PERFORM INSTALLATIN OF MOTOR CONTROL SYSTEM

NTQF Level II

Learning Guide #25

Unit of Competence: **Perform installation of motor controller system**

Module Title: **Performing installation of motor controller system**

LG Code: EEL EMD2 M02LO6-LG25

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LO6: Clean-Up

Instruction Sheet	Learning Guide #06

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

- Checking and maintaining tools and equipment
- Clean work area
- Returning Surplus Materials

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 –

- Clear and materials dispose of, reuse or recycle work area in accordance with legislation/regulations/codes of practice and job specification
- clean, check, maintain and store plant, tools and equipment in accordance with manufacturers' recommendations and standard work practices
- Return Surplus materials to warehouse

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information "Sheet 1, Sheet 2and Sheet 3,-" **in page 3-4, 6-9 and 11-12** respectively.
4. Accomplish the "Self-check 1, Self-check 2 and Self-check 3 **in page 5,10 and 13** respectively
5. If you earned a satisfactory evaluation from the "Self-check" proceed to "Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3 " **in page**
6. Do the "LAP test" **in page**

Information Sheet-1	Checking and maintaining tools and equipment

1. Checking and maintaining tools and equipment

1.1 TOOL WORK HABITS

LEARNING OBJECTIVES: Describe the Tool Control Program. List several good tool work habits. "A place for everything and everything in its place" is just good common sense. You can't do an efficient repair job if you have to stop and look around for each tool you need. The following rules will make your job easier and safer.

1.2 KEEP EACH TOOL IN ITS PROPER STOWAGE

PLACE. All divisions have incorporated a Tool Control Program as directed by the Aircraft Launch and Recovery Equipment Maintenance Program (ALREMP).

The Tool Control Program is based on the concept of a family of specialized tool boxes and pouches configured for instant inventory before and after each maintenance action. The content and configuration of each container is tailored to the task, work center, and equipment maintained. Work center containers are assigned to and maintained within a work center. Other boxes and specialized tools are checked out from the tool control center (tool room).

Keep your tools in good condition. Protect them from rust, nicks, burrs, and breakage.

Keep your tool allowance complete.

When you are issued a toolbox, each tool should be placed in it when not in use. When the toolbox is not actually at the work site, it should be locked and stored in a designated area.

1.3 USE EACH TOOL ONLY FOR THE JOB IT WAS DESIGNED TO DO.

Each particular type of tool has a specific purpose. If you use the wrong tool when performing maintenance or repairs, you may cause damage to the equipment you're working on or damage the tool itself. Remember, improper use of tools results in improper maintenance. Improper maintenance results in damage to equipment and possible injury or death to you or others.

1.4 SAFE MAINTENANCE PRACTICES

Always avoid placing tools on or above machinery or an electrical apparatus. Never leave tools unattended where machinery or aircraft engines are running.

1.5 NEVER USE DAMAGED TOOLS.

A battered screwdriver may slip and spoil the screw slot, damage other parts, or cause painful injury. A gauge strained out of shape will result in inaccurate measurements.

Remember, the efficiency of craftsmen and the tools they use are determined to a great extent by the way they keep their tools. Likewise, they are frequently judged by the manner in which they handle and care for them. Anyone watching skilled craftsmen at work notices the care and precision with which they use the tools of their trade. The care of hand tools should follow the same pattern as for personal articles; that is, always keep hand tools clean and free from dirt, grease, and foreign matter. After use, return tools promptly to their proper place in the toolbox. Improve your own efficiency by organizing your tools so that those used most frequently can be reached easily without digging through the entire contents of the box. Avoid accumulating unnecessary junk

1.6 CARE OF HAND TOOLS LEARNING OBJECTIVES: List several principles that apply to the care of hand tools.

Tools are expensive; tools are vital equipment. When the need for their use arises, common sense plus a little preventive maintenance prolongs their usefulness. The following precautions for the care of tools should be observed:

• Clean tools after each use. Oily, dirty, and greasy tools are slippery and dangerous to use.

• NEVER hammer with a wrench.

• NEVER leave tools scattered about. When they are not in use, stow them neatly on racks or in toolboxes.

