

MAINTAIN VEHICLE FUEL SYSTEM

UNIT CODE: 0716 451 14A

TVET CDACC UNIT CODE: ENG/OS/AUT/CR/01/5/MA

UNIT DESCRIPTION

This unit specifies competencies required to maintain vehicle engine. It involves performing vehicle engine overhaul, servicing vehicle engine cooling system, servicing vehicle lubricating system and servicing vehicle fuel system

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1. Service Vehicle Fuel injection system.	1.1 Work area is organised as per workplace procedure 1.2 Safety precautions are undertaken as per workplace procedure 1.3 Tools, equipment and materials are assembled as per work requirements 1.4 Vehicle fuel system is diagnosed as per manufacturer's specification 1.5 Vehicle fuel system components are inspected according to manufacturer's manual 1.6 Vehicle fuel system components are Serviced/replaced according to manufacturer's specifications 1.7 Vehicle fuel system is tested according to manufacturer's specifications 1.8 Vehicle fuel system service documents are prepared according to workplace procedures
2. Service vehicle intake-Exhaust system	2.1 Work area is organised and safety measures undertaken as per workplace procedure. 2.2 Engine intake-Exhaust system is diagnosed as per Manufacturer's specification 2.3 Tools, equipment and materials are assembled as per work requirements

	2.4 Engine intake-Exhaust system components are inspected according to manufacturer's manual 2.5 Engine intake-Exhaust system Components are serviced/replaced according to manufacturer's specifications. 2.6 Engine intake-Exhaust system Components are fitted back according to manufacturer's specifications 2.7 Engine intake-Exhaust system is tested according to manufacturer's specifications 2.8 Engine intake-Exhaust system service documents are prepared according to workplace procedures
3. Carry out vehicle Engine diagnosis	3.1 Work area is organised and safety measures undertaken as per workplace procedure 3.2 Tools, equipment and materials are assembled as per work requirements 3.3 Diagnostic trouble codes are interpreted as per manufacturer's specifications 3.4 Engine faulty sensors, actuators and circuits are replaced/serviced as per manufacturer's specifications
4. Perform vehicle fuel system tune up	4.1 Work area is organised as per workplace procedure 4.2 Safety precautions are undertaken as per workplace procedure 4.3 Tools, equipment and materials are assembled as per work requirements 4.4 Vehicle fuel system is diagnosed as per manufacturer's specification 4.5 Performance Parameters Vehicle fuel system are adjusted as per Manufacturer's specification

RANGE

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

Variable	Range
16. Engine overhaul Tools, equipment and materials	• Spanners • Torque wrench • Straight edge • Valve spring compressor • Pliers

	• Telescopic dial gauge • Feeler gauge • Vernier callipers • Micrometer screw gauge • Ratchet • Scan Tools • Dial indicator • Engine compression gauges • Piston ring squeezer • Timing light • Oil • Radiator pressure tester • Funnels and draining pans • Cleaning materials • Plastigage • Coolant
17. Engine components	• seals and sealants • Filters • Piston and piston rings • Top covers • Valves and valve trains • Camshaft • Gaskets • Crankshaft • Drive pulleys • Oil sump and oil pump • Timing gears • Timing belt • Cylinder head • Cylinder block

18. Re-installation checks	• Engine ignition timing • Software initialization • Valve timing • Injector pump timing • Tappet clearance
19. Engine Cooling Components	• Radiator cap • radiator • hoses • Thermostat • Thermistor • sensors • Water pump • Fan belt • fan relay • fan
20. Engine lubrication tools, equipment and materials	• Drain pan • Feeler gauge • Straight Edge • Oil funnels • Grease gun • Oil Gauge • Silicon • Oil • Grease • Rags
21. Engine lubrication components	• Oil sump • Oil filters • Oil Strainer • Oil pump • Pressure regulating valve • Lubrication sensors • Oil galleries

	• PCV valves
22. Vehicle fuel system	• Petrol fuel system • Diesel fuel system
23. Vehicle Fuel system components	• Air cleaners • Mufflers • Sensors • Catalytic converters • EGR valves • Manifolds • Throttle body • Fuel Injectors • Electronic control unit • Fuel-lines • Common Rail • Supply Pump

REQUIRED KNOWLEDGE AND SKILLS

The individual needs to demonstrate knowledge of:

- Kenyan legislation and workplace procedures relevant to:
 - ✓ Health and safety
 - ✓ Environment
 - ✓ Personal protective equipment
 - ✓ Waste management
- Legal requirements relating to the vehicles warranty
- Workplace procedures for vehicle engine overhaul.
- Documenting assessment and rectification information
- Working to agreed time frame and keeping others informed of progress
- The relationship between time, costs and profitability
- Interpretation and use of technical information for engine service activities
- The purpose of and how to use identification codes

Required Skills

The individual needs to demonstrate the following skills:

- Communication (verbal and written)
- ICT
- Time management
- Problem solving
- Decision making
- Planning
- First aid
- Report writing
- engine overhaul
- vehicle engine cooling system service
- vehicle engine lubrication system service
- Vehicle Fuel system service
- Interpreting technical information

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range

1. Critical Aspects of Competency	1.1 Undertook safety measures as per workplace procedures 1.2 Diagnosed Engine as per Manufacturer's specification 1.3 Dismantled Engine components according to manufacturer's manual 1.4 Serviced/replaced engine parts according to manufacturer's specification 1.5 Reassembled engine parts according to manufacturer's manual 1.6 Tune up engine according to manufacturer's specification 1.7 Fitted back Engine to vehicle according to manufacturer's manual 1.8 Serviced engine-cooling system components according to manufacturer's specifications.
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	1.9 Tested engine cooling system according to manufacturer's specifications 1.10 Engine lubrication system is diagnosed as per Manufacturer's specification 1.11 Serviced engine lubrication components according to manufacturer's specifications. 1.12 Fitted Engine lubrication Components back according to manufacturer's specifications 1.13 Diagnosed engine fuel system as per manufacturer's specification 1.14 Serviced/replaced engine fuel system components according to manufacturer's specifications.
2.Resource Implications	The following resources should be provided: 2.7 Access to relevant workplace where assessment can take place 2.8 Appropriately simulated environment where assessment can take place 2.9 Resources relevant to the proposed assessment activity or tasks.
3. Methods of Assessment	Competency in this unit may be assessed through: 3.11 Practical 3.12 Project 3.13 Portfolio of evidence 3.14 Third party report 3.15 Written tests
4.Context of Assessment	Competency may be assessed in a workplace or in a simulated workplace
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended