

# National Vocational Certificate Level 2 in Automotive Technology (Auto Electrician)

## Competency Standards



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**Date of approval by NCRC:**

19th -20th Nov 2014

**Date of Notification:**

10th Dec 2014, vide notification no F.2-1/2013-DD(VT)

This curriculum has been produced by the National Vocational & Technical Training Commission (NAVTTCC) with the technical assistance of TVET Reform Support Programme, which is funded by the European Union, the Embassy of the Kingdom of the Netherlands, Federal Republic of Germany and the Royal Norwegian Embassy. The Programme has been commissioned by the German Federal Ministry for Economic Cooperation and Development and is being implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

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## A: Apply Safety Precautions and Guidelines at Workplace

**Overview:** This Competency Standard identifies the competencies required to apply occupational health and safety procedures at workplace by Auto Electrician in accordance with the organization’s approved guidelines and procedures. Trainee will be expected to identify hazards in workplace, comply health and safety precautions, use of personal protective equipment and practicing safe work habits at workplace at all times. Your underpinning knowledge regarding occupational health and safety procedures will be sufficient to provide Trainee the basis for his/her work.

Unit of Competency	Performance Criteria	Knowledge and Understanding	Tools & Equipment
A1. Identify hazards in workplace environment	<p><i>Trainee must be able to:</i></p> <p>P1. Read and interpret work processes and procedures correctly to identify risk of hazards at workplace.</p> <p>P2. Recognize 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><i>Trainee must know and understand:</i></p> <p>K1. Health and safety precautions of the company.</p> <p>K2. Techniques and methods to identify the risks of hazards at workplace.</p> <p>K3. Dealing with hazards to avoid any accident or injury.</p> <p>K4. Safety reporting procedures and documentation.</p>	Health and safety manual.
A2. Comply with Occupational Health and Safety Precautions	<p><i>Trainee must be able to:</i></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 control, and report those to safety officer that cannot be resolved.</p>	<p><i>Trainee must know and understand:</i></p> <p>K1. Organizational health and safety procedures.</p> <p>K2. Health and safety risks that can arise as a result of accidents.</p> <p>K3. Types of hazards that are most likely to cause harm to health and safety.</p>	Safety shoes, Safety gloves, Safety goggles, Safety helmet, Fire extinguisher, Smoke alarm, First aid box

Unit of Competency	Performance Criteria	Knowledge and Understanding	Tools & Equipment
A3. Apply Personal Protective and Safety Equipment	<p><i>Trainee must be able to:</i></p> <p>P1. Select personal protective equipment in terms of type and quantity according to work orders.</p> <p>P2. Wear, adjust, and maintain personal protective equipment to ensure correct fitness and optimum protection in compliance with company procedures.</p> <p>P3. Ensure personal protective equipment is cleaned and stored in proper place.</p>	<p><i>Trainee must know and understand:</i></p> <p>K1. Importance of using Personal Protective Equipment.</p> <p>K2. Types of PPE.</p> <p>K3. Protective clothing and equipment (PPE) to be worn and where it can be obtained.</p> <p>K4. Safely maintaining the PPEs.</p>	Safety shoes, Safety gloves, Safety goggles, Safety helmet
A4. Practice safe work habits to ensure safety at workplace	<p><i>Trainee must be able to:</i></p> <p>P1. Wear required clothing (not loose or torn), confine long hair, and remove jewelry in accordance with company procedures.</p> <p>P2. Apply work procedures and approaches that ensure personal safety as well as others safety.</p> <p>P3. Demonstrate good housekeeping in the workplace by cleaning up spills or leaks.</p> <p>P4. Keep work area clean and clear of obstructions, and storing tools or equipment, so that the potential for accident or injury is prevented.</p> <p>P5. Ensure tools or equipment are in place and available in proper place as per company procedures.</p>	<p><i>Trainee must know and understand:</i></p> <p>K1. Importance of safety at work and its implications.</p> <p>K2. Work safety procedures and guidelines.</p> <p>K3. Specific company procedures regarding workplace safety.</p> <p>K4. Recommended procedure for cleaning and storing of tools and equipment at workplace.</p>	Fire extinguisher, Tool box/bins, Safety covers, First aid box, Safety equipment

