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AUTOMOBILE ELECTRICIAN

Competency Standards

National Vocational Certificate Level 2-3

Version 1 - August 2019



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Introduction

An Automobile Electrician is a tradesman who specializes in the electric systems contained within automotive vehicles. This person is an expert on all of the electrical systems in a vehicle. Repair of headlights, diagnostic lights, alarm system, circuit board, alternator and starter motor all fall under the Auto Electrician's domain of expertise. The job of an Automobile Electrician is perfect for those who love to work with their hands. This is a job that involves constant activity, so it is perfect for someone who dreads the idea of sitting at a desk all day. Automobile Electrician is hired by car manufacturers, car dealers and auto repair shops.

Automobile industry is dynamic and ever changing as complex technological advancements are taking place in this sector. Therefore, industry expectations for skilled workforce are also dynamic which can only be managed through setting relevant competency standards in collaboration with the leading industries. Being cognizant of this fact, National Vocational & Technical Training Commission (NAVTTTC) developed competency standards for Automobile Electrician under National Vocational Qualifications Framework (NVQF). These competency standards have been developed by a Qualifications Development Committee (QDC) and validated by the Qualifications Validation Committee (QVC) having representation from the leading auto sector companies of the country.

Purpose of the Qualification

The purpose of these qualifications is to set high professional standards for automobile industry. The specific objectives of developing these qualifications are as under:

- Improve the professional competence of the trainees
- Provide opportunities for recognition of skills attained through non-formal or informal pathways
- Improve the quality and effectiveness of training and assessment
- Enable the existing workforce to capacitate themselves in new technologies and methods

Date of Validation

These national qualifications have been validated by the Qualifications Validation Committee (QVC) on 13th & 14th February 2018 and they will remain in currency until 13th February 2021.

Code of Qualification

Qualification Title	Code
National Vocational Certificate Level-2 in Automobile Technology (Auto Electrician)	0716MSA04
National Vocational Certificate Level-3 in Automobile Technology (Auto Electrician)	0716MSA05

Entry Requirements

The entry requirement to National Vocational Certificate Level-2 in Automobile Technology (Auto Electrician) is Middle or Matric. For National Vocational Certificate Level-3 in Automobile Technology (Auto Electrician), the entry requirement is award of National Vocational Certificate Level-2 in Automobile Technology (Auto Electrician).

Qualifications Development Committee

The Qualifications Development Committee consisted of following members:

S.No.	Name & Designation	Designation/Organization
1.	Ijaz Hamid	Chief Instructor (Auto & Diesel) PTEVTA
2.	Syed Salman Nasir Ali Shah	Deputy Manager PTEVTA
3.	Mehwish Aisha Ahsan	CBT Expert/Assessor Freelance Consultant
4.	Adeel Ahmad	Assistant Manager (Tech) Lahore Transport Company, Lahore
5.	Muhammad Zahid	Senior Technician Bosh Car Service, Lahore
6.	Abdul Basit	Technical Advisor Toyota Garden Motors, Lahore
7.	Shahzad Ahmad	Diagnostic Technician Royal Motors, Johar Town, Lahore.
8.	Muhammad Nasir Khan	Forman (Electrical) Toyota Garden Motors, Lahore
9.	Zahid Mahmood	Auto Electrician Suzuki Khalid Motors Co. Lahore
10.	Muhammad Aslam	Technical Advisor (Electrical) Toyota Township Motors, Lahore
11.	Mian Atique	CEO Rehman Auto Engineers
12.	Zeeshan Ahmad	AM After Sale

Suzuki Khalid Motors Co. Lahore

13.	Khawar Hussain	AM Service Toyota Garden Motors, Lahore
14.	Abdul Waheed	CEO Honda Johar Town, Lahore

Qualifications Validation Committee

The Qualifications Validation Committee consisted of following members:

S.No.	Name & Designation	Organization
1.	Ijaz Hamid	Chief Instructor Auto & Diesel GCT, Railway Road, Lahore PTEVTA
2.	Tanvir Abbas	Senior Instructor Auto & Diesel GCT, Railway Road, Lahore PTEVTA
3.	Aamir Javed	Service Manager Suzuki Khalid Motors, Lahore
4.	Atif Mahmood	Service Manager Suzuki Mini Motors, Lahore
5.	Atif Iqbal	Area Manager (QC) Pak Suzuki Motors, Lahore
6.	Muhammad Adnan Siddique	Service Manager JDM, Dubai
7.	Muhammad Rizwan Minhas	Technical Advisor Suzuki Township Motors, Lahore
8.	Faisal Qayyum	Service Advisor Suzuki Township Motors, Lahore

