An Oshkosh Corporation Company

Operation and Safety Manual

Original Instructions - Keep this manual with the machine at all times.

Model - 10MSP

ANSI

CE

P/N - 3121227
April 9, 2013

FOREWORD

This manual is a very important tool! Keep it with the machine at all times.

The purpose of this manual is to provide owners, users, operators, lessors, and lessees with the precautions and operating procedures essential for the safe and proper machine operation for its intended purpose.

Due to continuous product improvements, JLG Industries, Inc. reserves the right to make specification changes without prior notification. Contact JLG Industries, Inc. for updated information.

Other Publications Available:

Service Manual 3121228
Illustrated Parts Manual 3121229

SAFETY ALERT SYMBOLS AND SAFETY SIGNAL WORDS

This is the Safety Alert Symbol. It is used to alert you to the potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death

⚠ DANGER

INDICATES AN IMMINENTLY HAZARDOUS SITUATION. IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE A RED BACKGROUND.

⚠ WARNING

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE AN ORANGE BACKGROUND.

⚠ CAUTION

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO ALERT AGAINST UNSAFE PRACTICES. THIS DECAL WILL HAVE A YELLOW BACKGROUND.

NOTICE

INDICATES INFORMATION OR A COMPANY POLICY THAT RELATES DIRECTLY OR INDIRECTLY TO THE SAFETY OF PERSONNEL OR PROTECTION OF PROPERTY.

⚠ WARNING

THIS PRODUCT MUST COMPLY WITH ALL SAFETY RELATED BULLETINS. CONTACT JLG INDUSTRIES, INC. OR THE LOCAL AUTHORIZED JLG REPRESENTATIVE FOR INFORMATION REGARDING SAFETY RELATED BULLETINS WHICH MAY HAVE BEEN ISSUED FOR THIS PRODUCT.

NOTICE

JLG INDUSTRIES, INC. SENDS SAFETY RELATED BULLETINS TO THE OWNER OF RECORD OF THIS MACHINE. CONTACT JLG INDUSTRIES, INC. TO ENSURE THAT THE CURRENT OWNER RECORDS ARE UPDATED AND ACCURATE.

NOTICE

JLG INDUSTRIES, INC. MUST BE NOTIFIED IMMEDIATELY IN ALL INSTANCES WHERE JLG PRODUCTS HAVE BEEN INVOLVED IN AN ACCIDENT INVOLVING BODILY INJURY OR DEATH OF PERSONNEL OR WHEN SUBSTANTIAL DAMAGE HAS OCCURRED TO PERSONAL PROPERTY OR THE JLG PRODUCT.

For :

- Accident Reporting
- Product Safety Publications
- Current Owner Updates
- Questions Regarding Product Safety
- Standards and Regulations Compliance Information
- Questions Regarding Special Product Applications
- Questions Regarding Product Modifications

Contact :

Product Safety and Reliability Department
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McConnellsburg, PA 17233

or Your Local JLG Office
(See addresses on manual rear cover)

In USA:

Toll Free: 877-JLG-SAFE (877-554-7233)

Outside USA:

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E-mail: ProductSafety@JLG.com

REVISION LOG

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LIST OF FIGURES

LIST OF TABLES

SECTION 1. SAFETY PRECAUTIONS

1.1 GENERAL

This section outlines the necessary precautions for proper and safe machine usage and maintenance. For proper machine use, it is mandatory that a daily routine is established based on the content of this manual. A maintenance program, using the information provided in this manual and the Service and Maintenance Manual, must also be established by a qualified person and must be followed to ensure that the machine is safe to operate.

The owner/user/operator/lessor/lessee of the machine should not accept operating responsibility until this manual has been read, training is accomplished, and operation of the machine has been completed under the supervision of an experienced and qualified operator.

If there are any questions with regard to safety, training, inspection, maintenance, application, and operation, please contact JLG Industries, Inc. *("JLG")*.

⚠ WARNING

FAILURE TO COMPLY WITH THE SAFETY PRECAUTIONS LISTED IN THIS MANUAL COULD RESULT IN MACHINE DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

NOTICE

THE FOLLOWING INFORMATION IS PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EUROPEAN MACHINERY DIRECTIVE 2006/42/EC AND IS ONLY APPLICABLE TO CE MACHINES:

FOR ELECTRIC POWERED MACHINES, THE EQUIVALENT CONTINUOUS A-WEIGHTED SOUND PRESSURE LEVEL AT THE WORK PLATFORM IS LESS THAN 70DB(A).

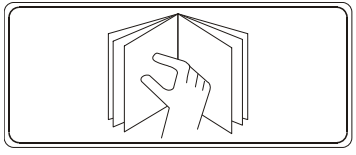
FOR COMBUSTION ENGINE POWERED MACHINES, GUARANTEED SOUND POWER LEVEL (LWA) PER EUROPEAN DIRECTIVE 2000/ 14/EC (NOISE EMISSION IN THE ENVIRONMENT BY EQUIPMENT FOR USE OUTDOORS) BASED ON TEST METHODS IN ACCORDANCE WITH ANNEX III, PART B, METHOD 1 AND 0 OF THE DIRECTIVE, IS 109 DB.

THE VIBRATION TOTAL VALUE TO WHICH THE HAND-ARM SYSTEM IS SUBJECTED DOES NOT EXCEED 2,5 M/S2. THE HIGHEST ROOT MEAN SQUARE VALUE OF WEIGHTED ACCELERATION TO WHICH THE WHOLE BODY IS SUBJECTED DOES NOT EXCEED 0,5 M/S2.

1.2 PRE-OPERATION

Operator Training And Knowledge

- Read and understand this manual before operating the machine.



- Do not operate this machine until complete training is performed by authorized persons.
- Only authorized and qualified personnel can operate the machine.
- Read, understand, and obey all DANGERS, WARNINGS, CAUTIONS, and operating instructions on the machine and in this manual.
- Use the machine in a manner which is within the scope of its intended application set by JLG.
- All operating personnel must be familiar with the emergency controls and emergency operation of the machine as specified in this manual.
- Read, understand, and obey all applicable employer, local, and governmental regulations as they pertain to operation of the machine.

Workplace Inspection

- The operator is to take safety measures to avoid all hazards in the work area prior to machine operation.
- Do not operate or raise the platform while on trucks, trailers, railway cars, floating vessels, scaffolds or other equipment unless approved in writing by JLG.
- This machine can be operated in temperatures of 0° F to 104° F *(-20° C to 40° C)*. Consult JLG for operation outside this range.

Machine Inspection

- Before machine operation, perform inspections and functional checks. Refer to Section 2 of this manual for detailed instructions.
- Do not operate this machine until it has been serviced and maintained according to requirements specified in the Service and Maintenance Manual.
- Ensure all safety devices are operating properly. Modification of these devices is a safety violation.

⚠ WARNING

MODIFICATION OR ALTERATION OF AN AERIAL WORK PLATFORM SHALL BE MADE ONLY WITH PRIOR WRITTEN PERMISSION FROM THE MANUFACTURER

- Do not operate any machine on which the safety or instruction placards or decals are missing or illegible.
- Avoid any build up of debris on platform floor. Keep mud, oil, grease, and other slippery substances from footwear and platform floor.

1.3 OPERATION

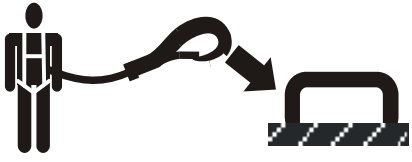
General

- Do not use the machine for any purpose other than positioning personnel, their tools and equipment, or for hand stock picking.
- Never operate a machine that is not working properly. If a malfunction occurs, shut down the machine.
- Never slam a control switch or lever through neutral to an opposite direction. Always return switch to neutral and stop before moving the switch to the next function. Operate controls with slow and even pressure.
- Do not allow personnel to tamper with or operate the machine from the ground with personnel in the platform, except in an emergency.
- Do not carry materials directly on platform railing unless approved by JLG.
- Always ensure that power tools are properly stowed and never left hanging by their cord from the platform work area.
- Fully lower mast assembly and shut off all power before leaving machine.
- No riders are permitted on machine. Operator only in machine during operation.

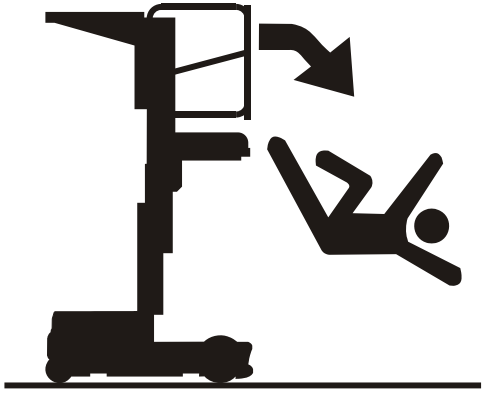
- When performing welding operations at elevation, precautions must be taken to protect all machine components from contact with weld splatter or molten metal.
- Battery fluid is highly corrosive. Avoid contact with skin and clothing at all times.
- Charge batteries on in a well ventilated area.

Trip and Fall Hazards

- JLG Industries, Inc. recommends that the operator utilize a fall restraint system in the platform with a maximum 30 inch (76 cm) lanyard attached to an authorized lanyard anchorage point. For further information regarding fall protection requirements on JLG products, contact JLG Industries, Inc.



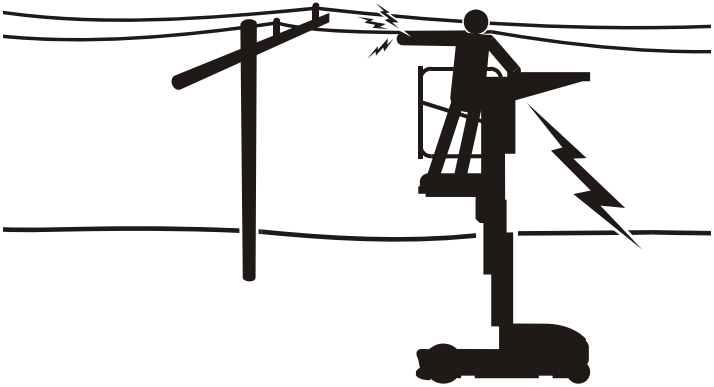
- Before operating the machine, make sure all railing and gates are fastened in their proper position.



- Keep both feet firmly positioned on the platform floor at all times. Never use ladders, boxes, steps, planks, or similar items on platform to provide additional reach.
- Never use the mast assembly to enter or leave the platform.
- Use extreme caution when entering or leaving platform. Ensure that the mast assembly is fully lowered. Face the machine when entering or leaving the platform. Always maintain “three point contact” with the machine, using two hands and one foot or two feet and one hand at all times during entry and exit.

Electrocution Hazards

- This machine is not insulated and does not provide protection from contact or proximity to electrical current.



- Maintain distance from electrical lines, apparatus, or any energized (exposed or insulated) parts according to the Minimum Approach Distance (MAD) as shown in Table 1-1.
- Allow for machine movement and electrical line swaying.

Table 1-1. Minimum Approach Distances (M.A.D.)

Voltage Range (Phase to Phase)	MINIMUM APPROACH DISTANCE in Feet (Meters)
0 to 50 KV	10 (3)
Over 50KV to 200 KV	15 (5)
Over 200 KV to 350 KV	20 (6)
Over 350 KV to 500 KV	25 (8)
Over 500 KV to 750 KV	35 (11)
Over 750 KV to 1000 KV	45 (14)
NOTE: This requirement shall apply except where employer, local or governmental regulations are more stringent.	

- Maintain a clearance of at least 10 ft. (3m) between any part of the machine and its occupants, their tools, and their equipment from any electrical line or apparatus carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less.
- The minimum approach distance may be reduced if insulating barriers are installed to prevent contact, and the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of (or attached to) the machine. The minimum approach distance shall be reduced to a distance within the designed working dimensions of the insulating barrier. This determination shall be

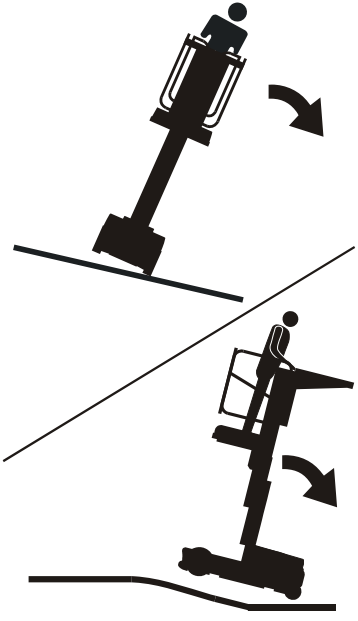
made by a qualified person in accordance with the employer, local, or governmental requirements for work practices near energized equipment

⚠ DANGER

DO NOT MANEUVER MACHINE OR PERSONNEL INSIDE PROHIBITED ZONE (MAD). ASSUME ALL ELECTRICAL PARTS AND WIRING ARE ENERGIZED UNLESS KNOWN OTHERWISE.

Tipping Hazards

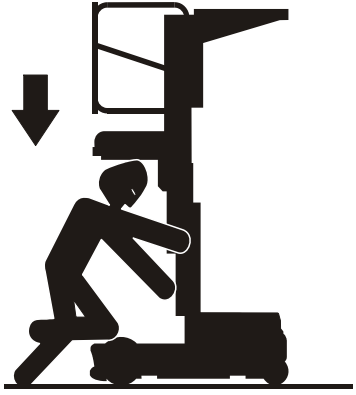
- The user should be familiar with the surface before driving. Do not exceed the allowable sideslope and grade while driving.



- Do not elevate platform or drive with platform elevated while on a slope, or on an uneven or soft surface.
- Before driving on floors, bridges, trucks, and other surfaces, check allowable capacity of the surfaces.
- Never exceed the maximum platform capacity. Distribute loads evenly on platform floor and material tray.
- Keep the chassis of the machine a minimum of 2 ft. (0.6m) from holes, bumps, drop-offs, obstructions, debris, concealed holes, and other potential hazards at the ground level.
- Never attempt to use the machine as a crane. Do not tie-off machine to any adjacent structure.
- Do not increase the platform size with unauthorized deck extensions or attachments, increasing the area exposed to wind will decrease stability.
- If mast assembly or platform is caught so that one or more wheels are off the ground, the operator must be removed before attempting to free the machine. Use cranes, forklift trucks, or other appropriate equipment to stabilize machine and remove personnel.

Crushing And Collision Hazards

- Personal protection equipment must be worn by all operating and ground personnel.
- Check work area clearances above, on sides, and bottom of platform while driving and lifting or lowering platform.



- During operation, keep all body parts inside platform railing.
- Always post a lookout when driving in areas where vision is obstructed.

- Keep non-operating personnel at least 6 ft. *(1.8m)* away from machine during all driving operations.
- Limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel, and other factors causing hazards of collision or injury to personnel.
- Be aware of stopping distances in all drive speeds.
- Do not drive at high speeds in restricted or close quarters or when driving in reverse.
- Exercise extreme caution at all times to prevent obstacles from striking or interfering with operating controls and persons in the platform.
- Ensure that operators of other overhead and floor level machines are aware of the aerial work platform's presence. Disconnect power to overhead cranes.
- Warn personnel not to work, stand, or walk under a raised platform. Position barricades on floor as necessary.

1.4 LIFTING, AND HAULING

General

- Never allow personnel in platform while lifting, or hauling.
- This machine should not be towed in the event of emergency, malfunction, power failure, or loading/unloading. Lift only with a fork lift truck using the designated fork lift pockets in the machine's base frame.
- Ensure platform is fully retracted and completely empty of tools prior to lifting or hauling.
- When lifting machine with a forklift, position forks only at designated areas of the machine. Lift with a forklift of adequate capacity.
- Refer to the Machine Operation section of this manual for lifting information.

SECTION 2. PREPARATION AND INSPECTION

2.1 PERSONNEL TRAINING

The aerial platform is a personnel handling device; so it is necessary it be operated and maintained only by trained personnel.

Persons under the influence of drugs or alcohol or who are subject to seizures, dizziness or loss of physical control must not operate this machine.

Operator Training

Operator training must cover:

1. Use and limitations of the controls in the platform and at the ground, emergency controls and safety systems.
2. Control labels, instructions, and warnings on the machine.
3. Rules of the employer and government regulations.
4. Use of approved fall protection device.
5. Enough knowledge of the mechanical operation of the machine to recognize a malfunction or potential malfunction.
6. The safest means to operate the machine where overhead obstructions, other moving equipment, and obstacles, depressions, holes, drop-offs are present.
7. Means to avoid the hazards of unprotected electrical conductors.
8. Specific job requirements or machine application.

Training Supervision

Training must be done under the supervision of a qualified person in an open area free of obstructions until the trainee has developed the ability to safely control and operate the machine.

Operator Responsibility

The operator must be instructed that he/she has the responsibility and authority to shut down the machine in case of a malfunction or other unsafe condition of either the machine or the job site.

NOTE: *The Manufacturer or Distributor will provide qualified people for training assistance with the first unit(s) delivered and from that time forward as requested by the user or his/her personnel.*

2.2 PREPARATION, INSPECTION, AND MAINTENANCE

The following Table 2-1 on page 2-3, covers the periodic machine inspections and maintenance recommended by JLG Industries, Inc. Consult local regulations for further requirements for aerial work platforms.

The frequency of inspections and maintenance must be increased as necessary when the machine is used in a harsh or hostile environment, if the machine is used with increased frequency, or if the machine is used in a severe manner.

Table 2-1. Inspection and Maintenance Table

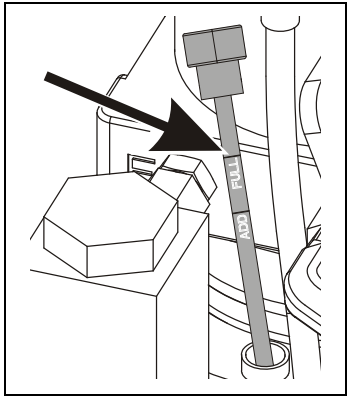
TYPE	FREQUENCY	PRIMARY RESPONSIBILITY	SERVICE QUALIFICATION	REFERENCE
Pre-Start Inspection	Before using each day; or whenever there's an Operator change.	User or Operator	User or Operator	Operator and Safety Manual
Pre-Delivery Inspection *(See Note)*	Before each sale, lease, or rental delivery.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual and applicable JLG inspection form
Frequent Inspection	In service for 3 months or 150 hours, whichever comes first; or; Out of service for a period of more than 3 months; or Purchased used.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual and applicable JLG inspection form
Annual Machine Inspection	Annually, no later than 13 months from the date of prior inspection.	Owner, Dealer, or User	Qualified JLG Mechanic *(Recommended)*	Service and Maintenance Manual and applicable JLG inspection form
Preventative Maintenance	At intervals as specified in the Service and Maintenance Manual.	Owner, Dealer, or User	Qualified JLG Mechanic	Service and Maintenance Manual
NOTE: *Inspection forms are available from JLG. Use the Service and Maintenance Manual to perform inspections.*				

2.3 PRE-START INSPECTION

The Pre-Start Inspection should include each of the following:

1. **Cleanliness –** Check all surfaces for leakage (hydraulic oil or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.
2. **Decals and Placards** – Check all for cleanliness and legibility. Make sure no decals or placards are missing. Make sure all illegible decals and placards are cleaned or replaced. *(Reference "Decal Installations" in Section 3)*.
3. **Operation and Safety Manuals** – Make sure a copy of the Operator and Safety Manual, EMI Safety Manual (ANSI/CSA Spec only), and ANSI Manual of Responsibilities (ANSI/CSA Spec only) is enclosed in the weather resistant storage container.
4. **Daily Walk-Around Inspection** – *(See Section 2.4 on page 2-5)*
5. **Battery – C**harge as required (See Section 3.5 on page 3-5).
6. **Hydraulic Oil** – The hydraulic oil level in the pump reservoir can vary with oil temperature, i.e a machine that is cold the oil level may not be up to the FULL line on the dipstick. Cycle the mast up and down a few times to get a more accurate reading on the dipstick. Once the hydraulic oil is warmed check the dipstick reading, it should be up to or close to the FULL line on the dipstick.
   - DO NOT FILL PAST THE FULL LINE.
   - ALWAYS ADD oil if level is at or below the ADD line.

