Vehicle Servicing and Repairing Level II

Learning guide

Unit of Competence: - inspect and servicing engine systems

Module Title: inspecting and servicing engine systems

LG Code: EIS VSR2 M02 L04-
TTLM Code: EIS VSR2 TTLM 0919v1

L04: Cleanup work area and finalize work processes

Instruction Sheet	Learning Guide

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- final inspection
- Clean vehicle.
- check and store Tools and equipment
- complete Workplace documentation

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Final inspection in accordance with workplace procedures and manufacturer specifications.
- Final inspection is made to ensure work is to workplace expectations
- Check and store tools and equipment presented for use or storage to workplace expectations
- Complete workplace processed in accordance with workplace procedures

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in Information Sheets.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1” in the module
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “learning guide”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to “Information Sheets”.
7. Submit your accomplished Self-checks in learning guide. This will form part of your training portfolio.
8. Read the information written in the “Learning Guide”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
9. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work

Final Inspection

Consumers' expectations are that they will receive their vehicle back in a serviceable condition and in a better operational condition than when it was delivered to the workshop. This expectation requires two (2) critical components:

- A final inspection must be completed by the service technician to ensure that all of the protective features for the braking system have been refitted is replaced to the required specifications; and
- A final inspection must be completed by the service technician to ensure that all of the work that was commenced on the system was completed to workplace, customer and manufacturers expectations.

Service provision

There are some tasks that a technician will not carry out frequently. It would be unrealistic for a technician to have a detailed knowledge of seldom-performed procedures. In these circumstances, job cards or checklists are very useful as they give a step-by-step guide to follow whenever the rarely-used procedure needs to be performed. The required knowledge is often kept in manuals which may not be easily accessible. However, going through a large manual, possibly in front of a customer, does nothing for time effectiveness or professional image.

A job card is also used as the basis of a recording process for the organization. In addition to refreshing the process for the technician it will be a list of the workplace expectations as well. It is suggested that the final task on a job card will be to ensure that the equipment is cleaned for use or storage.

Noting and documenting observations during the service

The most precise way to document instruction is to create a Running Record, or virtual transcript, noting what was observed every two minutes.

Direct observation of behaviors is important for many reasons. It is a means of generating hypotheses and new ideas or a means of answering specific questions. Observations also enable us to answer questions about what happens during repairing. For the purpose of these observations, time sampling is used to record engine parts repairing.

An observer should attend to all contextual details on the parts of engine repair. Observers do not make any assumptions at any time. They do not assume that any event is instructionally relevant or irrelevant. Observers should avoid biases based on personal preferences or practice. That is, when assigned to observe a particular instructional program, observers do not judge the engine parts or specific activities during repairing.

Observers must record what kind of an engine part is repaired without making ongoing judgments about the quality of engine part repairing or the effective use of a particular technique. The observer's job is to capture what happened, not his or her opinion of what happened. After noting and documenting the observation during the repair every technician should complete work shop practice schedule documentation.

Follow these three general principles to develop records and documents:

1. Keep it short and simple. Use bullet points and flow diagrams instead of long sentences and lengthy paragraphs.
2. Clarity is important. Step-by-step instructions are easily understood.
3. Use a standardized, consistent format. Although different programs may need different documents and records, using a similar approach will help staff learn quickly.

Completing and delivering report to appropriate person

Delivery is the process of transporting something/ like reports/ from a source location to a predefined destination after the work is done. The technician should be prepare a report and deliver to appropriate person. The reporting procedures are as follows

- Record the work to be done
- Inspect/test the repaired engine accordance with manufacturer procedure
- Record/ capture the problem with the necessary information
- Order the recorded problems /work done in accordance with their damaging area
- Preparing reports have no error/discrepancy
- Deliver reports to appropriate person.

Cleaning and making ready workplace for next work

Cleaning is not just a measure of respect for the workspace, it also removes hazards. Plan to easily and regularly remove trash and debris. Enforce a strict clean up policy throughout the workspace. Keep work areas tidy as well by minimizing the number of wires running around. Extension cords quickly become tripping hazards, and power

strips also cause trouble on the ground or as they tumble erratically on a desktop. We suggest you provide access to grounded outlets all along the perimeter of the room and/or dropped from the ceiling for each workbench.

Kinds of Cleaning Solvents

Solutions are homogeneous mixture of two or more components. They can be gaseous, liquid or solid. When we speak of a solution, we usually think of a solid dissolved in water. While water is the most common solvent, other liquids are frequently employed as solvents for certain substances for example wax maybe dissolved in gasoline. The dissolved material in a solution is termed as solute (e.g. Wax) while the dissolving medium is called solvent (e.g. Gasoline). However, the term can be interchanged depending on which substance is of greater amount.

Solvent is a component of a solution that dissolves solute and is usually present in large proportion or amount. It can be classified as polar or non-polar. Polar solvents are solvents which dissolve/are soluble in water; while non-polar solvents are solvents which do not dissolve/are insoluble in water.

Solvents usually used for cleaning in automotive shops are: water, gasoline, kerosene, thinner and detergent soap.

The table below shows the kinds of cleaning solvents based on their solubility in water.

Cleaning Solvents	Solubility in Water	Polar	Nonpolar
a. Water	Soluble	X	
b. Gasoline	Insoluble		X
c. Kerosene	Insoluble		X
d. Thinner	Insoluble		X
e. Detergent soap	Soluble	X	

Properties of Cleaning Solvents

A useful generalization much quoted is that “Like dissolves like”. More specifically, high solubility occurs when the molecules of the solute are similar in structure and electrical properties to the molecules of the solvent.