9.	Azhar Minhas	GM The Garage, Johar Town, Lahore
10.	Abdul Waheed	CEO Honda, Johar Town, Lahore

Regulations for the Qualification and Schedule of Units

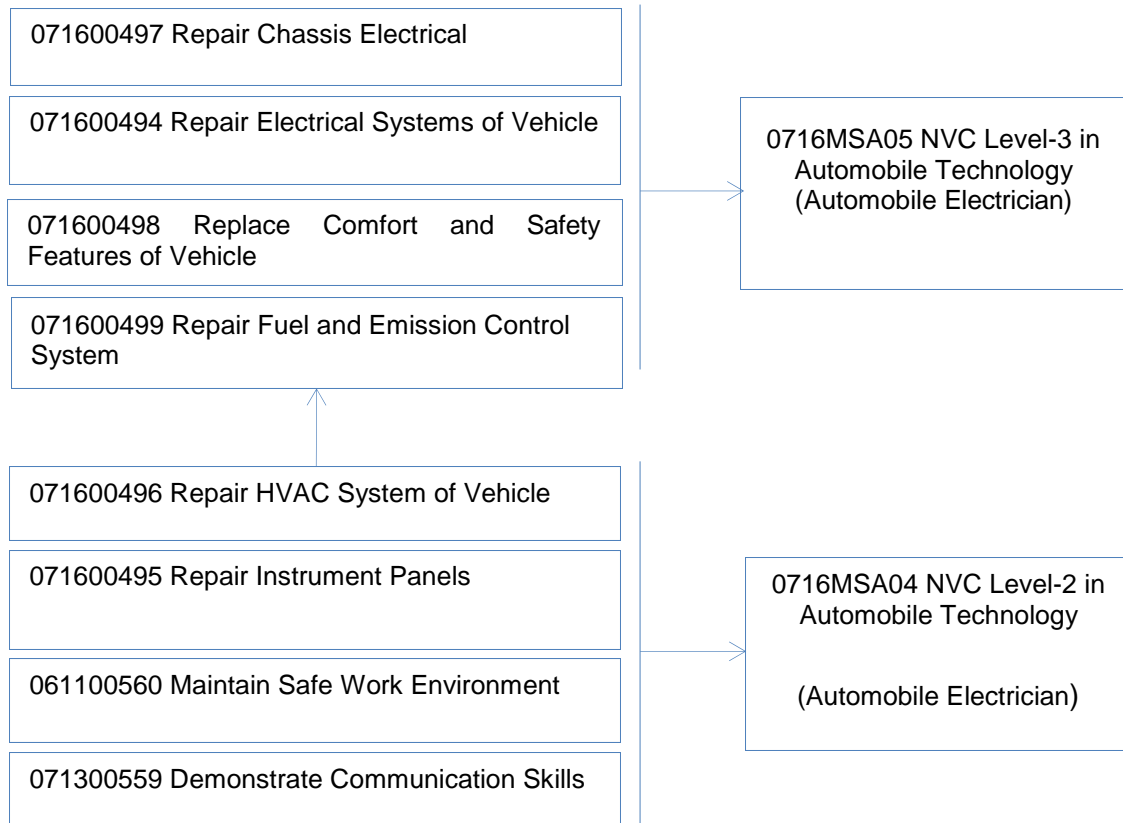
Not Applicable

Summary of Competency Standards

Code	Competency Standards	Level	Credits	Category
071300559	Demonstrate Communication Skills	2	3	Generic
061100560	Maintain Safe Work Environment	2	3	Generic
071600494	Repair Electrical Systems of Vehicle	3	40	Technical
071600495	Repair Instrument Panels	2	18	Technical
071600496	Repair HVAC of Vehicle	2	18	Technical
071600497	Repair Chassis Electrical	3	42	Technical
071600498	Replace Comfort and Safety Features of Vehicle	3	40	Technical
071600499	Repair Fuel and Emission Control System	3	20	Technical
041600453	Occupational health and safety	2	3	Technical
041600455	Communicate in the workplace to support customers and team	3	6	Technical
041600459	Work effectively in a customer service - sales environment	3	7	Technical
041600460	Develop professionalism	3	3	Technical
041600461	Comply with health and safety regulations	3	2	Technical

Packaging of Qualifications

The national vocational qualifications are packaged as per following:



071300559 Demonstrate Communication Skills

Overview

This Competency Standard identifies the competencies required to apply communication skills at workplace in accordance with the organization's guidelines and procedures. You are expected to work in a team to achieve common organizational goals and avoid conflicts. This competency standard will also enable you to use basic computer skills to communicate effectively and prepare work related documents.

Competency Units	Performance Criteria
1. Work in Team	<p>P1. Treat team members with respect and maintain positive relationships to achieve common organizational goals</p> <p>P2. Listen instructions carefully and strictly follow them</p> <p>P3. Provide work related information to team members and identify interrelated work activities to avoid confusion</p> <p>P4. Adopt communication skills appropriate to work activities and company procedures</p> <p>P5. Identify problems and resolve them through discussion and mutual agreement</p>
2. Deal with Clients	<p>P1. Collect and confirm work requirements from clients using appropriate communication procedures</p> <p>P2. Provide clear information to clients about work requirements including costs and time needed to accomplish the task</p> <p>P3. Negotiate with clients regarding wages, time, labour requirements etc.</p>
3. Demonstrate Basic IT Skills	<p>P1. Create folders and files and learn major commands of operating system/windows</p> <p>P2. Type text and use major commands such as printing, editing, creating tables, header, footer, footnotes, table of contents and page number etc.</p> <p>P3. Prepare the document as per work specifications and client's requirement</p> <p>P4. Generate reports for clients as required using appropriate computer applications</p> <p>P5. Use internet for sending/receiving emails and connecting through social or other media</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Principles of effective and interactive communication
- 7 C's of communication and their importance
- Cultural and organizational practices for effective communication
- Effective negotiation skills
- Role of team members and functionality of work teams
- Team dynamics and stages of team development
- Conflict resolution strategies
- Negotiation techniques
- Basic architecture of computer system
- Input / output devices of computer and their functions
- Basic computer skills using MS Word, MS Excel, use of internet, sending and receiving emails etc.
- Preparing documents and work related reports

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Communicate effectively with colleagues and clients
- Develop a job completion report for the work using computer technology

061100560 Maintain Safe Work Environment

Overview

This Competency Standard identifies the competencies required to apply occupational safety and health at workplace in accordance with the organization's approved guidelines and procedures. You will be expected to identify and use Personal Protective Equipment (PPE) according to the job requirement and potential hazards at workplace. The underpinning knowledge regarding OSH will be sufficient to provide the basis for your work.

Competency Units	Performance Criteria
<p>1. Identify Hazards at Workplace</p>	<p>P1. Read and interpret work processes and procedures correctly to identify risk of hazards at workplace</p> <p>P2. Recognize engineering processes, tools, equipment and consumable materials that have the potential to cause harm</p> <p>P3. Identify any potential hazards and take appropriate action to minimize the risk</p>
<p>2. Observe Occupational Safety and Health (OSH)</p>	<p>P1. Work safely at all times, complying with health and safety precautions, regulations and other relevant guidelines</p> <p>P2. Identify health and safety hazards in the workplace, so that the potential for personal injury, damage to equipment or the workplace is prevented, and corrective action is taken.</p> <p>P3. Deal with problems which are within your control, and report those that cannot be resolved to safety officer</p> <p>P4. Wear, adjust and maintain Personal Protective Equipment to ensure correct fit and optimum protection in compliance with company procedures</p> <p>P5. Keep work area clean and clear of obstructions, and storing tools or equipment, so that the potential for accident or injury is prevented</p>

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Types of hazards that are most likely to cause harm to health and safety
- Health and safety precautions
- Health and safety signs and symbols
- Techniques and methods to identify the risks of hazards at workplace
- Dealing with hazards to avoid any accident or injury
- Following 5S and Kaizen Activities
- Safety reporting procedures and documentation
- Use of Personal Protective Equipment
- First Aid treatment methods including methods of resuscitation
- Fire-fighting methods
- Safe methods of handling heavy loads

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify possible hazards at workplace
- Use correct Personal Protective Equipment (PPE) for the assigned job

List of Tools and Equipment

S.No.	Items
1.	Health and safety manual
2.	Fire Extinguisher
3.	Safety Equipment, Safety Shoes, Safety Gloves, Safety Goggles, Safety Helmet and Ear Plugs
4.	Smoke detecting alarm
5.	First Aid box

071600494 Repair Electrical Systems of Vehicle

Overview

This competency standard is designed to provide skills and knowledge to repair Electrical Systems of Vehicle, in accordance with the manufacturer's Manual. You will be able to diagnose faults related to Electrical System of Vehicle and repair faulty part/s according to set standards.

