Operation & Safety Manual

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

H340AJ

PVC 2501

3122336000

January 13, 2025 - Rev A

ANSI
AS/NZS MOL70

English (en-US)

⚠ 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.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

Indicates a potentially hazardous situation. If not avoided, may result in minor or moderate injury. It may also alert against unsafe practices. This decal will have a yellow background.

NOTICE

Indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

⚠ WARNING

This product must comply with all safety related bulletins. Contact JLG Industries, Inc. or the local authorized JLG representative for information regarding safety related bulletins which may have been issued for this product.

NOTICE

JLG Industries, Inc. sends safety related bulletins to the owner of record of this machine. Contact JLG Industries, Inc. to ensure that the current owner records are updated and accurate.

NOTICE

JLG Industries, Inc. must be notified immediately in all instances where JLG products have been involved in an accident involving bodily injury or death or when substantial damage has occurred to personal property or the JLG product.

For:

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

Contact:

Product Safety and Reliability Department
JLG Industries, Inc.
13224 Fountainhead Plaza
Hagerstown, MD 21742
USA
or Visit www.jlg.com to find your local JLG office.

In USA:

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

Outside USA:

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

REVISION LOG

DATE	REVISION	DESCRIPTION
January 13, 2025	A	Original Issue

Other Publications Available

Publication	Publication Number
Service & Maintenance Manual	31223361
Illustrated Parts Manual	31223362

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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”).

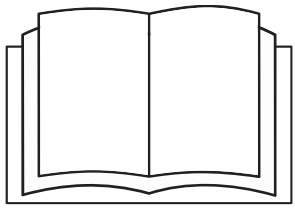
⚠ WARNING

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



- 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.

- 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.
- When operating an internal combustion engine at high altitudes, a decrease in machine performance may occur due to a decrease in air density depending on engine aspiration type, temperature, and humidity, therefore JLG recommends not operating the machine higher than 6000 m above sea level without consultation with the engine suppliers. For electric machines, performance may diminish higher than 6000 m above sea level.

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 Manual.

- Ensure all safety devices are operating properly. Modification of these devices is a safety violation.

⚠ WARNING

Modification or major alteration of a MEWP shall be made only with the prior written permission from the manufacturer. Modification is defined as change(s) to a MEWP that affect the operation, stability, safety factors, rated load, or safety of the MEWP in any way.

- 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

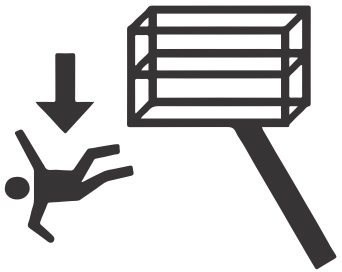
1.3.1 General

- 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.

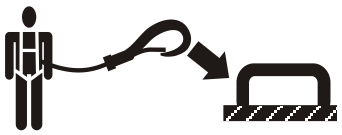
- When driving, always position boom over rear axle in line with the direction of travel. Remember, if boom is over the front axle, steer and drive functions will be reversed.
- Do not assist a stuck or disabled machine by pushing or pulling except by pulling at the chassis tie-down lugs.
- Fully lower platform and shut off all power before leaving machine.
- Remove all rings, watches, and jewelry when operating machine. Do not wear loose fitting clothing or long hair unrestrained which may become caught or entangled in equipment.
- Persons under the influence of drugs or alcohol or who are subject to seizures, dizziness or loss of physical control must not operate this machine.
- Hydraulic cylinders are subject to thermal expansion and contraction. This may result in changes to the platform position while the machine is stationary. Factors affecting thermal movement can include the length of time the machine will remain stationary, hydraulic oil temperature, ambient air temperature, and platform position.

1.3.2 Trip and Fall Hazards

- Before operating the machine, ensure all gates are closed and fastened in their proper position.



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



Note: For machines covered under CE/UKCA certifications, the utilization of fall protection systems is limited to fall restraint devices.

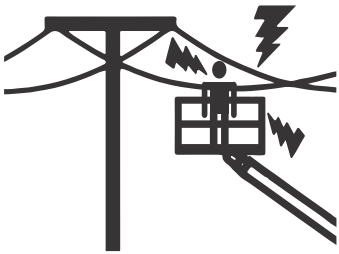
- Enter and exit only through gate area. Use extreme caution when entering or leaving platform. Ensure that the platform assembly is fully lowered. Face the platform when entering or leaving the platform. Always maintain “three point

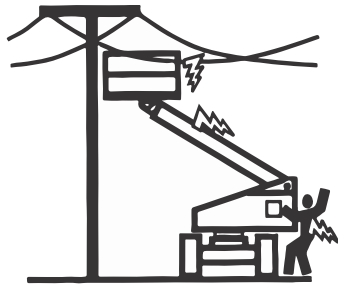
contact" with the machine, using two hands and one foot or two feet and one hand at all times during entry and exit.

- 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.
- 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.

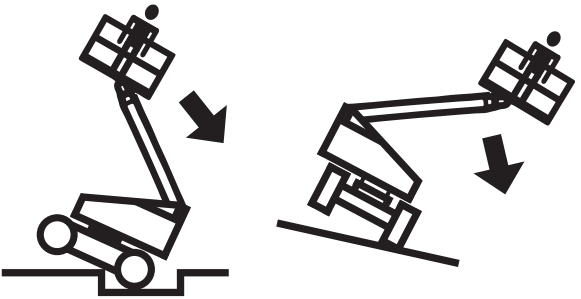
- Maintain a clearance of at least 10 ft (3m) between any part of the machine and its occupants, their tools, and their equipment from any electrical line or apparatus carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less.
- The MAD may be reduced 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.

⚠ 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, drop-offs, obstructions, debris, concealed holes, and other potential hazards at the ground level.
- Do not push or pull any object with the boom.
- Never attempt to use the machine as a crane. Do not tie-off machine to any adjacent structure. Never attach wire, cable, or any similar items to platform.
- If boom assembly or platform is in a position that one or more wheels are off the ground, all persons must be removed before attempting to stabilize the machine. Use cranes, forklift trucks, or other appropriate equipment to stabilize machine.
- Do not operate the machine when wind conditions, including gusts, exceed 28 mph (12.5 m/s). Refer to *Table — Beaufort Scale (For Reference Only), page 19*. 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 or attachments.

⚠ 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.

Table 2. Beaufort Scale (For Reference Only)

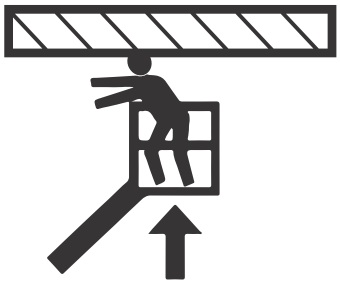
Beaufort Number	Wind Speed		Description	Land Conditions
	mph	m/s		
0	0	0-0.2	Calm	Calm. Smoke rises vertically
1	1-3	0.3-1.5	Light air	Wind motion visible in smoke
2	4-7	1.6-3.3	Light breeze	Wind felt on exposed skin. Leaves rustle
3	8-12	3.4-5.4	Gentle breeze	Leaves and smaller twigs in constant motion
4	13-18	5.5-7.9	Moderate breeze	Dust and loose paper raised. Small branches begin to move.

Table 2. Beaufort Scale (For Reference Only) (continued)

Beaufort Number	Wind Speed		Description	Land Conditions
	mph	m/s		
5	19-24	8.0-10.7	Fresh breeze	Smaller trees sway.
6	25-31	10.8-13.8	Strong breeze	Large branches in motion. Flags waving near horizontal. Umbrella use becomes difficult.
7	32-38	13.9-17.1	Near Gale/ Moderate Gale	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	17.2-20.7	Fresh Gale	Twigs broken from trees. Cars veer on road.
9	47-54	20.8-24.4	Strong Gale	Light structure damage.

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.
- Use the boom functions, not the drive function, to position the platform close to obstacles.
- Always post a lookout when driving in areas where vision is obstructed.
- Keep non-operating personnel at least 6 ft (1.8 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.

1.4 TOWING, LIFTING, AND HAULING

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

1.5 MAINTENANCE

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

1.5.1 Maintenance Hazards

- Shut off power to all controls and remove the key to 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.
- Do not use machine as a ground for welding.
- When performing welding or metal cutting operations, precautions must be taken to protect the chassis from direct exposure to weld and metal cutting spatter.
- Do not refuel combustion engine-powered machines with the engine running.
- 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.

⚠ WARNING

Modification or major alteration of a MEWP shall be made only with the prior written permission from the manufacturer. Modification is defined as change(s) to a MEWP that affect the operation, stability, safety factors, rated load, or safety of the MEWP in any way.

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.

⚠ 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.

1.6 LONG-TERM STORAGE

- Prior to long-term storage of machines (placed into storage for periods greater than 3 months) with an internal combustion engine, refer to the engine manufacturer's guidance regarding fuel degradation.
- For long-term storage of battery-electric machines, store machines in a cool, dry place away from direct sunlight and heat sources. Avoid storing batteries in a fully discharged or fully charged state.

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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.
9. Selection of the appropriate MEWP and available options for the work to be performed considering specific job requirements, with involvement from the MEWP owner, user, and/ or supervisor.
10. The responsibility of the operator to ensure all platform occupants have a basic level of knowledge to work safely on the MEWP, and to inform them of applicable regulations, standards, and safety rules.
11. The requirement for familiarization in addition to training.

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.

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:

1. Location of the manual storage compartment and the requirement to ensure the required manual(s) are present on the MEWP;
2. Purpose and function of the machine controls and indicators at the platform and ground control stations;
3. Purpose, location, and function of the emergency controls;
4. Operating characteristics and limitations;
5. Features and devices;
6. Accessories and optional equipment.

2.2 PREPARATION, INSPECTION, AND MAINTENANCE

The following table covers 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.

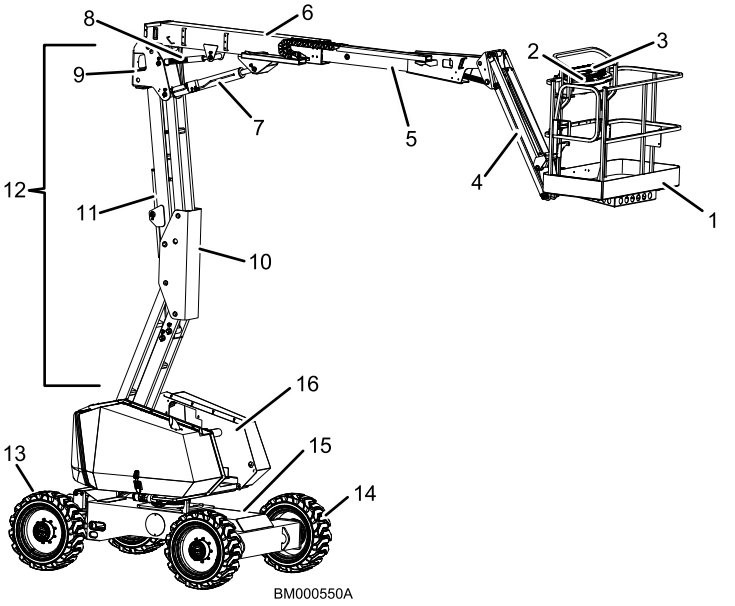
Table 3. Inspection and Maintenance Table

Type	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 & Maintenance Manual and applicable JLG inspection 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 & Maintenance Manual and applicable JLG inspection form
Annual Machine Inspection (See Note)	Annually, no later than 13 months from the date of prior inspection	Owner, Dealer, or User	Factory Trained Service Technician (Recommended)	Service & Maintenance Manual and applicable JLG inspection form
Preventive Maintenance	At intervals as specified in the Service & Maintenance Manual	Owner, Dealer, or User	Qualified JLG Mechanic	Service & Maintenance 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 MACHINE COMPONENTS



1. Platform	7. Main Lift Cylinder	13. Front Drive/Steer Wheels
2. Platform Control Console	8. Master Cylinder	14. Rear Drive Wheels
3. SkyGuard	9. Upper Upright	15. Frame
4. Jib	10. Lower Upright	16. Turntable
5. Fly Boom Section	11. Tower Lift Cylinder	
6. Base Boom Section	12. Tower Boom	

2.4 PRE-START INSPECTION

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

1. **Cleanliness** — Check all surfaces for leakage (oil, fuel, or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.

2. **Structure** — Inspect the machine structure for dents, damage, weld or parent metal cracks or other discrepancies.

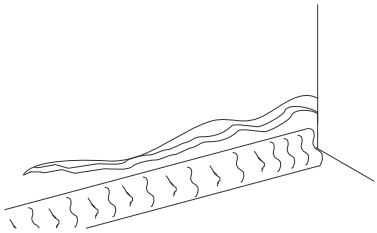


Figure 1. Parent Metal Crack

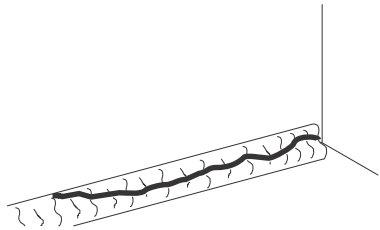


Figure 2. Weld Crack

3. **Decals and Placards** — Check all for cleanliness and legibility. Make sure none of the decals and placards are missing. Make sure all illegible decals and placards are cleaned or replaced.

4. **Operation and Safety Manuals** — Make sure a copy of the Operation & Safety Manual, AEM Safety Manual (ANSI markets only), and ANSI Manual of Responsibilities (ANSI markets only) are enclosed in the weather resistant storage container.

5. **Walk-Around Inspection** — Perform as instructed.

6. **Battery** — Charge as required.

7. **Fuel (Combustion Engine Powered Machines)** — Add the proper fuel as necessary.

8. **Engine Oil Supply** — Ensure the engine oil level is at the Full mark on the dipstick and the filler cap is secure.

9. **Hydraulic Oil** — Check the hydraulic oil level. Ensure hydraulic oil is added as required.

10. **Accessories/Attachments** — Refer to the Accessories section in this manual or accessory installed upon the machine for specific inspection, operation, and maintenance instructions.

11. **Function Check** — Once the Walk-Around Inspection is complete, perform a functional check of all systems in an area free of overhead and ground level obstructions. Refer to *Section — Machine Operation* for more specific instructions.

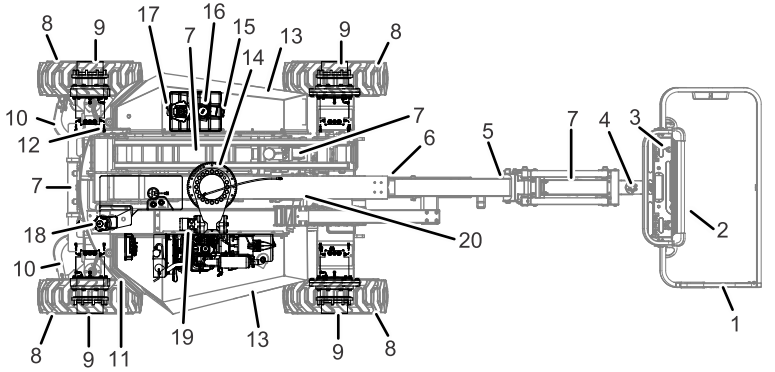
12. **Platform Gate** — Keep gate and surrounding area clean and unobstructed. Verify the gate closes properly and is not bent or damaged. Keep gate closed at all times except when entering/exiting the platform and loading/unloading materials.

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

⚠ WARNING

If the machine does not operate properly, turn off the machine immediately! Report the problem to the proper maintenance personnel. Do not operate the machine until it is declared safe for operation.

2.5 WALK-AROUND INSPECTION



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

⚠ WARNING

To avoid possible injury, be sure machine power is off. Do not operate machine until all malfunctions have been corrected.

NOTICE

Do not overlook visual inspection of chassis underside. Checking this area may result in discovery of conditions which could cause extensive machine damage.

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

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

2. **SkyGuard** - Refer to Inspection Note.

3. **Platform Control Console** - Switches and levers return to neutral when activated and released, decals/placards secure and legible, control markings legible.