NOTE: *If hydraulic oil is to be added, CHECK THE HYDRAULIC OIL DECAL located on the right side frame, opposite the pump assembly, for hydraulic oil type and specification. DO NOT OVERFILL.*



The hydraulic oil level in the reservoir located on the hydraulic pump assembly should read to or close to the FULL LINE on the Hydraulic Reservoir dip stick when hydraulic oil is at operating temperature.

7. **Function Check -** Check all machine controls for operation. *(See Section 2.5 on page 2-8)*

If optional equipment is installed on this machine refer to Section 3 for specific Pre-Start Inspection and Operation instructions.

2.4 DAILY WALK-AROUND INSPECTION

Begin the “Walk-Around Inspection” at item one (1) as noted on the diagram *(See Figure 2-1. on page 2-6)*. Continue around machine checking each item in sequence for the conditions listed in the following check list.

⚠ WARNING

TO AVOID POSSIBLE INJURY, BE SURE MACHINE POWER IS “OFF” DURING “WALK-AROUND INSPECTION”.

DO NOT OPERATE MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED.

NOTICE

DO NOT OVERLOOK VISUAL INSPECTION OF THE BASE FRAME UNDERSIDE. CHECK THIS AREA FOR OBJECTS OR DEBRIS WHICH COULD CAUSE EXTENSIVE MACHINE DAMAGE.

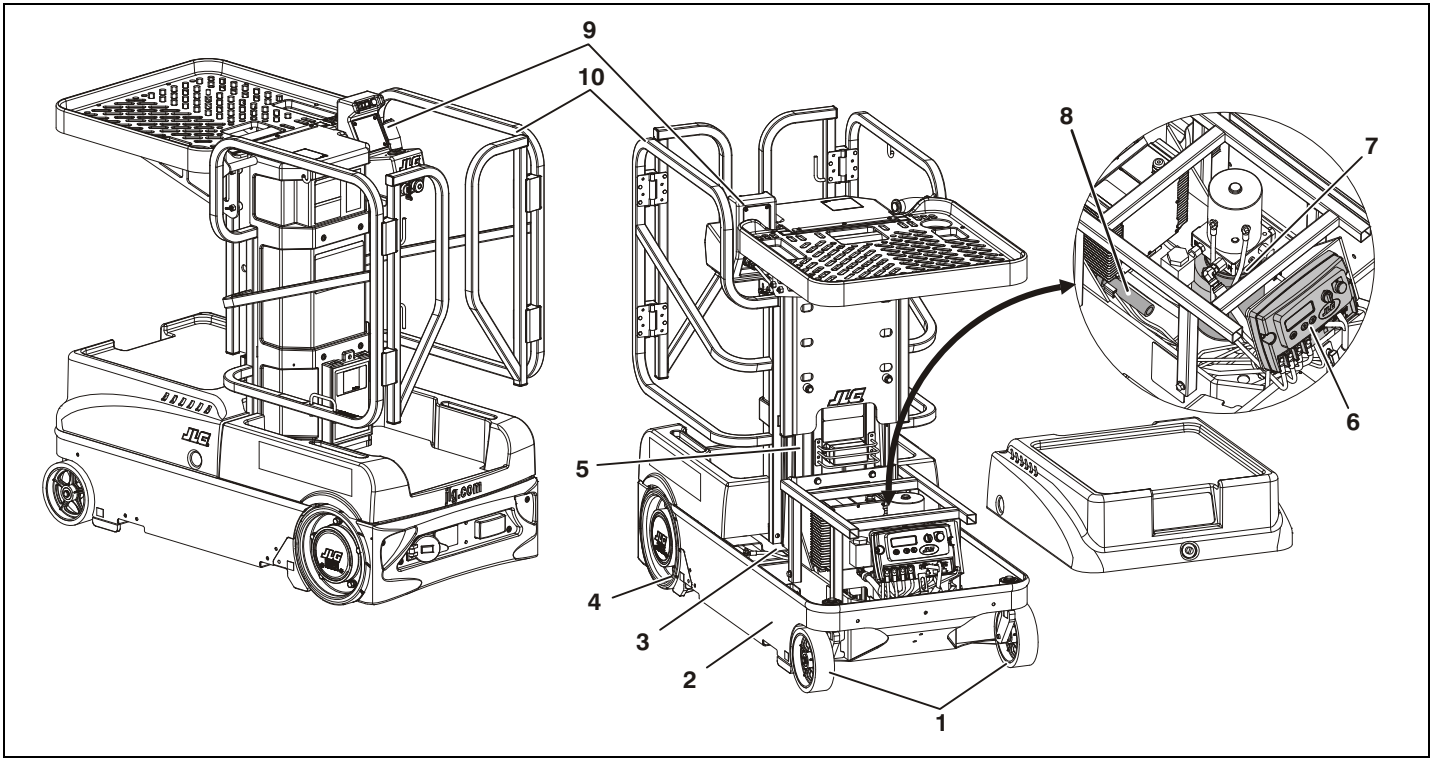


Figure 2-1. Daily Walk-Around Inspection for 10MSP Machines.

Walk-Around Inspection Components

Reference - Figure 2-1. on page 2-6

NOTE: *On all components, make sure there are no loose or missing parts, they are securely fastened, no visible damage, leaks or excessive wear exists in addition to any other criteria mentioned.*

1. **Front Caster Wheels** - Check for any debris stuck to or around wheels.
2. **Base Frame** - Check for loose wires or cables dangling below the base.
3. **Batteries** (one each side of machine) - Not leaking; battery cables secure to posts; no corrosion.
4. **Rear Drive Wheels** - Check for any debris stuck to or around wheels.
5. **Mast Assembly** - Mast sections; slide pads; mast chains; sequencing cables; platform control and power cables *(on side of mast);* power cables properly tensioned and seated in sheaves; cable sheaves rotating freely.
6. **Motor/Pump/Reservoir Unit** - No evidence of hydraulic leaks. Hydraulic oil level should be filled level with the full line on the dip stick.
7. **Ground Control Station** - Main Power Switch (Key) operable; placards secure and legible; emergency stop switch operates properly.
8. **Manual Descent Control Valve** - See note before item-1.
9. **Platform Control Console** - Platform control; placards secure and legible; emergency stop switch reset for operation; Control markings legible.
10. **Platform Assembly and Gate** - Platform railings; entry gate in proper working order, closing properly.

2.5 FUNCTION CHECK

Once the “Walk-Around” Inspection is complete, perform a function check of all systems in an area free of overhead and ground level obstructions. Refer to Section 3 this manual, for more specific operating instructions.

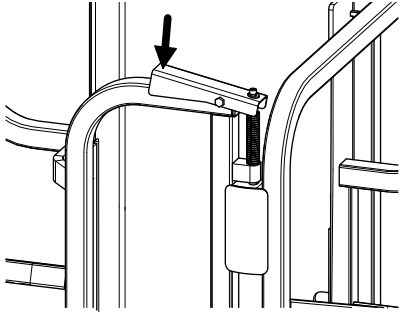
⚠ WARNING

IF THE MACHINE DOES NOT OPERATE PROPERLY, TURN OFF THE MACHINE IMMEDIATELY! REPORT THE PROBLEM TO THE PROPER MAINTENANCE PERSONNEL. DO NOT OPERATE THE MACHINE UNTIL IT IS DECLARED SAFE FOR OPERATION.

Function Check Items:

1. From the ground controls with no load in the platform:
   - **a.** Operate ground control functions, platform lift up and lower.
   - **b.** Ensure all machine functions are disabled when the Emergency Stop Button is activated (pressed in).
   - **c.** Check Manual Descent Control valve is operating properly. *(Located under hood)*
2. From the platform control console:
   - **a.** Ensure the control console is properly mounted and secure.
   - **b.** Raise and lower platform 2 ft. to 3 ft. *(.61m to.92 m)* several times. Check for smooth elevation and lowering of platform.
   - **c.** Operate all functions, check all limit, cut-out, and enable switches are functioning properly:
     - **Machine Brakes** - Drive the machine on a grade, **(do not exceed the rated gradeability)**, and stop to ensure the brakes hold.
     - **Tilt Warning Limit** - With the platform completely lowered, drive the machine onto a surface with a tilt of more than 1.5° in any direction **(do not exceed rated gradeability).** The machine will indicate a tilt condition if any attempt is made to elevate the platform.
     - **Drive Speed Reduction Limit** - When platform is elevated more than 1.5 to 2 ft. (.5m) drive speed is cut to 1/4 of platform lowered drive speed.
     - **Platform Gate Open Limit** - If either side platform gate is open during machine operation, the machine will stop and will display a fault code at the Ground Control Module and Platform Con-

sole. *(Australian Spec machines also include a platform gate lock/release lever mechanism on top of each gate that must be pressed down to open the platform gate. Check that the lock/release on each gate is latching properly when gate is closed, and releasing when the handle lever is depressed.)*



Platform Gate Lock/Release Lever (Australian Spec Machines Only)

- **Platform Joystick Enable and Footswitch Enable** - The machine will not operate (drive or lift) unless both of these switches are pressed and held during drive or lift operation.

d. Ensure all machine functions are disabled when the Emergency Stop Button is activated (pressed in).

NOTES:

SECTION 3. MACHINE OPERATION

3.1 GENERAL

NOTICE

THE MANUFACTURER HAS NO DIRECT CONTROL OVER MACHINE APPLICATION AND OPERATION. THE USER AND OPERATOR ARE RESPONSIBLE FOR CONFORMING WITH GOOD SAFETY PRACTICES.

This section provides the necessary information needed to understand control function and operation.

3.2 MACHINE DESCRIPTION

The JLG 10MSP Lift is an electric powered self-propelled machine with an aerial work platform mounted to an elevating mast mechanism. The personnel lift's intended purpose is to provide personnel access to areas above ground level.

The primary control console is located in the platform. From the Platform Control Console the operator can drive the machine and raise or lower the platform.

The machine is rear wheel drive and provide steering with freewheeling front caster wheels.

The controls of the programmable Ground Control Station are to be used during machine power-up, maintenance, function checks, or in case of emergency, should the operator in the platform be unable to lower the platform.

Vibrations emitted by these machines are not hazardous to an operator working in the platform.

The continuous A-Weighted sound pressure level at the work platform is less than 70db (A).

3.3 MACHINE OPERATION

Getting Started

The following control conditions must be met before the machine can be operated from either the Ground or Platform Controls:

- Batteries contain enough voltage to operate. Low Battery warning not indicated on Ground Control Station.
- The Main Power Selector Switch on the Ground Control Station must be set for either Ground Control Mode or Platform Control Mode.
- Platform Control Console On/Off Power Switch (Key) must be set to ON.
- Both Emergency Stop Switches, Ground and Platform Control must be in the RESET position (out).
- The Machine Status LCD Screen on the Ground Control Station indicates normal operating conditions when machine is powered up.
- Both platform swing-in entry gates must be closed to operate machine.

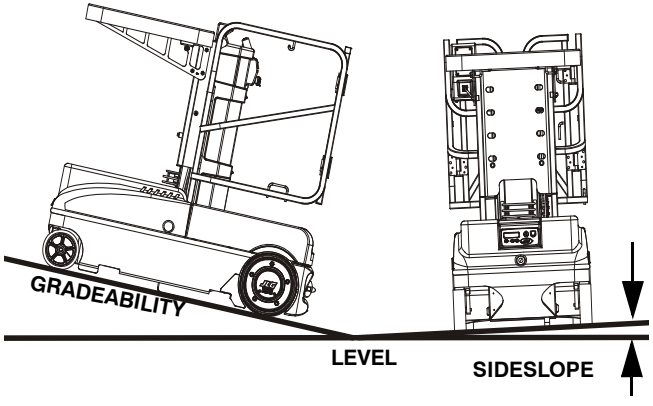


Figure 3-1. 10MSP - Machine Operating Specifications

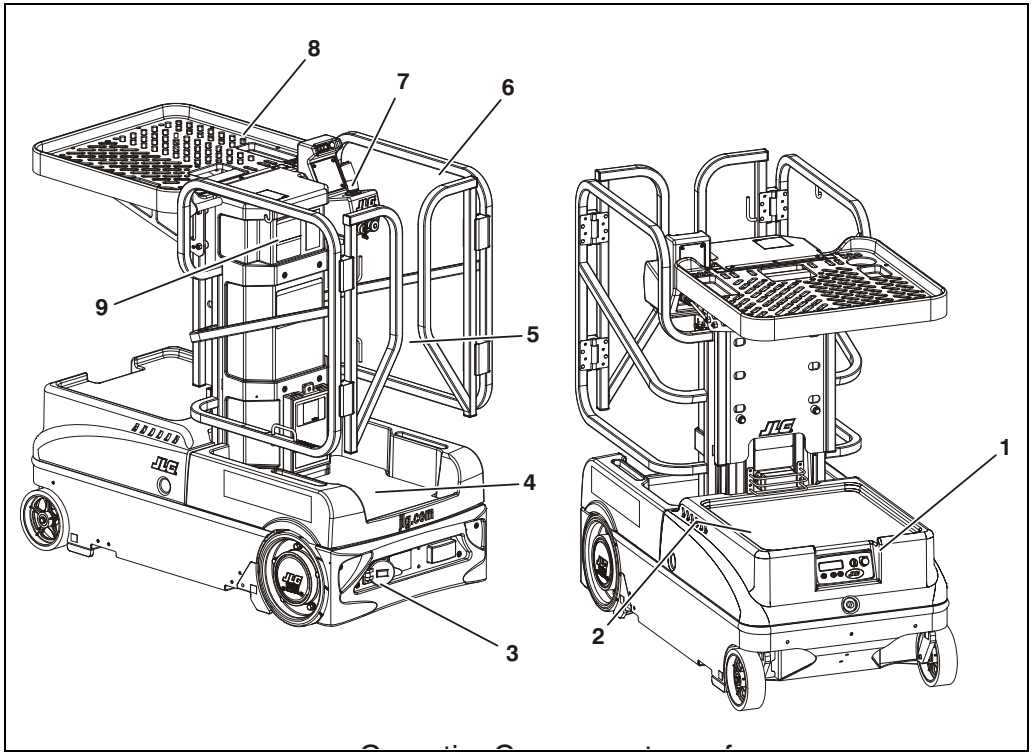


Figure 3-2. Machine Operating Component Locations.

1. **Ground Control Station (Module)** - (See page 3-10)
2. **Platform Manual Descent Valve (Located Under Hood)-** (See page 3-26)
3. **Battery Charger AC Receptacle and Charging Status LED Indicators -** (See page 3-5)
4. **Platform Enable Foot Switch -** (See page 3-25)
5. **Platform Entry Gate -** (See page 3-27)
6. **Platform -** (See page 3-27)
7. **Platform Control Console** - (See page 3-17)
8. **Material Handling Tray -** (See page 3-28)
9. **(PSL) Programmable Security Lock (OPTION) -** (See page 3-32)

3.4 HOOD - (CARRY DECK)

Removal:

1. To remove the hood, loosen the attach screw on the front of the hood.
2. Lift the hood at the front to clear the rubber sealing gasket on the base frame and slide the hood forward while lifting up to completely remove it from the machine.

Installation:

1. Set hood down into the hood gasket on the top of the frame and slide it rearward. Be certain the rear hold-down bracket engages the hood support underneath the hood.
2. Tighten the hood attach screw at the front of the hood.

⚠ WARNING

DO NOT ALLOW ANY PERSONNEL TO RIDE ON THE CARRY DECK HOOD.

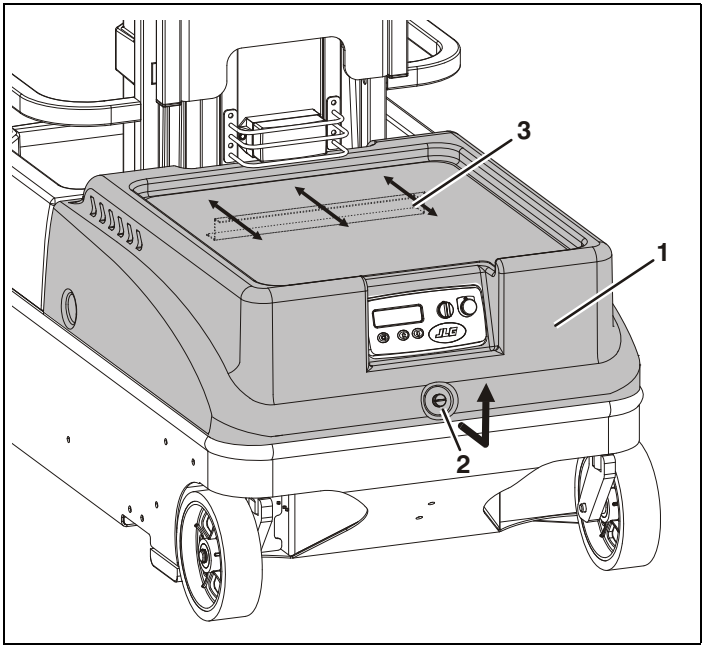


Figure 3-3. Carry Deck - Hood Removal.

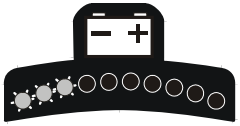
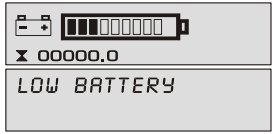
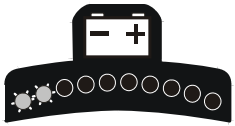
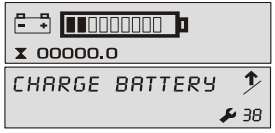
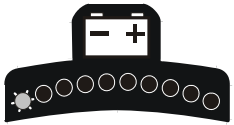
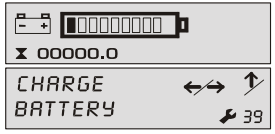
1. Hood - Carry Deck
2. Attach Screw
3. Rear Hold-Down Bracket - Located Under Hood - Slides Under Hood Support

3.5 BATTERY CHARGING

Battery Low Voltage Warning Indicators

The 10MSP Platform Control Console and Ground Control Station indicate battery low voltage at three (3) Warning Levels.