Competency Units	Performance Criteria
<p>1. Perform Maintenance Battery</p>	<p>P1. Inspect the Battery to find any leakage or damages</p> <p>P2. Perform Volt Meter Test with appropriate tool and diagnose faults in voltages, if any</p> <p>P3. Perform Hydrometer Test to check gravity of battery and diagnose faults, if any</p> <p>P4. Perform Load Test to check the load performance of battery and diagnose faults, if any</p> <p>P5. Check the battery indicator (magic eye) for the condition of battery electrolyte and diagnose faults, if any</p> <p>P6. Refill the battery with electrolyte according to standard level</p> <p>P7. Clean the corroded terminals and poles according to set standard</p> <p>P8. Charge the battery with charger according to set standards</p> <p>P9. Replace the battery in case of damage or irreparable leakage</p>
<p>2. Repair Charging System</p>	<p>P1. Inspect the charging system light, abnormal noise, and conditions of drive belt to diagnose faults, if any</p> <p>P2. Check amperes with Digital Multi Meter (DMM) and compare it with set standards and diagnose faults, if any</p> <p>P3. Inspect physically and repair/ replace wiring harness of charging system in case of any fault</p> <p>P4. Adjust or replace Drive Belt according to manufacturer specifications</p> <p>P5. Replace faulty Alternator according to set standards</p>
<p>3. Repair Ignition System</p>	<p>P1. Check and replace Ignition Switch, Ignition Coil and Resistor to ensure specified function in case of any fault</p>

	<p>P2. Check high tension cables for damage insulation, continuity/resistance and replace faulty cables if required</p> <p>P3. Check electric power source and charging system of the vehicle for specified functionality and diagnose faults, if any</p> <p>P4. Replace or clean and adjust spark plugs according to set standards</p> <p>P5. Replace faulty fuses with correct ratings</p> <p>P6. Check Distributor, Distributor Cap and Router and replace faulty part/s, if any</p> <p>P7. Check Ignition System Sensors and replace faulty Sensor, if required</p>
<p>4. Repair Starting System</p>	<p>P1. Check battery condition with appropriate tools and diagnose faults, if any</p> <p>P2. Check starter motor for loose, corroded or broken connections or grinding noise during start, if any</p> <p>P3. Check solenoid relay and fuses with appropriate tools and replace faulty parts, if any</p> <p>P4. Check slipping/damage teeth of pinion and fly wheel and replace faulty part/s, if any</p> <p>P5. Replace/repair faulty Starter Motor, if required</p>
<p>5. Repair Lighting System</p>	<p>P1. Check the headlights at high/ low beam, tail lights and replace faulty parts, if any</p> <p>P2. Check reverse lights and reverse gear switch and replace in case of any fault</p> <p>P3. Check fog lights and replace in case of any fault</p> <p>P4. Check roof and reading lights and replace in case of any fault</p> <p>P5. Check break switch to verify flow of power supply and replace faulty part/s, if any</p> <p>P6. Check turn signals (indicators) to verify flow of power supply and replace faulty part/s, if any</p> <p>P7. Check parking/ instrument panel light bulbs and replace in case of any fault</p> <p>P8. Check combination switch and replace damaged/faulty parts, if any</p> <p>P9. Check all relays and fuses of lighting system and replace faulty parts, if any</p>

6. Repair Engine Cooling Fan & Electrical Circuit

P1. Carry out inspection of operation of cooling fan and repair the faults, if any

P2. Carry out inspection of Water Temperature Gauge, and Sensor/ Switch and replace faulty parts, if any

P3. Carry out inspection of cooling fan relay, fuse, and replace faulty parts, if any

P4. Carry out inspection of wiring harness and repair/ replace faulty part/s, if any

Knowledge & Understanding

This competency standard will provide knowledge related to:

- Manufacturer's Repair Manual
- Uses of Measuring Tools
- Use of Scanners
- Alternator with Voltage Regulator
- Wiring Harness and Wiring Circuit Diagram (EWD)
- Spark Plug
- Different Types of Batteries (including Hybrid Batteries)
- Use of Tools and Equipment
- Different Types of Ignition System
- Types of Sensors
- Electronic Control Module (ECM)
- Ignition Timing Light
- C.B Point and Condenser

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Service the battery according to SOPs

071600495 Repair Instrument Panel

Overview

This competency standard is designed to provide skills and knowledge related to repairing of Instrument Panel of Vehicle by Auto Electrician, in accordance with the Manufacturer's Manual. You will be able to repair faulty part/s of Instrument Panel according to set standards.

Competency Units	Performance Criteria
1. Replace Gauges	<p>P1. Check instrument panel visually to find any abnormality in gauges</p> <p>P2. Verify the abnormal current flow or bad connection of gauges with the help of Scanners and Multimeter</p> <p>P3. Repair/ replace wiring harness or faulty parts, if any</p>
2. Replace Sensors	<p>P1. Check Instrument Panel visually to find any abnormality in sensors</p> <p>P2. Verify the abnormal current flow or bad connection of sensors with the help of scanners and Multimeter</p> <p>P3. Repair/ replace wiring harness or faulty parts, if any</p>

Knowledge & Understanding

This competency standard will provide knowledge related to:

- Understanding of Manufacturer Repair Manual
- Different Types Gauges used in Instrument Panel
- The operating principles of Electronic Gauges
- Different Types of Sensors, location and working principles
- The differences between types of displays: Light Emitting Diode (LED), Liquid Crystal Display (LCD) and Vacuum Fluorescent Display (VFD)

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify and fix Instrumental Panel faults as per set standards

071600496 Repair HVAC System of the Vehicle

Overview

This competency standard is designed to provide skills and knowledge to repair HVAC system of vehicle by Auto Electrician, in accordance with the manufacturer's Manual. You will be able to perform inspection and diagnose faults of HVAC system of the vehicle.

