TRAINING REGULATIONS

AUTOMOTIVE SERVICING NC I

AUTOMOTIVE SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

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AUTOMOTIVE SECTOR

AUTOMOTIVE SERVICING NC I

TRAINING REGULATIONS FOR
AUTOMOTIVE SERVICING NC I

SECTION 1 AUTOMOTIVE SERVICING NC I QUALIFICATION

The AUTOMOTIVE SERVICING NC I Qualification consist of competencies that a person must achieve to perform pre-delivery inspection and periodic maintenance of automotive parts and components.

This Qualification is packaged from the competency map of the Automotive Industry (Service sector) as shown in Annex A.

The Units of Competency comprising this Qualification include the following

CODE NO.	BASIC COMPETENCIES
500311101	Received and respond to workplace communication
500311102	Work with others
500311103	Demonstrate work values
500311104	Practice basic housekeeping procedures

CODE NO.	COMMON COMPETENCIES
ALT723211	Validate vehicle specification
ALT832212	Move and position vehicle
ALT723213	Utilize automotive tools
ALT723214	Perform mensuration and calculation
ALT723215	Utilize workshop facilities and equipment
ALT723216	Prepare servicing parts and consumables
ALT723217	Prepare vehicle for servicing and releasing

CODE NO.	CORE COMPETENCIES
ALT723372	Perform pre-delivery inspection
ALT723373	Perform periodic maintenance of automotive engine
ALT723374	Perform periodic maintenance of drive train
ALT723375	Perform periodic maintenance of brake system
ALT723376	Perform periodic maintenance of suspension system
ALT723377	Perform periodic maintenance of steering system

A person who has achieved this Qualification is competent to be:

- ❑ Pre-delivery inspector / Check lister
- ❑ Periodic maintenance personnel/staff
- ❑ Periodic maintenance associate
- ❑ Junior technician
- ❑ Maintenance technician
- ❑ Auto – service personnel

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in AUTOMOTIVE SERVICING NC I.

BASIC COMPETENCIES

UNIT OF COMPETENCY : RECEIVE AND RESPOND TO WORKPLACE COMMUNICATION

UNIT CODE : 500311101

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to receive, respond and act on verbal and written communication.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Follow routine spoken messages	1.1 Required information is gathered by listening attentively and correctly interpreting or understanding information/instructions 1.2 Instructions/ information are properly recorded 1.3 Instructions are acted upon immediately in accordance with information received 1.4 Clarification is sought from workplace supervisor on all occasions when any instruction/ information is not clear	• Knowledge of organizational policies/guidelines in regard to processing internal/external information • Ethical work practices in handling communications • Communication process	• Conciseness in receiving and clarifying messages/information/communication • Accuracy in recording messages / information • Communication skills
2. Perform workplace duties following written notices	2.1 ***Written notices and instructions*** are read and interpreted correctly in accordance with ***organizational***	• Knowledge of organizational policies/guidelines in regard to processing internal/external information	• Conciseness in receiving and clarifying messages/ information/ communication

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	guidelines 2.2 Routine written instruction are followed in sequence 2.3 Feedback is given to workplace supervisor based on the instructions/ information received	• Ethical work practices in handling communications • Communication process	• Accuracy in recording messages/ information

RANGE OF VARIABLES

VARIABLE	RANGE
1. Written notices and instructions	May include: 1.1 Handwritten and printed material 1.2 Internal memos 1.3 External communications 1.4 Electronic mail 1.5 Briefing notes 1.6 General correspondence 1.7 Marketing materials 1.8 Journal articles
2. Organizational Guidelines	May include: 2.1 Information documentation procedures 2.2 Company policies and procedures 2.3 Organization manuals 2.4 Service manual

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Demonstrated knowledge of organizational procedures for handling verbal and written communications 1.2 Received and acted on verbal messages and instructions 1.3 Demonstrated competency in recording instructions/ information
2. Resource Implications	The following resources MUST be provided: 2.1 Pens 2.2 Note pads
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Direct Observation 3.2 Oral interview 3.3 Written Evaluation 3.4 Third Party Report
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY : **WORK WITH OTHERS**

UNIT CODE : **500311102**

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes required to develop workplace relationship and contribute in workplace activities.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop effective workplace relationship	1.1 ***Duties and responsibilities*** are done in a positive manner to promote cooperation and good relationship 1.2 Assistance is sought from ***workgroup*** when difficulties arise and addressed through discussions 1.3 ***Feedback*** provided by others in the team is encouraged, acknowledged and acted upon 1.4 Differences in personal values and beliefs are respected and acknowledged in the development	• Reasons why cooperation and good relationships are important • Knowledge of the organization's policies, plans and procedures • Understanding how to elicit and interpret feedback • Knowledge of workgroup member's responsibilities and duties • Importance of demonstrating respect and empathy in dealings with colleagues • Understanding of how to identify and prioritize personal development opportunities and options	• Ability to read and understand the organization's policies and work procedures • Write simple instructions for particular routine tasks • Interpret information gained from correspondence • Communication skills to request advice, receive feedback and work with a team • Planning skills to organized work priorities and arrangement • Technology skills including the ability to select and use technology appropriate to a task • Ability to relate to people from a range of social, cultural and ethnic backgrounds
2. Contribute to work group activities	2.1 ***Support is provided to team members*** to ensure workgroup goals are met 2.2 Constructive contributions to workgroup goals	• Reasons why cooperation and good relationships are important • Knowledge of the organization's policies, plans and procedures	• Ability to read and understand the organization's policies and work procedures • Write simple instructions for particular routine

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	and tasks are made according to ***organizational requirements*** 2.3 Information relevant to work is shared with team members to ensure designated goals are met	• Understanding how to elicit and interpret feedback • Knowledge of workgroup member's responsibilities and duties • Importance of demonstrating respect and empathy in dealings with colleagues • Understanding of how to identify and prioritize personal development opportunities and options	tasks • Interpret information gained from correspondence • Communication skills to request advice, receive feedback and work with a team • Planning skills to organized work priorities and arrangement • Technology skills including the ability to select and use technology appropriate to a task • Ability to relate to people from a range of social, cultural and ethnic backgrounds

RANGE OF VARIABLES

VARIABLE	RANGE
1. Duties and responsibilities	May include: 1.1 Job description and employment arrangements 1.2 Organization's policy relevant to work role 1.3 Organizational structures 1.4 Supervision and accountability requirements including OHS 1.5 Code of conduct
2. Work group	May include: 2.1 Supervisor or manager 2.2 Peers/work colleagues and clients 2.3 Other members of the organization
3. Feedback on performance	May include: 3.1 Formal/Informal performance appraisal 3.2 Obtaining feedback from supervisors and colleagues and clients 3.3 Personal, reflective behavior strategies 3.4 Routine organizational methods for monitoring service delivery
4. Providing support to team members	May include: 4.1 Explaining/clarifying 4.2 Helping colleagues 4.3 Providing encouragement 4.4 Providing feedback to another team member 4.5 Undertaking extra tasks if necessary
5. Organizational requirements	May include: 5.1 Goals, objectives, plans, system and processes 5.2 Legal and organization policy/guidelines 5.3 OHS policies, procedures and programs 5.4 Ethical standards 5.5 Defined resources parameters 5.6 Quality and continuous improvement processes and standards

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Provided support to team members to ensure goals are met 1.2 Acted on feedback from clients and colleagues 1.3 Accessed learning opportunities to extend own personal work competencies to enhance team goals and outcomes
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or task
3. Method of Assessment	Competency may be assessed through: 3.1 Direct observations of work activities of the individual member in relation to the work activities of the group 3.2 Observation of simulation and/or role play involving the participation of individual member to the attainment of organizational goal 3.3 Case studies and scenarios as a basis for discussion of issues and strategies
4. Context of Assessment	4.1 Competency assessment may occur in workplace or any appropriately simulated environment 4.2 Assessment shall be observed while task are being undertaken whether individually or in group

UNIT OF COMPETENCY : DEMONSTRATE WORK VALUES

UNIT CODE : 500311103

UNIT DESCRIPTOR : This unit covers the outcomes required in demonstrating and living by desirable values and ethics in the workplace.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Define the purpose of work	1.1 One's unique sense of purpose for working and the why's of work are identified, reflected on and clearly defined for one's development as a person and as a member of society. 1.2 Personal mission is in harmony with company's values	• Work values and ethics • Company performance and ethical standards • Company policies and guidelines • Fundamental rights at work including gender sensitivity • Work responsibilities/job functions • Corporate social responsibilities • Company code of conduct/values • Balancing work and family responsibilities	• Interpersonal skills • Communication skills • Self awareness, understanding and acceptance • Application of good manners and right conduct
2. Apply work values/ ethics	2.1 ***Work values/ ethics/concepts*** are classified and reaffirmed in accordance with the transparent company ethical standards, policies and guidelines. 2.2 ***Work practices*** are undertaken in compliance with industry work ethical standards, organizational policy and guidelines 2.3 Personal behavior and relationships with co-workers and/or clients are	• Work values and ethics • Company performance and ethical standards • Company policies and guidelines	• Interpersonal skills • Communication skills • Self- awareness, understanding and acceptance • Application of good manners and right conduct

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	conducted in accordance with ethical standards, policy and guidelines. 2.4 ***Company resources*** are used in accordance with transparent company ethical standard, policies and guidelines.		
3. Deal with ethical problems	3.1 Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct are accessed and applied in accordance with transparent company ethical standard, policies and guidelines. 3.2 ***Work incidents/ situations*** are reported and/or resolved in accordance with company protocol/guidelines. 3.3 Resolution and/or referral of ethical problems identified are used as learning opportunities.	• Work values and ethics • Company performance and ethical standards • Company policies and guidelines • Fundamental rights at work including gender sensitivity • Work responsibilities/job functions • Corporate social responsibilities • Company code of conduct/values • Balancing work and family responsibilities	• Interpersonal skills • Communication skills • Self- awareness, understanding and acceptance • Application of good manners and right conduct
4. Maintain integrity of conduct in the workplace	4.1 Personal work practices and values are demonstrated consistently with acceptable ethical conduct and company's core values. 4.2 ***Instructions*** to co-	• Work values and ethics • Company performance and ethical standards • Company policies and guidelines • Fundamental rights at work including gender sensitivity	• Interpersonal skills • Communication skills • Self- awareness, understanding and acceptance • Application of good manners and right conduct

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	workers are provided based on ethical, lawful and reasonable directives. 4.3 Company values/practices are shared with co-workers using appropriate behavior and language.	• Work responsibilities/job functions • Corporate social responsibilities • Company code of conduct/values • Balancing work and family responsibilities	

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work values/ethics/ concepts	May include but are not limited to: 1.1 Commitment/ Dedication 1.2 Sense of urgency 1.3 Sense of purpose 1.4 Love for work 1.5 High motivation 1.6 Orderliness 1.7 Reliability 1.8 Competence 1.9 Dependability 1.10 Goal-oriented 1.11 Sense of responsibility 1.12 Being knowledgeable 1.13 Loyalty to work/company 1.14 Sensitivity to others 1.15 Compassion/Caring attitude 1.16 Balancing between family and work 1.17 Pakikisama 1.18 Bayanihan spirit/teamwork 1.19 Sense of nationalism
2. Work practices	May include but are not limited to: 2.1 Quality of work 2.2 Punctuality 2.3 Efficiency 2.4 Effectiveness 2.5 Productivity 2.6 Resourcefulness 2.7 Innovativeness/Creativity 2.8 Cost conciousness 2.9 5S 2.10 Attention to details
3. Incidents/situations	May include but are not limited to: 3.1 Violent/intensed dispute or argument 3.2 Gambling 3.3 Use of prohibited substances 3.4 Pilferages 3.5 Damage to person or property 3.6 Vandalism 3.7 Falsification 3.8 Bribery 3.9 Sexual Harassment 3.10 Blackmail
4. Company resources	May include but are not limited to: 4.1 Consumable materials 4.2 Equipment/Machineries 4.3 Human 4.4 Time 4.5 Financial resources

VARIABLE	RANGE
5. Instructions	May include but are not limited to: 5.1 Verbal 5.2 Written

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Defined one's unique sense of purpose for working 1.2 Clarified and affirmed work values/ethics/concepts consistently in the workplace 1.3 Demonstrated work practices satisfactorily and consistently in compliance with industry work ethical standards, organizational policy and guidelines 1.4 Demonstrated personal behavior and relationships with co-workers and/or clients consistent with ethical standards, policy and guidelines 1.5 Used company resources in accordance with company ethical standard, policies and guidelines 1.6 Followed company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior
2. Resource Implications	The following resources should be provided: 2.1 Workplace or assessment location 2.2 Case studies/Scenarios
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Portfolio Assessment 3.2 Interview 3.3 Third Party Reports
4. Context of Assessment	4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : **PRACTICE BASIC HOUSEKEEPING PROCEDURES**