4. **Platform Rotator** - Refer to Inspection Note.
5. **Jib Assembly and Jib Rotator** - Refer to Inspection Note.
6. **Boom Sections/Uprights/Turntable** - Refer to Inspection Note.
7. **All Hydraulic Cylinders** - No visible damage; pivot pins and hydraulic hoses undamaged, not leaking.
8. **Wheel/Tire Assemblies** - Properly secured, no missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies. Inspect wheels for damage and corrosion.
9. **Drive Motor, Brake, and Hub** - No evidence of leakage.
10. **Tie Rod Ends and Steering Spindles** - Refer to Inspection Note.
11. **Counterweight** - Refer to Inspection Note.
12. **Ground Control Console** - Switches and levers return to neutral when activated and released, decals/placards secure and legible, control markings legible.
13. **Hood Assemblies** - Refer to Inspection Note.
14. **Turntable Bearing** - Evidence of proper lubrication. No evidence of loose bolts or looseness between bearing and machine.
15. **Manual Descent** - Refer to Inspection Note.
16. **Hydraulic Reservoir** - Refer to Inspection Note.
17. **Hydraulic Pump** - Refer to Inspection Note.
18. **Fuel Tank** -Refer to Inspection Note.
19. **Swing Motor and Worm Gear** - No evidence of damage.
20. **Battery** - Cables tight; refer to Inspection Note.

2.6 FUNCTION CHECK

Prior to performing the function check, verify that the battery disconnect on the side of the frame works properly.

1. Position the Platform/Ground Select switch to the ground position.



2. Pull out the Power/Emergency Stop Switch on the ground console to power up the machine.



3. Turn the Battery Disconnect Switch to the Off position.



4. Watch the Indicator Gauge on the Ground Control Console to verify the power is disconnected.



Note: If the Platform/Ground Select switch is in the Platform position, it will take approximately 10 seconds for the Control System power to be shut down.

5. If the power shuts down properly, turn the Battery Disconnect Switch back to the On position. Look at the display to verify the power has been turned back on and resume the Function Check. If the power did not shut down or turn on properly, Report the problem to the proper maintenance personnel. Do not operate the machine until it is declared safe for operation.



Perform the Function Check as follows:

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

5. With the machine positioned on a smooth, firm surface within the limits of the maximum operating slope, elevate the boom 4 degrees of horizontal. Select high speed drive mode. Carefully attempt to drive and ensure the drive speed is reduced.

2.7 SKYGUARD® FUNCTION CHECK

From the Platform Control Station in an area free from obstructions:

1. Operate the telescope-out function.
2. Activate the **SkyGuard SkyLine®** sensor by pressing rod to break connection between the rod and the right bracket.
3. Once the sensor has been activated, verify the following conditions:
   a. Telescope-out function stops and telescope-in function operates for a short duration.
   b. The horn sounds.
   c. If equipped with a configured ClearSky CS550 or SkyGuard beacon, the beacon illuminates.

Note: If SkyGuard is enabled with the Soft Touch system, functions will cut out instead of reversing.

4. Release controls, reattach the rod to the right bracket and recycle the foot switch. Make sure normal operation is available.

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

Refer to the SkyGuard Activation/Deactivation section for additional information.

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SECTION 3
Machine Controls and Indicators

3.1 GENERAL

NOTICE

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

This section provides the necessary information needed to understand control functions.

3.2 CONTROLS AND INDICATORS

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



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

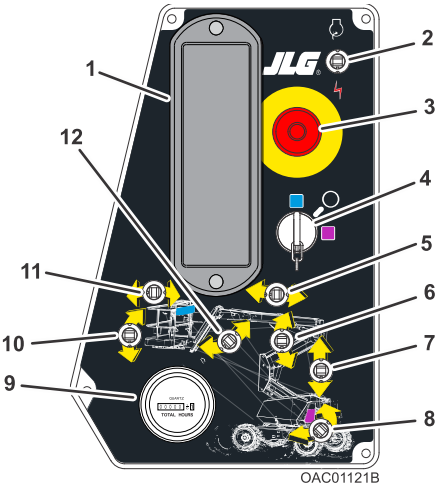


Indicates an abnormal operating condition, which if not corrected, may result in machine interruption or damage. This indicator will be yellow.



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

3.3 GROUND CONTROL STATION



1. Indicator Panel
2. Engine Start/Auxiliary Descent Enable
3. Power/Emergency Stop
4. Platform/Ground Select
5. Main Boom Telescope
6. Main Boom Lift
7. Tower Boom Lift
8. Swing
9. Hourmeter
10. Platform Level
11. Platform Rotate
12. Jib Lift

Figure 3. Ground Control Station

3.3.1 Ground Control Station Functions

⚠ WARNING

When operating the boom ensure there are no personnel around or under platform.

⚠ WARNING

To avoid serious injury, do not operate machine if any control levers or toggle switches controlling platform movement do not return to the off or neutral position when released.

Note: When machine is shut down the Platform/Ground Select switch and Emergency Stop must be positioned to Off.
To operate machine from the platform, the Platform/Ground Select switch must be turned to the blue square.
To operate the machine from the ground, the Platform/Ground Select switch must be turned to the purple square.



Engine Start/ Auxiliary Descent Enable
To start the engine, the switch must be held up until the engine starts.



To use auxiliary descent enable, the switch must be held down for duration of function use.



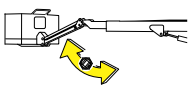
Hourmeter
Registers the amount of time the machine has been in use with the engine running. By connecting into the oil pressure circuit of the engine, only engine hours are recorded. The hourmeter registers up to 9,999.9 hours and cannot be reset.



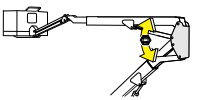
Indicator Panel
The Indicator Panel contains indicator lights that signal problem conditions or functions operating during machine operation.



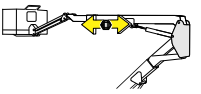
Jib Lift
Provides raising and lowering of the jib.



Main Boom Lift
Provides raising and lowering of the main boom.



Main Boom Telescope
Provides extension and retraction of the boom.

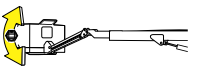


Platform/Ground Select Switch
The three position, key operated switch supplies power to the platform control console when positioned to Platform. With the switch key turned to the Ground position only ground controls are operable.



Note: When the Platform/Ground Select Switch is in the center position, power is shut off to the controls at both operating stations. Remove the key to prevent the controls from being actuated.

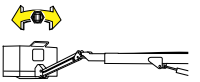
Platform Leveling Override
A three position switch allows the operator to adjust the automatic self leveling system. This switch is used to adjust platform level in situations such as ascending/descending a grade.



⚠ WARNING

Only use the platform leveling override function for slight leveling of the platform. Incorrect use could cause the load/occupant to shift or fall. Failure to do so could result in death or serious injury.

Platform Rotate
Provides rotation of the platform.



Power / Emergency Stop Switch
A two-position red mushroom shaped switch supplies power to Platform/ Ground Select switch when pulled out (On position). When pushed in (Off position), power is shut off to the Platform/Ground Select switch.

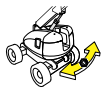


Note: When Power/Emergency Stop switch is in the On position and engine is not running, an alarm will sound, indicating the ignition power is On.

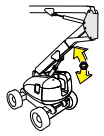
NOTICE

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

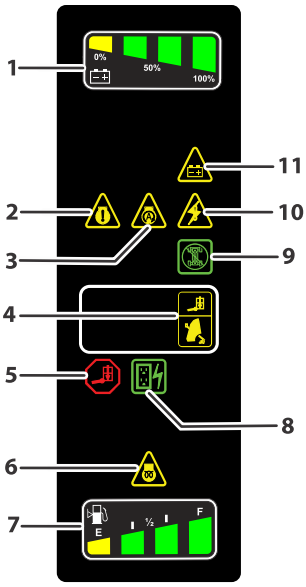
Swing
Provides 355° non-continuous turntable rotation.



Tower Boom Lift
Provides raising and lowering of the tower boom.



3.4 GROUND CONTROL INDICATOR PANEL



1. Battery Charge Level
2. Engine Error
3. Generator Auto Start
4. Capacity Zone Indicator
5. Platform Overload
6. Glow Plug
7. Fuel Level
8. AC Generator
9. Drive / Steer Disable (If Equipped)
10. System Distress
11. Battery Charge Error

3.4.1 Ground Control Indicator Panel Functions

AC Generator
Indicates the generator is in operation.



Battery Charge Level
Indicates the state-of-charge of the battery pack.



Battery Charge Error
Indicates a problem in the battery or charging circuit and service is required.



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



Drive and Steer Disable (If Equipped)
Indicates the Drive and Steer Disable function has been activated.



Engine Error
Indicates a fault with the engine and service is required or is requesting a cleaning sequence.



Fuel Level
Indicates the level of fuel in the fuel tank.



Generator Auto Start
Indicates the auto generator system is in operation



Glow Plug
Indicates the glow plugs are on. The glow plugs are automatically turned on with the ignition circuit and remain on for approximately seven seconds. Start the engine only after the light goes out.



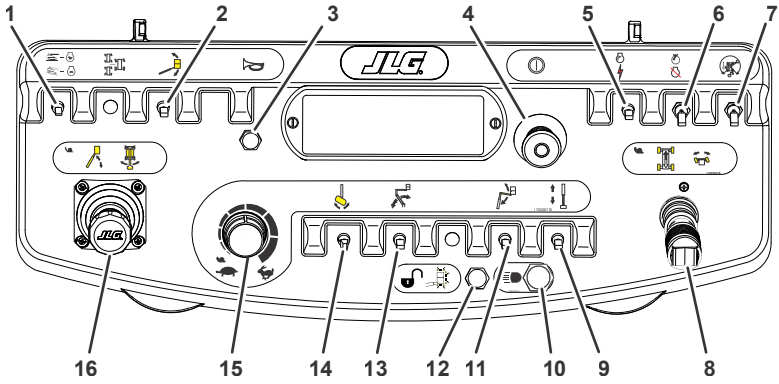
Platform Overload
Indicates the platform has been overloaded.



System Distress
The light indicates that the JLG Control System has detected an abnormal condition and a Diagnostic Trouble Code has been set in the system memory. Refer to the Service Manual for instructions concerning the trouble codes and trouble code retrieval.
The system distress indicator light will illuminate for 2-3 seconds when the key is positioned to the On position to act as a self test.



3.5 PLATFORM CONTROL STATION



1. Maximum Speed/Reduced Speed
2. Platform Level Override
3. Horn
4. Power / Emergency Stop
5. Engine Start/Auxiliary Descent Enable
6. Generator Enable
7. Drive Orientation Override
8. Drive / Steer
9. Main Boom Telescope
10. Lights / SkySense Mute (If Equipped)
11. Jib Lift
12. SkyGuard / SkySense Switch
13. Tower Boom Lift
14. Platform Rotate
15. Function Speed Control
16. Main Lift / Swing

3.5.1 Platform Control Station Functions

⚠ WARNING

To avoid serious injury, do not operate machine if any control levers or toggle switches controlling platform movement do not return to the off or neutral position when released.

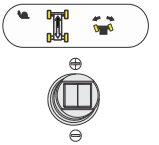
Note: Lift, Swing, and Drive control levers are spring-loaded and will automatically return to neutral (off) position when released.

Drive Orientation Override

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

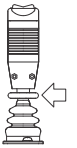


Drive / Steer
Push forward to drive forward, pull back to drive in reverse. Steering is accomplished via a thumb-activated rocker switch on the end of the steer handle.

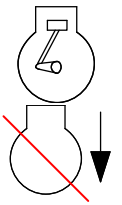


Note: To operate the Drive joystick, pull up on the locking ring below the handle.

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



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



Function Speed Control
This control knob affects the speed of Telescope, Tower Lift, Jib Lift, and Platform Rotate.

Note: During platform rotation, a speed difference may not be noticeable to the operator.

Turning the knob all the way counterclockwise until it clicks puts the machine into Creep Mode. Creep Mode puts the functions listed above, as well as Drive/Steer and Main Lift/ Swing functions into the slowest speed setting.



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



Jib Lift
Provides raising and lowering of the jib.



Lights / SkySense Mute (If Equipped)
This switch operates the accessory lights package if the machine is so equipped.

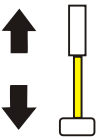


Note: The Platform/Ground Select Switch does not shut off power to operate the lights. To avoid draining the battery, the lights must be shut off using this switch.

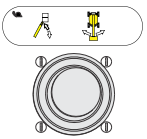


If machine is equipped with SkySense, the switch will mute the SkySense speakers.

Main Boom Telescope
Provides extension and retraction of the main boom.

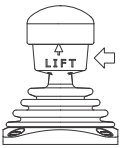


Main Lift / Swing
Provides main lift and swing. Push forward to lift up, pull backward to boom down. Move right to swing right, move left to swing left.

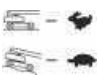


Note: To operate the Main Boom Lift/Swing joystick, pull up on the locking ring below the handle.

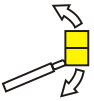
Note: The Main Boom Lift/Swing joystick is spring loaded and will automatically return to neutral (Off) position when released.



Maximum Speed / Reduced Speed
Activating the Speed Mode switch allows the operator to select High or Low Speed travel operation..



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



⚠ WARNING

Only use the platform leveling override function for slight leveling of the platform. Incorrect use could cause the load/occupants to shift or fall. Failure to do so could result in death or serious injury.

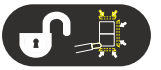
Platform Rotate
Provides rotation of the platform.



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



SkyGuard / SkySense Switch



For machines equipped with SkyGuard:

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

For machines equipped with both SkyGuard and SkySense:

> The switch operates like the SkyGuard override switch as described above. The switch also enables the functions cut out by the SkySense system to operate again at creep speed, allowing the operator to move the platform closer to the obstacle that caused the shutdown situation if desired.

Start / Auxiliary Descent Enable
When pushed forward, the switch energizes the starter motor to start the engine.



Note: After turning on ignition, the JLG Control System will wait until glow plug indicator light goes out before cranking engine.

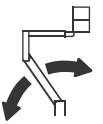


When pushed back, it energizes Auxiliary Descent Enable which allows the boom and jib to be lowered in the event of system malfunction. Gravity is used to control valves and lower the booms and jib. The functions that can be operated with this control are:

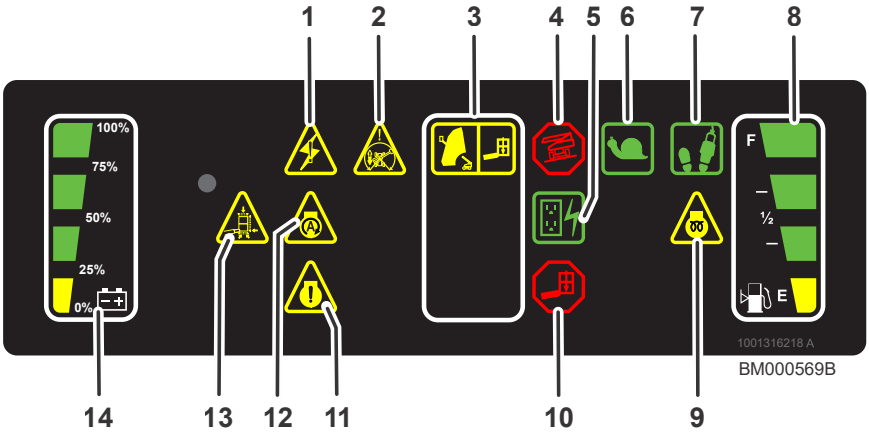


- Main Lift Down
- Tower Lift Down
- Jib Lift Down

Tower Boom Lift
This switch provides for raising and lowering of the Tower Boom.



3.6 PLATFORM CONTROL INDICATOR PANEL



1. System Distress
2. Drive Orientation
3. Capacity Zone Indicator
4. Tilt Alarm / Warning
5. AC Generator
6. Creep
7. Footswitch
8. Fuel Level
9. Glow Plug
10. Platform Overload
11. Engine Error
12. Generator Auto Start
13. Soft Touch / SkyGuard / SkySense Indicator
14. Battery Charge Level

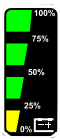
Note: The indicator lights will illuminate for approximately 1 second when the key is positioned to the on position to act as a self test.

