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# Operation and Safety Manual

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

**Models**

**E400A Narrow**

**E400AJP Narrow**

**PVC 2001**

**ANSI**   **AS/NZS**

**31215009**

November 8, 2019 - Rev A

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## **WARNING**

Operating, servicing and maintaining this vehicle or equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle or equipment in a well-ventilated area and wear gloves or wash your hands frequently when servicing. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## **FOREWORD**

The Mobile Elevating Work Platform (MEWP) models covered in this manual are designed and tested to meet or exceed various compliance standards. Please refer to the manufacturer's nameplate affixed to the subject MEWP for specific standard compliance information.

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.

Refer to [www.JLG.com](http://www.JLG.com) for Warranty, Product Registration, and other machine-related documentation.

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

### **CAUTION**

INDICATES A POTENTIALLY 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 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  
JLG Industries, Inc.  
13224 Fountainhead Plaza  
Hagerstown, MD 21742  
USA

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

**In USA:**

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

**Outside USA:**

Phone: 240-420-2661  
Fax: 301-745-3713  
E-mail: ProductSafety@JLG.com

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## SECTION 1. SAFETY PRECAUTIONS

### 1.1 GENERAL

This section outlines the necessary precautions for proper and safe machine usage and maintenance. It is mandatory that a daily routine is established based on the content of this manual to promote proper machine usage. 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 must 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.

This section contains the responsibilities of the owner, user, operator, lessor, and lessee concerning safety, training, inspection, maintenance, application, and operation. If there are any questions with regard to safety, training, inspection, maintenance, application, and operation, please contact JLG Industries, Inc. ("JLG").

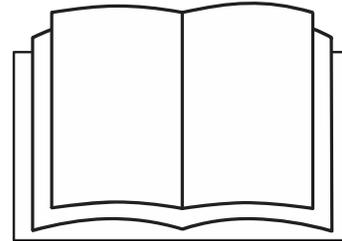
### WARNING

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

### 1.2 PRE-OPERATION

#### Operator Training and Knowledge

- Read, understand, and study the Operation and Safety Manual in its entirety before operating the machine. For clarification, questions, or additional information regarding any portions of this manual, contact JLG Industries, Inc.



## **SECTION 1 - SAFETY PRECAUTIONS**

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- Only personnel who have received proper training regarding the inspection, application and operation of MEWPs (including recognition and avoiding hazards associated with their operation) shall be authorized to operate a MEWP.
- Only properly trained personnel who have received unit-specific familiarization shall operate a MEWP. The user shall determine if personnel are qualified to operate the MEWP prior to operation.
- Read, understand, and obey all DANGERS, WARNINGS, CAUTIONS, and operating instructions on the machine and in this manual.
- Ensure that the machine is to be used in a manner which is within the scope of its intended application as determined by JLG.
- All operating personnel must have a thorough understanding of the intended purpose and function of the MEWP controls, including platform, ground and emergency descent controls.
- Read, understand, and obey all applicable employer, local, and governmental regulations as they pertain to your utilization and application of the machine.

### **Workplace Inspection**

- Precautions to avoid all hazards in the work area must be taken by the user before and during operation of the machine.
- Do not operate or raise the platform from a position on trucks, trailers, railway cars, floating vessels, scaffolds or other equipment unless the application is approved in writing by JLG.
- Before operation, check work area for overhead hazards such as electric lines, bridge cranes, and other potential overhead obstructions.
- Check operating surfaces for holes, bumps, drop-offs, obstructions, debris, concealed holes, and other potential hazards.
- Check the work area for hazardous locations. Do not operate the machine in hazardous environments unless approved for that purpose by JLG.
- Ensure that the ground conditions are adequate to support the maximum tire load indicated on the tire load decals located on the chassis adjacent to each wheel. Do not travel on unsupported surfaces.

## **Machine Inspection**

- Do not operate this machine until the inspections and functional checks as specified in Section 2 of this manual have been performed.
- Do not operate this machine until it has been serviced and maintained according to the maintenance and inspection requirements as specified in the machine's Service and Maintenance Manual.
- Ensure all safety devices are operating properly. Modification of these devices is a safety violation.

### **WARNING**

**MODIFICATION OR ALTERATION OF A MEWP 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.
- Check the machine for modifications to original components. Ensure that any modifications have been approved by JLG.
- Avoid accumulation of debris on platform floor. Keep mud, oil, grease, and other slippery substances from footwear and platform floor.

## **1.3 OPERATION**

### **General**

- Machine operation requires your full attention. Bring the machine to a full stop before using any device, i.e. cell phones, two-way radios, etc. that will distract your attention from safely operating the machine.
- Do not use the machine for any purpose other than positioning personnel, their tools, and equipment.
- Before operation, the user must be familiar with the machine capabilities and operating characteristics of all functions.
- Never operate a malfunctioning machine. If a malfunction occurs, shut down the machine. Remove the unit from service and notify the proper authorities.
- Do not remove, modify, or disable any safety devices.
- 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.

## SECTION 1 - SAFETY PRECAUTIONS

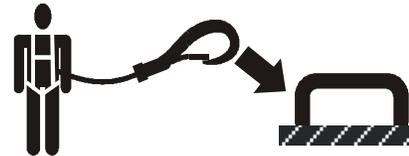
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- Do not carry materials directly on platform railing unless approved by JLG.
- When two or more persons are in the platform, the operator shall be responsible for all machine operations.
- Always ensure that power tools are properly stowed and never left hanging by their cord from the platform work area.
- When driving, always position boom over rear axle in line with the direction of travel. Remember, if boom is over the front axle, steer and drive functions will be reversed.
- Do not assist a stuck or disabled machine by pushing or pulling except by pulling at the chassis tie-down lugs.
- Fully lower platform and shut off all power before leaving machine.
- Remove all rings, watches, and jewelry when operating machine. Do not wear loose fitting clothing or long hair unrestrained which may become caught or entangled in equipment.
- 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.

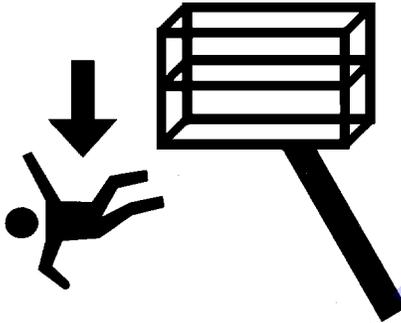
- Hydraulic cylinders are subject to thermal expansion and contraction. This may result in changes to the platform position while the machine is stationary. Factors affecting thermal movement can include the length of time the machine will remain stationary, hydraulic oil temperature, ambient air temperature, and platform position.

### Trip and Fall Hazards

- Prior to operation, ensure all gates are closed and fastened in their proper position.
- During operation, occupants in the platform must wear a full body harness with a lanyard attached to an authorized lanyard anchorage point. Attach only one (1) lanyard per lanyard anchorage point.



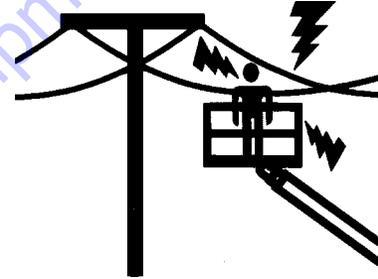
- Enter and exit only through gate area. Use extreme caution when entering or leaving platform. Ensure that the platform assembly is fully lowered. Face the platform when entering or leaving the platform. Always maintain three points of contact with the machine, using two hands and one foot or two feet and one hand at all times during entry and exit.



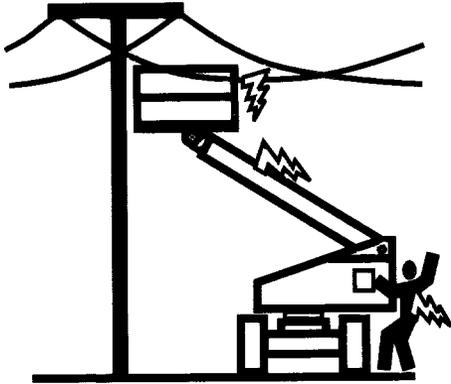
- Keep both feet firmly positioned on the platform floor at all times. Never position ladders, boxes, steps, planks, or similar items on unit to provide additional reach for any purpose.
- Keep oil, mud, and slippery substances cleaned from footwear and the platform floor.

### **Electrocution Hazards**

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



## SECTION 1 - SAFETY PRECAUTIONS



- 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.)**

| <b>Voltage Range<br/>(Phase to Phase)</b> | <b>MINIMUM APPROACH DISTANCE<br/>in Feet (Meters)</b> |
|---|---|
| 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.

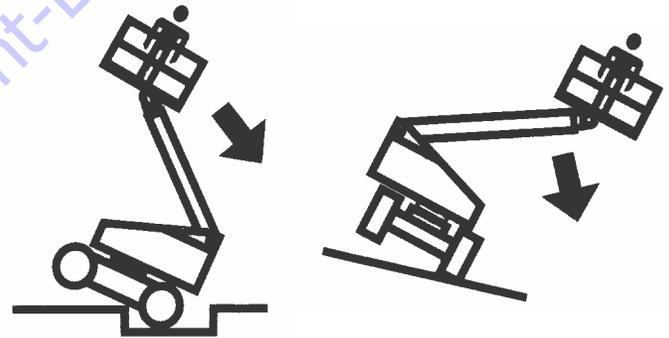
- The minimum approach distance may be reduced if insulating barriers are installed to prevent contact, and the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of (or attached to) the machine. The minimum approach distance shall be reduced to a distance 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

- Ensure that the ground conditions are adequate to support the maximum tire load indicated on the tire load decals located on the chassis adjacent to each wheel. Do not travel on unsupported surfaces.
- The user must be familiar with the operating surface before driving. Do not exceed the allowable sideslope and grade while driving.



- Do not elevate platform or drive with platform elevated while on or near a sloping, uneven, or soft surface. Ensure machine is positioned on a smooth, firm surface within the limits of the maximum operating slope before elevating platform or driving with the platform in the elevated position.

## **SECTION 1 - SAFETY PRECAUTIONS**

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- Before driving on floors, bridges, trucks, and other surfaces, check allowable capacity of the surfaces.
- Never exceed the maximum platform capacity as specified on the platform. Keep all loads within the confines of the platform, unless authorized by JLG.
- 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.
- Do not push or pull any object with the boom.
- Never attempt to use the machine as a crane. Do not tie-off machine to any adjacent structure. Never attach wire, cable, or any similar items to platform.
- If boom assembly or platform is in a position that one or more wheels are off the ground, all persons must be removed before attempting to stabilize the machine. Use cranes, forklift trucks, or other appropriate equipment to stabilize machine.
- Do not operate the machine when wind conditions, including gusts, exceed specifications shown in Section 7.2 of this manual or as shown on the capacity placard on the platform billboard. Factors affecting wind speed are; platform elevation, surrounding structures, local weather events, and approaching storms.
- Wind speed can be significantly greater at height than at ground level.
- Wind speed can change rapidly. Always consider approaching weather events, the time required to lower the platform, and methods to monitor current and potential wind conditions.
- Do not cover or increase surface area of the platform or the load. Do not carry large surface area items on the platform when operating outdoors. The addition of such items increases the exposed wind area of the machine. Increased areas exposed to wind will decrease stability.
- Do not increase the platform size with unauthorized modifications or attachments.

**NOTICE**

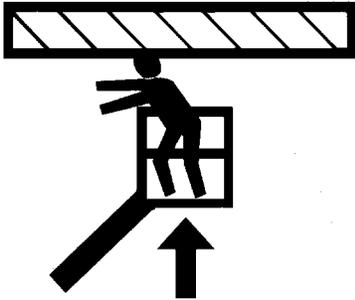
**DO NOT OPERATE THE MACHINE WHEN WIND CONDITIONS EXCEED SPECIFICATIONS SHOWN IN SECTION 7.2 OR AS SHOWN ON THE CAPACITY PLACARD ON THE PLATFORM BILLBOARD.**

**Table 1-2. Beaufort Scale (For Reference Only)**

| Beaufort Number | Wind Speed |           | Description             | Land Conditions   |
|-----------------|------------|-----------|-------------------------|---|
|                 | mph        | m/s       |                         |   |
| 0               | 0          | 0-0.2     | Calm                    | Calm. Smoke rises vertically  |
| 1               | 1-3        | 0.3-1.5   | Light air               | Wind motion visible in smoke  |
| 2               | 4-7        | 1.6-3.3   | Light breeze            | Wind felt on exposed skin. Leaves rustle  |
| 3               | 8-12       | 3.4-5.4   | Gentle breeze           | Leaves and smaller twigs in constant motion   |
| 4               | 13-18      | 5.5-7.9   | Moderate breeze         | Dust and loose paper raised. Small branches begin to move.                              |
| 5               | 19-24      | 8.0-10.7  | Fresh breeze            | Smaller trees sway.   |
| 6               | 25-31      | 10.8-13.8 | Strong breeze           | Large branches in motion. Flags waving near horizontal. Umbrella use becomes difficult. |
| 7               | 32-38      | 13.9-17.1 | Near Gale/Moderate Gale | Whole trees in motion. Effort needed to walk against the wind.                          |
| 8               | 39-46      | 17.2-20.7 | Fresh Gale              | Twigs broken from trees. Cars veer on road.   |
| 9               | 47-54      | 20.8-24.4 | Strong Gale             | Light structure damage.   |

### Crushing and Collision Hazards

- Approved head gear must be worn by all operating and ground personnel.
- Watch for obstructions around machine and overhead when driving. Check clearances above, on sides, and bottom of platform during all operations.



- During operation, keep all body parts inside platform railing.
- Use the boom functions, not the drive function, to position the platform close to obstacles.
- 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 operations.
- Under all travel conditions, the operator must limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel, and other factors.
- Be aware of stopping distances in all drive speeds. When driving in high speed, switch to low speed before stopping. Travel grades in low speed only.
- Do not use high speed drive 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 MEWP's presence. Disconnect power to overhead cranes.
- Do not operate over ground personnel. Warn personnel not to work, stand, or walk under a raised boom or platform. Position barricades on floor if necessary.

## **1.4 TOWING, LIFTING, AND HAULING**

- Never allow personnel in platform while towing, lifting, or hauling.
- This machine should not be towed, except in the event of emergency, malfunction, power failure, or loading/unloading. Refer to the Emergency Procedures section of this manual for emergency towing procedures.
- Ensure boom is in the stowed position and, if equipped, the turntable locked prior to towing, lifting or hauling. The platform must be completely empty of tools.
- When lifting machine, lift only at designated areas of the machine. Lift the unit with equipment of adequate capacity.
- Refer to the Machine Operation section of this manual for lifting information.

## **1.5 MAINTENANCE**

This sub-section contains general safety precautions which must be observed during maintenance of this machine. Additional precautions to be observed during machine maintenance are inserted at the appropriate points in this manual and in the Service and Maintenance Manual. It is of utmost importance that maintenance personnel pay strict attention to these precautions to avoid possible injury to personnel or damage to the machine or property. A maintenance program must be established by a qualified person and must be followed to ensure that the machine is safe.

### **Maintenance Hazards**

- Shut off power to all controls and ensure that all moving parts are secured from inadvertent motion prior to performing any adjustments or repairs.
- Never work under an elevated platform until it has been fully lowered to the full down position, if possible, or otherwise supported and restrained from movement with appropriate safety props, blocking, or overhead supports.
- DO NOT attempt to repair or tighten any hydraulic hoses or fittings while the machine is powered on or when the hydraulic system is under pressure.
- Always relieve hydraulic pressure from all hydraulic circuits before loosening or removing hydraulic components.

## SECTION 1 - SAFETY PRECAUTIONS

- DO NOT use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks. Wear gloves to help protect hands from spraying fluid.



- Use only replacement parts or components that are approved by JLG. To be considered approved, replacement parts or components must be identical or equivalent to original parts or components.
- Never attempt to move heavy parts without the aid of a mechanical device. Do not allow heavy objects to rest in an unstable position. Ensure adequate support is provided when raising components of the machine.
- Do not use machine as a ground for welding.
- When performing welding or metal cutting operations, precautions must be taken to protect the chassis from direct exposure to weld and metal cutting spatter.
- Use only approved non-flammable cleaning solvents.
- Do not replace items critical to stability, such as batteries or solid tires, with items of different weight or specification. Do not modify unit in any way to affect stability.
- Refer to the Service and Maintenance Manual for the weights of critical stability items.

### **⚠ WARNING**

**MODIFICATION OR ALTERATION OF A MEWP SHALL BE MADE ONLY WITH PRIOR WRITTEN PERMISSION FROM THE MANUFACTURER.**

### **Battery Hazards**

- Always disconnect batteries when servicing electrical components or when performing welding on the machine.
- Do not allow smoking, open flame, or sparks near battery during charging or servicing.
- Do not contact tools or other metal objects across the battery terminals.
- Always wear hand, eye, and face protection when servicing batteries. Ensure that battery acid does not come in contact with skin or clothing.

### **⚠ CAUTION**

**BATTERY FLUID IS HIGHLY CORROSIVE. AVOID CONTACT WITH SKIN AND CLOTHING AT ALL TIMES. IMMEDIATELY RINSE ANY CONTACTED AREA WITH CLEAN WATER AND SEEK MEDICAL ATTENTION.**

- Charge batteries only in a well ventilated area.
- Avoid overfilling the battery fluid level. Add distilled water to batteries only after the batteries are fully charged.

## **SECTION 2. USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION**

### **2.1 PERSONNEL TRAINING**

The Mobile Elevating Work Platform (MEWP) is a personnel handling device; so it is necessary that it be operated and maintained only by trained personnel.

#### **Operator Training**

Operator training must cover:

1. Reading and understanding the Operation and Safety Manual.
2. Thorough understanding of the intended purpose and function of the MEWP controls, including platform, ground, and emergency descent controls.
3. Control labels, instructions, and warnings on the machine.
4. Applicable regulations, standards, and safety rules.
5. Use of approved fall protection equipment.
6. Enough knowledge of the mechanical operation of the machine to recognize a malfunction or potential malfunction.
7. The safest means to operate the machine where overhead obstructions, other moving equipment, and obstacles, depressions, holes, and drop-offs exist.
8. Means to avoid the hazards of unprotected electrical conductors.
9. Selection of the appropriate MEWP and available options for the work to be performed considering specific job requirements, with involvement from the MEWP owner, user, and/or supervisor.
10. The responsibility of the operator to ensure all platform occupants have a basic level of knowledge to work safely on the MEWP, and to inform them of applicable regulations, standards, and safety rules.
11. The requirement for familiarization in addition to training.