Competency Units	Performance Criteria
<p>1. Repair Heating in HVAC System</p>	<p>P1. Check hoses connection and water circulation in HVAC heating system and repair any loose connection or replace damaged parts</p> <p>P2. Check for any leakage or blockage and replace faulty parts, if any</p> <p>P3. Check dumper and repair faulty parts to ensure stable operation of heating core</p> <p>P4. Carry out inspection of blower motor and replace in case of any fault/s or irregularity</p>
<p>2. Repair Air Conditioning System</p>	<p>P1. Inspect switches, relays, fuses and wiring circuit and repair/ replace faulty part/s, if any</p> <p>P2. Inspect Air Conditioning System visually and replace manually damaged or leaking part/s, if any</p> <p>P3. Use the AC Recycling Machine to check the refrigerant pressure in system and refill it with new refrigerant as per set standards</p> <p>P4. Detect any abnormal noise from compressor and replace faulty part/s, if any</p> <p>P5. Monitor Air Flow in the system and repair/ replace clogged or damaged part/s, if any</p>
<p>3. Repair Ventilation System</p>	<p>P1. Inspect switches, fuse and wiring circuit and repair/ replace faulty part/s, if any.</p> <p>P2. Inspect air flow in different modes of Ventilation System and repair/replace in case of any fault</p>

Knowledge & Understanding

This competency standard will provide knowledge related to:

- Understanding of Manufacturer Repair Manual
- Wiring Harness and Wiring Circuit Diagram (EWD)
- Heat Transfer Method
- Measuring Tools and Equipment
- Occupational Health & Safety (OHS) Precautions

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Diagnose faults in HVAC and replace/ repair faulty part/s confirming the smooth functioning of the vehicle

071600497 Repair Chassis Electrical Circuits

Overview

This competency standard is designed to provide skills and knowledge to repair electrical systems at chases of vehicle by Auto Electrician, in accordance with the manufacturer's Manual. You will be able to perform inspection and diagnose faults of Electrical Circuits used in chassis of vehicle and perform road test to verify a performance of the vehicle.

Competency Units	Performance Criteria
1. Repair Electronic Brake System (ABS)	<p>P1. Identify faults of Electronic Brake System using Scanner</p> <p>P2. Inspect continuity of electricity in wire harness and diagnose faults, if any</p> <p>P3. Identify faulty components of Brake System (sensors, modulator etc.) to identify faults, if any</p> <p>P4. Check Brake Indicator Switches to identify faults. Repair/ replace damaged wire harness according to set standards</p> <p>P5. Replace faulty components of Brake System (sensors, modulator etc.) according to SOPs</p> <p>P6. Perform road test to ensure the proper working of Electronic Brake System</p>
2. Repair Auto Transmission	<p>P1. Carry out road test at different speeds for smooth operations of torque converter and gear shifting according to manufacturer standard</p> <p>P2. Check electrical controls and Hydraulic Pressure of automatic transmission for faults if any</p> <p>P3. Check automatic transmission mounts for faults if any</p> <p>P4. Check automatic transmission solenoid by using electronic scanner and identify faults if any</p> <p>P5. Carryout vehicle road test of automatic transmission for engagement and disengagement, abnormal noise and vibrations if any</p>

3. Repair Electronic Power Steering (EPS)	<p>P1. Diagnose faults in EPS with the help of scanner and remove code, if any</p> <p>P2. Check and replace faulty fuse, relay and control module, if required</p> <p>P3. Check the motor of power steering (EPS) and replace faulty parts, if any</p> <p>P4. Check wiring harness to find cuts or damages and repair/ replace, if required</p>
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Knowledge & Understanding

This competency standard will provide knowledge related to:

- Manufacturer Repair Manual
- Measuring Tools and Equipment
- Wiring Harness with Wiring Circuit Diagram
- Basics of Electronic Power Steering (EPS)
- Types and specification of tyres
- Types of Sensors and their use
- Basic Electrical/ Electronic Terminology and principal
- Functions of Electronic Brake Force Distribution (EBD) System
- Functions and working of ABS System
- ABS air bleeding procedure
- Occupational Health & Safety (OHS) precautions

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Diagnose faults in chassis electrical and replace/ repair faulty part/s confirming the smooth functioning of the vehicle

071600498 Repair Comfort and Safety Features/ Systems of the Vehicle

Overview

This competency standard is designed to provide skills and knowledge to repair system for Comfort and Safety Features of Vehicle by Auto Electrician, in accordance with the manufacturer's Manual. You will be able to diagnose faults and perform repairing according to SOPs.

Competency Units	Performance Criteria
1. Repair Power Windows	<p>P1. Check the functionality of fuses, relays, switches and replace faulty parts, if any</p> <p>P2. Monitor Current flow with Digital Multimeter and repair damage/s, as per set standard</p> <p>P3. Check power window motor and observe any abnormal sound from doors and repair faulty parts if any</p> <p>P4. Check visually cable/ gear driven regulators for any damage/s and replace faulty part/s, if any</p>
2. Repair Sun Roof	<p>P1. Inspect sunroof operation and diagnose the fault, if any</p> <p>P2. Observe any abnormal sound during opening/ closing operation of Sun Roof and fix it according to manufacturer specifications</p> <p>P3. Check channel / track condition and service dirty parts, if any</p>
3. Repair Security and Immobilizer	<p>P1. Start the car to check for any failure</p> <p>P2. Find the failure with the help of Scanner and fix the problem according to set standards</p> <p>P3. Check the condition of receiver key and replace, if required</p>
4. Repair Center Locking System	<p>P1. Check the battery of remote with the help of Multimeter and replace faulty parts, if required</p> <p>P2. Check fuse module and wiring circuit current flow and repair faulty parts, if required</p> <p>P3. Observe any abnormal noise from door lock actuators, find the fault and fix it according to set standards</p>