Table 3-1. Battery Low Voltage Warning Indicators.

WARNING LEVEL	INDICATOR LOCATION		RESULT	ACTION REQUIRED TO CLEAR FAULT
	PLATFORM CONTROL LED	GROUND CONTROL LCD		
LEVEL-1			• 3 LEDs/BARS Flashing with an audible beep. • Machine will Operate - No Control Functions Locked Out.	Charge batteries to a level of four (4) LEDs/BARS or more before operating.
LEVEL-2			• 2 LEDs/BARS Flashing with an audible beep. • Platform Lift-UP Function is Locked Out.	Charge batteries for a minimum of four (4) continuous hours or eight (8) LEDs/BARS lit before operating. (a)
LEVEL-3			• 1 LED/BAR Flashing with an audible beep. • Drive and Platform Lift-UP Functions Locked Out.	Charge batteries for a minimum of four (4) continuous hours or eight (8) LEDs/BARS lit before operating. (a)

NOTE: *(a) To maximize battery life, it is recommended that the factory supplied batteries be charged continuously for a minimum of 4 hours or until 8 bars are lit on the ground station LCD Display before operating the machine. When drained to Warning Level 2 or 3, batteries must be charged until 8 bars are lit on the ground station LCD display to clear the fault code.*

To Charge Batteries

This machine is equipped with an AC voltage input/DC voltage output battery charger. The charger automatically terminates charging when the batteries reach full capacity.

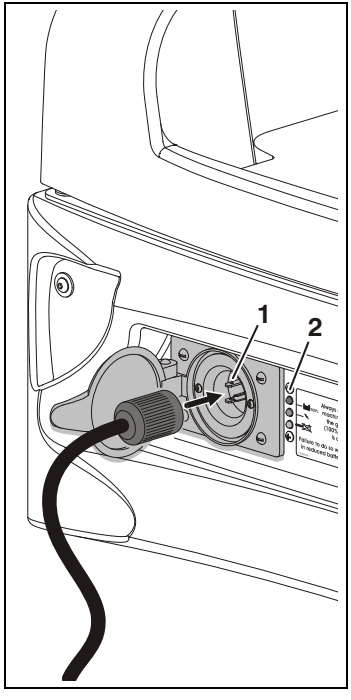
NOTE: *The platform drive function is disabled when the battery charger is plugged into an AC receptacle.*

⚠ WARNING

LEAD ACID BATTERIES MAY GENERATE EXPLOSIVE HYDROGEN GAS DURING NORMAL OPERATION. KEEP SPARKS, FLAMES, AND SMOKING MATERIALS AWAY FROM BATTERIES. PROVIDE ADEQUATE VENTILATION DURING CHARGING. NEVER CHARGE A FROZEN BATTERY. STUDY ALL BATTERY MANUFACTURERS' SPECIFIC PRECAUTIONS SUCH AS RECOMMENDED RATES OF CHARGE AND REMOVING OR NOT REMOVING CELL CAPS WHILE CHARGING.

1. Park machine in a well ventilated area near an AC voltage electrical wall outlet.

NOTE: *To maximize battery life, it is recommended the batteries be charged continuously for a minimum of four (4) hours when drained to Warning Levels 2 and 3, See Warning Level Chart on previous page.*



2. Always use a grounded AC outlet. Connect charger to an outlet that has been properly installed and grounded in accordance with all local codes and ordinances. A grounded outlet is required to reduce risk of electric shock – do not use ground adapters or modify plug. When using an extension cord, avoid excessive voltage drops by using a grounded 3-wire 12 AWG cord.

(1) Charger AC Input Receptacle located on the rear bumper cover of the machine.

(2) Battery Charger Status LED Indicators.

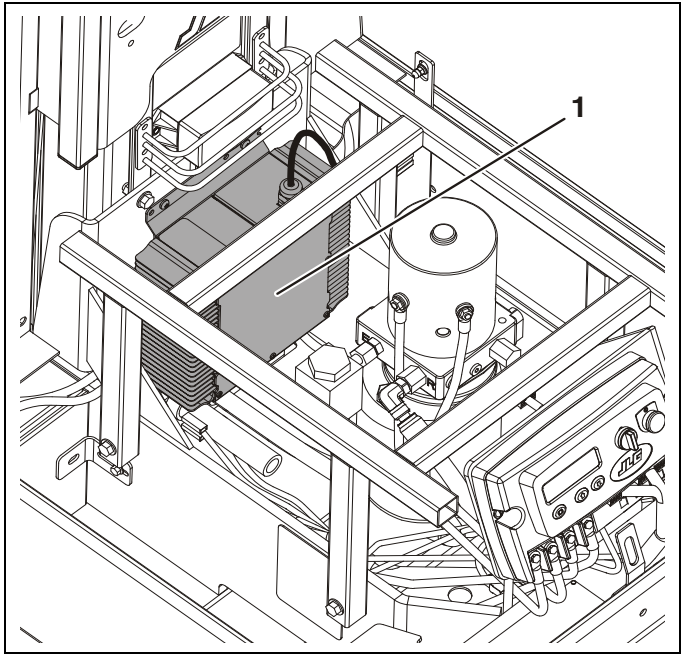


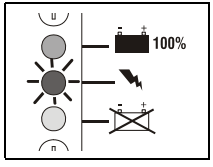
Figure 3-4. Battery Charger Location (Hood Removed - For Hood Removal, See page 3-4).

1. Battery Charger

Battery Charging Status Indicators

The battery charging status indicators are located just above the Charger AC input receptacle on the center cover section at the rear of the machine. *(See Figure 3-2. on page 3-3)*

1. When first plugged in, the charger will automatically turn on and go through a short LED indicator self-test (all LED's will flash in an up-down sequence for two seconds), then charging will begin.



CHARGING

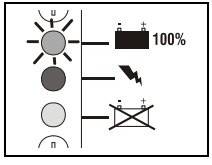
YELLOW(MIDDLE) LED ON
Charge Incomplete

2. The YELLOW 'CHARGING' LED will turn on and a trickle current will be applied until a minimum voltage is reached.

   Once a minimum battery voltage of 2 volts per cell is detected, the charger will enter the bulk charging constant-current stage and the YELLOW 'CHARGING' LED will remain on. The length of charge time will vary by how large and how depleted the battery pack is, the input voltage (the higher, the better), and ambient temperatures (the lower, the better). If the input AC voltage is low (below 104VAC), then the charging power will be reduced to avoid high input currents.

If the ambient temperature is too high, then the charging power will also be reduced to maintain a maximum internal temperature.

3. When the GREEN 'CHARGED' LED turns on, the batteries are completely charged.

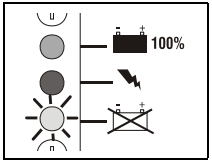


CHARGE COMPLETE

GREEN (TOP) LED ON
100% Complete

The charger may now be unplugged from AC power (always pull on plug and not cord to reduce risk of damage to the cord). If left plugged in, the charger will automatically restart a complete charge cycle if the battery pack voltage drops below a minimum voltage or 30 days has elapsed.

4. If a fault occurred anytime during charging, a fault indication is given by flashing the RED 'FAULT' LED with a code corresponding to the error.



CHARGING PROBLEM

RED (BOTTOM) LED ON
See Flash Codes following

There are several possible conditions that generate errors. Some errors are serious and require human intervention to first resolve the problem and then to reset the charger by interrupting AC power for at least 10 seconds. Others may be simply transient and will automatically recover when the fault condition is eliminated. To indicate which error occurred, the RED 'FAULT' LED will flash a number of times, pause, and then repeat.

[1 FLASH] Battery Voltage High: auto-recover. Indicates a high battery pack voltage.

[2 FLASH] Battery Voltage Low: auto-recover. Indicates either a battery pack failure, battery pack is not connected to charger, or battery volts per cell is less than 0.5 VDC. Check the battery pack and battery pack connections.

[3 FLASH] Charge Time-out: Indicates the battery did not charge within the allowed time. This could occur if the battery is of a larger capacity than the algorithm is intended for. It can also occur if the battery pack is damaged, old, or in poor condition. In unusual cases it could mean charger output is reduced due to high ambient temperature.

[4 FLASH] Check Battery: Indicates the battery pack could not be trickle charged up to the minimum 2 volts per cell level required for the charge to be started. This may also indicate that one or more cells in the battery pack are shorted or damaged.

[5 FLASH] Over-Temperature: auto-recover. Indicates charger has shutdown due to high internal temperature which typically indicates there is not sufficient airflow for cooling – see step 1 of Installation Instructions. Charger will restart and charge to completion if temperature is within accepted limits.

[6 FLASH] QuiQ Fault: Indicates that the batteries will not accept charge current, or an internal fault has been detected in the charger. This fault will nearly always be set within the first 30 seconds of operation. Once it has been determined that the batteries and connections are not faulty and Fault 6 is again displayed after interrupting AC power for at least 10 seconds, the charger must be brought to a qualified service depot.

3.6 GROUND CONTROL STATION - OPERATION

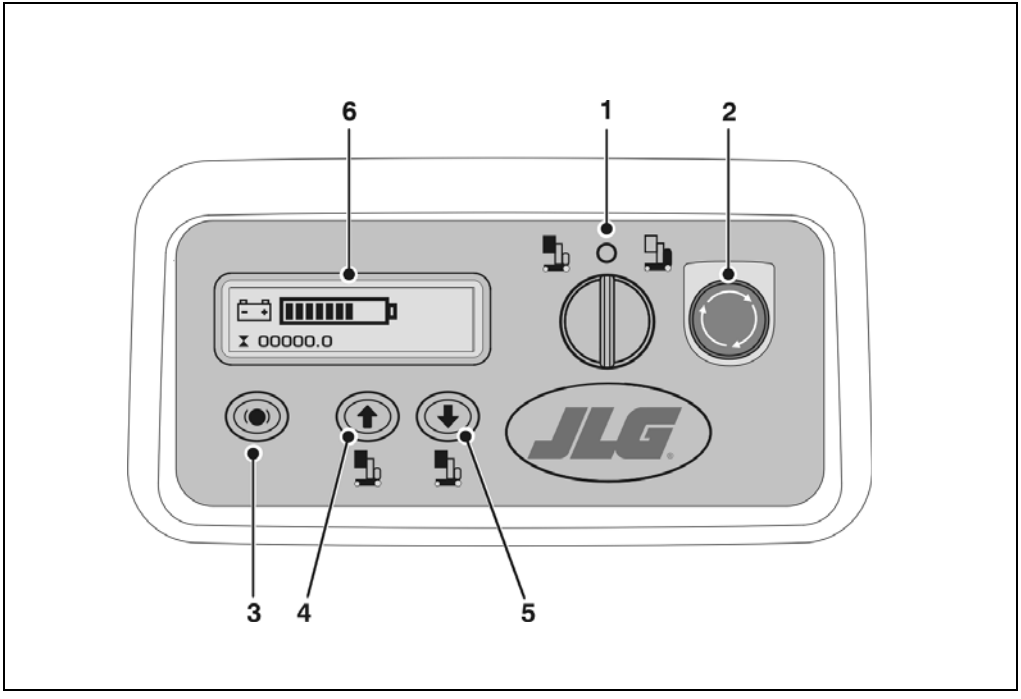


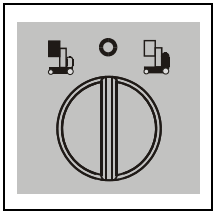
Figure 3-5. Ground Control Station.

1. Platform/Off/Ground Selector Switch
2. Emergency Stop/Shut Down Button
3. Brake Release Button
4. Platform Up Button
5. Platform Down Button
6. Machine Status LCD Display

NOTE: *The Ground Control Station Module is fully programmable. For operator level programmability see Section 5 - Operator Maintenance.*

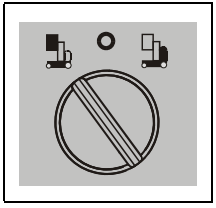
NOTE: *If equipped with optional Programmable Security Lock (PSL) see Section 3.13 on page 3-32 for additional machine power-up instructions.*

Platform/Off/Ground Selector Switch



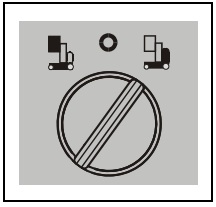
POWER OFF

Turn to this position to power machine off after use.



PLATFORM CONTROL MODE

When set to this position the machine can be operated from the platform control console.

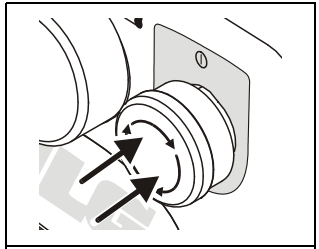


GROUND CONTROL MODE

When set to this position the machine can be operated from the ground control station.

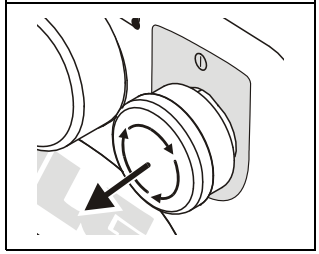
NOTE: ***SLEEP MODE*** *- During operation if no control functions have been activated for 5 minutes (default programmable setting), the ground control module will power the machine down to conserve battery power. Cycle power back on using either the main power selector switch (key) or the emergency stop/power down button either on the platform controller or on the ground control station.*

Emergency Stop/Shut Down Button



POWER OFF

PUSH IN - To Engage Emergency Stop



POWER ON

TURN CLOCKWISE and RELEASE to RESET Emergency Stop

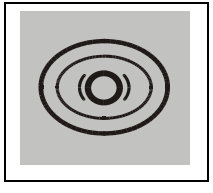
Brake Release Button

The machine must be POWERED ON and the Ground Control Station set to the GROUND CONTROL MODE to manually release the brakes. The brakes only DISENGAGE (electrically) when the joystick control is moved off center during driving or are manually DISENGAGED (electrically) using the Brake Release Button on the front of the Ground Control Station.

NOTE: *If the machine's batteries are completely depleted of electrical charge the brakes cannot be released manually.*

⚠ CAUTION

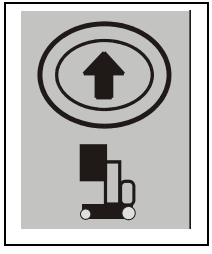
DO NOT MANUALLY DISENGAGE THE BRAKES UNLESS MACHINE IS SETTING ON A LEVEL SURFACE OR MACHINE IS FULLY RESTRAINED.



PUSH and RELEASE -
TO DISENGAGE Brakes

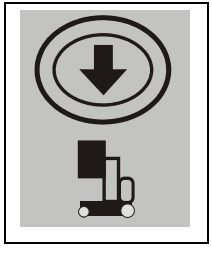
PUSH and RELEASE AGAIN -
TO ENGAGE Brakes

Platform Up and Down Buttons



PUSH IN -
TO ELEVATE Platform

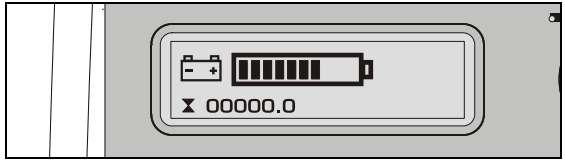
RELEASE -
TO STOP ELEVATING



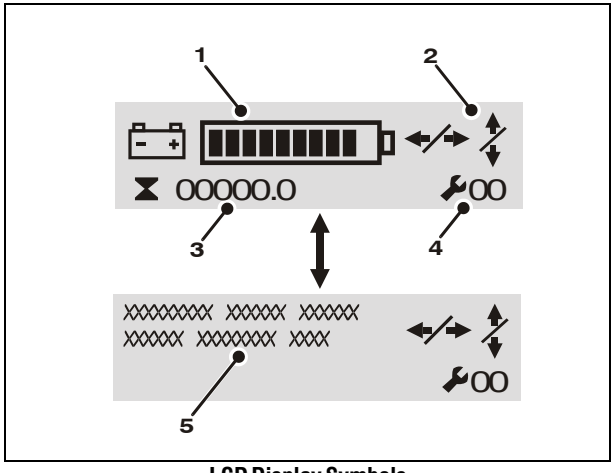
PUSH IN -
TO LOWER Platform

RELEASE -
TO STOP LOWERING

Machine Status LCD Display



At power-up and during operation the LCD display on the Ground Control Module displays the current machine operating status. The following illustration explains the symbol indications.

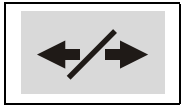


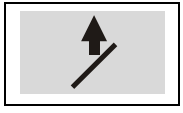
LCD Display Symbols

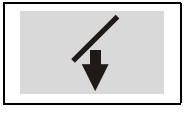
1. Battery Charge Indicator (BCI)
2. Function Display or Function Disabled Indicators
3. Hour Meter Display
4. Fault Code Indicator *(Also see Table 3-2 on page 3-15)*
5. Fault Text Message Display (a)

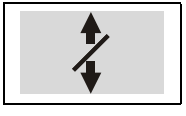
NOTE: *(a) When an Fault Code is indicated the LCD screen will alternate between the text and symbol display modes.*

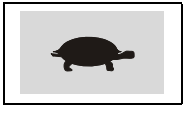
In the LCD Display Symbols (previous illustration - item-2), the Function Display or Function Disabled Indicators will vary as shown following:


DRIVE Disabled


LIFT UP Disabled


LIFT DOWN Disabled


Both LIFT UP and LIFT DOWN Disabled


Drive Speed Cut-Back *(Turtle)* Mode Engaged *(When Platform is Elevated)*


Battery Charger (AC) Plugged In

Tilt Alarm Warning

The Ground Control Station LCD screen flashes a fault code and gives an audible warning. The LEDs on the platform control console also flash during the tilt warning. See Table 3-2 on page 3-15

⚠ WARNING

THE GROUND CONTROL STATION CONTAINS A 1.5 DEGREE TILT ALARM, IF THE TILT ALARM HAS BEEN ACTIVATED, THE PLATFORM WILL NOT ELEVATE. ALSO IF THE TILT ALARM HAS BEEN ACTIVATED WHEN THE PLATFORM IS ELEVATED, THE DRIVE AND LIFT UP FUNCTIONS WILL BE DISABLED UNTIL THE PLATFORM IS COMPLETELY LOWERED AND DRIVEN OFF THE TILT CONDITION.

LCD Display Fault Conditions

Table 3-2 following shows common LCD display Fault indicators which may occur during operation and are usually caused by either an error in machine operation or a work area condition. These fault conditions can usually be corrected by the operator and do not require a qualified mechanic to repair:

NOTICE

AFTER A FAULT CONDITION IS CORRECTED THE MACHINE POWER MAY NEED TO BE RECYCLED TO RESET THE GROUND CONTROL STATION.