## B:Repair Lighting System of Vehicle

**Overview:** This Competency Standard identifies the competencies required to repair lighting system of a vehicle by Auto Electrician in accordance with the organization’s approved guidelines and procedures. Trainee will be expected to identify faults in different parts of the lighting system of a vehicle and fixing the problems by repairing or replacing the faulted parts. Trainee’s underpinning knowledge regarding tools, techniques, methods and procedures for repairing/replacing auto-lighting parts will be sufficient to provide Trainee the basis for his/her work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
B1: Diagnose Fault in Lighting System of the Vehicle.	<p><i>Trainee Must be able to:</i></p> <p>P1. Carry out tests to determine faults using proper tooling and techniques.</p> <p>P2. Adopt a method for testing systems and components without causing damage to them.</p> <p>P3. Identify faults and determine repair actions to client.</p> <p>P4. Carry out tests according to guidelines and organization’s procedures/policies.</p> <p>P5. Follow Repair manual for diagnosing fault in lighting system</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Using multi-meter and test lamp.</p> <p>K2. Components and functions of lighting system.</p> <p>K3. Different types faults in lighting system of vehicles.</p> <p>K4. Techniques and procedures of diagnosing faults in lighting system.</p> <p>K5. Specific safety precautions and guidelines.</p> <p>K6. Reporting procedures of faults and possible repair actions.</p> <p>K7. Guidelines, procedures and policies of the organization.</p> <p>K8. Read and interpret repair manual.</p>	Multi-meter, Test lamp Cutter Pliers, repair manuals
B2: Repair lighting system of the Vehicle.	<p><i>Trainee Must be able to:</i></p> <p>P1. Select tools and equipment according to job requirement.</p> <p>P2. Repair faults in the components as diagnosed according to procedures.</p> <p>P3. Adopt a method for repairing systems and components without causing damage to them</p> <p>P4. inspect and verify the fault is removed</p> <p>P5. Observe occupational health and safety precautions at all times.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of multi-meter, test lamp and toolkit</p> <p>K2. methods and procedures of repairing faults in the components ( harness, switch)</p> <p>K3. Techniques for inspecting and verifying the repair of lighting system.</p> <p>K4. Specific safety precautions and guidelines.</p> <p>K5. Guidelines, procedures and policies of the organization.</p> <p>K6. Read and interpret repair manual.</p>	Multi-meter, Test Lamp, Wire Insulating Tape, Cutter Pliers, screw drivers, spanners.



Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	P6. Follow Repair manual for repairing lighting system of the vehicle		
B3: Replace Fuses/Connectors of Lighting System.	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the job requirement</p> <p>P2. Follow the instructions of repair manual for the replacement of faulty fuses/connectors</p> <p>P3. Communicate to the client if the replacement of fuses/connectors is required</p> <p>P4. Follow Repair manual for replacement of fuses/connectors</p> <p>P5. Observe occupational health and safety precautions at all times.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of multi-meter, test lamp, fuse puller and cutter pliers</p> <p>K2. functions of fuses and connectors</p> <p>K3. classification of fuses (e.g. 10 Amp, 20 Amp, 30 Amp etc)</p> <p>K3. Read and interpret repair manual.</p> <p>K4. specific safety precautions and guidelines</p> <p>K5. Organizational standard operating procedures (SOPs)</p>	Multi-meter, Test Lamp, fuse puller, screw driver, cutter pliers, insulation tape
B4: Repair Indicator Light Unit.	<p><i>Trainee Must be able to:</i></p> <p>P1. Select tools and equipment according to job requirement.</p> <p>P2. Repair faults in the components as diagnosed according to procedures.</p> <p>P3. Adopt a method for repairing indicator light unit without causing damage to it.</p> <p>P4. inspect and verify the fault is removed</p> <p>P5. Observe occupational health and safety precautions at all times.</p> <p>P6. Follow Repair manual for repairing indicator light unit of the vehicle</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of multi-meter, Flats &amp; Phillips Screw Drivers, Test Lamp, Amery Paper, spanner</p> <p>K2. methods and procedures of repairing faults in indicator light unit</p> <p>K3. techniques for inspecting and verifying the repair of indicator light unit</p> <p>K4. Specific safety precautions and guidelines.</p> <p>K5. Guidelines, procedures and policies of the organization.</p> <p>K6. Read and interpret repair manual.</p> <p>.</p>	Multi-meter, Flats & Phillips Screw Drivers, Test Lamp, spanner, Amery Paper (for cleaning rusted points).
B5: Replace Light Bulbs of the Vehicle.	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the job requirement</p> <p>P2. Follow the instructions of repair manual for</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of Phillips Type Screw Driver, Flat Type Screw Driver, spanner</p> <p>K2. Classification of bulbs (Volts and Watts)</p>	Phillips Type Screw Driver, Flat Type Screw Driver, spanner