#### **Training Supervision**

Training must be delivered by a qualified person in an open area free of hazards until the trainee has demonstrated the ability to safely control and operate the machine.

### **Operator Responsibility**

The operator must be instructed they have 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.

### **Machine Familiarization**

**NOTE:** *Responsibilities for familiarization may vary by region.*

Only properly trained personnel who have received unit-specific familiarization shall operate a MEWP. The user shall determine if personnel are qualified to operate the MEWP prior to operation. The user shall ensure that after familiarization, the operator operates the MEWP for a sufficient period of time to achieve proficiency. When authorized by the user, self-familiarization can be achieved, if authorized, by a properly trained operator reading, understanding and following the manufacturer's operator's manual.

Prior to users authorization of an operator to use a specific model of MEWP, the user shall ensure the operator is familiarized on the following:

1. Location of the manual storage compartment and the requirement to ensure the required manual(s) are present on the MEWP;
2. Purpose and function of the machine controls and indicators at the platform and ground control stations;
3. Purpose, location, and function of the emergency controls;

4. Operating characteristics and limitations;
5. Features and devices;
6. Accessories and optional equipment.

### **2.2 PREPARATION, INSPECTION, AND MAINTENANCE**

The following table covers the periodic machine inspections and maintenance required 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.

## SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION

**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 (See Note)       | In service for 3 months or 150 hours, whichever comes first; or<br>Out of service for a period of more than 3 months; or<br>Purchased used. | Owner, Dealer, or User | Qualified JLG Mechanic                           | Service and Maintenance Manual and applicable JLG inspection form |
| Annual Machine Inspection (See Note) | Annually, no later than 13 months from the date of prior inspection.  | Owner, Dealer, or User | Factory Trained Service Technician (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.

### NOTICE

**JLG INDUSTRIES, INC. RECOGNIZES A FACTORY TRAINED SERVICE TECHNICIAN AS A PERSON WHO HAS SUCCESSFULLY COMPLETED THE JLG SERVICE TRAINING SCHOOL FOR THE SPECIFIC JLG PRODUCT MODEL.**

## SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION

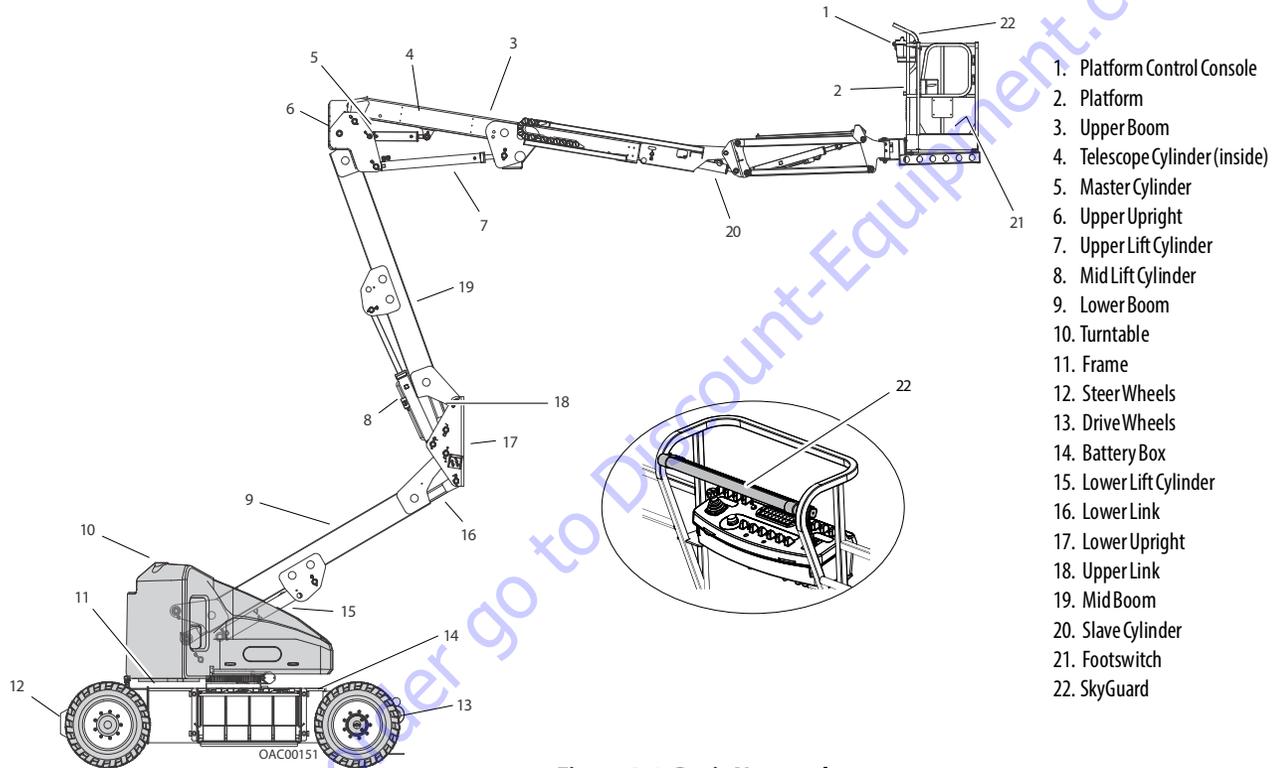
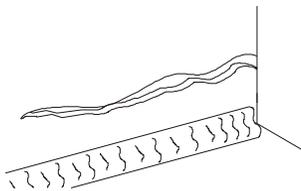


Figure 2-1. Basic Nomenclature

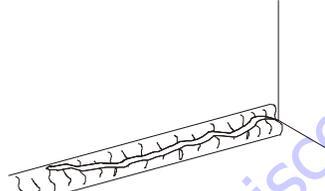
### Pre-Start Inspection

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

1. **Cleanliness** – Check all surfaces for leakage (oil, fuel, or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.
2. **Structure** - Inspect the machine structure for dents, damage, weld or parent metal cracks or other discrepancies.



Parent Metal Crack



Weld Crack

3. **Decals and Placards** – Check all for cleanliness and legibility. Make sure none of the decals and placards are missing. Make sure all illegible decals and placards are cleaned or replaced.
4. **Operation and Safety Manuals** – Make sure a copy of the Operation and Safety Manual, AEM Safety Manual (ANSI markets only), and ANSI Manual of Responsibilities (ANSI markets only) is enclosed in the weather resistant storage container.

5. **Walk-Around Inspection** – Perform as instructed.
6. **Battery** – Charge as required.
7. **Fuel (Generator Equipped Machines)** – Add the proper fuel as necessary.
8. **Engine Oil Supply (Generator Equipped Machines)** - Ensure the engine oil level is at the Full mark on the dipstick and the filler cap is secure.
9. **Hydraulic Oil** – Check the hydraulic oil level. Ensure hydraulic oil is added as required.
10. **Accessories/Attachments** - Refer to the Accessories section in this manual or the accessory installed upon the machine for specific inspection, operation, and maintenance instructions.
11. **Function Check** – Once the Walk-Around Inspection is complete, perform a functional check of all systems in an area free of overhead and ground level obstructions. Refer to Section 4 for more specific operating instructions.
12. **Platform Gate** – Keep gate and surrounding area clean and unobstructed. Verify the gate closes properly and is not bent or damaged. Keep gate closed at all times except when entering/exiting the platform and loading/unloading materials.

## **SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION**

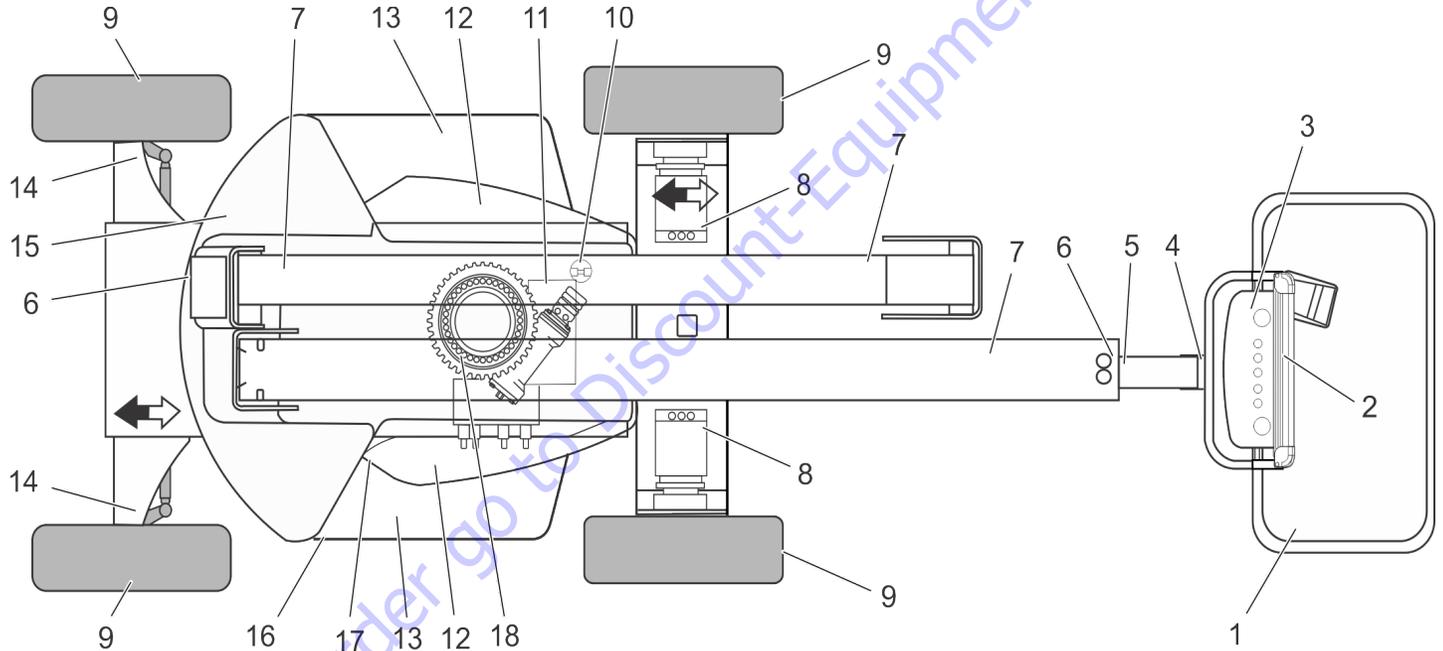
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- 13. Lanyard Attach Points** – During operation, occupants in the platform must wear a full body harness with a lanyard attached to an authorized lanyard anchorage point. Attach only one (1) lanyard per lanyard anchorage point

### **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.**

Walk-Around Inspection



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## SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION

### General

Begin the Walk-Around Inspection at Item 1, as noted on the diagram. Continue checking each item in sequence for the conditions listed in the following checklist.

#### **WARNING**

**TO AVOID POSSIBLE INJURY, BE SURE MACHINE POWER IS OFF. DO NOT OPERATE MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED.**

#### **NOTICE**

**DO NOT OVERLOOK VISUAL INSPECTION OF CHASSIS UNDERSIDE. CHECKING THIS AREA MAY RESULT IN DISCOVERY OF CONDITIONS WHICH COULD CAUSE EXTENSIVE MACHINE DAMAGE.**

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

1. **Platform Assembly and Gate** - Footswitch works properly, not modified, disabled or blocked. Gate latches and hinges in working condition.
2. **SkyGuard** - See Inspection Note.

3. **Platform Control Console** - Switches and levers return to neutral when activated and released, decals/placards secure and legible, control markings legible.
4. **Platform Rotator** - See Inspection Note.
5. **Jib Assembly and Jib Rotator** - See Inspection Note.
6. **All Hydraulic Cylinders** - No visible damage; pivot pins and hydraulic hoses undamaged, not leaking.
7. **Boom Sections/Uprights/Turntable** - See Inspection Note.
8. **Drive Motor, Brake, and Hub** - No evidence of leakage.
9. **Wheel/Tire Assemblies** - Properly secured, no missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies. Inspect wheels for damage and corrosion.
10. **Swing Motor and Worm Gear** - No evidence of damage.
11. **Hydraulic Pump and Hydraulic Reservoir** - See Inspection Note.
12. **Hood Assemblies** - See Inspection Note.
13. **Battery Compartment** - Batteries have proper electrolyte level; cables tight; no visible damage or corrosion.
14. **Tie Rod Ends and Steering Spindles** - See Inspection Note.

## **SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION**

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15. **Counterweight** - See Inspection Note.
16. **Ground Control Console** - Switches and levers return to neutral when activated and released, decals/placards secure and legible, control markings legible.
17. **Manual Descent** - See Inspection Note.
18. **Turntable Bearing** - Evidence of proper lubrication. No evidence of loose bolts or looseness between bearing and machine.

### Function Check

#### **WARNING**

**TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINE IF ANY CONTROL LEVERS OR TOGGLE SWITCHES CONTROLLING PLATFORM MOVEMENTS DO NOT RETURN TO THE OFF POSITION WHEN RELEASED.**

#### **WARNING**

**TO AVOID A COLLISION AND INJURY IF PLATFORM DOES NOT STOP WHEN A CONTROL SWITCH OR LEVER IS RELEASED, REMOVE FOOT FROM FOOTSWITCH OR USE EMERGENCY STOP TO STOP MACHINE.**

Perform the Function Check as follows:

1. From the ground control console with no load in the platform:
  - a. Ensure that all machine functions are disabled when the Emergency Stop Button is pushed in.
  - b. Ensure all functions stop when the function switch is released.
  - c. Operate all functions and ensure proper operation;
  - d. Ensure proper operation of the manual descent controls, as described in Section 5.5 of this manual.
2. From the platform control console:
  - a. Ensure that the control console is firmly secured in the proper location
  - b. Check that all guards protecting the switches or locks are in place.
  - c. Ensure that all machine functions are disabled when the Emergency Stop Button is pushed in.
  - d. Ensure that all machine functions stop when the footswitch is released.
  - e. Operate all functions and ensure proper operation.
3. With the platform in the stowed position:
  - a. Drive the machine on a grade, not to exceed the rated gradeability, and stop to ensure the brakes hold;
  - b. Check that the tilt indicator is illuminated to ensure proper operation.
4. Swing the boom over either of the rear tires and ensure that the Drive Orientation indicator illuminates and that the Drive Orientation Override switch must be used for the drive function to operate.
5. With the machine positioned on a smooth, firm surface within the limits of the maximum operating slope, elevate the boom above 3 degrees of horizontal; Select high speed drive mode. Carefully attempt to drive and ensure the drive speed is reduced.

### SkyGuard Function Test

**NOTE:** Refer to Section 4.12 for additional information on SkyGuard operation.

From the Platform Console in an area free from obstructions:

1. Operate the telescope out function.
2. Activate the SkyGuard sensor:
  - a. **SkyGuard** - Apply approximately 50 lb (222 Nm) of force to yellow bar.
  - b. **SkyGuard - SkyLine** - Press cable to break magnetic connection between the cable and right bracket.
  - c. **SkyGuard - SkyEye** - Put arm or hand in path of sensor beam.
3. Once the sensor has been activated, verify the following conditions:
  - a. Telescope out function stops and telescope in function operates for a short duration.
  - b. The horn sounds.
  - c. If equipped with a SkyGuard beacon, the beacon illuminates.

4. Disengage the SkyGuard sensor, release controls, then recycle the footswitch. Ensure normal operation is available.

**NOTE:** On machines equipped with SkyLine, reattach magnetic end of the cable to the bracket.

If SkyGuard remains activated after function reversal or cutout, depress and hold the SkyGuard Override Switch to allow normal use of machine functions until the sensor is disengaged.

## SECTION 3. MACHINE CONTROLS AND INDICATORS

### 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 functions.

### 3.2 CONTROLS AND INDICATORS

**NOTE:** *The indicator panels use different shaped symbols to alert the operator to different types of operational situations that could arise. The meaning of those symbols are explained below.*



*Indicates a potentially hazardous situation, which if not corrected, could result in serious injury or death. This indicator will be red.*

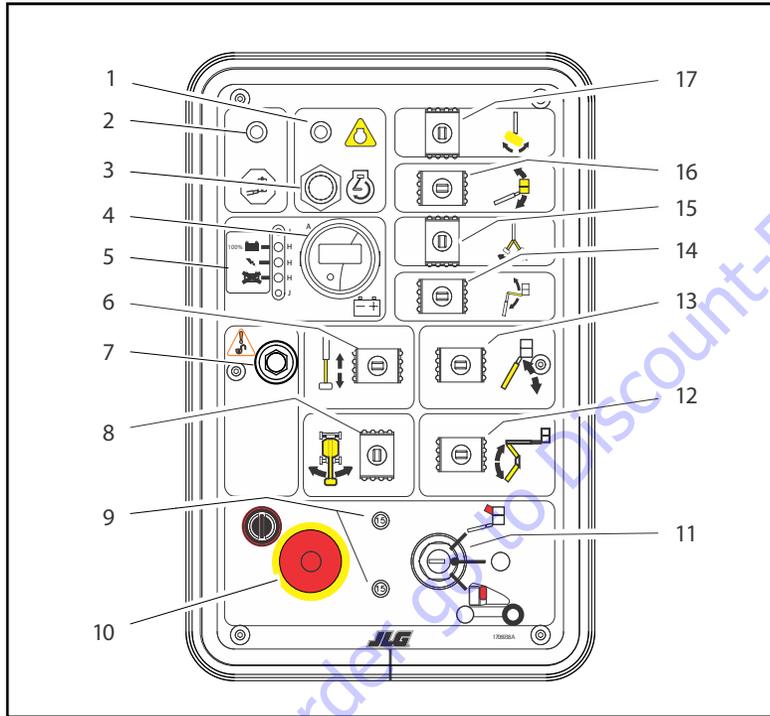


*Indicates an abnormal operating condition, which if not corrected, may result in machine interruption or damage. This indicator will be yellow.*



*Indicates important information regarding the operating condition, i.e. procedures essential for safe operation. This indicator will be green with the exception of the capacity indicator which will be yellow.*

## SECTION 3 - MACHINE CONTROLS AND INDICATORS



1. System Distress Indicator
2. Platform Overload Indicator
3. Generator/Engine Start Button
4. Indicator Gauge
5. Charger Status
6. Telescope
7. Machine Safety System Override (MSSO)
8. Swing
9. Circuit Breakers
10. Power/Emergency Stop
11. Platform/Ground Select
12. Lower/Mid Lift
13. Upper Boom Lift
14. Jib
15. Jib Swing
16. Platform Leveling
17. Rotate

Figure 3-1. Ground Control Console

### Ground Control Console

#### **WARNING**

**TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINE IF ANY CONTROL LEVERS OR TOGGLE SWITCHES CONTROLLING PLATFORM MOVEMENT DO NOT RETURN TO THE OFF POSITION WHEN RELEASED.**

(See Figure 3-1.)