UNIT CODE : **500311104**

UNIT DESCRIPTOR : This unit of covers the knowledge, skills and attitudes required to apply the basic housekeeping procedures.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Sort and remove unnecessary items	1.1 Reusable, recyclable materials are sorted in accordance with company/office procedures 1.2 ***Unnecessary items*** are removed and disposed of in accordance with company or office procedures	• Principles of 5S • Work process and procedures • Safety signs and symbols • General OSH principles and legislation • Environmental requirements relative to work safety	• Basic communication skills • Interpersonal skills • Reading skills required to interpret instructions
2. Arrange items	2.1 Items are arranged in accordance with company/office housekeeping procedures 2.2 Work area is arranged according to job requirements 2.3 Activities are prioritized based on instructions 2.4 Items are provided with clear and visible ***identification marks*** based on procedure 2.5 Safety equipment and evacuation passages are kept clear and accessible based on instructions	• Principles of 5S • Work process and procedures • Safety signs and symbols • General OSH principles and legislation • Environmental requirements relative to work safety	• Basic communication skills • Interpersonal skills • Reading skills required to interpret instructions
3. Maintain work area, tools and equipment	3.1 Cleanliness and orderliness of work area is maintained in accordance with company/office	• Principles of 5S • Work process and procedures • Safety signs and symbols	• Basic communication skills • Interpersonal skills • Reading skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	procedures 3.2 Tools and equipment are cleaned in accordance with manufacturer's instructions/manual 3.3 ***Minor repairs*** are performed on tools and equipment in accordance with manufacturer's instruction/manual 3.4 Defective tools and equipment are reported to immediate supervisor	• General OSH principles and legislation • Environmental requirements relative to work safety	required to interpret instructions
4. Follow standardized work process and procedures	4.1 Materials for common use are maintained in designated area based on procedures 4.2 Work is performed according to standard work procedures 4.3 Abnormal incidents are reported to immediate supervisor	• Principles of 5S • Work process and procedures • Safety signs and symbols • General OSH principles and legislation • Environmental requirements relative to work safety • Accident/Hazard reporting procedures	• Basic communication skills • Interpersonal skills • Reading skills required to interpret instructions • Reporting/ recording accidents and potential hazards
5. Perform work spontaneously	5.1 Work is performed as per instruction 5.2 Company and office ***decorum*** are followed and complied with 5.3 Work is performed in accordance with occupational health and safety (OHS) requirements	• Principles of 5S • Work process and procedures • Safety signs and symbols • General OSH principles and legislation • Environmental requirements relative to work safety • Accident/Hazard reporting procedures	• Basic communication skills • Interpersonal skills • Reading skills required to interpret instructions • Reporting/ recording accidents and potential hazards

RANGE OF VARIABLES

VARIABLE	RANGE
1. Unnecessary items	May include but are not limited to: 1.1 Non-recyclable materials 1.2 Unserviceable tools and equipment 1.3 Pictures, posters and other materials not related to work activity 1.4 Waste materials
2. Identification marks	May include but are not limited to: 2.1 Labels 2.2 Tags 2.3 Color coding
3. Decorum	May include but are not limited to: 3.1 Company/ office rules and regulations 3.2 Company/ office uniform 3.3 Behavior
4. Minor repair	May include but are not limited to: 4.1 Replacement of parts 4.2 Application of lubricants 4.3 Sharpening of tools 4.4 Tightening of nuts, bolts and screws

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Practiced the basic procedures of 5S
2. Resource Implications	The following resources MUST be provided: 2.1 Facilities, materials tools and equipment necessary for the activity
3. Method of Assessment	Competency must be assessed through: 3.1 Third party report 3.2 Interview 3.3 Demonstration with questioning
4. Context of Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

COMMON COMPETENCIES

UNIT OF COMPETENCY : VALIDATE VEHICLE SPECIFICATION

UNIT CODE : ALT723211

UNIT DESCRIPTOR : This unit covers the knowledge and skills in identifying types of automotive vehicles

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Check body type of the vehicle	1.1 ***Kind of vehicle*** is determined according to job order. 1.2 ***Vehicle dimensions*** is determined according to manual. 1.3 ***Vehicle weight*** is determined according to the manual. 1.4 ***Body shape*** is determined according to the manual. 1.5 ***Power train*** is determined according to the manual. 1.6 Safety practices are applied following OSHS	• Kind of vehicle - Aerodynamics - Vehicle Dynamics - Body shapes - Power train - Major dimensions • Vehicle specifications - Vehicle performance - Weight & Measurements • Automotive history • Documentation/ Accomplishing checklist • Resources information - Bulletin - Shop manual • OSHS • PPEs Attitude: • Patience • Attention to details	• Identifying kind of vehicle, dimensions, weight, body shape, and power train • Accomplishing checklist • Estimating visually dimensions and masses • Utilizing resource information • Wearing PPEs • Applying safety practices
2. Check vehicle engine type	2.1 ***Engine type*** is identified according to industry standards. 2.2 Engine ***fuel/energy system*** is identified according to manual. 2.3 ***Engine components*** are identified following manual.	• Principles of internal combustions • Principles of Electricity and motors • History of engines • Hybrid technology • Resources information - Bulletin - Shop manual	• Identifying engine type, parts & components • Identifying fuel systems or energy systems • Utilizing resource information

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Check vehicle specifications	3.1 VIN plate is inspected for specification of vehicle according to manual. 3.2 Vehicle specification is verified according to ***vehicle reference materials***. 3.3 Vehicle modifications and conversions are checked following the manual. 3.4 Vehicle conversions are inspected following the manual.	• Fundamentals of Automotive engineering: - Understanding of power & torque - Gear Ratios - Vehicle Regulations - Knowledge of vehicle performance - Knowledge in Vehicle manufacturing process - Knowledge of vehicle use - Automotive history • Knowledge in specifications • Reading of brochure, owner's manuals • Reading of Resources information - Bulletin - Shop manual	• Reading vehicle reference materials • Conducting vehicle inspection for modification and conversion • Comparing actual vehicle and specification sheets • Utilizing resource information
4. Complete validation of vehicle specification	4.1 Vehicle ownership is verified using repair order and vehicle reference materials. 4.2 ***Dealers check sheet*** is accomplished following industry standards. 4.3 ***Dealers check sheet*** is submitted to immediate superior following industry standards.	• Reporting to immediate superior • Documentation/ Accomplishing checklist Attitude: • Accuracy	• Verifying vehicle ownership • Accomplishing dealers check sheet • Reporting skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Kind of Vehicle	May include: 1.1 Motorized 1.2 Not Motorized 1.3 On-Road 1.4 Off-Road 1.5 Passenger 1.6 Commercial 1.7 Utility 1.8 Manned 1.9 Unmanned 1.10 Remote control 1.11 Automated/Self Driving 1.12 Guided
2. Vehicle Dimensions	May include: 2.1 Overall length 2.2 Overall width 2.3 Overall height 2.4 Wheelbase 2.5 Tread 2.6 Minimum running ground clearance 2.7 Room Length 2.8 Room Width 2.9 Room Height 2.10 Overhang front 2.11 Overhang rear 2.12 Angle of approach 2.13 Angle of departure
3. Vehicle Weight	May include: 3.1 Gross weight 3.2 Curb weight 3.3 Tare weight 3.4 Net weight
4. Body Shape	May include: 4.1 Sedan 4.2 Coupe 4.3 Hardtop 4.4 Convertible 4.5 Multipurpose vehicle (MPV) 4.6 Sports utility vehicle (SUV) 4.7 Truck 4.8 Tractor Head 4.9 Trailer 4.10 Special Utility Truck 4.11 Bus 4.12 Mini Bus 4.13 Articulated bus 4.14 Asian Utility Vehicle (AUV)
5. Power Train	May include:

VARIABLE	RANGE
	5.1 Front Wheel Drive 5.2 Rear Wheel Drive 5.3 4x2 5.4 4x4 5.5 Limited Slip Differential (LSD) 5.6 Manual Transmission 5.7 Automatic Transmission 5.8 Continuously Variable Transmission
6. Engine Type	May include: 6.1 Internal Combustion Engine 6.2 Electric Motor
7. Fuel/Energy System	May include: 7.1 Diesel Fuel 7.2 Gasoline Fuel 7.3 Compressed Natural Gas (CNG) 7.4 Liquefied Petroleum Gas (LPG) 7.5 Methanol 7.6 Hydrogen 7.7 Biodiesel 7.8 Solar Cell 7.9 Fuel Cell
8. Engine Components	May include: 8.1 Intake System 8.2 Electrical System 8.3 Cooling System 8.4 Exhaust System 8.5 Valve Train System 8.6 Cylinder Head 8.7 Engine Block 8.8 Lubricating System
9. Vehicle reference materials	May include: 9.1 Warranty booklet 9.2 Brochure of the vehicle 9.3 Vehicle registration
10. Dealers check sheet	May include: 10.1 Vehicle mileage 10.2 Owner's information 10.3 Damage

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Checked body type of the vehicle 1.2 Checked vehicle engine type 1.3 Checked vehicle specifications 1.4 Completed validation of vehicle specification
2. Resource Implications	The following resources should be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate vehicle or model equivalent 2.3 Materials relevant to the activity 2.4 Resource information, references, and manual
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Direct Observation 3.2 Interview 3.3 Third Party Report 3.4 Written exam 3.5 Demonstration with Oral questioning
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : MOVE AND POSITION VEHICLE

UNIT CODE : ALT832212

UNIT DESCRIPTOR : This unit involves the skills and knowledge and attitudes required to move and position vehicle safely including systematic and efficient control of all vehicle functions.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare vehicle for operation	1.1 Vehicle ***multi point inspection*** is conducted according to industry practice. 1.2 ***Cockpit Drill*** is performed according to industry practice. 1.3 Vehicle is start-up following owner's manual. 1.4 Parking brake is engaged according to industry practice.	• Revolutions per minute during idle • Manual, automatic and CVT Transmission • Vehicle parts, components and functions • Inspection procedures • Owner's manual • Safety procedures	• Performing Cockpit Drill • Conducting Vehicle Multi point inspection • Starting the engine • Using owner's manual
2. Position vehicle	2.1 ***Workshop hazards*** are identified and avoided as per standard operating procedures. 2.2 Vehicle is moved according to Occupational Health and Safety Standards. 2.3 Workshop rules and regulations are recognized according to standard procedures.	• Revolutions per minute in running condition • Kilometer per hour • Estimation/ timing • Manual, automatic and CVT Transmission • Diesel, Gasoline and EV engines • Vehicle parts, components and functions • Defensive driving • Owner's Manual • Safety procedures	• Skills in positioning vehicle • Vehicle positioning estimation skill • Identifying workshop signs and markings
3. Park and stop the vehicle	3.1 Vehicle is positioned according to ***parking rules and regulations***. 3.2 Parking brake is engaged according	• Vehicle parts, components and functions • Inspection procedures • Owner's Manual • Procedure in	• Vehicle positioning estimation skills • Identifying parking signs and markings

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	to industry practice. 3.3 ***Electrical devices*** are turned off based on manufacturer's specification. 3.4 Vehicle is shut-off following owner's manual	shutting-off vehicle • Safety procedures • Parking rules and regulations	

RANGE OF VARIABLES

VARIABLE	RANGE
1. Multi point inspection	May include: 1.1 Check for any obstruction 1.2 Check external condition 1.3 Check internal condition 1.3.1 Manual transmission 1.3.2 Automatic transmission 1.4 Check vehicle drivability
2. Cockpit Drill	May include: 2.1 Car mirror adjustments 2.2 Steering the car 2.3 How to change gears 2.4 Use of parking brake 2.5 Doors, Seat, Steering, Seat belt and Mirrors 2.6 Foot controls 2.7 Hand controls 2.8 Auxiliary controls (indicators)
3. Workshop hazards	May include: 3.1 Workshop tools and materials 3.2 Workshop equipment 3.3 Other vehicles 3.4 Other people 3.5 Oil spills 3.6 Loose parts
4. Parking rules and regulation	May include: 4.1 Parallel parking 4.2 Horizontal parking 4.3 Park facing the wall
5. Electrical devices	May include: 5.1 Lights 5.2 Air conditioning 5.3 Wiper 5.4 Radio

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared vehicle for operation 1.2 Positioned the vehicle 1.3 Parked and stopped the vehicle 1.4 Used owner's manual
2. Resource implication	The following resources MUST be provided: 2.1 Workshop range/area 2.2 Service working bay 2.3 Appropriate vehicle for moving and positioning 2.4 Owner's manual
3. Method of assessment	Competency MUST be assessed through: 3.1 Demonstration with oral questioning 3.2 Written exam 3.3 Interview 3.4 Direct observation
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : UTILIZE AUTOMOTIVE TOOLS

UNIT CODE : ALT723213

UNIT DESCRIPTOR : This unit covers the knowledge and skills in selecting and using automotive power tools, hand tools and tool keeping.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare automotive tools	1.1 ***Automotive tools*** are identified according to their classification and specification. 1.2 ***Automotive tools and attachments*** are selected according to job requirements. 1.3 ***Automotive tools and attachments*** are inspected for ***defects and damages*** according to manufacturers and work place procedures. 1.4 Safety practices are applied following OSHS.	• Understanding power to size ratio • Leverage • Types of power tools and hand tools • Uses of automotive power tools and hand tools • Defects and damages of automotive tools and attachments • Handling of tools • Interpretation of contents of users manuals • Safety procedures • Wearing of PPE	• Identifying defects or damages of tools before use • Knowledgeable in proper handling of tools • Identifying tools required for the job • Inspecting the area were power tools will be use.
2. Use automotive tools	2.1 ***Attachments*** are mounted to ***automotive tools*** according to job requirements 2.2 Power tools are connected to ***power sources*** according to operation's manual 2.3 Power tools are operated according to operation's manual 2.4 ***Hand tools*** are utilized according to operation's manual 2.5 ***PPEs*** are worn in accordance to	• Use of automotive tools • Application of Torque and pressure • Unit conversion of torque • English and metric system • Types of hand tools • Types of power tools • Fundamentals of automotive hand tools and power tools • Interpretation of contents of users manuals • OSHS • Resources	• Analytical skills • Technical literacy • Mounting attachments to automotive tools • Connecting power tools to power sources • Operating power tools • Utilizing hand tools • Wearing PPEs • Applying safety practices • Following manuals

