

Domain	AUTOMOTIVE ELECTRICAL AND ELECTRONICS	Unit ID: 489
Title:	Test and service ignition system	
Level: 3		Credits: 7

Purpose

This unit standard specifies the competencies required to test and service the ignition system of a motor vehicle. It includes testing and servicing of an ignition system and/or associated parts. This unit standard is intended for those who work as automotive electricians.

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. To demonstrate competence, at a minimum, evidence is required of testing and servicing a solid state ignition system. This task includes locating and repairing two (2) circuit faults and conducting a final performance test according to the manufacturers' specifications.
3. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which automotive electrical and electronic operations are carried out.
4. Performance of all elements in this unit standard must comply with manufacturers' specifications, workplace specific requirements and reasonable flat rate time.
5. Glossary of terms:
 - '*service operations*' refers to 'on-vehicle service' where operations can be directly performed on the vehicle and 'component repair' where the operations are done on the workbench after removing the component from the vehicle but are limited to electrical or electronic components, units, and systems
 - '*ignition system*' refers to electronic and non-electronic ignition systems built in stationary and non-stationary engines, which are not associated with an engine management system.
6. 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 commercial vehicles, heavy plant and earthmoving equipment.

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, special tools and testing equipment (including multimeter, ohmmeter, tachometer, timing light, engine analyser, and vacuum tester) as per manufacturers' requirements.

Materials may include but are not limited to spare parts 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.
- 1.6 Technical and/or calibration requirements for tools and equipment are sourced and implemented in line with workplace procedures.

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

Element 2: Test ignition system components

Range

Testing methods may include but are not limited to reading and interpreting wiring diagrams, interpretation of readings related to faults where the cause may be direct, indirect or intermittent, diagnosing, functional testing, measurements, visual, aural and functional assessment (including damage, corrosion, spark discharge, electrical short or broken circuit, wear) in line with manufacturers' specifications.

Faults may include but are not limited to difficult engine starting or no starting, engine misfiring, poor engine performance, overheating.

Performance Criteria

- 2.1 Procedures and information required for testing ignition system components are identified and sourced in line with workplace procedures.
- 2.2 Testing is implemented according to workplace procedures and manufacturers' specifications.
- 2.3 Faults are identified and documented with evidence and supporting information.
- 2.4 Testing results are compared with manufacturers' specifications.
- 2.5 Conditional report and recommendation made are forwarded to appropriate personnel in line with workplace procedures.

Element 3: Service ignition system and/or associated component parts

Range

Service operations may include but are not limited to isolation of faults, removing and installing, disassembling and assembling, inspection and evaluation, adjustments, operational testing, repair, replacement and visual inspections, spark plug service (including spark plug appearance and electrode gap setting), high tension leads (including firing order and electrical contact), distributor service (including distributor removal and installation, cap and rotor inspection, vacuum and centrifugal advanced ignition timing components), static and dynamic timing setting, ignition switch, ignition coil, pulse generator assembly, ignition module, contact-breaker points and ballast resistor in line with manufacturers' specifications.

Performance Criteria

- 3.1 Procedures and information required for servicing the ignition system and/or associated parts are identified and sourced in line with workplace procedures.

- 3.2 Service operations are implemented according to workplace procedures and manufacturers' specifications.
- 3.3 Adjustments made during the service are undertaken in line with manufacturers' specifications.
- 3.4 Final ignition system performance test is conducted and results compared with manufacturers' specifications.

Element 4: 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

- 4.1 Work is completed and appropriate personnel notified in accordance with workplace procedures.
- 4.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures.
- 4.3 Reusable material is collected and stored in accordance with workplace procedures.
- 4.4 Equipment used is cleaned, checked, maintained and stored in accordance with workplace procedures.
- 4.5 Work completion details are finalised in accordance with workplace procedures.

Registration Data

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