Table 3-2. LCD Display - Operating Fault Conditions

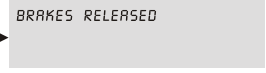
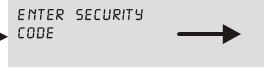
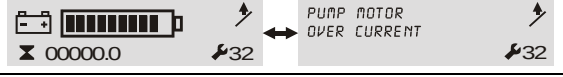
FAULT CODE	PLATFORM LEDs FLASHING	LCD SYMBOL SCREEN	LCD TEXT SCREEN	FAULT DESCRIPTION/ MACHINE CONDITION	TO CORRECT PROBLEM
—	—			Brakes Released - *(DRIVE Disabled)*	To Engage Brakes - Press Brake Release Button on Ground Control Station
—	—		—	Charger AC Plugged In DRIVE Disabled	Unplug Charger AC Power Cord
—	—			Programmable Security Lock Password	Enter Code on PSL Keypad to Power-Up Machine
—	3			Low Battery - *(Warning Level 1)*	Charge Batteries to Four (4) Bars or more on Indicator.
—	2			Charge Battery - *(LIFT UP Disabled) (Warning Level 2)*	Charge Batteries a Minimum of Four (4) Hours or eight (8) LEDs/ BARS lit.
—	1			Charge Battery - *(LIFT UP/DRIVE Disabled) (Warning Level 3)*	Charge Batteries a Minimum of Four (4) Hours or eight (8) LEDs/ BARS lit.
4	3			Tilt Condition *(Platform Elevated)* DRIVE and Lift UP Disabled	Lower the Platform and Drive off the Tilt Condition

Table 3-2. LCD Display - Operating Fault Conditions (Continued)

FAULT CODE	PLATFORM LEDs FLASHING	LCD SYMBOL SCREEN	LCD TEXT SCREEN	FAULT DESCRIPTION/ MACHINE CONDITION	TO CORRECT PROBLEM
6	8			Drive Motor Brush Wear Warning *(Counts down 25 hrs. of DRIVE operation remaining to a 10 sec. shut down mode)*	Drive Motor Brushes Require Service Replacement - *(See Section 5.7 on page 5-16 for further Instructions)*
13	6			Traction Module Over Temperature *(DRIVE Disabled)*	Allow Drive System Traction Module to Cool Before Operating *(Caused by extreme temperature)*
17	7			Ground Control Module Over Temperature *(Machine Stopped)*	Allow Ground Control Module to Cool Before Operating - *(Caused by extreme temperature)*
32	7			Pump Motor Over Current *(LIFT UP Disabled)*	Platform Load Over Capacity
34	—			Aux. #1 - Platform Gate Open or No Pressure on the Platform Footswitch	Close Platform Gate or Depress Platform Footswitch during machine operation
35	—			Aux. #1 - Platform Footswitch depressed during Machine Power-up	Do Not Press on Platform Footswitch during Machine Power-Up

NOTE: *The fault conditions shown in this table are fault conditions which the Operator may be able to resolve. Should a fault occur which cannot be corrected at the Operator's level, the problem must be referred to a mechanic qualified to repair this model of JLG Lift. A complete table of Fault Codes is listed in the TroubleShooting Section of the Service and Maintenance Manual.*

3.7 PLATFORM CONTROL CONSOLE - OPERATION

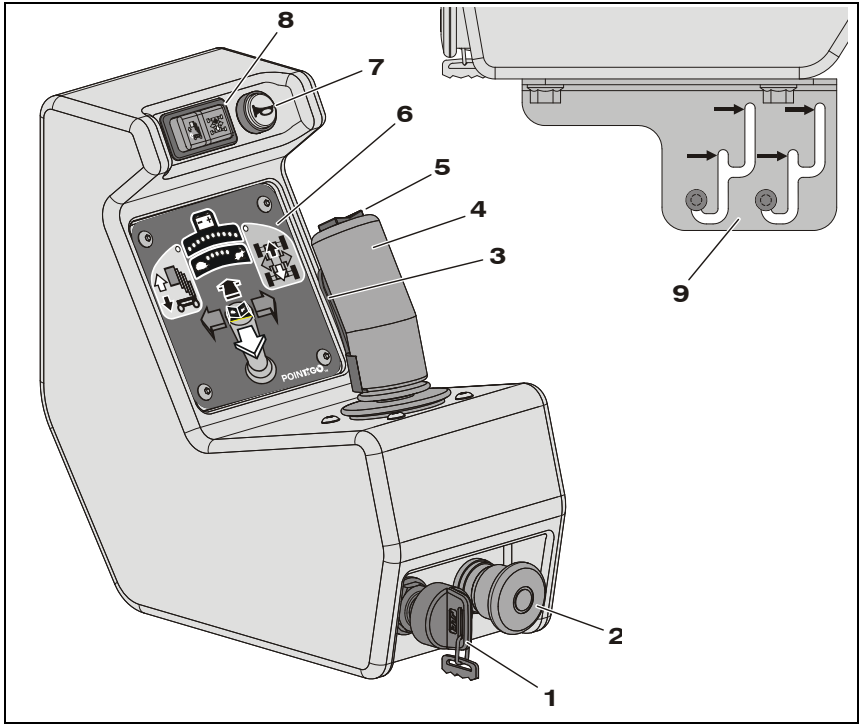


Figure 3-6. Platform Control Console.

1. On/Off Key Switch - (See page 3-18)
2. Emergency Stop/Shut Down Switch - (See page 3-19)
3. Function Enable Lever - *(on front of joystick) (See page 3-21)*
4. Multifunction Joystick Control - (See page 3-22)
5. Drive Speed Setting Selector Switch - (See page 3-24)
6. Platform Control Display Panel - (See page 3-19)
7. Horn Button - (See page 3-23)
8. Drive/Lift Mode Selector Switch - (See page 3-21)
9. Console Mounting Bracket - 3 Position Height Adjustment - *(on bottom of console box)*

General

NOTE: ***SLEEP MODE*** *- During operation if no control functions have been activated for 10 minutes (default programmable setting), the ground control module will power the machine down to conserve battery power. Cycle power back on using either the main power selector switch (key) or the emergency stop/power down button either on the platform controller or on the ground control station.*

The following conditions must be met before the machine can be operated from the platform control console:

- Ground Control Station - Main Power Selector Switch must be set to PLATFORM CONTROL MODE.
- Ground Control Station - Emergency Stop/Shut Down Button must be in the RESET position (POWER ON).

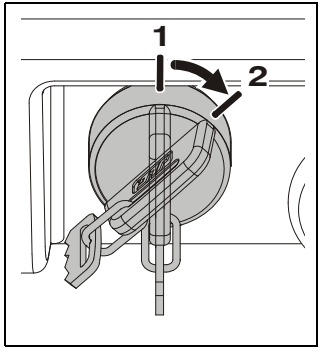
NOTE: *See Section 3.6 on page 3-10 for Ground Control Station.*

- On Platform - If equipped with the OPTIONAL - PSL (Programmable Security Lock) it must be set to the ON position.

NOTE: *See Section 3.13 on page 3-32 for PSL instructions.*

- Both platform entry gates are equipped with an interlock switch and must be completely closed before the drive and platform lift functions can be operated.

Platform On/Off Key Switch



At the Platform Control Console - Set the On/Off Key Switch to the ON position (2) to operate machine.

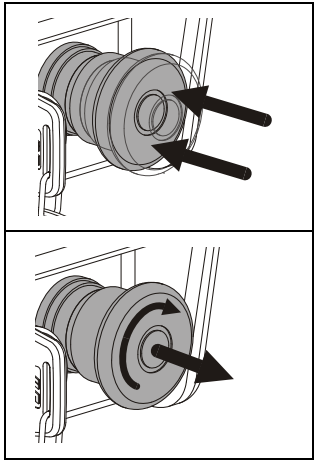
1. OFF Position
2. ON Position

Set the ON/OFF Key Switch to the OFF position to power machine down.

If necessary, when machine is not in use, remove key from platform key switch to disable machine from unauthorized use.

Platform Emergency Stop/Shut Down Button

NOTE: *The Platform and Ground Control Station Emergency Stop/Shut Down Buttons must both be in the RESET position to operate machine.*



POWER OFF

PUSH IN -
TO ENGAGE
Emergency Stop

POWER ON

TURN CLOCKWISE
and RELEASE to
RESET Emergency Stop

Platform Control Display Panel

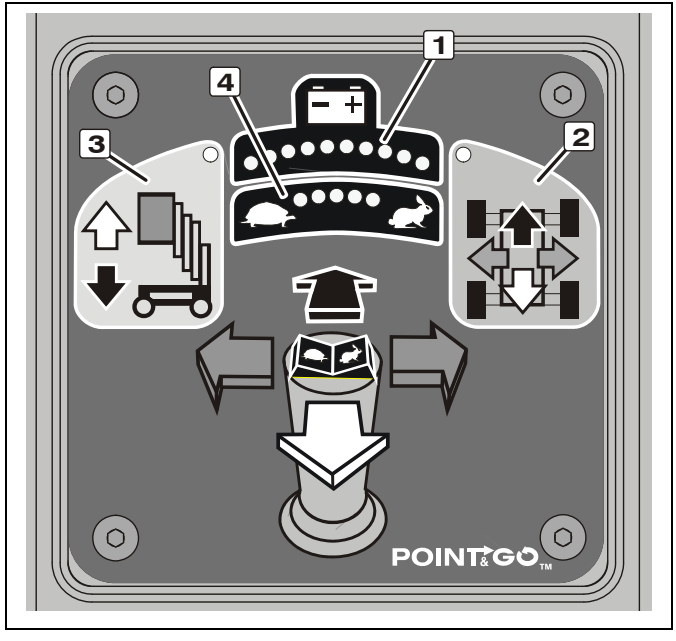


Figure 3-7. Platform Control Display Panel.

1. Battery Charge/Flash Code LEDS
2. Drive Mode Indicator
3. Lift Mode Indicator
4. Drive Speed Setting

1. **Battery Charge/Flash (Fault) Code Indicator LEDS**

   On normal power-up and operation this series of ten (10) LEDs visually indicates the amount of charge remaining in the batteries.

   The number of LEDs lit will change depending on the level of charge in the batteries.

- (+) All Three (3) GREEN LEDs lit up indicate maximum battery charge.
- Four (4) YELLOW LEDs indicate a two thirds to one third battery charge remaining.
- (–) Three (3) RED LED's lit indicate minimum battery charge remaining. The machine will continue to operate at this charge level but will begin to indicate low battery voltage warning indicators.

NOTE: *For more information on Battery Warning Level Indicators See "Battery Low Voltage Warning Indicators" on page 3-5.*

This set of ten (10) LEDs will also indicate a flash (fault) code if other operating problems are detected by the Ground Control Station. Fault codes are also accompanied by a beeping alert from the platform control console.

NOTE: *LED Flash (Fault) Code indications that may be corrected by the operator are shown on Table 3-2 on page 3-15 of this manual.*

2. **Drive Mode Indicator**

   When the Drive/Lift Mode Selector Switch is set to DRIVE MODE the round LED indicator on that portion of the display panel will light up indicating the DRIVE Mode active. *(See page 3-21)*

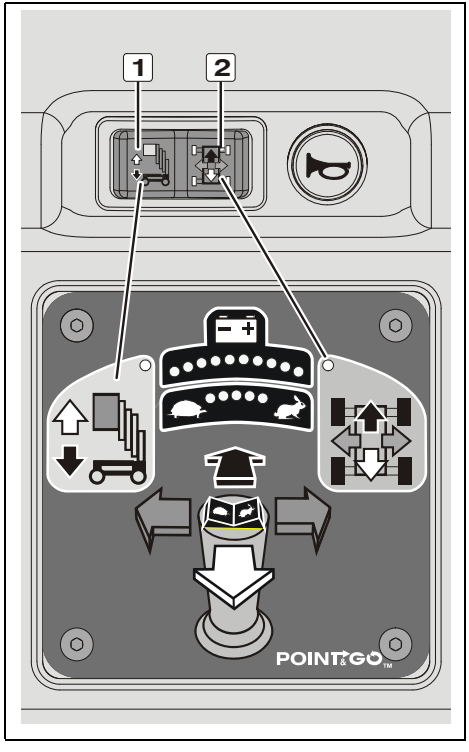
3. **Lift Mode Indicator**

   When the Drive/Lift Mode Selector Switch is set to LIFT MODE the round LED indicator on that portion of the display panel will light up indicating the LIFT Mode active. *(See page 3-22)*

4. **Drive Speed Setting Indicator**

   The five (5) GREEN LEDs on the top of this indicator display the drive speed setting with the TURTLE *(on the left*) representing the MINIMUM speed setting and the RABBIT (*on the right)* representing the MAXIMUM speed setting. *(See page 3-24)*

Drive/Lift Mode Selector Switch



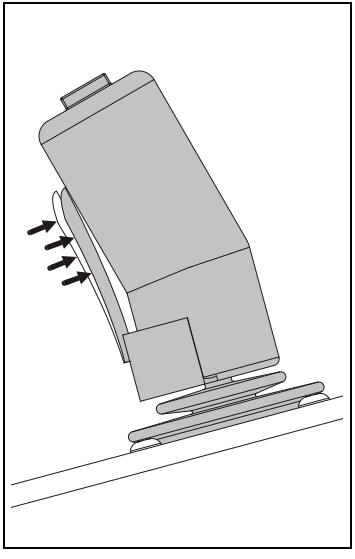
Drive/Lift Mode Selector Switch

1. LIFT Mode
2. DRIVE Mode

PUSH the rocker switch to select mode of operation. Whichever mode is selected the appropriate LED indicator on the display panel below will light up showing which mode has been activated for joystick operation.

IMPORTANT:
The selected mode will only remain active for 5 seconds if the function is not operated.

Joystick Function Enable Lever



Joystick Function Enable Lever

The joystick enable lever on the front of the joystick control, must be engaged and held in during any joystick operation.

Note:
The platform function enable foot switch must also be pressed and held simultaneously with the joystick enable lever.

Multifunction Joystick Control

The joystick operates the following machine functions:

- Drive/Steer
- Lift Up and Down

NOTE: *Use the Drive/Lift Mode Selector Switch to select which function the joystick will operate.*

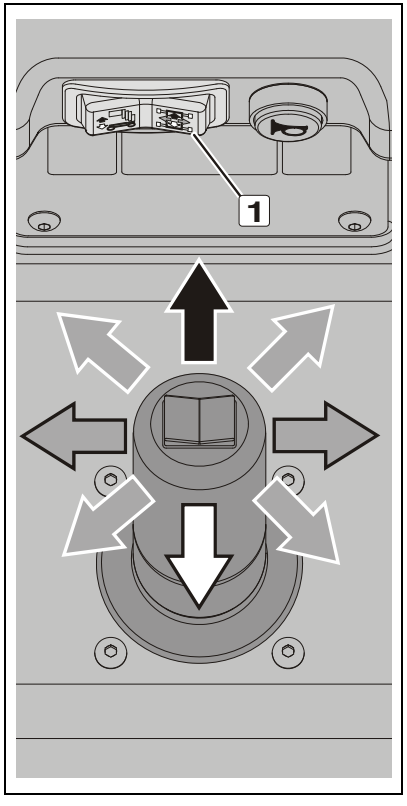
The selected operating mode will only remain active for 5 seconds if the function is not operated.

Remember to press and hold both the joystick function enable lever and platform function enable foot switch simultaneously in order to operate any joystick functions.

⚠ WARNING

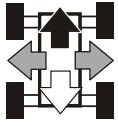
SEE Figure 3-1. on page 3-2 FOR GRADE AND SIDESLOPE DRIVING DESCRIPTION WHEN DRIVING WITH THE PLATFORM LOWERED (STOWED).

WHEN THE PLATFORM IS ELEVATED DRIVE ONLY ON A SMOOTH, FIRM, AND LEVEL SURFACE.

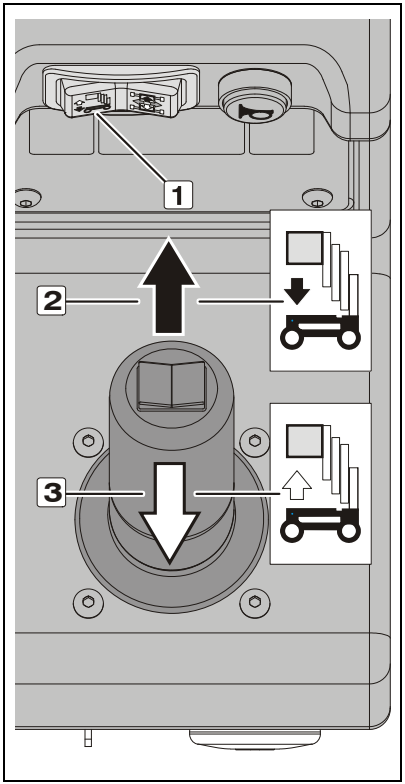


Drive Mode

1. Activate the Drive Mode using the Drive/Lift Mode Selector switch.



Within 5 seconds of activation - Simultaneously ENGAGE and HOLD both the JOYSTICK ENABLE LEVER and the FOOTSWITCH ENABLE then move the joystick in the desired direction of travel. Drive power is applied proportionally the further the joystick is moved off center.



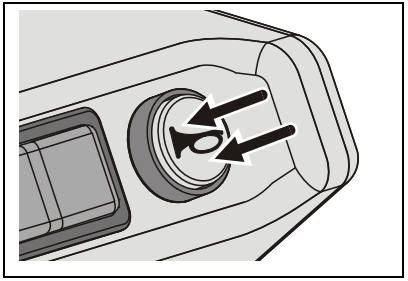
Lift Mode

1. Activate the Lift Mode using the Drive/Lift Mode Selector switch.

2. Platform LIFT DOWN Direction
3. Platform LIFT UP Direction

Within 5 seconds of activation - ENGAGE and HOLD both the JOYSTICK ENABLE LEVER and the FOOTSWITCH ENABLE - then move the joystick in the direction of LIFT (3) OR LOWER (2).

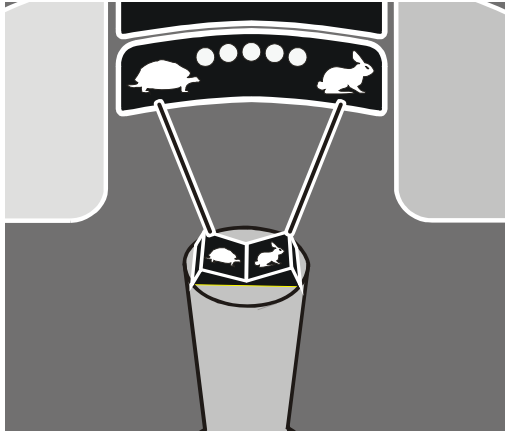
Horn Button



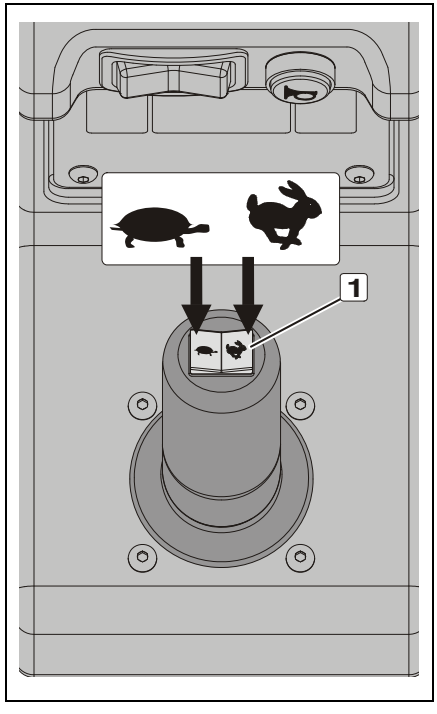
When the machine is powered on, pressing this button will sound the Horn.