**NOTE:** When machine is shut down the Platform/Ground Select switch and Emergency Stop must be positioned to Off.

#### 1. System Distress Indicator

The system distress indicator lights to signify an abnormal condition for the generator engine (high oil temperature or low oil pressure) or, on electric machines, an electrical system fault.



**NOTE:** The engine will automatically shut down under the following conditions:

High Oil Temperature  
Low Oil Pressure  
Engine Overspeed  
Overvoltage

#### 2. Platform Overload

Indicates the platform has been overloaded.



#### 3. Generator/Engine Start Button

The generator/engine start push-button switch allows the generator to be started manually to top-off the battery charge. The generator will start automatically when the batteries reach a low-charge state and the Generator Enable switch on the platform console is in the on position.



**NOTE:** The engine will not start if the batteries are fully charged or if the Generator Enable switch on the platform console is not in the on position.

## SECTION 3 - MACHINE CONTROLS AND INDICATORS

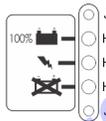
### 4. Indicator Gauge

Registers the amount of time the machine has been in use, with functions operating. In the event of a fault, the hourmeter also displays the three digit fault code. Refer to the Service Manual for a listing of fault codes. Additionally, there is a small, red indicator light that will blink when there is a fault on the machine to draw operator attention to the display.



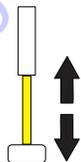
### 5. Charger Status

The Charger Status LEDs give a visual indicator of the status of the battery charger. The red LED indicates Charging Abnormal. The yellow LED indicates charging in progress. The green LED indicates charging is complete.



### 6. Telescope

Provides for extension and retraction of Upper Boom when positioned in or out.



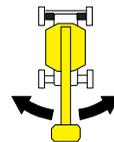
### 7. Machine Safety System Override (MSSO) (CE Only)

Provides emergency override of function controls that are locked out in the event of Load Sense System activation.



### 8. Swing

The Swing control switch provides 360 degrees non-continuous turntable rotation. To activate SWING, position switch to Left or Right.



### 9. Circuit Breakers

The circuit breakers open (pop out) to indicate a short or overload somewhere on the machine.

### 10. Power/Emergency Stop Switch

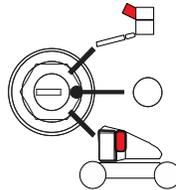
A two-position red mushroom shaped switch furnishes power to Platform/Ground Select switch when pulled out (on). When pushed in (off), power is shut off to the Platform/Ground Select switch.



## SECTION 3 - MACHINE CONTROLS AND INDICATORS

### 11. Platform/Ground Select Switch

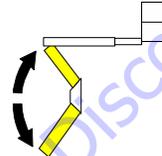
A three position, key operated switch supplies power to the platform control console when positioned to Platform. With the switch key in the Ground position, power is shut off to platform and only ground controls are operable.



**NOTE:** With Platform/Ground Select switch in the center position, power is shut off to controls at both operating stations.

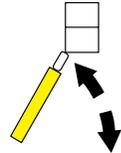
### 12. Lower/Mid Boom Lift

Provides for raising and lowering of Lower Boom when positioned to Up or Down.



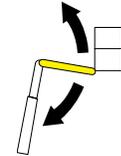
### 13. Upper Boom Lift

Provides for raising and lowering of Upper Boom when positioned to Up or Down.



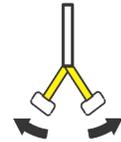
### 14. Jib (If equipped)

The Jib control switch provides raising and lowering of the jib when positioned up or down.



### 15. Jib Swing (If equipped)

The Jib Swing control switch provides swinging of the jib when positioned left or right.

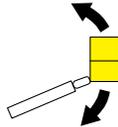


### **⚠ WARNING**

**ONLY USE THE PLATFORM LEVELING OVERRIDE FUNCTION FOR SLIGHT LEVELING OF THE PLATFORM. INCORRECT USE COULD CAUSE THE LOAD/OCCUPANT TO SHIFT OR FALL. FAILURE TO DO SO COULD RESULT IN DEATH OR SERIOUS INJURY.**

#### 16. Platform Leveling Override

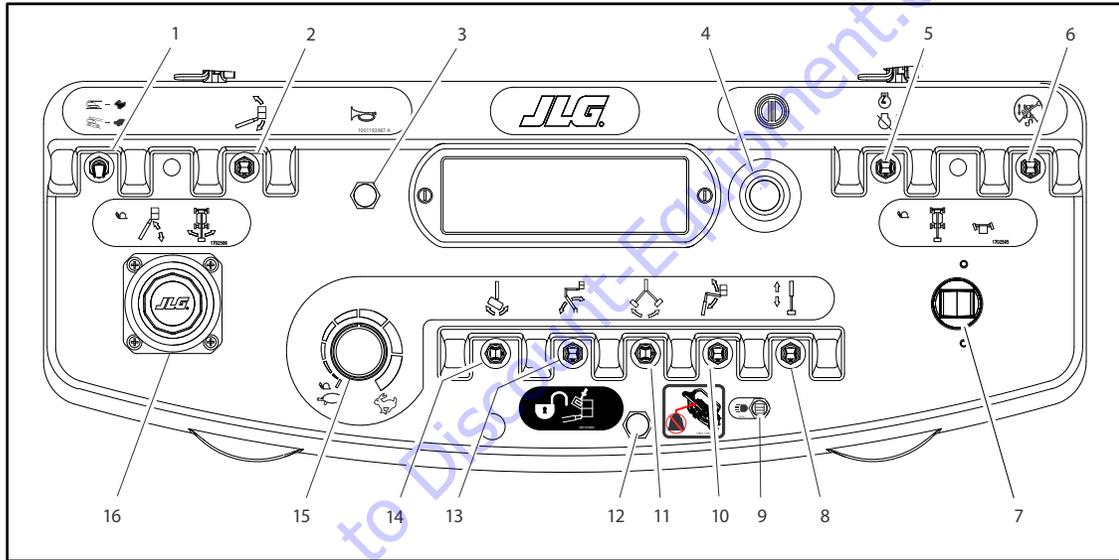
A three position switch allows the operator to adjust the automatic self leveling system. This switch is used to adjust platform level in situations such as ascending/descending a grade.



#### 17. Rotate

A three position Rotate control switch permits rotation of the platform when positioned to left or right.





- |                               |                               |                                  |                     |
|-------------------------------|-------------------------------|----------------------------------|---------------------|
| 1. Speed Mode                 | 5. Generator Enable           | 9. Lights                        | 13. Lower Boom Lift |
| 2. Platform Leveling Override | 6. Drive Orientation Override | 10. Jib                          | 14. Platform Rotate |
| 3. Horn                       | 7. Drive/Steer                | 11. Jib Swing                    | 15. Function Speed  |
| 4. Power/Emergency Stop       | 8. Telescope                  | 12. Soft Touch/SkyGuard Override | 16. Main Lift/Swing |

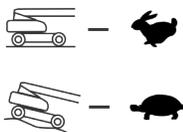
Figure 3-2. Platform Console

### Platform Control Console

(See Figure 3-2.)

#### 1. Speed Mode

Activating the Speed Mode switch allows the operator to High or Low Speed travel operation.

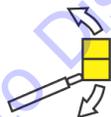


### **⚠ WARNING**

**ONLY USE THE PLATFORM LEVELING OVERRIDE FUNCTION FOR SLIGHT LEVELING OF THE PLATFORM. INCORRECT USE COULD CAUSE THE LOAD/OCCUPANT TO SHIFT OR FALL. FAILURE TO DO SO COULD RESULT IN DEATH OR SERIOUS INJURY.**

#### 2. Platform Leveling Override

A three position switch allows the operator to adjust the automatic self leveling system. This switch is used to adjust platform level in situations such as ascending/descending a grade.



#### 3. Horn

A push-type Horn switch supplies electrical power to an audible warning device when pressed.



#### 4. Power/Emergency Stop

A two-position red mushroom shaped switch furnishes power to Platform Controls when pulled out (On). When pushed in (Off), power is shut off to the platform functions.



Within about 2 seconds of pulling the switch out, the machine will perform a diagnostic check of the various electrical circuits, and if everything is OK, the platform alarm will beep once. During this time the lights on the indicator panel will also blink once as a bulb check.

#### 5. Generator Enable Control (If equipped)

The Generator Enable control switch, when in the off position, allows the operator to prevent the generator engine from starting when using the machine indoors. When in the on position (and the ground Emergency Stop Switch on [pulled out]), the generator is enabled to automatically start when the batteries need charged.



### 6. Drive Orientation Override

When the boom is swung over the rear tires or further in either direction, the Drive Orientation indicator will illuminate when the drive function is selected. Push and release the switch, and within 3 seconds move the Drive/Steer control to activate drive or steer. Before driving, locate the black/white orientation arrows on both the chassis and the platform controls and match the control direction arrow to the intended direction of travel.



**NOTE:** To operate the Drive joystick, pull up on the locking ring below the handle.

**NOTE:** The Drive joystick is spring loaded and will automatically return to neutral (off) position when released.

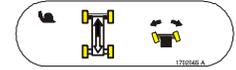


### 7. Drive/Steer

The Drive controller provides for driving either forward or backward when positioned to Forward or Reverse. The controller is 'ramped' to allow infinitely variable drive speed between fast and slow.

Positioning the steer control thumb operated switch Right or Left enables steering the machine to the right or left respectively.

**NOTE:** When lower boom is raised above horizontal, or the upper boom is raised approximately 16 inches (40.64 cm) above boom rest, the high drive function will automatically switch to low drive. This also occurs when Function Speed Control is clicked on creep.



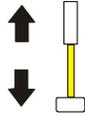
### **⚠ WARNING**

**TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINE IF ANY CONTROL LEVERS OR TOGGLE SWITCHES CONTROLLING PLATFORM MOVEMENT DO NOT RETURN TO THE OFF OR NEUTRAL POSITION WHEN RELEASED.**

## SECTION 3 - MACHINE CONTROLS AND INDICATORS

### 8. Telescope Control

The Telescope control switch affords extension and retraction of the main boom.



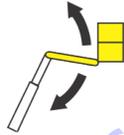
### 9. Lights (If Equipped)

This switch operates the accessory lights package if the machine is so equipped.



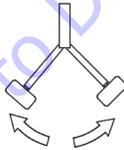
### 10. Jib (If Equipped)

Provides for raising and lowering of the jib.



### 11. Jib Swing (If Equipped)

Provides swinging of the jib



### 12. Soft Touch/SkyGuard Override Switch

For machines equipped with SkyGuard:

The SkyGuard override switch enables functions cut out by the Skyguard system to be operated again, allowing the operator to resume use of machine functions.



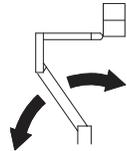
For machines equipped with both SkyGuard and Soft Touch:

The switch operates like the SkyGuard override switch as described above. The switch also enables the functions cut out by the Soft Touch system to operate again at creep speed, allowing the operator to move the platform away from the obstacle that caused the shut-down situation.



### 13. Lower Boom Lift

Provides for raising and lowering of Lower and Mid Boom.



## SECTION 3 - MACHINE CONTROLS AND INDICATORS

### 14. Platform Rotate

Provides rotation of the platform.

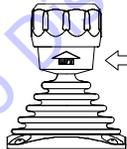


### 15. Function Speed Control

Adjusts speed of Boom and Swing Functions. Rotate counterclockwise for slower speed and clockwise for faster speed. To adjust Drive, Swing, and Main Lift to Creep, turn knob fully counterclockwise until it clicks.



**NOTE:** To operate the Main Boom Lift/Swing joystick, pull up on the locking ring below the handle.



**NOTE:** The Main Boom Lift/Swing joystick is spring loaded and will automatically return to neutral (off) position when released.

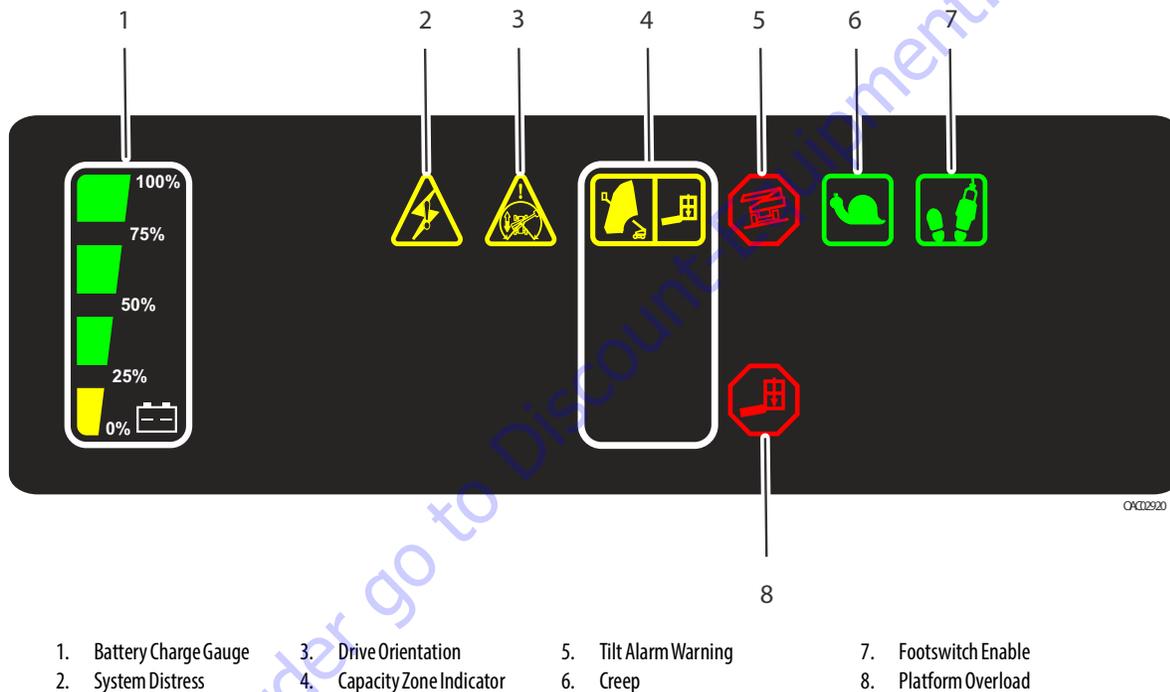
### 16. Main Lift/Swing Controller

Provides main lift and swing. Push forward to lift up, pull backward to boom down. Move right to swing right, move left to swing left. Moving the joystick activates switches to provide the functions selected.



**NOTE:** Lower lift will not function when operating main lift.

## SECTION 3 - MACHINE CONTROLS AND INDICATORS



**Figure 3-3. Platform Control Indicator Panel**

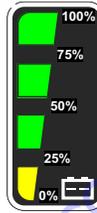
**Platform Control Indicator Panel**

(See Figure 3-3., Platform Control Indicator Panel)

**NOTE:** The indicator lights will illuminate for approximately 1 second when the key is positioned to the On position to act as a self test.

**1. Battery Charge Level Indicator**

Indicates the state-of-charge of the battery pack.



**2. System Distress Indicator**

The light indicates the JLG Control System has detected an abnormal condition and a Diagnostic Trouble Code has been set in the system memory. Refer to the Service Manual for instructions concerning the trouble codes and the trouble code retrieval.



**3. Drive Orientation Indicator**

When the boom is swung beyond the rear drive tires or further in either direction, the Drive Orientation indicator will illuminate



**4. Tilt Warning Light and Alarm**

when the drive function is selected. This is a signal for the operator to verify that the drive control is being operated in the proper direction (i.e. controls reversed situations).

This red illuminator indicates the chassis is on a slope. If the boom is above horizontal and the machine is on a slope, the tilt alarm warning light will illuminate, an alarm will sound, available functions are placed in Creep speed, and drive is cut out in the direction of travel. Drive in the opposite direction may be allowed under certain conditions.



| Tilt Angle | Specification |
|------------|---------------|
| 3°         | All Markets   |

**⚠ WARNING**

**IF TILT WARNING LIGHT IS ILLUMINATED WHEN BOOM IS RAISED OR EXTENDED, RETRACT AND LOWER TO BELOW HORIZONTAL THEN REPOSITION MACHINE SO THAT IT IS WITHIN THE LIMITS OF THE MAXIMUM OPERATING SLOPE BEFORE EXTENDING BOOM OR RAISING BOOM ABOVE HORIZONTAL.**

## SECTION 3 - MACHINE CONTROLS AND INDICATORS

### 5. Creep Speed Indicator

When the Function Speed Control is turned to the creep position, the indicator acts as a reminder that all functions are set to the slowest speed.



### 6. Enable Indicator/Footswitch

To operate any function, the footswitch must be depressed and the function selected within seven seconds. The enable indicator shows that the controls are enabled. If a function is not selected within seven seconds, or if a seven second lapse between ending one function and beginning the next function, the enable light will go out and the footswitch must be released and depressed again to enable the controls.



Releasing the footswitch removes power from all controls and stops all functions.

### **⚠ WARNING**

**TO AVOID SERIOUS INJURY, DO NOT REMOVE, MODIFY OR DISABLE THE FOOTSWITCH BY BLOCKING OR ANY OTHER MEANS.**

### 7. Platform Overload Indicator

Indicates the platform has been overloaded.