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	OSHS.	information - Bulletin - Shop manual	
3. Maintain automotive tools	3.1 ***Automotive tools and attachments*** are cleaned according to user's manual. 3.2 ***Automotive tools and attachments*** are checked for serviceability according to workplace and manufacturers procedures. 3.3 ***Defects and damages*** are reported to immediate superior following industry standards. 3.4 ***Automotive tools and attachments*** are stored according to workplace procedures. 3.5 Safety practices are applied following OSHS. 3.6 ***Wastes*** are disposed following environmental law and regulations.	• Different types of power tools and hand tools • Techniques in tool Arrangement • Fundamentals of automotive tools • Cleaning of automotive tools • Labeling and arranging of power tools and hand tools • Safety practices • Procedures in maintaining of power tools and hand tools • Tagging of damaged/worn power tools and hand tools • Reporting damage power tools and hand tools • Proper disposal of damaged tools • Proper disposal of chemicals used for cleaning • OSHS • Environmental law and regulations • 5S of good housekeeping • 3Rs	• Sorting of tools • Skills in creating reports • Cleaning of tools • Checking, cleaning and storing automotive tools and attachments • Reporting defects and damages • Disposing wastes • Practicing safety procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Automotive tools	May include: 1.1 Power tools 1.1.1 Electric power tools 1.1.1.1 Electric drill 1.1.2 Pneumatic tools 1.2 Basic tools 1.3 Special service tools (SST)
2. Power sources	May include: 2.1 Electric source 2.2 Pneumatic or air 2.3 Hydraulic
3. Basic tools	May include: 3.1 Wrenches 3.2 Pliers 3.3 Screw drivers 3.4 Power handle 3.5 Ratchet 3.6 Multitester 3.7 Flash light 3.8 Rubber mallet 3.9 Hammer 3.10 Jack 3.11 Jack stand 3.12 Choke
4. Attachments	May include: 4.1 Bits 4.2 Sockets 4.3 Extension
5. Defects and damages	May include: 5.1 Tools 5.1.1 Cracks 5.1.2 Breakage 5.1.3 Deformity 5.1.4 Looseness 5.1.5 Corrosions 5.1.6 Leaks 5.2 Attachments 5.2.1 Cracks 5.2.2 Breakage 5.2.3 Deformity 5.2.4 Looseness 5.2.5 Corrosions
6. Personal protective equipment (PPEs)	May include: 6.1 Goggles 6.2 Gloves 6.3 Hard hat 6.4 Safety shoes 6.5 Dust mask

VARIABLE	RANGE
7. Wastes	May include: 7.1 Dead batteries 7.2 Deformed, cracked, broken bits/sockets/extensions 7.3 Used cleaning chemicals 7.4 Used oil 7.5 Contaminated cleaning materials

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment require evidence that the candidate understands the applications and guidelines specified by the manufacturer. 1.1 Prepared automotive tools 1.2 Used Power tools 1.3 Used Hand tools 1.4 Maintained and stored automotive tools 1.5 Disposed wastes 1.6 Applied safety measures
2. Resource implication	The following resource MUST be provided. 2.1 Appropriate power tools and hand tools 2.2 Tools and materials relevant for training 2.3 Proper place for storage and disposal 2.4 Work shop manuals
3. Method of assessment	Competency MUST be assessed through. 3.1 Written examination 3.2 Demonstrations with oral questioning 3.3 Direct observation 3.4 Third party report 3.5 Interview
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PERFORM MENSURATION AND CALCULATION**

UNIT CODE : ALT723214

UNIT DESCRIPTOR : This unit covers the knowledge and skills on how to use automotive measuring tools.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select measuring instruments	1.1 Component to be measured is identified based on job requirements. 1.2 ***Automotive measuring instrument*** is identified based on job requirements. 1.3 Correct specifications are obtained from repair manual. 1.4 Measuring tools are calibrated in line with job requirements. 1.5 Measuring instruments are checked for accuracy and adjusted according to manufacturer's manual 1.6 Defective measuring instruments are reported and returned to toolkeeper following industry standards 1.7 Safety practices are applied following OSHS	• Category of measuring instruments • Types and uses of measuring instruments • Shapes and Dimensions • Use of user's manual • Workshop procedures in reporting defective instruments • Characteristics of defective measuring instruments • Procedure in preparing report • OSHS in calibrating measuring instruments • Calibration of measuring tools • Inspection of measuring tools • Segregation and reporting of defective measuring instruments	• Identifying and selecting measuring instruments • Visualizing objects and shapes • Calibration skills • Identifying defective measuring instruments • Reporting skills • Applying safety practices • Obtaining correct specifications • Checking measuring instruments for accuracy • Reporting and segregating defective measuring instruments
2. Carry out measurements and calculation	2.1 ***Automotive measuring instrument*** is selected to achieve required outcome in line with job requirements 2.2 Accurate measurements are	• Formulas for volume, areas, perimeters of plane and geometric figures • Different automotive measuring instruments • Calculation &	• Performing calculation • Applying formulas for volume, areas, perimeters of plane and geometric figures • Handling measuring

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	obtained in line with job requirements 2.3 ***Calculation*** needed to complete work tasks are performed using ***mathematical operations***. 2.4 Numerical computation is self-checked and corrected for accuracy following manufacturer's workshop manual 2.5 Tools' limit of accuracy are read following manufacturer's workshop manual 2.6 Report is submitted to immediate supervisor following industry standard operating procedure 2.7 Safety practices are applied following OSHS	measurement • Four fundamental operation • Linear measurement • Dimensions • Unit conversion • Ratio and proportion • Handling of measuring instruments • Tools' limit of accuracy • OSHS • PPEs	instruments • Selecting automotive measuring instruments • Obtaining accurate measurements • Performing calculation • Self-checking and correcting numerical computation • Reading tools' limit of accuracy • Applying OSHS • Wearing of PPEs
3. Maintain measuring instruments	3.1 Measuring instruments are handled following manufacturer's manual 3.2 Measuring instruments are cleaned following manufacturer's manual. 3.3 Instruments are stored according to manufacturer's specifications and standard operating procedures. 3.4 Safety practices are applied	• Types of measuring instruments and their uses • Safe handling procedures in using measuring instruments • Four fundamental operation of mathematics • Formula for volume, area, perimeter and other geometric figures • 5S of good housekeeping • Waste management • Storing of measuring instruments • OSHS	• Handling and maintaining measuring instruments • Disposing wastes • Practicing good housekeeping • Applying safety practices

RANGE OF VARIABLES

VARIABLE	RANGE
1. Automotive measuring instruments	May include: 1.1 Torque wrench 1.2 Vernier caliper 1.3 Micrometer (inside and outside) 1.4 Dial gauge 1.5 Feeler gauge 1.6 Pitch/thread gauge 1.7 Multi-tester (analog/digital) 1.8 Vacuum Gauge 1.9 Tire depth gauge 1.10 Battery tester 1.11 Steel tape 1.12 Ruler
2. Calculation	May include: 2.1 Volume 2.2 Area 2.3 Displacement 2.4 Inside diameter 2.5 Circumference 2.6 Length 2.7 Thickness 2.8 Outside diameter 2.9 Taper 2.10 Out of roundness 2.11 Voltage 2.12 Resistance 2.13 Current 2.14 Pressure 2.15 Clearance 2.16 Distortion/run-out 2.17 Torque conversion 2.18 Temperature
3. Mathematical operations	Includes: 3.1 Addition 3.2 Subtraction 3.3 Multiplication 3.4 Division 3.5 Fractions 3.6 Percentages 3.7 Mixed numbers

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate perform the following: 1.1 Selected measuring instruments 1.2 Performed measurements and calculation 1.3 Maintained measuring instruments 1.4 Applied safety practices
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Automotive Measuring Tools & equipment 2.3 Materials relevant to the activity 2.4 Training vehicle or simulators 2.5 User's manual 2.6 Repair manual
3. Method of assessment	Competency MUST be assessed through: 3.1 Written exam 3.2 Demonstration with oral questioning 3.3 Third party report 3.4 Interview
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **UTILIZE WORKSHOP FACILITIES AND EQUIPMENT**

UNIT CODE : ALT723215

UNIT DESCRIPTOR : This unit deals with inspecting and cleaning of work area including tools, equipment and facilities. Storage of equipment, including operating of basic workshop equipment.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform pre-operation activities	1.1 ***Workshop facilities*** are prepared according to work requirements. 1.2 ***Equipment*** are prepared according to work requirements. 1.3 ***Equipment*** are calibrated following users' manual. 1.4 ***Minor repairs*** are carried out based on users' ***manual***. 1.5 Defective equipment are reported to immediate supervisor following company procedures. 1.6 Safety practices are applied following OSHS.	• Different areas of an automotive service facilities. • Preparation procedures of automotive service facilities • Different equipment in the automotive service facilities • Preparation procedures of automotive equipment • Minor repairs of automotive equipment • Report of defective equipment • Reporting procedures for defective equipment • OSHS practices related to the preparation of facilities and equipment • Workshop facilities and equipment	• Preparing work area • Preparing equipment • Calibrating equipment • Repairing minor equipment issues • Reporting defective equipment • Applying safety practice • Following manuals

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Use facilities and equipment	2.1 Equipment is operated according to operation ***manual***. 2.2 Facilities are utilized according to workshop procedures. 2.3 Equipment performance is monitored following users' ***manual***. 2.4 Facilities functionalities are monitored following workplace procedures. 2.5 Safety practices are applied following OSHS.	• Operate Equipment • Identify facilities required for task • Evaluate equipment operation • Inspect facility functionalities • OSHS practices related to operation of facilities and equipment • Manuals in utilizing facility and equipment • Monitoring procedure of equipment's performance • Evaluate equipment operation • Inspection of facility functionalities	• Operating equipment • Utilizing facility • Monitoring equipment performance • Monitoring functionalities of facility • Practicing safety • Following manual
3. Conduct post-operation activities	3.1 Workshop facilities are restored according to 5S of good housekeeping. 3.2 ***Equipment*** are cleaned and stored according to good housekeeping. 3.3 Wastes are disposed following waste management procedure and OSHS. 3.4 ***PPEs*** and Safety practices are applied following OSHS. 3.5 Report is prepared based on workshop procedure.	• 5S of Good housekeeping • 3Rs/ Waste segregation and disposal • Restoration of the facilities • Maintenance and storage of Equipment • OSHS • Preparation of report	• Restoring workshop facilities properly • Cleaning Equipment • Storing equipment in proper location • Disposing waste materials • Reporting facilities and equipment condition • Practicing safety • Practicing 5S and 3Rs

RANGE OF VARIABLES

VARIABLE	RANGE
1. Equipment	May include: 1.1 Lifter (Two Post Lifter / Four Post Lifter/ Scissor type) 1.2 Crocodile Jack 1.3 Jack Stand 1.4 Air Compressor 1.5 Oil drain
2. Workshop facilities	May include: 2.1 Service Stall / Working Bay / Workshop areas for servicing/repairing light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment 2.2 Overhauling Room 2.3 Electrical / Air-con Room 2.4 Inspection Area 2.5 Open workshop/garage and enclosed, ventilated office area 2.6 Car wash area 2.7 Other variables may include workshop with: 2.7.1 Mess hall 2.7.2 Wash room 2.7.3 Comfort room 2.7.4 Storage Room 2.7.5 Training Room
3. Manuals	May include: 3.1 Vehicle/plant manufacturer specifications 3.2 Company operating procedures 3.3 Industry/Workplace Codes of Practice 3.4 Product manufacturer specifications 3.5 Industry Occupational Health &Safety 3.6 Equipment Operation Guidelines 3.7 Service/workshop/repair manual
4. PPEs	May include: 4.1 Gloves 4.2 Apron 4.3 Goggles 4.4 Safety shoes 4.5 Uniforms 4.6 Cap 4.7 Safety helmet
5. Minor repairs	May include: 3.1 Lubrication 3.2 Bolt tightening 3.3 Worn-out parts replacement

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Performed pre-operation activities 1.2 Used facilities and equipment 1.3 Conducted post-operation activities 1.4 Applied safety practices and good housekeeping 1.5 Disposed wastes
2. Resource implications	The following resources should be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Equipment 2.3 Materials relevant to the activity 2.4 Manuals/references 2.5 PPEs 2.6 Fire Extinguishers
3. Method of assessment	Competency in this unit may be assessed through: 3.1 Written exam 3.2 Demonstration with oral questioning 3.3 Direct observation
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PREPARE SERVICING PARTS AND CONSUMABLES**

UNIT CODE : ALT723216

UNIT DESCRIPTOR : This unit of competency covers the ability to prepare parts and consumables for gasoline and diesel engines in conducting preventive maintenance.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify parts and consumables	1.1 ***Parts and consumables*** are ***determined*** according to job requirements. 1.2 Availability of parts and consumables are confirmed based on stock. 1.3 ***Indirect materials*** are identified according to job requirements. 1.4 ***Hazardous parts and consumables*** are identified according International standards. 1.5 Safety practices are applied according to OSHS.	• Job requirements • Safety practices • Understanding manuals • Hazardous parts and consumables • Solid waste management act (RA 6969) • Wearing of PPE's • OSHS • Proper storage of materials • Chemical contents of consumables • Composition of consumables • Quality of parts and consumables • Computation for quantity of parts and consumables • Vehicle specifications • Identifying Part no. • Awareness in part number • Updated type of parts and consumables	• Determining parts and consumables • Reading and interpreting job requirements • Identifying required parts & consumables • Understanding safety practices • Determining quantity and quality of parts and consumables • Confirming availability of parts and consumables • Identifying indirect materials • Identifying hazardous parts and consumables • Applying safety practices • Understanding safety practices • Following manuals
2. Retrieve and withdraw parts and consumables	2.1 Requisition slip is prepared according to identified parts and consumables. 2.2 Withdrawal of parts and materials are recorded. 2.3 Quantity of parts	• Job requirements • Safety practices • Understanding manuals • Hazardous parts and consumables • Solid waste management act	• Reading and interpreting requisition slip • Validating quantity of parts and materials • Handling parts and consumables

