

# Operation & Safety Manual

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

Model R4045

**PVC 2304** 

31221538

April 10, 2023 - Rev A





## **A 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.

#### **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 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.

## **A** DANGER

Indicates an imminently hazardous situation. If not avoided, will result in serious injury or death. This decal will have a red background.

## **A** WARNING

Indicates a potentially hazardous situation. If not avoided, could result in serious injury or death. This decal will have an orange background.

## **A** 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.

## **A 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.

#### **Foreword**

#### For:

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

#### **Contact:**

Product Safety and Reliability Department

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## **REVISION LOG**

Date	Revision	Description
April 10, 2023	А	Original Issue

## **Other Publications Available**

Publication	Publication Number
Service & Maintenance Manual	31221539
Illustrated Parts Manual	31221540

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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 & 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").

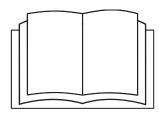
## **A WARNING**

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

## 1.2.1 Operator Training and Knowledge

Read, understand, and study the Operation & 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.



 Only personnel who have received proper training regarding the inspection, application and operation of MEWPs (including recognizing and avoiding hazards associated with their operation) shall be authorized to operate a MEWP.

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- 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.

#### 1.2.2 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.
- This machine can be operated in nominal ambient temperatures of 0° F to 104° F (-20° C to 40° C). Consult JLG to optimize operation outside of this temperature range.

## 1.2.3 Machine Inspection

- Do not operate this machine until the inspections and functional checks as specified in the User Responsibilities, Machine Preparation, and Inspection Section 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 & Maintenance Manual.
- Ensure all safety devices are operating properly. Modification of these devices is a safety violation.

## **A 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

#### 1.3.1 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.
- 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.
- 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.

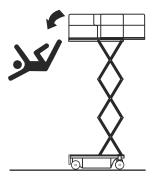
- Remove all rings, watches, and jewelry when operating machine. Do not wear loose fitting clothing or long hair unrestrained which may become caught or entangled in equipment.
- Persons under the influence of drugs or alcohol or who are subject to seizures, dizziness or loss of physical control must 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.

## 1.3.2 Trip and Fall Hazards

 Prior to operation, ensure all gates and rails are fastened and secured in their proper position.



- JLG Industries, Inc. recommends that all persons in the platform wear a full body harness with a lanyard attached to an authorized lanyard anchorage point while operating this machine. For further information regarding fall protection requirements on JLG products, contact JLG Industries, Inc.
- Identify the designated lanyard anchorage point (s) at the platform and securely attach the lanyard. 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 machine when
  entering or leaving the platform. Always maintain "three point contact" with the
  machine, using two hands and one foot or two feet and one hand at all times during
  entry and exit.

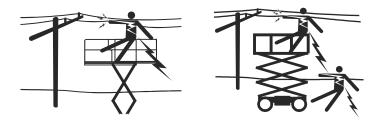


 Keep both feet firmly positioned on the platform floor at all times. Never position ladders, boxes, steps, planks, or similar items on unit to provide additional reach for any purpose.

- Never use the scissor arm assembly to gain access to or leave the platform.
- Keep oil, mud, and slippery substances cleaned from footwear and the platform floor.

#### 1.3.3 Electrocution Hazards

- This machine is not insulated and does not provide protection from contact with or proximity to electrical current.
- It is not recommended to use the machine during lightning. To prevent injury or
  machine damage if lightning occurs during operation, lower the boom and shut
  down the machine in a safe and secure location.



- Maintain distance from electrical lines, apparatus, or any energized (exposed or insulated) parts according to the Minimum Approach Distance (MAD) as shown in Table — Minimum Approach Distances (MAD), page 17.
- Allow for machine movement and electrical line swaying.

Table 1. Minimum Approach Distances (MAD)

Voltage Range (Phase to Phase)	Minimum Approach Distance in Feet (Meters)		
0 to 50 KV	10 (3)		
Over 50K V 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.

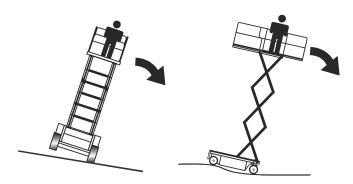
- The MAD may be reduced if insulating barriers are installed to prevent contact, and the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of (or attached to) the machine.
- The MAD shall be reduced to a distance within the designed working dimensions of the insulating barrier. This determination shall be made by a qualified person with respect to electrical transmission and distribution in accordance with the employer, local, or governmental requirements for work practices near energized equipment.

## **A DANGER**

Do not maneuver machine or personnel inside prohibited zone (MAD). Assume all electrical parts and wiring are energized unless known otherwise.

## 1.3.4 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 side slope 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.
- 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, dropoffs, obstructions, debris, concealed holes, and other potential hazards at the ground level.

- Do not push or pull any object with the machine.
- 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 the scissor arm assembly or platform is caught so that one or more wheels are off the ground, all persons must be removed before attempting to free 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 the Machine Specifications and Operator Maintenance section. Refer to Table Beaufort Scale (For Reference Only), page 20. 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 in 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, deck extensions, or attachments.

## **A WARNING**

Do not operate the machine when wind conditions exceed specifications shown in the General Specifications section of this manual or as shown on the capacity placard on the platform billboard.

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Beaufort	Wind Speed		Description	Land Conditions	
Number mph		m/s	Description		
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/Mod- erate 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.	

Table 2. Beaufort Scale (For Reference Only)

## 1.3.5 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.
- Keep hands and limbs out of the scissor arm assembly during operation and when elevated without safety prop engaged.
- Always post a lookout when driving in areas where vision is obstructed.

- Keep non-operating personnel at least 6 ft (1.8 m) 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, reduce drive 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. Barricade floor area if necessary.
- 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.

## **A WARNING**

If driving machine with the platform control station from ground, do not hang the control box on any part of the machine while driving. Hold the control box and keep at least 3 ft (1 m) distance from machine.

## 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 platform is fully retracted and completely empty of tools prior to towing, lifting or hauling.
- When lifting machine with a forklift, position forks only at designated areas of the machine. Lift with a forklift of adequate capacity.
- Refer to the Machine Operation section of this manual for lifting information.

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#### 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.

#### 1.5.1 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.
- 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.
- 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 the MEWP in any way to affect stability.
- Refer to the Service & Maintenance Manual for the weights of critical stability items.

## **A WARNING**

Modification or alteration of a MEWP shall be made only with prior written permission from the manufacturer.

#### 1.5.2 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.

## **A** 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.

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## 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.

#### 2.1.1 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.
- 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.
- 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.

## 2.1.2 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.

## 2.1.3 Operator Responsibility

The operator must be instructed that 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.

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#### 2.1.4 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 user's authorization of an operator to use a specific model of MEWP, the user shall ensure the operator is familiarized on the following:

- Location of the manual storage compartment and the requirement to ensure the required manual(s) are present on the MEWP;
- 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 machine inspections and maintenance required by JLG Industries, Inc. Consult local regulations for further requirements for MEWPs. 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.

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Table 3. Inspection and Maintenance Table

Туре	Frequency	Primary Responsibility	Service Qualification	Reference
Pre-Start Inspection	Before using each day; or whenever there is an Operator change	User or Operator	User or Operator	Operation & Safety Manual
Pre-Delivery Inspection (See Note)	Before each sale, lease, or rental delivery	Owner, Dealer, or User	Qualified JLG Mechanic	Service & Mainte- nance Manual and applicable JLG in- spection form
Frequent Inspection (See Note)	In service for 3 months or 150 hours, whichever comes first or Out of service for a period of more than 3 months or Purchased used	Owner, Dealer, or User	Qualified JLG Mechanic	Service & Mainte- nance Manual and applicable JLG in- spection 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 & Mainte- nance Manual and applicable JLG in- spection form
Preventive Maintenance	At intervals as specified in the Service & Mainte- nance Manual	Owner, Dealer, or User	Qualified JLG Mechanic	Service & Mainte- nance Manual

**Note:** Inspection forms are available from JLG. Use the Service & 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 specified JLG product model.

## 2.3 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.

 Structure – Inspect the machine structure for dents, damage, weld or parent metal cracks or other discrepancies.
 Report this to the proper maintenance personnel.

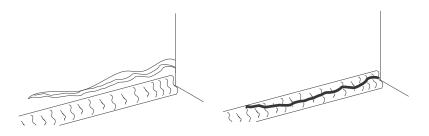


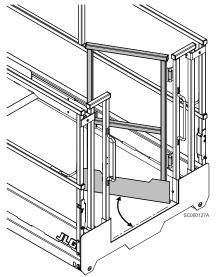
Figure 1. Parent Metal Crack

Figure 2. Weld Crack

- 3. **Decals and Placards** Check all for cleanliness and legibility. Ensure none of the decals and placards are missing. Ensure all illegible decals and placards are cleaned or replaced (refer to *Section Decal Installation*).
- Operation & Safety Manuals Ensure that a copy of the Operation & Safety Manual, AEM Safety Manual (ANSI markets only), and ANSI Manual of Responsibilities (ANSI markets only) is enclosed in the weather resistant storage container.
- Walk-Around Inspection Perform as instructed in Section Walk-Around Inspection.
- 6. **Battery** Charge as required.
- 7. **Hydraulic Oil Level** Check the hydraulic oil level in the pump reservoir, add as required (refer to *Section 6.4*).
- 8. **Fluid Levels** Be sure to check the engine oil and the hydraulic oil levels.
- 9. **Accessories/Attachments** Refer to the Accessories section in this manual or the accessory installed upon the machine for specific inspection, operation, and maintenance instructions.
- 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 – Machine Controls, Indicators, And Operation for more specific instructions on the operation of each function.
- 11. **Platform Gate** Keep gate and surrounding area clean and unobstructed. Ensure 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.
- 12. **Lanyard Attach Points** JLG Industries, Inc. recommends personnel in the platform wear a full body harness with a lanyard attached to an authorized lanyard anchorage point.

## **A** 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.



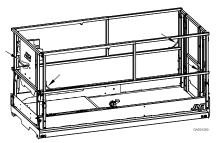


Figure 4. Lanyard Attach Point

Figure 3. Self-Closing Swing Gate

### 2.4 WALK-AROUND INSPECTION

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

## **A WARNING**

To avoid possible injury, be sure machine power is off. Do not operate 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.

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

- 1. **Frame/Chassis/Ladder** Ensure that pothole protection (PHP) components on frame are in place, undamaged, not bent or worn. Side compartment doors open and close properly. Refer to Inspection Note.
- 2. **Ground Controls** Placard secure and legible, control switches return to neutral position when activated and released, emergency stop switch functions properly. Control markings legible.
- 3. **Hydraulic Pump/Motor, Control Valve Installation** No unsupported wires or hoses; no damaged or broken wires. Refer to Inspection Note.
- Front Wheels, Tires and Drive Motors Wheel nut properly secured. Refer to Section 6.4 Inspect wheels for damage and corrosion, Steer linkage, and Steer Cylinder. Refer to Inspection Note.
- 5. **Battery Compartment** Refer to Inspection Note.
- Rear Wheels, Tires and Hydraulic Brake Wheel nut properly secured. Refer to Section 6.4. Inspect wheels for damage and corrosion, check hydraulic brake hoses for damage or leakage. Refer to Inspection Note.
- 7. Manual Descent Control Refer to Inspection Note.
- 8. **Beacon(s)** (**If Equipped**) Refer to Inspection Note.
- Scissor Arm Stack Assembly, Pivot Pins, Slide Wear Pads, Lift Cylinder Refer to Inspection Note.
- Platform/Rail/Gate Assembly Deck extension slides in and out and locks in place properly. Gate closes properly. All fold-down rail pins (if equipped) in place and secure - Refer to Inspection Note.
- 11. **Platform Control Console** Ensure that the control console is firmly secured in the proper location. Placards secure and legible, control lever and switches return to neutral when activated and released, and emergency stop switch function properly, required manual(s) in storage box.
- 12. **Static Strap** Refer to Inspection Note.

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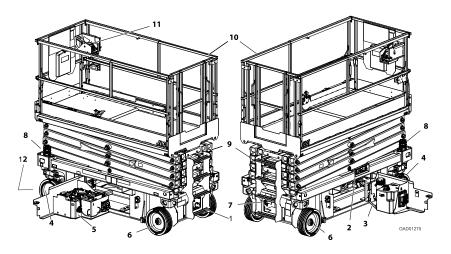
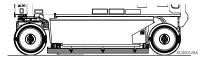


Figure 5. Inspection Diagram

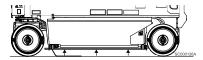
#### 2.5 FUNCTION CHECK

Perform the Function Check as follows:

- 1. At the Ground Control Panel with no load in the platform:
  - a. Ensure the key selector switch and platform lift switch operate properly.
  - b. Ensure all machine functions are disabled when the Emergency Stop Button is depressed.
  - c. With the platform raised a few feet (1 m), ensure the manual descent control (T-handle located at rear of machine next to the battery charger) lowers the platform (refer to Section 3.8).
  - d. Verify the Pothole Protection bars are fully lowered when the platform is raised.







Platform Fully Lowered - Pothole Bars Raised

#### 2. From the Platform Control Console:

- a. Ensure the control console is firmly secured in the proper location.
- b. Ensure all guards protecting switches are in place.
- c. Operate all switch functions, drive/lift mode select switch, and horn button.
- d. Operate all platform joystick functions to ensure proper operation of drive, lift, steer, and enable trigger switch.
- e. Ensure all machine functions stop when function control is released or when joystick trigger is released.
- f. Ensure all machine functions are disabled when the platform Emergency Stop Button is depressed.
- g. With the platform elevated on a smooth, firm, level surface with no overhead obstructions, drive the machine to check if the high drive cutback speed limit is engaged at the height indicated in Table 2-1. Ensure drive speed reduces from high speed to a slower speed.

MODEL HIGH DRIVE SPEED CUTBACK DRIVE SPEED REDUCTION HEIGHT

R4045 75 in (190.5 cm) 2.0 mph (3.2 kph) to 0.5 mph (0.8 kph)

**Table 4. High Drive Cutout Height** 

#### 3. With the platform in the stowed position:

- Drive the machine on a grade, not to exceed the rated gradeability, and stop to ensure the drive motor brakes hold.
- b. Check the tilt indicator light to verify proper operation. The light should be illuminated if tilted beyond allowed settings shown in Table 2-2.

**Note:** When the tilt indicator warning is activated, drive and lift up functions are disabled and the platform must be fully lowered (stowed) to drive.

MODEL	TILT SETTING (Front to Back)	TILT SETTING (Side to Side)	Maximum Deck Elevation	
		1.50° - indoor 1.50° - outdoor	25 - 28.7 ft 31 ft - max.	7.6 - 8.7 m 9.4 - max.
R4045	3.50°	2.00° - indoor 2.00° - outdoor	23 - 25 ft 27 - 31 ft	7 - 7.6 m 8.2 - 9.4 m
		2.50° - indoor 2.50° - outdoor	0 - 23 ft 0 - 27 ft	0 - 7 m 0 - 8.2 m

Table 5. Tilt Activation Setting

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# SECTION 3 Machine Controls, Indicators, and Operation

#### 3.1 GENERAL

## NOTICE

The manufacturer has no direct control over machine application and operation, the user and operator are responsible for conforming with good safety practices.