### 8. Capacity Zone Indicator

Indicates the platform capacity zone for the current position of the platform. Restricted capacities are permitted at restricted platform positions (shorter boom lengths and higher boom angles).



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## **SECTION 4. MACHINE OPERATION**

### **4.1 DESCRIPTION**

This machine is a mobile elevating work platform used to position personnel, along with their necessary tools and materials at work locations.

The primary operator control station is in the platform. From this control station, the operator can drive and steer the machine in both forward and reverse directions. The operator can raise or lower the boom or swing the boom to the left or right. Standard boom swing is 350 degree non-continuous. The machine has a Ground Control Station which will override the Platform Control Station. Ground Controls operate all functions except drive and steer. Except for performing inspections and the Function Check, the ground controls are to be used in an emergency to lower the platform to the ground should the operator in the platform be unable to do so.

### **4.2 BOOM OPERATING CHARACTERISTICS AND LIMITATIONS**

#### **Capacities**

Raising boom above horizontal with or without any load in platform, is based on the following criteria:

1. Machine is positioned on a smooth, firm surface within the limits of the maximum operating slope.
2. Load is within manufacturers rated design capacity.
3. All machine systems are functioning properly.
4. Machine is as originally equipped from JLG.

### Platform Load Sensing System (LSS)

The Platform Load Sensing System provides the platform capacity to the control system.

If the LSS system senses an overload condition, boom functions will be disabled, the overload indicator is illuminated at both control stations, and the overload alarm will sound. Reduce the weight in the platform to not exceed the rated workload indicated on the capacity decal, then the controls will work again.

### Stability

Machine stability is based on two positions which are called Forward and Backward stability. The machines position of least Forward stability is shown in Figure 4-1., Position of Least Forward Stability, and its position of least Backward stability is shown in Figure 4-2., Position of Least Backward Stability.

#### **WARNING**

**TO AVOID FORWARD OR BACKWARD TIPPING, DO NOT OVERLOAD MACHINE OR OPERATE THE MACHINE ON AN OUT-OF-LEVEL SURFACE.**

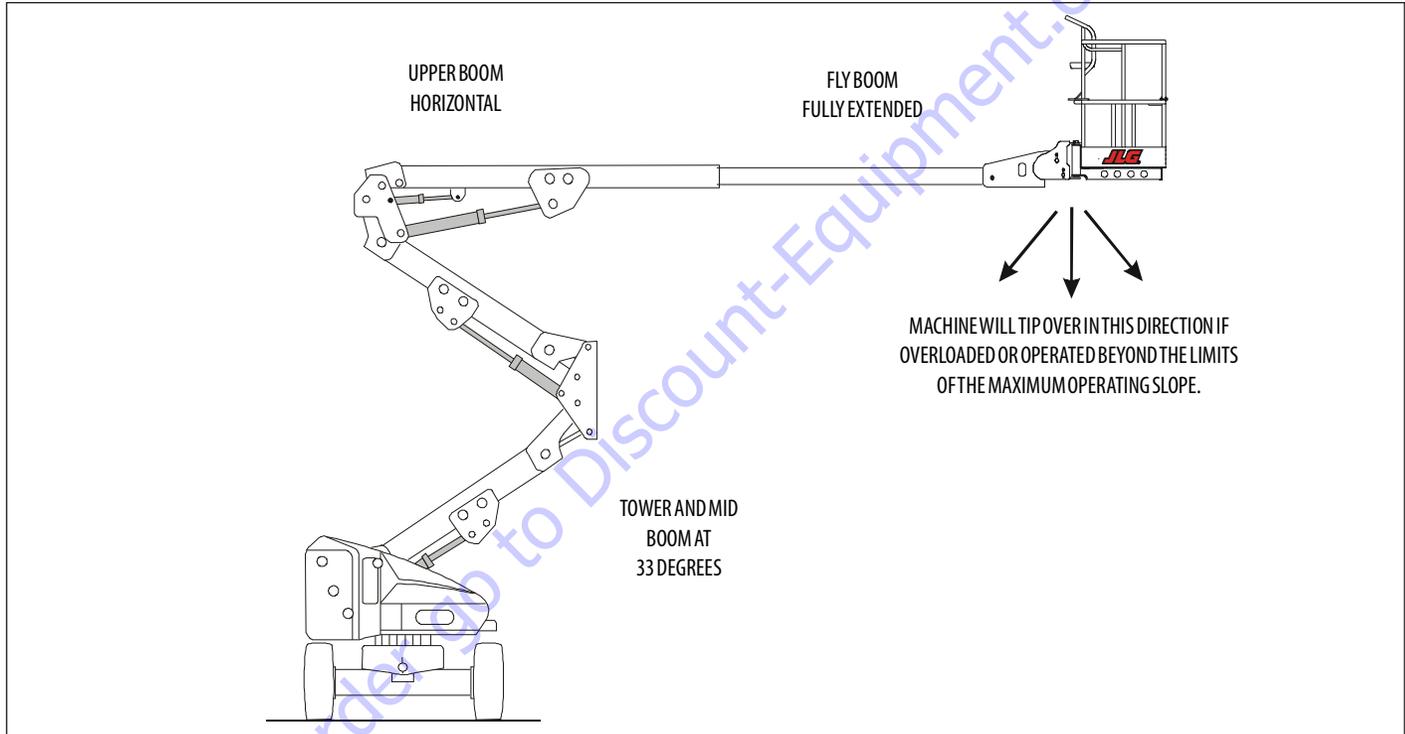
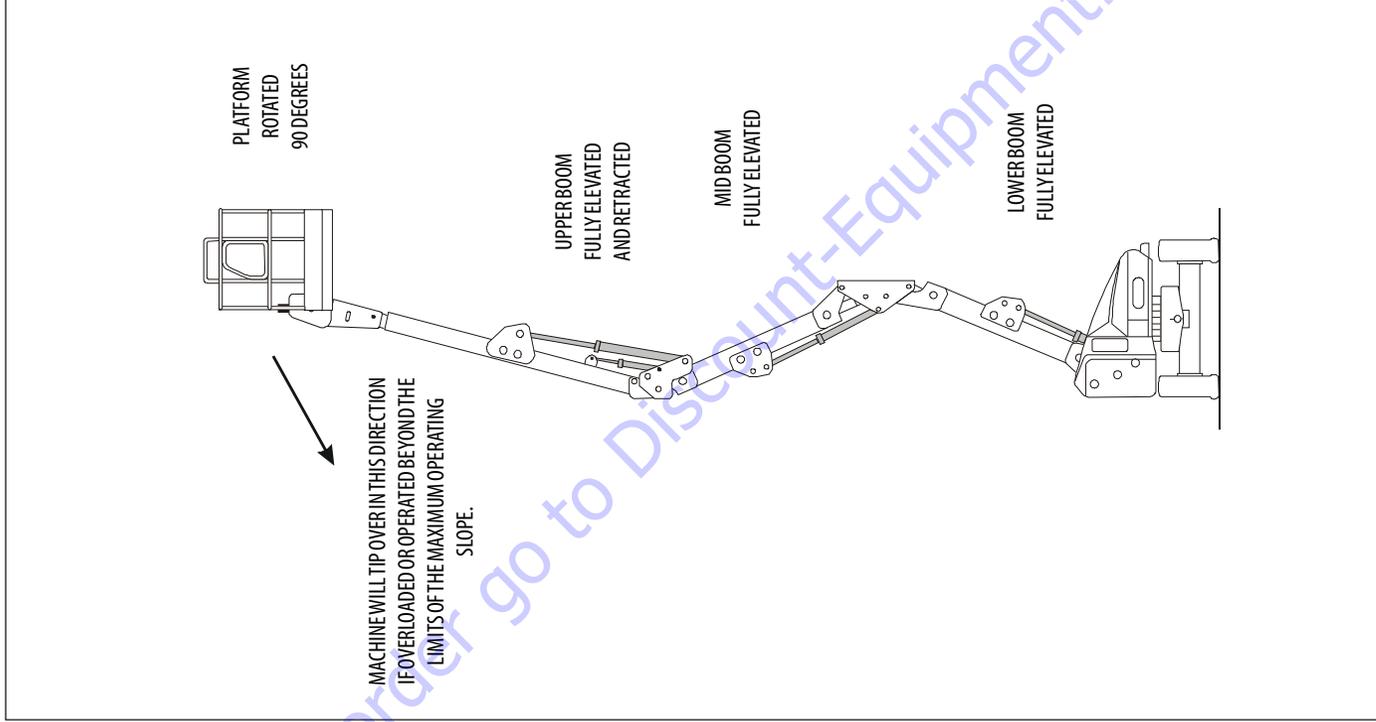


Figure 4-1. Position of Least Forward Stability

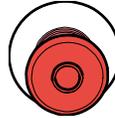


**Figure 4-2. Position of Least Backward Stability**

## 4.3 MOTOR OPERATION

### Power/Emergency Stop

The Power/Emergency Stop switch, when pulled out (On), provides battery power for all machine functions. The switch should be pushed in (Off) when recharging the batteries or parking the machine overnight.

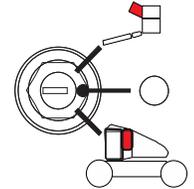


**NOTE:** *If equipped with the optional on-board generator, the Emergency Stop switch must be left on (pulled out) to allow for automatic charging of the batteries.*

Within about 2 seconds of pulling the switch out, the machine will perform a diagnostic check of the various electrical circuits, and if everything is OK, the platform alarm will beep once. During this time the lights on the indicator panel will also blink once as a bulb check.

### Platform/Ground Select Switch

The Platform/Ground Select switch directs battery power to the desired control station when the Power/Emergency Stop switch is pulled out (On). With the switch held in the Ground position battery power is supplied to the ground control station. When the switch is in the Platform position, battery power is supplied to the platform control station.



### Motor Activation

#### **NOTICE**

**FOOTSWITCH MUST BE DEPRESSED PRIOR TO ACTIVATING ANY FUNCTION, OTHERWISE FUNCTION WILL NOT OPERATE.**

The motor becomes activated and operates the desired function when the Emergency Stop switch is pulled out (On), the Platform/Ground select switch is in the appropriate position and the Footswitch is depressed.

#### **CAUTION**

**IF A MOTOR MALFUNCTION NECESSITATES UNSCHEDULED SHUTDOWN, DETERMINE AND CORRECT CAUSE BEFORE RESUMING ANY OPERATION.**

### 4.4 TRAVELING (DRIVING)

**NOTE:** When lower boom is raised above horizontal, or the upper boom is raised approximately 16 inches (40.6 cm) above boom rest, the high drive function will automatically be in low drive.

**NOTE:** Refer to the Operating Specifications table for Gradeability and Sideslope ratings.

All ratings for Gradeability and Sideslope are based upon the machine's boom being in the stowed position, fully lowered, and retracted.

Traveling is limited by two factors:

1. Gradeability, which is the percent of grade of the incline the machine can climb.
2. Sideslope, which is the angle of the slope the machine can be driven across.

#### **⚠ WARNING**

**DO NOT DRIVE THE MEWP OUT OF TRANSPORT MODE EXCEPT ON A SMOOTH, FIRM SURFACE WITHIN THE LIMITS OF THE MAXIMUM OPERATING SLOPE.**

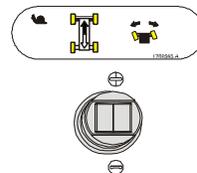
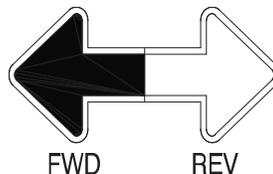
**TO AVOID LOSS OF TRAVEL CONTROL OR TIP OVER, DO NOT DRIVE MACHINE ON GRADES EXCEEDING THOSE SPECIFIED IN THE OPERATING SPECIFICATIONS SECTION OF THIS MANUAL.**

**BE SURE THE TURNABLE LOCK IS ENGAGED BEFORE ANY EXTENDED TRAVELING.**

**DO NOT DRIVE ON SIDESLOPES WHICH EXCEED 3 DEGREES.**

**USE EXTREME CAUTION WHEN DRIVING IN REVERSE AND AT ALL TIMES WHEN DRIVING WITH PLATFORM ELEVATED.**

**BEFORE DRIVING, MAKE SURE BOOM IS POSITIONED OVER REAR DRIVE AXLE. IF BOOM IS OVER FRONT WHEELS, STEER AND DRIVE CONTROLS WILL BE REVERSED. LOCATE THE BLACK/WHITE ORIENTATION ARROWS ON BOTH THE CHASSIS AND THE PLATFORM CONTROLS. MOVE THE DRIVE CONTROLS IN A DIRECTION MATCHING THE DIRECTIONAL ARROWS FOR THE INTENDED DIRECTION OF TRAVEL.**



## Traveling Forward and Reverse

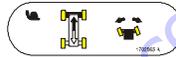
### NOTICE

**FOOTSWITCH MUST BE DEPRESSED PRIOR TO ACTIVATING ANY FUNCTION, OTHERWISE FUNCTION WILL NOT OPERATE.**

1. At Platform Controls, pull out Emergency Stop switch and activate footswitch.

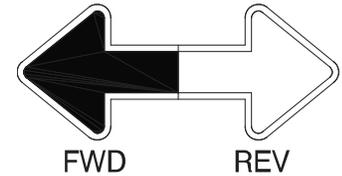


2. Position Drive controller to Forward or Reverse as desired. Angle of controller will determine travel speed.



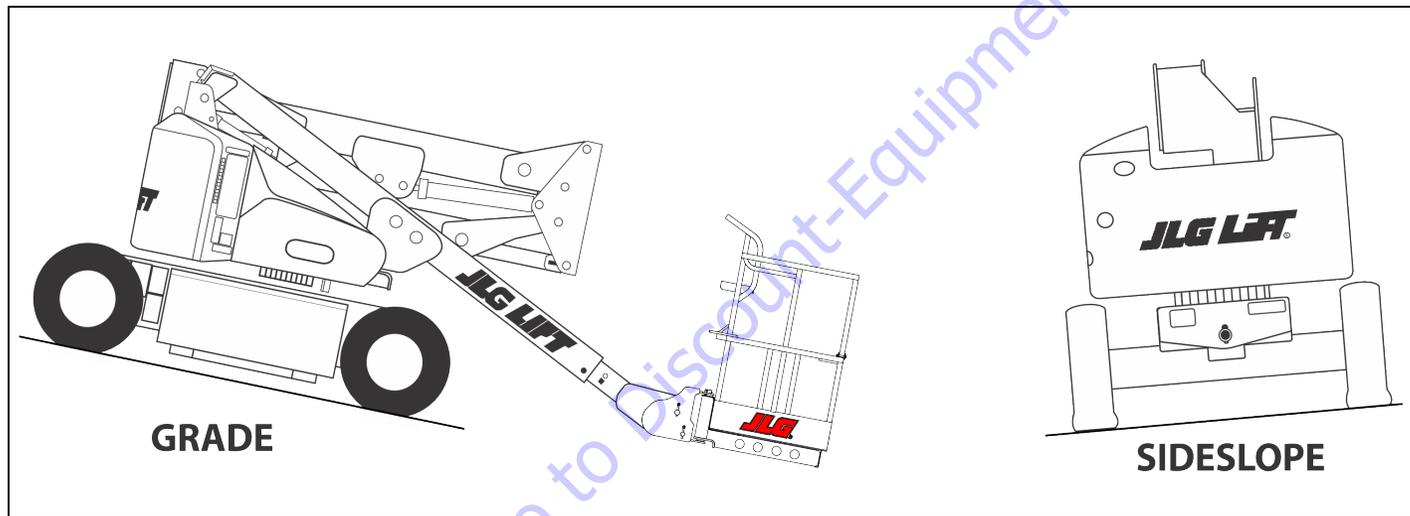
This machine is equipped with a Drive Orientation Indicator. The yellow light on the platform control console indicates that the boom is swung beyond the rear drive tires and the machine may Drive/Steer in the opposite direction from the movement of the controls. If the indicator is illuminated, operate the Drive function in the following manner:

1. Match the black and white direction arrows on both platform control panel and the chassis to determine the direction the machine will travel.



2. Push and release the Drive Orientation Override switch. Within 3 seconds, slowly move the Drive control toward the arrow matching the intended direction of machine travel. The indicator light will flash during the 3 second interval until the drive function is selected.





**Figure 4-3. Grade and Side Slopes**

## Traveling on a Grade

When traveling a grade, maximum braking and traction are obtained with the boom stowed, in position over the rear (drive) axle, and in line with the direction of travel. Drive the machine forward when climbing a grade, and in reverse when descending a grade. Do not exceed the machine's maximum rated gradeability.

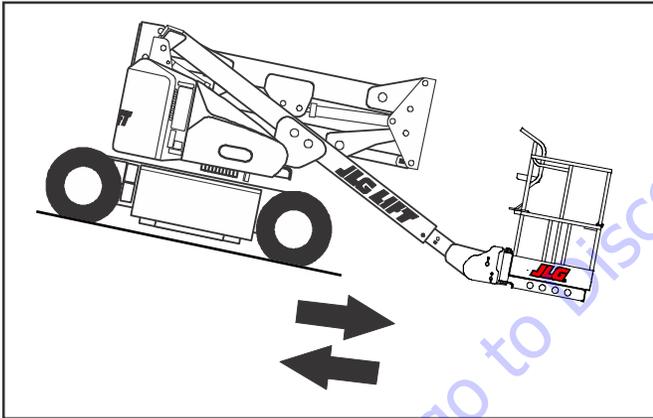


Figure 4-4. Traveling on a Grade

### NOTICE

IF THE BOOM IS OVER THE FRONT (STEER) AXLE, DIRECTION OF STEER AND DRIVE MOVEMENT WILL BE OPPOSITE FROM THE MOVEMENT OF THE CONTROLS.

## 4.5 STEERING

Depress footswitch, position thumb switch on Drive/Steer controller to Right for steering right, or to Left for steering left.



## 4.6 PLATFORM

### Loading From Ground Level

1. Position chassis on a smooth, firm and level surface.
2. If total load (personnel, tools and supplies) is 500 lb (227 kg for ANSI markets and 230 kg for CE and Australia markets) or less, distribute load uniformly on platform floor and proceed to work position.