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>the replacement of faulted light bulbs</p> <p>P3. Communicate to the client if the replacement of light bulbs is required</p> <p>P4. Follow Repair manual for replacement of light bulbs</p> <p>P5. Observe occupational health and safety precautions at all times.</p>	<p>K3. Read and interpret repair manual.</p> <p>K4. specific safety precautions and guidelines</p> <p>K5. Organizational standard operating procedures (SOPs)</p> <p>.</p>	
<p>B6: Align the Head Lights of the Vehicle.</p>	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the repair manual</p> <p>P2. adopt a method for adjusting head lights without causing damage to them</p> <p>P3. Inspect and verify the focus of head lights according to the repair manual</p> <p>P4. Observe occupational and machine safety at all times</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of Phillips screw Driver, Head light Aligner ( Special Service Tools SST)</p> <p>K2. Read and interpret repair manual.</p> <p>K3. Techniques and procedure of using headlight aligner (SST)</p> <p>K4. specific safety precautions and guidelines</p> <p>K5. Organizational standard operating procedures (SOPs)</p>	<p>Phillips screw Driver, Head light Aligner (SST), measuring tape</p>



### C:TestBattery Performance

**Overview:** This Competency Standard identifies the competencies required to test the battery performance of a vehicle by Auto Electrician in accordance with the organization’s approved guidelines and procedures. Trainee will be expected to apply different tests including inspection of electrolyte and terminals, measuring the specific gravity, checking the level of distilled water and recharging the battery in order to enhance the performance of the battery of the vehicle. Trainee’s underpinning knowledge regarding tools, techniques, methods and procedures for testing battery performance will be sufficient to provide Trainee the basis for his / her work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
C1: Remove Battery from the Vehicle	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the repair manual            P2. Adopt a proper method for removing battery from the vehicle using repair manual            P3. Disconnect terminals of the battery carefully.            P4. Observe occupational health and safety precautions at all the times.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of Pliers and Ring Spanner            K2. Read and interpret repair manual            K3. Techniques for removing battery            K4. Specific safety precautions and guidelines</p>	Pliers, Ring Spanner, and Silicon Gloves.
C2: Inspect Electrolyte and Terminals of Battery	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the repair manual            P2. Adopt a proper method for inspecting battery electrolyte and terminals using repair manual            P3. Report faults and possible solutions to client.            P4. Observe occupational health and safety precautions at all the times.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of Hydro meter and Battery Tester            K2. Read and interpret repair manual            K3. Techniques for inspecting and verifying faults in the battery            K4. Standard gravity of electrolytes            K5. Specific safety precautions and guidelines            K6. organizational reporting procedures</p>	Hydro meter, Battery Tester, Amery paper, Goggles and Silicon Gloves.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
C3: Check the Specific Gravity of the electrolytes	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the repair manual</p> <p>P2. Adopt a proper method for checking specific gravity of battery using repair manual</p> <p>P3. Observe occupational health and safety precautions at all the times.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of Hydrometer</p> <p>K2. Standard gravity of electrolytes</p> <p>K3. read and interpret repair manual</p> <p>K4. personal health and safety measures</p>	Hydrometer, Silicon Gloves.
C4: Clean Terminals of the Battery	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools according to the repair manual</p> <p>P2. adopt a proper technique for cleaning terminals</p> <p>P3: Observe personal health and safety at all times</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of contact Spray and Amery paper for cleaning</p> <p>K2. Read and interpret repair manual</p> <p>K3. Personal health and safety measures.</p>	Contact spray(WD40), Amery paper, spanner
C5: Top up battery cells with distilled water	<p><i>Trainee Must be able to:</i></p> <p>P1. Adopt a proper method for topping up the battery cells with distilled water</p> <p>P2. carry out top up according to the repair manual's guidelines</p> <p>P3. Observe personal health and safety at all times</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Use of hydrometer</p> <p>K2. Upper and lower levels of battery electrolytes.</p> <p>K3. Personal health and safety measures</p>	Hydro meter, Silicon Gloves
C6: Recharge the Battery	<p><i>Trainee Must be able to:</i></p> <p>P1. Select proper tools and equipment according to the job requirement</p> <p>P2. select a proper method for recharging from the repair manual</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Techniques and procedures to use battery charger</p> <p>K2. Read and interpret repair manual</p> <p>K3. Personal and machine safety</p>	Battery charger, Multi-meter, Silicon Gloves