This section provides the necessary information needed to understand machine controls and indicators.

## **A** WARNING

Do not raise platform unless the machine is on a smooth, firm surface, within the limits of the maximum operating slope, free of obstructions and holes.

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.

If the platform does not stop when a control switch or lever is released, use the emergency stop switch to stop the machine.

## 3.2 DESCRIPTION

This machine is a Mobile Elevating Work Platform (MEWP) used to position personnel, along with their necessary tools and materials at work locations.

This MEWP has a primary operator control station in the platform. From this control station, the operator can drive and steer the machine in both forward and reverse directions, and raise and lower the platform.

The machine can be driven on a smooth, firm surface within the limits of the maximum operating slope from an elevated platform position. Refer to the subsection Steering and Traveling of this manual for specific requirements.

The machine also has a ground control station that can override the platform control station. Ground controls operate lift up and down functions only. Except for performing inspections and function checks, ground controls are to be used only in an emergency to lower the platform to the ground should the operator in the platform be unable to do so.

#### 3.3 OPERATING CHARACTERISTICS AND LIMITATIONS

#### 3.3.1 Placards

Important points to remember during operation are provided at the control stations by DANGER, WARNING, CAUTION, NOTICE, IMPORTANT and INSTRUCTION placards. This information is placed at various locations for the express purpose of alerting personnel of potential hazards constituted by the operating characteristics and limitations of the machine. See foreword for definitions of placard safety signal words.

### 3.3.2 Capacities

Raising platform 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 manufacturer's rated capacity.
- 3. All machine systems are functioning properly.

### 3.3.3 Stability

This machine, as originally manufactured by JLG and operated within its rated capacity on a smooth, firm surface, within the limits of the maximum operating slope, provides a stable aerial platform for all platform positions.

#### 3.4 PLATFORM LOADING

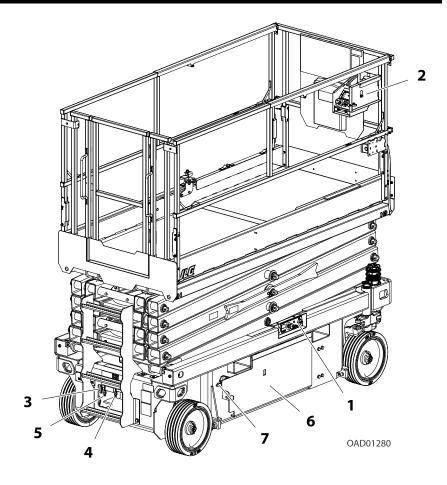
The platform maximum rated load capacity is shown on a placard located on the platform billboard and ground control station and is based upon the machine positioned on a smooth, firm surface within the limits of the maximum operating slope. Refer to Section – Machine Specifications for the maximum platform capacity.

The platform is entered through an entry gate at the rear of the platform. Keep entry gate closed at all times except when entering/exiting the platform and loading/unloading materials.

**Note:** It is important to remember that the load should be evenly distributed on the platform. The load should be placed near the center of the platform when possible.

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### 3.5 MACHINE CONTROL LOCATIONS



- 1. Ground Control Station
- 2. Platform Control Station
- 3. Platform Manual Descent Control (T-Handle)
- 4. AC Plug (for Platform AC Receptacle Outlet Box)
- 5. AC Plug Battery Charger Input
- 6. Side Compartment Doors (Both Sides)
- 7. Side Compartment Door Latch Location (Both Sides)

### 3.6 BATTERY CHARGING

**Note:** Park the machine in a well ventilated area before charging.

## **A** CAUTION

Only plug the charger into a properly installed and grounded outlet. Do not use ground adaptors or modify plug. Do not touch non-insulated portion of output connector or non-insulated battery terminal.

Do not operate charger if the AC supply cord is damaged or if the charger has received a sharp blow, been dropped, or otherwise damaged in anyway.

Always disconnect the charger AC supply before making or breaking the (POS/NEG) connections to the battery.

Do not open or disassemble charger.

The battery charger AC input plug is located inside the frame at the left rear of the machine next to the battery charger. See charger specific information in <u>Section</u> — <u>General Specifications and Maintenance</u>.

- 1. Connect the charger AC input plug to a grounded outlet using a 3 wire heavy duty extension cord.
- After connecting the charger to an AC outlet at the start of the charging cycle, verify normal operation of the LED indicators on the charger (refer to Section — Operator Maintenance).

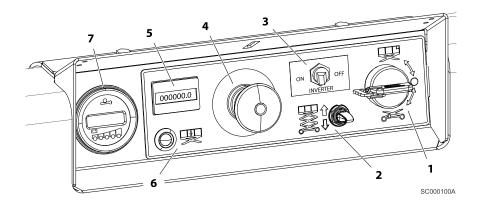
**Note:** Current battery charge state can also be seen on the platform control station panel LEDs or the MDI indicator (if equipped) on the ground control station when machine is powered up.

3. The batteries are fully charged when all three GREEN LED indicators on the platform control station or MDI battery charger status panel are illuminated.

**Note:** If the charger is left plugged in, the charger will automatically restart a complete charge cycle if the battery voltage drops below a minimum voltage, or if 30 days has elapsed.

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#### 3.7 GROUND CONTROL STATION



- **1.** Ground/Platform/OFF Key Selector Switch
- 2. Platform Lift/Lower Switch
- **3.** Inverter ON/OFF Switch (If Equipped)
- 4. Ground Emergency Stop Button

- 5. Hourmeter
- 6. Overload Indicator
- 7. MDI Indicator (If Equipped)

#### 3.7.1 Ground Control Station Functions

#### **Ground Emergency Stop Switch**

Power is turned on by pulling the switch out, and is turned off by depressing switch. A two-position, red, mushroom-shaped emergency stop switch, when positioned to ON with the key selector switch positioned to ground, furnishes operating power to the ground control station key switch. In addition, the switch can be used to turn off power to the function controls in the event of an emergency.



# **A WARNING**

Do not operate from ground control station with personnel in the platform except in an emergency.

#### Ground/Platform/OFF Key Selector Switch

The key selector switch on the Ground Control Station functions to direct electrical power to the desired control station.

With the switch turned to the ground position (1), power is supplied to the controls at the Ground Control Station. When the switch is turned to the platform position (2), power is supplied to the controls at the Platform Control Station. The switch should be set to the off position (3) when not using machine or parking the machine overnight.



#### Hourmeter

The machine is equipped with an hour meter to indicate the number of hours the machine has been operated.



#### Inverter ON/OFF Switch (If Equipped)

When switched on the inverter converts the DC voltage stored in the on-board batteries to AC voltage for use at the AC receptacle outlet mounted on the platform rail.

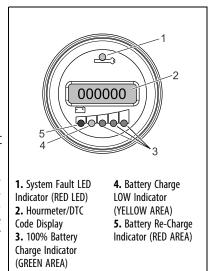
#### MDI Indicator (If Equipped)

The Multifunction Digital Indicator (MDI) displays a Battery Discharge Indicator (BDI), a LCD display showing the current hourmeter reading, a system distress LED, and Diagnostic Trouble Codes (DTC) when a functional problem occurs with the machine.

When a problem occurs and a DTC Code displayed:

- A LED wrench icon (1) LED illuminates.
- A three to five digit DTC code will display on the DTC LCD display (2) below the wrench icon.

Note: When more than one DTC exists, each DTC will be displayed on the LCD for three seconds before changing to the next DTC. Once the last active DTC is displayed, the display will recycle indefinitely until the DTCs are corrected. For DTCs and descriptions, refer to Section 6.7.



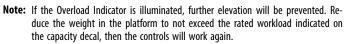
Also located on the MDI are Battery Discharge Indicators (BDI) (3, 4, 5). The three green LEDs indicate the level of charge (voltage) remaining in the batteries.

Note: When the battery voltage is low and will need a charge soon, the yellow LED (4) begin to flash.

BDIs and the hourmeter display under normal operating conditions. When a DTC exists other than 00x DTCs, the BDI LEDs and hourmeter are not be displayed. Additionally, when the platform is elevated and the machine is driving in creep mode, the turtle icon is displayed.

#### Overload Indicator (LSS)

The Overload Indicator indicates when the platform has been overloaded. An audible alarm will also signal when the platform is overloaded.



**Note:** When ambient temperatures are below freezing, the LSS will have a reduction in available capacity. This will trigger the LSS before achieving the maximum allowable capacity.



#### Platform Lift/Lower Switch

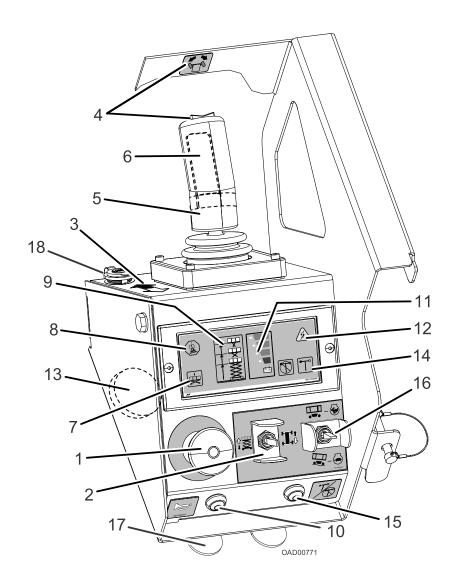
A three position, momentary contact lift control switch provides raising and lowering of the platform from the Ground Control Station.

**Note:** There will be a brief delay between switch activation and movement of the platform.

When operating platform from the ground controls, activate the Lift/Lower switch to up position and hold to raise platform, or down position and hold to lower an elevated platform. Release to stop all movement.



### 3.8 PLATFORM CONTROL STATION



#### **Machine Controls, Indicators, and Operation**

- **1.** Emergency Stop Switch
- 2. Lift/Drive Select Switch
- 3. Black/White Directional Arrow
- 4. Steer Control Switch and Decal
- 5. Joystick Controller
- **6.** Trigger Enable Switch
- 7. Overload Indicator (LSS)
- 8. Tilt Indicator
- 9. Variable Tilt Platform Restricted Height Indicator
- 10. Horn Button

- **11.** Battery Discharge Indicator
- 12. System Fault Indicator
- 13. Alarm
- 14. Indoor/Outdoor Capacity Indicators
- 15. Indoor/Outdoor Capacity Select Switch
- **16.** Drive Speed Select Switch
- 17. Mobile Phone Cradle (If Equipped)
- **18.** USB Port (If Equipped)

#### 3.8.1 Platform Control Station Functions

#### Alarm

This alarm mounted on the front of the platform control station will sound for various machine conditions or warnings such as, system ready chirp or if the machine tilt warning is activated.

#### Arm Guards (If Equipped)

If the machine is equipped with electronic arm guards, the platform will stop lowering at a predetermined height and the machine's beacons will flash at a different rate to warn ground personnel. The machine can continue lowering after a three (3) second delay and re-engaging the lowering function. Once the lowering function is re-engaged an audible alarm will sound. After a three second delay, the platform will continue lowering.

#### **Battery Charge Indicator**

The battery charge indicator displays the current charge status of the onboard batteries.



RED LED ON solid = batteries low

RED LED flashing = batteries depleted

• RED LED ON and GREEN LEDs ON = batteries FULL charge

#### Drive/Lift/Steer Joystick Control

**Trigger (Enable) Switch** - This trigger switch is located on the front of the joystick controller. It acts as an enable and must be depressed before operating the drive, steer, and lift functions. When released, the function in operation will stop.

The speed on all selected functions is proportionally controlled by the distance from the neutral (center) position of the joystick controller.

**Note:** Once the trigger switch is pressed, the operator has (5) seconds to begin operating a function. After 5 seconds, the trigger switch must be released and pressed again to operate a joystick function.

**Note:** If the machine is also equipped with a footswitch, depress the footswitch in conjunction with the trigger (enable) switch located on the joystick controller. Power is removed from the platform controls when the footswitch is released.

**Steer Switch** - The steer switch is a thumb-operated switch located at the top of the joystick controller handle. Depressing the switch to the right will steer the wheels to the right. Depressing the switch to the left will steer the wheels to the left.

Joystick Controller - This controls drive and lift.

#### **Emergency Stop Switch**

Note: Both the ground and platform emergency stop buttons must be set to ON in order to operate the

When power is directed to the platform from the ground control station, the platform emergency stop switch is turned on by pulling the switch out (on), and is turned off by pushing the switch in (off). The two-position, red, mushroom-shaped emergency stop switch functions to provide power to the platform control station and also to turn off power to machine functions in the event of an emergency.

## NOTICE

Always position emergency stop switch to off position (pushed in) when machine is not in use.

#### Forward/Reverse/Lift/Lower Direction Arrow

This decal indicates the proper direction to mount the platform control box, with the black arrow pointing to the front of the machine. The black/white arrow also indicates the direction to move the joystick control per the lift/drive selector switch decal for the lift and the drive select functions.



#### Horn

This push-button switch, when pressed, permits the operator to warn job site personnel when the machine is operating in the area.



#### Indoor/Outdoor Operation Indicator

The Indoor (GREEN) indicator and the Outdoor (YELLOW) indicator displays which mode the machine is currently set to operate in.



#### Indoor/Outdoor Operation Mode Switch

This button will toggle between the indoor/outdoor operation modes.



#### Lift/Drive Select Switch

**Note:** When selecting between the lift and drive functions the joystick control must be returned to the neutral position for approximately 1/2 second before the function change is operable.



This toggle switch is used to select operation of either the drive or lift function. After selecting a function, the joystick controller must be used in order to activate that function. Only change the function selected, with the joystick in the neutral position. Otherwise, the function selected will not change until the joystick is returned to the neutral position.

#### Overload Indicator (LSS)

The Overload Indicator indicates when the platform has been overloaded. An audible alarm will also signal when the platform is overloaded.



**Note:** If the Overload Indicator is illuminated, further elevation will be prevented. Reduce the weight in the platform to not exceed the rated workload indicated on the capacity decal, then the controls will work again.

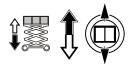
**Note:** When ambient temperatures are below freezing, the LSS will have a reduction in available capacity. This will trigger the LSS before achieving the maximum allowable capacity.

#### Mobile Phone Cradle (If Equipped)

Provides an enclosed area for mobile phones in the platform.

#### Raising And Lowering Platform

- If the machine was shut down, place the key selector switch to the platform position.
  - Position both emergency stop switches, to the ON position.
- Position the lift/drive select switch to lift.
- 4. Squeeze and hold the trigger switch, and move the joystick back (platform up white arrow direction) or move the joystick forward (platform down black arrow direction) and hold until desired elevation is reached. Releasing the trigger switch or moving the joystick back to its center position will stop the function being operated.