• Apply a light film of oil after cleaning to prevent rust on tools.

• INVENTORY tools after use to prevent loss.

1.7 MAINTENANCE AIDS

LEARNING OBJECTIVES: Read and interpret blueprints, drawings, diagrams, and other maintenance aids. As an ABE you will be required to read blueprints and drawings during the performance of many maintenance actions required to maintain the operational readiness of the catapults and the arresting gear engines. As you advance in rating you may also be required to make sketches and drawings, which will assist you in the training of less-experienced maintenance personnel by making it possible for them

to visualize the system or object you are explaining.

1.8 BLUEPRINTS AND DRAWINGS

Blueprints are exact copies of mechanical or other types of drawings and employ a language of their own. It is a form of sign language or shorthand that uses lines, graphic symbols, dimensions, and notations to accurately describe the form size, kind of material, finish, and construction of an object. It can be said that blueprint reading is largely a matter of translating these lines and symbols into terms of procedure, materials, and other details needed to repair, maintain, or fabricate the object described on the print. Usually you can look at a blueprint and recognize the object if you are familiar with the actual part. But when you are required to make or check on a certain part, the applicable blueprint must be referred to in order to get dimensions and other pertinent information. The important thing is to know what the different symbols stand for and where to look for the important information on a blueprint. Some of the important facts listed on all blueprints are discussed in the following paragraphs.

Self-Check 1	Written Test

Part I: Enumeration

Direction: If the statement is correct write TRUE if the statement is in correct write FALSE

_____1.Good general ventilation plus local exhaust ventilation to remove air contaminants at the source.

_____ 2. Keep your tools in good condition. Protect them from rust, nicks, burrs, and breakage.

_____ 3. Always avoid placing tools on or above machinery or an electrical apparatus.

_____ 4. Remember, improper use of tools results in improper maintenance.

_____5. Use each tool only for the job it was designed to do.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-2	Clean work area

2. Clean work area

Work station is defined as an area, in an office, outfitted with equipment and furnishings for one or more workers. Normally leather goods are operated in awork shop therefore the work station for a leather goods worker would be the workshop. It is necessary for a worker t o prepare his work station and the pieces to bedone but before doing so a worker should be well a ware of the safety rules andregulations.

2.1 Housekeeping

Good housekeeping involves every phase of industrial operations and should apply throughout the entire premises, indoors and out. It is more than mere cleanliness. It requires orderly conditions, the avoidance of congestion, and

attention to such details as an orderly layout of the whole workplace, the markingof aisles, adequ ate storage arrangements, and suitable provision for cleaning and maintenance.

Efficient production and a good working environment are complementary. Theelimination o f inefficiencies and accident hazards caused by unfavorable conditions in and about the workplace is essential in getting the job done properly and safely. The attention to these important details—which may be overlooked when management's attention is concentrated upon such amenities as good cloakrooms, canteens, rest rooms, recreational facilities, etc.—is widely referred to as "good housekeeping.

A clean, well-ordered, attractive work environment sets the tone of your establishment. It encourages tidy work habits in employees. It helps reduce fatigue. It promotes good worker-management relations. It also gives a lift to morale, which is reflected in the quality of production and overall efficiency. Good housekeeping is also a good advertisement for your company. Customers and clients have more confidence in an organization when they we work being carried out efficiently in clean, pleasant, well ordered surroundings. There's an even more important reason why good housekeeping matters — it makes the undertaking a safer place to work in.

Good housekeeping is a vital factor in preventing accidents. The great majority of all work accidents are caused during the handling of goods or materials, and by people falling, being hit by falling objects, or striking against objects in the workplace. All these causes can be reduced by good housekeeping practices in fact; good housekeeping is the only cure for hundreds of accidents that occur.

Here are some kinds of accidents commonly caused by *bad* housekeeping:

- Tripping over loose objects on floors, stairs and platforms

- Articles dropping from above
- Slipping on greasy, wet or dirty surfaces
- Striking against projecting, poorly stacked, or misplaced material
- Tearing the hands or other parts of the body on projecting nails, wire, steel strapping on bales or crates, etc.