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	and consumables are validated according to job requirements 2.4 Parts and materials are handled following safety procedures.	(RA 6969) • Wearing of PPE's • Updated types of parts & consumables for proper usage	
3. Complete work process	3.1 Used parts and consumables are labeled and segregated 3.2 Used parts are packed and returned to customers 3.3 Consumables are collected for recycling 3.4 PPEs are worn following OSHS. 3.5 ***Wastes*** are disposed according to RA 6969.	• Labeling and segregation of used parts and consumables • Job requirements • Safety practices • 3Rs • Solid waste management act (RA 6969) • Wearing of PPE's	• Waste segregation and disposal of parts & consumables according to RA 6969

RANGE OF VARIABLES

VARIABLE	RANGE
1. Parts and consumables	May include: 1.1 Engine oil 1.2 Clutch fluid 1.3 Transmission oil 1.4 Differential oil 1.5 Power steering fluid 1.6 Brake fluid 1.7 Engine coolant 1.8 Engine oil filter 1.9 Fuel filter 1.10 Air cleaner element 1.11 Feed pump strainer 1.12 Sparkplugs (Gasoline engine) 1.13 Battery 1.14 Air cleaner 1.15 Tire 1.16 Wiper blade 1.17 A/C pollen filter 1.18 Bulb 1.19 Brake pad/brake shoe 1.20 Clutch lining
2. Determining parts and consumables	May include: 2.1 Quantity 2.2 Quality
3. Indirect materials	May include: 3.1 Rags 3.2 Saw dust 3.3 Cleaning fluids 3.4 Sand paper
4. Hazardous parts consumables	May include: 4.1 Batteries 4.2 Used oil 4.3 Used fluids 4.4 Used coolant 4.5 Used parts 4.6 Used oil filter
5. Wastes	May include: 5.1 Contaminated consumables 5.2 Contaminated parts

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified parts and consumables 1.2 Retrieved and withdrawn parts and consumables 1.3 Completed work process 1.4 Applied safety practices
2. Resource implications	The following resources should be provided: 2.1 Workplace: Real or simulated work area 2.2 Materials relevant to the activity 2.3 Repair manuals and related reference materials
3. Method of assessment	Competency in this unit may be assessed through: 3.1 Direct observation 3.2 Interview 3.3 Written examination 3.4 Demonstration with oral questioning 3.5 Third party report
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PREPARE VEHICLE FOR SERVICING AND RELEASING**

UNIT CODE : ALT723217

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes needed in identifying and preparing the vehicle for servicing and releasing.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Receive vehicle	1.1 Vehicle is located following company standard. 1.2 Checklist is validated for exterior and interior items in accordance with ***vehicle checklist***. 1.3 Job Order is checked for proper assignment according to ***work classification***. 1.4 ***Work bay*** for vehicle is designated based from Job Order. 1.5 Vehicle is moved on the designated ***work bay***.	• Identification of basic vehicle components • Types of defects • Read & understand Job Order • Flat rate time • Use of PPEs • Adherence to safety procedures • Vehicle checklist • Work classification • Work bay **Attitudes:** • Patient • Attention to details • Honest • Time Conscious	• Completing vehicle checklist • Classifying work to be performed • Assigning work bay • Validating checklist for exterior and interior items • Checking job order for proper assignment • Identifying vehicle • Moving vehicle to designated work bay
2. Prepare vehicle for servicing	2.1 ***Protective covers*** are installed prior to servicing based on workshop operating standards 2.2 Vehicle is positioned and set-up for lifting according to repair order. 2.3 Vehicle is lifted for servicing following manufacturer's manual. 2.4 Safety practices are applied following safety procedures.	• Familiarization on equipment & facilities • Time estimation of completion • Vehicle tagging • Types of protective covers • Setting-up of vehicle for lifting • Read & understand repair order • Use of PPEs • Use of safety gears • OSHS • Adherence to safety procedures **Attitudes:**	• Understanding of vehicle status • Installation of protective covers • Positioning vehicle • Operating lifter • Moving vehicle • Setting-up vehicle for lifting • Practicing safety

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		• Patient • Attention to details • Honest • Time Conscious	
3. Prepare vehicle for releasing	3.1 Job done is confirmed according to repair order. 3.2 Quality check is done based from repair order. 3.3 Transfer of vehicle to wash bay is coordinated according to SOP. 3.4 Vehicle is endorsed to quality control person following workplace procedure.	• Familiarization of equipment & facilities • Read & understand repair order • Confirmation of job done • Quality standards checking • Coordination of transferring vehicle • Endorsement procedures for vehicle **Attitudes:** • Patient • Attention to details • Honest • Time Conscious	• Confirming job done • Performing quality checking • Coordinating transfer of vehicle to wash bay • Endorsing and turning-over vehicle

RANGE OF VARIABLES

VARIABLE	RANGE
1. Vehicle checklist	May include: 1.1 External scratches, accessories, items, dents, damages and cracks 1.2 Internal items, scratches, noticeable damages, including spare tire, tools, and loose items 1.3 Standard items that are not present during inspection 1.4 Valuable/personal belongings
2. Work classification	May include: 2.1 Body and Paint repair 2.2 General Job repair 2.3 Periodic maintenance service (PMS)
3. Work bay	May include: 3.1 Service Stall / Working Bay / Workshop areas for servicing/repairing light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment 3.2 Overhauling Room 3.3 Electrical / Air-con Room 3.4 Inspection Area 3.5 Open workshop/garage and enclosed, ventilated office area
5. Protective covers	May include but not limited to: 5.1 Seat Cover 5.2 Steering Wheel Cover 5.3 Handbrake Cover 5.4 Shift Knob Cover 5.5 Fender Cover 5.6 Paper mat

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Received vehicle 1.2 Prepared vehicle for servicing 1.3 Prepared vehicle for releasing 1.4 Applied safety practices
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Tools & Equipment 2.3 Materials relevant to the activity 2.4 Manuals and references
3. Method of assessment	Competency may be assessed through: 3.1 Direct observation 3.2 Demonstration with Oral questioning 3.3 Interview 3.4 Written Evaluation 3.5 Third Party Report
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

CORE COMPETENCIES

UNIT OF COMPETENCY : PERFORM PRE-DELIVERY INSPECTION

UNIT CODE : ALT723372

UNIT DESCRIPTOR : This competency unit covers the ability to carry out pre-delivery inspection in order to ensure that the brand new and pre-owned vehicle is in optimal condition before the actual handover.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare for pre-delivery inspection	1.1 Pre-delivery inspection checklist is obtained from immediate supervisor. 1.2 Vehicle is located based on pre-delivery inspection documents. 1.3 ***Required items*** are prepared following inspection procedures. 1.4 Transfer of vehicle to inspection area is coordinated following standard operating procedures.	• Required items of vehicle • Factory-loaded parts • Pre-delivery inspection • Installation of required items • Coordinated transfer of vehicle • PPEs	• Obtaining job order • Locating vehicle • Preparing required items • Inspecting factory-loaded parts • Coordinating transfer of vehicle
2. Perform physical and functional inspection	2.1 Walk-around is conducted according to industry practices. 2.2 ***Factory-loaded parts*** are inspected following manufacturer's standard procedure. 2.3 Vehicle is ***restored*** following standard operating procedures. 2.4 Vehicle is ***checked*** following standard operating procedures.	• Coordination for transfer of vehicle to inspection area • Restoration of vehicle • Checking of vehicle - Physical - Functional • Procedure in accomplishing inspection checklist • OSHS • PPEs • Walk-around procedures • Inspection of factory-loaded parts • Minor corrective	• Coordinating transfer vehicle to inspection area • Restoring vehicle • Checking vehicle • Accomplishing inspection checklist • Wearing PPEs • Conducting walk-around • Inspecting factory-loaded parts • Applying minor corrective measures

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.5 ***Minor corrective measures*** are applied following manufacturer's manual. 2.6 Inspection checklist is accomplished based on manufacturer's standards. 2.7 PPEs are worn based on OSHS.	measures	
3. Complete work processes	3.1 Initial quality inspection is performed based on workplace procedure 3.2 Minor defects are ***corrected*** following manufacturer's manual 3.3 Wastes are disposed according to environmental standards 3.4 Vehicle is endorsed to immediate superior following industry procedures 3.5 ***Defects*** are reported following industry procedures 3.6 Pre-delivery checklist is accomplished and submitted according to industry procedures	• Hydraulics • Measuring methods • Arithmetic, ratio and proportion • Proper disposal of waste and spills • Accomplishment of pre-delivery checklist • Preparation of report • Reading of tire pressure gauge • Adjustment of tire pressure • Application of corrective measures for minor defects	• Reading fluid levels • Endorsing vehicle • Disposing wastes • Accomplishing pre-delivery checklist • Preparing report

RANGE OF VARIABLES

VARIABLE	RANGE
1. Required items	May include: 1.1 Tire pressure gauge 1.2 Fender cover 1.3 Steering wheel cover 1.4 Seat cover 1.5 Shifting knob cover 1.6 Floor mat cover
2. Factory-loaded parts	May include: 2.1 Wheel caps 2.2 Wheel covers 2.3 Spare wheel 2.4 Tow hook 2.5 Tool Kit 2.6 Early warning device 2.7 Owner's Handbook-Manual 2.8 Spare Key 2.9 Floor Mats 2.10 Jack Set
3. Restoration of vehicle	May include: 3.1 Installation of factory-loaded parts 3.2 Removal of towing eyelets, labels, tags, stickers, covers, and body protective films 3.3 Adjustment of tire pressure 3.4 Removal of spring locks
4. Checking of vehicle	May include: 4.1 Operation of electrical components 4.2 Checking of fluid levels 4.3 Checking for leaks 4.4 Checking of vehicle performance 4.5 Checking of minor defects
5. Minor corrective measures	May include: 5.1 Correct Brake fluid 5.2 Correct Coolant level 5.3 Correct Automatic Transmission Fluid (ATF)
6. Correction of minor defects	May include: 6.1 Fluid level correction 6.2 Tightening of bolts and nuts 6.3 Adjustment of tire pressure
7. Defects	May include: 7.1 Mechanical 7.2 Electrical 7.3 Body Paint 7.4 Scratches 7.5 Dents

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared for pre-delivery inspection 1.2 Performed physical and functional inspection 1.3 Completed work processes
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Tools & equipment 2.3 Materials relevant to the activity 2.4 Training vehicle or simulators
3. Method of assessment	Competency MUST be assessed through: 3.1 Written exam 3.2 Demonstration with oral questioning
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PERFORM PERIODIC MAINTENANCE OF AUTOMOTIVE ENGINE**

UNIT CODE : ALT723373

UNIT DESCRIPTOR : This competency unit covers the ability to carry out periodic maintenance of gasoline and diesel engine in order to maintain optimum engine performance and prevent serious engine trouble.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare for inspection and service engine	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and ***checked*** for serviceability	• OSHS • Wearing of PPEs • Job requirements • Servicing information • Safety practices • Sourcing out and interpretation of servicing information • Different hazards associated with the work • Risk management • Selection and inspection of tools, equipment and materials **Attitude:** • Patience • Attention to details • Time conscious • Honest	• Clarifying instructions • Locating appropriate sources of information efficiently • Reading and interpreting job requirements • Sourcing and interpreting servicing information • Practicing safety • Wearing PPEs • Identifying different hazards associated with the work • Managing risk • Selecting and inspecting tools, equipment and materials
2. Inspect engine	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings	• Knowledge on engine automotive components • Different measuring tools - Spark plug gauge - Multi-tester • Characteristics of drive belt • Measurement of fluid level • Characteristics of fluids and oils	• Interpreting information from manufacturer's repair manual when seeking engine service procedures and specifications • Calculating liquid volumes and service schedule intervals, using mathematical operations,

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	are reported according to workplace procedures, including recommendations for necessary repairs or adjustments 2.4 PPEs are worn following OSHS	• Inspection procedures • Use of measuring tools • Automotive engine fundamentals • OSHS • Wearing of PPEs **Attitude:** • Patience • Attention to details • Time conscious • Honest	including addition and subtraction • Reporting inspection findings and make repair recommendations • Carrying out inspection • Comparing inspection results • Wearing PPEs
3. Service engine	3.1 ***Service*** and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Irregularities are recorded using inspection sheet according to workplace procedures 3.3 ***Post-service testing*** is carried out according to workplace procedures 3.4 PPEs are worn 3.5 Safety practices are applied	• Engine oil filter • Air cleaner element • Fuel filter • Basic Carburetor System • Adjustment of valve tappet clearance • Simple arithmetic • Use of Special Service Tools • OSHS • Wearing of PPEs • Inspection and replacement of engine oil and filter • Post-service testing **Attitude:** • Patience • Attention to details • Time conscious • Honest	• Interpreting information from manufacturer's repair manual • Calculating liquid volumes and service schedule intervals, using mathematical operations, including addition and subtraction • Recording irregularities • Carrying out service and adjustments • Carrying out post-service testing • Wearing of PPEs • Applying safety practices
4. Complete work processes	4.1 Initial quality inspection is performed based on workplace procedure 4.2 Vehicle is turned over to immediate	• OSHS • Wearing of PPEs • Final inspection procedure • Checking and storing of tools and	• Tagging faulty tools and equipment legibly and accurately • Completing tool and equipment

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	supervisor for final inspection to ensure work is done according to workplace standards expectations 4.3 Work area is restored following standard operating procedure 4.4 Waste management is practiced according to 5S of good housekeeping 4.5 Tools and equipment are checked and stored according to workplace procedures 4.6 Workplace documentation is prepared according to workplace procedures	equipment • Restoration of work area • Service standard operating procedure • Waste management • 5S • 3Rs • Fix it right the first time all the time • Workplace documentation **Attitude:** • Patience • Attention to details • Time conscious • Honest • Respect people	service and maintenance schedules • Recording of service made • Restoring work area • Inspection skills • Practicing waste management • Checking and storing tools and equipment • Preparing workplace documentation