<p>5. Repair Supplemental Restraint System (SRS)</p>	<p>P1. Check Supplemental Restraint System (SRS) using Scanner</p> <p>P2. Identify faulty components of Supplemental Restraint System (SRS) (Spiral Cable, Seat belt, SRS unit, Control Module, Sensor etc.) and replace faulty parts, if any</p> <p>P3. Inspect continuity of electricity in wire harness and repair/ replace faulty harness, if required</p>
<p>6. Repair Cruise Control System</p>	<p>P1. Check the Cruise Control System and diagnose fault with the help of Scanner, if any</p> <p>P2. Check continuity of Spiral Cable, Cruise Switch, Brake Light Switch, Fuse and Module with the help of Digital Multimeter (DMM) and replace faults if any</p> <p>P3. Check wiring harness circuit, and repair/replace faulty harness, if required</p>
<p>7. Repair Wiper & Washer System</p>	<p>P1. Blown Wiper system fuse. Check and replace fuse</p> <p>P2. Check lose wiper system, electrical/wiper motor connection and secure relevant connections</p> <p>P3. Check and tighten disengaged or loose wiper motor linkage or replace with new linkage fixings, if required</p> <p>P4. Check relay/ wiper motor and multi switch; renew relay motor; replace to confirm fault; and renew relay, wiper motor, multi switch</p> <p>P5. Check the washer fluid reservoir for dirt / leakage and clean it well inside, if required</p> <p>P6. Look for cracks, leaks in the plastic or rubber hoses connected to the washer reservoir. Replace any faulty hoses, if any</p> <p>P7. Unclog dirt from nozzles, hoses or screens and service these using a long pin or fine wire to pick out or poke through clogged dirt, if required</p>
<p>8. Repair Electrically Controlled Seats</p>	<p>P1. Check operation of the seat in each direction of movement to verify the functionality of seats</p> <p>P2. Inspect the fuse, wiring and remove/ replace faulty part/s, if any</p> <p>P3. Inspect the power seat switches and remove/ replace the switch if faulty</p> <p>P4. Check motor condition to ensure that the motor is not clogged with debris and replace faulty part/s, if any</p>
<p>9. Repair Horn</p>	<p>P1. Blow the horn to check the functionality</p> <p>P2. Check the fuse, relay and wiring circuit in case of no or low sound and replace faulty part/s, if any</p>

10. Repair Power Mirrors

P1. Check movements of mirrors in different directions to inspect the functionality of power mirrors

P2. Check fuse, circuit wiring and control switch and replace faulty part/s, if any

P3. Check for any hard sound deadening in all four doors and replace faulty part/s, if any

P4. Check the function of folding and replace non-functioning part/s, if any

Knowledge & Understanding

This competency standard will provide knowledge related to:

- Understanding of Manufacturer Repair Manual
- Tools and Equipment required to repair or replace comfort and safety features of vehicle
- Wiring Harness and Wiring Circuit Diagram (EWD)
- Types of power windows
- Immobilizer
- Immobilizer key coding method
- Center Locking System
- SRS
- Cruise Control System
- Wiper & Washer
- Electric Seats Control System
- Horn & Power Mirrors

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify and repair fault/s in comfort and safety features of vehicle

071600499 Repair Fuel and Emission Control System

Overview

This competency standard is developed to provide skills and knowledge to repair the Fuel and Emission Control System in accordance with the manufacturer's Repair Manual. You will be able to diagnose and repair the Fuel and Emission Control System.

Unit of Competency	Performance Criteria
<p>1. Repair Electronic Fuel Injection System (EFI)</p>	<p>P1. Check EFI system with the help of scanner to diagnose faults, if any</p> <p>P2. Check Fuel Pump pressure with the help of fuel pressure tester to verify the appropriate functioning and replace the faulty Fuel Pump as per given standards</p> <p>P3. Check Fuel Injector Resistance with the help of multi-meter to ensure standard operation and replace the faulty Fuel Injector as per given standards</p> <p>P4. Replace clogged/ contaminated Fuel Filter, if any</p>
<p>2. Repair Exhaust Gas Recirculation (EGR) System</p>	<p>P1. Identify the type of EGR valve of your vehicle and remove fault, if any</p> <p>P2. Check Oxygen sensor with the help of scanner and replace in case of any fault</p> <p>P3. Check Wiring Harness and repair/ replace faulty wire as per set standards</p> <p>P4. Check and service EGR System in case of any contamination or clog as per set standards</p>
<p>3. Replace Oxygen Sensors</p>	<p>P1. Inspect Oxygen sensor visually to check for any miss fire or damage</p> <p>P2. Diagnose Oxygen sensor with the Scanner to check for malfunction</p> <p>P3. Inspect Oxygen Sensor to ensure the clean emission of vehicle and replace in case of any fault</p> <p>P4. Inspect Oxygen Sensor to check for any sluggish or slightly corroded sulphate and perform cleaning, if Required</p> <p>P5. Check Wiring Harness of Oxygen Sensor and replace/ repair harness, if any</p>

Knowledge & Understanding

This competency standard will provide knowledge related to:

- Understanding of Manufacturer Repair Manual
- Tools and Equipment required to repair or replace comfort and safety features of vehicle
- Wiring Harness and Wiring Circuit Diagram (EWD)
- Use of Vehicle Scanner
- Use of Measuring Tools and Equipment

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify the Fuel and Emission Control System faults and repair as per set standards

Occupational health and safety

Purpose

It is for the safety of persons working in that environment.

Classification ISCED

0416 Wholesale and retail sales

Available grade

Competent / Not yet competent

Modification history

N/A

Unit of Competency	Performance Criteria	Knowledge
I1. Identify and implement safe working practices	You must be able to: P1. Study of facility layout design and operations P2. Implement the health and safety measures	You must know and understand: K1. Knowledge of health and safety precautions

Communicate in the workplace to support customers and team

Purpose

This Competency standard identifies the competencies required to communicate in the workplace to support customers and team as per organization's approved guidelines and procedures. You will be expected to communicate face-to-face with customers, use technology to communicate with customers, communicate with customers and colleagues from diverse backgrounds, work in a team, ask appropriate probing / questioning from customers and provide continuous feedback to customers / colleagues. Your underpinning knowledge about basic communication tools and correspondence tactics will be sufficient for you to provide the basics of the work.