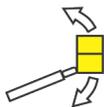
### Loading From Positions Above Ground Level

Before loading weight to platform above ground level:

1. Determine what the total weight will be after additional weight is loaded (personnel, tools and supplies).
2. If total weight in platform will be 500 lb (227 kg for ANSI markets and 230 kg for CE and Australia markets) or less, proceed with adding weight.

### Platform Level Adjustment

1. Depress footswitch. To raise platform, position Platform/Level control switch Up and hold until platform is level.
2. Depress footswitch. To lower platform, position Platform/Level control switch to Down and hold until platform is level.



### **⚠ WARNING**

**ONLY USE THE PLATFORM LEVELING OVERRIDE FUNCTION FOR SLIGHT LEVELING OF THE PLATFORM. INCORRECT USE COULD CAUSE THE LOAD/OCCUPANT TO SHIFT OR FALL. FAILURE TO DO SO COULD RESULT IN DEATH OR SERIOUS INJURY.**

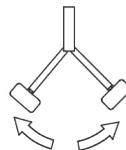
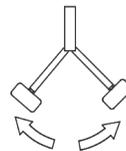
### Platform Rotation

1. Depress footswitch. To rotate platform to the left, Platform Rotate control switch is positioned to the Left and held until desired position is reached.
2. Depress footswitch. To rotate platform to the right, Platform Rotate control switch is positioned to the Right and held until desired position is reached.



### Jib Swing

1. Depress footswitch. To rotate Jib and platform to the left, Jib Swing control switch is positioned to the Left and held until desired position is reached.
2. Depress footswitch. To rotate Jib and platform to the right, Jib Swing control switch is positioned to the Right and held until desired position is reached.



### 4.7 BOOM

### **⚠ WARNING**

**A RED TILT WARNING LIGHT IS LOCATED ON THE CONTROL CONSOLE WHICH LIGHTS WHEN THE CHASSIS IS ON A 5 DEGREE OR GREATER SLOPE. DO NOT SWING OR RAISE BOOM ABOVE HORIZONTAL WHEN LIGHT IS LIT OR AUDIBLE ALARM SOUNDS.**

**DO NOT DEPEND ON TILT ALARM AS A LEVEL INDICATOR FOR THE CHASSIS. TILT ALARM INDICATES CHASSIS IS ON A SEVERE SLOPE (5 DEGREE OR GREATER). CHASSIS MUST BE LEVEL BEFORE SWINGING, OR RAISING BOOM ABOVE HORIZONTAL.**

TO AVOID TIP OVER IF RED TILT WARNING LIGHT LIGHTS WHEN BOOM IS RAISED ABOVE HORIZONTAL, LOWER PLATFORM TO GROUND LEVEL. THEN REPOSITION MACHINE SO THAT CHASSIS IS LEVEL BEFORE RAISING BOOM.

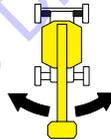
TRAVELING WITH BOOM BELOW HORIZONTAL IS PERMITTED ON GRADES NOT EXCEEDING THOSE SPECIFIED ON THE SERIAL NUMBER PLATE.

TO AVOID SERIOUS INJURY, DO NOT OPERATE MACHINERY IF ANY CONTROL LEVER OR TOGGLE SWITCH CONTROLLING PLATFORM MOVEMENT DOES NOT RETURN TO THE 'OFF' OR NEUTRAL POSITION WHEN RELEASED.

TO AVOID A COLLISION AND INJURY IF PLATFORM DOES NOT STOP WHEN A CONTROL SWITCH OR LEVER IS RELEASED, REMOVE FOOT FROM FOOTSWITCH OR USE EMERGENCY STOP SWITCH TO STOP THE MACHINE.

## Swinging the Boom

To swing boom, with footswitch activated, position Swing control switch to Right or Left for direction desired.

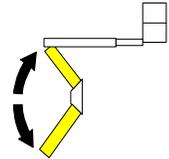


### NOTICE

WHEN SWINGING THE BOOM MAKE SURE THERE IS AMPLE ROOM FOR THE BOOM TO CLEAR SURROUNDING WALLS, PARTITIONS AND EQUIPMENT.

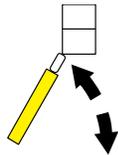
## Raising and Lowering the Lower and Mid Boom

To raise or lower the Lower and Mid Boom, with footswitch activated, position Lower Boom Lift switch to UP or DOWN as desired.



## Raising and Lowering the Upper Boom

To raise or lower the Upper Boom, with footswitch activated, position Upper Boom Lift switch to UP or DOWN until desired height is reached.



**NOTE:** On CE Market machines, when boom functions are being operated there is an interlock that prevents the use of Drive and Steer functions.

### 4.8 GENERATOR

The machine is equipped with an engine powered DC generator connected in parallel to the 48V DC battery bank.

#### Automatic Operating Mode

The generator will operate in automatic mode always when the following two conditions apply.

1. Ground Control Emergency Stop Switch is pulled out (on), **and**:



2. The Generator Enable switch on the platform control console is in the On or Enable position.

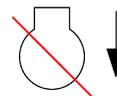


When the above conditions apply, the generator's controller will monitor status of the batteries, will turn on automatically when the battery voltage drops as a result of discharge and will turn off when batteries are fully charged.

#### Battery Only Operating Mode

The machine will operate in the battery only mode when the following two conditions apply:

1. Ground Control Emergency Stop Switch is pulled out (on), **and**:
2. The switch on the platform control console is in the Off or Disable position.



In this mode the machine will operate as a conventional battery operated unit. The batteries can be used until they are fully discharged.

## Manual (Charge) Operating Mode

The generator will operate in manual mode always when the following three conditions apply.

1. Ground Control Emergency Stop Switch is pulled out (on), **and**:



2. The switch on the platform control console is in the On or Enable position **and**:



3. The Manual Charge push button is activated.

Activation of the Manual Charge button will start the engine and initiate the charging cycle even if the batteries are charged above the level of automatic start. The operator can initiate the charge cycle to charge the batteries to the maximum level. The charging cycle will include finishing phase similar to conventional chargers.

## 4.9 INVERTER

The inverter converts 48 VDC to 110 VAC to allow operation of power tools from the machine's batteries.

- The inverter is operational when the emergency stop switch is pulled out.
- The machine and inverter can be operated at the same time.
- The inverter will shut off at approximately 42 VDC and stay off until the emergency stop switch is recycled. It will operate again until voltage drops to 42 VDC.
- The machine will operate down to 36 VDC.
- The inverter will shut down if the high temperature light indicated overheating. It will automatically turn back on when cooled.
- The overload light indicates an output wiring short circuit or a load that is too large for the rating of the inverter.

### 4.10 MACHINE FUNCTION SPEEDS

The Function Speed Control affects the speed of boom functions Lower Lift, Telescope, and Rotate. Turn the control clockwise to increase function speed or counterclockwise to decrease function speed. When in the counterclockwise maximum position, all functions are placed in creep speed.

### 4.11 MACHINE SAFETY SYSTEM OVERRIDE (MSSO) (CE ONLY)

The Machine Safety System Override (MSSO) is used to override function controls for Emergency Platform Retrieval only. Refer to Section 5.7, Machine Safety System Override (MSSO) (CE Only) for operating procedures.



## 4.12 SKYGUARD OPERATION

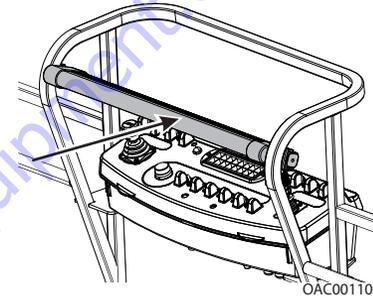
SkyGuard provides enhanced control panel protection. When the SkyGuard sensor is activated, functions in use at the time of activation will reverse or cutout. The SkyGuard Function Table provides more details on these functions.

During activation, the horn will sound and, if equipped with a SkyGuard beacon, the beacon will illuminate until sensor and footswitch are disengaged.

If the SkyGuard sensor remains activated after function reversal or cutout, depress and hold the SkyGuard Override Switch to allow normal functions until the sensor is disengaged.

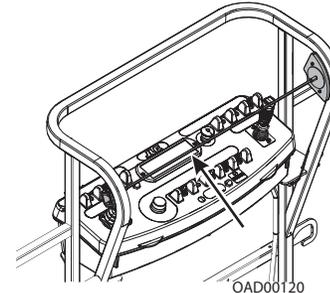
Consult the following illustrations to determine which type of SkyGuard the machine has. Regardless of type, SkyGuard function according to the SkyGuard Function Table does not change.

### SkyGuard

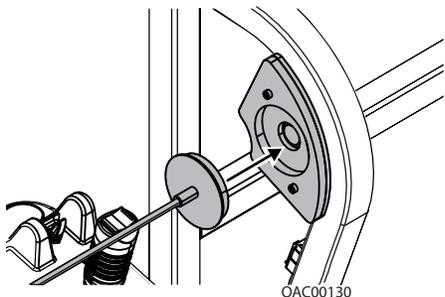


Approximately 50 lb (222 Nm) of force is applied to yellow bar.

### SkyGuard - SkyLine

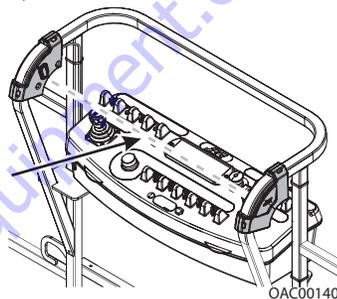


Cable is pressed, breaking the magnetic connection between the cable and right bracket.



Reattach magnetic end of cable to bracket if it becomes disconnected.

**SkyGuard - SkyEye**



Operator passes through path of sensor beam.

**SkyGuard Function Table**

| Drive Forward  | Drive Reverse | Steer | Swing | Tower Lift Up | Tower Lift Down | Boom Lift Up | Boom Lift Down | Boom Tele Out | Boom Tele In | Jib Lift | Jib Swing | Basket Level | Basket Rotate |
|--|---------------|-------|-------|---------------|-----------------|--------------|----------------|---------------|--------------|----------|-----------|--------------|---------------|
| R*/C**   | R             | C     | R     | R             | C               | R            | C              | R             | C            | C        | C         | C            | C             |
| R = Indicates Reversal is Activated  |               |       |       |               |                 |              |                |               |              |          |           |              |               |
| C = Indicates Cutout is Activated  |               |       |       |               |                 |              |                |               |              |          |           |              |               |
| *DOS (Drive Orientation System) Enabled  |               |       |       |               |                 |              |                |               |              |          |           |              |               |
| ** DOS Not Enabled, machine is driving straight without steering, and any other hydraulic function is active |               |       |       |               |                 |              |                |               |              |          |           |              |               |

### 4.13 BOOM SYNCHRONIZING PROCEDURE

**NOTE:** *If the Lower Boom assembly does not fully lower:*

1. Remove all personnel from the platform.
2. Pull the red knob located beside the main control valve.
3. From Ground Control, activate the lift control switch, raise Lower Boom 1.8 m (6 feet).
4. After raising Lower Boom, release the red knob.
5. Activate Lower Boom Down, fully lower boom.
6. Repeat step 1 thru 5 if necessary.

### 4.14 SHUT DOWN AND PARK

**NOTE:** *When parking battery powered units overnight, batteries should be charged in accordance with instructions in Section 2 to ensure readiness for following workday.*

**NOTE:** *Electric machines are equipped with a static strap due to static electricity build-ups. Strap is located under rear of machine chassis.*

The preferred procedures to shut down and park the machine are as follows:

1. Drive machine to a reasonably well protected area.
2. Ensure boom is fully retracted and lowered over rear axle.
3. Shut down Emergency Stop at Platform Controls.
4. Shut down Emergency Stop at Ground Controls. Position Platform/Ground Select switch to center Off (center position).
5. If necessary, cover Platform Controls to protect instruction placards, warning decals, and operating controls from hostile environment.

#### **NOTICE**

**IF PARKING A MEWP WITH THE BOOM ELEVATED IN AN EFFORT TO CONSERVE SPACE, BOOMS MAY BE ELEVATED, BUT SHALL NOT BE EXTENDED. IT IS THE OPERATOR'S RESPONSIBILITY TO ENSURE ALL SAFETY PRECAUTIONS IN SECTION 1 OF THIS MANUAL ARE FOLLOWED FOR EACH UNIQUE SITUATION.**

## **4.15 MACHINE LIFTING AND TIE DOWN**

*See Figure 4-5.*

### **Lifting**

1. Refer to the Serial Number Plate, refer to the Specifications section of this manual, or weigh the individual unit to find out the Gross Vehicle Weight.
2. Place the boom in the stowed position.
3. Remove all loose items from the machine.
4. Attach lifting device and equipment only to the designated lifting points.
5. Properly adjust the rigging to prevent damage to the machine and so the machine remains level.

### **Tie Down**

1. Place the boom in the stowed position.
2. Remove all loose items from the machine.
3. Secure the chassis and the platform using straps or chains of adequate strength.