3.6.1 Platform Control Indicator Panel Functions

AC Generator
Indicates the generator is in operation.



Battery Charge Level
Indicates the state-of-charge of the battery pack.



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



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



Drive Orientation
When the boom is swung beyond the rear drive tires or further in either direction, the Drive Orientation indicator will illuminate when the drive function is selected. This is a signal for the operator to verify that the drive control is being operated in the proper direction (i.e. controls reversed situations).



Engine Error
Indicates a fault with the engine and service is required or is requesting a cleaning sequence.



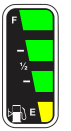
Footswitch Enable
To operate any function, the footswitch must be pressed down and the function selected within seven seconds. The enable indicator shows that the controls are enabled. If a function is not selected within seven seconds, or if a seven second lapse between ending one function and beginning the next function, the enable light will go out and the footswitch must be released and pressed again to enable the controls.
Releasing the footswitch removes power from all controls and applies the drive brakes.



⚠ WARNING

To avoid serious injury, do not remove, modify or disable the footswitch by blocking or any other means.

Fuel Level
Indicates the level of fuel in the fuel tank.



Generator Auto Start
Indicates the auto generator system is in operation



Glow Plug
Indicates the glow plugs are on. The glow plugs are automatically turned on with the ignition circuit and remain on for approximately seven seconds. Start the engine only after the light goes out.



Platform Overload
Indicates the platform has been overloaded.



Soft Touch / SkyGuard / SkySense Indicator
Indicates the Soft Touch bumper is against an object or the SkyGuard sensor has been activated. All controls are cut out until the override button is pushed. For Soft Touch, controls are then active in the Creep Mode or for SkyGuard, controls will work normally.



System Distress
The light indicates that the JLG Control System has detected an abnormal condition and a Diagnostic Trouble Code has been set in the system memory. Refer to the Service Manual for instructions concerning the trouble codes and trouble code retrieval.
The system distress indicator light will illuminate for 2-3 seconds when the key is positioned to the On position to act as a self test.



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



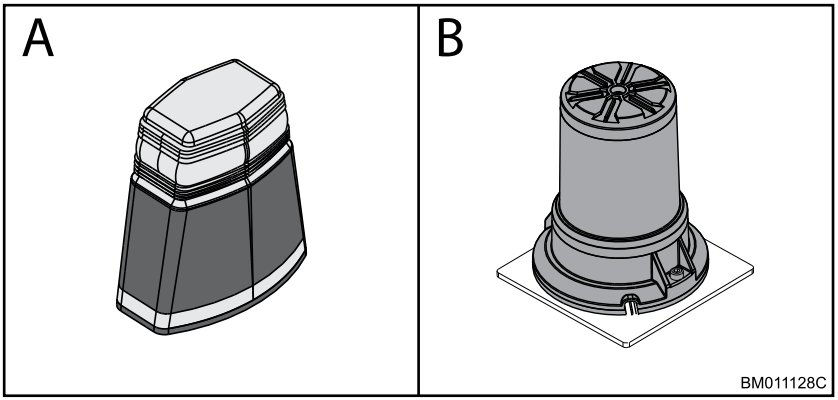
Note: When the tilt sensor alarm is activated, the Drive function will be disabled if the boom is elevated above horizontal.

⚠ WARNING

If tilt warning light is illuminated when boom is raised or extended, retract and lower to below horizontal then reposition machine so that it is within the limits of the maximum operating slope before extending boom or raising boom above horizontal.

Tilt Angle	Market
4°	All Markets

3.7 BEACONS



A. LED Motion / Amber Beacon (CS550) B. Beacon

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

3.7.1 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. Where applicable, the CS550 can also be configured to function as a SkyGuard Beacon (see below).

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

3.7.2 Amber Beacon

This amber-colored beacon flashes in a consistent pattern to alert those nearby that the machine power is on. The device may also use different flash patterns to identify specific machine alerts.

3.7.3 Blue or Red SkyGuard® Beacon

The SkyGuard beacon is available in blue or red lamp options. The beacon will flash in conjunction with an audible alarm when the SkyGuard sensor is activated.

Refer to the SkyGuard Operation section for more information.

SECTION 4
Machine Operation

4.1 GENERAL

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

The primary operator control station is in the platform. From this control station, the operator can drive and steer the machine in both forward and reverse directions. The operator can raise or lower the main or tower boom or swing the boom to the left or right.

Standard boom swing is 355° non-continuous left and right of the stowed position. The machine has a Ground Control Station which will override the Platform Control Station. Ground Controls operate all functions except drive and steer. Except for performing inspections and the Function Check, the ground controls are to be used in an emergency to lower the platform to the ground should the operator in the platform be unable to do so.

4.2 OPERATING CHARACTERISTICS AND LIMITATIONS

4.2.1 Operating Conditions

The boom can be raised above horizontal with or without any load in platform, if:

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.
4. Machine is as originally equipped from JLG.

4.2.2 Platform Load Sensing System (LSS)

The Platform Load Sensing System (LSS) measures platform load from a sensor in the platform support.

If the LSS senses an overload condition, the overload alarm will sound, the overload indicator will light up at both the platform control and the ground control stations, and all boom functions will be disabled. To regain boom control, reduce the load in the platform to not exceed the rated workload indicated on the capacity decal. If unable to resolve the overload condition, auxiliary power may be used to return the platform to a safe working condition. See Emergency Operation section.

4.3 STABILITY

Machine stability is based on two (2) conditions which are called Forward and Backward stability. The machine's position of least FORWARD stability and its position of least BACKWARD stability are shown in the following images.

⚠ WARNING

To avoid forward or backward tipping, do not overload machine or operate the machine beyond the limit of the maximum operating slope.

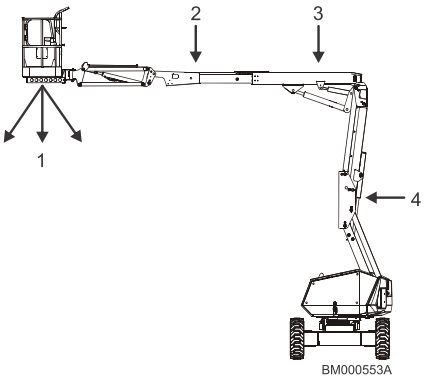


Figure 4. Position of Least Forward Stability

1. Machine will tip over in this direction if overloaded or operated beyond the limits of the maximum operating slope.
2. Main Boom fully extended.
3. Main Boom horizontal.
4. Lower Boom fully elevated.

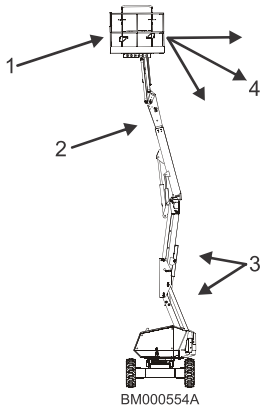


Figure 5. Position of Least Backward Stability

1. Platform rotated 90°.
2. Main Boom fully elevated and fully retracted.
3. Lower Boom fully elevated.
4. Machine will tip over in this direction if overloaded or operated beyond the limits of the maximum operating slope.

4.4 ENGINE OPERATION (START/SHUTDOWN)

Note: When operating a machine at high altitudes, a decrease in machine performance may occur due to a decrease in air density.

Note: When operating a machine at high ambient temperatures, a decrease in machine performance and an increase in engine coolant temperature may occur.

Note: Contact JLG Customer Service for operation under abnormal conditions.

There are three engine starting modes: **Auto Start**, **Operator Start**, and **Jump Start**.

In the Auto Start mode, an audible warning will sound before the genset (generator set) will start the engine. The other two modes require the operator to engage the Start switch to begin the engine start sequence.

Note: The engine is started by the genset, not the engine starter. The engine starter only functions for Jump Start operation.

4.4.1 Auto Start

In this mode, the JLG Control System will automatically start the engine when the Generator Enable switch is in the On position and the battery pack state of charge is in a low discharged state. The engine start is required to supply a charge to the battery pack.

4.4.2 Operator Start

Note: Initial starting should always be performed from the Ground Control console.

⚠ CAUTION

If engine fails to start promptly, do not crank for an extended time. If engine fails after several attempts, refer to engine maintenance manual.

1. Turn key of Platform/Ground Select switch to Ground.



2. Pull the Power/Emergency Stop switch to On.



3. Push the Engine Start switch.



Note: After turning on ignition, the JLG Control System will wait until glow plug indicator light goes out before cranking engine.



⚠ CAUTION

Allow engine to warm-up for a few minutes at low speed before applying any load.

4. After engine has had sufficient time to warm up, push in the Power/ Emergency Stop switch and shut engine off.



5. Turn Platform/Ground Select switch to Platform.



6. Pull out the Ground Console Power/Emergency Stop switch to provide power to the platform controls.



7. From Platform, pull Power/Emergency Stop switch out.



8. Push the Engine Start switch.



Note: Footswitch must be in released in the up position before genset or starter will operate. If genset or starter operates with footswitch in the down position, do not operate the machine.

4.4.3 Jump Start

The engine can be jump started from an external battery when the battery pack voltage becomes too low to power the genset module engine start sequence. The JLG Control System senses the machine is in Jump Start mode when an external battery has been connected to machine jump terminal.

To start the machine in Jump Start Mode:

1. Connect the positive battery contact of the external battery to the machine jump terminal.



2. Connect the negative battery contact of the external battery to a grounded location on the machine.
3. Refer to Operator Start and start the engine.

4.4.4 Shutdown Procedure

If the genset is in automatic mode, the engine will shut down

⚠ CAUTION

If an engine malfunction causes an unscheduled shutdown, determine the cause and correct it before restarting the engine.

1. Remove all load and allow engine to operate at low speed for 3-5 minutes; this allows further reduction of internal engine temperature.
2. Push Power/Emergency Stop switch in.



3. Turn Platform/Ground Select switch to Off.

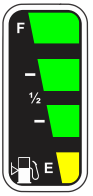


Refer to Engine Manufacturer's manual for detailed information.

4.5 FUEL SHUTOFF SYSTEM (RESERVE)

Note: Reference the Service and Maintenance Manual along with a qualified JLG Mechanic to verify your machine setup.

The Fuel Shutoff System monitors the fuel in the tank and senses when the fuel level is getting low. The JLG Control System automatically shuts the engine down before the fuel tank is emptied unless the machine is set up for Engine Restart.



If fuel level reaches the Low Fuel range the ¼ tank indicator will flash once a second and there will be approximately 5 minutes of engine run time left. If the system is in this condition and automatically shuts down the engine, or the engine is manually shut down before the 5 minute run time is complete, the ¼ tank indicator will flash 10 times a second and the engine will react according to machine setup. Setup options are as follows:

- **Engine One Restart** - When the engine shuts down, the operator will be permitted to cycle power and restart the engine once with approximately 2 minutes of run time. After the 2 minute run time is complete or if the engine is shut down by the operator prior to the completion of the 2 minute run time, it cannot be restarted until fuel is added to the tank.
- **Engine Restart** - When the engine shuts down, the operator will be permitted to cycle power and restart the engine for approximately 2 minutes of run time. After the 2 minutes of run time is complete, the operator may cycle power and restart the engine for an additional 2 minutes of run time. The operator can repeat this process until there is no more fuel available.

NOTICE

Contact a qualified JLG mechanic if the machine needs restarted after no more fuel is available.

- **Engine Stop** - The engine will shut down. No restarts will be permitted until fuel is added to the tank.

4.6 OPERATING MODES (GENERATOR/CHARGING)

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

4.6.1 Hybrid Mode (Automatic)

In Hybrid Mode, the generator's controller will monitor battery status, turn on (engine on) automatically when the battery voltage drops as a result of discharge, and turn off (engine off) when batteries are adequately charged.

The generator will operate in Hybrid Mode when:

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



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



4.6.2 Electric Mode (Battery Only)

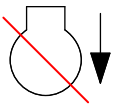
In Electric Mode, the machine will operate using battery power only. The batteries can be used until they reach a discharged state.

The machine will operate in the Electric Mode when:

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



2. The switch on the platform control station is in the Off or Disable position.



4.6.3 Engine Mode (Manual Charge)

In this mode, the engine will continuously run to provide needed power for machine operations. The generator will charge the battery pack if it is not fully charged.

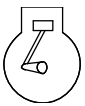
Activating the Manual Charge button will start the engine and initiate the charging cycle even if the batteries are charged above the level of automatic start. The operator can initiate the charge cycle to charge the batteries to the maximum level. The charging cycle will include finishing phase similar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

The machine will operate in Engine Mode when:

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



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



3. The Manual Charge push button is activated.

4.7 INVERTER

The inverter converts 48 VDC to 110 VAC 230 VAC (depending on market) to allow operation of power tools from the machine's batteries.

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

4.8 TRAVELING (GRADE/SIDE SLOPE)

Note: Refer to the Operating Specifications table for gradeability and side slope ratings.

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

Traveling is limited by two factors:

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

4.8.1 Traveling on a Grade

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

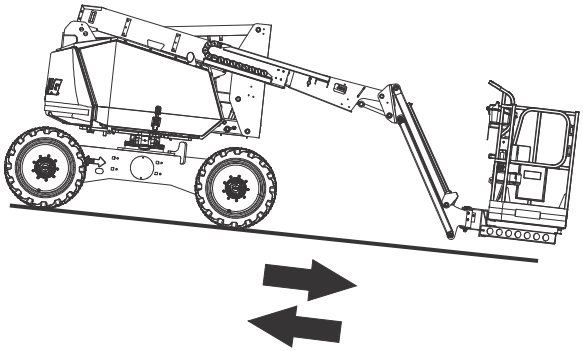
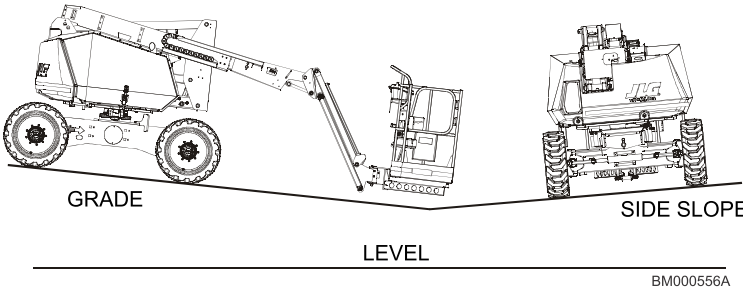


Figure 6. Traveling on a Grade

NOTICE

If the boom is over the front (steer) axle, direction of steer and drive movement will be opposite from the movement of the controls.



4.9 TRAVELING (DRIVING)

⚠ WARNING

Do not drive with boom above horizontal except on a smooth, firm surface within the limits of the maximum operating slope.

⚠ WARNING

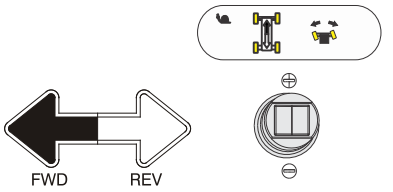
Do not drive on side slopes which exceed 4 degrees.

To avoid loss of travel control or tip over, do not drive machine on grades exceeding those specified in the operating specifications section of this manual.

⚠ WARNING

Use extreme caution when driving in reverse and at all times when the platform is elevated.

Before driving, locate the black/white orientation arrows on both the chassis and the platform controls. Move the drive controls in a direction matching the directional arrows for the intended direction of travel.



4.9.1 Traveling Forward and Reverse

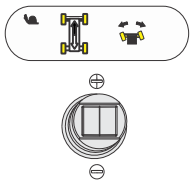
NOTICE

Footswitch must be depressed prior to activating any function, otherwise function will not operate.

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

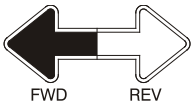


2. Position Drive controller to forward or reverse as desired.



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

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



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



4.10 STEERING

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



4.11 PLATFORM

JLG offers multiple platform sizes to accommodate a variety of applications. Refer to the Illustrated Parts Manual for available platforms.

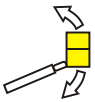
Not all platform options may be of adequate size to allow for the maximum number of rated occupants shown on the machine's capacity decal. The number of platform occupants may never exceed the number of available lanyard anchorage points. Attach only one (1) lanyard per lanyard anchorage point.