Classification ISCED

Available grade

Competent / Not yet competent

Modification history

N/A

Unit of Competency	Performance Criteria	Knowledge
B1. Communicate face-to-face with customers.	You must be able to: P1. Maintain welcoming customer environment that reflects company branding and market position and is in line with the company policy and procedures. P2. Greet customer warmly according to company policy and procedures. P3. Create effective service environment through verbal and non-verbal	You must be able to: K1. Explain different techniques that can be applied when communicate with customer face to face K2. Describe types of customer behavior and dealings K3. Explain different communication skills and techniques K4. Explain the basic key elements of the communication process.

	<p>interaction according to company policy and procedures.</p> <p>P4. Use questioning and active listening to determine customer needs.</p> <p>P5. Use positive and inclusive language.</p> <p>P6. Recognize personal factors impact on customer service delivery</p>	<p>K5. Describe a range of communication methods that can be used to effectively communicate with customers and identify the most appropriate to use in different situations.</p> <p>K6. Explain how 'body language' impacts on the communication process.</p>
<p>B2. Use technology to communicate with customers.</p>	<p>You must be able to:</p> <p>P1. Answer telephone according to the company procedures.</p> <p>P2. Questioning and active listening to identify caller and establish and confirm requirements.</p> <p>P3. Use telephone system functions according to instructions.</p> <p>P4. Use email, social networking sites and other technologies to receive and process information and customer requests in line with company policy and procedures.</p> <p>P5. Record and promptly pass on messages or information.</p> <p>P6. Inform customer of any problems and relevant action being taken.</p> <p>P7. Perform follow-up action as necessary.</p>	<p>You must be able to:</p> <p>K1. Identify the recognized principles of communicating electronically, by telephone and in writing.</p> <p>K2. Describe the different methods of collecting customer feedback on telephone.</p> <p>K3. Explain the importance of collecting customer feedback and how this can be used to improve customer service.</p> <p>K4. Describe how technology can affect and enhance the service delivery process.</p>
<p>B3. Communicate with customers and colleagues from diverse backgrounds.</p>	<p>You must be able to:</p> <p>P1. Treat customers and colleagues from diverse backgrounds with respect and sensitivity.</p> <p>P2. Consider cultural differences in verbal and non-verbal communication.</p> <p>P3. Use gestures or simple words to communicate where language barriers exist.</p>	<p>You must be able to:</p> <p>K1. Identify the barriers to effective communication that can arise and how best to deal with these.</p> <p>K2. Identify and explain when it is necessary to seek advice or assistance from colleagues and when to take own initiative.</p> <p>K3. Describe different types of</p>

	<p>P4. Obtain assistance from colleagues or supervisors when required to facilitate communications.</p>	<p>dealings techniques with different types of behaviors</p>
<p>B4. Work in a team.</p>	<p>You must be able to:</p> <p>P1. Display a courteous and helpful manner at all times.</p> <p>P2. Complete allocated tasks willingly, according to set timeframes.</p> <p>P3. Actively seek or provide assistance by approaching other team members when difficulties arise.</p> <p>P4. Identify and use lines of communication with supervisors and peers according to company policy.</p> <p>P5. Encourage, acknowledge and act upon constructive feedback provided by other team members.</p> <p>P6. Use questioning to minimise misunderstandings.</p> <p>P7. Identify signs of potential workplace conflict wherever possible and take action to resolve the situation using open and respectful communication.</p> <p>P8. Participate in team problem solving.</p> <p>P9. Interpret organization's goals and objectives and translate them into individual targets</p> <p>P10. Prepare plan of action to achieve individual as well as team goals</p>	<p>You must be able to:</p> <p>K1. Define team work.</p> <p>K2. Explain the importance of team work.</p> <p>K3. Define company goals and objectives as well as SOPs of the company</p> <p>K4. Explain different concepts and techniques of problem solving</p> <p>K5. Describe systematic decision making process</p> <p>K6. Describe characteristics of a successful teamwork experience.</p>
<p>B5. Ask appropriate probing / questioning from customers</p>	<p>You must be able to:</p> <p>P1. Use different types of questions when appropriate.</p> <p>P2. Allow the other person to answer freely.</p> <p>P3. Collect facts, information and data about the other person's situation.</p>	<p>You must be able to:</p> <p>K1. Explain:</p> <ul style="list-style-type: none"> • Open-ended questions • Close-ended questions • High gain questions • Mirror questions • Probing questions • Situation questions

	<p>P4. Focus on the necessary information (information that links directly to product or service)</p>	
<p>B6. Provide continuous feed-back</p>	<p>You must be able to:</p> <ul style="list-style-type: none"> P1. Give and receive feed-back with customers. P2. Apply appropriate body language and read customers body language. P3. Give and receive feed-back with internal departments. P4. Design a communication system / process and share information. P5. Gain commitment from others to work together in the interest of the customers. P6. Conduct meetings. P7. Utilize the feed-back to identify opportunities for product / service improvement. 	<p>You must be able to:</p> <ul style="list-style-type: none"> K1. Explain how to use customer feed-back to improve your business K2. Define importance of body language. K3. Explain communication ethics. K4. Define organizational Jargon.

Work effectively in a customer service/ sales environment

Purpose

This Competency standard identifies the competencies required Work Effectively in a Customer Service/Sales Environment as per Organization's approved guidelines and procedures. You will be expected to work within organizational requirements, support the work team, maintain personal presentation, develop effective work habits, portray ethical behaviour and acquire up to date product / service knowledge. Your underpinning knowledge about Work Effectively in a Customer Service/Sales Environment will be sufficient for you to provide the basics of the work.

Classification ISCED

0416 Wholesale and retail sales

Available grade

Competent / Not yet competent

Modification history

N/A

Unit of Competency	Performance Criteria	Knowledge
F1. Work within organizational requirements.	You must be able to: P1. Identify and read organisation's requirements and responsibilities and seek advice from appropriate people where necessary. P2. Interpret staff rosters and provide sufficient notice of unavailability	You must be able to: K1. Define industry awards and agreements that relate to personal job role and terms and conditions of employment. K2. Differentiate between employer and employee responsibilities. K3. Explain different relevant legislation and statutory requirements.