#### Steering

2.

On the platform control station, position the lift/drive select switch to the drive position. To steer the machine, engage trigger switch and the thumb operated steer rocker-switch on the joystick handle. Press to the right for steering right, or to the left for steering left. When released, the switch will return to the center-off position and the wheels will remain in the previously selected position. To return the wheels to the center position, the switch must be activated in the opposite direction until the wheels are centered.





#### Steering And Traveling

- 1. Place key selector switch at the ground control station to platform operation.
- Position emergency stop switches, one at the platform and one at the ground control station to the ON position.

# **A** WARNING

Do not drive with platform raised except on a smooth, firm surface, within the limits of the maximum operating slope, free of obstructions and holes.

To avoid loss of travel control or upset on grades and side slopes, do not drive machine on grades or side slopes exceeding those specified in Section 6.

Before driving, locate the decals with the black/white orientation arrows on the chassis and the platform controls. Move the joystick in the direction of the black or white arrow that matches the color of the arrow on the chassis for the intended direction of travel.

If the tilt indicator warning light/alarm is activated while driving with platform raised, lower platform completely and drive to a smooth, firm surface, within the limits of the maximum operating slope.

#### **System Fault Indicator**

When this indicator light is flashing, a system fault has occurred, possibly stopping machine operation.

Check the MDI Indicator (if equipped) on the Ground Control Station to see if a DTC is displayed.

If the code cannot be cleared by the operator, the machine will require service by a qualified JLG mechanic.



#### Tilt Indicator Warning Light and Alarm

A red warning light on the control panel illuminates and an audible alarm sounds when the chassis is at or beyond the tilt cutout settings.



# **A WARNING**

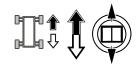
If the tilt indicator warning light/alarm is activated when platform is raised, lower platform and drive to a smooth, firm surface, within the limits of the maximum operating slope.

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#### **Traveling Forward And Reverse**

Position the platform lift/drive select switch to drive/steer position. Squeeze the trigger switch on front of the joystick and move the joystick forward to drive forward, or backward to drive in reverse.

The drive system is proportional: for additional drive speed, push the joystick further from the neutral position in the direction of travel. Releasing the trigger switch or returning the joystick to center will stop machine movement.



**Note:** To ensure proper operation of the desired platform function, move the joystick in the direction of the black or white arrow that matches the color of the arrow on the chassis for the intended direction of travel.

#### **Drive Speed Select Switch**

The two position speed switch controls high or low range drive speed. High speed would be used in unobstructed open, flat, and level work areas. Low speed would be used in close work areas with obstacles, other machinery or personnel to avoid.

**Note:** Drive speed will automatically be reduced to low drive when the platform is raised above the stowed position, regardless of speed switch position.



#### USB Port (If Equipped)

Provides a USB port in the platform.

#### Variable Tilt - Platform Restricted Height Indicator

This indicator shows the maximum allowable platform elevation when the machine is within the limits of the variable tilt envelope. When activated, allowable platform height will be shown in one of three height ranges, depending on the amount of tilt detected by the machine's tilt sensor. See tables in Section 2 for tilt angle - platform operating height restrictions.



#### 3.9 PLATFORM MANUAL DESCENT CONTROL

The platform manual descent control is used in the event of total power failure to lower the platform using gravity. The manual descent control T-handle is located on the left rear of the machine, just below the platform ladder. Look for the instruction decal located beside the release handle.

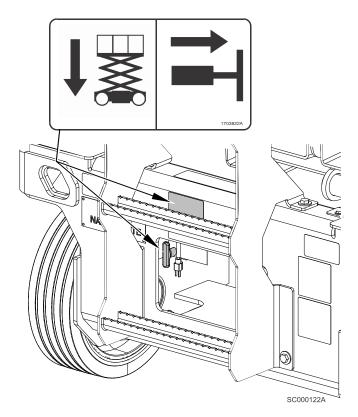
The lowering procedure is as follows:

1. Locate the manual descent control red T-handle.

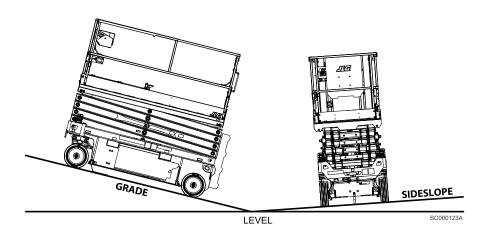
# **A WARNING**

Keep hands and arms out of the path of the scissor arms and platform while lowering.

2. Grasp the T-handle and slowly pull out to lower the scissor arms/platform. When the platform is lowered to desired level, allow the T-handle to return to its closed position.



#### 3.10 GRADE AND SIDESLOPE



#### 3.11 PLATFORM EXTENSION

This machine is equipped with an extension deck that allows the operator better access to certain work areas. The deck extension adds length to the front of the platform.

## **A** WARNING

For maximum capacity of the deck extension see Machine Specifications section or refer to the capacity placard on the platform billboard.

# **A** CAUTION

Do not lower without completely retracting the platform extension.

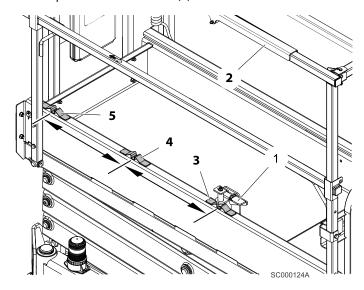
#### To extend the deck:

- 1. Press foot down on locking mechanism lever (1) until it clears the rear platform extension lock (3).
- 2. While holding the lever, grasp the top handrails (2) and push forward until the locking mechanism pin locks into the forward platform extension lock (4 or 5).

#### To retract the deck:

1. Press foot down on locking mechanism lever (1) until it clears the forward platform extension lock (4 or 5).

2. Grasp the top handrails (2) and pull back until it the locking mechanism pin locks into the rear platform extension lock (3).



# 3.12 PLATFORM RAILS FOLD-DOWN PROCEDURE (IF EQUIPPED)

# WARNING

Only fold down the rails when the machine is in the stowed (platform fully lowered) position. Do not raise the platform with the rails folded down. The rails must be in the upright position and properly pinned when raising the platform.

The platform rails fold down from the mid rail only, except for the rear gate rail.

#### 3.12.1 Platform with Dual Rail Extension Deck

The platform end rails fold-down first, then both the extension platform side rails and the main platform side rails will be folded down together.

The platform rails fold down in the following sequence;

- Remove platform top rail pins (four total two front, two rear) and fold the FRONT and REAR GATE platform rails down onto the platform deck.
- 2. Fold down both platform extension side rails next.
- 3. Fold down main platform left side rail.

4. Fold down main platform right side rail.

To raise the rails back to the upright position, unfold the rails in the reverse sequence they were folded and replace the rail pins into the rails.

**Note:** When setting platform side rails back to upright position be certain the extension platform rail guide is interlocked with the main platform rail once both rails are completely upright.

# **A** WARNING

After the rails have been folded down, use extreme caution when exiting and entering the platform. Enter and exit platform only at the gate area and ladder provided.

# **A** WARNING

If driving machine with the platform control station from ground, do not hang the control box on any part of the machine while driving. Hold the control box and keep at least 3 ft (1 M) distance from machine.

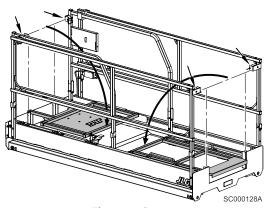


Figure 6. Step 1

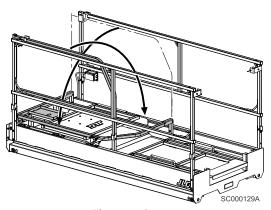


Figure 7. Step 2

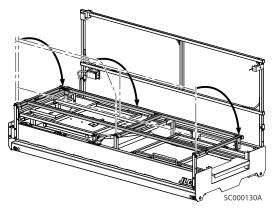


Figure 8. Step 3

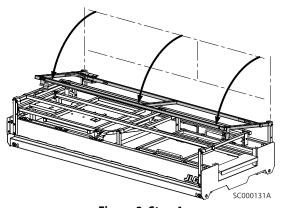


Figure 9. Step 4

#### 3.12.2 Platform with Rail In Rail Extension Deck

## **A** WARNING

Only fold down the rails when the machine is in the stowed (platform fully lowered) position. Do not raise the platform with the rails folded down. The rails must be in the upright position and properly pinned when raising the platform.

The platform rails fold down in the following sequence;

- 1. At the rear gate rail, pull the pins at the top rail corners one (1) each side and fold the rear gate rail down onto the platform deck.
- 2. Before lowering side rails, the front deck extension sliding top and mid rail pins, one (1) each rail four (4) total, must be removed and sliding rails slid towards rear of machine and re-pinned to top and mid side rails. (Both Sides)
  - A Reuse the top sliding rail pin hole to re-pin to the top side rail.
  - B The mid sliding rail is provided a pinning hole under the lanyard attach lug, on the mid rail.
- 3. Remove the two (2) lower side rail pins and fold down RIGHT side rail. Remove the two (2) lower side rail pins and fold down LEFT side rail.
- 4. Remove the two (2) lower front rail pins and fold down FRONT platform extension rail.

To raise the rails back to the upright position, unfold the rails in the reverse sequence they were folded and replace the bail pins to secure rails.

# **A WARNING**

After the rails have been folded down, use extreme caution when exiting and entering the platform. Enter and exit platform only at the gate area and ladder provided.

# **A WARNING**

If driving machine with the platform control station from ground, do not hang the control box on any part of the machine while driving. Hold the control box and keep at least 3 ft (1 M) distance from machine

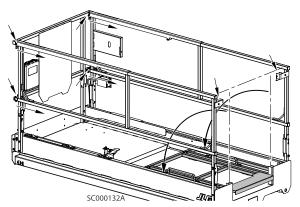


Figure 10. Step 1

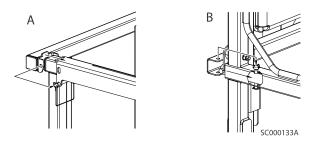


Figure 11. Step 2

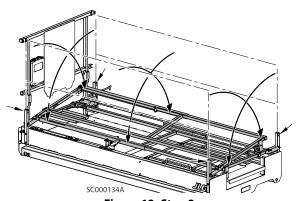


Figure 12. Step 3

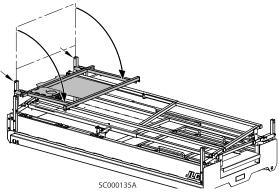


Figure 13. Step 4

### 3.13 PARKING AND STOWING MACHINE

- 1. Drive the machine to a well-protected and well-ventilated area.
- 2. Ensure the platform is fully lowered.

## NOTICE

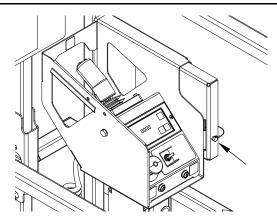
When the machine is shut down for overnight parking or battery charging, the emergency stop and power select switches must be positioned to off to prevent draining the batteries.

3. At the ground control station, turn the platform - ground selector key switch to OFF and remove the key to disable the machine and prevent unauthorized use.

**Note:** For added protection, the platform control station can be secured to its mounting plate.

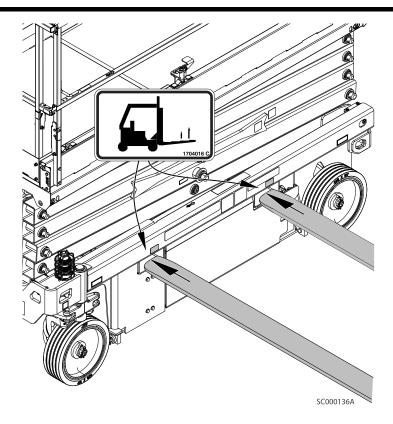
Additionally, the side compartment doors can be secured by placing a padlock through the holes provided just below the door latch on each door.

- 4. At the ground control station, depress emergency stop switch to the off position.
- 5. If necessary, cover the platform control box, instruction placards, caution and warning decals so that they will be protected from hostile environment.
- Chock at least two wheels when parking the machine for an extended period of time.

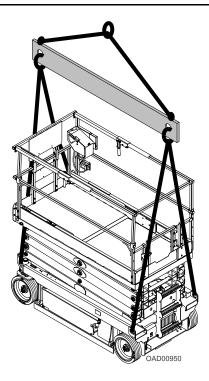


To prevent unauthorized removal, the platform control station can be secured to its mount by replacing the lock pin located on its mounting tab with a keyed or combination lock.

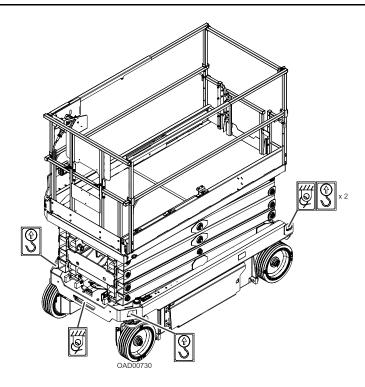
### 3.14 MACHINE LIFTING AND TIE DOWN



The machine may be lifted using a fork lift truck. Lift only using the built-in fork lift pockets on the side of the machine, and only with the platform in the stowed position. Adjust the width of the forklift truck, lifting tines to properly fit the machine forklift pockets. Slide the forklift tines into the forklift pockets and carefully lift machine.



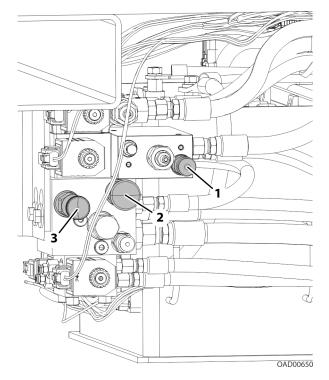
The machine may also be lifted using a spreader bar and four equal length straps or chains capable of supporting the full gross weight of the machine. Lift only using the lifting lugs provided at the four corners of the machine. When transporting the machine, fully lower the platform (stowed position) and secure the machine to the truck or trailer deck. There are two tie-down/lift lugs at the rear of the machine, and two tie-downs and one lifting lug at the front of the machine.



### **3.15 TOWING**

It is not recommended to tow this machine except in the event of an emergency such as a machine malfunction or total machine power failure.