4.11.1 Platform Level Adjustment

⚠ WARNING

Only use the platform leveling override function for slight leveling of the platform. Incorrect use could cause the load/occupants to shift or fall. Failure to do so could result in death or serious injury.

During normal operation of the machine, the platform will automatically maintain its position. To manually level up or down, position the platform/level control switch up or down and hold until the platform is level.



4.11.2 Platform Rotation

To rotate the platform to the left or right, use the platform rotate control switch to select the direction and hold until the desired position is reached.



4.12 BOOM

⚠ WARNING

A red tilt warning light is located on the control console which lights when the chassis is on an excessive slope. Do not swing or raise boom above horizontal when light is lit.

Do not depend on tilt alarm as a level indicator for the chassis. Tilt alarm indicates chassis is on an excessive slope. Chassis must be level before swinging, or raising boom above horizontal or driving with the boom elevated.

To avoid tip over if red tilt warning lights light when the boom is raised above horizontal, lower platform to ground level. Then reposition machine so that chassis is level before raising boom.

Traveling with boom below horizontal is permitted on grades and side slopes specified on serial nameplate on the frame.

⚠ WARNING

To avoid serious injury, do not operate machinery if any control lever or toggle switch controlling platform movement does not return to the 'off' or neutral position when released.

⚠ CAUTION

To avoid a collision and injury if platform does not stop when a control switch or lever is released, remove foot from footswitch or use emergency stop switch to stop the machine.

4.12.1 Swinging the Boom

To swing boom, use Swing control to select Right or Left direction.

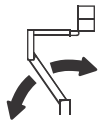


NOTICE

When swinging the boom make sure there is ample room for the boom to clear surrounding walls, partitions, and equipment.

4.12.2 Raising and Lowering the Tower Boom

To raise or lower the Tower Boom, position Tower Boom Lift switch to Up or Down until desired height is reached.



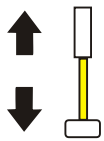
4.12.3 Raising and Lowering the Main Boom

To raise or lower the Main Boom, position Main Boom Lift controller to select Up or Down until desired height is reached.



4.12.4 Telescoping the Main Boom

To extend or retract the main boom, use the Main Telescope Control Switch to select In or Out movement.



4.13 FUNCTION SPEED CONTROL

This control affects the speed of Telescope, Tower Boom Lift, Jib Lift, and Platform Rotate functions.

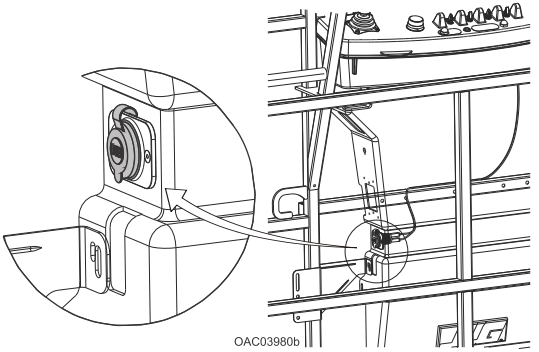
Note: During platform rotation, a speed difference may not be noticeable to the operator.



Turning the knob all the way counterclockwise until it clicks puts the machine into Creep Mode. Creep Mode puts the functions listed above, as well as the Drive/Steer and Main Lift/Swing functions into the slowest speed setting.

4.14 USB CHARGING PORT

The machine is equipped with a USB charging port for the operator.



4.15 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.

4.16 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:

1. Speed Restricted — Machine is in Creep mode. See Operation section for more information on machine mode.
2. Speed and Function Restricted — Machine is in Creep mode and boom movement is restricted to transport position. In this state, once the boom reaches the transport position, it is not permitted to leave that defined position.
3. Locked Out — Machine has been locked out and will not operate (including engine start and auxiliary power, if applicable).

⚠ CAUTION

The Locked Out state will override the machine capability to use auxiliary power.

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.

4.17 SKYGUARD ACTIVATION/DEACTIVATION

SkyGuard provides enhanced protection at the Platform Control Station. When the SkyGuard sensor is activated, functions in use at the time of actuation will reverse or cutout. See SkyGuard Function Table.

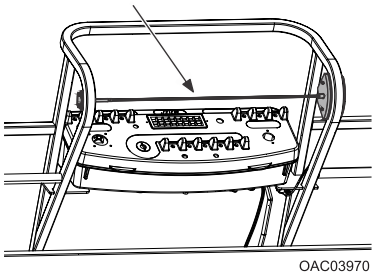


Figure 7. SkyGuard - SkyLine

To activate SkyGuard, the rod is pressed breaking the connection between the rod and right bracket.

During activation, the horn will sound and (if equipped and configured) a beacon will illuminate until sensor is reattached and footswitch is disengaged.

If SkyGuard activates inadvertently, release controls, reattach the rod to the right bracket and recycle the foot switch. Normal operation should resume.

If SkyGuard remains activated after rod reattachment, press and hold the SkyGuard Override Switch to allow functions to return the operator to the ground. Do not operate machine until the machine is inspected and any malfunctions are corrected.

Table 4. SkyGuard Function Table

Function	Reversal / Cutout
Drive Forward	R * / C **
Drive Reverse	R
Steer	C
Swing	R
Tower Lift Up	R
Tower Lift Down	C
Tower Telescope Out	C
Tower Telescope In	C
Boom Lift Up	R
Boom Lift Down	R
Boom Telescope Out	R
Boom Telescope In	C
Jib Lift (If equipped)	C
Platform Level	C
Platform Rotate	C

R = Indicates Reversal is Activated; **C** = Indicates Cutout is Activated
* DOS (Drive Orientation System) Enabled
** DOS Not Enabled, machine is driving straight without steering, and any other hydraulic function is active
Note: If SkyGuard is enabled with the Soft Touch system, functions will cut out instead of reversing.

4.18 SHUT DOWN AND PARK/STORAGE POSITION

4.18.1 Shut Down and Park

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

1. Drive machine to a reasonably well protected area.
2. Ensure boom is fully retracted and lowered over rear axle.
3. Shut down Emergency Stop at Platform Controls.
4. Shut down Emergency Stop at Ground Controls. Position Platform/Ground Select switch to center OFF (center position).

5. If necessary, cover Platform Controls to protect instruction placards, warning decals, and operating controls from hostile environment.

NOTICE

If parking a MEWP with the boom elevated in an effort to conserve space, booms may be elevated, but shall not be extended. It is the operator's responsibility to ensure all safety precautions in Section 1 of this manual are followed for each unique situation.

4.18.2 Storage Position

Use these figures as reference for the following procedure to place the machine in the Storage/Compact Shipping Position.

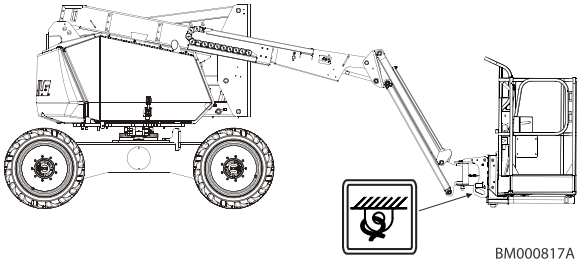
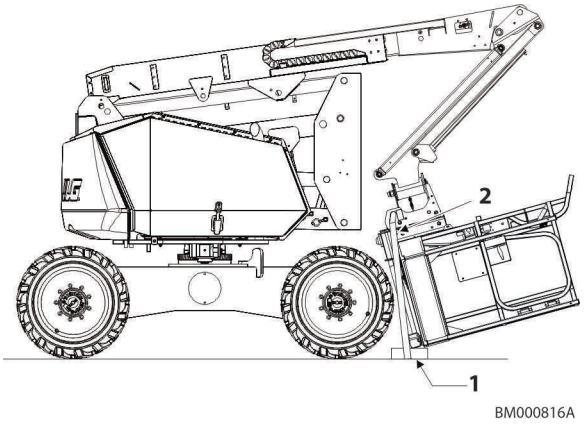


Figure 8. Stowed Position



1. Blocking/Support
2. Tie Down Strap

Figure 9. Storage/Compact Shipping Position

1. Place the machine in the Stowed Position.

2. From the ground control station, raise the main boom at least to the elevation shown in the Storage /Compact Shipping Position. The main boom must be raised to prevent the platform basket from hitting the ground during this procedure.

3. Activate Platform Level Down until the platform is in the position shown in the Storage/Compact Shipping Position.

NOTICE

The platform basket must not be in contact with the ground, blocking, or any tie down equipment.

4. Place blocking under the platform support, lower the platform support down onto the blocking by using Main Boom Lift Down, and tie it down as shown in the Storage/Compact Shipping Position.

4.19 LIFTING AND TIE DOWN

4.19.1 Lifting

1. Refer to the Serial Number Plate, refer to the Specifications section of this manual, or weigh the individual unit to find out the Gross Vehicle Weight.

2. Place the boom in the stowed position.

3. Remove all loose items from the machine.

4. Properly adjust the rigging to prevent damage to the machine and so the machine remains level.

4.19.2 Tie Down (Stowed Position)

NOTICE

When transporting the machine in the stowed position, the boom must be fully lowered into the boom rest.

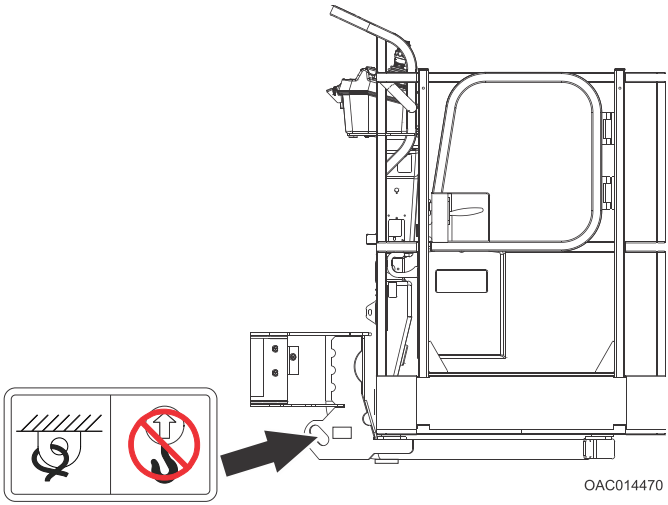
1. Place the boom in the stowed position.

2. Remove all loose items from the machine.

3. Secure the chassis using straps or chains of adequate strength.

4. Ensure the platform is lowered so the wear pad on the bottom rests on the surface of the transportation vehicle.

5. Secure through the tie downs on the boom using straps or chains of adequate strength.



4.19.3 Tie Down (Compact Shipping Position)

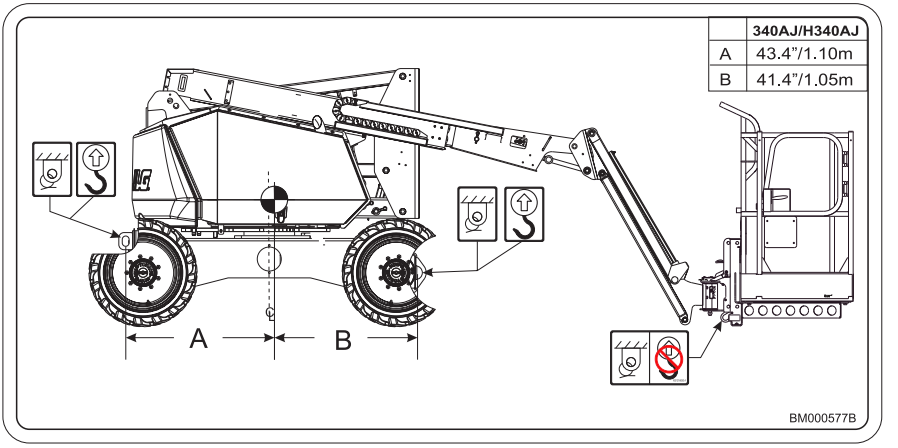
1. Place the machine in the stowed position.
2. Remove all loose items from the machine.
3. Secure the chassis using straps or chains of adequate strength.
4. From the ground control station, raise the main boom at least to the elevation shown in *Figure — Storage Position/Compact Shipping Position*. The main boom must be raised to prevent the platform basket from hitting the ground during this procedure.
5. Activate Platform Level Down until the platform is in the position shown.

NOTICE

Only the platform support should contact blocking and tie down equipment. The platform basket must not be in contact with the ground, blocking, or any tie down equipment.

6. Place blocking under the platform support, lower the platform support down onto the blocking by using Main Boom Lift Down, and tie it down as shown in *Figure — Storage Position/Compact Shipping Position*.