	<p>for rostered hours according to workplace policy and procedures.</p> <p>P3. Develop and use a current working knowledge and understanding of employee and employer rights and responsibilities.</p> <p>P4. Comply with relevant duty of care and legal responsibilities, and support organisational culture.</p> <p>P5. Identify roles and responsibilities of colleagues and immediate supervisors.</p> <p>P6. Identify standards and values considered to be detrimental to the organisation and communicate this through appropriate channels.</p> <p>P7. Identify, recognise and follow behaviour that contributes to a safe and sustainable work environment.</p>	
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F2.Support the work team.

You must be able to:

- P1. Display courteous and helpful behaviour at all times.
- P2. Take opportunities to enhance the level of assistance offered to colleagues and meet all reasonable requests for assistance within acceptable workplace timeframes.
- P3. Complete allocated tasks as required.
- P4. Seek assistance when

You must be able to:

- K1. Explain the importance of team work
- K2. Define workplace relations
- K3. Explain workplace policies, plans and procedures, including:
 - Dealing with grievances
 - Discriminatory behavior
 - Equal opportunity issues.
 - Staff rosters and notification of shift
 - Availability or non-attendance

- difficulties arise.
- P5. Use questioning techniques to clarify instructions or responsibilities.
- P6. Identify and display a non-discriminatory attitude in all contacts with customers and other staff members.

- Providing customer service to colleagues and customers.

<p>F3. Maintain personal presentation.</p>	<p>You must be able to:</p> <p>P1. Observe appropriate dress code and presentation as required by the workplace, job role and level of customer contact.</p> <p>P2. Follow personal hygiene procedures according to organisational policy and relevant legislation.</p>	<p>You must be able to:</p> <p>K1. Explain hygiene and personal presentation</p> <p>K2. Explain the importance of workplace ethics</p>
<p>F4. Develop effective work habits.</p>	<p>You must be able to:</p> <p>P1. Interpret, confirm and act on workplace information, instructions and procedures relevant to the particular task.</p> <p>P2. Ask questions to seek and clarify workplace information.</p> <p>P3. Plan and organise daily work routine within the scope of the job role.</p> <p>P4. Prioritise and complete tasks according to required timeframes.</p> <p>P5. Identify work and personal priorities and achieve a balance between competing priorities</p>	<p>You must be able to:</p> <p>K1. Explain staff counseling and disciplinary procedures</p> <p>K2. Describe workplace organizational structure.</p>

F5. Portray ethical behavior	You must be able to: P1. Follow ethical code of conduct. P2. Understand your customer's code of ethics. P3. Declare conflict of interest. P4. Maintain confidentiality. P5. Honour your commitments (timeframe, deliverables etc.) P6. Use internet for business only on company time.	You must be able to: K1. Explain the importance of ethical behavior. K2. Explain the importance of commitment in sales and customer services.
F6. Acquire up to date product / service knowledge	You must be able to: P1. Gather information about your product / services. P2. Identify the components of your product and services. P3. Recognize the essential selling features of your products and services. P4. Translate all essential features of your product and services. P5. Analyze product success. P6. Identify your market position. P7. Familiar with all product promotions, sales manuals and product literature. P8. Keep information of latest technology advances and seek ways to use these technologies in your work.	You must be able to: K1. Explain: <ul style="list-style-type: none"> • Price per product. • Profit per product / service. • Price flection • Product strengths • Product weaknesses. • Warranty / guarantee policies. • Packaging facilities and potential. K2. Explain how your product/service fits into your customers overall operations, business plan, sales success, operation cost etc.

Develop professionalism

Purpose

This Competency standard identifies the competencies required to Develop Professionalism as per Organization's approved guidelines and procedures. You will be expected to create a personal vision / mission, manage your attitude, practice self-discipline, manage time, manage your professional development, and participate in trainings and performance review. Your underpinning knowledge about Develop Professionalism will be sufficient for you to provide the basics of the work.

Classification ISCED

0416 Wholesale and retail sales

Available grade

Competent / Not yet competent

Modification history

N/A

Unit of Competency	Performance Criteria	Knowledge
G1. Create a personal vision / mission	You must be able to: P1. Clarify / prioritize self-values and consider the value of others. P2. Clarify expectations of yourself and expectations others have of you. P3. Identify what you need to do to be successful (personal standards, targets, goals, principals) P4. Set specific short and long term goals. P5. Translate the vision into	You must be able to: K1. Explain long and short term goals. K2. Explain why personal vision and mission is important for success. K3. Describe the advantages of personal vision and mission.

	<p>actionable steps.</p> <p>P6. Integrate the vision into daily practice.</p> <p>P7. Recount frequently with your vision and change accordingly.</p>	
<p>G2. Manage your attitude.</p>	<p>You must be able to:</p> <p>P1. Challenge yourself, break old habits, and move out of your comfort zone.</p> <p>P2. Practice innovative techniques for out of the box creative thinking.</p> <p>P3. Seek out support and feedback from others on the team, in the organization / community etc.</p> <p>P4. Identify daily, weekly accomplishments.</p> <p>P5. Read inspirational material, audiotapes etc.</p>	<p>You must be able to:</p> <p>K1. Explain the importance of personal and professional motivation</p> <p>K2. Identify your positive attitude.</p> <p>K3. Explain the advantages of innovative ideas and techniques during job.</p>
<p>G3. Practice self-discipline</p>	<p>You must be able to:</p> <p>P1. Accountable for your performance.</p> <p>P2. Identify what you need to do to be successful.</p> <p>P3. Communicate your priorities to others.</p> <p>P4. Make and honour appointments with yourself and others.</p> <p>P5. Practice relaxation and energizing techniques.</p>	<p>You must be able to:</p> <p>K1. Explain the importance of communication.</p> <p>K2. Explain the advantages of self-discipline.</p>
<p>G4. Manage time</p>	<p>You must be able to:</p> <p>P1. Isolate key success activities and prioritize them.</p> <p>P2. Breakdown large tasks down into manageable action steps (set time frame).</p> <p>P3. Create or adopt action plans and follow it.</p> <p>P4. Set aside appropriate blocks of time for goal-related activities.</p>	<p>You must be able to:</p> <p>K1. Explain the importance of time management to achieve different tasks.</p>

P5. Make the best possible use of support people / recourses to accomplish tasks.

