

Domain**AIR CONDITIONING AND REFRIGERATION****Title:****Install and service vehicle air conditioning system****Level: 3****Credits: 8****Purpose**

This unit standard specifies the competencies required to install and service vehicle air conditioning system. It includes plan and prepares for work; install air-conditioning system; service and repair of air-conditioning system; and perform housekeeping.

This unit standard is intended for those who works as air conditioning and refrigeration artisans.

Special Notes

1. Entry information:

Prerequisite

- *Unit 1157 – Demonstrate basic knowledge of workplace health and safety.*

2. To demonstrate competence, at a minimum, evidence is required of installing two air conditioning system, and servicing two air conditioning system.

3. Assessment evidence may be collected from a real workplace or a simulated workplace or an appropriate simulated realistic environment in which automotive electrical and electronic operations are carried out.

4. Glossary of terms:

- “*Evacuation*” refers to the Removal of air, moisture and non-condensable gases from the system.
- “*Flushing*” refers to cleaning and removing the contaminants or old.
- “*Servicing*” refers to the routine maintenance or repair of the air conditioning system.

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

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

- Labour Act, No. 11, 2007
- Occupational Health and Safety Regulations No. 101, 1992 (act 6,1992)
- Occupational Health and Safety Regulations No. 18, 1997

- Road Traffic and Transport Regulations No. 266, 2000 and all subsequent amendments.
 - Import and Export control act, 1994.
 - NAMS 5149-2: 2021 (ISO 5149 – 2: 2014)
 - NAMS 5149 – 3: 2021 (ISO 5149 – 3: 2014)
 - ISO 13043: 2021
 - SANS 10147: 2014
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, electrical drilling machine, refrigerant leak detecting equipment (electronic or fluorescent fluid leak detector), thermometer, air-conditioning recycling, and charging station.

Materials may include but are not limited to primer and rust proofing agents; refrigerant and refrigerant oils; lubricants, and cleaning material; UV dye; flushing solvent; and O-ring.

Performance Criteria

- 1.1 Work instructions including job cards, specifications and operational details are interpreted and confirmed.
- 1.2 Workplace inspection is carried out in line with safety standards.
- 1.3 Safety requirements are applied in line with safety and workplace policies.

- 1.4 Tools and equipment are selected in line with the job requirements.
- 1.5 Material required are selected and obtained in line job specifications.
- 1.6 Calibration requirements for tools, instruments and equipment are carried out in line with job requirements.
- 1.7 Environmental protection requirements are outlined and followed in line with environmental legislative requirements.

Element 2: Install air-conditioning system

Range

Installation may include but not limited to, condenser coil, evaporator coil; compressor; receiver dryer; metering device; T-belt; V-belt; refrigerant tubes; condenser fan; evaporator fan; thermostat; climate controller and aircon filter.

Flushing may include but not limited to evaporator coil; condenser coil and refrigerant tubes.

Industrial standard refers to EN378/ISO 5149.

Performance Criteria

- 2.1 Information required for installing air-conditioning system is outlined in line with manufactures specifications.
- 2.2 Inspection is carried out in line with the job specifications.
- 2.3 Flushing of the system is carried out in line with the industrial standards.
- 2.4 Installation is carried out in line with the manufacturer specifications.
- 2.5 Pressure test is carried out in line with the industrial standards
- 2.6 System evacuation is carried out in line with the industrial standards.
- 2.7 System charging is carried out in line with the job specifications.
- 2.8 Commissioning is carried out in line with the job specifications.

Element 3: Service and repair of air-conditioning system

Range

Service may include but not limited to condenser coil, evaporator coil, compressor, receiver dryer, metering device, refrigerant tubes, condenser fan, evaporator fan, thermostat, climate controller, and aircon filter.

Flushing may include but not limited to evaporator coil, condenser coil, refrigerant tubes, and horse pipe.

Servicing Equipment and materials may include but not limited to air blower, cleaning brush, cloth, fin comb, high pressure cleaner, coil cleaner, and flushing liquid.

Performance Criteria

- 3.1 Information required for servicing are outlined in line with manufactures specifications.
- 3.2 Inspection is carried out in line with the job specifications.
- 3.3 Servicing is carried out in line with the job specifications.
- 3.4 Repairing is carried out in line with the job specifications.
- 3.5 Flushing of the system is carried out in line with industrial standards.
- 3.6 Pressure test is carried out in line with the industrial standards.
- 3.7 System evacuation is carried out in line with the industrial standards.
- 3.8 System charging is carried out in line with the job specifications.
- 3.9 Commissioning is carried out in line with the job specifications.

Element 4: Perform housekeeping

Range

Housekeeping may include but not limited to work completion; cleaning; arranging; and storing of tools and equipment.

Performance Criteria

- 4.1 Work area is cleared of waste, cleaned, restored and secured in line job specifications.
- 4.2 Reusable materials are collected and stored in line with workplace procedures.
- 4.3 Equipment used are cleaned, checked, maintained, and stored in line job specifications/work instructions.

Registration Data

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