4.20 LIFTING AND TIE DOWN CHART



4.21 SAFETY DECALS LOCATIONS

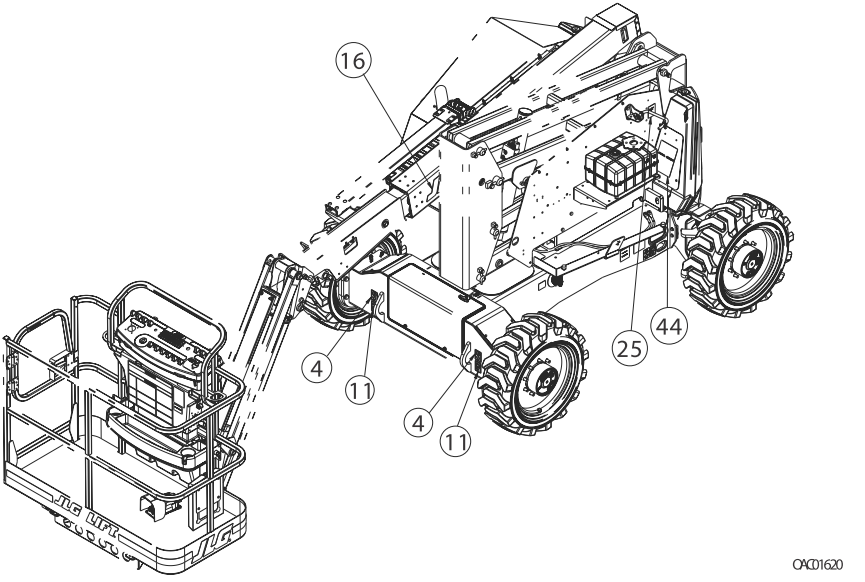


Figure 10. ANSI - Sheet 1 of 6

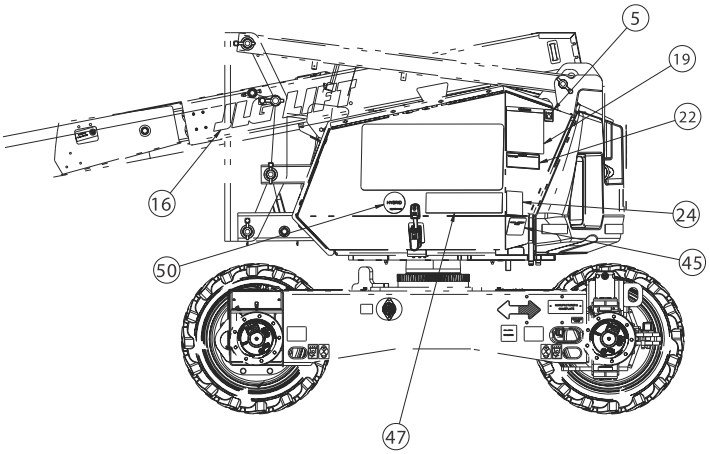


Figure 11. ANSI - Sheet 2 of 6

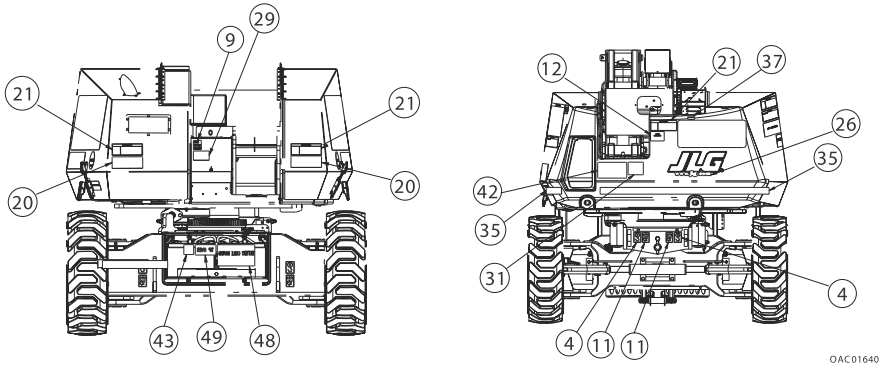


Figure 12. ANSI - Sheet 3 of 6

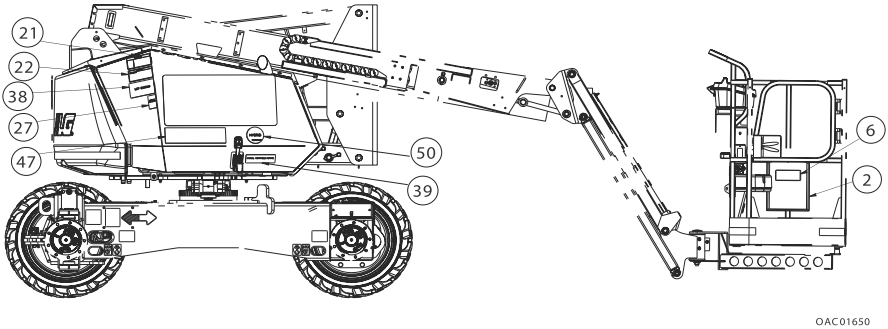


Figure 13. ANSI - Sheet 4 of 6

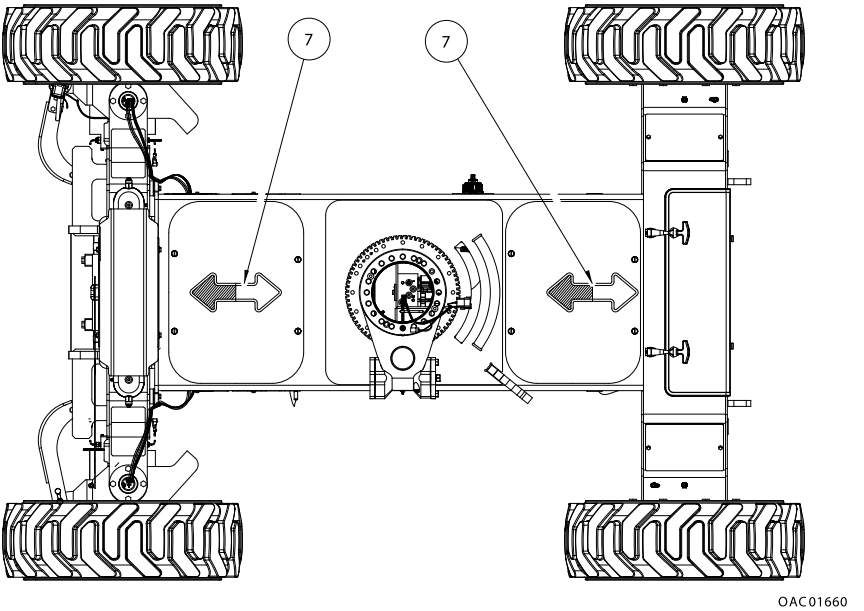


Figure 14. ANSI - Sheet 5 of 6

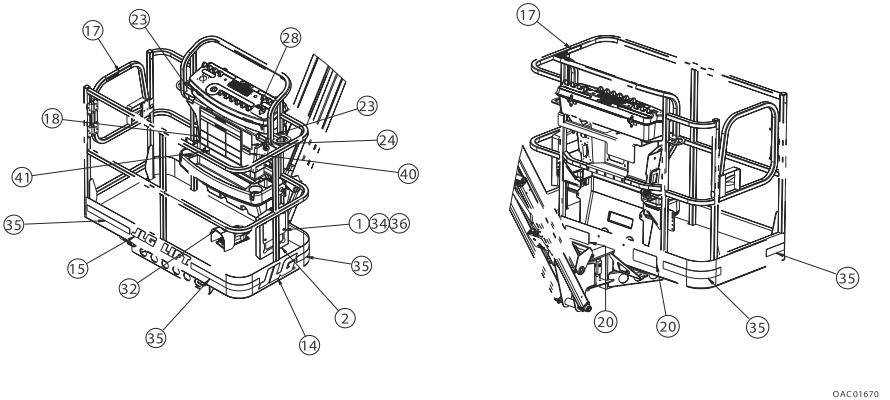


Figure 15. ANSI - Sheet 6 of 6

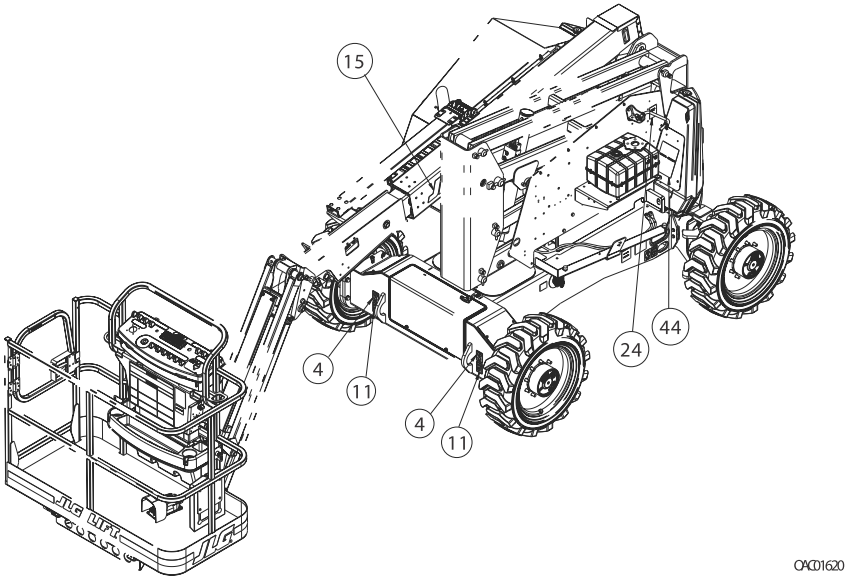


Figure 16. CSA - Sheet 1 of 6

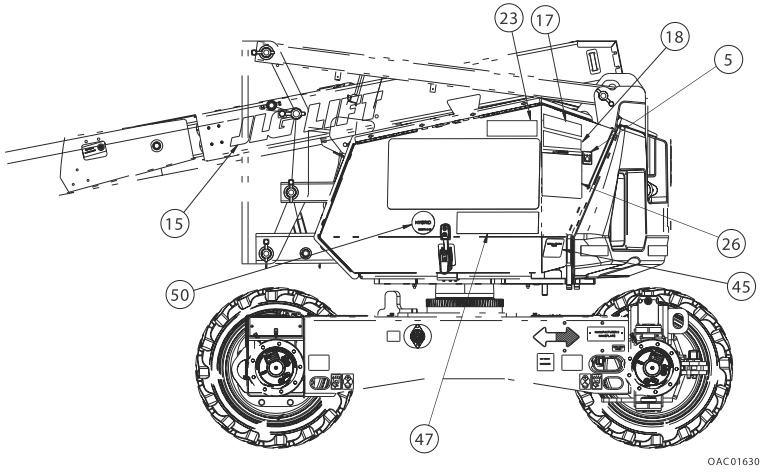


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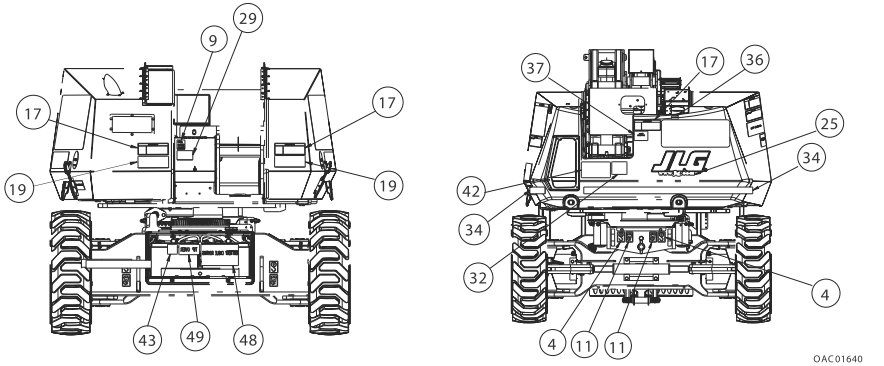


