

## SERVICE AND REPAIR VEHICLE ENGINES

**UNIT CODE: ENG/OS/AUT/CR/2/4/A**

**Unit description:**

This unit specifies competencies required to service and repair vehicle engine. It involves disassembling the engine, inspecting, servicing/replacing engine parts/components, assembling the engine, performing engine basic tests and preparing vehicle service/repair reports.

**ELEMENTS AND PERFORMANCE CRITERIA**

<b>ELEMENT</b> These describe the key outcomes which make up Workplace functions	<b>PERFORMANCE CRITERIA</b> 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. Disassemble vehicle engine.	1.1 Personal protective equipment (PPE) are used as per OSHA 2007 1.2 Health, safety environment and quality regulations are observed as per OSH Act 2007. 1.3 Appropriate <b>tools and equipment</b> are assembled as per workshop procedure 1.4 Job card is referred to and required task identified 1.5 Prior inspection of vehicle engine parts is carried out as per SOPs. 1.6 Vehicle Engine is dismantled according to manufacturer's manual
2. Clean and inspect engine parts/components	2.1 Vehicle Engine <b>parts/components</b> are cleaned as per manufacture's manual. 2.2 Vehicle Engine parts/components are inspected as per manufacture's manual.
3. Service/replace vehicle engine parts/components	3.1 Vehicle Engine parts/components are serviced according to manufacturer's specification 3.2 Vehicle Engine defective parts/components are replaced according to manufacturer's specification

	3.3 Necessary adjustments/alignments are carried out as per manufacturers manual
4. Assemble vehicle engine	4.1 Vehicle Engine parts/components are identified and arranged as per SOPs. 4.2 Vehicle engine parts/components are assembled according to manufacturer's specification
5. Perform vehicle engine basic tests and prepare service/repair report	5.1 Vehicle Engine basic tests are performed according to manufacturer's specification. 5.2 Necessary adjustments are carried out as per manufacturers specifications 5.3 Service /repair report is prepared as per workshop procedure. 5.4 Tools and equipment are cleaned and stored as per workshop procedures 5.5 Cleaning of work area is carried out as per workshop procedures 5.6 Waste materials are disposed as per environmental regulations and OSHA 2007 5.7

### 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:	<ul style="list-style-type: none"> <li>• Assorted spanners</li> <li>• Screw drivers</li> <li>• Hammers</li> <li>• Pliers</li> <li>• Straight edge</li> <li>• Dial gauge</li> <li>• Vernier caliper</li> <li>• Micrometer screw gauge</li> <li>• Oil pressure gauge</li> <li>• Coolant pressure gauge</li> <li>• Torque wrench</li> <li>• Piston ring squeezer</li> <li>• Piston ring expander</li> <li>• Compression tester</li> </ul>

<p>2. Parts/components may include but is not limited to:</p>	<ul style="list-style-type: none"> <li>• Seals and gaskets</li> <li>• Filters</li> <li>• Piston and piston rings</li> <li>• Valves, push rods and valve lifters</li> <li>• Camshaft</li> <li>• Crankshaft</li> <li>• Drive pulleys and tensioners</li> <li>• Oil sump and oil pump</li> <li>• Timing gears</li> <li>• Cylinder head</li> <li>• Cylinder block</li> <li>• water pump and thermostat</li> <li>• Radiator and coolant hoses</li> </ul>
<p>3. Basic tests/measurement/adjustments may include but is not limited to:</p>	<ul style="list-style-type: none"> <li>• Compression test</li> <li>• Crankshaft rotation</li> <li>• Engine timing</li> <li>• Ignition timing</li> <li>• Straightness/warpage</li> <li>• Tappet clearance</li> <li>• Valve seat grinding</li> <li>• Decarbonising</li> <li>• Oil pressure test</li> <li>• Bolts/nuts torque</li> <li>• Clearances</li> </ul>

## REQUIRED KNOWLEDGE AND SKILLS

*The individual needs to demonstrate knowledge of:*

- Legislative and organizational requirements and procedures
- Kenyan legislation and workplace procedures Legal requirements relating to the vehicles warranty and insurance policies
- Workplace procedures
- Rectification procedures
- Obtaining the correct information for rectification
- Working to agreed time frame and keeping others informed of progress
- The relationship between time, costs and profitability
- Reporting anticipated delays
- How to find, interpret and use technical information for engine service activities
- Importance of using the correct technical information
- The purpose of and how to use identification codes.

## Required Skills

*The individual needs to demonstrate the following skills:*

- Communications (verbal and written)
- Proficient in ICT

- Time management
- Problem solving
- Decision making
- Planning
- Multitasking
- First aid
- Report writing
- Driving
- Listening
- Team work
- Dismantling
- Inspecting
- Assembling

## EVIDENCE GUIDE

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

1. Critical Aspects of Competency	<p><b><i>Assessment requires evidence that the candidate:</i></b></p> <ul style="list-style-type: none"> <li>1.1 Used Personal protective equipment (PPE) appropriately</li> <li>1.2 Observed Health, safety, environmental and quality regulations correctly.</li> <li>1.3 Dismantled, cleaned and inspected engine components correctly.</li> <li>1.4 Replaced defective engine parts correctly</li> <li>1.5 Serviced engine parts correctly</li> <li>1.6 Reassembled vehicle engine parts correctly</li> <li>1.7 Performed basic vehicle engine tests/adjustments correctly.</li> <li>1.8 prepared vehicle engine service/repair report correctly</li> </ul>
2. Resource Implications	<p><b><i>The following resources must be provided:</i></b></p> <ul style="list-style-type: none"> <li>2.1 A workshop that is fully equipped for the service and repair of vehicle engines</li> <li>2.2 Instruments and equipment for measuring and assessing the condition of engine components/parts</li> <li>2.3 Access to manufacturers' technical information</li> <li>2.4 Facilities for the disposal of waste oil and scrap parts</li> <li>2.5 Customer database and systems for service records</li> <li>2.6 Personal protection equipment</li> </ul>

	2.7 Access to computers
3. Methods of Assessment.	<b><i>Competency may be assessed through:</i></b> 3.1 Oral Questioning 3.2 Observation 3.3 Written Tests
4. Context of Assessment	Competency may be assessed individually in an actual workplace or in work-simulated conditions within accredited institutions or during Industrial Attachment
5. Guidance information for assessment.	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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