<p>G5.Manage your professional development</p>	<p>You must be able to: P1. Take inventory of your personal interests, abilities, skills, knowledge etc. P2. Identify and prioritize the strengths and gaps. P3. Use available assessment tools. P4. Create a personal growth strategy / career path. P5. Set personal goals and timeframe for achieving them. P6. Learn from your mistakes.</p>	<p>You must be able to: K1. Explain the importance and need of professional development.</p>
<p>G6.Participate in trainings and performance review</p>	<p>You must be able to: P1. Analyse, evaluate and improve performance, and report significant issues/problems to senior management P2. Demonstrate to-do attitude in profession P3. Demonstrate understanding of skills requirements P4. Use the competences acquired in trainings</p>	<p>You must be able to: K1. Define concept about performance standards. K2. Explain policies, procedures and regulations regarding human resources of the organization. K3. Explain self-planning and management techniques K4. Define goals and strategies of self- development. K5. Explain relevant knowledge about training / job requirements</p>

Comply with health and safety regulations

Purpose

This Competency standard identifies the competencies required to comply with health and Safety Regulations as per Organization's approved guidelines and procedures. You will be expected to interpret health and safety regulations, apply basic safety procedures and apply basic emergency procedures. Your underpinning knowledge about comply with health and safety regulations will be sufficient for you to provide the basics of the work.

Classification ISCED

0416 Wholesale and retail sales

Available grade

Competent / Not yet competent

Modification history

N/A

Unit of Competency	Performance Criteria	Knowledge
H1. Interpret health and safety regulations, standards and guidelines of an organization.	You must be able to: P1. Identify, understand and apply health and safety regulations at workplace P2. Assess risk of injury and equipment damages in common work situations and report to department concerned for timely response P3. Participate in quality enhancement of products or services of the	You must be able to: K1. Explain concepts and principles of health, safety, quality and environment regulations. K2. Define types of risk of injuring and equipment damages. K3. Describe types of risk and injury at workplace. K4. Explain the procedure of dealing with risk and injury situation.

	<p>organization</p> <p>P4. Comply with quality and safety standards effectively</p> <p>P5. Handle toxic and hazardous material and product with caution</p> <p>P6. Assess risk of injuries and accidents and report it to senior management for avoiding serious injuries</p>	<p>K5. Explain health and safety policies and guidelines of the organization.</p> <p>K6. define characteristics and types of toxic and hazardous material or products offered by company and their impact on environment.</p>
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H2. Apply basic safety procedures.

You must be able to:

- P1. Follow safety procedures to achieve a safe work environment, according to all relevant WHS legislation, including codes of practice relating to particular hazards in the industry or workplace.
- P2. Identify and report unsafe work practices , including faulty plant and equipment according to company policy and procedures
- P3. Manage dangerous goods and substances according to company policy and relevant legislation.
- P4. Identify potential manual handling risks and manage manual handling tasks according to company policy.
- P5. Report work-related incidents and accidents to designated personnel.
- P6. Participate in consultative processes and procedures for WHS.

You must be able to:

- K1. Explain appropriate use of personal protective clothing.
- K2. Explain the procedure to eliminating hazards.
- K3. Explain first aid procedures.

<p>H3. Apply basic emergency procedures.</p>	<p>You must be able to:</p> <p>P1. Follow fire and emergency procedures, including evacuation, according to company policy and legislation.</p> <p>P2. Identify designated personnel responsible for first aid and evacuation procedures.</p> <p>P3. .Accurately identifies safety alarms.</p>	<p>You must be able to:</p> <p>K1. Define fire, chemical and electrical hazards</p> <p>K2. Explain slip, trips and falls</p> <p>K3. Explain the procedure of storage of dangerous goods and hazardous substances and waste.</p> <p>K4. Define communication and consultation processes.</p> <p>K5. Explain manual handling procedures.</p>
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List of Tools and Equipment

Sr.No.	Description
1.	A/C Gas Manifold Gauge Set
2.	A/C Gas Recycling Machine
3.	A/C Gas Leakage Detector
4.	Allen Key Set
5.	Battery Tester
6.	Bench Vice
7.	Brake Efficiency Tester
8.	Brushes different types
9.	Cleaning Equipment with Detergent
10.	Coil Spring Compressor
11.	Computer Lead Box/ Diagnosis System/ Interface Box
12.	Condenser Tester
13.	DB Meter (Sound Tester)
14.	Dial Gauge with Magnetic Stand
15.	Drill Bits Set (Mason, Metal)
16.	Drill Machine
17.	Dual Techo Meter
18.	Dust Blower
19.	Electric Connector Remover
20.	Feeler Gauge
21.	Files Set for Contact Points Facing
22.	Fuel Pressure Gauge
23.	General Mechanic's Hand Tools

24. Hammer: different size and types

25. Hand Drilling Machine

26. Heat Gun

27. Hydrometer (Gravity Meter)

28. Injector Cleaner

29. Injector Tester

30. Insulation Tape

31. Insulation Tester

32. Jack Hoist/ Stands

33. Jack Telescopic with Weight Lifting Capacity 1.5 Tons

34. Jack Trolley Type with Weight Lifting Capacity 5 Tons

35. Lifting Equipment (Service Pit)

36. Lock Pliers

37. Magnifying Glass

38. Magnetic Stick

39. Marking Tools

40. Masking Tape

41. Measuring Precision Tools/ Instruments

42. Measuring Tape

43. Multi Scanner Tools for Vehicle

44. Multimeter (AVO Meter)

45. Oscilloscope

46. Pedestal Drilling Machine

47. Pliers Set


48. Pullers: different types


49. Safety Clothing, Equipment and Kit

50.	Scraper
51.	Screw Driver Kit
52.	Set of Spanner
53.	Soldering Gun
54.	Soldering Iron
55.	Soldering Wire and Paste
56.	Spark Plug Deep Sockets
57.	Spark Plug Tester
58.	Special Service Tools Recommended by the Manufacturer
59.	Star Key Set (Torx Key set)
60.	Stroboscope
61.	Sucker
62.	Temperature Gauge
63.	Testing Board
64.	Torque Wrench
65.	Tweezers Kit
66.	Wire Brush
67.	Wires of different Gauges
68.	Work Bench
69.	Wrenches Set

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