Figure 18. CSA - Sheet 3 of 6

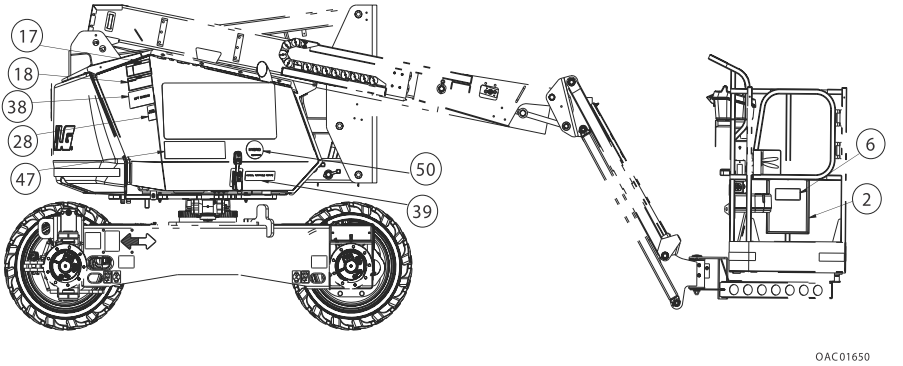


Figure 19. CSA - Sheet 4 of 6

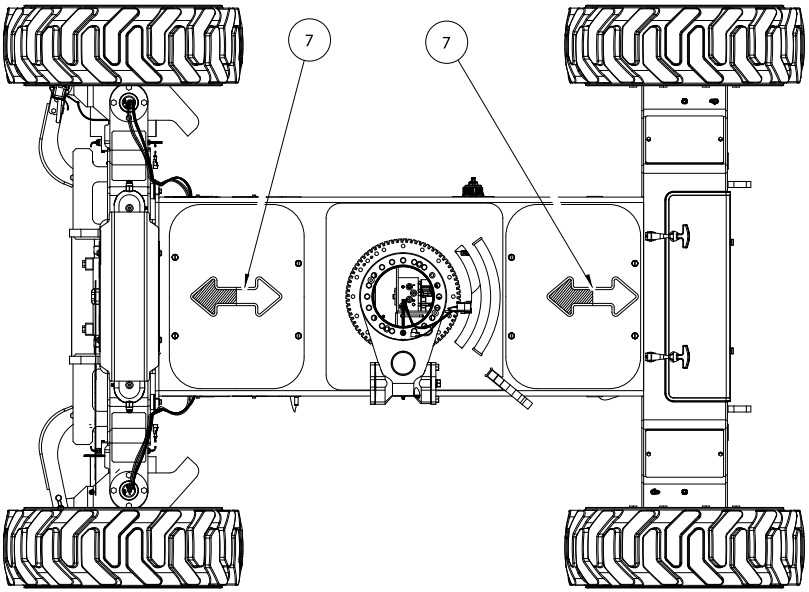


Figure 20. CSA - Sheet 5 of 6

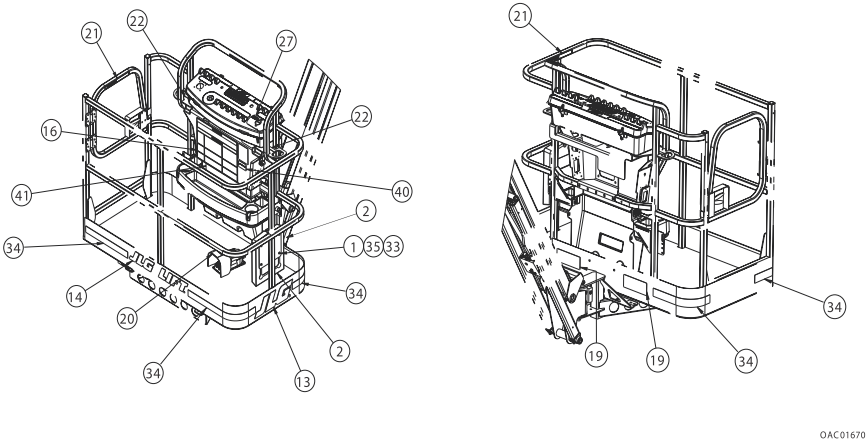


Figure 21. CSA - Sheet 6 of 6

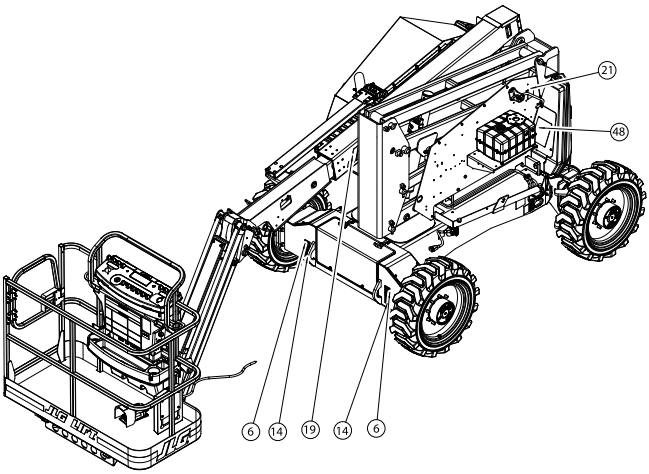


Figure 22. AUS - Sheet 1 of 6

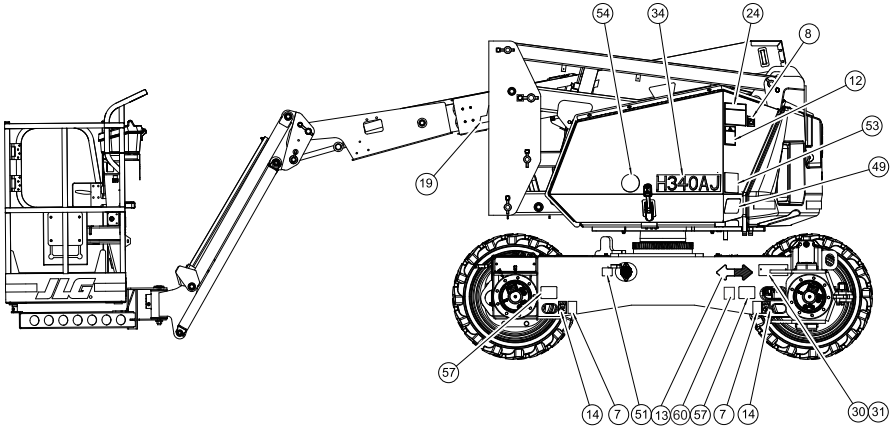


Figure 23. AUS - Sheet 2 of 6

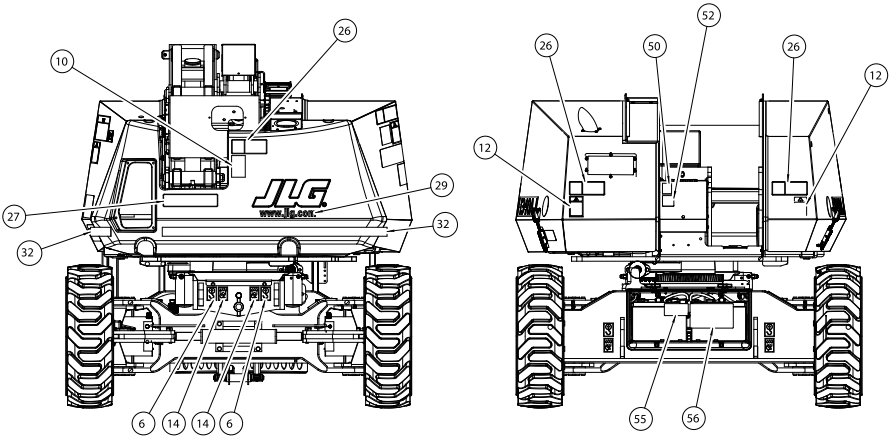


Figure 24. AUS - Sheet 3 of 6

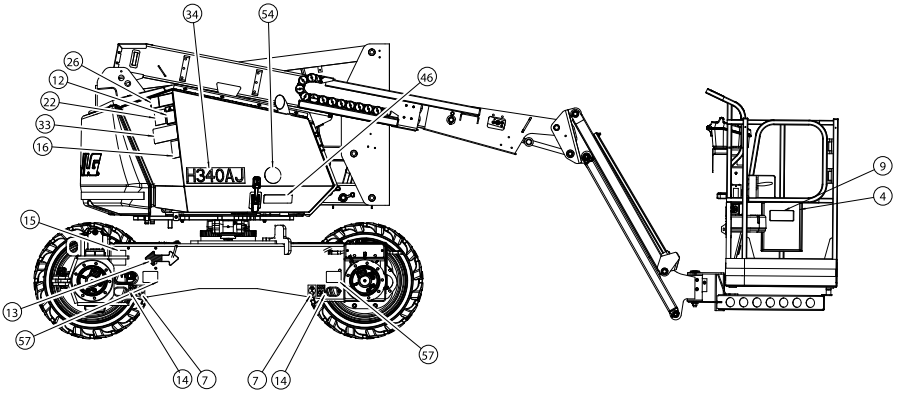


Figure 25. AUS - Sheet 4 of 6

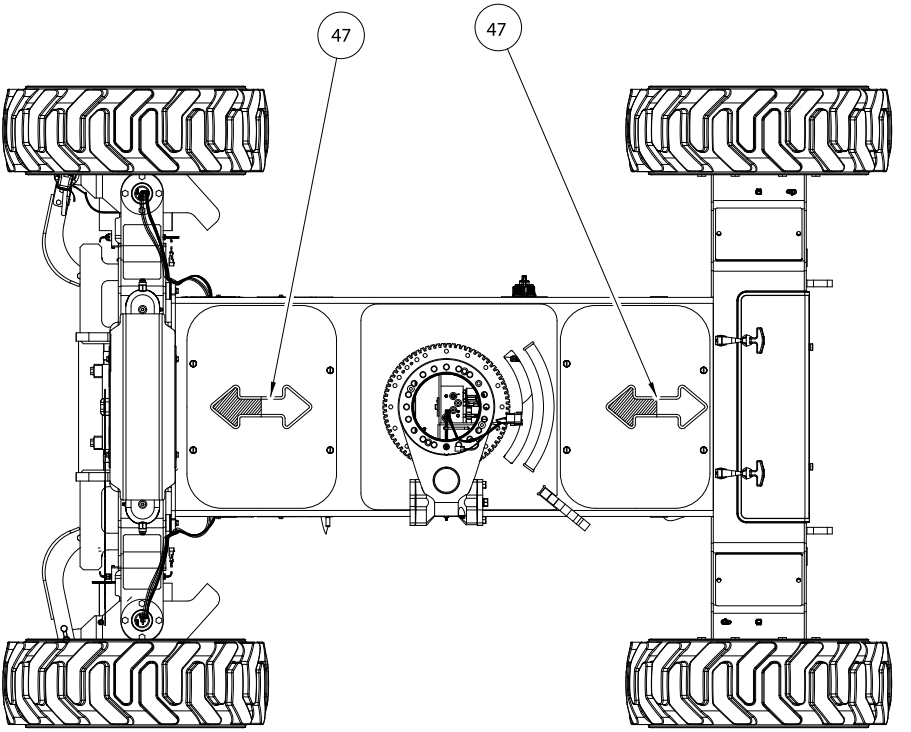


Figure 26. AUS - Sheet 5 of 6

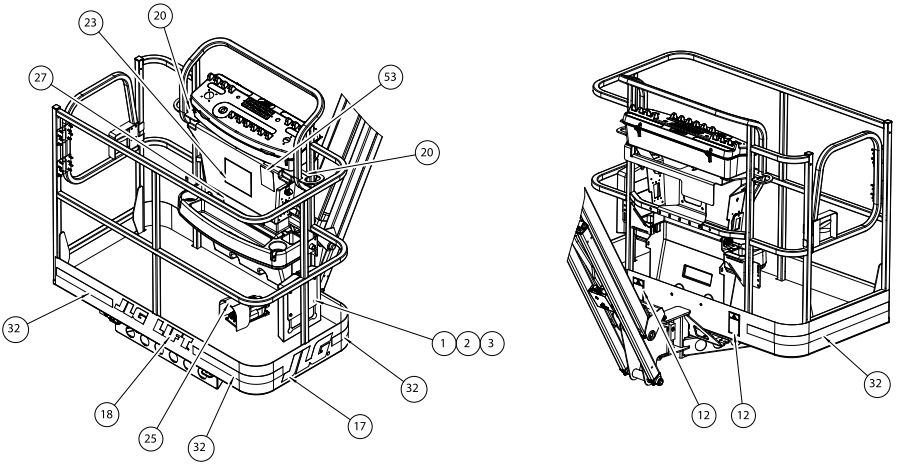


Figure 27. AUS - Sheet 6 of 6

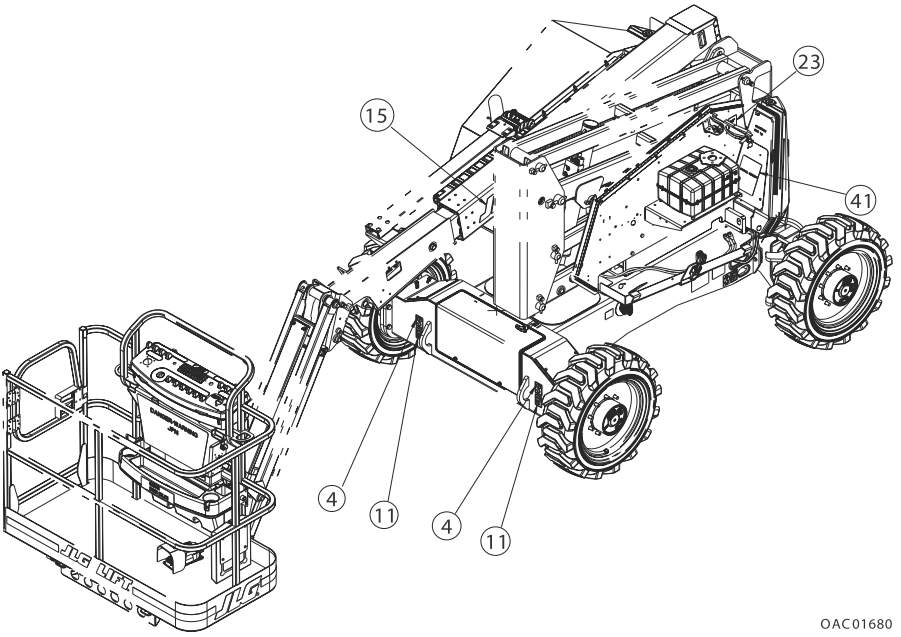


Figure 28. Japan/Korea/China - Sheet 1 of 6

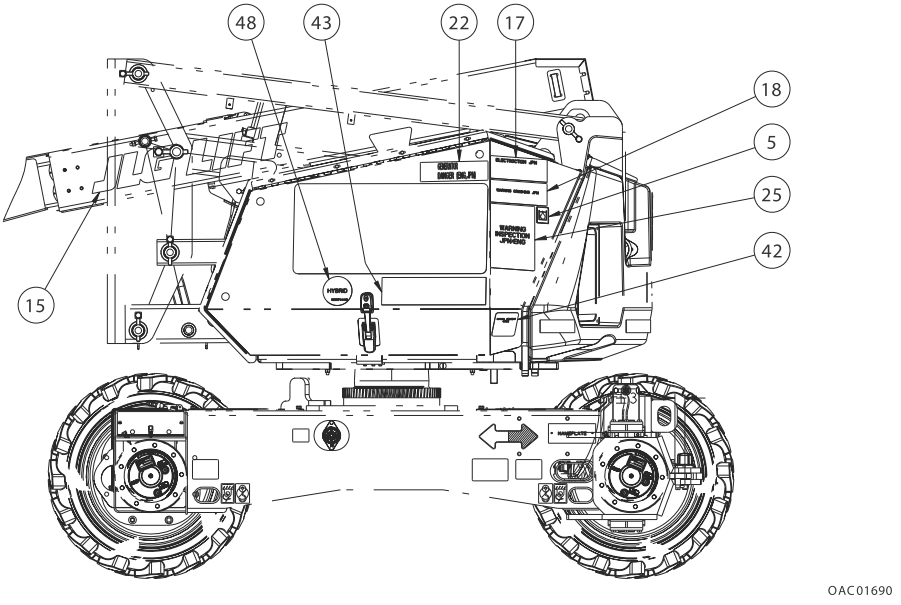


Figure 29. Japan/Korea/China - Sheet 2 of 6

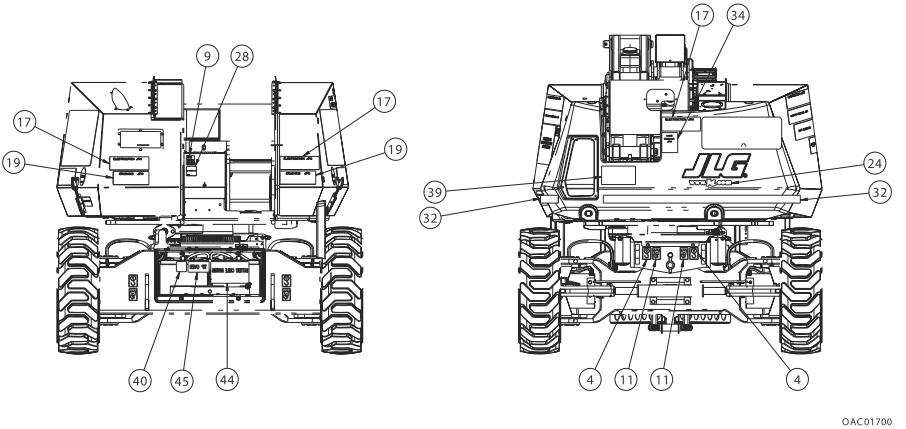


Figure 30. Japan/Korea/China - Sheet 3 of 6

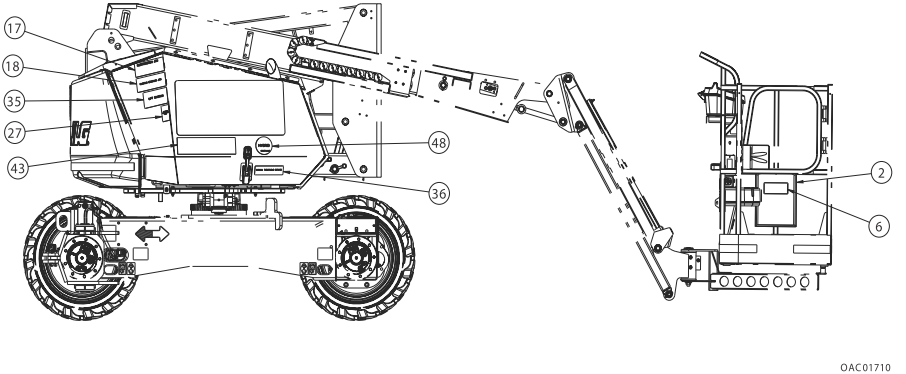


Figure 31. Japan/Korea/China - Sheet 4 of 6

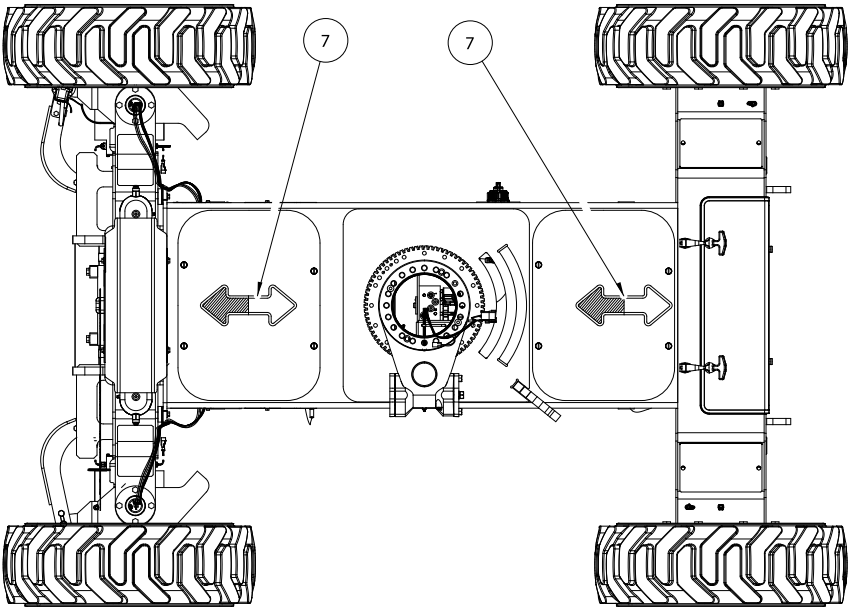


Figure 32. Japan/Korea/China - Sheet 5 of 6

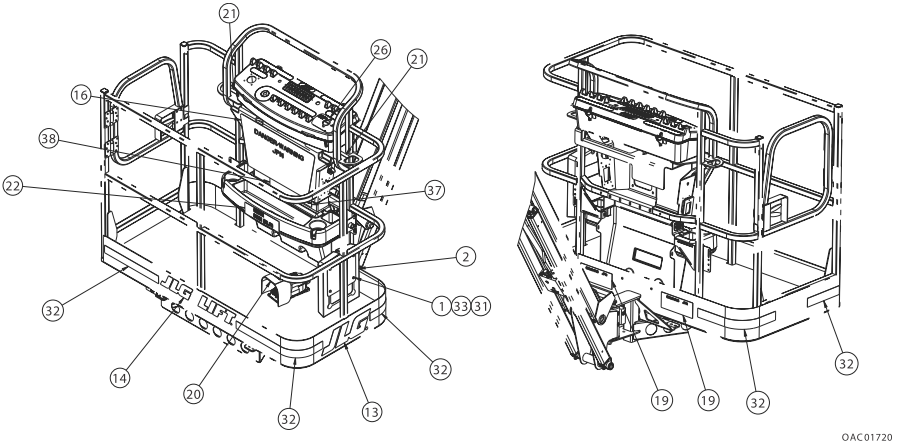


Figure 33. Japan/Korea/China - Sheet 6 of 6

Item #	ANSI	CSA	AUS	Japan (MOL70)	Korea	China (GB)
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2	0860520	0860520	- -	0860520	0860520	0860520
3	1701499	1701499	- -	1701499	1701499	1701499
4	1701500	1701500	- -	170500	170500	170500
5	1701504	1701504	- -	1701504	1701504	1701504
6	1701509	1701509	1701500	1701509	1701509	1701509
7	1701529	1701529	1701499	1701529	1701529	1701529
8	1701642	1701642	1701504	1701642	1701642	1701642
9	1701644	1701644	1701509	1701644	1701644	1701644
10	1702155	1702155	1701517	1702155	1702155	1702155
11	1702300	1702300	- -	1702300	1702300	1702300
12	1702391	1702631	1701518	1702631	1702631	1702631
13	1702631	1001110613	1701642	1001110613	1001110613	1001110613
14	1001110613	1001110613	1702300	1001110613	1001110613	1001110613
15	1001110613	1001110613	1702631	1001110613	1001110613	1001110613
16	1001110613	1703924	- -	1703926	1703927	1703925
17	1702868	1703936	- -	1703938	1703939	1703937
18	1703797	1703942	- -	1703944	1703945	1703943
19	1703798	1703948	- -	1703950	1703951	1703949