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	P3. Observe personal health and safety at all times P4. set the amperes of tanger ( Battery Charger) according to battery specifications P5. connect battery terminals with the battery tanger/charger according to the procedure	K4. procedures for setting the amperes of tanger K5. method of connecting battery terminals with the tanger	
C7: Test load of the battery	<i>Trainee Must be able to:</i>  P1. Select proper tools and methods for calculated load of the battery P2. Test battery performance through battery analyzer. P3. Measure battery charging with the help of multi-meter to analyze the volts.	<i>Trainee must be able to know and understand:</i>  K1. Use of Battery analyzer and multi-meter K2. method of calculating Battery load. K3. Values of Charge, recharge and discharge. K4: Personal health and safety measures	Battery Analyzer, multi-meter, Silicon Gloves
C8: Install Battery in the Vehicle	<i>Trainee Must be able to:</i>  P1. Wash Battery bracket and terminals to remove sulphur and rust P2. Re-assemble battery in bracket. P3. Install the positive (+) and negative (-) terminals and tight the lead. P4: follow repair manual's instructions for installation of battery P5. Start the car and check the performance.	<i>Trainee must be able to know and understand:</i>  K1. Purpose of washing battery bracket and terminals K2: procedure of installation of battery K3: read and interpret repair manual	Pliers, Ring spanner, Silicon Gloves.

