEHICLE FUEL SYSTEM

UNIT CODE: ENG/OS/AUT/CR/3/6

Unit description:
This unit specifies competencies required to service vehicle fuel system. It involves, servicing fuel components, replacing petrol fuel and diesel injector pumps, pipes, rail and nozzles, performing injector pump timing and testing fuel injector and injection pressure and voltage.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make the workplace function.	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Service fuel components e.g. injectors, tank	1.1 Identify the component to be serviced according to vehicle's performance. 1.2 Tools and equipment are used according to manufacturer's manual. 1.3 Remove faulty component according to manufacturer's manual. 1.4 Service the faulty component according to manufacturer's manual.
2. Replace petrol fuel pump	2.1 Petrol fuel pump location is identified as per manufacturers

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	manual 2.2 Petrol fuel pump is removed and replaced as per manufacturers manual 2.3 Tools and Equipment are used to remove and refit petrol fuel components as per manufacturers' manual 2.4 Faulty fuel pump is stored as per company policy 2.5 Fuel system operation test is conducted as per manufacturers manual
3. Replace diesel injector pump, rail, pipes and nozzles	3.1 Diesel injector pump, rail, pipes and nozzles location is identified as per manufacturers manual. 3.2 Pump, rail, pipes and nozzles are removed as per ***manufacturer's procedure.*** 3.3 New pump, rail, pipes and nozzles are fitted as per manufacturers manual. 3.4 Air bubbles from the fuel system are removed by bleeding the system in accordance with the manufacturer's specification.

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	3.5 Diesel system operation test is conducted as per manufacturer's manual
4. Perform injector pump timing	4.1 Fan belt and timing cover are removed in accordance with the workshop manual 4.2 Timing marks are identified in accordance with manufacturers' manual 4.3 Timing marks are aligned and timing belt fitted as per manufacturers manual 4.4 Timing belt tensioner is adjusted and timing marks reconfirmed as per manufacturers manual 4.5 Timing cover and fan belt are fitted back as per manufacturers manual 4.6 Diesel system operation test is performed as per manufacturers manual
5. Test fuel injectors for injection pressure and voltage	4.7 Identify the gauges for testing according manufacturer's specification. 4.8 Tools and equipment are identified according to

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	manufacturer's manual. 4.9 Connect the gauges according to manufacturer's manual 4.10 Take the measurements according to manufacturer's specification. 4.11 Record and file results according to standard operating procedures (SOP)

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Tools and equipment may include but is not limited to:	1.1 Specialist tools relevant to specific vehicle makes and models; 1.2 General workshop equipment; 1.3 Electrical multi-meter 1.4 Fuel system pressure gauge 1.5 Faulty code diagoniser 1.6 Prepared and shared vehicle fuel system service report
2. Components may include but is not limited to:	2.1 Fuel pump 2.2 Fuel filter 2.3 Fuel tank

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	2.4 Fuel high pressure pump 2.5 Fuel pipes 2.6 Fuel feed pump 2.7 Injectors 2.8 Fuel level gauge 2.9 Fuel sensors
3. Manufacturer's procedure may include but is not limited to:	3.1 Vehicle technical data 3.2 Manufacturers' tolerances and specification data. 3.3 Manufacturers' specifications 3.4 Approved company practices
4. Gauges may include but is not limited to:	4.1 Pressure gauge 42 Multimeter gauge
5. Measurements may include but is not limited to:	5.1 Injection pressure 5.2 Injection voltage
6. standard operating procedures (SOP) may include but is not limited to:	6.1 Company policy 6.2 Filling system 6.3 Record management procedures 6.4 Client satisfaction procedures.

REQUIRED KNOWLEDGE AND SKILLS

The individual needs to demonstrate knowledge of:

- Handling fuel in line with health and safety precautions
- Interpretation of symbols on the manufacturers manual
- Fuel system
- Legislative and organisational requirements and procedures
- Kenyan legislation and workplace procedures relevant to:
- health and safety;
- the environment (including waste disposal
- Appropriate personal and vehicle protective equipment.

- Legal requirements relating to the vehicle, its construction and fuel and exhaust emission control. Workplace procedures for:
    - Recording fault location and correction activities;
    - Reporting the results of tests;
    - The referral of problems;
    - Reporting delays to the completion of work.

The importance of working to recognized assessment and rectification

- Procedures and obtaining the correct information for rectification.
- The importance of documenting assessment and rectification information.
- The importance of working to agreed timescales and keeping others informed of progress
- The importance of reporting anticipated delays to relevant person(s) promptly.

Required Skills

The individual needs to demonstrate the following skills:

- Communications (verbal and written)
- Proficient in ICT
- Time management
- Interpretation
- Problem solving
- Planning;
- Decision making;
- Multitasking;
- First aid;
- Report writing;
- Driving

EVIDENCE GUIDE

This provides advice on assessment and is dealt in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency.	Assessment requires evidence that the candidate: 1.1 Worked in a safe and clean environment using personal protection and appropriate tools and equipment; 1.2 Observed regulations concerned with health and safety and the disposal of waste; 1.3 Used technical information to service vehicle fuel system in accordance with manufacturers' specifications; 1.4 Inspected and replaced fuel system components; 1.5 Tested fuel system for satisfactory operation as per the manufacturers specifications.
2. Resource implications.	***The following resources must be provided:*** 2.1 Workshop that is fully equipped for the service of vehicle fuel system 2.2 Specialist tools relevant to specific vehicle makes and models; 2.4 Electrical Multimeter 2.7 Access to manufacturers' technical information; 2.8 Facilities for the disposal of waste fuel and scrap parts; 2.9 Customer database and systems for service records; 2.11 Personal protection equipment.
3. Methods of assessment.	Competency may be assessed through: 3.1 Observation with the use of checklists

	3.2 Verbal questioning during practical activities 3.3 Short-answer tests
4. Context of assessment.	Competency may be assessed individually in an actual workplace or in work-simulated conditions within accredited institutions.
5. Guidance information for assessment.	This unit may be assessed on an integrated basis with others within this occupational sector.