Typical examples of poor housekeeping that lead to these accidents are:

- Excessive material, waste or chips in the working area
- Congested aisles
- Tools left on machines
- Waste containers overflowing
- Lockers and workrooms in disorder
- Acids in open containers
- Broken glass
- Electric leads or air lines across aisles
- Dirty light fittings, windows and skylights

Where housekeeping is bad, fire is a constant hazard. It can be caused by many housekeeping problems such as oil-soaked rags and clothing igniting from spontaneous combustion; dust collectors not being properly or frequently cleaned; or piles of paper and other packing materials being allowed to accumulate. Poor housekeeping can also lead to infestation by pests such as rodents and cockroaches and create serious health risks.

2.2 Elements of a Good Housekeeping

The following are the basic elements of a good housekeeping:

- **Aisles**: Wide enough for traffic movements, marked off by floor lines from work positions and storage areas.
- **Space:** Insuring sufficient room for the individual to work.
- **Storage**: Adequate and convenient space for materials and tools.
- **Materials Handling**: Layout planned for materials flow, with efficient methods and equipment.
- **Ventilation**: Good general ventilation plus local exhaust ventilation to remove air contaminants at the source.
- **Floors and Walls**: They need to be constructed with materials that are easy to clean and if needed easy to repair.
- **Lighting** Welldistributed artificial light and effective use of available daylight.
- **Amenities**: Clean, up-to date washrooms and lockers for clothing, and clean and inviting lunch room for employees to eat their meals.
- **Waste Removal**: Adequate facilities to prevent congestion and disorr.

Let us look at some of these elements in detail:

Keep Aisles Clear: Aisle space should be reserved for the movement ofpersonnel, produc ts and materials. It should be kept clean and clear and shouldnever be used for “bottleneck” or “overflow’’ storage. This also applies to passageways and emergency exits. Blind corners should be eliminated or beadequately pr otected by warning signs.

Aisle boundary markings should be drawn to show clearly the space which has been reserved for traffic. Markings should be sufficiently wide (say a minimum of 30 mm) and of a color to make them clearly visible. Paint or durable plastic strips can be used.

Improve Storage Facilities: Tidiness and order are essential in overcoming storage problems, both in storerooms and in the yard. Good storage utilizes air space instead of floor space, and also saves time-wasting delays. It’s important to prevent stores and scraps accumulating on the floor and around machines. Never keep more stores and materials than necessary near machines and provide proper facilities (such as bins, shelves, boxes, racks, etc.) in which to store them.

Keep Floors Clean: Every year thousands of work injuries are caused by people falling. Floor conditions are responsible for many of these accidents. When floors are given the right treatment they are much easier to keep clean and hygienic.Spilt oil a nd other liquids should be cleaned up at once. Chips, shavings, dust,and similar waste s should never be allowed to accumulate. They should beremoved frequently, or better still, be suitably trapped before they reach the floor

Paint the Walls: Paint is one of the cheapest means of renovating walls, and a fresh coat of paint can give a boost to morale. Light-colored walls reflect light. Dirty or dark-colored walls absorb light. Dirty walls have a depressing effect and encourage dirty habits and sloppy attitudes. Choose suitable colors to paint walls, ceilings and working surfaces. See that the paintwork is cleaned down periodically. Color can be harnessed to assist with safety. For example it can be used to warn of physical hazards and to mark obstructions such as pillars. Painting handrails, machine guards and other safety equipment renders them distinctive and also prevents rust. Color can be used to highlight the hazardous parts of machinery but it can never substitute for a needed guard.

Maintain Light Fittings: Attention to light fittings should be an integral part of any good housekeeping programme. Dirty lamps and shades, and lamps whose output has deteriorated with use, deprive employees of essential light. It’s been found that lighting efficiency may be improved by 20 to 30 percent simply by cleaning the lamps and reflectors.

Clean the Windows: Clean windows let in light; dirty ones keep it out. Insufficient light causes eye strain and leads to accidents because employees are unable to see properly. Ensure that windows are not blocked by stacked

Dispose of Scrap and Prevent Spillage: It's a common practice to let the floor catch all the waste and then spend time and energy cleaning it up. It is obviously better to provide convenient containers for scrap and waste and educate employees to use them. Safety will benefit, expense will be saved, and the factory will be a better place in which to work. Oily floors are a common accident and fire hazard. Splash guards and drip pans should be installed wherever oil spills or drips may occur. Prevent accidents by keeping oil and grease off the floor.