## D: Install and Repair Starting System of Vehicle

**Overview:** This Competency Standard identifies the competencies required to Install and Repair Starting System of Vehicle by Auto Electrician in accordance with the organization's approved guidelines and procedures. Trainee will be expected to identify starting system's common problems and to figure out possible solutions, either by repairing or replacing the parts of the starting system of the vehicle. Trainee's underpinning knowledge regarding tools, techniques, methods and procedures for installation and repairing starting system of a vehicle will be sufficient to provide you the basis for his /her work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<p>D1: Diagnose faults in Starting system of vehicle</p>	<p><i>Trainee Must be able to:</i></p> <p>P1. Carry out tests on following to determine faults:</p> <ul style="list-style-type: none"> <li>• Glow Plug for diesel engine</li> <li>• Spark Plug for petrol engine</li> <li>• Ignition coil</li> <li>• Injection pump solenoid valve for diesel engine</li> <li>• Fuel pump and regulator valve</li> <li>• Contact and Breaker Point (CB) and Condenser</li> </ul> <p>P2. Using proper tooling and techniques for performing diagnostic tests.</p> <p>P3. Adopt a method for diagnosing faults in starting system without causing damage to them.</p> <p>P4. Identify faults and determine repair actions to client.</p> <p>P5. Carry out tests according to guidelines and organization's procedures/policies.</p> <p>P6. Follow Repair manual for diagnosing fault in</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Using multi-meter and test lamp.</p> <p>K2. Components and functions of lighting system.</p> <p>K3. Different types faults in lighting system of vehicles.</p> <p>K4. Techniques and procedures of diagnosing faults in lighting system.</p> <p>K5. Specific safety precautions and guidelines.</p> <p>K6. Reporting procedures of faults and possible repair actions.</p> <p>K7. Guidelines, procedures and policies of the organization.</p> <p>K8. Read and interpret repair manual.</p>	<p>Multi-meter, scanner, Tool kit (Spanner set, Screw driver, Pliers), Tester, Fuel pressure gauge.</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>starting system</p> <p>Check the cranking /self</p> <p>P7. Report the diagnose fault to the concerned department.</p>		
D2: Repair Starter Motor of Vehicle	<p><i>Trainee Must be able to:</i></p> <p>P1. Select tools and equipment according to job requirement.</p> <p>P2. Repair faults in the starter motor, as diagnosed, according to procedures.</p> <p>P3. Adopt a method for repairing starter motor without causing damage</p> <p>P4. inspect and verify the fault is removed</p> <p>P5. Observe occupational health and safety precautions at all times.</p> <p>P6. Follow Repair manual for repairing starter motor of the vehicle</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. use of toolkit and repair manual</p> <p>K2. procedure of repairing faults in starter motor</p> <p>K3. safety precautions for dismantling and assembling starter motor</p> <p>K4. method of measuring resistance of starter motor components</p>	<p>Screw driver and pliers</p> <p>Spanner Set, Socket Set</p> <p>Repair manual, soldering iron, Star Allen Key, Allan Key , Jumper Wire, Soldering wire, paste, Multi-meter and Vernier caliper, Screw Drivers Set, Pliers Set, Test Lamp</p>
D3: Install the starter motor in the Vehicle	<p><i>Trainee Must be able to:</i></p> <p>P1. Select relevant tools and methods for installation of starter motor in the vehicle.</p> <p>P2. Reconnect the wiring and connectors according to repair manual.</p> <p>P3. Tighten the bolts of starter motor to specified torque.</p> <p>P4. Ensure the fault is removed and starter motor is functioning properly.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Procedure for installation of starter motor in the vehicle.</p> <p>K2. Guidelines and procedures of repair manual of vehicles.</p> <p>K3. Importance of tightening the bolts at specified torque.</p> <p>K4. Method of connecting wires carefully.</p>	<p>Screw driver and pliers</p> <p>Spanner Set, Socket Set</p> <p>Repair manual, soldering iron, Star Allen Key, Allan Key , Jumper Wire, Soldering wire, paste, Multi-meter and Vernier caliper, Screw Drivers Set, Pliers Set, Test Lamp</p>

## E: Install and Repair Charging System of Vehicle

**Overview:** This Competency Standard identifies the competencies required to install and Repair Charging System of Vehicle by Auto Electrician in accordance with the organization's approved guidelines and procedures. Trainee will be expected to identify charging system's common problems and to figure out possible solutions, either by repairing or replacing the parts of the charging system of the vehicle. Trainee's underpinning knowledge regarding tools, techniques, methods and procedures for installation and repairing charging system of a vehicle will be sufficient to provide Trainee the basis for his / her work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
E1: Diagnose faults in Charging system of vehicle	<p><i>Trainee Must be able to:</i></p> <p>P1. Carry out tests on following to determine faults:</p> <ul style="list-style-type: none"> <li>• Check battery warning light</li> <li>• Alternator output voltage and ampere</li> <li>• Check tension of belt</li> </ul> <p>P2. Use proper tooling and techniques to perform diagnostic tests.</p> <p>P3. Adopt a method for diagnosing faults in charging system without causing damage.</p> <p>P4. Identify faults and determine repair actions to relevant person.</p> <p>P5. Carry out tests according to guidelines and organization's procedures/policies.</p> <p>P6. Follow Repair manual for diagnosing fault in charging system</p> <p>P7. Report the diagnose fault to the concerned department.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Method of using multi-meter.</p> <p>K2. Components and functions of charging system of vehicle.</p> <p>K3. Different types faults in charging system of vehicles.</p> <p>K4. Techniques and procedures of diagnosing faults in charging system.</p> <p>K5. Specific safety precautions and guidelines.</p> <p>K6. Reporting procedures of faults and possible repair actions.</p> <p>K7. Guidelines, procedures and policies of the organization.</p> <p>K8. Read and interpret repair manual.</p>	Multi-meter, Scanner Tool kit ,Spanner set, Screw driver, Pliers,Tester.



Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
E2. Replace Faulty Components of Alternator	<p><i>Trainee Must be able to:</i></p> <p>P1. Select relevant tools and method for the job.</p> <p>P2. Follow repair manual in replacing the faulty components of alternator.</p> <p>P3. Dismantle components of alternator according to repair manual.</p> <p>P4. Check resistance of Integrated Circuit (IC) with multi-meter.</p> <p>P5. Replace faulty components (bearings, stator, carbon brushes, rotor, rectifier, compotator, IC regulator, alternator shaft gear etc) according to procedure.</p> <p>P6. Assemble components of alternator according to repair manual.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Method of using tools and equipment for replacing components of alternator.</p> <p>K2. Procedure of dismantling and assembling the components of alternator.</p> <p>K3. Procedure and methods for replacing different components of alternator according to repair manual.</p> <p>K4. Method of checking resistance of IC with multi-meter.</p> <p>K5. Safety precautions and guidelines.</p>	Multi-meter, Vernier caliper, spanners, sockets.
E3. Adjust Tension of Fan Belt	<p><i>Trainee Must be able to:</i></p> <p>P1. Select Special Service Tool (SST) for adjusting tension of fan belt.</p> <p>P2. Inspect fan belt to identify cracks and replace it.</p> <p>P3. Adopt method for adjusting tension of fan belt according to repair manual.</p> <p>P4. Observe safety precautions and guidelines at all times.</p> <p>P5. Check tension of fan belt using SST and verify the tension of belt with specifications mentioned in repair manual.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Functions and method of using special services tools.</p> <p>K2. Procedure of replacing fan belt safely.</p> <p>K3. Method and techniques for adjusting tension of fan belt.</p> <p>K4. Safety precautions and guidelines.</p> <p>K5. Procedure of checking tension of fan belt using SST.</p> <p>K6. Specifications for tension of fan belts according to repair manual.</p>	Special Services Tools (SST), Spanners, Socket Set, Hammer.

