	Unit ID: 217
Domain	**AUTOMOTIVE MECHANICS**
Title:	**Overhaul engine sub-assembly**
Level: 4	**Credits: 8**

Purpose

This unit standard specifies the competencies required to overhaul engine sub-assembly. It includes dismantling, overhauling, reassembling engine sub-assemblies and components as well as checking engine operation against manufacturers' specifications. This unit standard is intended for those who work as automotive mechanics.

Special Notes

1. Entry information:

   Prerequisite
   - Unit 65 - *Apply safety rules and regulations in an automotive mechanics workshop* or demonstrated equivalent knowledge and skills.

2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which automotive mechanics operations are carried out.

3. Performance of all elements in this unit standard must comply with manufacturers' specifications, workplace specific requirements and reasonable flat rate time.

4. Glossary of terms:
   - *'specifications'* refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements
   - *'engine sub-assemblies'* refer to four (4) stroke ignition engines, two (2) stroke ignition engines, four (4) stroke compression ignition engines, two (2) stroke compression ignition engines.

5. Regulations and legislation relevant to this unit standard include the following:
   - Labour Act, No. 6, 1992
   - Occupational Health and Safety Regulations No. 18, 1997
   - Road Traffic and Transport Regulations No. 266, 2000

   and all subsequent amendments.

7. This unit standard applies to passenger and light commercial vehicles with a Gross Vehicle Mass ≤ 5 500 kg (Petrol & Diesel).

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Planning and preparation may include but is not limited to workplace inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.

Tools and equipment may include but are not limited to standard tool set, power tools, specialist tools for removal and/or adjustment, lifting and supporting equipment, measuring equipment and tensioning equipment.

Materials may include but are not limited to spare parts, engine oils, moving parts lubricants, gaskets, sealants, and cleaning material.

Performance Criteria

1.1 Work instructions, including repair order forms, specifications and operational details are obtained, confirmed and applied.

1.2 Safety requirements are followed in accordance with safety plans and policies.

1.3 Tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults rectified or reported prior to commencement.

1.4 Material requirements are identified and obtained in accordance with repair order form and/or specifications.

1.5 Materials are safely handled and located ready for use in line with workplace procedures in line with workplace procedures.

1.6 Technical and/or calibration requirements for tools and equipment are sourced and implemented.

1.7 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Dismantle engine sub-assembly

Performance Criteria

2.1 Engine sub-assembly is dismantled in a logical sequence in line with manufacturers' specifications and workplace procedures.

2.2 Dismantling of engine sub-assembly and relevant components is completed without causing damage to any component or system in line with manufacturers' specifications and workplace procedures.

2.3 Components are cleaned ready for inspection in line with manufacturers' specifications and workplace procedures.

Element 3: Overhaul engine sub-assembly components

Range

Overhaul methods are to include the complete dismantling of component parts, measuring and evaluation of wear, the replacement, repair, rebuilding or reconditioning of parts comparable to original parts, the assembly of parts, and performance of functional testing in line with manufacturers' specifications.

Performance Criteria

3.1 Information required for overhauling of engine sub-assembly is accessed and interpreted from manufacturers' specifications and in line with workplace procedures.

3.2 Components are measured and compared against manufacturers' specifications and tolerances in line with workplace procedures.

3.3 Decisions are made as to serviceability and repair method of each component in line with manufacturers' specifications and workplace procedures.

3.4 Replacement parts are identified and sourced in line with manufacturers' specifications and workplace procedures.

3.5 Rebuild or replacement of engine sub-assembly and/or engine sub-assembly components is carried out according to manufacturers' specifications and tolerances.

3.6 Unexpected or unplanned contingencies that are encountered in overhauling engine sub-assembly are addressed through applying workplace procedures, previous experience and manufacturers' technical information.

3.7 Overhaul activities are carried in line with manufacturers' specifications and workplace procedures.

Element 4: Assemble engine and components

Performance Criteria

4.1 Engine is assembled following manufacturers' and workplace procedures.

4.2 Running clearances are measured against manufacturers' specifications, differences are explained and necessary adjustments are made in line with workplace and manufacturers' procedures.

4.3 Assembly of engine is completed in line with manufacturers' specifications and workplace procedures.

4.4 Assembly is completed without causing damage to any component or system in line with manufacturers' specifications and workplace procedures.

Element 5: Check engine operation

Performance Criteria

5.1 Technical data on engine operation is accessed and interpreted from print and online manuals and other sources in line with workplace procedures.

5.2 Engine is securely mounted in preparation for starting in line with manufacturers' specifications and workplace procedures.

5.3 Engine fluid levels, including lubrication and coolant are checked in line with manufacturers' specifications and workplace procedures.

5.4 Gauges and warning devices are checked for operation prior to starting in line with manufacturers' specifications and workplace procedures.

5.5 Engine is started and checked for leaks and abnormal noises in line with manufacturers' specifications and workplace procedures.

5.6 Variations in engine operation are identified, explained and rectified in line with workplace procedures.

5.7 Final inspection and adjustments are conducted according to manufacturers' specifications and workplace procedures.

Element 6: Complete work and clean up

Range

Work completion details may include but are not limited to repair order form, sign-out form for equipment, service record book and service plan form.

Performance Criteria

6.1 Work is completed and appropriate personnel notified in accordance with workplace procedures.

6.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures.

6.3 Reusable material is collected and stored in accordance with workplace procedures.

6.4 Equipment used is cleaned, checked, maintained and stored in accordance with workplace procedures.

6.5 Work completion details are finalised in accordance with workplace procedures.

Registration Data

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