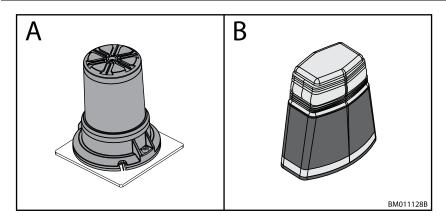
### 3.15.1 Hydraulic Brake Release



- 1. Chock wheels or secure machine with tow vehicle.
- Press in the Emergency Stop switch at the ground control console to turn off power.
- 3. Open the right side compartment door and locate the main hydraulic control valve.
- 4. Perform the following to set the drive motor control valve to tow mode:
  - 1. On the drive control valve locate the tow mode needle valve knob (1). Screw out the valve until it stops.
  - **2.** On the main valve body, to release the brakes, push the black brake override button (2) in. A detent will hold the valve in place).
  - **3.** Pump the red knob (3) until pressure builds, approximately 5 to 10 strokes. The brakes should now be released.
  - **4.** After towing is complete, chock the wheels. Release the black brake override button (2) and screw the tow mode needle valve knob (1) all the way in to reset the hydraulic brake.

**Note:** If machine is disabled to a point where the hydraulic system cannot be operated, the steer circuit will also not be operational. Then the machine will only track in the direction the front wheels are currently positioned.

#### 3.16 BEACONS



A. Beacon

B. LED Motion / Amber Beacon (CS550)

**Note:** Image for reference only. Beacon design may vary based on beacon type, machine model and installation location.

### 3.16.1 ClearSky® LED Motion / Amber Beacon (CS550)

The ClearSky® CS550 is installed on ClearSky Smart Fleet™ equipped machines.

The CS550 can function as a machine beacon using multiple colors and flash patterns for communication and identification purposes. In addition to amber, colors include: red, blue, green, cyan, and white. The ClearSky Smart Fleet mobile app can command visual alerts or audible alarms to assist in machine identification.

The CS550 also functions as a visible connectivity point for ClearSky Smart Fleet. Refer to the ClearSky Smart Fleet section for more information.

#### 3.16.2 Amber Beacon

This amber-colored beacon flashes at a constant rate to alert those nearby that the machine is in an active work state. The device may also use different flash patterns to identify specific machine alerts.

#### 3.17 CLEARSKY SMART FLEET™

ClearSky Smart Fleet™ integrates on-machine hardware with web-based software and a mobile app to provide fleet management data and analytics. Personnel with the appropriate permissions can access telematics and machine identification data using a dashboard visible in the ClearSky Smart Fleet web portal or the ClearSky Smart Fleet mobile app. (Navigation and visual configuration may vary between the web portal or mobile app.)

Features include machine monitoring such as fuel level and battery charge, remote analyzer tasks including diagnostic trouble codes or system alerts, and access control (if available) restrictions.

Refer to the Access Control and Beacons sections of this manual for more information. Visit the ClearSky section of the JLG website for more resources and information about accessing web portal or mobile app data.

# 3.18 ACCESS CONTROL - CLEARSKY SMART FLEET™ (IF EQUIPPED)

# NOTICE

Operator access to the machine may be placed into a restricted state remotely.

If a modification to a restricted state is required, contact the ClearSky Smart Fleet™ account owner. Only authorized personnel can make changes from within the web portal or mobile app.

This machine may be equipped with ClearSky Smart Fleet Access Control. Using the ClearSky Smart Fleet mobile app or web portal (remotely or locally), the machine can be placed into restricted states that limit machine functionality for all operators.

By using this machine, the operator acknowledges Access Control functionality, including restricted states, and accounts for it in their safe use plan.

### Restricted states may include:

- Speed Restricted Machine drive speed is restricted to low speed and lift speed is reduced.
- Speed and Function Restricted Machine drive speed is restricted to low speed and the platform is restricted to a fully-lowered position. In this state, once the platform is fully lowered, it is not permitted to leave that defined position.
- 3. Locked Out Machine has been locked out and will not operate (including engine start, if applicable).

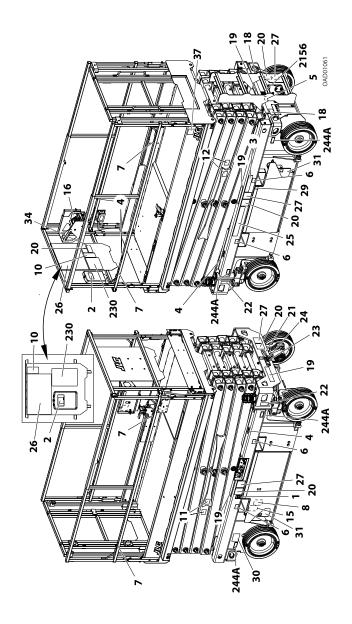
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### **Machine Controls, Indicators, and Operation**

**Note:** Restricted functionality may occur if the CS550 (ClearSky® LED Motion / Amber Beacon) is damaged or removed. A protective cage is available through JLG.

Machines equipped with ClearSky Smart Fleet Access Control are also equipped with the CS550. Refer to the ClearSky Smart Fleet and Beacons sections of this manual for more information.

### 3.19 SAFETY DECAL LOCATIONS



MOL70/AUS (1001222131)	1701504	1701640	1705670	1703819	1703822	1704016	1704277	1704412	1	l	1001228641	1001228642	-	_		1001132359	-	1001162864	1705673	1705671
CE/UKCA (1001222130)	1701504	1701640	1705670	1703819	1703822	1704016	1704277	1704412	-	-	1001228641	1001228642	-	_	_	1001132359	_	1001162864	1705673	1705671
ENG/FRE (1001222129)	1701504	1701640	1704339	1703819	1703822	1704016	1704277	1704412		1705723	1001228641	1001228642	I		1001131270	1001132359		1001162864	1001215755	1001211779
ENG/SPA (1001222128)	1701504	1701640	1704339	1703819	1703822	1704016	1704277	1704412	1	1705720	1001228641	1001228642	1			1001132359	1	1001162864	1001215754	1001211779
SPA/POR (1001222127)	1701504	1701640	1704341	1703819	1703822	1704016	1704277	1704412	1	1705726	1001228641	1001228642	I		1	1001132359	1	1001162864	1001216650	1001215748
ENG/CHI (1001222126)	1701504	1701640	1704344	1703819	1703822	1704016	1704277	1704412	-	1705946	1001228641	1001228642	_	_	_	1001132359	_	1001162864	1001215752	1001211779
ENG/KOR (1001222125)	1701504	1701640	1707022	1703819	1703822	1704016	1704277	1704412	I	1706057	1001228641	1001228642	I	ı	I	1001132359	I	1001162864	1001215751	1001211779
ENGLISH (1001222124)	1701504	1701640	1703813	1703819	1703822	1704016	1704277	1704412	ı	1705686	1001228641	1001228642	ı	1	1001131270	1001132359	ı	1001162864	1001211777	1001211779
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MOL70/AUS (1001222131)	1001212290	1001212291	1001212292	1001212293	1001146794	I	I	I	l	I	1001225620	1001225621	1001225622	I	I	1001229804	1001224553	-
CE/UKCA (1001222130)	1001212290	1001213442	1001212292	1001212293	1001146795	I	I	I	1702155	I	1001225620	1001225621	1001225622	I	I	1001220378	1001224553	1001173703
ENG/FRE (1001222129)	1001212290	1001213442	1001212292	1001212293	1001146794	1704684	1001215749	I	1702155	1001223971	1001225620	1001225621	1001225622	ı	I	1001220378	1001224553	-
ENG/SPA (1001222128)	1001212290	1001213442	1001212292	1001212293	1001146794	1704691	1001215748	I	1702155	1001224049	1001225620	1001225621	1001225622	I	I	1001220378	1001224553	-
SPA/POR (1001222127)	1001212290	1001213442	1001212292	1001212293	1001146794	1704699	1001216648	I	1702155	1001224052	1001225620	1001225621	1001225622	I	I	1001220378	1001224553	-
ENG/CHI (1001222126)	1001212290	1001213442	1001212292	1001212293	1001146794	1705195	1001215747	I	1702155	1001224051	1001225620	1001225621	1001225622	Ι	1001244298	1001220378	1001224553	-
ENG/KOR (1001222125)	1001212290	1001213442	1001212292	1001212293	1001146794	1001162115	1001215750	I	1702155	1001224048	1001225620	1001225621	1001225622	I	I	1001220378	1001224553	-
ENGLISH (1001222124)	1001212290	1001213442	1001212292	1001212293	1001146794	1703816	-	ı	1702155	1001223055	1001225620	1001225621	1001225622	1001231801	ı	1001220378	1001224553	_
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Note: Reference applicable Illustrated Parts Manual for decal description.

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# SECTION 4 Emergency Procedures

#### 4.1 GENERAL

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

#### 4.2 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, JLG must 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 incident, thoroughly inspect the machine. Do not elevate the platform until it is certain that all damage has been repaired and that all controls are operating correctly. Test all functions first from the ground control station then from the platform control console.

#### 4.3 EMERGENCY OPERATION

#### 4.3.1 Use of Ground Controls

# NOTICE

Know how to use the ground controls in an emergency situation.

Ground personnel must be thoroughly familiar with the machine operating characteristics and the ground control functions. Training should include operation of the machine, review and understanding of this section and hands-on operation of the controls in simulated emergencies.

### 4.3.2 Operator Unable to Control Machine

If the platform operator is unable to operate or control the machine:

- Other personnel should operate the machine from ground controls only as required.
- Only qualified personnel on the platform may use the platform controls. DO NOT CONTINUE OPERATION IF CONTROLS DO NOT FUNCTION NORMALLY.
- Rescue equipment can be used to remove the platform occupant(s). Cranes and forklifts can be used to stabilize motion of the machine.

### 4.3.3 Platform Caught Overhead

If the platform 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, carefully free the platform from the object.
- 5. Once clear, restart the machine and return the platform to a safe position.
- 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.

### 4.3.4 Righting of Tipped Machine

A fork truck of suitable capacity or equivalent equipment should be placed under the elevated side of the chassis, with a crane or other suitable lifting equipment used to lift the platform while the chassis is lowered by the forklift or other equipment.

#### 4.4 PLATFORM MANUAL DESCENT CONTROL

The platform manual descent control is used in the event of total power failure to lower the platform using gravity. The manual descent control T-handle is located on the left rear of the machine, just below the platform ladder. Look for the instruction decal located beside the release handle.

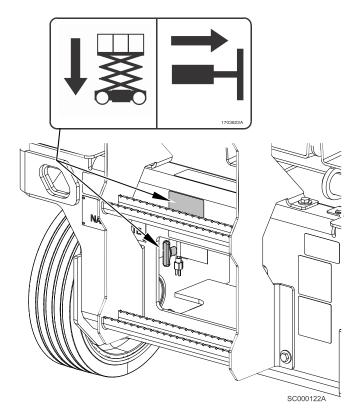
The lowering procedure is as follows:

1. Locate the manual descent control red T-handle.

# **A WARNING**

Keep hands and arms out of the path of the scissor arms and platform while lowering.

2. Grasp the T-handle and slowly pull out to lower the scissor arms/platform. When the platform is lowered to desired level, allow the T-handle to return to its closed position.



### 4.5 CLEARSKY SMART FLEET™ - LOCKED OUT STATE

The machine may be placed into a Locked Out state remotely through ClearSky Smart Fleet.

If the CS550 (ClearSky® LED Motion / Amber Beacon) is removed from a machine or disconnected from the control system through damage, the machine may also be placed into a Locked Out state.

### NOTICE

Contact the ClearSky Smart Fleet™ account owner if the machine is in a Locked Out state.

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## **SECTION 5 Accessories**

### **5.1 AVAILABLE ACCESSORIES**

**Table 6. Available Accessories** 

	Market						
ACCESSORY	ANSI	ANSI Export	CSA	CE/ UKCA	AUS	MOL70	China (GB)
DC/AC Power Inverter	✓						
Workstation	✓	✓	✓	✓	✓	✓	✓
Electrician's Tree	✓	✓	✓	✓	✓	✓	✓
Pipe Racks	✓	✓	✓	✓	✓		<b>✓</b>
Panel Carrier	✓	✓	✓	✓	✓	✓	✓
Machinist's Vise	✓	✓	✓	✓	✓	✓	✓
Platform Work Lights	✓	✓	✓	✓	✓	✓	✓
Platform Rail Padding	✓	✓	✓	✓	✓	✓	✓
Anti-Vandalism Package	✓	✓	✓	✓	✓	✓	✓
Platform Extension Handles	✓	✓	✓	✓	✓	<b>√</b>	<b>√</b>
Footswitch						✓	
Magnetic Gate Latch	✓	✓	✓	✓	✓	✓	✓
SkySense®	✓	✓	✓	✓	✓	✓	✓

**Table 7. Options/Accessories Relationship Table** 

ACCESSORY	COMPATIBLE WITH (Note 1)	INCOMPATIBLE WITH	INTERCHANGA BLE WITH (Note 2)
DC/AC Power Inverter	ALL	_	
Workstation	Inverter, Electrician's Tree, Pipe Racks, Panel Carrier, Anti-Vandal Package, Machinist's Vise, Footswitch, Magnetic Gate Latch	Platform Work Lights, Rail Padding, Extension Handles, Dual Rails	1

Table 7. Options/Accessories Relationship Table (continued)

ACCESSORY	COMPATIBLE WITH (Note 1)	INCOMPATIBLE WITH	INTERCHANGA BLE WITH (Note 2)
Electrician's Tree	Inverter, Workstation, Pipe Racks, Panel Carrier, Anti-Vandal Package, Machinist's Vise, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	Platform Work Lights, Rail Padding	I
Pipe Racks	Inverter, Workstation, Electrician's Tree, Panel Carrier, Anti-Vandal Package, Machinist's Vise, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	Platform Work Lights, Rail Padding	П
Panel Carrier	Inverter, Workstation, Electrician's Tree, Pipe Racks, Anti-Vandal Package, Machinist's Vise, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	Platform Work Lights, Rail Padding	
Machinist's Vise	Inverter, Workstation, Electrician's Tree, Pipe Racks, Panel Carrier, Platform Work Lights, Anti-Vandal Package, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	Rail Padding	I
Platform Work Lights	Inverter, Anti-Vandal Package, Machinist's Vise, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	Workstation, Electrician's Tree, Pipe Racks, Panel Carrier, Rail Padding	-
Platform Rail Padding	Inverter, Anti-Vandalism Package, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	Workstation, Electrician's Tree, Pipe Racks, Panel Carrier, Work Lights, Machinist's Vise	_
Anti-Vandalism Package	Inverter, Workstation, Electrician's Tree, Pipe Racks, Panel Carrier, Platform Work Lights, Rail Padding, Machinist's Vise, Extension Handles, Footswitch, Dual Rails, Magnetic Gate Latch	_	_
Platform Extension Handles	Electrician's Tree, Pipe Racks, Panel Carrier, Platform Work Lights, Anti-Vandal Package, Rail Padding, Machinist's Vise, Inverter, Footswitch, Dual Rails, Magnetic Gate Latch		-
Footswitch	ALL	_	

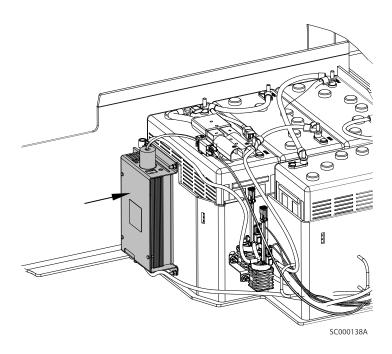
Table 7. Options/Accessories Relationship Table (continued)

ACCESSORY	COMPATIBLE WITH (Note 1)	INCOMPATIBLE WITH	INTERCHANGA BLE WITH (Note 2)		
Magnetic Gate Latch	ALL	_	_		
SkySense	Inverter, Anti-Vandalism Package, Footswitch	Electrician's Tree, Pipe Racks, Panel Carrier, Machinist's Vise, Platform Worklights, Platform Rail Padding, Platform Extension Handles, Magnetic Gate Latch	_		
Note 1: Any accessory not listed under "COMPATIBLE WITH" is assumed to be incompatible.					
Note 2: Can be used on same unit but not simultaneously.					