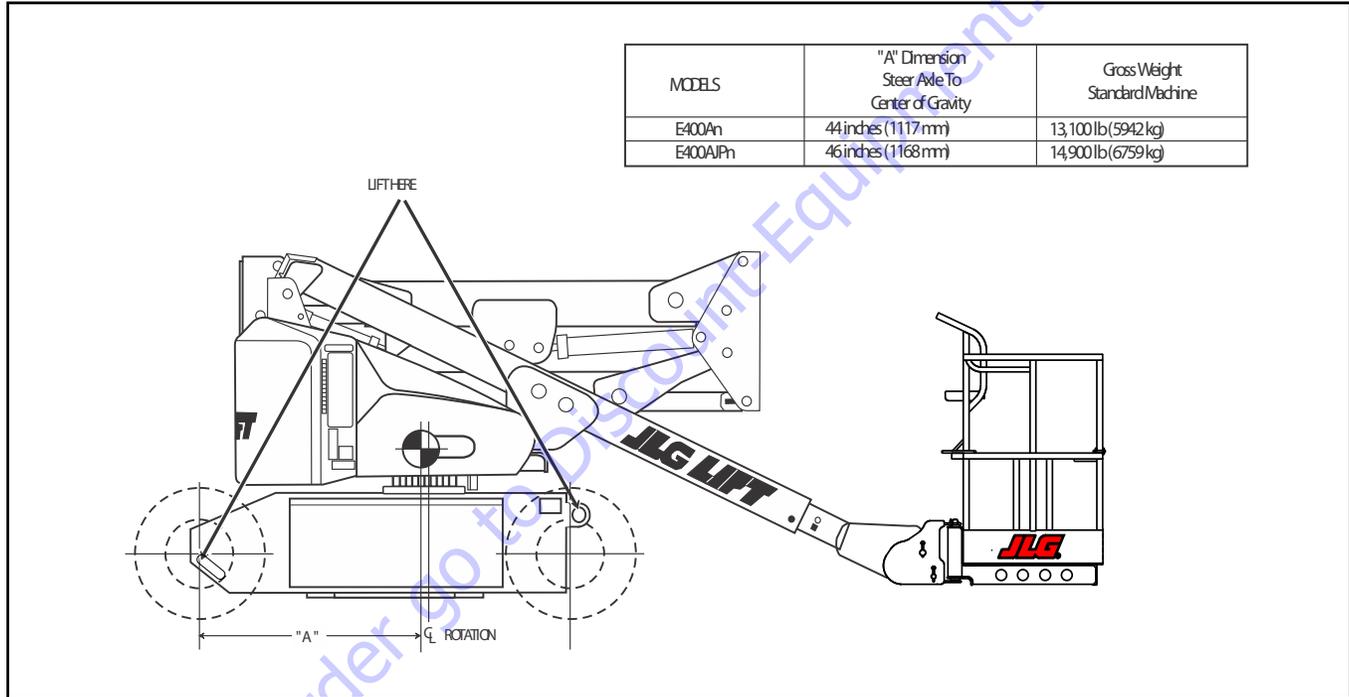


Figure 4-5. Lifting Chart

## SECTION 4 - MACHINE OPERATION

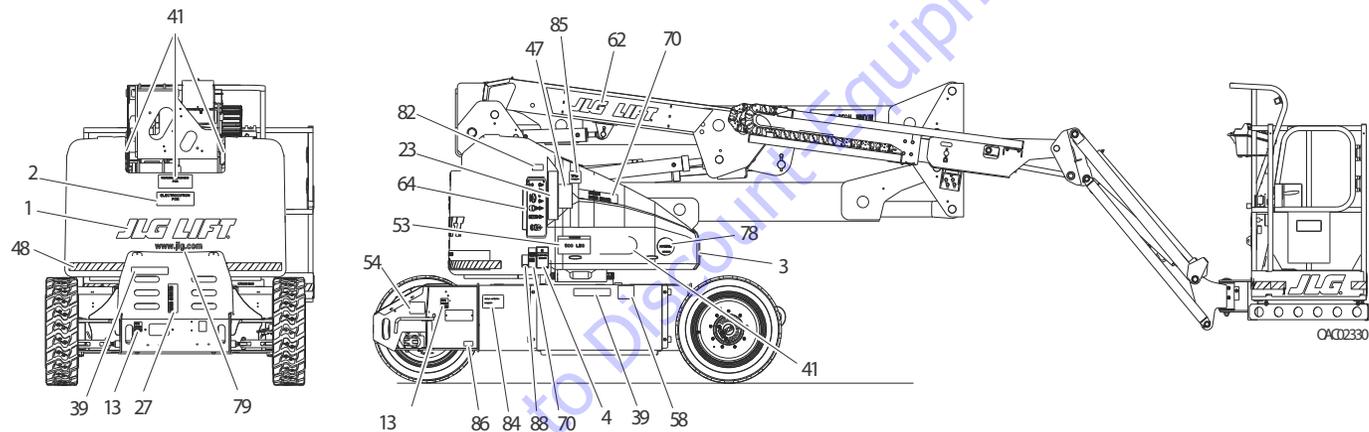


Figure 4-6. Decal Installation - Sheet 1 of 6

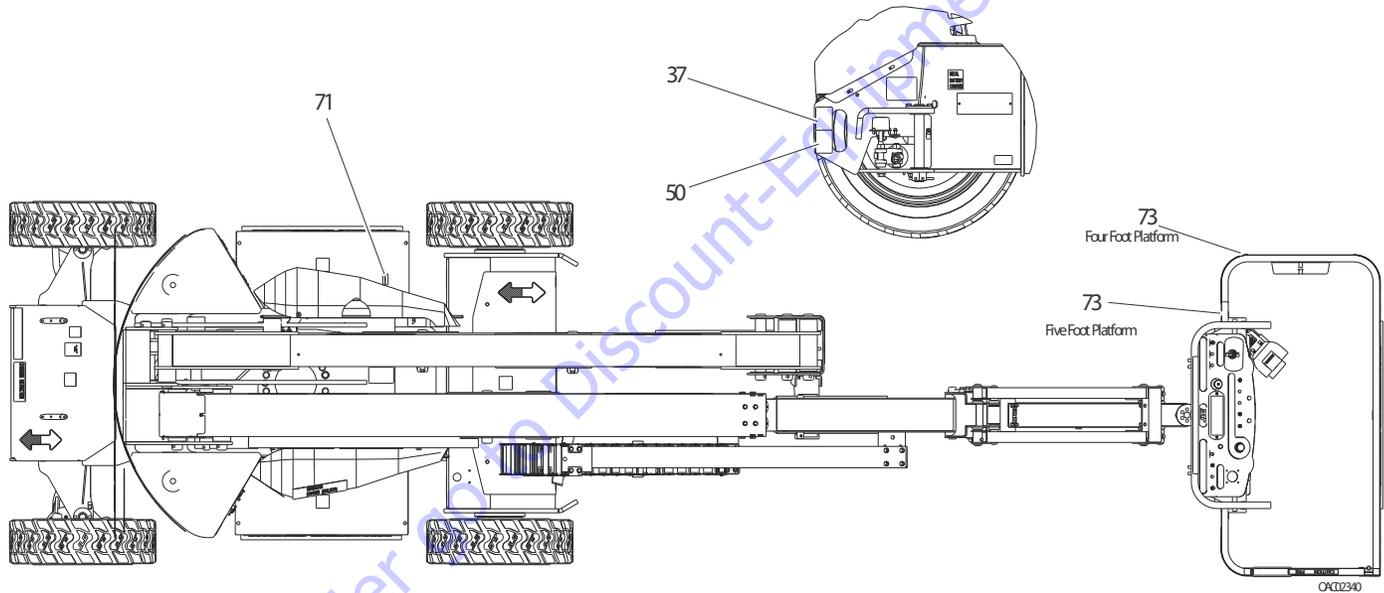


Figure 4-7. Decal Installation - Sheet 2 of 6

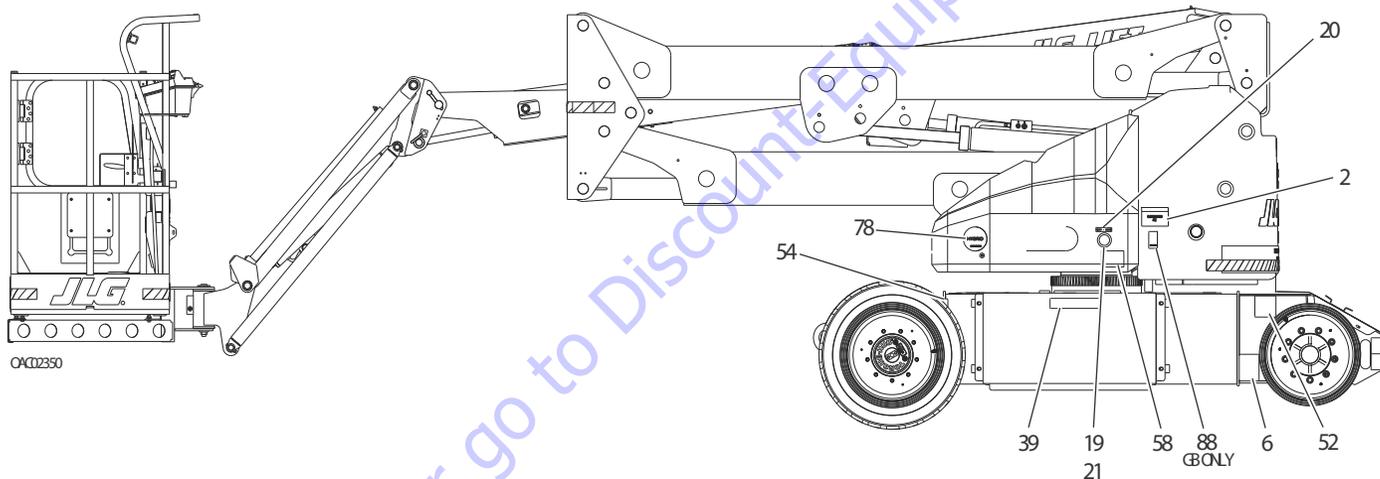


Figure 4-8. Decal Installation - Sheet 3 of 6

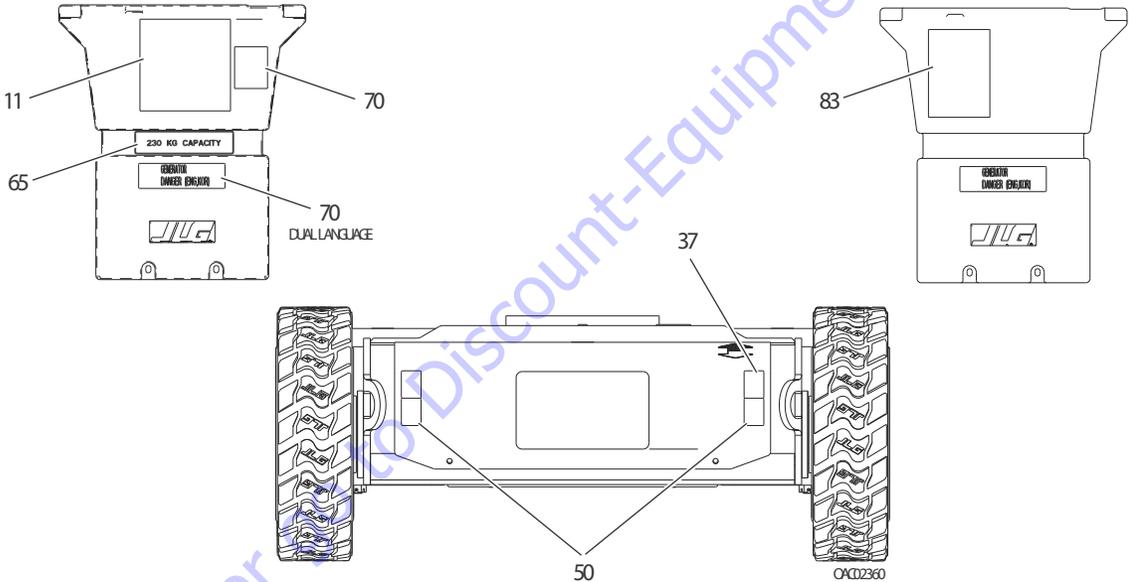


Figure 4-9. Decal Installation - Sheet 4 of 6

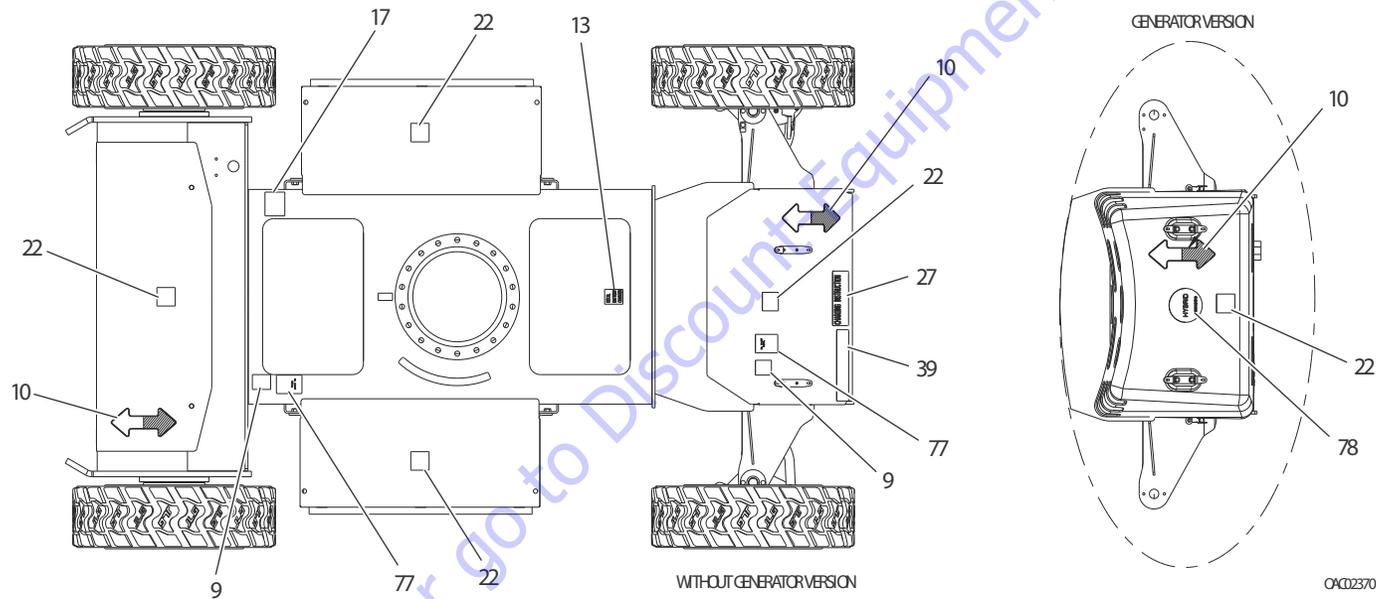
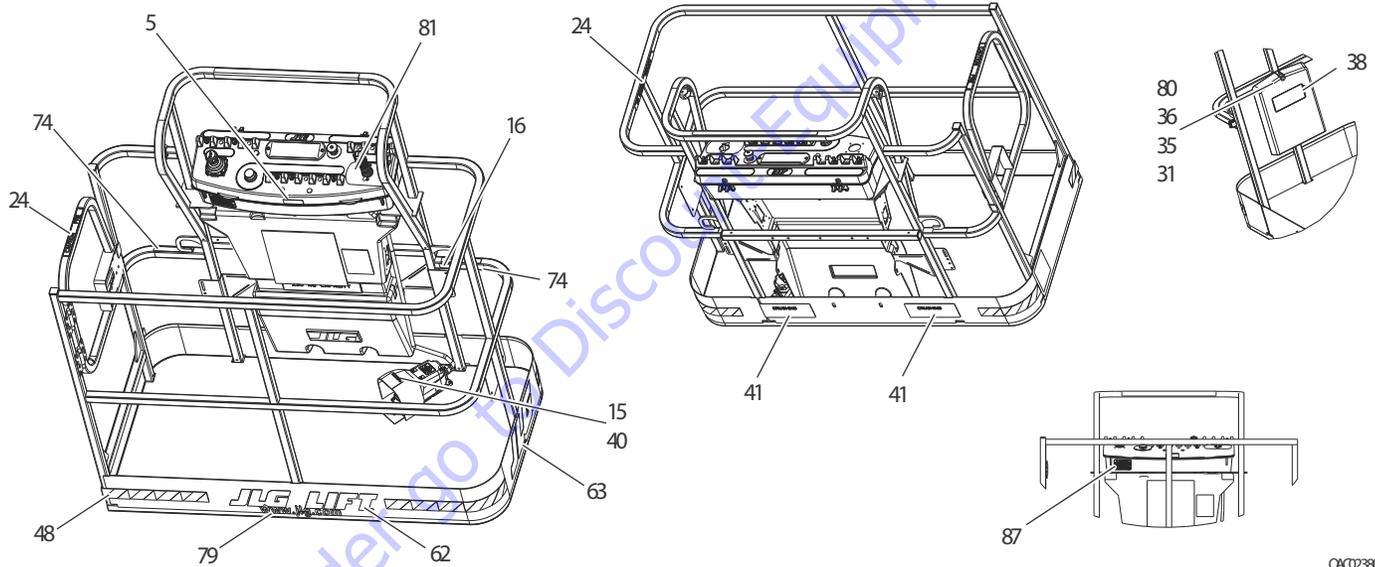


Figure 4-10. Decal Installation - Sheet 5 of 6



OX02380

Figure 4-11. Decal Installation - Sheet 6 of 6

## SECTION 4 - MACHINE OPERATION

Table 4-1. E400An/E400AJPn Decal Legend

| Item #       | ANSI<br>1001249184-B | Australian<br>1001178378-H | Japanese<br>1001249187-C | Korean<br>1001254178-A | English/<br>Lat. Spanish<br>1001249189-B | English/<br>French<br>1001249186-B | English<br>/Chinese<br>1001254179-A | English/<br>Portuguese<br>1001248655-C | CE<br>1001190003-G |
|--------------|----------------------|----------------------------|--------------------------|------------------------|--|------------------------------------|-------------------------------------|--|--------------------|
| 2            | 1703805              | --                         | 1703938                  | 1703939                | 1703935                                  | 1703936                            | 1703937                             | 1703940                                | --                 |
| 3 - E400An   | 1704900              | 1704900                    | 1704900                  | 1704900                | 1704900                                  | 1704900                            | 1704900                             | 1704900                                | 1704900            |
| 3 - E400AJPn | 1704792              | 1704792                    | 1704792                  | 1704792                | 1704792                                  | 1704792                            | 1704792                             | 1704792                                | 1704792            |
| 4            | 1703798              | 1705822                    | 1703932                  | 1703933                | 1703929                                  | 1703930                            | 1703931                             | 1703934                                | 1705822            |
| 6            | 1001131269           | --                         | --                       | --                     | --                                       | 1700584                            | --                                  | --                                     | --                 |
| 7            | 1001253997           | 1001253994                 | 1001253997               | 1001253997             | 1001253997                               | 1001253997                         | 1001253997                          | 1001253997                             | 1001253993         |
| 9            | 1701504              | 1701504                    | 1701504                  | 1701504                | 1701504                                  | 1701504                            | 1701504                             | 1701504                                | 1701504            |
| 10           | 1701642              | 1701642                    | 1701642                  | 1701642                | 1701642                                  | 1701642                            | 1701642                             | 1701642                                | 1701642            |
| 11           | 1703797              | 1705921                    | 1703926                  | 1703927                | 1703923                                  | 1703924                            | 1703925                             | 1703928                                | 1705921            |
| 13           | 1701644              | 1701644                    | 1701644                  | 1701644                | 1701644                                  | 1701644                            | 1701644                             | 1701644                                | 1701644            |
| 15           | --                   | 1705828                    | 1703980                  | 1703981                | 1703983                                  | 1703984                            | 1703982                             | 1703985                                | 1705828            |
| 16           | 1704277              | 1704277                    | 1704277                  | 1704277                | 1704277                                  | 1704277                            | 1704277                             | 1704277                                | 1704277            |
| 20           | 3251243              | --                         | --                       | --                     | 3251243                                  | 3251243                            | --                                  | 3251243                                | --                 |
| 22           | 1701691              | 1701691                    | 1701691                  | 1701691                | 1701691                                  | 1701691                            | 1701691                             | 1701691                                | 1701691            |

Table 4-1. E400An/E400AJPn Decal Legend

| Item # | ANSI<br>1001249184-B | Australian<br>1001178378-H | Japanese<br>1001249187-C | Korean<br>1001254178-A | English/<br>Lat. Spanish<br>1001249189-B | English/<br>French<br>1001249186-B | English<br>/Chinese<br>1001254179-A | English/<br>Portuguese<br>1001248655-C | CE<br>1001190003-G |
|--------|----------------------|----------------------------|--------------------------|------------------------|--|------------------------------------|-------------------------------------|--|--------------------|
| 23     | 1001104864           | 1001104864                 | 1001104864               | 1001104864             | 1001104864                               | 1001104864                         | 1001104864                          | 1001104864                             | 1001104864         |
| 24     | 1702868              | --                         | --                       | --                     | 1704001                                  | 1704000                            | --                                  | 1704002                                | --                 |
| 25     | 1001193949           | 1001193949                 | 1001193949               | 1001193949             | 1001193949                               | 1001193949                         | 1001193949                          | 1001193949                             | --                 |
| 27     | 1704446              | 1706378                    | 1704417                  | 1704418                | 1704454                                  | 1704452                            | 1704419                             | 1704453                                | 1706378            |
| 31     | 0860520              | 0860520                    | 0860520                  | 0860520                | 0860520                                  | 0860520                            | 0860520                             | 0860520                                | 0860520            |
| 37     | 1701500              | 1703811                    | 1701500                  | 1701500                | 1701500                                  | 1701500                            | 1701500                             | 1701500                                | 1703811            |
| 38     | 1701509              | 1701509                    | 1701509                  | 1701509                | 1701509                                  | 1701509                            | 1701509                             | 1701509                                | 1701509            |
| 39     | 1703813              | 1705670                    | 1704342                  | 1704343                | 1704339                                  | 1704340                            | 1704344                             | 1704341                                | 1705670            |
| 40     | 3252347              | --                         | --                       | --                     | --                                       | --                                 | --                                  | --                                     | --                 |
| 41     | 1703804              | 1701518                    | 1703950                  | 1703951                | 1703947                                  | 1703948                            | 1703949                             | 1703952                                | 1701518            |
| 47     | 1702265              | 1705977                    | 1702271                  | 1703987                | 1702265                                  | 1702265                            | 1703988                             | 1703991                                | 1705977            |
| 48     | 4420051              | 4420051                    | 4420051                  | 4420051                | 4420051                                  | 4420051                            | 4420051                             | 4420051                                | 4420051            |
| 50     | 1702300              | 1703814                    | 1702300                  | 1702300                | 1702300                                  | 1702300                            | 1702300                             | 1702300                                | 1703814            |
| 52     | 1702631              | 1702631                    | 1702631                  | 1702631                | 1702631                                  | 1702631                            | 1702631                             | 1702631                                | 1702631            |

## SECTION 4 - MACHINE OPERATION

**Table 4-1. E400An/E400AJPn Decal Legend**

| Item #      | ANSI<br>1001249184-B | Australian<br>1001178378-H | Japanese<br>1001249187-C | Korean<br>1001254178-A | English/<br>Lat. Spanish<br>1001249189-B | English/<br>French<br>1001249186-B | English<br>/Chinese<br>1001254179-A | English/<br>Portuguese<br>1001248655-C | CE<br>1001190003-G |
|-------------|----------------------|----------------------------|--------------------------|------------------------|--|------------------------------------|-------------------------------------|--|--------------------|
| 53          | 1001253921           | 1705978                    | 100125933                | 1001253925             | 1001253931                               | 1001253923                         | 1001253927                          | 1001253929                             | 1705978            |
| 54-E400An   | 1001262663           | 1001262663                 | 1001262663               | 1001262663             | 1001262663                               | 1001262663                         | 1001262663                          | 1001262663                             | 1001262663         |
| 54-E400AJPn | 1001262663           | 1001262663                 | 1001262663               | 1001262663             | 1001262663                               | 1001262663                         | 1001262663                          | 1001262663                             | 1001262663         |
| 65          | 1001253920           | 1705978                    | 1001253932               | 1001253924             | 1001253930                               | 1001253922                         | 1001253926                          | 1001253928                             | 1705978            |
| 77          | 1704412              | 1704412                    | 1704412                  | 1704412                | 1704412                                  | 1704412                            | 1704412                             | 1704412                                | 1704412            |
| 79          | 1704885              | 1704885                    | 1704885                  | 1704885                | 1704885                                  | 1704885                            | 1704885                             | 1704885                                | --                 |
| 81          | 1705351              | --                         | 1705426                  | 1705427                | 1705910                                  | 1705429                            | 1705430                             | 1001113680                             | --                 |
| 82          | --                   | 1001189882                 | --                       | --                     | --                                       | --                                 | --                                  | --                                     | 1001189882         |
| 84          | 1001223055           | --                         | 1001224053               | 1001224048             | 1001224049                               | 1001223971                         | 1001224050                          | 1001224052                             | --                 |
| 85          | 1001222801           | 1001222801                 | 1001222801               | 1001222801             | 1001222801                               | 1001222801                         | 1001222801                          | 1001222801                             | 1001222801         |
| 86          | 1001228370           | --                         | --                       | --                     | --                                       | 1001228370                         | --                                  | --                                     | --                 |
| 87          | 1001231801           | --                         | --                       | --                     | --                                       | --                                 | --                                  | --                                     | --                 |

## SECTION 5. EMERGENCY PROCEDURES

### 5.1 GENERAL

This section explains the steps to be taken in case of an emergency situation while operating.