Drive Speed Setting Controls

NOTE: *When the platform is elevated, the maximum drive speed is automatically cut-back to 25%. The Ground Control Module-LCD screen will display a turtle when in this mode, See page 3-13 - Machine LCD Status Display in this section of the manual.*



Drive Speed Indicator



Drive Speed Setting Selector Switch

1. Selector Switch (on top of joystick)

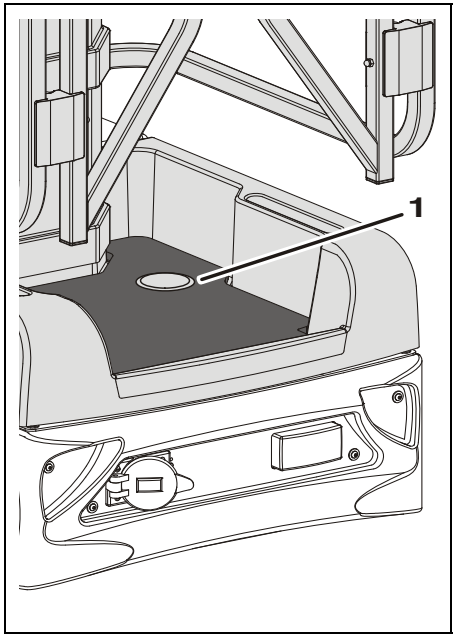
Each PRESS on this side of the switch will DECREASE maximum drive speed. (LESS LEDs Lit up on the Drive Speed Indicator.)

Each PRESS on this side of the switch will INCREASE maximum drive speed. (MORE LEDs Lit up on the Drive Speed Indicator.)

3.8 PLATFORM FUNCTION ENABLE FOOT SWITCH

NOTICE

DO NOT REST FOOT ON THE ENABLE FOOT SWITCH DURING MACHINE POWER UP, OPERATING ANY CONTROLS DURING MACHINE POWER UP OTHER THAN THE POWER ON/OFF KEY SWITCH OR RESETTING THE E-STOP/SHUT DOWN SWITCHES WILL CAUSE THE MACHINE TO DISPLAY AN ERROR.



Platform Function Enable Foot Switch

1. Foot Switch

Place your foot on the switch, press down and hold while operating any joystick function.

Note:
The foot switch must be pressed and held simultaneously with the joystick enable lever in order to operate any joystick functions.

3.9 PLATFORM MANUAL DESCENT CONTROL VALVE

⚠ WARNING

CRUSHING HAZARD - BE AWARE OF DESCENDING PLATFORM WHEN MANUALLY LOWERING THE PLATFORM. KEEP HANDS OR FEET OFF OF THE MAST ASSEMBLY AND FROM BENEATH PLATFORM.

The platform manual descent control valve is provided to allow ground personnel to lower the platform in event that the platform operator cannot lower the platform once elevated.

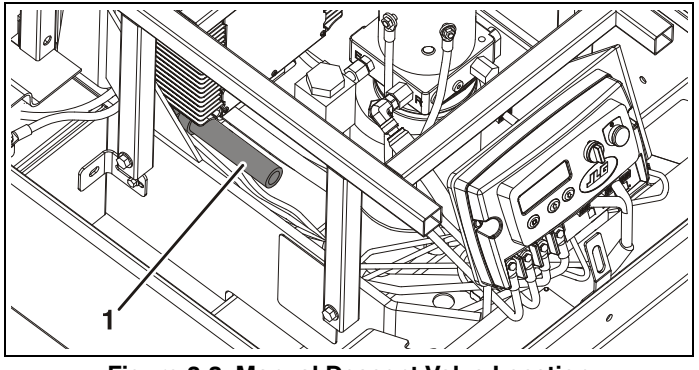
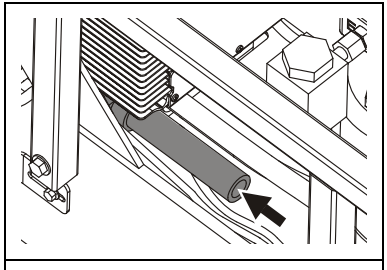


Figure 3-8. Manual Descent Valve Location

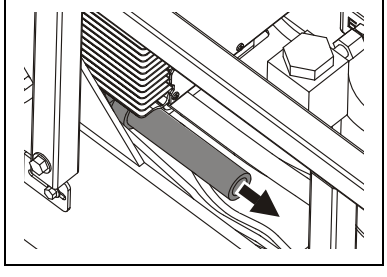
1. Manual Descent Valve

Activating the Manual Descent Valve

To activate the manual descent valve, remove the hood (carry deck) from the machine, *(for hood removal, See page 3-4)*. Locate the valve *(just below the battery charger)*, then operate per the following instructions;



PUSH-IN the RED BUTTON on the end of the valve TO LOWER the platform.



RELEASE the RED BUTTON TO STOP platform descent when desired level is reached.

3.10 PLATFORM CONFIGURATION

Table 3-3. Platform Maximum Capacity

SPECIFICATION	MAXIMUM CAPACITY			Max. Wind Speed
	Platform Load	Material Tray Load	Carry Deck	
ANSI/CSA	350 lb. (160kg)	250 lb. (115kg)	250 lb. (115kg)	28 mph (12 m/s)
CE (Indoor Use Only)				0 m/s
Australia (Indoor Use Only)				0 m/s

Platform Lanyard Anchorage Point

Attach fall restraint lanyard to lanyard anchorage point on lower platform railing. Maximum allowable lanyard length is 30 in. (76cm).

⚠ WARNING

JLG INDUSTRIES, INC. RECOMMENDS THAT THE OPERATOR UTILIZE A FALL RESTRAINT SYSTEM IN THE PLATFORM WITH A MAXIMUM 30 INCH (76 CM) LANYARD ATTACHED TO AN AUTHORIZED LANYARD ANCHORAGE POINT.

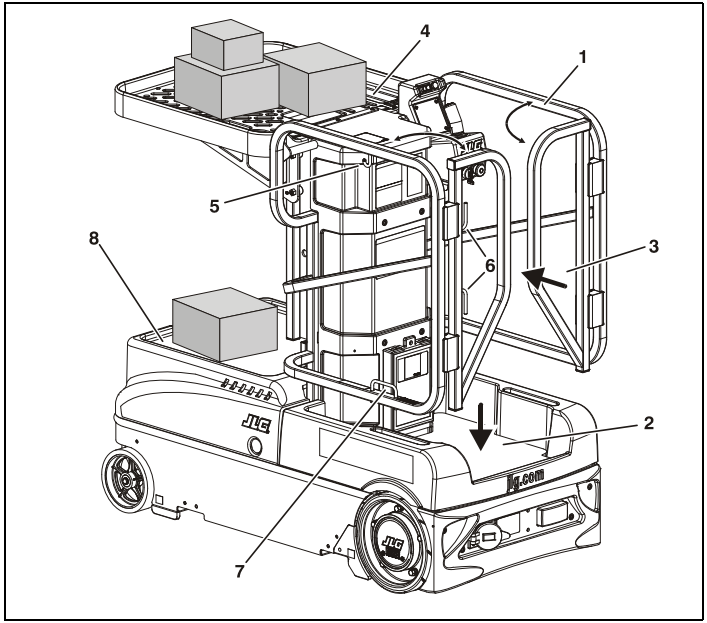


Figure 3-9. Standard Platform (10MSP)

1. Operators Platform
2. Platform Load (Operator)
3. Platform Swing-In Entry Gate
4. Material Handling Tray
5. Storage Hook
6. Ext. Cord Wrap Hooks
7. Lanyard Attach Point
8. Carry Deck - Hood

Material Handling Tray - Height Adjustment

The material handling tray is designed to carry up to 250 lb. (113kg) of weight. It can be quickly raised or lowered vertically on the front of the mast assembly using the tray handle release.

NOTICE

REMOVE ALL WEIGHT FROM THE MATERIAL TRAY BEFORE ENGAGING THE TRAY RELEASE BAR TO LOWER OR RAISE THE TRAY.

To Lower Or Raise The Tray:

1. In the slot opening at the top rear of the tray, grasp the tray lifting handle to support the tray while adjusting.
2. Squeeze the tray release rod and **raise the tray slightly** until the locking pins have disengaged from the detent slots.
3. Lower or raise the tray, when desired tray height is achieved release the tray release rod, be certain the locking pins at both ends of the release rod are engaged in the detent slots before letting go of the tray lifting handle.

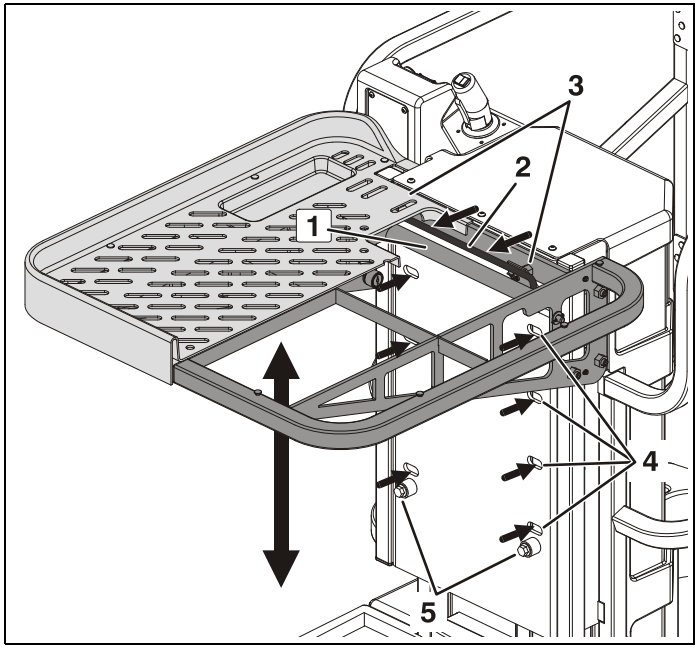


Figure 3-10. Material Handling Tray Height Adjustment.

1. Tray Lifting Handle
2. Tray Release Rod
3. Locking Pins
4. Lock Pin Detent Slots - (Five Level Settings)
5. Tray Stops

Material Handling Tray - Cargo Strap - OPTION

The retractable cargo strap is designed to help secure objects loaded onto the material handling tray while machine is in operation.

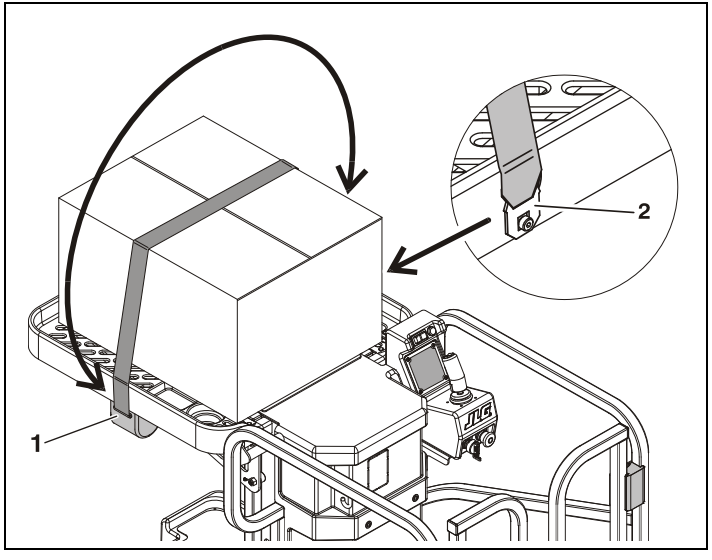


Figure 3-11. Material Handling Tray - Cargo Strap - Option

1. Cargo Strap Assembly **2.** Strap Attach Lug

3.11 PARKING MACHINE

1. Drive machine to a well-protected and well-ventilated area.
2. Ensure the platform is fully lowered, turn the main power selector switch on the platform to the OFF position.
3. If necessary, remove key from the platform ON/OFF power switch to disable machine from unauthorized use.

NOTE: *If required, charge batteries in preparation for next work day. (See Section 3.5 on page 3-5).*

3.12 TRANSPORTING, LIFTING AND TIE-DOWN PROCEDURES

General

The 10MSP Lift may be transported to a work site using the following methods:

- Driving the machine around on its base wheels if travel surface area permits.
- Moved with a fork-lift truck using the fork-lift pockets in the base frame. *(See Figure 3-12.)*
- Loaded onto a transport vehicle and driven to the work site, when equipped with Front and Rear Tie-Down Loop. *(See Figure 3-13.)*

Fork-Lift Truck Transport

10MSP Model Lifts are equipped with fork-lift pockets running crossways under the base frame. This allows the machine to be either transported around a work area or lifted onto a higher level using a standard fork-lift truck.

NOTE: *Fork-lift trucks must be capable of handling the gross weight of the machine, see the Operating Specifications table at the beginning of this Section.*

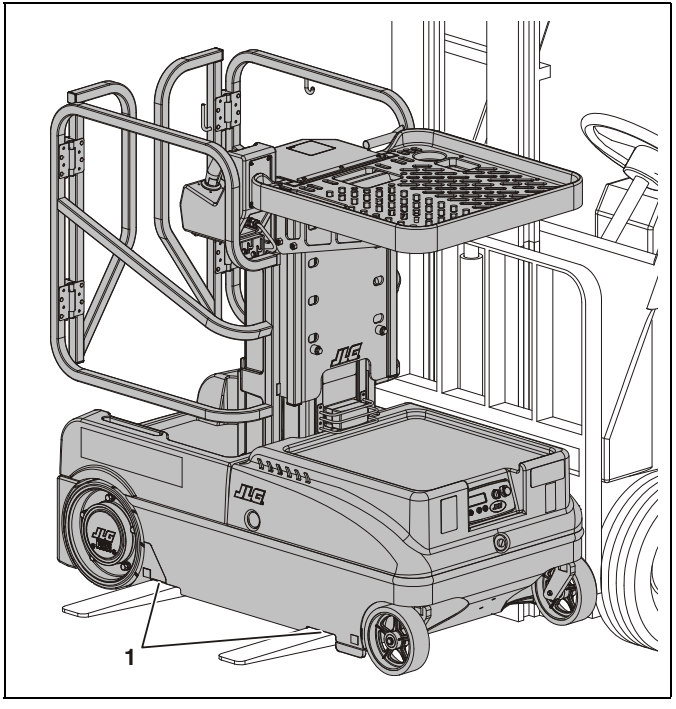


Figure 3-12. Forklift Truck Lifting Pockets.

1. Fork Lift Pockets

Vehicle Transport - Tied-Down Using the Tie-Down Loops

With the machine on the transport vehicle in position to be tied down, and machine powered down *(brakes engaged)*, use the following guidelines for restraining the machine during transport.

NOTICE

USE OF EXCESSIVE FORCE WHEN SECURING MACHINE (WHEEL LOAD), CAN CAUSE DAMAGE TO THE MACHINES REAR DRIVE OR FRONT CASTER WHEEL COMPONENTS.

1. Secure machine to the transport vehicle with adequate chains or straps attached through the tie down loops located at the front and rear of machine.

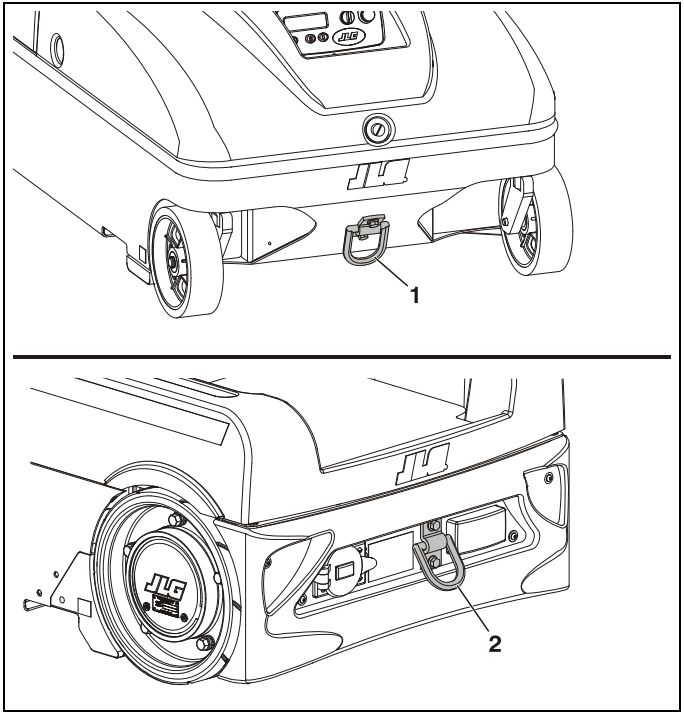


Figure 3-13. Front and Rear Tie-Down Loop.

1. Front Tie-Down Loop **2.** Rear Tie-Down Loop

3.13 PROGRAMMABLE SECURITY LOCK (PSL™) (OPTION)

The optional keyless Programmable Security Lock switch can be programmed with a four (4) digit Operators Code to allow only those persons with the code to power-up and operate the machine.

PSL™ Box Location

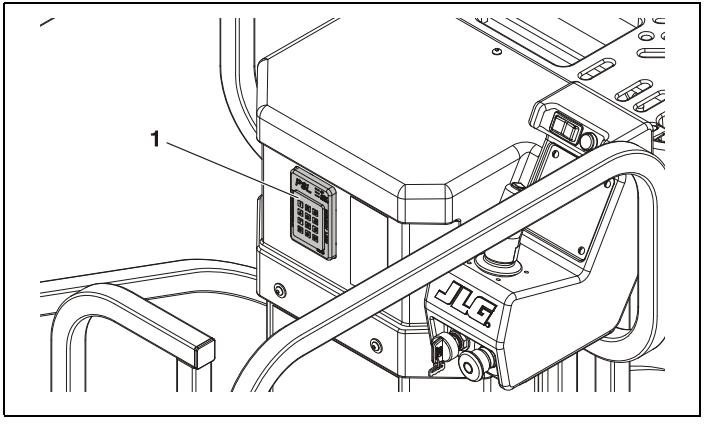


Figure 3-14. PSL™ Switch Location

1. PSL Switch *(Located on the mast cover in the platform)*.

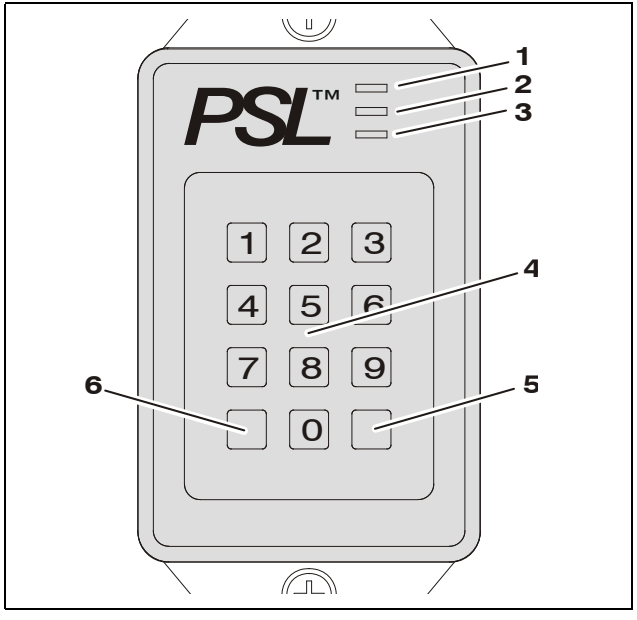


Figure 3-15. PSL™ Switch Controls & Indicators.