### 5.2 DC/AC POWER INVERTER

The DC to AC Power Inverter converts DC voltage from the onboard system batteries to AC voltage for use at the platform AC output receptacle.

The inverter module is mounted on the inside of the battery compartment door.



1. Inverter Module

### 5.2.1 Specifications

DESCRIPTION	SPECIFICATION
Electrical System Voltage (DC)	24V
Power Inverter:	Power Bright
DC Input:	
DC Input Voltage: Operating Temperature:	20 to 30 VDC -4° F (-20° C) to 113° F (+45° C)
AC Output:	

DESCRIPTION	SPECIFICATION
Output Power (Continuous): Output Power (Surge): Output Power (AC): Output Voltage (AC): Output Frequency: Type:	900W 1800W 7.5A 117V+/- 10% 60 Hz Modified Sine Wave
Protection:	
Output Reverse DC Polarity:	3 X 25A Replaceable Fuse

### **5.2.2 Safety Precautions**

### A DANGER

This accessory may cause shock or electrocution if used improperly. Treat inverter output the same as commercial ac power.

- This inverter will only operate from a 24V power source. Do not attempt to connect the inverter to any other power source, including any AC power source.
- Do not allow water or other liquids to contact the inverter.
- Do not use appliances with damaged or wet cords.
- Route appliance cords and extension cords to prevent accidental pinching, crushing, abrading, and tripping hazards.
- Do not use the inverter near flammable materials or in any locations that may accumulate flammable fumes or gases. This is an electrical device that can briefly spark when electrical connections are made or broken.

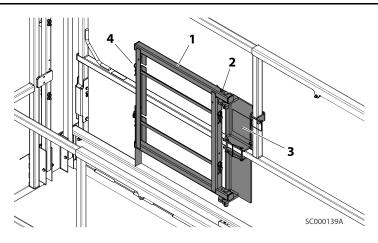
### 5.2.3 Operation

- 1. Set the inverter ON/OFF switch to the ON position at the ground control station.
- 2. Only plug in tools or appliances rated within the maximum output wattage at the platform AC receptacle mounted on the platform.

#### 5.3 ELECTRICIAN'S TREE

The Electrician's Tree provides a stable rack on which to hang spools of wire. Its design is ideal for pulling wire and reducing friction associated with ground-based wire spools.

**Note:** This accessory is rated for INDOOR USE only. INDOOR USE is use in areas shielded from wind so that there is no wind.



1. Electrician's Tree Assembly

3. Decal (Weight)

2. Release Pin

4. Hitch Pins

### 5.3.1 Safety Precautions

### **A WARNING**

This accessory affects the overall platform capacity. Refer to the capacity decal On the accessory and adjust accordingly.

- Ensure no personnel are beneath the platform.
- Do not exit the platform over the rails, or stand on the rails
- Do not pull wire by driving the machine.
- Only pull wire along the long axis of the machine with the rack in the working position.
- Ensure wire spools rotate freely.
- · Return to the stowed position when not in use.

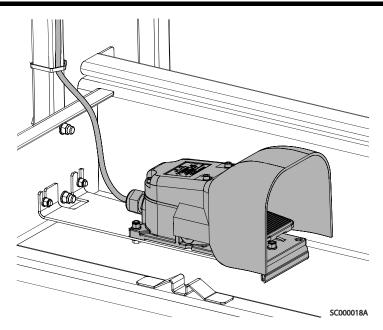
### 5.3.2 Preparation and Inspection

- Ensure the rack is secured to the platform.
- Check for missing or damaged components. Replace if necessary.
- Check for loose nuts and bolts. If necessary, torque according to the Torque Chart specifications in Section 1 of the Service Manual.
- Replace any missing or illegible decals.
- Ensure release pins are intact and function properly.

### 5.3.3 Operation

- 1. Remove release pins and rotate the rack from the stowed position.
- Pull the hitch pin for the spool rod to be loaded.
- 3. Load the spools onto the rod and replace the hitch pin.
- 4. Swing the rack into working position and lock into place by replacing the release pin.
- 5. When not in use, remove spools and return the rack to the stowed position.

### 5.4 FOOTSWITCH



The footswitch serves as another enable switch in the function control circuit. It must be depressed in sequence with the platform control joystick trigger switch to enable operation of machine functions when using the platform controls. Power is removed from the platform controls when the footswitch is released.

**Note:** This accessory is only available in MOL70 and Korean markets.

### 5.4.1 Operation

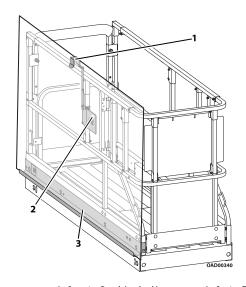
To operate a function, engage the footswitch and joystick trigger in any sequence before operating a function.

### 5.5 PANEL CARRIER

The Panel Carrier can transport flat sheets or panels to an elevated site by positioning them in a channel on the outside of the platform. It consists of a carrier tray that runs parallel to the length of the platform and an adjustable bracket mounted to the handrail to hold material in place.

The panels can measure up to 4 ft  $\times$  8 ft (1.22 m  $\times$  2.4 m), or approximately 32 ft sq. (3 m sq.).

**Note:** This accessory is rated for INDOOR USE only. INDOOR USE is use in areas shielded from wind so that there is no wind.



- 1. Adjustable Bracket
- 2. Capacity Decal (on back)
- 3. Carrier Tray

### 5.5.1 Safety Precautions

### **A WARNING**

Multiple material-handling accessories can be installed but only one may be loaded at a time unless approved by JLG Industries, Inc.

### **A WARNING**

This accessory affects the overall platform capacity. Refer to the capacity decal and adjust accordingly.

### **A WARNING**

When the carrier tray is loaded, the increase of area exposed to wind will decrease stability. Refer to the decal for maximum panel size and wind speed.

- Ensure no personnel are beneath the platform.
- Do not exit the platform over the rails, or stand on the rails.
- Remove the tray when not in use.

### 5.5.2 Preparation and Inspection

- Ensure all components are secured to the platform.
- Check for any missing or damaged components. Replace if necessary.
- Check for loose nuts and bolts. If necessary, torque according to the Torque Chart specifications in the Service Manual.
- Replace any missing or illegible decals.
- · Replace any torn or frayed straps.

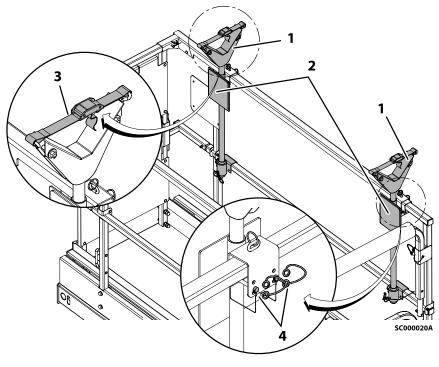
### 5.5.3 Operation

- 1. Attach the carrier tray to the outside of the platform.
- 2. Load the Panel Carrier with material and secure with the adjustable bracket.
- 3. Position the panel to its desired location.
- 4. Remove the carrier tray when finished.

#### 5.6 PIPE RACKS

Pipe Racks store pipe or conduit inside the platform in order to prevent rail damage and optimize platform utility. The accessory consists of two racks attached to the lower platform handrail with adjustable straps that secure the load in place.

**Note:** This accessory is rated for INDOOR USE only. INDOOR USE is use in areas shielded from wind so that there is no wind.



- 1. Pipe Racks (Working Position)
- 2. Capacity Decals

- 3. Tie-Down Strap
- 4. Locking Pins

### **5.6.1** Safety Precautions

### **A WARNING**

This accessory affects overall platform capacity. Refer to capacity decals and adjust accordingly. Weight in racks plus weight in platform must not exceed rated capacity.

### NOTICE

Retract platform extension before attaching pipe racks and loading material.

### NOTICE

Maximum weight in racks is 45 kg (100 lb) evenly distributed between racks. Max length is 6 m (20 ft). Max circumference of material is 180 mm per pipe.

- Do not exit platform over rails or stand on rails.
- Do not drive the machine without material secured.
- Use this accessory on approved models only.
- Return racks to the stowed position when not in use.

### 5.6.2 Preparation and Inspection

- Ensure both racks are mounted and securely fastened to inside of platform rails.
- Check for missing or damaged components. Replace if necessary.

### 5.6.3 Operation

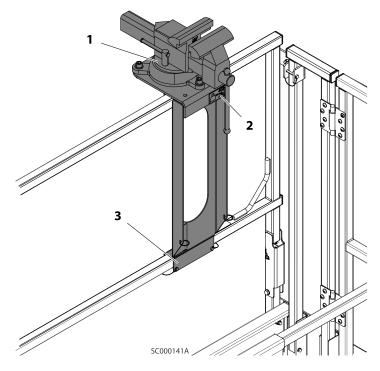
- 1. To prepare racks for loading, remove locking pins, rotate each rack 90 degrees from stowed to working position, then secure with locking pins.
- 2. Place material onto racks with weight evenly distributed between both racks. Do not exceed the rated capacity stated on the decal.
- 3. Route the tie-down 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.

5. When not in use, remove locking pins, rotate racks 90 degrees to the stowed position, then secure locking pins.

#### 5.7 MACHINIST'S VISE

The Vise allows the operator to secure material for assembling, disassembling, drilling, etc., while working from the platform.



- 1. Vise Assembly
- 2. Capacity Decal (Weight)

3. Attach Pins

**Note:** If the WorkStation is installed, it must be mounted to the opposite side of the platform from the Vise.

### 5.7.1 Safety Precautions

### **A** WARNING

This accessory affects the overall capacity of the platform. refer to the capacity decal and adjust accordingly.

• Do not drive machine with material in the Vise.

### 5.7.2 Preparation and Inspection

- Ensure the Vise is secured to the platform.
- Check for any missing or damaged components. Replace if necessary.

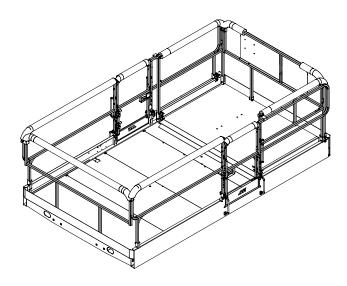
#### Accessories

- Check for loose nuts and bolts. If necessary, torque according to the Torque Chart specifications in Section 1 of the Service Manual.
- Replace any missing or illegible decals.
- · Remove when not in use.

### 5.7.3 Operation

- 1. Load material into the Vise.
- 2. Tighten the handle until secure.
- 3. Begin working.

#### 5.8 PLATFORM RAIL PADDING



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Platform Rail Padding provides bumpers to the top platform rails in order to prevent damage to the platform itself as well as objects it may come into contact with during operation.

### 5.8.1 Platform Rail Padding with Proximity Switches

This accessory is also available with proximity switches, which adds an attached padded frame to the bottom of the platform and eight proximity switches mounted to every corner of the platform.

#### **Platform Mode**

If a proximity switch is triggered by a nearby obstruction, the horn sounds and all motion immediately stops. In order to continue normal operation:

- 1. Release the selected function.
- 2. Press and hold the Horn button on control console.
- 3. Reverse the direction of the selected function.

**Note:** The machine will move in creep mode until proximity switch is no longer triggered.

4. Continue normal operation.

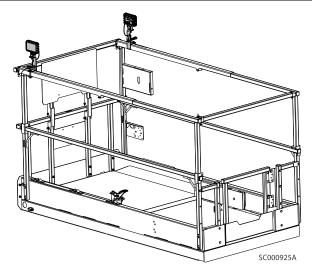
#### **Ground Mode**

If a proximity switch is triggered by a nearby obstruction, the horn sounds and all motion immediately stops. In order to continue normal operation:

- 1. Release selected function, then reverse the direction.
- 2. Re-engage the selected function.

**Note:** The machine will move in creep mode until proximity switch is no longer triggered.

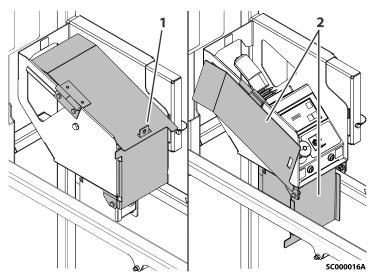
### 5.9 PLATFORM WORKLIGHTS



The Platform Worklights accessory consists of two 12V lights mounted to the platform railings.

### 5.10 ANTI-VANDALISM PACKAGE

The Anti-Vandalism Package consists of two lockable covers for the Platform and Ground Control Stations that prevent unauthorized use of the machine. Locks are not provided with this kit. This accessory is available for both control stations.



**Figure 14. Platform Control Station** 

1. Lock Position (Covers Closed)

2. Covers Open

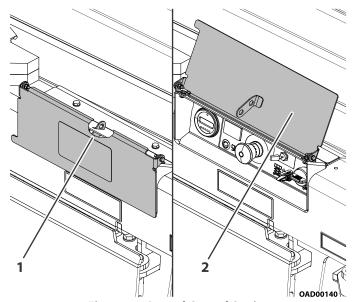
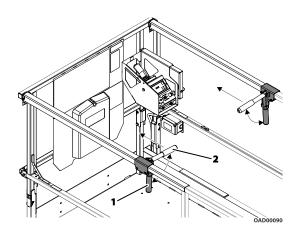


Figure 15. Ground Control Station

1. Lock Position (Cover Closed)

2. Cover Open

### 5.11 PLATFORM EXTENSION HANDLES



1. Extension Handle in the Stowed Position

2. Extension Handle in the Extension Position

The Platform Extension Handles are mounted to the top rails of the extension platform at the roller tabs. When rotated up 90°, the handles provide the operator an optional grip to push the extension platform out from its stowed position.

### 5.11.1 Operation

- 1. Swing both extension handles up 90° to the extend position.
- While standing on the main platform, release the extension platform lock mechanism with one foot.
- 3. Grasp both handles and push platform extension out until locked in either of the two other locked extension positions.

#### 5.12 MAGNETIC GATE LATCH

The Magnetic Gate Latch ensures the platform gate latches securely when closed.

### 5.12.1 Operation

Grasp handle and swing gate open.

