

Unit ID: 2208

Domain

**AUTOMOTIVE MECHATRONICS**

Title:

**Carry out motor vehicle major service**

Level: 3

**Credits: 12**

### Purpose

This unit standard is intended for those who carry out motor vehicle major service. People credited with this unit standard are able to describe motor vehicle service schedules, describe job card completion and calculation of labour hours, conduct vehicle inspection, change engine oil, replace filters, check and change fluids, change spark plugs, lubricate moving parts, change fan belt, replace brake pads and brake shoes.

This unit standard is intended for those who work in automotive mechatronics environment.

### Special Notes

1. Entry information

Prerequisite

- *none*

2. This unit standard is to be assessed in the context of industrial safety operations and should be assessed in conjunction with other relevant technical unit standards selected from this domain.

3. Assessment evidence may be collected at a real workplace or simulated workplace in which safety operations are carried out.

4. Glossary of terms:

- '*Specifications*' refers to any, or all the following: manufacturers' specifications and recommendations, workplace specific requirements, national and international standards and legislations
- '*ISO*' refers to International Organization for Standards

5. Performance of all elements in this unit standard must comply with industry standards and workplace requirements.

6. Regulations and legislation relevant to this unit standard include the following:

- Labour Act No. 11 of 2007
- Regulations relating to the health and safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007
- ISO 14001 (Environmental Management Standard) and all subsequent amendments to any of the above.

## **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 on [www.namqa.org](http://www.namqa.org) and the Namibia Training Authority on [www.nta.com.na](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Describe motor vehicle service schedules**

#### **Performance Criteria**

- 1.1 Importance and purpose for motor vehicle service is explained.
- 1.2 Different types of service schedules and information found on each service are explained.
- 1.3 Service intervals for both petrol and diesel engines are explained.
- 1.4 Advantages and disadvantages of different service schedules are explained.

### **Element 2: Describe job card completion and calculation of labour hours**

#### **Performance Criteria**

- 2.1 Different types of job cards are identified and explained.
- 2.2 The importance of job card is explained.
- 2.3 Job card is filled according to workplace procedures.
- 2.4 Data captured on job card is used to calculate labour hours using defined formulas.

### **Element 3: Conduct vehicle inspection**

#### **Range**

Vehicle inspection is conducted on the vehicle both inside and outside.

Leaks may include but is not limited to leaking oil, gearbox oil, brake and clutch fluid, power steering fluid and coolant fluid.

Lights including but not limited to headlight, parking lights, indicator lights, and brake light.

## **Performance Criteria**

- 3.1 Vehicle is checked for secure body parts and accessories according to workplace procedures.
- 3.2 Vehicle is checked for leaks according to workplace procedures.
- 3.3 Vehicle is checked for wear and tear of drive belts according to vehicle manufacturers' procedures.
- 3.4 Vehicle is checked for loose connections, malfunctions and defects according to workplace procedures.
- 3.5 Drive shafts are checked for torn boots and worn constant-velocity (CV) joints.
- 3.6 Warning lights are checked and faults identified according to workplace procedures.
- 3.7 Battery is checked for mounting security and terminals are checked for tightness.
- 3.8 Cables are checked for loose connections and overheating according to workplace procedures.
- 3.9 Wiper blades are checked for correct operation according to workplace procedures.
- 3.10 Lights are checked for correct operation according to vehicle manufacturers' procedures.
- 3.11 Suspension is checked for operation according to vehicle manufacturers' procedures.
- 3.12 Brake shoes and brake pads are checked for functioning according to vehicle manufacturers' procedures.
- 3.13 Vehicle tyres are checked for tread depth and tyre pressure according to vehicle manufacturers' procedures and Namibian traffic rules.

## **Element 4: Change engine oil**

### **Performance Criteria**

- 4.1 Condition of oil to be changed is analysed according to workplace procedures.
- 4.2 Drain plug is removed and oil is drained according to vehicle manufacturers' procedures.
- 4.3 Drain plug is secured and oil is filled with the recommended oil type according to vehicle manufacturers' procedures.
- 4.4 Oil level is checked and topped-up according to vehicle manufacturers' procedures.
- 4.5 Job card is completed according to workplace procedures.

## **Element 5: Replace filters**

### **Range**

Filters include and are not limited to air filters, fuel filters and oil filters.

### **Performance Criteria**

- 5.1 Filters are identified and located.
- 5.2 Filters are removed according to vehicle manufacturers' procedures.
- 5.3 New filters are fitted according to vehicle manufacturers' procedures.
- 5.4 Job card is completed according to workplace procedures.

## **Element 6: Check and change fluids**

### **Range**

Fluids include and are not limited to automatic transmission fluid, brake and clutch fluid, gearbox oil, coolant and wiper washer water.

### **Performance Criteria**

- 6.1 Fluid condition is checked according to vehicle manufacturers' procedures.
- 6.2 Fluid is drained according to vehicle manufacturers' procedures.
- 6.3 Fluid is re-filled according to vehicle manufacturers' procedures.
- 6.4 Brake systems are bled according to vehicle manufacturers' procedures.
- 6.5 Coolant is checked for trapped air to according to vehicle manufacturers' procedures
- 6.6 Fluid level is checked and topped up according to vehicle manufacturers' procedures.
- 6.7 Used lubricants and fluids are disposed of in line with environmental requirements, manufacturers' requirements and workplace procedures.
- 6.8 Job card is completed according to workplace procedures.

## **Element 7: Change spark plugs**

### **Performance Criteria**

- 7.1 Spark plugs are identified and removed according to workplace procedures.
- 7.2 High tension lines are checked for continuity and leakage according to manufacturers' procedures.
- 7.3 Spark plugs are checked and adjusted according to vehicle manufacturers' procedures.

7.4 New spark plugs are fitted according to vehicle manufacturers' procedures.

7.5 Job card is completed according to workplace procedures.

### **Element 8: Lubricate moving parts**

#### **Range**

Lubrication includes and is not limited to oiling and greasing moving parts. Moving parts may include but not limited to hinges, joints, latches and slides.

#### **Performance Criteria**

8.1 Moving parts are identified.

8.2 Moving parts are lubricated with recommended lubricant in accordance to vehicle manufacturers' procedures.

8.3 Moving parts are checked for correct operation and excess lubricant cleaned according to workplace procedures.

8.4 Job card is completed according to workplace procedures.

### **Element 9: Change fan belt**

#### **Performance Criteria**

9.1 Fan belt is located and inspected according to vehicle manufacturers' procedures.

9.2 Fan belt is replaced according to vehicle manufacturers' procedures.

9.3 Fan belt is checked for normal operation according to vehicle manufacturers' procedures.

9.4 Job card is completed according to workplace procedures.

### **Element 10: Replace brake pads and brake shoes**

#### **Performance Criteria**

10.1 Wear of brake pads and brake shoes are identified according to vehicle manufacturers' procedures.

10.2 Brake pads and brake shoes are replaced according to vehicle manufacturers' procedures.

10.3 Operation of brake pads and brake shoes is checked according to vehicle manufacturers' procedures.

10.4 Handbrake is adjusted according to vehicle manufacturers' procedures.

10.5 Job card is completed according to workplace procedures.

### **Registration Data**

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|--------------------------------------|----------------------------|
| <b>Subfield:</b>                     | Automotive Engineering     |
| <b>Date first registered:</b>        | 22 April 2020              |
| <b>Date this version registered:</b> | 22 April 2020              |
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| <b>Body responsible for review:</b>  | Namibia Training Authority |