1. ON (Green LED)
2. ACCEPT (Amber LED)
3. PROGRAM (Red LED)
4. Key Pad
5. OFF Switch
6. ON Switch

Machine - Power Up using the PSL™

NOTE: *When entering the Operators Code on the keypad, a short beep indicates a properly depressed key, a long beep indicates an error in depressing key. If an error occurs, you must restart the code entry process again.*

1. Enter the programmed four digit Operators Code on the PSL key pad. The ACCEPT - AMBER LED indicator will be lit if the code is correct.
2. Press the keypad ON button. The ON - GREEN LED indicator will light and power will be supplied to the Ground Control Station.
3. At the ground control station, turn the main power selector switch from OFF to either Platform Control Mode or Ground Control Mode. At the Platform Control Console set the key switch to the ON position.
4. The machine will now operate normally.

Machine - Power Down

1. At the Ground Control Station set the main power selector switch to the OFF position.
2. Press the OFF button on the PSL keypad. No LEDs on the PSL box will be lit.

Changing the Operator's Code

The PSL Operators Code can be changed should the need occur. A separate Permanent Code matched to the serial number of the PSL box is included on a sheet in the PSL user manual supplied with the machine.

1. Enter the Permanent Code on the key pad. The PROGRAM - RED LED will be lit if correct code is entered.

NOTE: *ON or OFF cannot be one of the four digits of the new Operator's code.*

2. Enter a new four (4) digit Operator's Code on the keypad. The ACCEPT - AMBER LED will light up if the new Operator's Code is accepted.
3. Press the OFF button on the keypad to activate the new Operator's Code.

NOTE: *The new Operator's Code will remain in the PSL even when power is removed from the equipment, or until that code is changed again using the Permanent Code.*

3.14 PLATFORM HANGER ACCESSORY - (OPTION)

⚠ WARNING

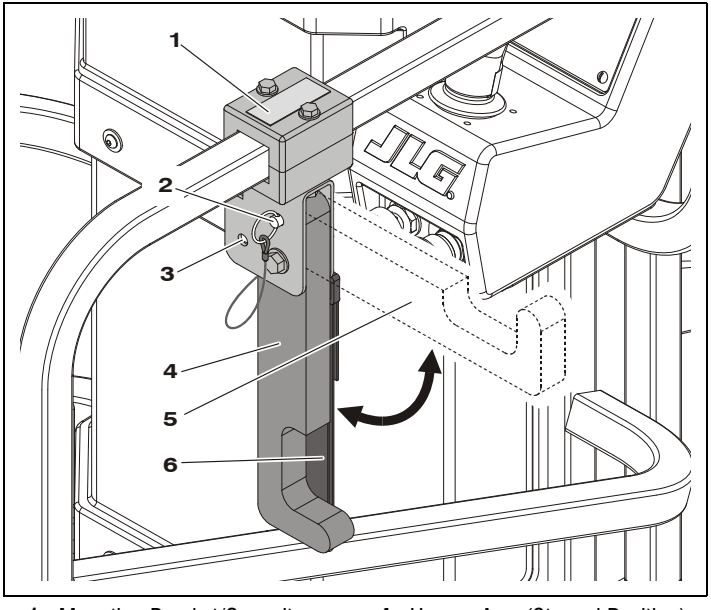
THE WEIGHT OF OBJECTS CARRIED IN A PLATFORM ACCESSORY, ALONG WITH PERSONNEL AND EQUIPMENT PLACED IN THE PLATFORM MUST NOT EXCEED THE MAXIMUM RATED PLATFORM CAPACITY.

DO NOT USE MORE THAN ONE ACCESSORY MOUNTED ON THE SAME SIDE OF THE PLATFORM AT ANY TIME.

NOTE: *This hanger accessory is intended for use in placing or retrieving lightweight bulky stock items such as bicycles, ladders, etc., on racks or shelves above ground level. Use for any other purpose is not authorized by JLG.*

The hanger accessory is a pivoting arm mounted to the 10MSP platform rail. The hanger accessory can be mounted to either side of the platform individually, or two can be mounted, one on each side of the platform. Each individual hanger has a maximum load capacity of 50 lb. (23 kg).

The hanger arm can be pivoted out of the way parallel with the platform side rails when not in use, *(the stowed position)*. The hanger arm is pinned into position at 90 degrees to the platform side rails when in use, *(the carry position)*.



1. Mounting Bracket/Capacity Decal (a)
2. Lock Pin (Stowed Position)
3. Lock Pin (Carry Position)
4. Hanger Arm (Stowed Position)
5. Hanger Arm (Carry Position)
6. Hanger Arm Strap

NOTE: *(a) Maximum load capacity of hanger is 50 lb. (23kg).*

Hanger Accessory - Pre-Start Inspection

Prior to use of the hanger accessory, check the following;

- Hanger arm mounting is secure to the platform railing, no missing or damaged fasteners.
- The hanger arm lock pin is in place and secure.

Loading and Transporting an Item using the Hanger Accessory

Use the following steps as a guide when loading and transporting an object with the hanger accessory arm.

1. Keep the hanger arm in the stowed position when not in use.
2. When ready to use, pull the lock pin from the stowed position hole and swing the hanger arm into the carry position. Place pin in the carry position hole locking the hanger arm in place.
3. Load the object onto the hanger arm and use the hanger arm strap to secure the object during transport.
4. Be aware of clearance above, below, and around the object when driving and lifting or lowering the platform.

3.15 RUG CARRIER ACCESSORY - (OPTION)

NOTE: *This rug carrier accessory is intended for use in placing or retrieving rolled/unrolled rugs and other similar stock stored on racks or shelves above ground level. Use for any other purpose is not authorized by JLG.*

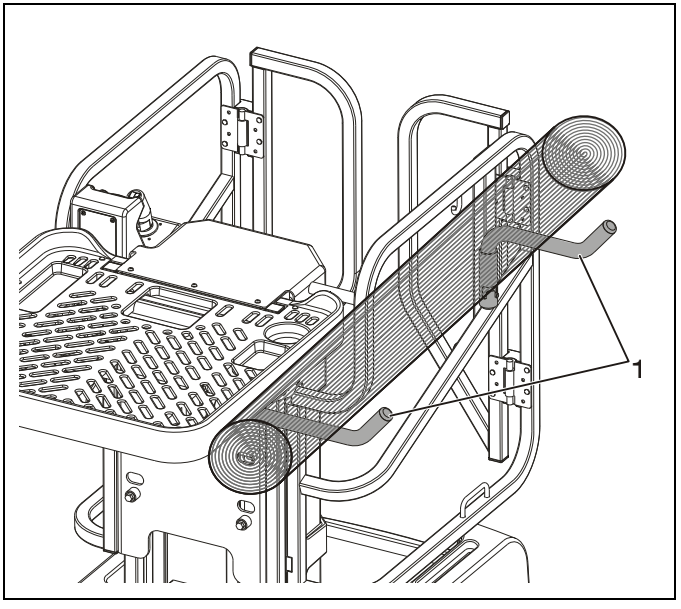
The rug carrier accessory consists of two extendable arms mounted on the left side of the 10MSP machine. The maximum combined load carrying capacity for both arms is 50 lb. (23kg).

The carrier arms can be retracted out of the way when not in use.

Pre-Start Inspection

Prior to use of the carrier accessory, check the following;

- The material tray is fully raised and locked in position.
- Carrier arm mounts are secure to the machine, no missing or damaged fasteners.
- The carrier arms lock pins are in place and secure.



1. Rug Carrier arms shown in the extended or carry position.

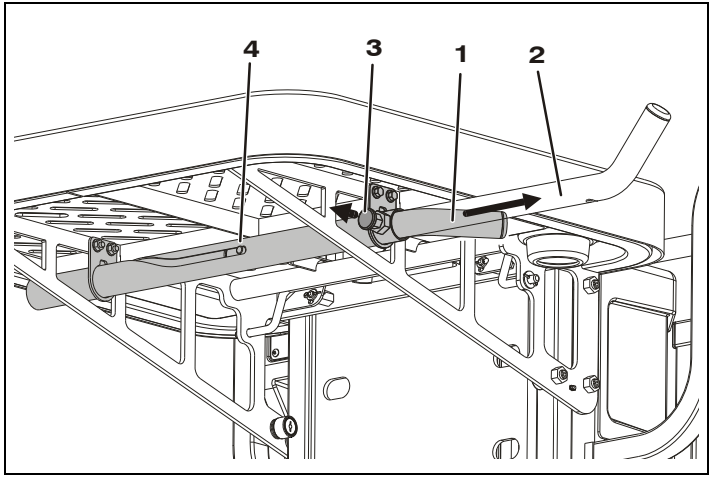
NOTE: Maximum combined carrying capacity for both arms is 50 lb. (23kg)

Hanging a Rug

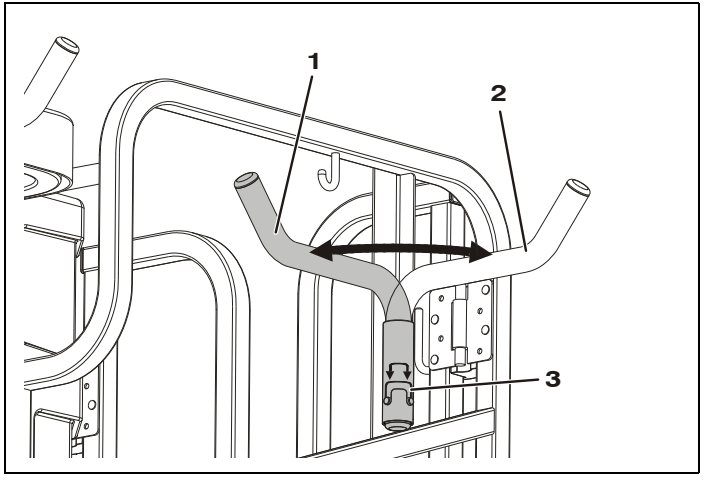
The following is a description for use of the Rug Carrier accessory in hanging rugs on horizontal pivoting arm display racks.

1. Select the intended location in the display for mounting the rug. Open the display rack to provide adequate space for the lift and rug.
2. With the Rug Carrier Accessory arms stowed, drive the lift into position prior to loading the rug.
3. Release and lock Rug Carrier Accessory arms into the carry position.
4. Load the rolled rug with the finished side facing the platform. As required, use an assistant to load the rug onto the Rug Carrier Accessory arms.
5. Make sure that the rug is centered over its length on the Rug Carrier Accessory.
6. Elevate the platform to the required height for mounting the rug onto the display arm.
7. Properly attach the rug to the display arm. Never climb onto the platform rails for any reason.

8. After adequately attaching the rug to the display arm, lower the platform, stow the Rug Carrier Accessory arms.
9. As required reposition and elevate the lift to completely attach the rug.



1. Front Arm in Stowed Position
2. Front Arm in Carry Position
3. Release Button to Move Arm
4. Arm Guide

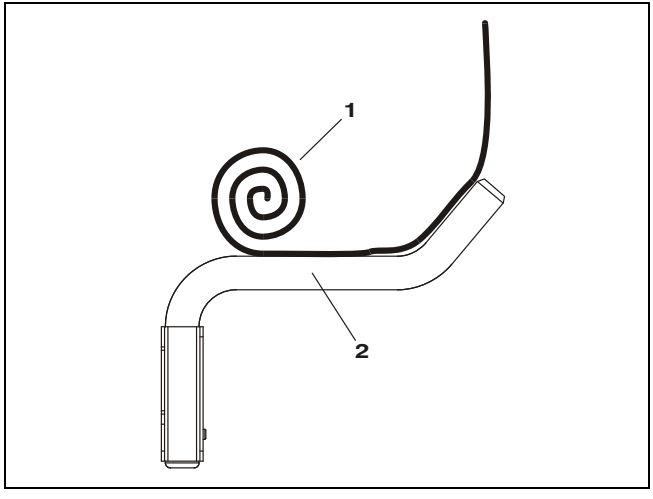


1. Rear Arm in Stowed Position
2. Rear Arm in Carry Position
3. Lift Arm, Swing Out and Lower Down to Lock in Place

Removing a Rug

This section describes the use of the Rug Carrier accessory in removing a rug from a horizontal pivoting arm display rack.

1. Select the intended location in the display for removal of the rug. Open the display rack to provide adequate space for the lift and rug.
2. With the Rug Carrier Accessory arms stowed, drive the lift into position prior to loading the rug.
3. Swing and lock the Rug Carrier Accessory arms into the carry position.
4. Elevate the platform a few feet. Start to roll the rug onto the Rug Carrier Accessory arms.
5. Be certain the rug is centered over its length on the Rug Carrier Accessory.
6. While elevating to the required height for removing the rug from the display arm, continue to roll the rug until it is completely rolled up on the carrier arms.
7. Properly remove the rug from the display arm. Never climb onto the platform rails for any reason.
8. After adequately removing the rug from the display arm, lower the platform.
9. Remove the rug from the Rug Carrier Accessory. If required, use an assistant to unload the rug from the Rug Carrier Accessory Arms.
10. Replace the Rug Hanger Accessory arms to the stowed position for normal operation.



Removing Rug From Display Arm.

1. Roll Rug onto Rug Carrier while Elevating Platform
2. Rug Carrier in Carry Position

⚠ CAUTION

THE RUG CARRIER ACCESSORY ARMS MUST BE LOCKED IN THE STOWED POSITION WHEN NOT IN USE.

EXTREME CAUTION MUST BE EXERCISED AT ALL TIMES WHILE THE RUG CARRIER ACCESSORY IS IN USE (DRIVING, RAISING AND LOWERING) TO PREVENT OBSTACLES AND PERSONNEL FROM STRIKING THE LOAD.

WHEN DRIVING WITH A RUG WITHIN THE RUG CARRIER ACCESSORY, THE RUG MUST BE PROPERLY SECURED TO PREVENT INADVERTENT MOTION OR MOVEMENT OF THE RUG AND MUST NOT EXCEED THE RATED CAPACITY OF THE RUG CARRIER ACCESSORY.

NEVER OVERLOAD THE RUG CARRIER ACCESSORY. MAXIMUM CAPACITY OF THE RUG CARRIER ACCESSORY IS 50 LBS.

THE COMBINED WEIGHT OF PERSONNEL, MATERIALS, EQUIPMENT PLUS ANY LOAD ON THE RUG CARRIER ACCESSORY MUST NOT EXCEED THE MAXIMUM CAPACITY OF THE PLATFORM.

NEVER USE A RUG CARRIER ACCESSORY THAT HAS DAMAGE OR LOOSE MOUNTINGS. IMMEDIATELY REPORT ANY DAMAGE TO APPROPRIATE PERSONNEL. DISCONTINUE USE OF THE RUG CARRIER ACCESSORY UNTIL ALL DISCREPANCIES HAVE BEEN CORRECTED.

3.16 FLOURSCENT TUBE CADDY - (OPTION)

NOTE: *The fluorescent tube caddy accessory is intended for use in replacing fluorescent tubes in light fixtures mounted at ceiling level. Use for any other purpose is not authorized by JLG. Maximum carrying capacity of caddy is 15 lb.(7kg)*

The fluorescent tube caddy consists of the caddy which attaches to the platform side rail. The caddy mount is secured to the platform rail with an attach pin. The caddy can be mounted to either side of the platform dependent on other attachments already mounted to the platform rail.

Pre-Start Inspection

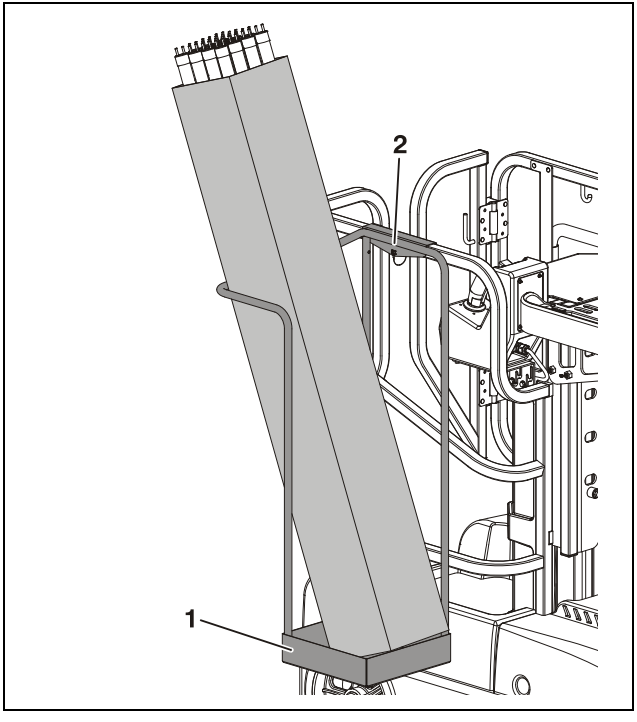
Prior to use of the Fluorescent Tube Caddy, check the following;

- Caddy mount is centered and secure to the platform rail.
- The caddy lock pin is in place under the platform rail and secure.

⚠ CAUTION

THIS MACHINE IS NOT INSULATED AND DOES NOT PROVIDE PROTECTION FROM CONTACT OR PROXIMITY TO ELECTRICAL CURRENT.

THE COMBINED WEIGHT OF PERSONNEL, MATERIALS, EQUIPMENT PLUS ANY LOAD ON THE FLUORESCENT TUBE CADDY MUST NOT EXCEED THE MAXIMUM LOAD CAPACITY OF THE PLATFORM.