RANGE OF VARIABLES

VARIABLE	RANGE
1. Checking of tools and equipment	May include: 1.1 Tagging of faulty tools and equipment 1.2 Servicing and maintenance of tools and equipment
2. Inspection	May include: 2.1 Pre- and post-service inspections for oil and fluid leaks 2.2 Analyzing abnormal engine noises 2.3 Inspecting battery 2.4 Inspecting air cleaner element 2.5 Inspecting engine oil 2.6 Inspecting engine coolant 2.7 Inspecting drive belt 2.8 Inspecting spark plug 2.9 Inspecting fuel filter
3. Safety requirements	May include: 3.1 Work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with: 3.1.1 Rotating and hot components 3.1.2 Engine oils 3.1.3 High energy ignition and charging systems 3.1.4 Hazardous materials
4. Service	May include: 4.1 Replacing engine oil 4.2 Replacing engine oil filter 4.3 Cleaning/replacing air cleaner element 4.4 Replacing engine coolant 4.5 Replacing drive belt 4.6 Cleaning/replacing spark plug 4.7 Replacing fuel filter 4.8 Adjustment of idle speed and idle mixture for carburated engine 4.9 Adjustment of idle speed (diesel with injection pump) 4.10 Removal of water from water sedimenter 4.11 Bleed fuel system (diesel) 4.12 Adjust valve clearance
5. Environmental requirements	May include : 5.1 Procedures for trapping of fluids released from engines 5.2 Procedures for storing of fluids released from engines 5.3 Procedures for disposing of fluids released from engines
6. Post-service testing	May include: 6.1 Starting up and running engine to operating temperature 6.2 Checking for leaks and abnormal noises

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared for inspection and service engine. 1.2 Inspected engine. 1.3 Serviced engine. 1.4 Completed work processes.
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Tools & equipment 2.3 Materials relevant to the activity 2.4 Repair manuals and related reference materials
3. Method of assessment	Competency MUST be assessed through: 3.1 Direct observation 3.2 Written examination 3.3 Demonstration with oral questioning
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PERFORM PERIODIC MAINTENANCE OF DRIVE TRAIN**

UNIT CODE : ALT723374

UNIT DESCRIPTOR : This competency unit covers the ability to carry out periodic maintenance of vehicle's drive train such as Manual, Automatic & Continuously Variable Transmission (CVT) in order to keep it in top condition and prevent serious trouble.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform pre-service preparations	1.1 Job requirements are determined based on drive train repair order. 1.2 Servicing information is sourced from service manual. 1.3 Vehicle mileage is used as reference for changing fluid following manufacturer's specification. 1.4 Fluids condition are ***inspected*** according to manufacturer's service workshop manual. 1.5 ***Fluids*** are acquired according to vehicle specification. 1.6 ***Tools*** are prepared based on drive train repair order. 1.7 Hazards and risks associated in the workplace are managed following OSHS.	• Use of PPEs • OSHS • Vehicle user's manual • Drive train repair order • Service standard operating procedure • Servicing information • Types of transmission fluids • Condition of transmission fluids • Inspection procedure • Preparation of tools • Management of hazards and risks • Different tools for periodic maintenance of drive train • Job requirements • Odometer reading	• Identifying job requirement • Reading service Manual • Sourcing servicing information • Inspecting transmission fluids condition • Acquiring transmission fluids • Preparing tools • Managing hazards and risks associated in the workplace • Applying OSHS • Reading odometer
2. Conduct periodic maintenance of drive trains	2.1 Fluids are replaced according to manufacturers' service manual. 2.2 Drain plug is cleaned following manufacturers'	• OSHS • Wearing of PPEs • Procedure in draining and replacing transmission fluids • Procedure in	• Draining transmission fluids • Replacing transmission fluids • Cleaning drain plug • Replacing drain

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	service manual. 2.3 Propeller shafts are lubricated according to manufacturer's service workshop manual. 2.4 Cracks and leaks of ***drive train components*** are inspected following manufacturer's service workshop manual. 2.5 Findings are reported to immediate superior following company's standard procedures. 2.6 Safety practices are applied following OSHS. 2.7 PPEs are worn	cleaning drain plug • Lubrication of propeller shafts • Drive train components • Procedure in inspecting cracks and leaks • Procedure in reporting findings	plug washers • Lubricating propeller shafts • Inspecting cracks and leaks of drive train components • Reporting findings • Applying safety practices • Wearing PPEs • Communication skills
3. Perform post-service activities	3.1 Fluid level is confirmed following company's standard procedures. 3.2 Initial quality inspection is performed based on workplace procedure 3.3 Vehicle is turned over to immediate supervisor for final inspection to ensure work is done according to workplace standards expectations 3.4 Wastes are disposed according to good housekeeping practices. 3.5 Job done is written	• Cleaning of transmission dipstick • 5S of Good housekeeping • Fluid level • Waste disposal • Spill control • Procedure of final inspection • Accomplishment of Repair Order • Restoration of workplace • OSHS	• Confirming fluid level • Disposing wastes • Performing final inspection • Accomplishing repair order • Restoring workplace • Applying safety practices

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	down on the Repair Order. 3.6 Workplace is restored according company's standard procedure. 3.7 Safety practices are applied following OSHS		

RANGE OF VARIABLES

VARIABLE	RANGE
1. Inspection of fluids	May include: 1.1 Visual 1.2 Smell 1.3 Texture 1.4 Age of fluid (mileage and months)
2. Fluids	May include: 2.1 Manual transmission 2.1.1 Brake fluids/Clutch fluids 2.1.2 Gear oil 2.2 CVT and automatic 2.2.1 CVT fluids 2.2.2 Automatic transmission fluid (ATF)
3. Tools	May include but not limited to: 3.1 Basic hand tools 3.2 Special service tools 3.3 Oil bucket 3.4 Trouble light
4. Drive train components	May include but not limited to: 4.1 Clutch 4.2 Transmission 4.3 Transfer case 4.4 Propeller shaft 4.5 Differentials (Front and rear) 4.6 Constant Velocity Rubber Boots

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Performed pre-service preparations 1.2 Conducted periodic maintenance of drive trains 1.3 Performed post-service activities 1.4 Applied safety practices
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Tools & equipment 2.3 Materials relevant to the activity 2.4 Repair manuals and related reference materials
3. Method of assessment	Competency MUST be assessed through: 3.1 Direct observation 3.2 Written examination 3.3 Demonstration with oral questioning
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PERFORM PERIODIC MAINTENANCE OF BRAKE SYSTEM**

UNIT CODE : ALT723375

UNIT DESCRIPTOR : This competency unit covers the ability to carry out periodic maintenance of vehicle's brake system in order to keep it in top condition and prevent serious trouble.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare for periodic maintenance of brake system	1.1 Job requirements are determined based on brake system repair order. 1.2 Servicing information is sourced from service manual. 1.3 ***Tools*** are prepared based on brake system repair order. 1.4 Hazards and risks associated in the workplace are managed following OSHS.	• Manufacturer's specification • Sourcing out of service information • Planning for periodic maintenance of brake system • Preparation of tools for brake system repair • Service information • Tools for brake system maintenance • Brake system repair order • Management of hazards and risks • OSHS	• Determining job requirements • Sourcing servicing information • Preparing tools • Managing hazards and risks associated in the workplace • Communication skills • Applying safety practices
2. Carry-out periodic maintenance procedures	2.1 ***Brake system components*** and ***condition*** are inspected according to manufacturer's service workshop manual 2.2 Findings and recommendations are reported to immediate superior following company's standard procedures. 2.3 Maintenance measures are applied according to instruction of immediate supervisor superior	• Brake system components • Inspection of brake system components • Measuring thickness of brake lining • Introduction to anti-lock brake system • Inspection of brake system components • Procedure in cleaning and lubricating brake caliper guide pins • Bleeding of brake system • Adjustment of parking brake lever/ pedal travel and cable tension	• Inspecting brake system components and condition • Measuring brake pads and shoes thickness • Measuring brake drum diameter • Measuring rotor disc run-out • Measuring pedal height • Lubricating brake caliper guide pins • Bleeding brake system • Adjusting parking brake lever and cable tension

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	and manufacturer's manual. 2.4 Safety practices are applied following OSHS.	• Calibration of electric parking brake • OSHS • Pedal height • Measurement of brake system components • Linear measurement • Report preparation of findings and recommendations	• Calibrating electric parking brake • Reporting findings and recommendations • Applying OSHS • Communication skills
3. Complete periodic maintenance procedure	3.1 Initial quality inspection is performed based on workplace procedure 3.2 Vehicle is turned over to immediate supervisor for final inspection to ensure work is done according to workplace standards expectations 3.3 Wastes are disposed according to good housekeeping practices. 3.4 Job done is written down on the Repair Order. 3.5 Tools and equipment are checked, cleaned and stored following workplace procedure 3.6 Workplace is restored according company's standard procedure 3.7 Safety practices are applied following OSHS	• Waste management • Report preparation • Restoration of workplace • OSHS • 5S • 3Rs	• Disposing wastes • Accomplishing repair order • Restoring workplace • Checking, cleaning, and storing tools and equipment • Applying safety practices

RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools	Includes: 1.1 Basic hand tools 1.2 Special tools
2. Brake system components	May include: 2.1 Fluids 2.2 Pad thickness 2.3 Rotor disc 2.4 Brake pedal free play 2.5 Parking brake 2.6 Brake pads/shoes 2.7 Brake caliper 2.8 Brake pipe 2.9 Brake drums 2.10 Disc brake 2.10.1 Rotor disc 2.10.2 Brake pads 2.10.3 Brake caliper 2.10.4 Retainer 2.10.5 Slider bolt 2.11 Drum brake 2.11.1 Brake drum 2.11.2 Brake shoe 2.11.3 Wheel cylinder 2.12 Other components 2.12.1 Fluids 2.12.2 Brake pipe 2.12.3 Brake master 2.12.4 Brake booster 2.12.5 Parking brake
3. Brake system condition	May include: 3.1 Leakage 3.2 Worn out 3.3 Corrosion 3.4 Crack 3.5 Foreign object 3.6 Bending 3.7 Deformation 3.8 Cut 3.9 Fluid quality

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared for periodic maintenance of brakes system 1.2 Carried out period maintenance procedures 1.3 Inspected and maintained brake system components 1.4 Completed periodic maintenance procedure 1.5 Applied safety practices
2. Resource Implications	The following resources MUST be provided: 2.1 Workplace: real or simulated work area 2.2 Appropriate Tools & equipment 2.3 Materials relevant to the activity 2.4 Repair manuals and related reference materials
3. Method of assessment	Competency MUST be assessed through: 3.1 Direct observation 3.2 Demonstration with oral questioning 3.3 Written exam
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PERFORM PERIODIC MAINTENANCE OF SUSPENSION SYSTEM**

UNIT CODE : ALT723376

UNIT DESCRIPTOR : This competency unit covers the ability to carry out periodic maintenance of vehicle's suspension system in order to keep it in top condition and prevent serious trouble.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform pre-periodic maintenance of suspension system	1.1 Job requirements are determined based on suspension system repair order. 1.2 Servicing information is sourced from service manual. 1.3 ***Tools***, equipment and materials are prepared based on suspension system repair order. 1.4 Hazards and risks associated in the workplace are managed following OSHS. 1.5 Protective covers are installed based on standard operating procedure.	• Suspension system fundamentals • Use of service information resources • Use of job/ repair order • Use of inspection checksheets • Tools, equipment and materials for maintenance of suspension system • Installation of protective covers • Hazards and risk • Work safety • OSHS **Attitudes:** • Full attention to details • Time conscious • Complies to standards	• Interpreting specifications based on manufacturer's service workshop manual. • Preparing specified tools, equipment and materials for suspension system maintenance. • Managing hazards and risk in the workplace. • Installing protective covers
2. Apply periodic maintenance procedures	2.1 ***Inspection*** procedures are applied according to service manual 2.2 ***Suspension system components*** are inspected according manufacturer's service workshop manual 2.3 Suspension bolts/fasteners are tightened to	• Suspension system fundamentals • Suspension system fundamentals - Wheel bearing fundamentals - Threaded fasteners fundamentals - Torque wrench fundamentals - Tire fundamentals	• Practicing Safety • Inspecting suspension system components • Writing job done on repair order • Applying corrective measures • Reporting findings and recommendations • Communication skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	specified torque. 2.4 ***Defects and damage*** are reported to immediate superior. 2.5 Findings and recommendations are reported to immediate superior following company's standard procedures. 2.6 Safety practices are applied following OSHS.	• Use of service information resources (ex: repair manual) • Use of Job/repair order • Bounce test • Use of inspection checksheets • Application of corrective measures • Mensuration • Metric system • Reporting of findings and recommendations • OSHS • PPEs **Attitudes:** • Full attention to details • Time conscious • Complies to standards	• Mathematical skills
3. Perform work to completion	3.1 Wastes are disposed according to good housekeeping practices 3.2 Initial quality inspection is performed based on workplace procedure 3.3 Vehicle is endorsed and hand-over to immediate superior for road test and final inspection. 3.4 Job done is written down on the repair order. 3.5 Workplace is restored according company's standard procedure 3.6 Safety practices are applied following OSHS	• Waste management fundamentals • Initial quality inspection • Vehicle endorsement and hand-over • Accomplishment of job/repair order • 5S • 3Rs • OSHS **Attitudes:** • Good housekeeping habit • Full attention to details • Time conscious • Complies to standards	• Practicing good housekeeping • Following standard • Reporting results of inspection • Endorsing and hand-over vehicle • Performing initial quality inspection • Accomplishing job/repair order • Applying OSHS

RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools	Includes: 1.1 Basic tools 1.2 Special tools
2. Inspection techniques	May include: 2.1 Bounce test 2.2 Vehicle height
3. Suspension system components	May include: 3.1 Stabilizer 3.2 Stabilizer links 3.3 Stabilizer links 3.4 Coil springs, torsion bar, bar bushing, and leaf spring 3.5 Upper and Lowers arms 3.6 Suspension bushings 3.7 Ball joints 3.8 Fasteners 3.8.1 Suspension bolts 3.8.2 Suspension nuts 3.8.3 Wheel nuts 3.9 Damper/shock absorber 3.10 Wheel bearing 3.11 Tire wheel 3.12 Shock mounting
4. Defects and damage	May include: 4.1 Leaks on damper/shock absorber 4.2 Crack bushing 4.3 Loose ball joints 4.4 Worn-out tires

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Performed pre-periodic maintenance of suspension system 1.2 Applied periodic maintenance procedures 1.3 Performed work to completion
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Tools & equipment 2.3 Materials relevant to the activity 2.4 Repair manuals and related reference materials
3. Method of assessment	Competency MUST be accessed through: 3.1 Demonstration with oral questioning 3.2 Written exam 3.3 Interview
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : **PERFORM PERIODIC MAINTENANCE OF STEERING SYSTEM**

UNIT CODE : ALT723377

UNIT DESCRIPTOR : This competency unit covers the ability to carry out periodic maintenance for both manual and power steering system in order to keep it in top condition and prevent serious trouble.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform pre-periodic maintenance of steering system	1.1 Job requirements are determined based on steering system repair order. 1.2 Servicing information is sourced from service manual. 1.3 Tools, equipment and materials are prepared based on steering system repair order. 1.4 Hazards and risks associated in the workplace are managed following OSHS. 1.5 Protective covers are installed based on standard operating procedure.	• Steering system fundamentals • Use of service information resources • Use of job/repair order • Tools, equipment and materials for maintenance of steering system • Installation of protective covers • OSHS **Attitudes:** • Full attention to details • Time conscious • Complies to standards	• Interpreting specifications • Preparing specified tools, equipment and materials for steering system maintenance • Managing hazards and risk in the workplace • Installing protective covers • Sourcing out servicing information • Determining job requirements for steering system • Applying safety practices
2. Apply periodic maintenance procedures	2.1 ***Steering system components*** are ***inspected*** according manufacturer's service workshop manual. 2.2 Findings and recommendations are reported to immediate superior following company's standard procedures. 2.3 Power steering fluid	• Steering system fundamentals - Threaded fasteners fundamentals. - Torque wrench fundamentals. - Hydraulic steering fundamentals - Electric steering fundamentals - MIL illumination • Use of service information resources (ex. SM, Bulletins, etc.)	• Inspecting steering system components • Writing job done on repair order • Applying maintenance measures • Reporting findings and recommendations • Communication skills • Mathematical skills • Following manual • Practicing Safety

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	is replaced based on manufacturer's service workshop manual. 2.4 Steering wheel free play inspection is conducted based on service manual. 2.5 ***Defects and damages*** are reported to immediate supervisor. 2.6 Safety practices are applied following OSHS.	• Use of Job/repair order • Use of inspection checksheets • Application of maintenance measures • Mensuration • Metric system • Reporting of findings and recommendations • OSHS • PPEs Attitudes: • Full attention to details • Time conscious • Complies to standards	
3. Perform work to completion	3.1 Wastes are disposed according to good housekeeping practices 3.2 Initial quality inspection is performed based on workplace procedure 3.3 Job done is written down on the Repair Order. 3.4 Workplace is restored according company's standard procedure 3.5 Safety practices are applied following OSHS 3.6 Tools and equipment are checked, cleaned, and stored following 5S	• Waste management • Initial quality inspection • Information from job/ repair order • 5S • 3Rs • OSHS • Accomplishing repair order • Restoration workplace • Handling of tools and equipment	• Following standard • Reporting results of inspection • Performing initial quality inspection • Applying OSHS • Managing waste • Performing final inspection • Accomplishing repair order for job done • Restoring workplace • Practicing safety and 5S • Handling tools and equipment

RANGE OF VARIABLES

VARIABLE	RANGE
1. Steering system components	May include but not limited to the following: 1.1 Steering column 1.2 Steering shaft 1.3 Steering shaft bearing 1.4 Steering universal joints 1.5 Steering column adjustment mechanism 1.6 Electronic power steering 1.7 Hydraulic power steering 1.8 Tie-rods and rack end 1.9 Rack and pinion gear box 1.10 Steering wheel 1.11 Fastener 1.12 Fluids 1.13 Reservoir and Vane pump 1.14 Recirculating gear box 1.15 Hydraulic hose
2. Inspection of steering system components	May include: 2.1 Looseness 2.2 Wear 2.3 Damage 2.4 Free-play 2.5 Leaks 2.6 Abnormal noise 2.7 Malfunction on electric power steering
3. Defects and damages	May include: 3.1 Damage on steering rack boot 3.2 Power steering fluid leaks

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Performed pre-periodic maintenance of steering system 1.2 Applied periodic maintenance procedures 1.3 Performed work to completion
2. Resource implications	The following resources MUST be provided: 2.1 Workplace: Real or simulated work area 2.2 Appropriate Tools & equipment 2.3 Materials relevant to the activity 2.4 Repair manuals and related reference materials
3. Method of assessment	Competency MUST be assessed through: 3.1 Direct observation 3.2 Written exam 3.3 Demonstration with oral questioning
4. Context of assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

SECTION 3. TRAINING ARRANGEMENTS

These standards are set to provide technical and vocational education and training (TVET) providers with information and other important requirements to consider when designing training programs for Automotive Servicing NC I.

3.1 CURRICULUM DESIGN

Course Title: **AUTOMOTIVE SERVICING** NC Level **NC I**

Nominal Training Duration:
28 Hours (Basic Competencies)
162 Hours (Common Competencies)
279 Hours (Core Competencies)
469 Hours

Course Description:

This course is designed to enhance the knowledge, skills and attitudes of an individual in the field of automotive servicing in accordance with industry standards. It covers core competencies such as; performance of basic engine servicing through removal and reinstallation of components for gas and diesel engines.

This course is also designed to enhance the basic and common knowledge, skills and attitudes of an individual in the field of automotive servicing.

To obtain this, all units prescribed for this qualification must be achieved.

BASIC COMPETENCIES
28 Hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
1. Receive and respond to workplace communication	1.1 Follow routine spoken messages	• Read: o Parts of a speech o Parts of a sentence o Kinds of sentence • Practice exercise conciseness in receiving and clarifying messages/ information/ communication	• Lecture • Demonstration	• Written examination • Observation	8 hours
	1.2 Perform workplace duties following written notices	• Describe organizational policies/guidelines in regard to processing internal/external information • Read: o Communication processes o Work practices in handling communications o Receiving and clarifying communications, messages and information • Practice exercise: o Oral and written communications o Following written/oral instruction/ information o Recording messages	• Group discussion • Lecture • Demonstration	• Oral evaluation • Written examination • Observation	
2. Work with others	2.1 Develop effective workplace relationship	• Read: o Job description and employment arrangement. o Organization's policy relevant to	• Lecture • Group discussion • Demonstration	• Written examination • Oral evaluation • Observation	6 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		work role o Team structure o Supervision and accountability requirements including OHS o Code of conduct • Describe o Open communication channels o Performance appraisal - Formal/informal performance appraisal - Personal reflective behavior strategies - Obtaining feedback from supervisor and colleagues o Routine organization methods for monitoring service delivery • Practice o Cooperation and good relationship o Team structuring o OHS Code o Routine task analysis o Work effectively with team o Requesting advice and receiving feedback o Monitoring of service delivery • Apply use of ethical sentences • Apply use of personal decision and organized work priorities in the			

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		workplace • Apply use of technology for a given task in the workplace			
	2.2 Contribute to work group activities	• Describe o Quality and continues improvement processes and standard o Legal and organizational policy/guidelines and requirements o Clarifying the organization's preferred task completion methods o Open communication • Read: o Explaining /clarifying o Helping colleagues o Providing encouragement o Undertaking extra task if necessary o Goals, objectives, plans system and process o Resources parameters definition • Practice: o Writing routine or task of simple instruction or work plan o Application of planning skills in Organizing and prioritizing work • Apply proper personal relationship with others thru: o Social o Cultural and with	• Group discussion • Interaction • Demonstration	• Oral evaluation • Written examination • Observation	

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		○ Ethnic background • Apply use of appropriate technology in performing task • Apply Workplace hazards, risks and control			
3. Demonstrate work values	3.1 Define the purpose of work	• Read: ○ Purpose of Work ○ Benefits gained out of work • Practice exercise on simulating work and working condition	• Lecture	• Written examination	8 hours
	3.2 Apply work values/ethics	• Read Concept of work values/ethics • Describe Company policies and guidelines • Apply work values and work ethics in a simulated environment • Practice inventory of company's/ industry resources	• Lecture • Group discussion • Demonstration • Role Play	• Written examination • Oral evaluation • Observation	
	3.3 Deal with ethical problems	• Describe ○ Company/industry resources ○ Company's identified ethical problems ○ Work practices ○ Work incidents/ situation • Read Work ethical standard • Practice exercise ○ Standard operating procedures in dealing with present situation depicting ethical problems in work ○ Report writing and documentation	• Group discussion • Lecture • Demonstration • Role Play	• Oral evaluation • Written examination • Observation	

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration

	3.4 Maintain integrity of conduct in the workplace	• Describe:
		  ○ Fundamental rights at work including gender sensitivity
		  ○ Corporate social responsibilities
		  ○ Human Relations
		  ○ Interpersonal Relations
		  ○ Value Formation
		  ○ Professional Code of Conduct and Ethics
		• Read:
		  ○ Work responsibilities/ functions
		• Practice exercise on Simulating work responsibilities, corporate and social responsibilities
		• Role play proper inter personal relationship
		• Practice professional code of conduct and ethics towards work
			• Group discussion
			• Lecture
			• Demonstration
			• Role Play
				• Oral evaluation
				• Written examination
				• Observation	

4. Practice basic housekeeping procedures	4.1 Sort and remove unnecessary items	• Read:
		  ○ Principles of 5S
		  ○ Safety signs and symbols
		• Practice and demonstrate 5S
		• Practice Exercise in Accident/Hazard reporting procedures
		• Apply environmental requirement in analyzing and performing work
			• Lecture
			• Demonstration
			• Role Play
				• Written examination
				• Observation
					6 hours

	4.2 Arrange items	• Practice Exercise in arranging items at work	• Demonstration	• Observation	
	4.3 Maintain work	• Describe:	• Group	• Oral evaluation	

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	areas, tools and equipment	○ Maintenance system ○ Maintenance of tools and equipment • Read: ○ Maintenance of tools and equipment ○ Good Housekeeping procedures • Practice exercise on proper attitude towards work	discussion • Lecture • Demonstration	• Written examination • Observation	
	4.4 Follow standardized work process and procedures	• Apply standardized work process and procedures in performing work activities	• Demonstration	• Observation	
	4.5 Perform work spontaneously	• Practice Exercise on spontaneous work performance	• Demonstration	• Observation	

COMMON COMPETENCIES
<u>162</u> Hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
1. Validate vehicle specification	1.1 Check body type of the vehicle	• Enumerate the different kinds of vehicle • Explain the difference of each kind of vehicle • Identify the measuring points of the vehicle • Explain the procedures in measuring vehicle dimension and weight • Describe the different body shapes of the vehicle • Differentiate kinds of power train • Explain the function of each power train • Discuss occupational safety and health standard in checking the body type of a vehicle • Identify different kinds of vehicle • Measure vehicle dimensions and weight • Identify vehicle body shapes • Identify vehicle power train • Apply safety practices	• Lecture • Demonstration • Video presentation	• Written exam • Demonstrate	7 hrs
	1.2 Check vehicle engine type	• Discuss the different kinds of engine • Enumerate the different kinds of fuel/energy system • Describe the different engine	• Lecture • Demonstration • Video presentation	• Written exam • Demonstrate	3 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		components • Identify different kinds of engine • Identify different types of fuel/energy system • Identify different engine components			
	1.3 Check vehicle specifications	• Inspect VIN plate of the vehicle • Verify vehicle specification • Check vehicle modifications and conversions • Inspect vehicle conversions • Explain different vehicle related regulations in the Philippine	• Lecture • Demonstration • Video presentation	• Written exam • Demonstrate	4 hrs
	1.4 Complete validation of vehicle specification	• Explain verification of vehicle ownership using repair order and vehicle reference materials • Discuss procedures in accomplishing check sheet • Discuss submission of check sheet	• Lecture • Demonstration • Video presentation	• Written exam • Demonstrate	3 hrs
2. Move and position vehicle	2.1 Prepare vehicle for operation	• Explain vehicle multi point inspection • Enumerate cockpit drill procedure • Initialize engine startup • Perform parking brake • Show vehicle operational procedures	• Lecture discussion • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	16 hours