Item #	ANSI	CSA	AUS	Japan (MOL70)	Korea	China (GB)
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21	1703805	1704000	1704412	1704277	1704277	1704277
22	1703953	1704277	- -	1704369	1704370	1704372
23	1704277	1704368	1705921	1704412	1704412	1704412
24	1704286	1704277	1705822	1001110613	1001110613	1001110613
25	1704412	1001110613	1705828	1705344	1705345	1705348
26	1001110613	1705347	1705961	1705426	1705427	1705430
27	1704972	1705429	1705978	- -	1705969	1705968
28	1705351	1706098	- -	1706077	- -	1706093
29	1705929	1706097	- -	1706062	1706061	1706060
30	2080057	1001187083	- -	2080057	2080057	2080057
31	3251813	2080057	- -	3290605	3290605	3290605
32	3252347	3251813	- -	1706948	1706948	1706948
33	1706948	3290605	1001119576	4811700	4811700	4811700
34	3290605	4420051	1001170058	1001113166	1001113509	1001113168
35	4420051	4811700	- -	1001119576	1001119576	1001119576
36	4811700	1001108923	- -	1001119981	1001119981	1001119981
37	1001108923	1001113169	- -	1001120279	1001120280	1001120281
38	1001119576	1001119576	- -	1001253932	1001253924	1001253926

Item #	ANSI	CSA	AUS	Japan (MOL70)	Korea	China (GB)
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40	1001120002	1001120004	- -	1001125483	1001125483	1001125483
41	1001253920	1001253922	- -	1001127549	1001127549	1001127549
42	1001253921	1001253923	- -	1001127588	1001127588	1001127588
43	1001125483	1001125483	- -	1001170056	1001170058	1001170058
44	1001127549	1001127549	- -	1001170061	1001170061	1001170061
45	1001127588	1001127588	- -	1001170674	1001170673	1001170671
46	1001131269	1001131269	1001119981	- -	1001171296	- -
47	1001170058	1001170058	1701529	- -	3251813	3251813
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49	1001170676	1001170672	1001127588	1001182809	1001182809	1001182809
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51	1001182809	1001182809	1702155	4420051	4420051	4420051
52	1001223055	1001223971	1706097	- -	- -	- -
53	1001228370	1001228370	- -	- -	- -	- -
54	- -	- -	1001174449	- -	- -	- -
55	- -	- -	1001170060	- -	- -	- -
56	- -	- -	1001170061	- -	- -	- -

Item #	ANSI	CSA	AUS	Japan (MOL70)	Korea	China (GB)
57	--	--	1001182809	--	--	--
60	--	--	1001223055	--	--	--

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SECTION 5
Emergency Procedures

5.1 GENERAL

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

5.2 INCIDENT NOTIFICATION

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

- USA: 877-JLG-SAFE (554-7233)
- EUROPE: (32) 0 89 84 82 20
- AUSTRALIA: (61) 2 65 811111
- E-mail: ProductSafety@JLG.com

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

NOTICE

Following any incident, thoroughly inspect the machine and test all functions first from the ground controls, then from the platform controls. Do not lift above 3 m (10 ft.) until you are sure that all damage has been repaired, if required, and that all controls are operating correctly.

5.3 EMERGENCY OPERATION

5.3.1 Operator Unable to Control Machine

If the platform operator is pinned, trapped or unable to operate or control machine, do the following:

1. Other personnel should operate the machine from ground controls only as required.

2. Other qualified personnel on the platform may use the platform controls.

⚠ WARNING

Do not continue operation if controls do not function properly.

3. Cranes, forklift trucks or other equipment can be used to remove platform occupants and stabilize motion of the machine.

5.3.2 Platform or Boom Caught Overhead

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

1. Shut off the machine.
2. Rescue all people in the platform before freeing the machine. Personnel must be out of the platform before operating any controls on the machine.
3. Use cranes, forklifts, or other equipment to stabilize motion of the machine to prevent a tip over as required.
4. From the ground controls, use the Auxiliary Power System (if equipped) to carefully free the platform or boom from the object.
5. Once clear, restart the machine and return the platform to a safe position.
6. Inspect the machine for damage. If the machine is damaged or does not operate properly, turn off the machine immediately. Report the problem to the proper maintenance personnel. Do not operate the machine until it is declared safe for operation.

5.4 AUXILIARY DESCENT SYSTEM

The auxiliary descent system allows the boom and jib to be lowered in the event of primary power (engine power) loss. This system uses electrically powered solenoid valves and the force of gravity to lower the booms and jib. The following functions are included in this system and will operate normally if the engine is not running and the auxiliary power switch has been activated.

- Main Lift Down
- Tower Lift Down
- Jib Lift Down

1. From the ground control console, place the Platform/ Ground Select switch in the Ground position.
2. Pull out the Power/Emergency Stop control.

3. Hold down the Auxiliary Descent Enable Switch and the control switch for the desired function.

If it is necessary to raise the jib in order to properly perform the auxiliary descent procedure, use the following procedure.

1. From the ground control console, place the Platform/ Ground Select switch in the Ground position.
2. Pull out the Power/Emergency Stop control.
3. Hold down the Auxiliary Descent Enable Switch, hold up the jib lift control switch and operate the hand pump located next to the hydraulic tank to raise the jib.

Note: The manual pump for jib lift is only operable if a malfunction of the primary hydraulic pump has occurred.

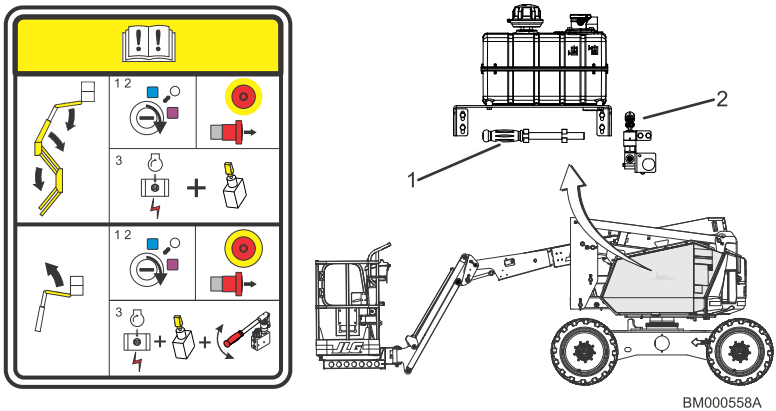


Figure 34. Auxiliary Descent Decal and Hand Pump

1. Pump Handle
2. Hand Pump

5.5 MANUAL SWING OVERRIDE

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

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

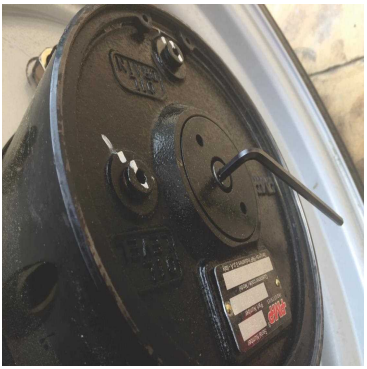
5.6 EMERGENCY TOWING PROCEDURES

Towing this machine is prohibited. However, provisions for moving the machine have been incorporated. The following procedures are to be used ONLY for emergency movement to a suitable maintenance area.

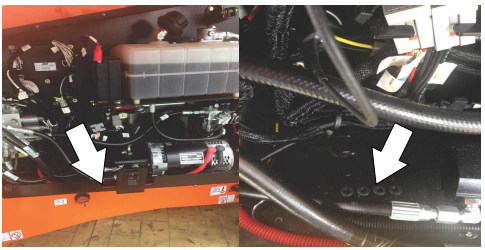
NOTICE

The allowable towing speed is 1.9 mph (3 km/h). The maximum allowable towing distance is 0.6 miles (1 km).

1. Chock wheels securely.
2. Using a 3/16" allen wrench, remove the cap retaining screw from the hub.



3. Locate the brake release bolts on the turntable and remove them. Install the cap retaining screws in the turntable in place of the brake release screws so they are not lost.



4. Using a 5/16" allen wrench, install the brake release screw into the hub.



5. Repeat steps 2 thru 4 for the remaining drive hubs.
6. Connect suitable equipment, remove chocks, and move machine.

After moving machine, complete the following procedure:

1. Position machine on a firm level surface.
2. Chock wheels securely.
3. Using a 5/16" allen wrench, remove the brake release screw from each hub.
4. Replace each brake release screw with the corresponding cap retaining screw and return the brake release screws to the turntable.
5. Remove chocks from wheels as desired.

5.7 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 6
Accessories

6.1 AVAILABLE ACCESSORIES AND RELATIONSHIP TABLE

Table 5. Available Accessories

Accessory	Market					
	ANSI (USA Only)	ANSI	CSA	AUS	MOL 70 (Japan)	China
Cable Ladder Carrier				✓		
Fabric Mesh to Mid Rail*	✓	✓		✓		✓
Fabric Mesh to Top Rail*	✓	✓	✓			✓
Pipe Racks				✓		
Platform Mesh to Mid Rail*	✓	✓		✓		✓
Platform Mesh to Top Rail*	✓	✓	✓			✓
Platform Top Rail Extension (30” x 48”) (30” x 60”)	✓	✓	✓	✓	✓	✓
Platform Work Lights	✓	✓	✓	✓	✓	✓
Platform Work Surface	✓	✓	✓	✓	✓	✓
SkySense®	✓	✓	✓	✓	✓	✓

* Mesh accessories are available on platform sizes 30"x48" and 30"x60".

Table 6. Accessories/Options Relationship Table

Accessory	Required Item	Compatible With (Note 1)	Incompatible With	Interchangeable With (Note 2)
Cable Ladder Carrier			Platform MTR**, Top Rail Extension	
Pipe Racks		Fabric Mesh MMR*, Fabric Mesh MTR**	Platform MMR*, Platform MTR**, Platform Work Surface	
Platform Top Rail Extension			Platform MMR*, Platform MTR**	
Platform Work Surface			Pipe Racks, Platform MMR*, Platform MTR**	
SkySense			Cable Ladder Carrier, Fabric MMR*, Fabric MTR**, Pipe Racks, Platform Top Rail Extension, Platform Work Surface	
Note 1: Any non - "Sky" accessory not listed under "Incompatible With" is assumed to be compatible. **Note 2:** Can be used on the same unit but not simultaneously				
* MMR = Mesh to Mid Rail; ** MTR = Mesh to Top Rail				

6.2 CABLE LADDER CARRIER

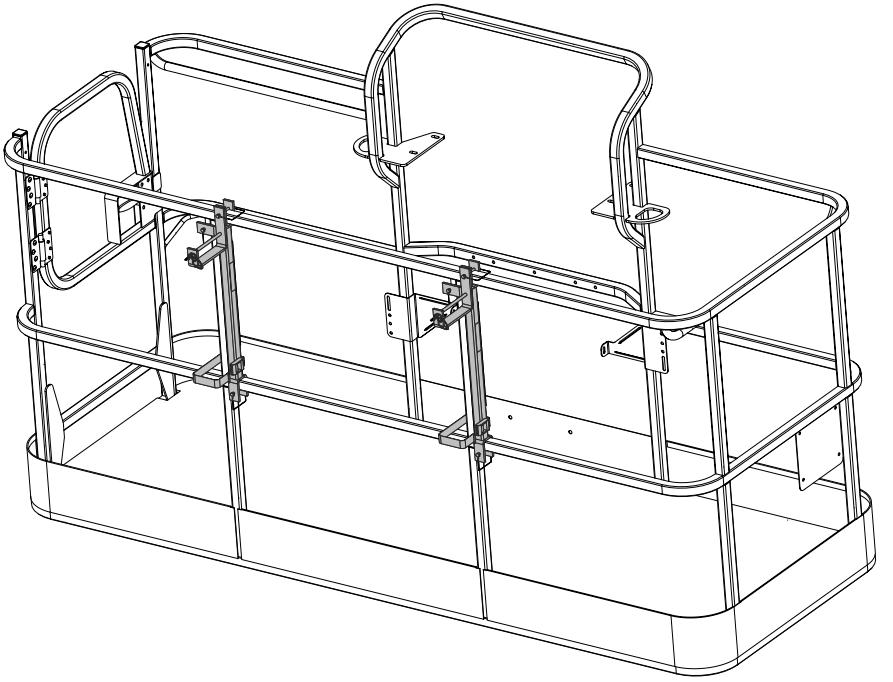


Figure 35. Cable Ladder Carrier

The Cable Ladder Carrier accessory consists of two vertical brackets mounted to the outside of the platform used to carry a “ladder” style cable tray.

6.3 FABRIC MESH TO MID OR TOP RAIL

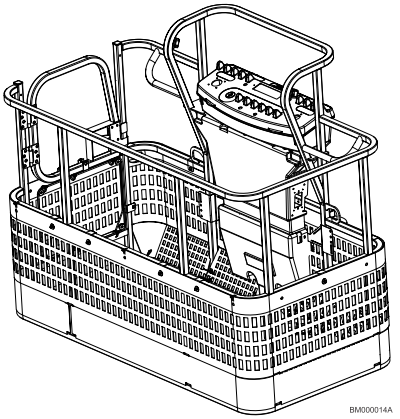


Figure 36. Fabric Mesh to Mid Rail

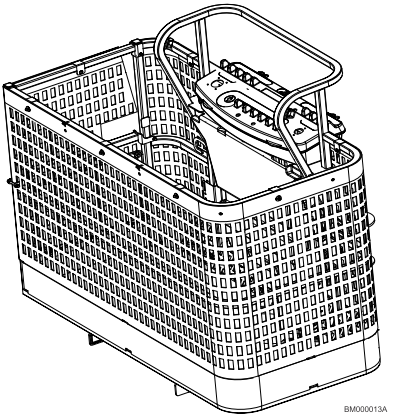


Figure 37. Fabric Mesh to Top Rail

The Fabric Mesh accessory consists of a flame retardant, lightweight mesh which is attached to the mid platform rail **or** the top platform rail.

6.4 PIPE RACKS

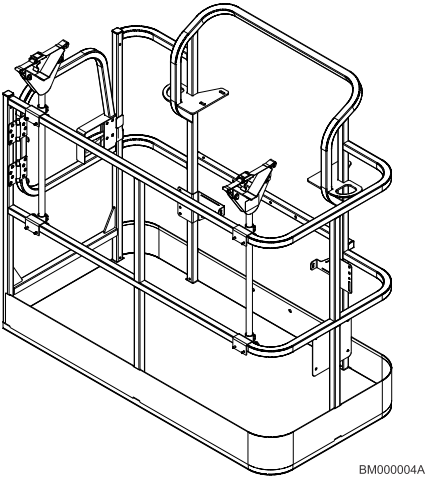


Figure 38. Pipe Racks

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

6.4.1 Capacity Specifications

Max. Capacity in Racks	Max. Platform Capacity (With Max. Weight in Racks)
80 kg	184 kg
Max. Length of Material in Racks: 6.1 m **Min. Length of Material in Racks**: 2.4 m	

6.4.2 Safety Precautions

⚠ WARNING

Reduce platform capacity by 100 lb (45.5 kg) when installed.

⚠ WARNING

Weight in racks plus weight in platform must not exceed rated capacity.

NOTICE

The maximum load in the racks is 180 lb (80 kg) evenly distributed between the two racks.

NOTICE

The maximum length of material in racks is 20 ft (6.1 m).

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

6.4.3 Preparation and Inspection

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

6.4.4 Operation

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

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

6.5 PLATFORM MESH TO MID OR TOP RAIL

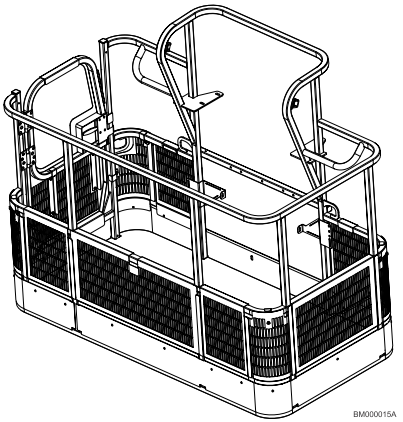


Figure 39. Platform Mesh to Mid Rail

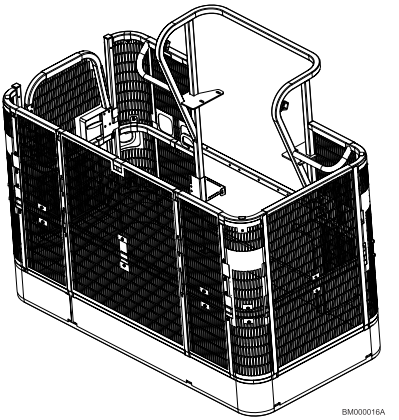


Figure 40. Platform Mesh to Top Rail

The Platform Mesh to Mid Rail accessory consists of stainless steel mesh attached to the platform mid rail.