### 5.2 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)
- EUROPE: (32) 0 89 84 82 20
- AUSTRALIA: (61) 2 65 811111
- 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 CONTROLS, THEN FROM THE PLATFORM CONTROLS. DO NOT LIFT ABOVE 3 M (10 FT.) UNTIL YOU ARE SURE THAT ALL DAMAGE HAS BEEN REPAIRED, IF REQUIRED, AND THAT ALL CONTROLS ARE OPERATING CORRECTLY.**

### 5.3 EMERGENCY OPERATION

#### Operator Unable to Control Machine

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

1. Other personnel should operate the machine from ground controls only as required.
2. Other qualified personnel on the platform may use the platform controls. DO NOT CONTINUE OPERATION IF CONTROLS DO NOT FUNCTION PROPERLY.
3. Cranes, forklift trucks or other equipment can be used to remove platform occupants and stabilize motion of the machine.

### Platform or Boom Caught Overhead

If the platform or boom becomes jammed or snagged in overhead structures or equipment, do the following:

1. Shut off the machine.
2. Rescue all people in the platform before freeing the machine. Personnel must be out of the platform before operating any controls on the machine.
3. Use cranes, forklifts, or other equipment to stabilize motion of the machine to prevent a tip over as required.
4. From the ground controls, use the Auxiliary Power System (if equipped) to carefully free the platform or boom from the object.
5. Once clear, restart the machine and return the platform to a safe position.
6. Inspect the machine for damage. If the machine is damaged or 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.

### 5.4 EMERGENCY TOWING PROCEDURES

Towing this machine is prohibited, unless properly equipped. However, provisions for moving the machine, in case of a malfunction or power failure, have been incorporated. The following procedures are to be used ONLY for emergency movement to a suitable maintenance area.

#### **NOTICE**

**THE ALLOWABLE TOWING SPEED IS 1.9 MPH (3 KM/H). THE MAXIMUM ALLOWABLE TOWING DISTANCE IS 0.6 MILES (1 KM).**

1. Chock wheels securely.
2. Disengage drive hubs by reversing disconnect caps.
3. Connect suitable equipment, remove chocks, and move machine.

After moving machine, complete the following procedures:

1. Position machine on a firm and level surface.
2. Chock wheels securely.
3. Engage drive hubs by reversing disconnect caps on hubs.
4. Remove chocks from wheels as needed.

## 5.5 MANUAL DESCENT SYSTEM

The manual descent system is used, in the event of total power failure, to lower the upper and lower booms using gravity. To operate the manual descent system, proceed as follows:

1. Locate manual descent knob on main valve and turn clockwise. Install handle into manual descent pump and lower the Mid and Lower Booms by pumping the handle until they are completely lowered.
2. Turn manual descent knob counterclockwise and lower the Upper (or main) Boom by pumping the handle until it is completely lowered. Return manual descent knob to center position and stow handle in bracket provided.

## 5.6 MANUAL SWING OVERRIDE

The manual swing override is used to manually swing boom and turntable assembly in the event of a total power failure when the platform is positioned over a structure or obstacle. To operate the manual swing override, proceed as follows:

1. Using a 7/8 inch socket and ratchet wrench, locate nut on swing worm gear on left side of machine.
2. Install wrench on nut and ratchet in the direction desired.

## 5.7 MACHINE SAFETY SYSTEM OVERRIDE (MSSO) (CE ONLY)

The Machine Safety System Override (MSSO) is only to be used to retrieve an operator that is pinned, trapped, or unable to operate the machine and function controls are locked out from the platform due to a platform overload situation.



**NOTE:** If the MSSO functionality is used, a fault code is set in the JLG Control System which must be reset by a qualified JLG Service Technician.

**NOTE:** No functional checks of the MSSO system are necessary. The JLG Control system will set a Diagnostic Trouble Code if the control switch is faulty.

To operate the MSSO:

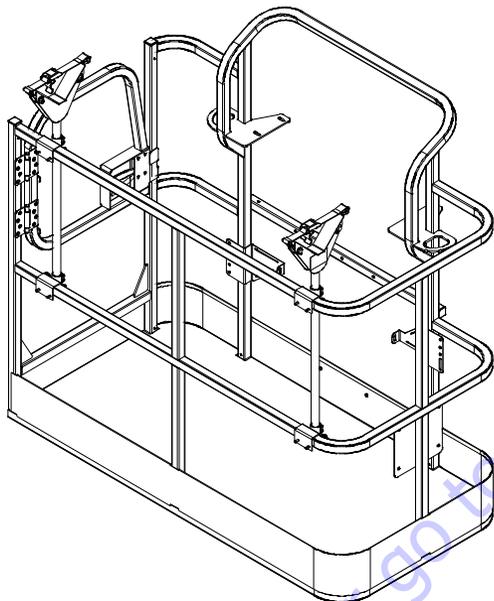
1. From the ground control console, place the Platform/ Ground Select switch in the Ground position.
2. Pull out the Power/Emergency Stop control.
3. Start the engine.
4. Press and hold the MSSO switch and the control switch for the desired function.

**SECTION 6. ACCESSORIES**

Table 6-1. Available Accessories

| Accessory  | Market             |      |     |    |     |       |       |
|------------|--------------------|------|-----|----|-----|-------|-------|
|            | ANSI<br>(USA Only) | ANSI | CSA | CE | AUS | Japan | China |
| Pipe Racks | √                  |      |     |    |     |       |       |

### 6.1 PIPE RACKS



Pipe Racks provide a way to store pipe or conduit inside the platform in order to prevent rail damage and optimize platform utility. This accessory consists of two racks with adjustable straps to secure the load in place.

### Safety Precautions

#### **⚠ WARNING**

REDUCE PLATFORM CAPACITY BY 100 LB (45.5 KG) WHEN INSTALLED.

#### **⚠ WARNING**

WEIGHT IN RACKS PLUS WEIGHT IN PLATFORM MUST NOT EXCEED RATED CAPACITY.

#### **NOTICE**

THE MAXIMUM LOAD IN THE RACKS IS 180 LB (80 KG) EVENLY DISTRIBUTED BETWEEN THE TWO RACKS.

#### **NOTICE**

THE MAXIMUM LENGTH OF MATERIAL IN RACKS IS 20 FT (6.1 M).

- Ensure no personnel are beneath the platform.
- Do not exit platform over rails or stand on rails.
- Do not drive machine without material secured
- Return racks to the stowed position when not in use.
- Use this option only on approved models.

## Preparation and Inspection

- Ensure racks are secured to the platform rails.
- Replace torn or frayed tie-down straps.

## Operation

1. To prepare racks for loading, remove locking pins, rotate each rack 90 degrees from stowed to working position, then secure with locking pins.
2. Loosen and remove tie-down straps. Place material on racks with weight evenly distributed between both racks.
3. Route the tie-down straps at each end across loaded material and tighten.
4. To remove material, loosen and remove tie-down straps, then carefully remove material from racks.

**NOTE:** *Reinstall tie-down straps across any remaining material before continuing machine operations.*

## SECTION 7. GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

### 7.1 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:

Service and Maintenance Manual ..... 31215010  
 Illustrated Parts Manual ..... 31215011

### 7.2 OPERATING SPECIFICATIONS

**Table 7-1. Operating Specifications**

|   |   |
|---|---|
| Maximum Work Load (Capacity)<br>ANSI Markets<br>Unrestricted:           | 500 lb (227 kg)                                 |
| Maximum Work Load (Capacity)<br>CE & Australia Markets<br>Unrestricted: | 500 lb (230 kg)                                 |
| Maximum Operating Slope   | 3°  |
| Maximum Travel Grade, Stowed Position                                   | 2 W/D-30%                                       |
| Maximum Travel Grade, Stowed Position                                   | 3°  |
| Platform Height:  | 40 ft. (12.19 m)                                |
| Horizontal Platform Reach (Up & Over)<br>E400An<br>E/400AJpN            | 21 ft.-2 in. (6.41 m.)<br>22 ft.-5 in. (6.8 m.) |
| Machine Width:<br>E400An; E400AJpN                                      | 4 ft.-11 in. (1.50 m.)                          |
| Turning Radius (Outside)  | 10 ft.-4 in. (3.15 m.)                          |

## SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

**Table 7-1. Operating Specifications**

|  |  |
|--|--|
| Turning Radius (Inside)<br>E400An; E/M400AJPn  | 2 ft. - 10 in. (0.86 m.)   |
| Maximum Tire Load:<br>E 400An<br>E400AJPn      | 7500 lb (3402 kg)<br>7500 lb (3402 kg)                                   |
| Ground Bearing Pressure<br>E 400An<br>E400AJPn | 200 psi (14.1 kg/cm <sup>2</sup> )<br>200 psi (14.1 kg/cm <sup>2</sup> ) |
| Drive Speed: (Above Horz.)<br>E400An; E400AJPn | 45-50 sec / 200 ft.<br>55-68 sec / 50 ft.                                |
| Gross Machine Weight<br>E400An<br>E400AJPn     | 13100 lb (5942 kg.)<br>14900 lb (6759 kg.)                               |
| Maximum System Voltage                         | 48VDC  |
| Battery Life per Charge                        | 7 hours continuous   |
| Battery Recharge Time<br>Charger<br>Generator  | 17 hours from full discharge<br>6.2 hours                                |
| Maximum Main Relief Hyd. Pressure              | 3400 psi<br>(234 bar)  |

## Capacities

**Table 7-2. Capacities**

|  |   |
|--|---|
| Generator Fuel Tank                                | 4 Gallons (15.1 L)                                    |
| Hydraulic Oil Tank<br>E400An<br>E400AJPn           | 4 gallons. (15.1L)<br>5 Gallons (19L) w/ 10% airspace |
| Hydraulic System (Including Tank)                  | 9 Gallons (34.1 L)                                    |
| Torque Hub, Drive*                                 | 17 ounces (0.50L)                                     |
| *Torque hubs should be one half full of lubricant. |   |

**Tires**

**Table 7-3. Tire Specifications**

| Size          | Type        | Pressure | Ply Rating | Load Range |
|---------------|-------------|----------|------------|------------|
| IN240/55-17.5 | Foam-Filled | N/A      | 10         | E          |
| 26x7x20       | Non-Marking | N/A      | N/A        | N/A        |
| 25x7x12       | Non-Marking | N/A      | N/A        | N/A        |
| 22x6x17.5     | Non-Marking | N/A      | N/A        | N/A        |

**Dimensional Data**

**Table 7-4. Dimensional Data**

|   |   |
|---|---|
| Machine Length (stowed)<br>E400An<br>E400AJPn | 18 ft. 1 in. (5.50 m)<br>22.0 ft. (6.7 m) |
| Machine Height (stowed)<br>E400An; E400AJPn   | 6 ft. 5.75 in. (1.31 m)                   |
| Up and Over Platform Height                   | 21 ft. 5 in. (6.55 m)                     |

**Table 7-4. Dimensional Data**

|  |  |
|--|--|
| Horizontal Reach @ Maximum Up and Over<br>E400An<br>E400AJPn | 21 ft. 2 in. (6.41 m)<br>22 ft. 5 in. (6.83 m) |
| Machine Width<br>E400An; E400AJPn                            | 4 ft. 11 in. (1.50 m)                          |
| Wheel Base   | 6 ft. 7.0 in. (2.00 m)                         |
| Working Height   | 46 ft. 0 in. (14.02 m)                         |
| Platform Height  | 40 ft. 0 in. (12.19 m)                         |
| Track Width<br>E400An; E400AJPn                              | 4 ft. 3.75 in. (1.31 m)                        |
| Tail Swing (Any Position)<br>E400AJPn<br>E400An              | 0<br>4 in. (10 cm)                             |
| Ground Clearance<br>E400An, E400AJPn                         | 5 in. (0.13 m)                                 |

**Torque Specifications**

**Table 7-5. Torque Requirements**

| Description                | Torque Value            | Interval Hours |
|----------------------------|-------------------------|----------------|
| Wheel Lugs                 | 170 ft. lbs.<br>(230Nm) | 150            |
| Swing Bearing<br>(Loctite) | 190 ft. lbs.<br>(260Nm) | 50/600*        |

\* Check swing bearing bolts for security after first 50 hours of operation and every 600 hours thereafter.

**Hydraulic Oil**

**Table 7-6. Hydraulic Oil**

| Hydraulic System Operating Temperature Range | S.A.E. Viscosity Grade |
|--|------------------------|
| +0° to +180°F<br>(-18° to +83°C)             | 10W                    |
| +0° to +210°F<br>(-18° to +99°C)             | 10W-20, 10W30          |
| +50° to +210°F<br>(+10° to +99°C)            | 20W-20                 |

**NOTE:** Hydraulic oils must have anti-wear qualities at least to API Service Classification GL-3, and sufficient chemical stability for mobile hydraulic system service.

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 standard UTTO is desired, contact JLG Industries for proper recommendations.

**SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE**

**Table 7-7. Mobil DTE 10 Excel 15 Specs**

|                                      |               |
|--------------------------------------|---------------|
| ISO Viscosity Grade                  | #15           |
| Pour Point, Max                      | -65°F (-54°C) |
| Flash Point, Min.                    | 360°F (182°C) |
| <b>Viscosity</b>                     |               |
| at 40°C                              | 15.8 cSt      |
| at 100°C                             | 4.07 cSt      |
| at 100°F                             | 15.8 cSt      |
| at 212°F                             | 4.07 cSt      |
| Viscosity Index                      | 168           |
| Density (Kg/l) @ 15°C                | 0.8375        |
| Density (lb/in <sup>3</sup> ) @ 60°F | 0.0302        |

**Table 7-8. Mobil EAL EnviroSyn H 32 Specs**

|                     |                         |
|---------------------|-------------------------|
| Type                | Synthetic Biodegradable |
| ISO Viscosity Grade | 32                      |
| Density at 15°C     | .869                    |
| Pour Point, Max     | -38°F (-39°C)           |
| Flash Point, Min.   | 514°F (268°C)           |
| <b>Viscosity</b>    |                         |
| at 40°C             | 33.1 cSt                |
| at 100°C            | 6.36 cSt                |
| Viscosity Index     | 147                     |

## SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

**Table 7-9. Mobil EAL EnviroSyn SHC 32 Specs**

| Type                | Synthetic Biodegradable |
|---------------------|-------------------------|
| ISO Viscosity Grade | 32                      |
| Density at 15°C     | .936                    |
| Pour Point, Max     | -27°F (-33°C)           |
| Flash Point, Min.   | 540°F (282°C)           |
| Viscosity           |                         |
| at 40°C             | 33.1 cSt                |
| at 100°C            | 6.2 cSt                 |
| Viscosity Index     | 152                     |

## Critical Stability Weights

**Table 7-10. Critical Stability Weights**

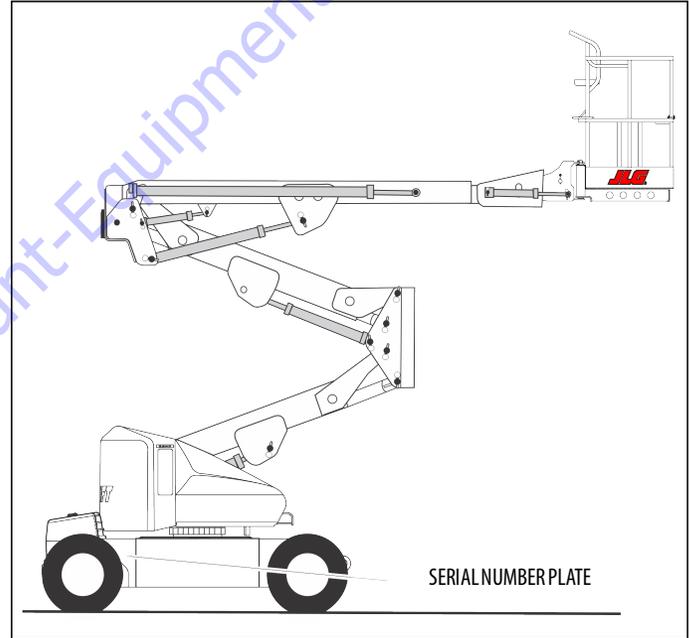
| Component                  | LB   | KG   |
|----------------------------|------|------|
| Counterweight              | 3850 | 1746 |
| Tire & Wheel (foam-filled) | 207  | 94   |
| Platform (4ft [1.2m])      | 90   | 41   |
| Platform (5ft [1.5m])      | 100  | 45   |
| Battery (each)             | 120  | 54   |

### **WARNING**

**DO NOT REPLACE ITEMS CRITICAL TO STABILITY WITH ITEMS OF DIFFERENT WEIGHT OR SPECIFICATION (FOR EXAMPLE: BATTERIES, FILLED TIRES, PLATFORM) DO NOT MODIFY UNIT IN ANY WAY TO AFFECT STABILITY.**

## **Serial Number Locations**

For machine identification, a serial number plate is affixed to the left rear of frame, in front of left rear wheel. If the serial number plate is damaged or missing, the machine serial number is stamped on the top left side of the frame and the top left side of the turntable. In addition, the serial number is stamped on top of the end of the upper boom, mid boom, and lower boom at the left rear of the booms.