	2.2 Position vehicle	• Determine workshop hazards • Discuss the procedure in avoiding workshop hazards • Define occupational health and safety standards • Move the vehicle • Explain workshop rules and regulations	• Lecture • Demonstration • Video presentation	• Demonstration • Written exam • Interview	16 hours
	2.3 Park and stop the vehicle	• Explain parking rules and regulations • Park vehicle • Outline parking principles • Shut-off vehicle	• Lecture • Demonstration • Video presentation	• Demonstration • Written exam • Interview	8 hours
3. Utilize automotive tools	3.1 Prepare automotive tools	• Identify and select automotive tools and attachments • Discuss inspection and selection procedures • Describe the defects and damages of automotive tools and attachments • Discuss OSHS in preparation of automotive tools • Prepare automotive tools and attachments	• Lecture • Demonstration • Visual aids • Videos	• Written examination • Interview • Demonstration • Practical examination	6 hrs
	3.2 Use automotive tools	• Discuss the procedure in mounting attachments to automotive tools • Discuss the procedure in connecting the power supply to power tools • Discuss the procedure in operating the power tools • Discuss the utilization of hand tools • Identify PPEs • Discuss OSHS in using automotive	• Lecture • Demonstration • Visual aids • Videos	• Written examination • Interview • Demonstration • Practical examination	6 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		tools • Use automotive tools • Use PPEs			
	3.3 Maintain automotive tools	• Discuss the procedure in cleaning, checking for serviceability, and storing of automotive tools and attachments • Discuss the procedure in identifying and reporting defects and damages • Discuss the proper waste segregation • Demonstrate the proper maintenance of automotive tools • Demonstrate disposal of wastes	• Lecture • Visual aids • Videos	• Written examination • Demonstration	4 hrs
4. Perform mensuration and calculation	4.1 Select measuring instruments	• Describe measuring instruments • Select measuring instruments • Inspect and calibrate measuring instruments • Report and return defective measuring instruments • Demonstrate safety practices	• Demonstration • Video presentation • Lecture Discussion • Workshop visit	• Demonstration • Written exam • Oral questioning	9 hours
	4.2 Carry out measurements and calculation	• Explain formulas for volume, areas, perimeters of plane and geometric figures • Explain the procedure in reading tools' limit of accuracy • Measure required automotive parts • Read tools' limit of accuracy • Inspect and calibrate measuring instruments	• Demonstration • Video presentation • Lecture Discussion • Workshop visit	• Demonstration • Written exam • Oral questioning	29 hours
	4.3 Maintain measuring	• Identify PPEs	• Demonstration	• Demonstration	5 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	instruments	• Discuss cleaning procedures of measuring instruments • Enumerate steps in storing instruments • Wear PPEs • Clean measuring instrument tools • Re-inspect and re-calibrate measuring instruments	• Video presentation • Lecture Discussion	• Written exam • Oral questioning	
5. Utilize workshop facilities and equipment	5.1 Perform pre-operation activities	• Identify different areas of an automotive service facilities • Explain the preparation procedures of automotive service facilities • Enumerate different equipment in the automotive service facilities • Discuss the preparation procedures of equipment • Describe minor repairs in automotive facilities and equipment • Describe defective equipment • Identify reporting procedures for defective equipment • Discuss OSHS practices related to the preparation of facilities and equipment • Prepare workshop facilities and equipment	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	9 hrs
	5.2 Use facilities and equipment	• Explain the operation of equipment according to operation manual • Describe how facilities are utilized	• Lecture • Demonstration • Video	• Demonstration • Written exam • Interview	5 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		according to workshop procedures • Explain how equipment performance is monitored following users' manual • Describe the monitoring of facilities functionalities following workplace procedures • Discuss how OSHS safety practices are applied	presentation • Workshop visit		
	5.3 Conduct post-operation activities	• Explain how workshop facilities are restored according to good housekeeping • Discuss tools and equipment are cleaned and stored according to good housekeeping • Explain wastes disposed following waste management procedure and OSHS • Enumerate the safety practices that are applied following OSHS • Demonstrate preparation of report based on workshop standard procedure	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	5 hours
6. Prepare servicing parts and consumables	6.1 Identify parts and consumables	• Familiarize parts & consumables • Identify indirect materials • Identify hazardous parts and consumables	• Lecture • Video presentation • Actual training	• Demonstration • Written exam • Interview	6 hrs
	6.2 Retrieve and withdraw parts and consumables	• Familiarize requisition slip • Perform parts withdrawal procedure & recording	• Lecture • Video presentation	• Demonstration • Written exam • Interview	4 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		• Validate parts and consumables according to quantity & specification • Perform safety precautions	• Actual training		
	6.3 Complete work process	• Segregate parts to be returned to customers • Segregate parts & consumables for proper disposal or recycling according to 3Rs and RA 6969 • Wear PPE's	• Lecture • Video presentation • Actual training	• Demonstration • Written exam • Interview	3 hrs
7. Prepare vehicle for servicing and releasing	7.1 Receive vehicle	• Identify different areas of an automotive service facility • Explain the receiving procedures of automotive service facilities • Explain the checklisting procedures of automotive service facilities • Describe minor repairs in automotive facilities and equipment • Discuss OSHS practices related to the preparation of facilities and equipment • Prepare workshop facilities and equipment	• Lecture • Demonstration • Video presentation • Workshop visit	• Role-playing • Written exam • Interview	6 hours
	7.2 Prepare vehicle for servicing	• Prepare vehicle for servicing • Explain the preparation procedures of automotive service facilities • Demonstrate the procedure in installing protective covers • Explain the concept of the locator blocks	• Lecture • Demonstration	• Role-playing • Written Exams • Oral Exams	5 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		• Classify the type of vehicle repair based on the Repair Order			
	7.3 Prepare vehicle for releasing	• Use the repair order to identify work performed • Apply quality control measures on work done • Operate vehicle for transfer and release	• Lecture • Demonstration	• Role-Playing • Written Exams • Oral Exams	3 hours

CORE COMPETENCIES
279 Hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
1. Perform pre-delivery inspection	1.1 Prepare for pree-delivery inspection	• Identify required items before pre-delivery inspection on the vehicle • Prepare required items in the vehicle • Install factory-loaded parts on the vehicle • Removal of emergency towing eyelets, spring locks, labels, tags, stickers, covers and body protective films • Adjust tire pressure into standard pressure based on manufacturer's standards	• Lecture-Discussion • Demonstration • Video presentation • Film viewing	• Written exam • Demonstration • Oral questioning	9 hrs
	1.2 Perform physical and functional inspection	• Check all electrical components operation in the vehicle • Check all fluid level in the vehicle • Check the vehicle for leaks • Check the vehicle performance • Check minor defects of the vehicle • Accomplish inspection checklist based on manufacturers standards	• Lecture-Discussion • Demonstration • Video presentation • Film viewing	• Written exam • Demonstration • Oral questioning	16 hrs
	1.3 Complete work processes	• Perform engine oil top-up based on Manufacturer's standards • Perform Automatic Transmission oil top-up based on Manufacturer's standards • Perform Brake fluid top-up based on	• Lecture-Discussion • Demonstration • Video presentation • Film viewing	• Written exam • Demonstration • Oral questioning	8 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		Manufacturer's standards • Perform Coolant oil top-up based on Manufacturer's standards			
2. Perform periodic maintenance of automotive engine	2.1 Prepare for inspection and service engine	• Determine job requirements from workplace instructions • Source and interpret servicing information • Identify hazards associated with the work and manage risks • Select tools, equipment and materials and check it's serviceability	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	41 hrs
	2.2 Inspect engine	• Carried out inspection according to manufacturer specifications, workplace procedures and safety requirements • Compared inspection results with manufacturer specifications • Report inspection findings according to workplace procedures, including recommendations for necessary repairs or adjustments	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	47 hrs
	2.3 Service engine	• Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems • Carry out post-service testing according to workplace procedures	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	28 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	2.4 Complete work processes	• Make final inspection to ensure work is according to workplace expectations and vehicle or machinery is presented ready for use • Clean work area, dispose waste and non-recyclable materials and collect recyclable material • Check tools and equipment and store according to workplace procedures • Process workplace documentation according to workplace procedures	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	20 hr
3. Perform periodic maintenance of drive train	3.1 Perform pre-service preparations	• Determine job requirements • Source servicing information from service manual • Use vehicle mileage as reference for changing fluid • Inspect transmission fluids condition • Acquire transmission fluids • Prepare tools for periodic maintenance of drive train • Manage hazards and risks	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	6 hrs
	3.2 Conduct periodic maintenance of drive trains	• Drain fluids • Replace fluids • Clean drain plug • Replace drain plug washers • Lubricate propeller shafts • Inspect cracks and leaks of drive train components • Report findings to immediate superior	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	16 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		• Apply safety practices			
	3.3 Perform post-service activities	• Confirm fluid level • Dispose wastes • Perform final inspection • Write down job done • Restore workplace	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview	6 hrs
4. Perform periodic maintenance of brake system	4.1 Prepare for periodic maintenance of brake system	• Demonstrate Job requirements are determined based on brake system repair order • Explain the service information sourced from the service manual • Prepare tools based on suspension system repair order • Explain hazards and risks associated in the workplace are managed following OSHS • Job and inspection performed is written/noted down on the repair order.	• Lecture-Discussion • Demonstration • Video presentation • Film viewing	• Written exam • Demonstrate • Oral questioning	4 hours
	4.2 Carry-out periodic maintenance procedures	• Demonstrate inspection of Brake system components according manufacturer's service workshop manual • Enumerate brake system components are replaced according manufacturer's service workshop manual • Demonstrate cleaning & lubrication of Brake caliper guide pins	• Lecture-Discussion • Demonstration • Video presentation • Film viewing	• Written exam • Demonstrate • Oral questioning	20 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		• Demonstrate bleeding of brake system according to service workshop manual • Demonstrate Adjustment of Parking brake lever/pedal travel and cable tension according to service workshop manual • Demonstrate calibration of Electric parking brake according to service workshop manual • Explain reports of findings and recommendations to immediate superior following company's standard procedures • Apply safety practices			
	4.3 Complete periodic maintenance procedure	• Explain wastes disposal according to good housekeeping practices • Perform Road test following established standard operating procedure • Explain Job done written on the Repair Order • Workplace is restored according company's standard procedure	• Lecture-Discussion • Demonstration • Video presentation • Film viewing	• Written exam • Demonstrate • Oral questioning	4 hours
5. Perform periodic maintenance of suspension system	5.1 Perform pre-periodic maintenance of suspension system	• State the basic function of the suspension system • Identify the different types of suspension system • Explain the features of the different	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview • Role play	6 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		types of suspension system • Identify the tools, equipment and materials required to service suspension system • Identify the different safety precautions, hazards and risks when servicing suspension system • Prepare tools, materials and equipment to be used for suspension system service			
	5.2 Apply periodic maintenance procedures	• Explain why tightening torque must be in accordance with the specified torque • Identify the suspension system fasteners that requires inspection of tightening torque • Describe how to check suspension system components • Describe how to use the torque wrench • Describe how to check tires • Describe how to check wheels • Describe how to check wheel bearing • Describe how to use the vernier caliper. • Describe how to use the dial gauge • Apply safety practice when conducting suspension system maintenance	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview • Role play	16 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		• Demonstrate the correct method for handling of torque wrench • Demonstrate how to use torque when tightening suspension system fasteners • Demonstrate how to check tires using a vernier caliper • Demonstrate how to check wheel bearing axial play using a dial gauge • Demonstrate how to check tire axial run-out • Write job done on the repair order			
	5.3 Perform work to completion	• Recognize good housekeeping practices (5S) • Demonstrate the proper storage of torque wrench • Demonstrate the proper storage of vernier caliper • Demonstrate the proper storage of dial gauge • Conduct final inspection on job performed • Report findings and recommendations to immediate superior • Perform good housekeeping practices before and after each job	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview • Role play	8 hours
6. Perform periodic	6.1 Perform pre-periodic	• State the basic function of the steering system	• Lecture • Demonstration	• Demonstration • Written exam	8 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
maintenance of steering system	maintenance of steering system	• Identify the different types of steering system • Identify the tools, equipment and materials required to service steering system • Identify the different safety precautions, hazards and risks when servicing steering system • Prepare tools, materials and equipment to be used for steering system service	• Video presentation • Workshop visit	• Interview • Role play	
	6.2 Apply periodic maintenance procedures	• Explain why tightening torque must be in accordance with the specified torque • Identify the steering system fasteners that requires inspection of tightening torque • Describe how to check steering system components • Describe how to use the torque wrench • Describe how to replace power steering fluid • Describe how to check if malfunction exist on electric power steering • Apply safety practice when conducting steering system maintenance • Demonstrate the correct method for	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview • Role play	12 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		handling of torque wrench • Demonstrate how to use torque when tightening steering system fasteners • Demonstrate how to replace power steering fluid • Demonstrate how to check electric power steering malfunction • Write job done on the repair order			
	6.3 Perform work to completion	• Recognize good housekeeping practices (5S) • Demonstrate the proper storage of torque wrench • Conduct final inspection on job performed • Report findings and recommendations to immediate superior • Perform good housekeeping practices before and after each job	• Lecture • Demonstration • Video presentation • Workshop visit	• Demonstration • Written exam • Interview • Role play	4 hours

3.2 TRAINING DELIVERY

1. **The delivery of training shall adhere to the design of the curriculum. Delivery shall be guided by the principles of competency-based TVET.**

   a. Course design is based on competency standards set by the industry or recognized industry sector; (Learning system is driven by competencies written to industry standards)
   b. Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
   c. Training can be done on an actual workplace setting, simulation of a workplace and/or through adoption of modern technology.
   d. Assessment is based in the collection of evidence of the performance of work to the industry required standards;
   e. Assessment of competency takes the trainee's knowledge and attitude into account but requires evidence of actual performance of the competency as the primary source of evidence.
   f. Training program allows for recognition of prior learning (RPL) or current competencies;
   g. Training completion is based on satisfactory performance of all specified competencies.

2. **The competency-based TVET system recognizes various types of delivery modes, both on-and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities and their variations/components may be adopted singly or in combination with other modalities when designing and delivering training programs:**

   2.1 School/Institution- Based:

   - Dual Training System (DTS) which contain both in-school and in-industry training or fieldwork components. Details can be referred to the Implementing Rules and Regulations of the DTS Law;

   - The traditional classroom-based or in-center instruction may be enhanced through use of learner-centered methods as well as laboratory or field-work components.

   2.2 Enterprise-Based:

   - Enterprise-based Training- where training is implemented within the company in accordance with the requirements of the specific company. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

2.3 Community-Based –refers to a short program conducted or coordinated by NGOs, LGUs, training centers and other TVET providers which are intended to address the specific needs of a community. Such programs are usually conducted in informal settings such as barangay hall, basketball courts and other available venues in a community.