1. Fluorescent Tube Caddy **2.** Attach Pin and Retaining Wire

NOTE: *Caddy maximum carrying capacity is 15 lb. (7kg)*

3.17 DECAL INSTALLATION

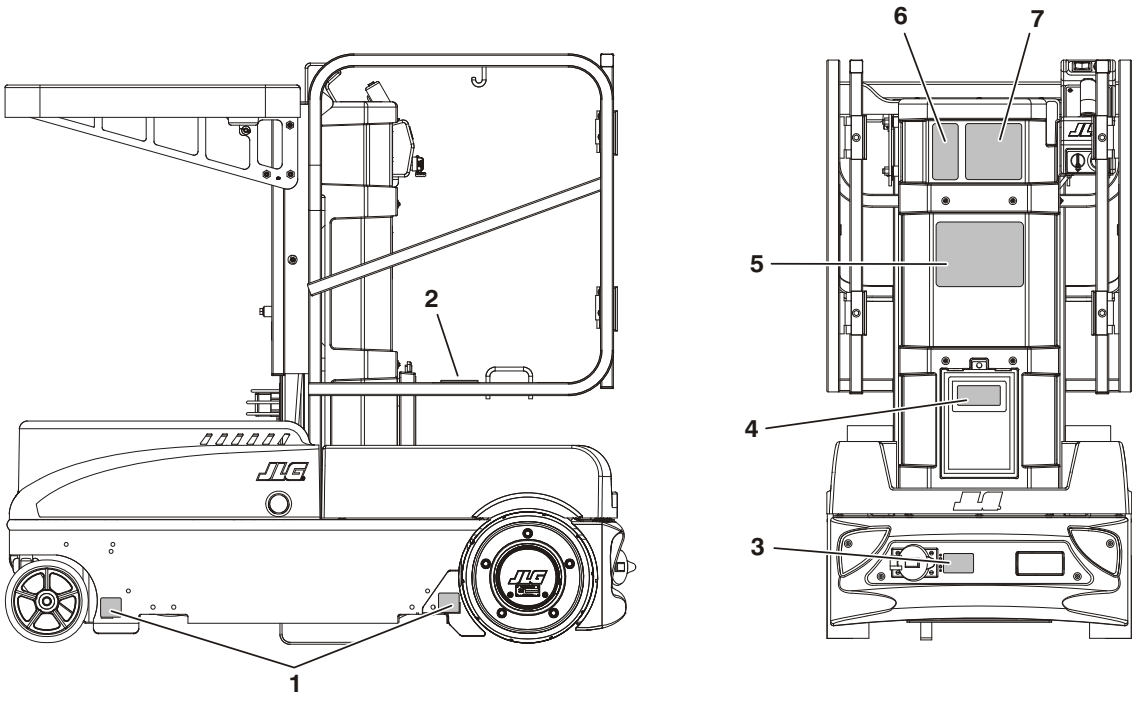


Figure 3-16. 10MSP Decal Installation Chart - (See Table 3-4 (ANSI) and (CE) for Specification)

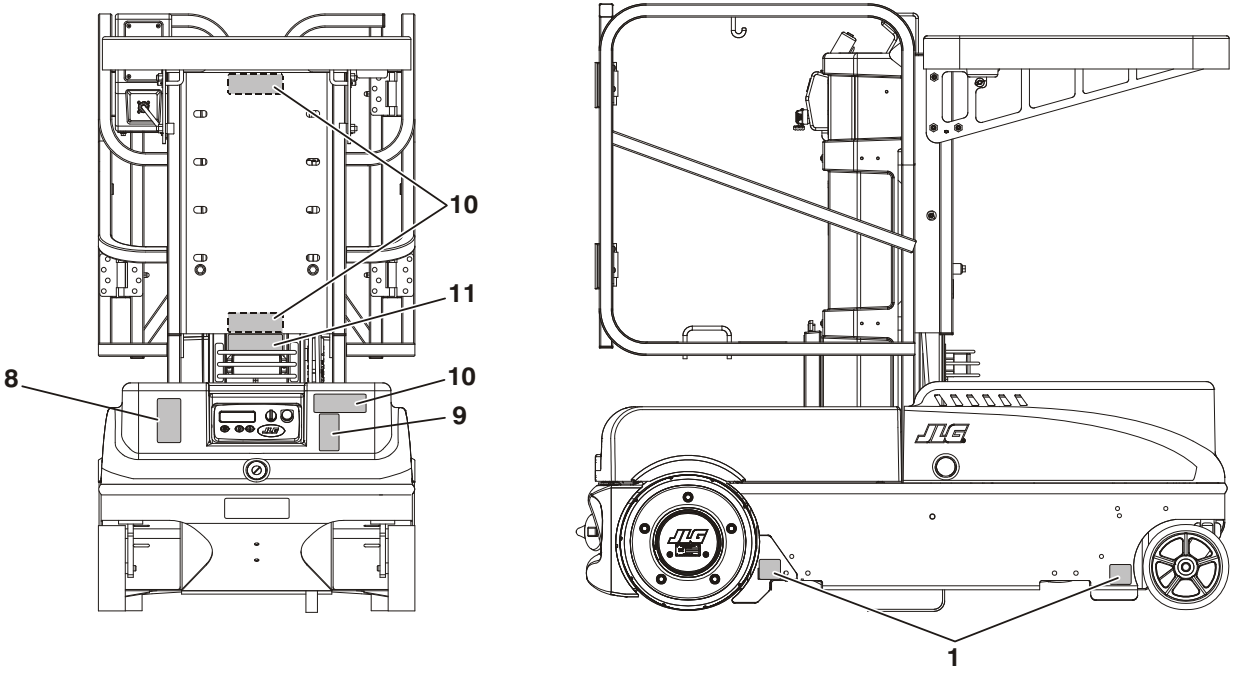


Figure 3-17. 10MSP Decal Installation Chart - (See Table 3-4 (ANSI) and (CE) for Specification)

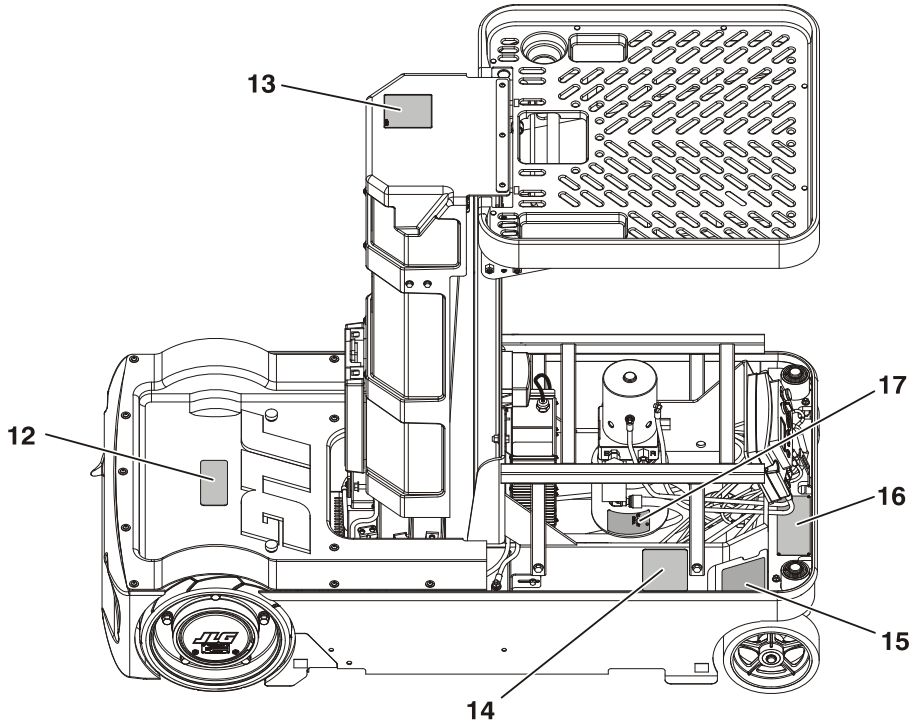


Figure 3-18. 10MSP Decal Installation Chart - (See Table 3-4 (ANSI) and (CE) for Specification)

Table 3-4. 10MSP - (ANSI and CE) Decal Installation Chart (See Figure 3-16., Figure 3-17. and Figure 3-18.)

Item	ANSI	ANSI (LAT)	ANSI (BRZ)	ANSI (JPN)	ANSI (CHI)	CE (ENG/(AUS)	CE (GER)	CE (FRE)	CE (SPA)	CE (ITA)	CE (DUT)	CE (SWE)	CSA (FRE)
1	1705930	1705930	1705930	1705930	1705930	1705930	1705930	1705930	1705930	1705930	1705930	1705930	1705930
2	1705624	1705624	1705624	1705624	1705624	1705624	1705624	1705624	1705624	1705624	1705624	1705624	1705624
3	1705929	1706085	1706089	---	1706093	1706077	1706077	1706077	1706077	1706077	1706077	1706077	1706097
4	1701640	1701640	1701640	1701640	1701640	1701640	1701640	1701640	1701640	1701640	1701640	1701640	1701640
5	1705937	1706084	1706088	---	1706092	---	---	---	---	---	---	---	1706096
6	1705938	1706083	1706087	---	1706091	1706078	1706078	1706078	1706078	1706078	1706078	1706078	1706095
7	1705939	1705939	1705939	---	1705939	1706079	1706079	1706079	1706079	1706079	1706079	1706079	1705939
8	1706616	1706616	1706616	1706616	1706616	1706616	1706616	1706616	1706616	1706616	1706616	1706616	1706616
9	1706617	1706617	1706617	1706617	1706617	1706617	1706617	1706617	1706617	1706617	1706617	1706617	1706617
10	1705995	1706082	1706086	---	1706090	1705099	1705099	1705099	1705099	1705099	1705099	1705099	1706094
11	1705992	1705992	1705992	1705992	1705992	1705992	1705992	1705992	1705992	1705992	1705992	1705992	1705992
12	1703786	1706082	1706086	---	1706090	1705099	1705099	1705099	1705099	1705099	1705099	1705099	1706094
13	1706131	1706131	1706131	1706131	1706131	1706131	1706131	1706131	1706131	1706131	1706131	1706131	1706131
14	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584	1700584
15	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631	1702631
16	3252645	3252645	3252645	3252749	3252645	3252811	3252799	3252799	3252799	3252799	3252799	3252799	3252645
17	1704412	1704412	1704412	1704412	1704412	1704412	1704412	1704412	1704412	1704412	1704412	1704412	1704412

SECTION 4. EMERGENCY PROCEDURES

4.1 GENERAL INFORMATION

This section explains the steps to be taken in case of an emergency situation during operation.

4.2 EMERGENCY OPERATION

Operator Unable to Control Machine

IF THE PLATFORM OPERATOR IS PINNED, TRAPPED OR UNABLE TO OPERATE OR CONTROL THE MACHINE:

1. Other personnel should operate the machine from ground controls only as required.
2. Only qualified personnel in the platform may use the platform controls. DO NOT CONTINUE OPERATION IF CONTROLS DO NOT FUNCTION PROPERLY.
3. Rescue equipment can be used to remove the platform occupant. Cranes and forklifts can be used to stabilize motion of the machine.

Platform Caught Overhead

If the platform becomes jammed or snagged in overhead structures or equipment, rescue the platform occupant prior to freeing the machine.

4.3 INCIDENT NOTIFICATION

JLG Industries, Inc. must be notified immediately of any incident involving a JLG product. Even if no injury or property damage is evident, the factory should be contacted by telephone and provided with all necessary details.

USA: 877-JLG-SAFE (554-7233)

Outside USA: 717-485-5161

E-mail: productsafety@jlg.com

Failure to notify the manufacturer of an incident involving a JLG Industries product within 48 hours of such an occurrence may void any warranty consideration on that particular machine.

NOTICE

FOLLOWING ANY ACCIDENT, THOROUGHLY INSPECT THE MACHINE AND TEST ALL FUNCTIONS FIRST FROM THE GROUND CONTROL STATION, THEN FROM THE PLATFORM CONTROL CONSOLE. DO NOT ELEVATE PLATFORM UNTIL YOU ARE SURE THAT ALL DAMAGE HAS BEEN REPAIRED, IF REQUIRED, AND THAT ALL CONTROLS ARE OPERATING CORRECTLY.

NOTES:

SECTION 5. GENERAL SPECIFICATIONS AND OPERATOR MAINTENANCE

5.1 INTRODUCTION

This section of the manual provides additional necessary information to the operator for proper operation and maintenance of this machine.

The maintenance portion of this section is intended as information to assist the machine operator to perform daily maintenance tasks only, and does not replace the more thorough Preventive Maintenance and Inspection Schedule included in the Service and Maintenance Manual.

Other Publications Available Specific to this Machine:

Service and Maintenance Manual

GLOBAL. 3121228

Illustrated Parts Manual

GLOBAL. 3121229

5.2 GENERAL SPECIFICATIONS

Machine Specifications

SPECIFICATION	10MSP
Gross Machine Weight: (*Platform Empty*)**:**	1100 lb. (499 kg)
Machine Height: *(Platform Stowed):*	57 in. (1.44m)
Maximum Ground Bearing Pressure: *(per wheel)* 2 x 12 VDC Batteries:	650 lb. (295 kg)
4 x 6 VDC Batteries:	710 lb. (322 kg)
Machine Ground Clearance:	1.875 in. (47.6mm)
Machine Turning Radius: (Circle)	65 in. (165cm)
Tilt Indicator Setting:	1.5°
Maximum Travel Grade (Gradeability): (Platform STOWED ONLY)	15% (8.5°)

SPECIFICATION	10MSP
Maximum Travel Grade (Side Slope): (Platform STOWED ONLY)	5°
Maximum Drive Speeds: *(Operator Variable)*:	0.5 - 3.4 mph (0.8 - 5.5 kph)
Machine Base - Overall: *(Width x Length)*	29.5 in. W x 60 in. L (75 cm W x 152 cm L)
Maximum Operating Wind Speed: ANSI/CSA:	28 mph (12.5 m/s)
(For indoor use only) - CE/AUST:	0 mph (0 m/s)
Maximum Horizontal Manual Side Force: *(Platform fully extended with Maximum load)* ANSI/CSA:	100 Lbs. (445 N)
CE/AUST/JPN:	200 N (45 Lbs.)
Maximum Hydraulic System Pressure: *(Recommended initial setting)*	1800 PSI (124 Bars)
Hydraulic System Capacity:	5 qts. U.S. (4.7 L)
Hydraulic Reservoir Capacity:	1 Gallon (3.78 L)

Electrical Specifications

SPECIFICATION		10MSP
System Voltage:		24 Volts DC
Battery Specifications:	Battery Type:	AGM (VRLA) (Sealed)
	Voltage:	(2) - 12 Volt DC (Standard) or (4) - 6 Volt DC (Option)
	Amp Hour (AH) Rating:	12V - 100 Amp Hr. @ 20 Hr. 6V - 210 Amp Hr. @ 20 Hr.
Battery Charger:	Input:	120/240 Volts AC - 50/60 Hz - Voltage Selectable
	Output:	24 volt, 20 Amp Output - with 2 Amp Finish

Platform Data

SPECIFICATION		10MSP
Occupants: *(Persons allowed in Platform)*		1
Maximum Work Load (Capacity):	Platform:	350 lb. (160kg)
	Material Tray:	250 lb. (115kg)
Carry Deck Capacity:		250 lb. (115kg)
Platform Entry Height: (Ground to Platform Floor)		13.5 in. (34.3cm)
Platform Height - Mast Fully Extended - *(Ground to Platform Floor)*:		10 ft. (3m) * 7 ft. (2m)
Platform Cycle Performance:	Lift Up:	13 sec.
(in seconds) (w/max. rated load)	Lift Down:	9 - 13 sec.

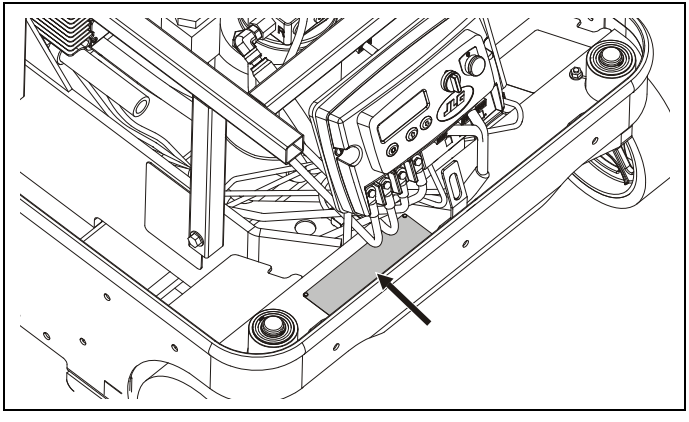
* Only on machines equipped with the 7 ft. platform height limit OPTION.

Machine Component Weights

SPECIFICATION	10MSP
Platform Weight:	75 lb. (34 kg)
Battery: *(per battery)*	12V - 65.7 lb. (29.8 kg) 6V - 64 lb. (29 kg)
Front Hood:	12 lb. (5.4 kg)

Serial Number Location

For machine identification, the serial number is stamped into a nameplate affixed to the machine. The plate is located under the front hood cover on the frame crossbar at the front of the machine.



5.3 OPERATOR MAINTENANCE

Lubrication

Hydraulic Oil (HO)

HYDRAULIC SYSTEM OPERATING TEMPERATURE RANGE	SAE VISCOSITYGRADE
+0° F to +180° F (-18° C to -83° C)	10W
+0° F to +210° F (-18° C to +99° C)	10W-20, 10W-30
+50° F to +210° F (+10° C to +99° C)	20W-20

Hydraulic oils must have anti-wear qualities at least to API Service Classification GL-3, and sufficient chemical stability for mobile hydraulic system service. JLG Industries, recommends Mobilfluid 424 hydraulic oil, which has an SAE viscosity of 10W-30 and a viscosity index of 152.