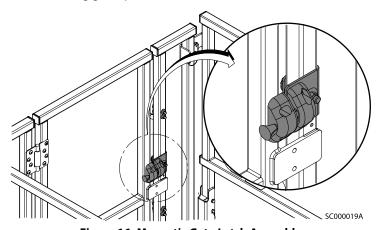


Figure 16. Magnetic Gate Latch Assembly

### 5.13 SKYSENSE™

#### 5.13.1 General Information

### **A** WARNING

SkySense is not intended to replace or reduce the need for the operator to be aware of the environment around the machine. hazards that will cause serious injury or death may not be prevented or reduced by SkySense. The operator must always look in the direction of travel, avoid power lines, avoid obstacles that could strike the machine or persons in the platform, and follow all instructions on machine placards and in this manual.

The operator must not rely on SkySense as a substitute for following the instructions and warnings on machine placards and in this manual.

### NOTICE

Read and understand these instructions in their entirety before operating the machine.

### NOTICE

SkySense is intended to assist the operator. SkySense may not detect certain objects depending on shape, type of material, or orientation of the object to the sensors. It is the operator's responsibility to be aware of their surroundings at all times.

**Note:** SkySense is not active when operating the machine from the ground controls.

### 5.13.2 Preparation and Inspection

Pre-Operation Inspection:

- 1. Inspect each of the SkySense tubes for dents, cracks, or other damage.
- 2. Inspect each Skysense sensor for any damage to the housing or sensor.

#### To test the system:

- Ensure there are no obstructions within 10 feet around or above the platform and the machine is on a smooth, firm surface within the limits of the maximum operating slope.
- 2. From the platform control console, lift and lower the platform.
- Place a hand or object 6" to 12" above one of the sensors, then lift up the platform. Platform movement should stop, the LED indicator should be red, and the alarm should sound. If the alarm is muted, the mute button light should be red.
- 4. Release the joystick and enable switch.
- 5. Place a hand or object 6" to 12" above one of the sensors. Press the override button on the notification unit and lift the platform. The platform should lift, the LED indicator should be red, and the alarm should sound. If the alarm is muted, the mute button light should be red.
- 6. Remove hand or object from the sensor zone, then release the joystick and enable switch. Lower the platform to stowed.
- 7. Lift the platform with no hand or object above the sensor. The platform should lift without interruption.
- 8. Lower the platform to stowed.

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### 5.13.3 Operation

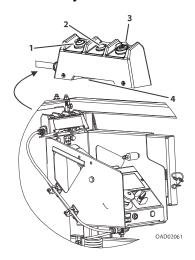
SkySense slows a machine's drive speed to elevated drive speed when it is a certain distance away from an object, known as the "warning zone." If the machine continues to approach the object and moves into the "stop zone," SkySense stops all machine functions.

For proportional functions that are activated by the joystick, the size of the warning zone varies based on the amount of joystick activation. The stop zone always activates at the same distance from the object regardless of the joystick's position.

SkySense is active during the following functions:

- Lift Up
- Drive Forward
- Drive Reverse

### 5.13.4 Notification Assembly



- 1. Override Button
- 2. Bi-Color LED
- 3. Indicator Speaker OFF
- 4. Indicator Speaker (Underneath Unit)

#### 5.13.5 LED Indicator

A bi color LED indicator on the platform control box signals SkySense activity.

- No LED: Normal operation.
- **LED Flashing Yellow:** Machine is in SkySense warning zone and will reduce to elevated drive height speed. Flash frequency correlates to proximity of the object.

- LED Red: Machine is in SkySense stop zone and all machine functions will cease.
- LED Flashing Red: SkySense sensor is obstructed or damaged. Obstructions must be removed and proper function verified. Damaged sensors must be replaced.

### 5.13.6 SkySense Alarm

Activation of SkySense is also signaled by an audible alarm that indicates SkySense activity when reaching the warning or stop zones.

In the warning zone, the audible alarm will pulse and increase in frequency as the machine moves closer to the object. In the stop zone, the alarm will sound a continuous tone.

Additionally, when the machine is in the stop zone, the platform control panel audible alarm will sound, indicating activation of the Soft Touch system. Reset the system by releasing the trigger switch.

Audible SkySense alarms can be muted, although LEDs will continue to light.

### 5.13.7 Override Button

The yellow override button allows operators to bypass normal SkySense operation in order to move closer to an object within the stop zone.

When the operator overrides SkySense via the override button to get closer to a work surface, the machine will maintain creep speed and flash the appropriate indicator color based on location in either the warning or stop zones.

**Note:** Override button is only required to be engaged if the operator desires to move the platform closer to an object that is in or entering the stop zone.

### 5.13.8 SkySense Coverage Areas



**Level One** 

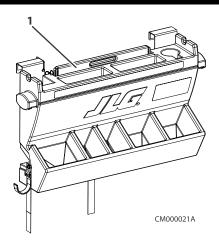
**Note:** Sensor Cones shown are approximations for reference only.



**Level Two** 

**Note:** Sensor Cones shown are approximations for reference only.

### 5.14 WORKSTATION



1. Adjustable Work Surface

The Workstation offers an adjustable work surface and additional space for storage of tools and objects.

**Note:** This accessory is rated for INDOOR USE only. INDOOR USE is use in areas shielded from wind so that there is no wind.

### 5.14.1 Safety Precautions

### **A WARNING**

This accessory affects the platform capacity. Refer to the capacity decal and adjust accordingly. Do not overload the platform.

- Return the adjustable work surface to the stowed position when finished working.
- Do not drive the machine unless materials are properly secured or stored.

### 5.14.2 Preparation and Inspection

- Ensure the Workstation is secured to the platform.
- Check for missing or damaged components. Replace if necessary.
- Check for loose nuts and bolts. Torque to JLG Torque Chart Specifications if necessary.
- Replace any missing or illegible decals.

### 5.14.3 Operation

To use the adjustable work surface, lift the handle and position across the Workstation.

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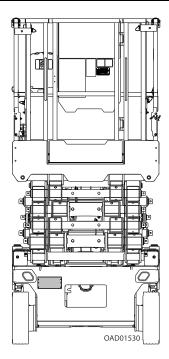
# SECTION 6 General Specifications and Operator Maintenance

#### 6.1 GENERAL

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 & Maintenance Manual.

### 6.2 SERIAL NUMBER IDENTIFICATION



**Note:** Ladder removed for illustrative purposes.

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### 6.3 MACHINE SPECIFICATIONS

DESCRIPTION	R4045
PLATFORM	
Maximum Platform Height (Ground to Platform Floor - Elevated)	39.3 ft (11.9 m)
Machine Height (Ground to Top of Rails)	8 ft 4 in (2.549 m)
Machine Height - Rails Folded (Ground to Top of Folded Rails)	6 ft 3 in (1.903 m)
Platform Lift Time (No Load)	
Lift Up: Lift Down:	63-73 seconds 38-44 seconds
Platform Lift Time (Rated Load)	
Lift Up: Lift Down:	70-80 seconds 35-41 seconds
Electronic Arm Guards (Activation Height)	75 in (190.5 cm)
DRIVING	
Maximum Allowable Operating Slope (Platform Fully Elevated)	
Front to Back: Side to Side:	3.5° 1.5°
Maximum Stowed Travel Side Slope	2.5°
Maximum Drive Speed (FWD/REV) (Seconds to Drive 25 ft (7.62 m)	
Stowed: Elevated:	8 seconds (2.0 mph (3.4 kph) 34 seconds - (0.5 mph (0.8 kph)
Maximum Stowed Travel Grade (Gradeability)	25% (14°)
Elevated Drive Height	
Indoor:	39 ft (11.9 m)
Outdoor:	28.7 ft (8.75 m) - All Other Markets 39 ft (11.9 m) - AUS
Turning Radius	
Inside: (Curb to Curb) Outside:	0 in (0 cm) 92 in (233.3 cm)
CHASSIS	

### **General Specifications and Operator Maintenance**

DESCRIPTION	R4045
PLATFORM	
Approximate Gross Machine Weight ANSI/CE/UKCA/CSA/GB: AUS: MOL70:	7,000 lb (3175 kg) 7,525 lb (3413 kg) 7,470 lb (3388 kg)
Wheelbase	80 in (2.032 m)
Machine Overall Width	45 in (1.143 m)
Maximum Tire Load (per wheel)	2,680 lb (1216 kg)
Ground Bearing Pressure	137 psi (943 kPa)
Ground Clearance	
PHP Retracted: PHP Deployed:	5 in (126 mm) 1.26 in (32 mm)
Break Over Angle (Grade)	14.5° (26%)
Maximum Hydraulic Pressure	
Main Relief: Steer Relief: Lift Relief:	3000 psi (207 bar) 1250 psi (86 bar) 2500 psi (172 bar)

### **6.3.1 Tilt Activation Setting**

MODEL	TILT SETTING (Front to Back)	TILT SETTING (Side to Side)	Maximum Deck Elevation		
		1.50° - indoor 1.50° - outdoor	25 - 28.7 ft 31 ft - max.	7.6 - 8.7 m 9.4 - max.	
R4045	3.50°	2.00° - indoor 2.00° - outdoor	23 - 25 ft 27 - 31 ft	7 - 7.6 m 8.2 - 9.4 m	
		2.50° - indoor 2.50° - outdoor	0 - 23 ft 0 - 27 ft	0 - 7 m 0 - 8.2 m	

### 6.3.2 Platform Capacities

MARKET	MAXIMUM OPERAT ING HEIGHT	MAXIMUM PLAT FORM CAPACITY (1)	MAXIMUM CAPACITY ALLOWED ON PLAT FORM EXTEN SION	MAXIMUM PERSONS ALLOWED IN PLAT FORM	MAX. SIDE FORCE (Platform Fully Extended @ Max. Capacity)	MAXIMUM OPERAT ING WIND SPEED	ENVIRON MENT (2)
ANSI/CSA/ CE/UKCA/ AUS/GB	FULL	770 lb (349 kg)	250 lb (113 kg)	3 Persons + 242 lb (110 kg)	90 lb (400 N)	0 mph (0 m/s)	INDOOR
ANSI/CSA/ CE/UKCA/ AUS/GB	29 ft (8.8 m)	550 lb (250 kg)	250 lb (113 kg)	1 Person + 371 lb (169 kg)	45 lb (200 N)	28 mph (12.5 m/s)	OUTDOOR
AUS	FULL	300 lb (136 kg)	250 lb (113 kg)	1 Person + 124 lb (56 kg)	45 lb (200 N)	28 mph (12.5 m/s)	OUTDOOR
MOL70	FULL	400 lb (181 kg)	250 lb (113 kg)	2 persons + 47 lb (21 kg)	100 lb (445 N)	0 mph (0 m/s) 28 mph (12.5 m/s)	INDOOR OUTDOOR

Note: (1) Maximum Platform Capacity includes platform and platform extension.

### 6.3.3 Machine Dimensions

DESCRIPTION	R4045
Platform Height - Elevated(Ground to Platform Floor)	39.3 ft (12 m)
Platform Height - Stowed(Ground to Platform Floor)	55 in (140 cm)
Rail Height(Platform Floor to Top of Rail)	44 in (113.2 cm) -Folding Rail
Overall Height - (Ground to Top of Rail):(Rails Folded Down):	100 in (254 cm)75 in (190.3 cm)
Overall Machine Width	45 in (114.3 cm)
Overall Machine Length (w/ladder)	106 in (271.1 cm)
Platform Size - Length (Inside)	96 in (243.4 cm)
Platform Size - Width (Inside)	41 in (104.3 cm)
Wheelbase	80 in (203.2 cm)

<sup>(2)</sup> INDOOR USE is use of a MEWP in areas shielded from wind so that there is no wind. OUTDOOR USE is use of a MEWP in an environment that can be exposed to wind.

#### 6.3.4 Tires

DESCRIPTION	R4045
Size	16 in x 5 in(40.6 cm x12.7 cm)
Wheel Nut Torque(1-1/8 inch - Slotted Nut with Cotter Pin)	150 ft.lb. (203 Nm)

### 6.4 BATTERY MAINTENANCE AND CHARGING

### 6.4.1 Battery Maintenance and Safety Practices

**Note:** These instructions are for unsealed (wet) batteries only.

If machine is equipped with sealed batteries, no maintenance other than cleaning corroded battery terminals is required.

### **A** CAUTION

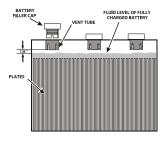
Ensure that battery acid does not come into contact with skin or clothing. Wear protective clothing and eyewear when working with batteries. Neutralize any battery acid spills with baking soda and water.

Battery acid releases an explosive gas while charging, allow no open flames, sparks or lighted tobacco products in the area while charging batteries. Charge batteries only in a well ventilated area.

Add only distilled water to batteries. When adding distilled water to the batteries, a non-metallic container and/or funnel must be used.

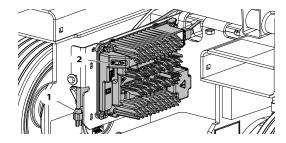
Check the electrolyte level of the batteries often, adding only distilled water when required. When fully charged, battery fluid level should be 1/8" below vent tubes.

- DO NOT fill to bottom of vent tubes.
- DO NOT allow fluid level to go below the top of the plates when charging or operating.



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### 6.4.2 Delta-Q - Battery Charger



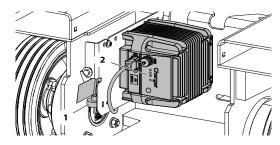
1. AC Voltage Input Plug

2. Charge Indicator LEDs

**Note:** Rear cross member and ladder shown removed for illustration purposes only.

- AC Power On BLUE LED ON
- Low State of Charge (Bottom Panel GREEN LED Flashing) (Top Panel GREEN LED OFF)
- High State of Charge (Bottom Panel GREEN LED ON) (Top Panel GREEN LED Flashing)
- Charge Complete (Bottom Panel GREEN LED ON) (Top Panel GREEN LED ON)
- Fault Indicator (RED LED ON)
- External Error Condition Caution (AMBER LED Flashing)

### 6.4.3 Green Power - Battery Charger (China Only)



1. AC Voltage Input Cable

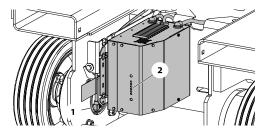
2. Charge Indicator LEDs

**Note:** Rear crossmember and ladder shown removed for illustration purposes only.

- Battery Charging (YELLOW LED AGM Flashes Quickly /FLOODED Remains ON/ AGM-FLOODED - Flashes Slowly)
- Charge Complete (GREEN LED ON)
- Fault Indicator (RED LED ON)

• Performing Self-Diagnostic - (YELLOW and GREEN LEDs Flashing Simultaneously)

### 6.4.4 Eagle Performance - Battery Charger



1. AC Voltage Input Cable

2. Charge Indicator LEDs

**Note:** Rear crossmember and ladder shown removed for illustration purposes only.

- Battery Type Indicator (YELLOW LED ON)
- Battery Charging (30%-60%-90% RED LED ON)
- Charge Complete (GREEN LED ON)
- No Battery Detected (30% RED Blinking)
- Overall Timer Shutdown (30-60-90% RED LEDs Blinking)
- Internal OverTemp Shutdown (30 90% RED LEDs Blinking)

### 6.5 BATTERY QUICK-DISCONNECT

Machines equipped with the battery quick disconnect allow all machine power to be easily disconnected at the battery without removing battery cables from the battery posts. To disconnect power, locate the RED quick-disconnect connector on top of the batteries inside the battery compartment and pull halves apart.