**Figure 7-1. Serial Number Locations**

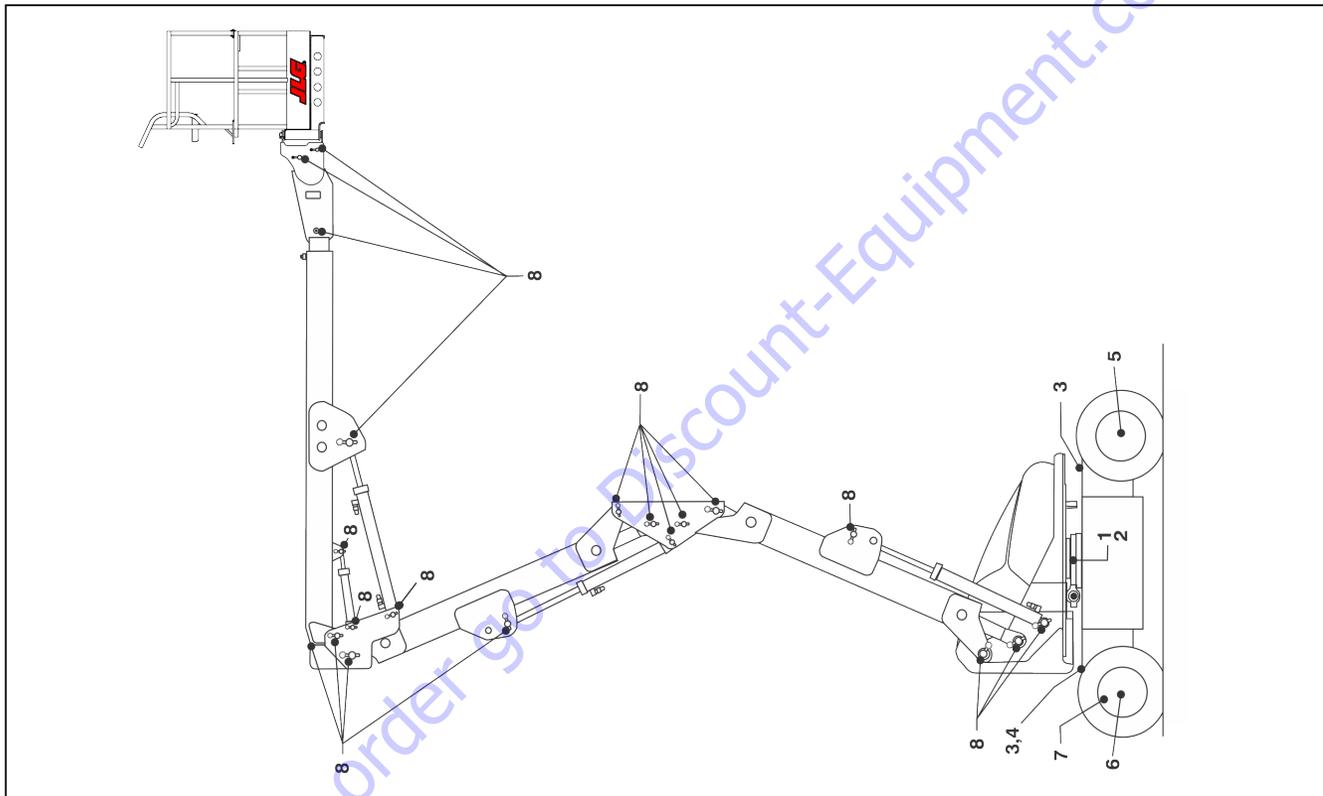


Figure 7-2. E400An/E400AJpN Maintenance & Lubrication Diagram

### 7.3 MAINTENANCE AND LUBRICATION

**NOTE:** The following numbers correspond to those in Figure 7-2.

**Table 7-11. Lubrication Specifications**

| KEY  | SPECIFICATIONS   |
|--|--|
| MPG  | Multipurpose Grease having a minimum dripping point of 350 degrees 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. Mobil DTE- 10   |
| OG*  | Open Gear Lube - Tribol Molub-Alloy 936 Open Gear Compound. (JLG Part No. 3020027)   |
| BG*  | Bearing Grease (JLG Part No. 3020029) Mobilith SHA 460.  |
| LL   | Synthetic Lithium Lubricant, Gredag 741 Grease. (JLG Part No. 3020022)   |
| EO   | Engine (crankcase) Oil. Refer to Engine Operation Manual.  |
| *MPG may be substituted for these lubricants, if necessary, but service intervals will be reduced. |  |

#### NOTICE

**LUBRICATION INTERVALS ARE BASED ON MACHINE OPERATION UNDER NORMAL CONDITIONS. FOR MACHINES USED IN MULTI-SHIFT OPERATIONS AND/OR EXPOSED TO HOSTILE ENVIRONMENTS OR CONDITIONS, LUBRICATION FREQUENCIES MUST BE INCREASED ACCORDINGLY.**

**1. Swing Bearing**

Lube Point(s) - 2 Grease Fittings

Capacity - A/R

Lube - MPG

Interval - Every 3 months or 150 hrs of operation

Comments - Remote Access (Optional)

## SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

### 2. Swing Bearing/Worm Gear Teeth



Lube Point(s) - Grease Fittings

Capacity - Spray On

Lube - OG or Mobilnac375NC

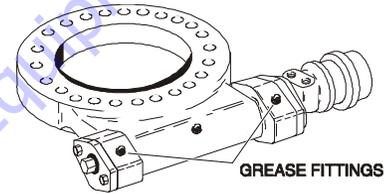
Interval - A/R

Comments - If necessary install grease fittings into worm gear housing and grease bearings.

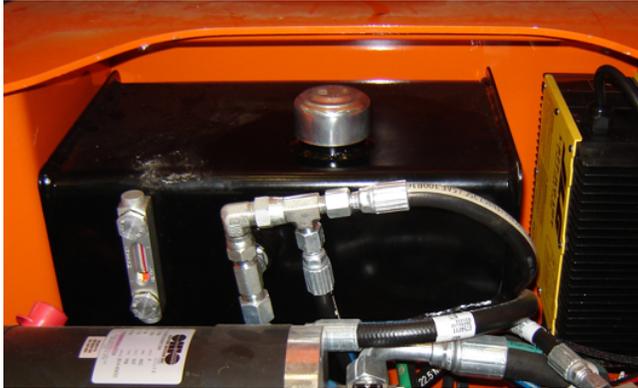
**NOTE:** *OG will allow better cycle times than Mobilnac375NC, however Mobilnac375NC must be used in dusty environments. If the swing function becomes noisy and/or rough lubricate the bearing teeth.*

**⚠ CAUTION**

**DO NOT OVERGREASE BEARINGS. OVERGREASING BEARINGS WILL RESULT IN BLOWING OUTER SEAL IN HOUSING.**



**3. Hydraulic Tank**



Lube Point(s) - Fill Cap

Capacity - E400An - 4 Gal. (15.1 L); E400AJPn - 5 Gal. (19 L)

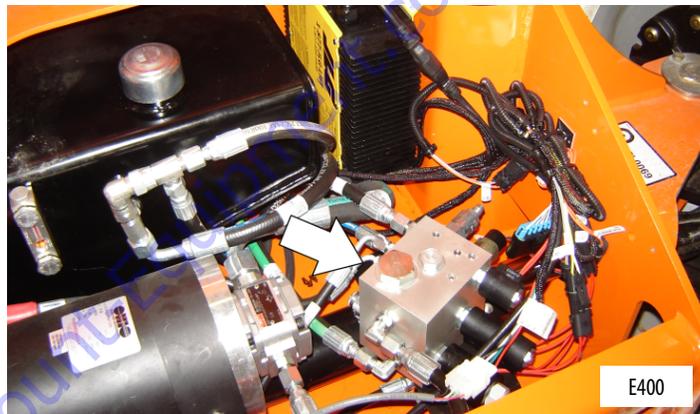
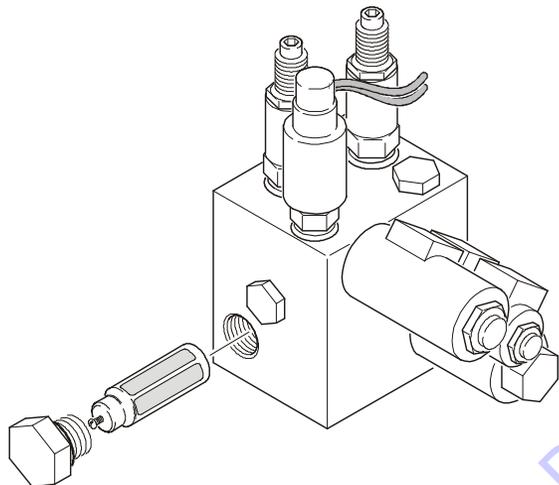
Lube - HO

Interval - Check Level daily; Change every 2 years or 1200 hours of operation.

Comments - On new machines, those recently overhauled, or after changing hydraulic oil, operate all systems a minimum of two complete cycles and recheck oil level in reservoir.

## SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

### 4. Hydraulic Return Filter



Interval - Change after first 50 hrs. and every 6 months or 300 hrs. thereafter.

Comments - Under certain conditions, it may be necessary to replace the hydraulic filter on a more frequent basis. A common symptom of a dirty filter is sluggishness experienced in hydraulic functions.



## SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

### 8. Boom Pivot Pins/Bushing

Capacity - A/R

Lube - Lithium Lubricant

Interval - Every 2 years or 1200 hours of operation

Comments - At boom pivot pins/bushing replacement; Coat I.D. of bushings prior to installing pivot pins.

### 9. Engine



Lube Point(s) - Fill Cap

Capacity - Refer to Engine Manual

Lube - EO

Interval - 3 Months or 150 hours of operation

Comments - Check level daily/Change in accordance with engine manual.

### 7.4 BATTERY MAINTENANCE AND CHARGING

#### Battery Maintenance, Quarterly

1. Open battery compartment cover to allow access to battery terminals and vent caps.

#### CAUTION

**WHEN ADDING WATER TO BATTERIES, ADD WATER UNTIL ELECTROLYTE COVERS PLATES. DO NOT CHARGE BATTERIES UNLESS ELECTROLYTE COVERS THE PLATES.**

**NOTE:** *When adding distilled water to batteries, non-metallic containers and/or funnels must be used.*

*To avoid electrolyte overflow, add distilled water to batteries after charging.*

*When adding water to the battery, fill only to level indicated.*

2. Remove all vent caps and inspect electrolyte level of each cell. Electrolyte level should be to the ring approximately one inch from top of battery. Fill batteries with distilled water only. Replace and secure all vent caps.
3. Remove battery cables from each battery post one at a time, negative first. Clean cables with acid neutralizing solution

(e.g. baking soda and water or ammonia) and wire brush. Replace cables and/or cable clamp bolts as required.

4. Clean battery post with wire brush then re-connect cable to post. Coat non-contact surfaces with mineral grease or petroleum jelly.
5. When all cables and terminal posts have been cleaned, ensure all cables are properly positioned and do not get pinched. Close battery compartment cover.
6. Start hydraulic system and ensure that it functions properly.

#### Optional On Board Generator

#### WARNING

**EXHAUST GAS HAZARD. RUN THE GENERATOR IN A WELL VENTILATED AREA ONLY.**

#### **NOTICE**

**WHEN THE GENERATOR ENABLE CONTROL LOCATED IN THE PLATFORM CONTROL BOX IS IN THE ON POSITION AND THE GROUND EMERGENCY STOP SWITCH IN ON (PULLED OUT), THE GENERATOR WILL START AUTOMATICALLY WHEN THE BATTERIES REACH A LOW-CHARGE STATE AUTOMATICALLY CHARGING THE BATTERIES.**

## SECTION 7 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

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**NOTE:** The engine will automatically shut down under the following conditions:

High Engine Oil Temperature

Low Engine Oil Pressure

Engine Over-speed

Generator Over-voltage

### **WARNING**

**TO AVOID INJURY FROM AN EXPLOSION, DO NOT SMOKE OR ALLOW SPARKS OR A FLAME NEAR BATTERY DURING SERVICING. ALWAYS WEAR EYE AND HAND PROTECTION WHEN SERVICING BATTERIES.**

### **Battery Charging (On Board Charger)**

1. For maximum battery life:
  - a. Avoid completely discharging the batteries.
  - b. Fully charge the batteries each day the machine is used.
  - c. Charge the batteries at available times between charging.
  - d. If applicable, be sure the battery fluid covers the battery plates before charging, but to avoid overflow, do not top off the fluid level until charging.
2. To charge the batteries, connect the charger to an appropriate volt source with a 15 amp minimum capacity.

3. The charge cycle is complete when the green 100% charge light on the battery charger comes on.

## **7.5 TIRES & WHEELS**

### **Tire Damage**

For polyurethane foam filled tires, JLG Industries, Inc. recommends that when any of the following are discovered, measures must be taken to remove the JLG product from service immediately and arrangements must be made for replacement of the tire or tire assembly.

- a smooth, even cut through the cord plies which exceeds 3 inches (7.5 cm) in total length
- any tears or rips (ragged edges) in the cord plies which exceeds 1 inch (2.5 cm) in any direction
- any punctures which exceed 1 inch in diameter
- any damage to the bead area cords of the tire

If a tire is damaged but is within the above noted criteria, the tire must be inspected on a daily basis to insure the damage has not propagated beyond the allowable criteria.

### Tire Replacement

JLG recommends a replacement tire be the same size, ply and brand as originally installed on the machine. Please refer to the JLG Parts Manual for the part number of the approved tires for a particular machine model. If not using a JLG approved replacement tire, we recommend that replacement tires have the following characteristics:

- Equal or greater ply/load rating and size of original
- Tire tread contact width equal or greater than original
- Wheel diameter, width, and offset dimensions equal to the original
- Approved for the application by the tire manufacturer (including inflation pressure and maximum tire load)

Unless specifically approved by JLG Industries Inc. do not replace a foam filled or ballast filled tire assembly with a pneumatic tire. When selecting and installing a replacement tire, ensure that all tires are inflated to the pressure recommended by JLG. Due to size variations between tire brands, both tires on the same axle should be the same.

### Wheel Replacement

The rims installed on each product model have been designed for stability requirements which consist of track width, tire pressure, and load capacity. Size changes such as rim width, center piece location,

larger or smaller diameter, etc., without written factory recommendations, may result in an unsafe condition regarding stability.

### Wheel Installation

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

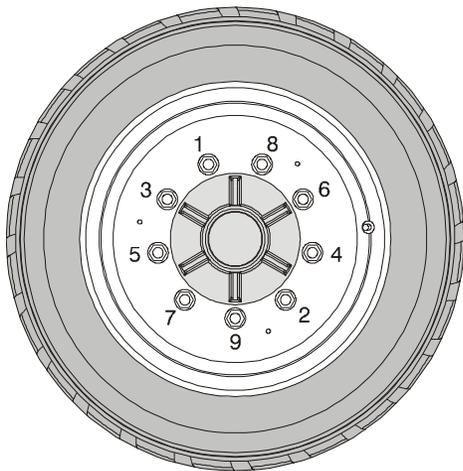
#### **WARNING**

**WHEEL NUTS MUST BE INSTALLED AND MAINTAINED AT THE PROPER TORQUE TO PREVENT LOOSE WHEELS, BROKEN STUDS, AND POSSIBLE DANGEROUS SEPARATION OF WHEEL FROM THE AXLE. BE SURE TO USE ONLY THE 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 studs or permanently deforming the mounting stud holes in the wheels. The proper procedure for attaching wheels is as follows:

1. Start all nuts by hand to prevent cross threading. DO NOT use a lubricant on threads or nuts.

2. Tighten nuts in the following sequence:



3. The tightening of the nuts should be done in stages. Following the recommended sequence, tighten nuts per wheel torque chart.
4. Wheel nuts should be torqued after first 50 hours of operation and after each wheel removal. Check torque every 3 months or 150 hours of operation.

**Table 7-12. Wheel Torque Chart**

| TORQUE SEQUENCE       |                          |                          |
|-----------------------|--------------------------|--------------------------|
| 1st Stage             | 2nd Stage                | 3rd Stage                |
| 40ft. lbs.<br>(55 Nm) | 100 ft. lbs.<br>(130 Nm) | 170 ft. lbs.<br>(255 Nm) |

### 7.6 SUPPLEMENTAL INFORMATION

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 104 dB.

The vibration total value to which the hand-arm system is subjected does not exceed  $2,5 \text{ m/s}^2$ . The highest root mean square value of weighted acceleration to which the whole body is subjected does not exceed  $0,5 \text{ m/s}^2$ .

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