3.3 TRAINEE ENTRY REQUIREMENTS

Trainees or students should possess the following requirements:

- can communicate both oral and written; and
- can perform basic mathematical computation.

This list does not include specific institutional requirements such as educational attainment, appropriate work experience, and others that may be required of the trainees by the school or training center delivering the TVET program.

3.4 TOOLS, EQUIPMENT AND MATERIALS AUTOMOTIVE SERVICING – NC I

Recommended list of tools, equipment and materials for the training of 25 trainees for Automotive Servicing – NC I

TOOLS		EQUIPMENT			MATERIALS
QTY		QTY		QTY	
1 pc	Tire pressure gauge	1 unit	Vehicle lifter (Can be of the following: Scissor or two post type lifter)	15 L	Engine oil
1 set	Fender cover	1 unit	Air Compressor	5 liters	Automatic Transmission oil
1 pc	Seat cover	1unit	Training Vehicle, M1 or M2 Type Vehicle	10 L	AT Fluid
1 pc	Shift knob cover	2	Engine simulator	2 L	Manual transmission fluid (MTF)
1 pc	Floor mat cover	2 pcs	Air hose reel	2 L	CVT Fluid
2 pcs	Pliers	1	Engine oil drain bucket	5 liters	Brake fluid
2 sets	Screwdriver	1 unit	Gear oil pump	5 liters	Coolant
3	Belt tension gauge	2 set	Jack (Can be of the following: Crocodile jack, telescopic, mechanical jack) 2 ton capacity	2	Oil pan
3	Spark plug wrench	2 pcs	Wedge (stopper)	3	Oil filter
3	Oil filter wrench	2 pcs	Trouble light	3	Fuel filter

3	Spark plug gauge	1 set	Service creeper	2 boxes	Torque marker
3	Spark plug cleaner	1 unit	Computer	12	Spark plug
5 sets	Standard set of hand tools	1 unit	Projector	3	Drive belt
3 pcs	Caddy			1 L	Molycoat grease
1 pc	Oil bucket			2 cans	Brake Cleaner
1 pc	Drain bucket			15 pcs	Service Data Sheet
2 sets	Box wrench			5 pcs	Repair Manual
2 sets	Open end wrench				
2 sets	Socket wrench				PPES
4 Sets	Tire Wrench			15 pcs	Bump cap
2 sets	Torque wrench			5 pcs.	Safety Cap
	Torque wrench 10-50 N-m (100-500 kgf-cm, 1-5 kgf-cm, 7-36 ft-lb.) range			20 pcs	Rags
	Torque wrench 50-200 N-m (500-2000 kgf-cm, 5-20 kgf-m, 36-147 ft-lb.) range			25 pairs	Gloves
	Torque wrench 10-50 N-m (100-500 kgf-cm, 1-5 kgf-cm, 7-36 ft-lb.) range			25 pairs	Cotton arm sleeves
	Torque wrench 50-200 N-m (500-2000 kgf-cm, 5-20 kgf-m, 36-147 ft-lb.) range			25 pcs	Apron
				25 pairs	Safety shoes
				25 pcs.	Safety goggles

3.5 TRAINING FACILITIES

AUTOMOTIVE SERVICING – NC I

The automotive workshop must be made of reinforced concrete or steel structure. The size must be suited on the requirements of the competencies. The class size of 25 students/trainees is reserved for the lecture room and the practical demonstration area for carrying out servicing of minor automotive parts. Most of the learning activities such as on-vehicle servicing are performed in the workshop.

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
Workshop/Laboratory area		6 per student	150.00
Lecture Room		30.00	30.00
Learning Resource Center		20.00	20.00
Wash/Comfort room		10	10.00
Storage/Tool room		20	20.00
Circulation Area			60.00
Total Area			**290.00**

3.6 TRAINERS' QUALIFICATION

- Holder of National TVET Trainers Certificate (NTTC) Level 1 in Automotive Servicing NC II; and
- Must have at least 1 year industry experience in automotive servicing within the last 3 years

3.7 INSTITUTIONAL ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

Competency Assessment is the process of collecting evidence and making judgments whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standards expected at the workplace as expressed in relevant competency standards.

The assessment process is based on evidence or information gathered to prove achievement of competencies. The process may be applied to an employable unit(s) of competency in partial fulfillment of the requirements of the national qualification.

4.1 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1.1 The Full National Qualification of **AUTOMOTIVE SERVICING NC I** shall be obtained when a candidate demonstrates competence through project-type assessment covering all units of competency listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.1.2 Assessment shall cover all competencies, with basic and common integrated or assessed concurrently with the core units of competency.

4.1.3 Any of the following are qualified to apply for assessment and certification:

4.1.3.1 Graduating students/trainees of WTR-registered programs, graduates of NTR programs or graduates of formal/non-formal/informal including enterprise-based trainings related to automotive servicing.

4.1.3.2 Experienced workers in automotive servicing.

4.1.4 Current holders of National Certificates (NCs) in Automotive Servicing NC I shall have their certificates renewed and converted to the amended TR provided they have accumulated at least 1 year of work experience in automotive servicing for the last five years. A Certificate of Employment must be provided as proof.

4.1.5 Current holders of Certificates of Competency (COCs), shall have to undergo assessment in the amended Training Regulations upon expiration of their Certificates.

COMPETENCY MAP – AUTOMOTIVE SERVICING NC I

CORE COMPETENCIES	Perform pre-delivery inspection	Perform periodic maintenance of automotive engine	Perform periodic maintenance of drive train	Perform periodic maintenance of brake system
	Perform periodic maintenance of suspension system	Perform periodic maintenance of steering system		
COMMON COMPETENCIES	Validate vehicle specification	Move and position vehicle	Utilize automotive tools	Perform mensuration and calculation	Utilize workshop facilities and equipment
	Prepare servicing parts and consumables	Prepare vehicle for servicing and releasing			
BASIC COMPETENCIES	Received and respond to workplace communication	Work with others	Demonstrate work values	Practice basic housekeeping procedures	

DEFINITION OF TERMS

Adhesives	Substance used to hold gasket in place during assembly. It also maintains a tight seal by filling in small irregularities on a surface and prevents gasket from shifting due to vibration.
Anti-lock braking system	System that automatically controls wheel slip or prevents sustained wheel locking on braking
Automotive service technician	It refers to an all-around auto serviceman that can perform both mechanical and electrical as well as auto electronics maintenance checking and inspection of motor vehicle. Assesses vehicle problems, perform all necessary diagnostic test or installation of accessories and competently repairs or replaces faulty parts.
Automatic transmission	A transmission in which gear or ratio changes are self-activated, eliminating the necessity of hand shifting gears
Automatic transmission fluid (ATF)	A fluid used in vehicles with self shifting or automatic transmission.
Backlash	The amount of clearance or play between two meshed gears
Brake system	An automotive system that stops or slows down the motion or movement of the vehicle.
Catalytic converter	Emission The control device fitted in the exhaust system of an internal combustion engine. The converter reduces the toxicity of products of combustion by catalytic re-combination
Charcoal canister	Trap containing charcoal granules to store fuel evaporating from a fuel system and prevent its loss to atmosphere, particularly from a carburetor and fuel tank.
Cockpit drill	Is a sequence of checks which should be carried out inside the vehicle before driving.
Hand tools	Any tool that is powered by hand.
Continuously variable transmission (CVT)	A type of automatic transmission that can change seamlessly through a continuous range of effective gear ratios.

Continuously variable transmission fluid (CVTF)	A fluid used for continuously variable transmission (CVT)
Damper	Also known as shock absorber
Drive train	A system in a motor vehicle that connects the transmission to the drive axels.
Electric drill	A portable, hand-held, motor-driven tool used for boring holes in a material powered either by direct or alternating current.
Electronics	Electrical assemblies, circuit and system that use electronic devices such as transistors and diodes.
Emissions	Any air contaminant, pollutant, gas stream from a known source which is introduced into the atmosphere.
Environmental law	Law that regulates the impact of human activities on the environment. Environmental law covers a broad range of activities that affect air, water, land, flora or fauna. It includes laws that relate to Protection of animals and plants.
Factory-loaded parts	Refers to loose items
Final drive	The end of the drive train before power is transmitted to the wheels.
Fuel injection	An electronic system that increases the performance ad fuel economy because it monitors engine conditions and provides the correct air/fuel mixture based on the engine's demand. It injects fuel directly into the cylinder head enabling more precise control over the quantity used.
Governor	A speed sensing device that employs centrifugal force and spring tension to govern engine speed.
Grinder	a machine used for grinding something.
Hand tools	Tools that are manually operated by hand and does not require external power supply.
Hotchkiss drive	The type of rear suspension in which leaf springs absorbs the rear axle housing torque.
Ignition system	Electrical system devised to produce timed sparks from engine spark plug. Consisting of a battery, induction coil, capacitor, distributor, spark plugs and relevant switches and wiring.

Impact wrench	It is a socket wrench power tool designed to deliver high torque output with minimal exertion by the user, by storing energy in a rotating mass, then delivering it suddenly to the output shaft.
Intake manifold	Tubing attached to the engine through which the air/fuel mixture reaches the cylinder.
Job control	It is a process of managing workshop load distribution.
Job order	Instructions in performing work according to specified time, cost estimates and requirements.
Light duty vehicles	These are motor vehicles whose gross vehicle weight is equal or less than 3,500 kgs. Powered by a gas or diesel engine.
Lubricant	A substance, such as oil or grease, used for minimizing friction, especially in an engine or component.
Manual transmission fluid	A fluid used for manual transmission
Master cylinder	The liquid-filled cylinder in the hydraulic brake system or clutch, where hydraulic pressure is developed when depresses a foot pedal.
Measuring tools	It is a device for measuring a physical quantity. In the physical sciences, quality assurance, and engineering, measurement is the activity of obtaining and comparing physical quantities of real-world objects and events.
Multi point inspection	Involves looking at all your vehicle's major systems. Checking all the fluids, belts, hoses, tires, transmission & drivetrain, steering components, battery, lights, brakes, air, and gasoline.
OSHS	Occupational Safety and Health Standards
Patent plate / Vehicle identification number (VIN) plate	A plate containing vehicle identification number (VIN), engine number, color code, and other information related to the vehicle.
Periodic maintenance schedule	Also known as Preventive maintenance service
Periodic maintenance service	The regular servicing prescribed by manufacturer to maintain the vehicle's top performance.
Personal protective	It is equipment that will protect the user against health or

equipment (PPE)	safety risks at work.
Pneumatic grease gun	It is a common workshop and garage tool used for lubrication. Air-powered (pneumatic), where compressed air is directed to the gun by hoses, the air pressure serving to force the grease through the aperture.
Pneumatic oil dispenser	A pump jack, often used to pump oil out of wells.
Pneumatic tools	These tools are powered by compressed air. Common types of these air-powered hand tools that are used in industry.
Positive crank ventilation	An emission control system that prevents crank case gases from entering the atmosphere, usually by drawing the gases from the crank case and feeding them into the engine's induction system.
Position vehicle	Any act of moving the vehicle whether manual or with the use of equipment.
Power steering	A steering that has been designed to make the wheel move more easily than in a manual steering system. Hydraulic assists the process utilizing hydraulic fluid. The fluid increases pressure in the power steering pump and aids in the movement of the steering mechanism. This fluid, called power steering fluid, is what is replaced at regular intervals to keep steering soft and comfortable.
Power tools	Tools that are actuated by an additional power source and mechanism other than the solely manual labor used with hand tools.
Pressure	The continuous physical force exerted on or against an object by something in contact with it.
Quality check	Checking and inspection of work done to make sure that servicing was done according to manufacturer standards.
Repair order	Document where services made to the vehicle are listed.
Revolutions per minute (rpm)	It is a measure of the frequency of rotation, specifically the number of rotations around a fixed axis in one minute. It is used as a measure of rotational speed of a mechanical component.
Special Service tools	A tool specially designed for specific job.
Steering system	An automotive system that is used to turn the wheels of a vehicle.

Suspension system	An automotive system of tires, tire air, springs, shock absorbers and linkages that connects a vehicle to its wheels and allows to relative motion between the two.
Super charged engine	An engine that is similar to a turbo-charged engine which uses a series of belts or chains from the crankshaft to turn the turbines that forces the air/fuel mixture into the cylinder heads under pressure creating a bigger explosion which generates more power. A turbocharger uses the exhaust gases to turn the turbines to create the same effect.
Thermostat	A device for automatic regulation of temperature.
Torque	A twisting force that tends to cause rotation.
Transaxle	Type of construction in which the transmission and differential are combined in one unit.
Trouble light	It is a special lamp used to illuminate obscure places and able to handle moderate abuse. The lightbulb is housed in a protective cage and a handle that are molded to form a single unit.
Turbo charged engine	A performance-increasing turbine positioned in the exhaust system. Expanding exhaust gases spin an impeller (very small fan-type blades) at speeds up to 25 thousand rpm, driving a similar compressing impeller. Compressed air from the driven impeller is forced into the induction system, which squeezes more air/fuel mixture into the combustion chambers. With the greater charge of air and fuel, a more powerful combustion burn results, thus more power. The big advantage of the turbo over directly driven superchargers is the increased efficiency, although there is a slight lag before the turbine spins up and increases the power output. Originally turbo was developed to enable aircraft to fly at high altitudes, then they found use in diesel trucks and train engines to increase their torque.
U-joint	A four-joint cross-connected to two U-shaped yokes that serve as a flexible coupling between shafts.
Vehicle performance	It refers to operational and functional condition of the vehicle.
Vehicle reference materials	Materials which contains information for operations, maintenance and repair of vehicles.
Wash bay	Area where the vehicle is washed after service.

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