#### 6.6 LUBRICATION

### 6.6.1 Lubrication Capacities

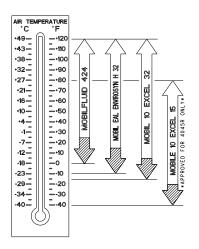
COMPONENT	R4045				
Hydraulic Reservoir(at Full mark)	6.6 gal (25 L)				
Hydraulic System(Including Reservoir)	7.9 gal (30 L)				

### 6.6.2 Lubrication Specifications

KEY	SPECIFICATIONS  Multipurpose Grease having a minimum dripping point of 350° F. Excellent water resistance and adhesive qualities, and being of extreme pressure type. (Timken OK 40 pounds minimum.)					
MPG						
EPGL	Extreme Pressure Gear Lube (oil) meeting API service classification GL-5 or MIL-Spec MIL-L-2105.					
НО	JLG Recommends - Mobil - Mobilfluid 424Mobil EAL ENVIRONSYN H 32Mobil SHC HYDRAULIC EAL 32EAL and SHC are compatible with each other.					

### 6.6.3 Hydraulic Oil Operating Temperature Chart





Fluid	Prope- rties		Base				Classi- fication		
Description	Viscosity @ 40°C (CsT, Typical)	Visc Index	Mineral Oils	Vegetable Oils	Synthetic	Synthetic Polyol Esters	Readilly Biodegradeable*	Virtually Non-toxic**	Fire Resistant***
Mobilfluid 424	55	145	Х		П				
Mobil EAL Envirosyn H 32	33	147			Х		Х		
Mobil 10 Excel 32	32	164	х		П			Х	
Mobil 10 Excel 15	15	168	Х					Х	