Get Rid of Dust and Dirt: In some jobs, dust, dirt, chips, etc., are unavoidable. If they can't be collected as part of the process (e.g. by enclosure and exhaust methods) you need a way to clean them up. Vacuum cleaners are suitable for removing light dust and dirt. Industrial models have special fittings for cleaning walls, ceilings, ledges, machinery, and other hard-to-reach places where dust and dirt collect. If light dust is removed by sweeping, floors should be dampened first rather than swept dry. Oiling floors occasionally with light oil helps to lay the dust but take care that slipping hazards do not occur. Remember, it is not only floors

that need sweeping. Dust and grime also collect on ledges, shelves, piping, conduits, lamps, reflectors, windows, cupboards, lockers, and so on and all these places need attention.

Self-Check 2	Written Test

Part II: Enumeration

Direction: Write/List down the following

1. ----------is defined as an area, in an office, outfitted with equipment and furnishings for one or more workers.

2. List at list five the basic elements of a good housekeeping.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	Returning Surplus Materials

3. Returning Surplus Materials

3.1 How to Handle Surplus Materials after an Installation Is Completed

SUMMARY

The Installed Sales contract has been updated with a new Certificate of Completion (COC), which explains the customer's options for handling surplus materials left over from an Installed Sales project. The customer must decide how they want to handle surplus materials, and indicate their choice by initialing beside it on the COC.
Only **unused receipted** surplus materials may be offered to customers, as clarified below.

- Customer has the option to receive some or all **unused, receipted** surplus
- materials from their installation Customer does **NOT** have the option to receive items not listed on the installed sales contract or receipt
- ***Examples***: tack strip for carpet installs, caulking and shims for door installs, fasteners for roofing and cabinet installs, countertop scrap cutouts for countertop installs, and installer-supplied lumber materials used for storage building installs

Note: It is still the installer's responsibility to remove and properly dispose of scraps and waste materials as part of the normal job site clean-up.

3.2 **SURPLUS MATERIAL OPTIONS on the COC**

The customer must choose one of the 3 surplus material options on the COC by initialing beside it; see below.
Note: A signed COC will be considered incomplete unless the customer initials beside 1 of the 3 options.
Option 1: _____ There were no such surplus materials
Example: There were no surplus materials, because all receipted product was used during the installation.
Option 2: _____ I accepted all surplus materials I wanted
Example: At completion of install, there were unused receipted materials, and the customer accepted Lowe's offer to give them the surplus materials. (The customer marks this option if they want to keep some or all surplus materials, **OR** if they want to receive return credit or a refund for some or all of the surplus materials. [If so, the items need to be transported to the store for the customer and processed as a return under Lowe's Return Policy.])

Option 3: _____ I declined to receive any surplus materials

Example: At completion of install, there were unused receipted materials, and the customer decided not to accept Lowe's offer to give them the surplus materials. (The customer marks this option if they do not want to keep any of the surplus materials and they do not want to receive return credit or a refund for some or all of the surplus materials. [The unused receipted items must be transported to the store for the customer and processed/handled, but no credit or refund will be given to the customer.])

3.3 INSTRUCTIONS for INSTALLER RETURNING SURPLUS MATERIALS to the STORE

1. Installer transports unused receipted surplus material from job site to the store.

2. The Manager on Duty (MOD), Department Manager of Installed Sales (DMIS), or Installed Sales Coordinator (ISC) must log into an LRT or Genesis to create an MR for the returned surplus material.

3. Once the MR has been submitted, the MOD must approve the MR.

4. Installer will be given a copy of the MR Worksheet.

Note: Installers returning product to the store must obtain a copy of the MR worksheet. This will serve as proof of the return.

Self-Check 3	Written Test

Part III: Enumeration

Direction: Write on the blank space/List down the following

1. List Three OPTIONS SURPLUS MATERIAL on the COC.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____