## F : Repair Electrical Accessories of Vehicle

**Overview:** This Competency Standard identifies the competencies required to Repair Electrical Accessories of Vehicle by Auto Electrician in accordance with the organization's approved guidelines and procedures. Trainee will be expected to identify faults in the electrical accessories of vehicle and figure out possible solutions, either by repairing or replacing the parts according to the requirement. Trainee's underpinning knowledge regarding tools, techniques, methods and procedures for installation and repairing/replacing electrical accessories of a vehicle will be sufficient to provide Trainee the basis for his / her work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
F1: Diagnose faults in Electrical Accessories of Vehicle	<p><i>Trainee Must be able to:</i></p> <p>P1. Carry out tests on following to determine faults:</p> <ul style="list-style-type: none"> <li>• Power Windows</li> <li>• Radio Antenna</li> <li>• Cigarette Lighter</li> <li>• Air Conditioner</li> <li>• Fog Lights</li> <li>• Defogger</li> <li>• Centre Door Locking System</li> <li>• Sun Roof</li> <li>• Wiper Motor</li> <li>• Horn</li> <li>• Navigation/stereo System</li> </ul> <p>P2. Use proper tooling and techniques to perform diagnostic tests.</p> <p>P3. Adopt a method for diagnosing faults in electrical accessories without causing damage.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Method of using multi-meter.</p> <p>K2. Components and functions of different electrical accessories in vehicle.</p> <p>K3. Types of faults in different electrical accessories in vehicle.</p> <p>K4. Techniques and procedures of diagnosing faults in electrical accessories.</p> <p>K5. Safety precautions and guidelines.</p> <p>K6. Reporting procedures of faults and possible repair actions.</p> <p>K7. Guidelines, procedures and policies of the organization.</p> <p>K8. Read and interpret repair manual.</p>	Multi-meter, scanner, Tool kit (Spanner set, Screw driver, Pliers), Socket Set, Tester, Repair Manual.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>P4. Identify faults and determine repair actions to relevant person.</p> <p>P5. Carry out tests according to guidelines and organization's procedures / policies.</p> <p>P6. Follow Repair manual for diagnosing fault in accessories.</p> <p>P7. Report the diagnosed fault to the concerned department.</p>		
<p>F2. Repair or Replace Electrical Accessories in Vehicle</p>	<p><i>Trainee Must be able to:</i></p> <p>P1. Select relevant tools and method for the job.</p> <p>P2. Follow repair manual in replacing or repairing the faulty electrical accessories in vehicle.</p> <p>P3. Dismantle electrical accessories from vehicle according to manufacturer's manual.</p> <p>P4. Replace faulty electrical accessories (defogger, wiper motor, radio antenna, motor of sun-roof, horn etc) according to procedure.</p> <p>P5. Repair faulty electrical accessories (air conditioner, power window, cigarette lighter, center door locking system, navigation system etc.) according to procedure.</p> <p>P6. Check and verify the electrical accessory installed, after repairing or replacing, is functioning properly.</p>	<p><i>Trainee must be able to know and understand:</i></p> <p>K1. Read and interpret repair manual and manufacturer's instructions.</p> <p>K2. Procedure of dismantling and assembling of electrical accessories from vehicle.</p> <p>K3. Procedures for replacing accessories (defogger, wiper motor, radio antenna, motor of sun-roof, horn etc.).</p> <p>K4. Procedure for repairing of accessories (air conditioner, power window, cigarette lighter, center door locking system, navigation system etc.).</p> <p>K5. Safety precautions and guidelines.</p>	<p>Multi-meter, scanner, Tool kit (Spanner set, Screw driver, Pliers), Socket Set, Tester, Repair Manual</p>

### List of tools, Equipment& Machinery

Sr. No.	Items
1.	Ring spanner set
2.	Philips Screwdrivers set
3.	Test lamp
4.	Head light alignment equipment
5.	Hammer
6.	Wire stripper
7.	Soldering iron
8.	Soldering lead
9.	Flux
10.	Multimeter
11.	Cells tester
12.	Hydrometer
13.	Battery charger.
14.	Battery cleaning kit
15.	Thermometer,
16.	Specific gravity chart
17.	Dwell angle Meter
18.	Spark plug cleaner Condenser tester Distributor tester
19.	Spring tension checking meter
20.	Bearing puller
21.	Torque wrench
22.	Tachometer
23.	Armature glower
24.	Mini hydraulic press machine.
25.	Ammeter
26.	Voltmeter
27.	Filler gauge
28.	Rectifier end

<b>29.</b>	Frame
<b>30.</b>	Puller
<b>31.</b>	Vernier caliper
<b>32.</b>	Repair Manual
<b>33.</b>	Pliers
<b>34.</b>	Socket Set
<b>35.</b>	Scanner
<b>38.</b>	Fuel pressure gauge
<b>39.</b>	Paste
<b>40.</b>	Battery Analyzer
<b>41.</b>	Amery Paper
<b>42.</b>	Head Light Aligner (SST)
<b>43.</b>	Safety goggles
<b>44.</b>	Safety Shoes
<b>45.</b>	Safety Helmet
<b>46.</b>	Silicon Gloves
<b>47.</b>	Safety Covers
<b>48.</b>	Fire Extinguisher
<b>49.</b>	First Aid Box



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