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Readily blodegradable classification indicates one of the following: ion>60 per EPA 560/6-82-003 (COZ Conversion>60 per EPA 560/6-82-003 per EPA 560/6-82-003 per EPA 560/6-80 per EPA 560/6-80
```

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#### 6.7 SAFETY PROP

### **A WARNING**

Never work under an elevated platform until it has been restrained from movement with the safety props, blocking or overhead sling.

### **A** CAUTION

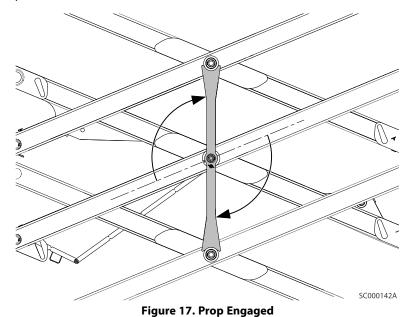
BOTH safety props must be used whenever maintenance performed on the machine requires the scissor arms to be raised and only with no load in the platform.

The safety props are located, one each side of the machine on the scissor arms. To engage the safety props:

- 1. From the Ground Control Station, raise the platform far enough to allow the safety props to be engaged.
- 2. Release the locking pin and rotate the prop on each side of machine. Always set both when engaging.
- 3. Lower the platform until the safety props rest against the safety prop stops on the arm set below it, stopping all downward movement of the platform/scissor arm assembly.

To disengage the safety props:

- 1. Raise the platform enough to release the safety props off the safety prop stops.
- 2. Rotate the prop assemblies until they align with the scissor arm and the release pin locks into the detent disk behind the arm.



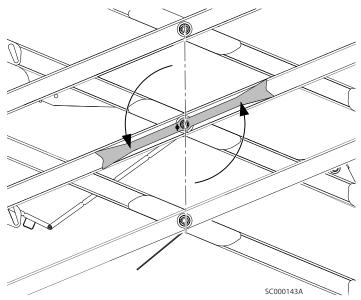


Figure 18. Prop Disengaged

# 6.8 HYDRAULIC OIL CHECK PROCEDURE

Lube Point(s) - Hydraulic Reservoir

Reservoir Capacity - Refer to Capacities

Lube - Hydraulic Oil

Interval - Check Daily

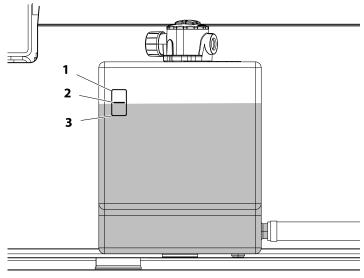
**Note:** Check the hydraulic oil level with the platform in the stowed position ONLY. Be certain the hydraulic oil has warmed to operating temperature before checking the oil level in the reservoir.

1. On the right side of the machine on the hydraulic compartment door there is a cutout (1) which allows viewing of the hydraulic oil tank marking (2). The reservoir is marked with a MAX (maximum) marking (2). The MIN marking (3) is the bottom edge of the cutout on the door. The oil level must be kept within these markings for the hydraulic system to operate properly.

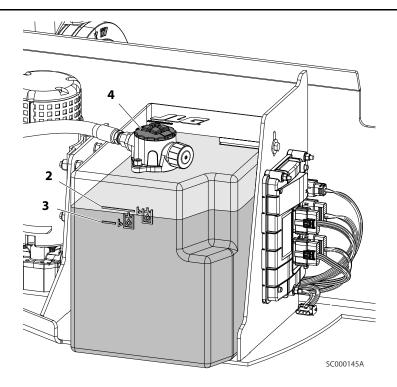
If additional oil is required, swing compartment door open and wipe all dirt and debris from the filler/filter cap (4) area. Remove filler cap and add proper grade of oil. Fill until oil level is close to the MAX marking (3), but not over the MAX marking.

**Note:** Care should be taken not to introduce any impurities (dirt, water, etc.) while cap is removed.

**Note:** Recommended lubricating intervals are based on machine operations under normal conditions. For machines used in multi-shift operations and/or exposed to hostile environments or conditions, lubrication frequencies must be increased accordingly.



SC000144A



### 6.9 TIRES AND WHEELS

# 6.9.1 Tire Wear and Damage

The tire and rim assemblies installed on machines have been approved by the tire manufacturer for applications in which those products are intended to be used. The tire and rims installed on each product model have been designed for stability requirements, which consist of track width, tire compound, and load capacity. Tire changes such as rim width, centerpiece location, larger or smaller diameter, tire compound, etc., without written manufacturers approval, could result in an unsafe condition regarding stability.

The tires and rims installed on machines are to be inspected daily as part of the daily walk-around inspection. JLG requires that the daily walk-around inspection be performed at each operator change during a shift and at each shift change.

# 6.9.2 Wheel and Tire Replacement

JLG recommends that any replacement tire be the same size and brand as originally installed on the machine or offered by JLG as an approved replacement. Please refer to the JLG Parts Manual for the part number of the approved tires for a particular machine model.

If any of the following is discovered during tire inspection, measures must be taken to remove the JLG product from service immediately. Arrangements must be made for replacement of the tire(s) or tire assembly(s). Both tires/wheels on the same axle must be replaced:

- If the overall diameter of the tire is less than 15.55 in. (395mm) minimum
- If any uneven wear is discovered.

A tire with significant damage in the tread area or sidewall requires immediate evaluation before placing the machine into service. If a cut, tear, chunk, or other discrepancy exceeds any one or more of the following dimensions, the tire must be replaced:

3.0 in. (76 mm) long

0.75 in. (19 mm) wide

0.75 in. (19 mm) deep

- If the metal wheel is visible at any point through the tread area of the tire.
- If more than one discrepancy exists in any quadrant of the wheel (within 90 degrees of one another).

### 6.9.3 Wheel Installation

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

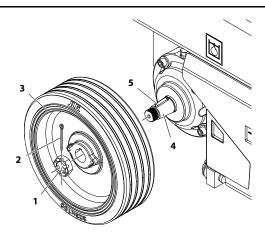
# **A WARNING**

Wheel slotted nuts must be installed and maintained at the proper torque to prevent loose wheels, a broken nut, and possible separation of wheel from the axle.

Tighten the slotted nuts to the proper torque to prevent wheels from coming loose. Use a torque wrench to tighten the slotted nuts. The proper procedure for attaching wheels is as follows:

- If not already installed, install shaft key (5) to shaft and align with wheel keyway, install wheel and hub (3) onto tapered shaft (4).
- 2. Start slotted nut (1) by hand to prevent cross threading. DO NOT use a lubricant on threads or nut.
- 3. Torque the slotted nut to 150 ft. lb. (203 Nm).
- 4. Install cotter pin (2), if hole in slots do not align with cotter pin hole on the tapered shaft, continue to turn nut clockwise to align nut with hole. Do not loosen to align hole.

**112** 31221538 R4045



1. Slotted Nut

3. Wheel and Hub Assembly

5. Shaft Key

2. Cotter Pin

4. Tapered Shaft

# 6.10 DIAGNOSTIC TROUBLE CODES (DTC)

# NOTICE

The DTC codes listed in the following table are not a complete listing of machine DTC codes. This listing shows only those DTC's which an operator may be able to correct due to operating error.

The DTC table following is sorted in groups by the first two digits, these digits represent the number of flashes the system distress indicator lamp will flash on the platform indicator panel when a fault occurs.

The more detailed three to five digit code numbers in the DTC column of the following tables are only indicated on a JLG handheld diagnostic analyzer connected to the machine, or on the Ground Control Station - MDI indicator, if equipped.

To troubleshoot multiple DTC's, start with the DTC with the higher first two digits.

If a correction is made during a check, conclude the check by cycling the machine power off then back on, using the emergency stop switch.

# NOTICE

Should a fault occur which cannot be corrected by the operator, the problem must be referred to a mechanic qualified to repair this model of JLG lift.

DIC	Help Message	Alarm	Flash Code	Action	Trigger
100	EVERYTHING OK	None	None	No Motion restrictions	Platform Mode and no Faults are active.
005	GROUND MODE OK	None	None	No Motion restrictions	<ul> <li>Ground Mode and no Faults are active.</li> </ul>
003	ALARM SOUNDING — TILTED & ABOVE ELEVATION	PF: Continuous	None	No Motion restrictions	Platform is elevated and chassis is not level
004	DRIVING AT CUTBACK — ABOVE ELEVATION	None	None	• Drive State = CREEP	<ul> <li>Platform is elevated and the machine is in the drive mode of operation</li> </ul>
900	DRIVE & LIFT UP PREVENTED TILTED & ELEVATED	PF: Continuous	None	• Drive State = PREVENTED Lift Up State = PREVENTED	<ul> <li>Driving and lift up are not possible since the platform is elevated and the chassis is not level.</li> </ul>
900	LIFT UP PREVENTED — MAX HEIGHT ZONE A	None	None	• Lift Up State = PREVENTED	The vehicle has reached the maximum height allowed by the Indoor/ Outdoor selection and further lift up motion is not possible.
200	DRIVING AT CUTBACK — POTHOLE STILL ENGAGED	None	None	• Drive State = GREFP	While stowed, drive speed is reduced (due to lower ground clearance) since the control system detected that the pot-hole protection mechanism is deployed (failed to retract).     Clear the obstacle blocking the pot-hole protection mechanism, repair the mechanical problem, re-adjust the pot-hole limit switches, or repair the wiring to correct the problem.      Alternately, there may be difficulty with the Elevation Angle Sensor that causes the Control System to improperly believe the platform is stowed.

DTC	Help Message	Alarm	Flash Code	Action	Trigger
800	FUNCTIONS LOCKED OUT — SYSTEM	None	None	• Enter Safe Mode Lift Down	<ul> <li>A period of time elapsed without activity and the Control System entered a low-power state to preserve battery charge (2 hours). Cycle the Ground EMS in Ground Mode or the Platform EMS in Platform Mode to re-enable the vehicle.</li> </ul>
	POWERED DOWN			State = PREVENTED	<ul> <li>Two hours without Drive Forward, Drive Reverse, Lift Up, Lift Down, Steer Left, or Steer Right.</li> </ul>
					• Timer resets if user changes Platform Mode / Ground Mode
600	DRIVE PREVENTED — ELEVATED ABOVE DRIVE CUTOUT HEIGHT	None	None	DriveState = PREVENTED	<ul> <li>The Drive Cutout functionality is enabled, and the Platform is Elevated above the Calibrated Cutout Height.</li> </ul>
211	POWER CYCLE	None	2_1	No Motion restrictions	<ul> <li>This Help Message is issued at each power-up. This serves to indicate which messages have been recorded in the failure log since the last power-up event.</li> </ul>
212	KEYSWITCH FAULTY	None	2_1	Force to GroundMode	<ul> <li>Both the Ground Select and Platform Select signals are energized, which means there is an issue with the keyswitch or one of the lines are shorted to battery.</li> </ul>
221	FUNCTION PROBLEM — HORN PER- MANENTLY SELECTED	None	2_2	Horn Prevented	Hom Switch in the Platform Control Box was closed during power- up. Release or repair the switch to clear the message.
2210				• TriggerState = FALSE therefore	. Trinner Switch on the Diatform Control Rov was closed for more than
	TRIGGER CLOSED TOO LONG WHILE IN NEUTRAL	None	2_2	• DriveState = PREVENTED	five seconds while the Joystick (accelerator) was in the neutral posi- tive seconds while the Joystick (accelerator) was in the neutral posi- tion (centered). Release switch or repair the switch / wiring to clear
				<ul> <li>LiftDownState = PREVENTED</li> </ul>	ure diritatiy.

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Help Message Alarm Flash Code	Flash Code	Action	Trigger
FUNCTION PROBLEM — INDOOR / None 2_2 OUTDOOR PERMANENTLY SELECTED	2_2	Previously selected Indoor / Outdoor Mode maintained	Indoor / Outdoor Switch in the Platform Control Box was closed during power-up. Release or repair the switch to clear the message.
		• MoveState $= LIFT$	
LUNCTION PROBLEM — DRIVE & LIFT	2 2	• DriveState = PREVENTED	The Drive - Lift Selector Switch indicates that both functions are selected cimultaneously. Bensir the wiring or switch to clear the
	) 	• LiftUpState = PREVENTED	message.
		• LiftDownState = PREVENTED	
		MoveState = LIFT	
FUNCTION PROBLEM — DRIVE & LIFT	7 2	• DriveState = PREVENTED	In PlatformMode, the Drive - Lift Selector Switch indicates that nei-     the function is calculated Density the uniting of quiette to done the
	<u>}                                    </u>	• LiftUpState = PREVENTED	uter function is sefected, hepail the willing of switch to dear the message.
		• LiftDownState = PREVENTED	
FUNCTION PROBLEM — STEER LEFT PERMANENTLY SELECTED  2_2	2_2	DriveState = PREVENTED	<ul> <li>Steer Left Switch in the Platform Control Box was closed during power-up. Release or repair the switch to clear the message.</li> </ul>
FUNCTION PROBLEM — STEER RIGHT None 2_2  PERMANNENTLY SELECTED	2_2	• DriveState = PREVENTED	<ul> <li>Steer Right Switch in the Platform Control Box was closed during power-up. Release or repair the switch to clear the message.</li> </ul>
		• DriveState = PREVENTED	. Calartad function (Driva or 1141) is not allowad bassusa tha invetify
FUNCTION LOCKED OUT — ACCELER— ATOR NOT CENTERED  2_2	2_2	• LiftUpState = PREVENTED	
		• LiftDownState = PREVENTED	поленкану.
FUNCTION PROBLEM — TRIGGER  PERMANENTLY CLOSED  2_2	2_2	DriveState = PREVENTED LiftUp- State = PREVENTED LiftDown- State = PREVENTED	<ul> <li>Trigger Switch in the Platform Control Box was closed at power-up.</li> <li>Release switch or repair the switch / wiring to clear the difficulty.</li> </ul>

DTC	Help Message	Alarm	Flash Code	Action	Trigger
231	FUNCTION PROBLEM — LIFT PERMA- Nently selected	None	2_3	In GroundMode then • LiftUpState = PREVENTED	Lift Switch (Up or Down) in the Ground Control Box was closed during
				• LiftDownState = PREVENTED	power-up, nercase of repair the switch to treat the message.
232				In GroundMode	
	Ground Lift UP/Down Active Together	None	2_3	• then LiftUpState = PREVENTED	In GroundMode, the control system has detected the Lift Up and Down are active simultaneously, Check the Lift Switch and associated
				• LiftDownState = PREVENTED	Willig iii ure gioulia colitol box.
242	AMBIENT TEMPERATURE SENSOR — OUT OF RANGE HIGH	PF: Continuous	2_4	Drive and Lift Restrictions	- The temperature as communicated by the temperature/tilt sensor is greater than 185° F (85° C).
253	DRIVE PREVENTED — CHARGER CONNECTED	None	2_5	DriveState = PREVENTED	<ul> <li>Driving is not possible since the vehicle is charging.</li> </ul>
254	DRIVE & LIFT UP PREVENTED —	anoN	5 6	• DriveState = PREVENTED	<ul> <li>Driving and Lifting are not possible since the vehicle is charging and</li> </ul>
	CHARGER CONNECTED			• LiftUpState = PREVENTED	it is configured to prevent all motion.

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Trigger		Triggers when OverloadState = TRUE     Clears when OverloadState = FALSE	<ul> <li>While the Load Sensing System is exaessive. Lift Up is Prevented, as ured by the Load Sensing System is exaessive. Lift Up is Prevented, as well as drive above transport height. For the GB and KOREA markets, lift down is also prevented above a certain height. For the Japanese Market, Drive is limited to CREEP speeds in transport.</li> </ul>	<ul> <li>Refer to LSS functionality for Lift and Drive restrictions.</li> <li>This fault shall be suppressed if technician navigates to the CALIBRA- TIONS menu of the ANALYZER.</li> </ul>	While elevated, driving is not possible since the control system detected that the pot-hole protection mechanism failed to deploy. Clear the obstade blocking the pot-hole protection mechanism, repair the mechanical problem, re-adjust the pot-hole limit switches, or repair the writing to correct the problem.      Alternately, there may be difficulty with the Elevation Angle Sensor that causes the Control System to improperly believe the platform is elevated.	
Action	• DriveState = PREVENTED if {TRANSPORT STATE = FALSE}	• DriveState = CREEP if {MA-CHINE SETUP —> MARKET = JAPAN} AND {TRANSPORT STATE = TRUE}	• LiftUpState = PREVENTED if {PlatformMode = TRUE} OR (GroundMode = TRUE AND MACHINE SETUP > LOAD = CUTOUT ALL}}	• LiftDownState = PREVENTED If {PlatformMode = TRUE} OR (GroundMode = TRUE AND MACHINE SETUP — > LOAD = CUTOUT ALL)} AND {{MACHINE SETUP — > MAR-KET = GB} OR (MACHINE SET-UP — > MAR-KET = KOREA}}	• DriveState = PREVENTED	
Flash Code	N/ 2_5			2_5		
Alarm	PF: 5000ms ON/ 2000ms OFF GND: 5000msON/ 2000ms OFF			PF: 500ms On/ 500ms Off GND: 500ms On/500ms Off		
Help Message			PLATFORM OVERLOADED		DRIVE PREVENTED — POTHOLE NOT ENGAGED	
DTC	255			_	256	

DTC	Help Message	Alarm	Flash Code	Action	Trigger
2568	TEMPERATURE CUTOUT ACTIVE -	lf Transport Mode= TRUE PF: Continuous			The temperature as communicated by the temperature sensor located on the temperature/fult sensor is less than or equal to {PERSONAL-ITIES->TEMP CUTOUT->CUTOUT SET}
	AMBIENT TEMPERATURE TOO LOW	If Transport	2_5	<ul> <li>Drive and Lift Restrictions</li> </ul>	(See Low Temperature Cutout Functionality)
		Mode= FALSE PF: 0FF			<ul> <li>This DTC shall not be displayed in GroundMode, and no restrictions shall be implemented.</li> </ul>
421					<ul> <li>Heatsink temperature above 203°F (95° C).</li> </ul>
				Duito Ctoto D DEVENTED	• Possible Cause:
	POWER MODULE TOO HOT - PLEASE WAIT	None	4_2	Universitate = Prevented     Hittlington     Decorated	<ul> <li>Controller is operating in an extreme environment.</li> </ul>
				• FILIODOIGIE — FINEVEINIED	• Excessive load on vehicle.
					<ul> <li>Improper mounting of controller</li> </ul>
4235					<ul> <li>Heatsink temperature exceeded 185° F (85° C).</li> </ul>
					• Effect: Reduced drive and brake torque.
				Drivo Ct + to	• Possible Cause:
	POWER MODULE TOO HOT - RE- DUCED OPERATION	None	4_2	• Dilyestate = Cheep	<ul> <li>Controller is performance-limited at this temperature.</li> </ul>
				י בוונחליזומוג – בעדבו	• Controller is operating in an extreme environment.
					• Excessive load on vehicle
					Improper mounting of controller.

DTC	Help Message	Alarm	Flash Code	Action	Trigger
4236	POWER MODULE TOO COLD - MOD- ULE SHUT- DOWN	None	4_2	DriveState = PREVENTED     LiftUpState = PREVENTED	<ul> <li>Heatsink temperature below -40° F(-40°C).</li> <li>Possible Cause:</li> <li>Controller is operating in an extreme environment.</li> </ul>
426	MASTER MODULE TEMPERATURE — OUT OF RANGE	None	4_2	Normal operation	• The Ground Module's internal temperature sensor is out of range. (<104° F (40° C) or > 302° F (150° C)
441	BATTERY VOLTAGE TOO LOW – SYS- TEM SHUTDOWN	None	4_4	• SafeMode • LiftDownState = PREVENTED	<ul> <li>Battery Voltage (VBAT) momentarily dropped below 14.5V when using flooded lead-acid batteries, or 16.0V when using AGM batteries. With a low battery charge, this can occur during heavy current demand due to Drive, Steer, or Liff Up, Recharge batteries or check for damaged batteries, sulfated batteries, or poor power connections.</li> </ul>
442	BATTERY VOLTAGE TOO HIGH — SYS- TEM SHUTDOWN	None	4_4	• Enter SafeMode • LiftDownState = MAX	The Ground Module measured excessively high battery voltage (VBAT) (>32.0V) and de-energized the Main Line Contactor and Battery Relay to protect system devices and was unable to bring voltage down to normal operating range. This may be due to improper battery charging or incorrect voltage batteries being used.
4421	LOGIC SUPPLY VOLTAGE OUT OF RANGE HIGH	None	4_4	• Enter SafeMode • LiftDownState = MAX	The Ground Module's VSW voltage was measured to be more than 32V. This may be caused by loose battery terminal, severely discharged batteries, a damaged battery, or an improper wire hamess connection.

DTC	Help Message	Alarm	Flash Code	Action	Trigger
4424					Severe B+ Under voltage Set: Capacitor bank voltage dropped below Severe Under voltage limit with FET bridge enabled.
					• Effect: Reduced Drive Torque
					• Possible Cause:
	POWER MODULE VOLTAGE TOO LOW - MODIJI F SHIJTDOWN	None	4_4	<ul> <li>DriveState = PREVENTED</li> </ul>	• Battery menu parameters are misadjusted
				• LiftUpState = PREVENTED	<ul> <li>Non-controller system drain on battery</li> </ul>
					• Battery resistance too high
					Battery disconnected while driving
					Blown B+ fuse or main contactor not closed
4475					<ul> <li>Pump BDI Fault Set: BDI Percentage charge at 0% when the pump was activated.</li> </ul>
				• DriveState = PREVENTED	• Effect: ShutdownPump
	POWER MODULE - BDI FAULT	None	4_4	• LiftUpState = PREVENTED	• Possible Cause:
					<ul> <li>Battery is fully discharged</li> </ul>
					• BDI parameters are mistuned

DTC	Help Message	Alarm	Flash Code	Action	Trigger
4476	BATTERY VOLTAGE TOO HIGH — UN- PLUG CHARGER	None	4_4	<ul> <li>Enter SafeMode</li> <li>LiftDownState = MAX</li> </ul>	<ul> <li>The Ground Module momentarily measured excessively high battery voltage (VBAT) (&gt;32.0V) and entered SafeMode to protect system de- vices. This may be due to improper battery charging or incorrect volt- age batteries being used.</li> </ul>
4477	Battery Voltage 100 high — Forcing discharge	None	4_4	Lift Down = PREVENTED Lift Up = PREVENTED Drive = PREVENTED	<ul> <li>The Ground Module momentarily measured excessively high battery voltage (VBAT) (&gt;32.0V) and entered SafeMode. This may be due to improper battery charging or incorrect voltage batteries being used.</li> </ul>

# 6.11 RADIO FREQUENCY (RF) INFORMATION

**Note:** The ClearSky® CS550 connectivity module antenna is internal to the assembly.

# 6.11.1 Federal Communications Commission (FCC)

### **FCC Interference Statement**

ClearSky CS550 has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# **Notice Regarding Radio Frequency Radiation Exposure**

ClearSky CS550 complies with the FCC radio frequency exposure limits prescribed for mobile use (i. e,. antennas are greater than 20 cm from a person's body) in an uncontrolled environment. Consequently, a person within 20 cm (8 in) of a CS550 that is connected to machine battery power could expose that person to RF energy in excess of what has been established by the FCC RF exposure guidelines.

# 6.11.2 Innovation, Science and Economic Development (ISED)

# Radio Frequency Interference Requirements

The ClearSky CS550 Class B digital apparatus complies with Canadian ICES-003. [ Canada Compliance Label: CAN ICES-3 (B)/NMB-3(B) ]

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### Notice Regarding Radio Frequency Radiation Exposure

ClearSky CS550 complies with the ISED radio frequency exposure limits prescribed for mobile use (i. e,. antennas are greater than 20 cm from a person's body) in an uncontrolled environment. Consequently, a person within 20 cm (8 inches) of a CS550 that is connected to machine battery power could expose that person to RF energy in excess of what has been established by the ISED RF exposure guidelines.

# 6.12 SUPPLEMENTAL INFORMATION ONLY APPLICABLE TO CE/UKCA MACHINES

The following information is provided in accordance with the requirements of the European Machinery Directive 2006/42/EC or Supply of Machinery (Safety) Regulations 2008 No. 1597.

For electric powered machines, the equivalent continuous A-Weighted sound pressure level at the work platform is less than 70 dB(A).

The vibration total value to which the hand-arm system is subjected does not exceed 2,5 m/s<sup>2</sup>. The highest root mean square value of weighted acceleration to which the whole body is subjected does not exceed 0,5 m/s<sup>2</sup>.

# 6.13 EC DECLARATION OF CONFORMITY

Manufacturer

JLG Industries, Inc.

**Address** 

1 JLG Drive

McConnellsburg, PA 17233 USA

**Technical File** 

JLG EMEA B.V.

Polaris avenue 63, 2132 JH Hoofddorp

The Netherlands

Contact/Position

Senior Manager — Product Safety & Reliability

Date/Place

Hoofddorp, Netherlands

Machine Type

Mobile Elevating Work Platform

Model Type

R4045

**EC-Number** 

2842

**Certificate Number** 

KCEC4618

**Notified Body** 

Kuiper Certificering b.v.

Address

Van Slingelandtstsraat 75, 7331 NM Apeldoorn, The Netherlands

### Reference Standards

- FN 55011:2009/A1:2010
- EN 61000-6-2:2005
- EN 60204-1:2018
- EN 280:2013+ A1:2015
- EN ISO 12100:2010

JLG Industries, Inc. hereby declares that the above mentioned machine conforms with the requirements of:

- 2006/42/EC Machinery Directive
- 2014/30/EU EMC Directive
- 2014/53/EU RED Directive (If fitted with optional equipment)

**Note:** This declaration conforms with the requirements of annex II-A of the council directive 2006/42/EC. Any modification of the above described machine violates the validity of this declaration.

### 6.14 UKCA DECLARATION OF CONFORMITY

### Manufacturer

JLG Industries, Inc.

### Address

1 JLG Drive

McConnellsburg, PA 17233 USA

### **Technical File**

JLG Industries UK Ltd Braunstone Frith Industrial Estate Unit 3 Sunningdale Road Leicester, LE3 1UX United Kingdom

### Contact/Position

Director of Engineering — Europe

### Date/Place

Leicester, United Kingdom

### Machine Type

Mobile Elevating Work Platform

## **Model Type**

R4045

### **AB-Number**

0463

### Certificate Number

AVUK4448

### Approved Body

Amtri Veritas

### **Address**

Pierce Street, Macclesfield, SK11 6ER, England

### **Reference Standards**

- EN 55011:2009/A1:2010
- EN 61000-6-2:2005
- EN 60204-1:2018
- EN 280:2013+ A1:2015
- EN ISO 12100:2010

JLG Industries, Inc. hereby declares that the above mentioned machine conforms with the requirements of:

- 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008
- 2016 No. 1091 Electromagnetic Compatibility Regulations 20165
- 2017 No. 1206 Radio Equipment Regulations 2017 (if fitted with optional equipment)

**Note:** This declaration conforms with the requirements of annex II-A of the Regulations 2008 No. 1597. Any modification of the above described machine violates the validity of this declaration.

Serial Number	

Date	Comments

# Inspection, Maintenance and Repair Log



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