When there is a similarity of electrical properties; e.g. High dipole element between solute and solvent, the solute-solvent attractions are particularly strong. When there is dissimilarity, solute-solvent attractions are weak. For this reason, a polar substance such as H2O usually is a good solvent for a polar substance such as detergent soap but a poor solvent for a non-polar substance such as gasoline.

Uses of Cleaning Solvents

Cleaning Solvents	Uses
1. Gasoline	- It is used to wash oil/greasy tools/equipment.
2. Diesel	- It is used to wash oil engine, transmission and other parts of the vehicle.
3. Kerosene	- It is used to remove dust, grease oil, paint, etc.
4. Thinner	-It is used to remove spilled paint on the floor, walls and tools.
5. Soap and water	- It is used to wash/clean upholstered furniture such as seats, tables, cabinets, etc.

Occupational Health and Safety Practices in Handling Cleaning Solvents

A great percentage of eye injury and cuts results from a disregard for the simplest of rules in handling cleaning solvents. You should never use compressed air to clean your clothes, hands or body. The pressure could cause the cleaning solvents and dirt particles to penetrate your skin, resulting in infection and /or blood poisoning. Do not use compressed air to clean an object immediately after it has been removed from a hot cleaning tank. First, rinse the cleaning solvents away with water. Do not use carbon tetrachloride as a cleaning solution. The fumes, when inhaled can cause serious internal injury and possibly result in death. When steam-cleaning, place the object to be cleaned on a pallet and wear a face shield and rubber gloves for protection against loose debris.

If a job or cleaning task requires the use of gloves, use the appropriate gloves. Do not for instance use welding gloves when removing an object from a hot tank, or rubber gloves when welding. If you have cut, nicked, or burned yourself, or something has got into your eyes, report immediately to the first-aid person.

Keep all inflammable cleaning solvents in closed tin containers and whenever possible, store them in a separate area.

Cleaning procedures

- ✓ Clean up every time whenever you leave an area, including sweeping the floor.
- ✓ Clean and return all tools to where you got them.
- ✓ Use compressed air sparingly; never aim it at another person or use it to clean hair or clothes.
- ✓ Shut off and unplug machines when cleaning, repairing, or oiling.
- ✓ Never use a rag near moving machinery.

- ✓ Use a brush, hook, or a special tool to remove chips, shavings, etc. From the work area. Never use the hands.
- ✓ Keep fingers clear of the point of operation of machines by using special tools or devices, such as, push sticks, hooks, pliers, etc.
- ✓ Keep the floor around machines clean, dry, and free from trip hazards. Do not allow chips to accumulate.
- ✓ Mop up spills immediately and put a chair or cone over them if they are wet enough to cause someone to slip.

Self-Check	Written Test

Directions: Answer all the questions listed below

1. **What are the three general principles to develop records and documents(3)**

   A----------

   B.----------

   C.----------

2. **List the cleaning solvents (5)**

   A.----------

   B.----------

   C.----------

   D.----------

   E.----------

OPERATION SHEET-4.1

OPERATION TITLE:- cleaning work area and equipment's
PURPOSE:- prevents hazard and injuries
CONDITIONS OR SITUATIONS FOR THE OPERATIONS:-

- ✓ Bright/good visibility work area
- ✓ Cleaned and properly organized shop
- ✓ Good ventilation working area
- ✓ Occupied work shop by proper tools and equipment's
- ✓ Hazard free work shop

EQUIPMENT TOOLS AND MATERIALS : -
Consumable materials = rugs, brooms, cleaning solvent and any cleaning materials.
PROCEDURE,

- ✓ Clean up every time whenever you leave an area, including sweeping the floor.
- ✓ Clean and return all tools to where you got them.
- ✓ Use compressed air sparingly; never aim it at another person or use it to clean hair or clothes.
- ✓ Shut off and unplug machines when cleaning, repairing, or oiling.
- ✓ Never use a rag near moving machinery.
- ✓ Use a brush, hook, or a special tool to remove chips, shavings, etc. From the work area. Never use the hands.
- ✓ Keep fingers clear of the point of operation of machines by using special tools or devices, such as, push sticks, hooks, pliers, etc.
- ✓ Keep the floor around machines clean, dry, and free from trip hazards. Do not allow chips to accumulate.
- ✓ Mop up spills immediately and put a chair or cone over them if they are wet enough to cause someone to slip.

PRECAUTIONS:-

- ✓ Wear appropriate clothes, shoe ...
- ✓ prepare tools, equipment's and materials used for cleaning purpose
- ✓ read and interpret manuals which guide you how to clean work area, tools and equipment's

QUALITY CRITERIA:

- ✓ all work area, tools and equipment's should be cleaned in a correct procedures
- ✓ Check and inspect work area, tools and equipment's for cleanness, attractiveness, and conformability for the next work activities

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates/guides, workshop, tools and materials you are required to perform the following tasks within 2:00 hours.

Tassk 1. Using the given template, Note and document observations during the service

Tassk 2. Using the given template, Complete workshop practice scheduled documentation

Tassk 3. Using the given template, Complete and delivering report to appropriate person

Tassk 4. Using the given template, Clean and make ready workplace for next work

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For further communication about TTLM

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