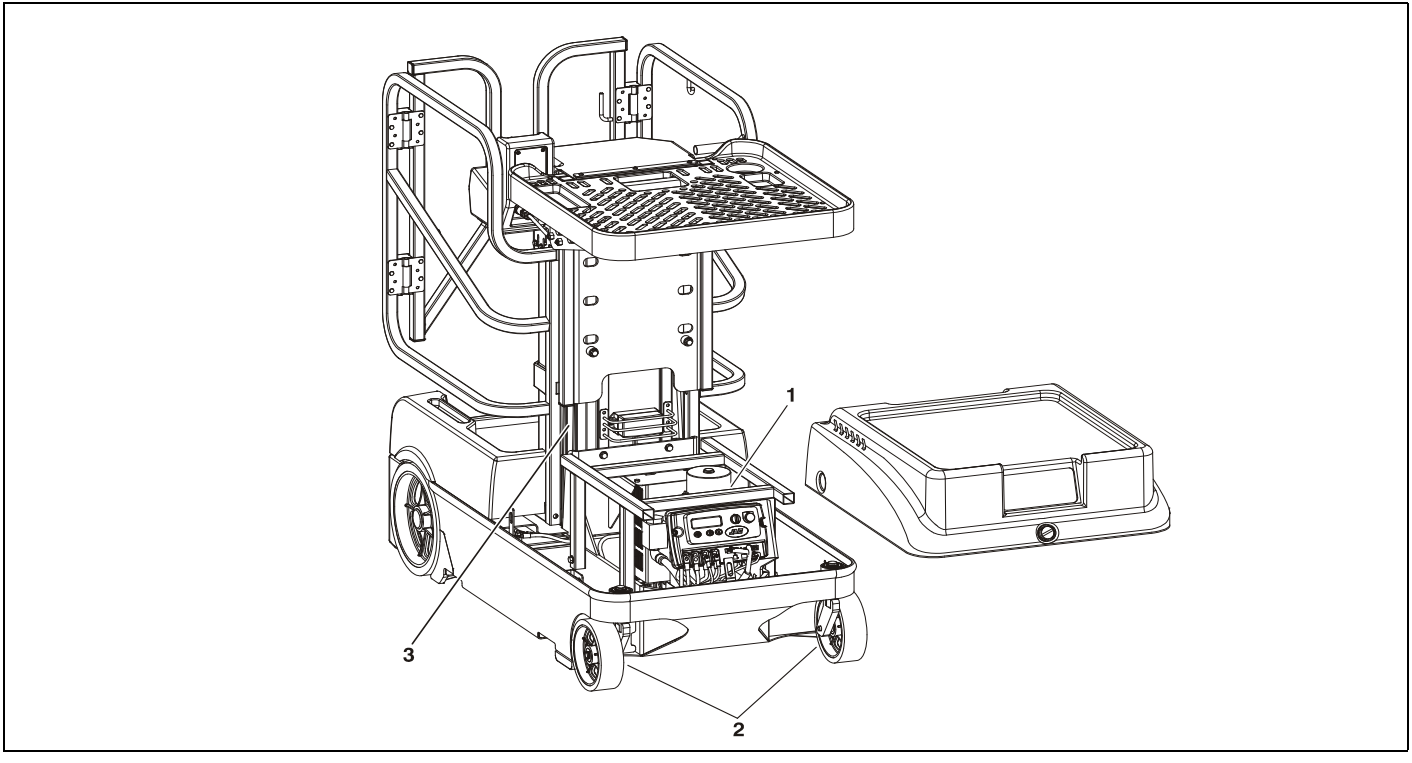
For cold weather applications, i.e. when temperatures remain consistently below +20°F (–7°C) JLG recommends using Mobil DTE 13 hydraulic oil.

Aside from JLG recommendations, it is not advisable to mix oils of different brands or types, as they may not contain the same required additives or be of comparable viscosities. If use of hydraulic oil other than Mobilfluid 424 is desired, contact JLG Industries for proper recommendations.

Table 5-1. - Lubrication Specifications

KEY	SPECIFICATIONS
MPG -	Multipurpose Grease having a minimum dripping point of 350° F. Excellent water resistance and adhesive qualities, and being of extreme pressure type. (Timken OK 40 pounds minimum.)
EPGL -	Extreme Pressure Gear Lube (oil) meeting API service classification GL-5 or MIL-Spec MIL-L-2105.
HO -	Hydraulic Oil. ISO-Vg grade 32, 46.
CL -	Chain Lube. Use a good quality chain lubricant.

NOTE: *Refer to Lubrication Chart, Table 5-2. for specific lubrication locations on machine.*



Lubrication Points. *(See Table 5-2.)*

Table 5-2. Lubrication Intervals for Various Components

ITEM	COMPONENT	NO/TYPE [a] LUBE POINTS	LUBE/METHOD	INTERVAL [b]				COMMENTS
				3 MONTHS	6 MONTHS	1 YEAR	2 YEARS	
1	Hydraulic Oil	Fill To Full Line on Dipstick - 5 Qt. Reservoir	HO - Check Hyd. Oil Level HO - Change Hyd. Oil				✔	Check fluid level every day. [c] Change hydraulic oil every 2 years.
2	Swivel Raceways	—	MPG					Upper: Permanently Sealed. Lower: Repack if Serviced.
3	Mast Chains	2 - Per Section	CL - Brush or Spray		✔			Inspect, lubricate if dry or rusting.

Key to Lubricants: **MPG** - Multipurpose Grease
HO - Hydraulic Oil - ISO-Vg grade 32, 46
GEAR OIL - Good Quality Worm Gear Oil - SAE 90 - AGMA#5 - EP Compounded
CL - Chain Lube. Use a good quality chain lubricant

Notes: ***(a)*** *Be certain to lubricate like items on each side of the machine.*
(b) *Recommended lubricating intervals are based on normal use. If machine is subjected to severe operating conditions, such as a high number of cycles, location, corrosive/dirty environment, etc., user must adjust lubricating requirements accordingly.*
(c) *Prior to checking hydraulic oil level, operate machine through one complete cycle of lift function (full up and down). Failure to do so will result in incorrect oil level reading on the hydraulic reservoir.*

5.4 BATTERY MAINTENANCE

The OEM batteries are AGM sealed (VRLA) type so the electrolyte level cannot be checked, however the battery terminals should be checked periodically for corrosion and tightness. The batteries are located directly in front of the rear drive wheels inside the base frame. To access the batteries, remove the hood (carry deck) and the rear cover under the platform.

5.5 TIRES AND WHEELS

Tire Wear and Damage

Inspect tires periodically for wear or damage. Tires with worn edges or distorted profiles require replacement. Tires with significant damage in the tread area or side wall, require immediate evaluation before replacing the machine into service.

Wheel and Tire Replacement

Replacement wheels must have the same diameter and profile as the original. Replacement tires must be the same size and rating as the tire being replaced.

Wheel Installation

It is extremely important to apply and maintain proper wheel mounting torque.

⚠ WARNING

WHEEL LUG NUTS MUST BE INSTALLED AND MAINTAINED AT THE PROPER TORQUE TO PREVENT LOOSE WHEELS, BROKEN LUG NUTS, AND POSSIBLE SEPARATION OF WHEEL FROM THE AXLE. BE SURE TO USE ONLY THE LUG NUTS MATCHED TO THE CONE ANGLE OF THE WHEEL.

Tighten the lug nuts to the proper torque to prevent wheels from coming loose. Use a torque wrench to tighten the fasteners. If you do not have a torque wrench, tighten the fasteners with a lug wrench, then immediately have a service garage or dealer tighten the lug nuts to the proper torque. Over-tightening will result in breaking the lug nuts or permanently deforming the mounting holes in the wheels. The proper procedure for attaching wheels is as follows:

1. Start all lug nuts by hand to prevent cross threading. DO NOT use a lubricant on threads or nuts.
2. Tighten lug nuts in the following sequence.

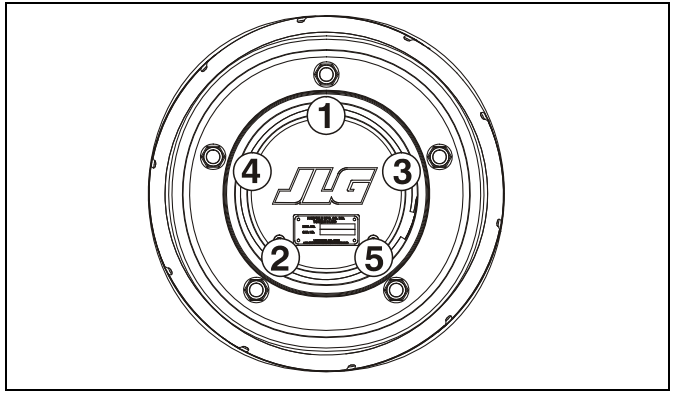


Figure 5-1. Wheel Lug Nut Tightening Sequence

3. The tightening of the lug nuts should be done in stages. Following the recommended sequence, tighten lug nuts per wheel torque.

Table 5-3. Wheel Torque Chart

TORQUE SEQUENCE		
1st Stage	**2nd Stage**	**3rd Stage**
20-30 ft lb (28 - 42 Nm)	65-80 ft lb (91 - 112 Nm)	105 -120 ft lb (142 - 163 Nm)

4. Wheel lug nuts should be torqued after the first 50 hours of operation and after each wheel removal. Check torque every 3 months or 150 hours of operation.

5.6 GROUND CONTROL STATION - PROGRAMMING

General

The Ground Control Station on the MSP10 machine allows on-board programming of various component and control function personality settings.

Programming may be required under circumstances such as:

- The Ground Control Station module has been replaced and optional equipment on the machine needs to be enabled.
- Optional equipment has been added to the machine in the field and a function must be enabled before operation.
- Customizing the machine to fit a specific application, such as changing the LCD display language.

Programming Levels

There is one (1) **password protected** programming level available to the Operator:

- **Level-3:** Operator's Settings - **Level-3 Password: 33271**

Operator Programming Mode

In the Operator Level Programming Mode the following items are shown on the main menu:

- Tilt Sensor
- Program

Tilt Sensor

Allows viewing current tilt sensor - individual X and Y direction degree reading.

Programming Items

Allows programming of the items shown in Table 5-4 on page 5-12, the following is a brief explanation of each programming item.

NOTE: *There are two production modules available at this time, one for North/South American and European languages, and one for Asian languages. All programmable items between these modules are identical with the exception of language selection.*

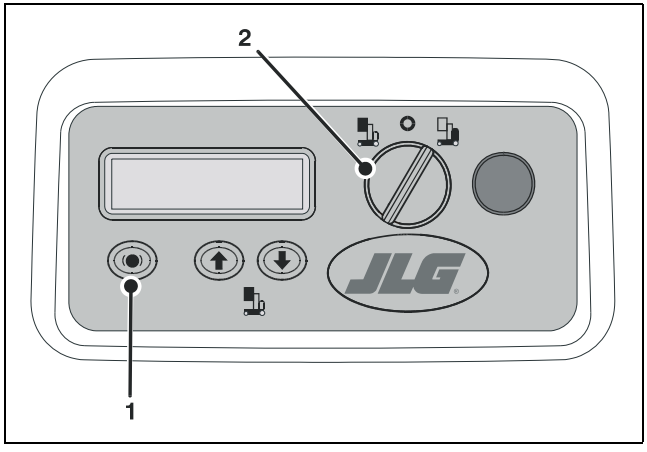
- **Back To Main (Menu)** - When selected, will return to main level menu.
- **Set Language** - Selects the language that text on the LCD screen will be displayed.
- **Set Sleep Time** - Allows setting the length of time the machine will remain powered up without control input before powering itself down.
- **Set Polarity of Keypad Code** - Turns ON or OFF the Programmable Security Lock switch circuit, if equipped.
- **Enable Detection of Horn Open Circuit** - Enables horn electrical circuit to be turned ON (YES) or OFF (NO) if machine is equipped with a horn.
- **Enable Detection of Beacon Open Circuit** - Enables mast/base beacon strobe electrical circuits to be turned ON (YES) or OFF (NO) if machine is equipped with either or both beacon strobes.
- **Forward Alarm Disable** - When turned ON (YES) will disable the alarm when driving forward.

Table 5-4. Ground Control Station - Level 3 - Programmable Settings and Factory Presets.

LEVEL	PROGRAMMABLE ITEM	FACTORY PRESET	SETTING RANGE
3	Back to Main	—	Return to Main Menu
3	Set Language ***NOTE:*** *There are two production modules available at this time, one for North/South America and European Languages, and one for Asian Languages.*	1	**1.** English **2.** German **3.** Dutch **4.** French **5.** Spanish **6.** Italian **7.** Swedish **8.** Brazilian Portuguese **9.** Finnish
		2	**10.** English **11.** Chinese **12.** Japanese
3	Set Sleep Time	10 MINS	0 - 60 MINS
3	Set Polarity of the Keypad Code	LOW	HIGH/LOW
3	Enable Detection of Horn Open Circuit	NO	YES/NO
3	Enable Detection of Beacon Open Circuit	NO	YES/NO
3	Forward Alarm Disable	NO	YES/NO
		On LCD Display:	YES = ✓ HIGH = ↑ NO = X LOW = ↓

Activating Programming Mode

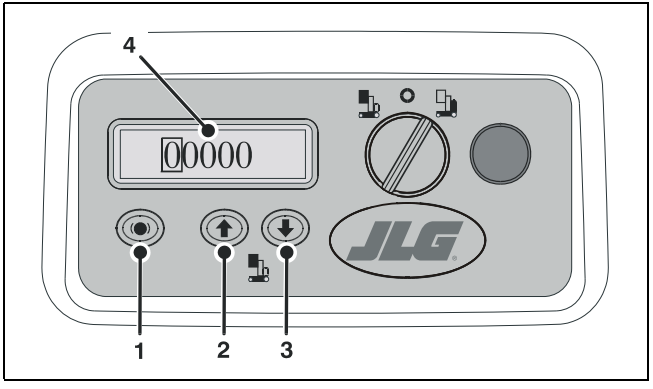
NOTE: *If machine does not power up, check that both the Ground Control Station - Emergency Stop Button, and the Platform Control Console - Emergency Stop Button, are in the RESET position.*
Also if machine is equipped with the (PSL) Programmable Security Lock option, see Section 3 of this Operators Manual for additional machine power-up steps.



Activating Programming Mode

1. With machine power OFF, press and hold the Brake Release Button (1) on the Ground Control Station.
2. While holding the Brake Release Button in, power machine up by turning the Main Power Selector Switch (2), to either the Ground Control or Platform Control Mode.
3. Release the Brake Release Button (1) after machine is powered up. The LCD display should now display five zeros, one with a box around. Continue to next step Entering Password.

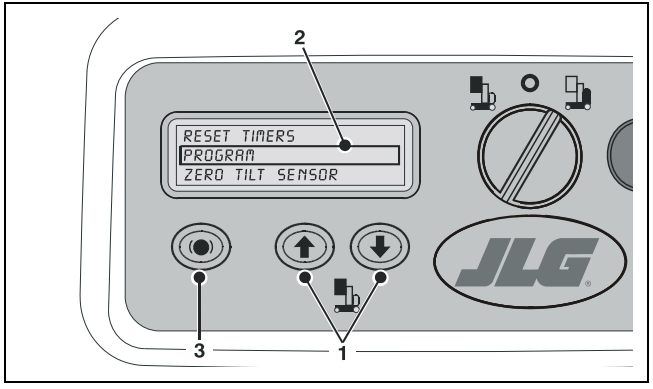
Entering Password



Entering Password

1. The Brake Release button (1) moves the box (around digit) from left to right to select which digit to change.
2. Platform UP button (2) increases the numerical digit.
3. Platform DOWN button (3) decreases the numerical digit.
4. Change all five digits (4) to match password level, then press the Brake Release button (1) again.

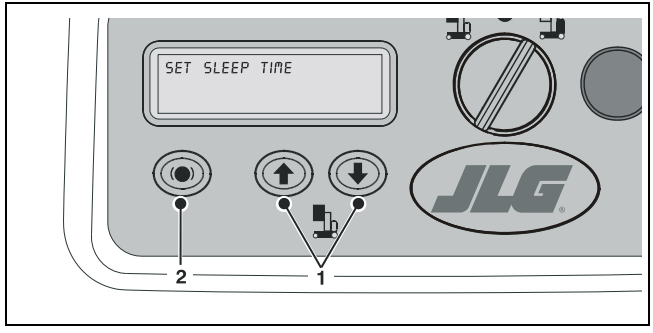
Programming Mode Selection



Programming Mode Selection

1. Use Platform UP/DOWN buttons (1) to move the selection box (2) up or down to select item to program.
2. Press the Brake Release button (3) to enter selected mode then move on to Selecting Programmable Item to Adjust.

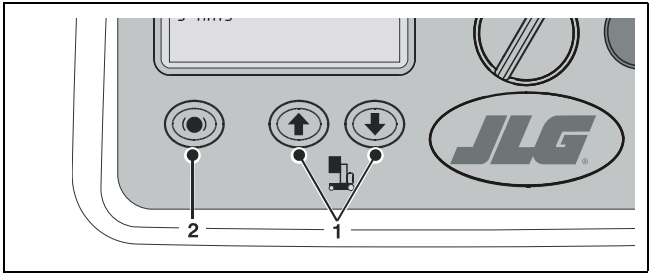
Selecting Programmable Item to Adjust



Selecting Programmable Item to Adjust

1. Use the Platform UP/DOWN buttons (1) to scroll through the list of programmable items available to your programming level.
2. Once a programmable item to be adjusted is selected, press the Brake Release button (2) to enter that settings' adjustment mode.

Adjusting Programmable Setting



Adjusting Programmable Setting

1. Adjust the programmable setting using the Platform UP/DOWN buttons (1), see Table 5-4 for range of settings for that item.
2. Once parameter is set for the programmable item, press the Brake Release button (2), this will enter the parameter and return you to the Programmable Settings Menu.

TO EXIT Programming Mode after adjusting programmable settings, power machine down with either the Main Power Selector Switch or Emergency Stop Button.

5.7 DRIVE MOTOR BRUSH WEAR - WARNING INDICATION

The machines drive motors include brush wear sensors that activate a warning indicating the drive motor brushes will require replacement soon. This warning protects the drive motors from damage due to extreme brush wear.

When the brush wear warning is activated the Ground Control Station LCD screen will indicate a fault code of 6, also the hourmeter is set to countdown 25 hours of (DRIVE) operation remaining.

The Platform Control LEDs will indicate this warning with 8 flashing LEDs and an intermittent beep.

NOTE: *Only the drive function when used will affect the hour meter count down once the warning has been activated. The machine will operate normally until the last 10 seconds of the 25 hour countdown.*

During the last 10 seconds of the 25 hour (DRIVE) countdown the machine will only drive in creep/turtle drive mode and platform lift up will be disabled. At this point cycling power on/off will only repeat the final 10 second mode cycle.

The machine will not operate normally until the drive motor brushes are replaced *(repositioning the brush warning sensors),* and the Ground Control Station is programmed to reset the Brush Wear - Warning Timer per the Service and Maintenance Manual.

SECTION 6. INSPECTION AND REPAIR LOG

Machine Serial Number _____

Table 6-1. Inspection and Repair Log

Date	Comments

Table 6-1. Inspection and Repair Log

Date	Comments

An Oshkosh Corporation Company

TRANSFER OF OWNERSHIP

To Product Owner:

If you now own but ARE NOT the original purchaser of the product covered by this manual, we would like to know who you are. For the purpose of receiving safety-related bulletins, it is very important to keep JLG Industries, Inc. updated with the current ownership of all JLG products. JLG maintains owner information for each JLG product and uses this information in cases where owner notification is necessary.

Please use this form to provide JLG with updated information with regard to the current ownership of JLG products. Please return completed form to the JLG Product Safety & Reliability Department via facsimile or mail to address as specified below.

Thank You,
Product Safety & Reliability Department
JLG Industries, Inc.
13224 Fountainhead Plaza
Hagerstown, MD 21742
USA
Telephone: +1-717-485-6591
Fax: +1-301-745-3713

NOTE: Leased or rented units should not be included on this form.

Mfg. Model: _____

Serial Number: _____

Previous Owner: _____

Address: _____

_____

Country: _____ **Telephone: (_____)** _____

Date of Transfer: _____

Current Owner: _____

Address: _____

_____

Country: _____ **Telephone: (_____)** _____

Who in your organization should we notify?

Name: _____

Title: _____

CALIFORNIAN PROPOSITION 65

BATTERY WARNING

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

Batteries also contain other harmful chemicals known to the State of California.

WASH HANDS AFTER HANDLING!

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