The Platform Mesh to Top Rail accessory consists of lightweight, aluminum mesh attached to the platform top rail.

6.6 PLATFORM TOP RAIL EXTENSION

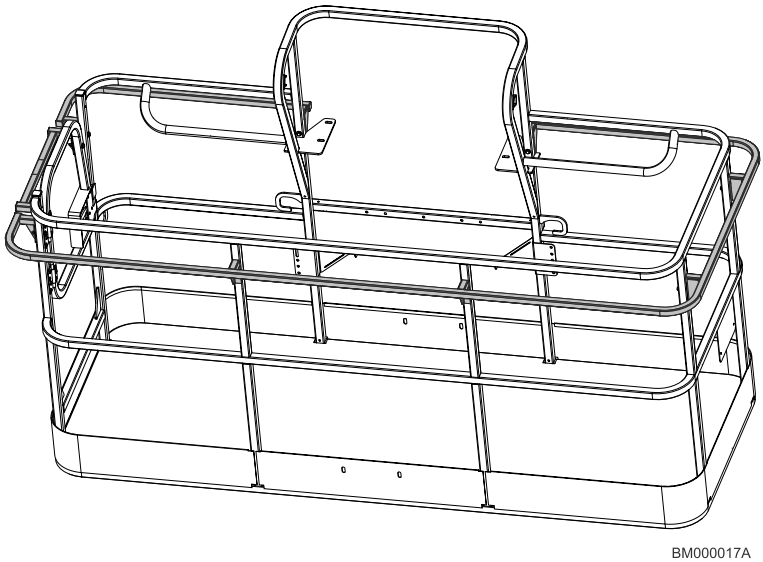


Figure 41. Platform Top Rail Extension

The Platform Top Rail Extension accessory consists of an additional bar extending from all sides of the platform.

6.7 PLATFORM WORK LIGHTS

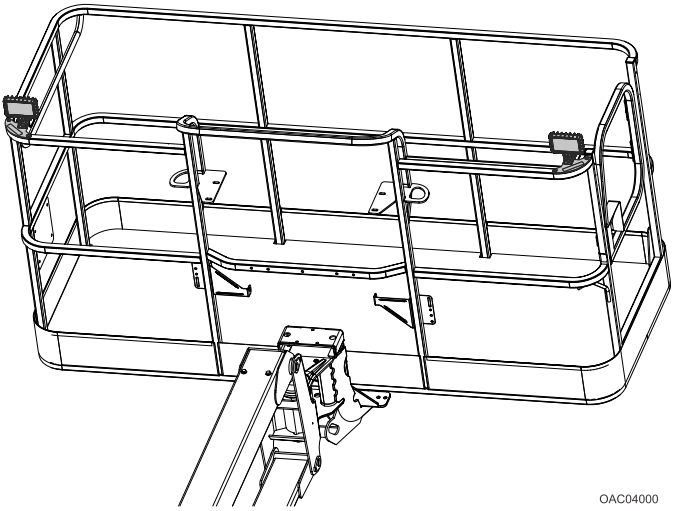


Figure 42. Platform Work Lights

The Platform Work Lights accessory consists of two 12V lights mounted to the platform railing.

6.8 PLATFORM WORK SURFACE

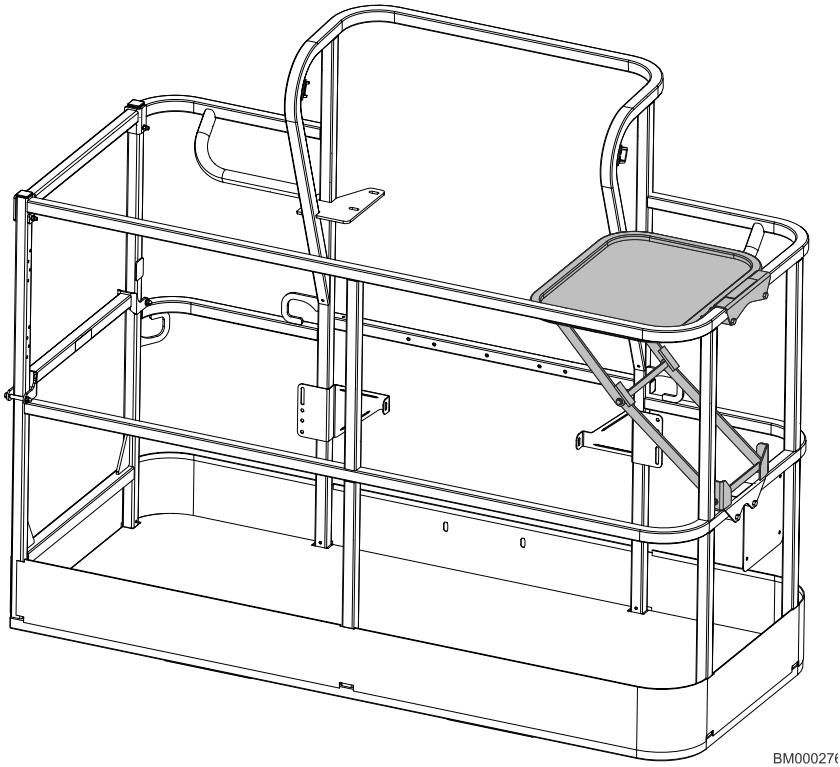


Figure 43. Platform Work Surface

The platform work surface option consists of a corner tray bolted onto the top and mid rails of the platform.

6.9 SKYSENSE®

⚠ 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, decals, and other warnings provided with this machine.

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

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.

⚠ WARNING

De-rate the platform by 10 lb (4.5 kg) per bar when installed on the platform (20 lb (9 kg) or 30 lb (14 kg) total).

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

6.9.1 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 SkySense system:

1. In an area free of obstructions, ensure the machine is on a smooth, firm surface within the limits of the maximum operating slope.
2. From the platform control console, elevate the boom until the bottom of the platform is at least 6 feet off the ground.
3. Continue to elevate the platform.
4. While elevating, hold your hand 6 inches to 12 inches above one of the upward facing sensors. The machine should stop, and the LED corresponding to that sensor (left LED for left sensor bar; right LED for right sensor bar; both LEDs for center sensor bar or overhead sensor) should be red.
5. Recycle the footswitch and press the override button on the platform control console.

6. Ensure the area below the platform is clear of obstructions and lower the platform. The machine should slow down, (SkySense Status LED will blink yellow with increasing frequency) and stop, (SkySense Status LED will be illuminated solid red) when the bottom of the platform is approximately 12 inches from the ground. The alarm should sound if it is not muted (refer to SkySense Alarm).

7. Recycle the footswitch and press the override button on the platform control console.

8. Continue to lower the platform. The machine should move in the elevated drive speed mode (SkySense Status LED will remain red).

Note: The SkySense system will not stop machine operation while in Creep.

6.9.2 Operation

SkySense slows a machine's function to creep 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 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.

If the function has reached the warning zone, normal drive speed will resume when a function is activated in the opposite direction. If the machine has reached the SkySense stop zone, release the function and recycle the footswitch to activate a function in the opposite direction.

SkySense is active during the following functions:

- Lift Up/Down (including jib functions)
- Platform Rotate (including jib rotate)
- Telescope Out
- Swing
- Reverse Drive

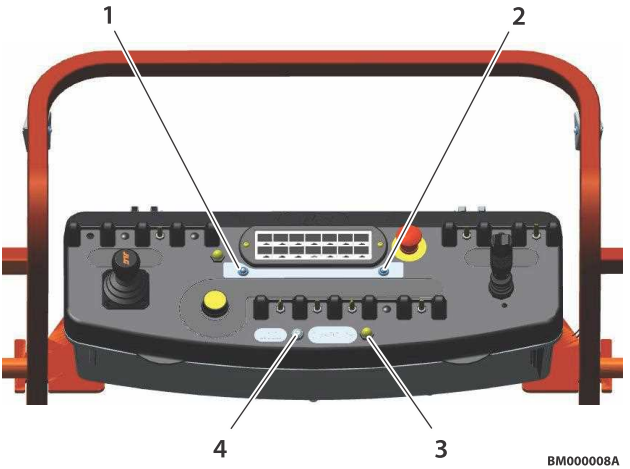
Note: During active DOS (Drive Orientation System), SkySense is active when driving in both forward and reverse directions.

There are two LED indicators on the platform control box that signal SkySense activity.

- **No LED**: Normal operation.
- **LED Flashing Yellow**: Machine is in SkySense warning zone and will reduce function speed to creep. Flash frequency correlates to proximity of 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.

6.9.3 SkySense Platform Panel Indicators



1. LED Indicator Light
2. LED Indicator Light
3. Override Button
4. Mute Speaker Button

6.9.4 SkySense Alarm

Activation of SkySense is signaled by an audible alarm and the LEDs on the platform console that indicate 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. The system may be reset by recycling the footswitch.

The audible SkySense alarms can be muted by a button on the platform control console, although LEDs will continue to light. The platform control panel alarm will sound when the machine enters the SkySense stop zone even when muted.

6.9.5 SkySense Override Button

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

When the operator overrides the 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 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.

NOTICE

SkyGuard operation is affected when SkySense is installed on a machine. If SkySense activation occurs prior to SkyGuard activation, SkyGuard will only cut out functions if activated. If SkyGuard activation occurs prior to SkySense activation, SkyGuard will function normally.

6.9.6 SkySense Coverage Areas

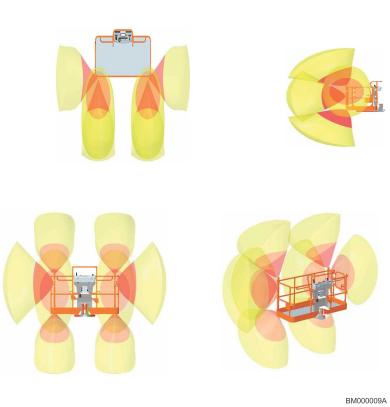


Figure 44. SkySense Coverage Level 1 Areas (2– Bar)

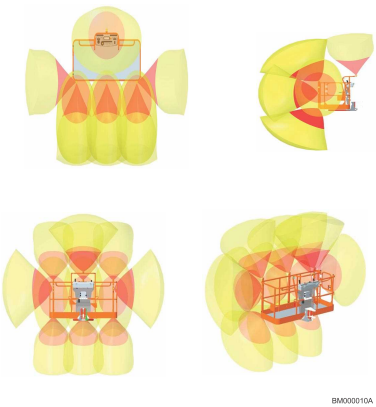


Figure 45. SkySense Coverage Level 2 Areas (3 — Bar)

Note: Sensor Cones shown are approximations for reference only.

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SECTION 7
General Specifications and Operator Maintenance

7.1 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.

7.2 OPERATING SPECIFICATIONS

Table 7. Operating Specifications

Capacity: ANSI, ANSI Export, CSA, MOL70, GB AS/NZS	 500 lb (227 kg) 500 lb (230 kg)
Maximum Operating Slope	4°
Max. Travel Grade (Stowed Position) – Gradeability Max. Travel Grade (Stowed Position) – Side Slope	45% 4°
Maximum Manual Side Force	90 lb (400 N)
Maximum Wind Speed	28 mph (12.5 m/s)
Ground Bearing Pressure Foam Filled Solid Non-Marking Solid	 64 psi (4.5 kg/cm^2) 75 psi (5.3 kg/cm^2) 81 psi (5.7 kg/cm^2)
Drive Speed - Stowed Drive Speed - Elevated	3.7 mph (6.0 km/h) 0.6 mph (0.97 km/h)
System Voltage	48V DC
Maximum Main Relief Hyd. Pressure	4060 psi (280 Bar)
Gross Machine Weight* (Approximate)	9,860 lb (4472 kg)
Ambient (Operating) Temperature: See Hydraulic Oil/Engine Oil Figures — Operating Temperature Specifications	
* Gross Machine Weight is configured with standard machine. Additional options and/or accessories will alter the gross weight of the machine.	

7.2.1 Dimensional Data

Table 8. Dimensional Data

Machine Height:	
Stowed	6’ 7" (2 m)
Storage	7’ 1" (2.17 m)
Machine Length:	
Stowed	18’ 2" (5.52 m)
Storage	13’ 1" (3.98 m)
Storage with LSS	13’ 2" (4.02 m)
Machine Width	6’ 4" (1.93 m)
Turning Radius:	
Inside	5’ (1.52 m)
Outside	13’ (3.96 m)
Wheel Base	6’ 2" (1.87 cm)
Ground Clearance	10.1" (23.7 cm)
Up and Over Platform Height	17’ 0" (5.17 m)
Horizontal Reach	19’ 11" (6.06 m)
Platform Height:	
ANSI	33’ 9" (10.29 m)
Australia	33’ 10.5" (10.33 m)

7.2.2 Capacities

Table 9. Capacities

Fuel Tank	13 gal. (49.2 L)
Hydraulic Oil Tank (to Full Level)	5 gal (18.9 L)
Hydraulic System	6 gal (22.7 L)
Drive Hub*	30.4 oz. (0.9 L)
Engine Coolant	1.6 gal (6.0 L)
*Drive hubs should be one half full of lubricant.	

7.2.3 Engine Data

Table 10. Kubota Z482

Fuel	Diesel
Type	Liquid Cooled
Number of Cylinders	2
Bore	2.64 in (67 mm)
Stroke	2.68 in (68 mm)
Total Displacement	29.2 cu. in. (0.479 L)
Oil Capacity	0.66 gal (2.5 L)
Coolant Capacity (Engine Only)	0.18 gal (.67 L)
Low Idle RPM	1300 ± 50
High Idle RPM	3000 ± 50
Output	11.1 hp (8.3 kW)

7.2.4 Tires

Table 11. Tires

Size	Type	Maximum Tire Load
265/50 D20 (9" x 20")	Foam-Filled	5,000 lb (2268 kg)
7" x 18"	Solid	5,000 lb (2268 kg)

7.3 HYDRAULIC OIL SPECIFICATIONS

Table 12. Hydraulic Oil SAE Viscosity Grade Operating Temperature Ranges

Hydraulic System Operating Temperature Range	SAE Viscosity Grade
+0° to + 180° F (-18° to +83° C)	10W
+0° to + 210° F (-18° to + 99° C)	10W–20, 10W–30
+50° to + 210° F (+10° to + 99° C)	20W–20

Note: Hydraulic oils require anti-wear qualities at least to API Service Classification GL-3 and sufficient chemical stability for mobile hydraulic system service. JLG Industries recommends standard UTTO.

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

Note: Machine operation using non-JLG approved hydraulic fluids or operation outside of the temperature boundaries outlined in the hydraulic fluid operation charts may result in premature wear or damage to components of the hydraulic system.

Note: Machines may be equipped with standard UTTO biodegradable and non-toxic hydraulic oil. This is a fully synthetic hydraulic oil that possesses the same anti-wear and rust protection characteristics as mineral oils, but will not adversely affect the ground water or the environment when spilled or leaked in small amounts.

Note: When temperatures remain consistently below 20° F (-7° C), JLG Industries recommends the use of a premium “cold weather” hydraulic fluid (Viscosity Gr. 32).

Table 13. Hydraulic Oil Properties and Classifications

Fluid	Properties		Base				Classifications		
Description	Viscosity at 40° C *	Viscosity Index	Mineral Oils	Vegetable Oils	Synthetic	Synthetic Polyol Esters	Readily Biodegradable**	Virtually Non-toxic †	Fire Resistant ‡
Shell Spirax S4 TXM — Recommended	**67**	**146**	**X**						
Mobilfluid 424 — ***Optional***	60	134	X						
Shell Tellus S2 VX32 — Recommended	**32**	**142**	**X**						
Mobil DTE 10 Excel 32 — ***Optional***	32	164	X						
Shell Tellus S4 VX32 — Recommended	**32**	**296**	**X**						
Univis HVI 26 — ***Optional***	26	376	X						
Shell Naturelle HF-E32 — Recommended	**31**	**192**		**X**			**X**	**X**	

Table 13. Hydraulic Oil Properties and Classifications (continued)

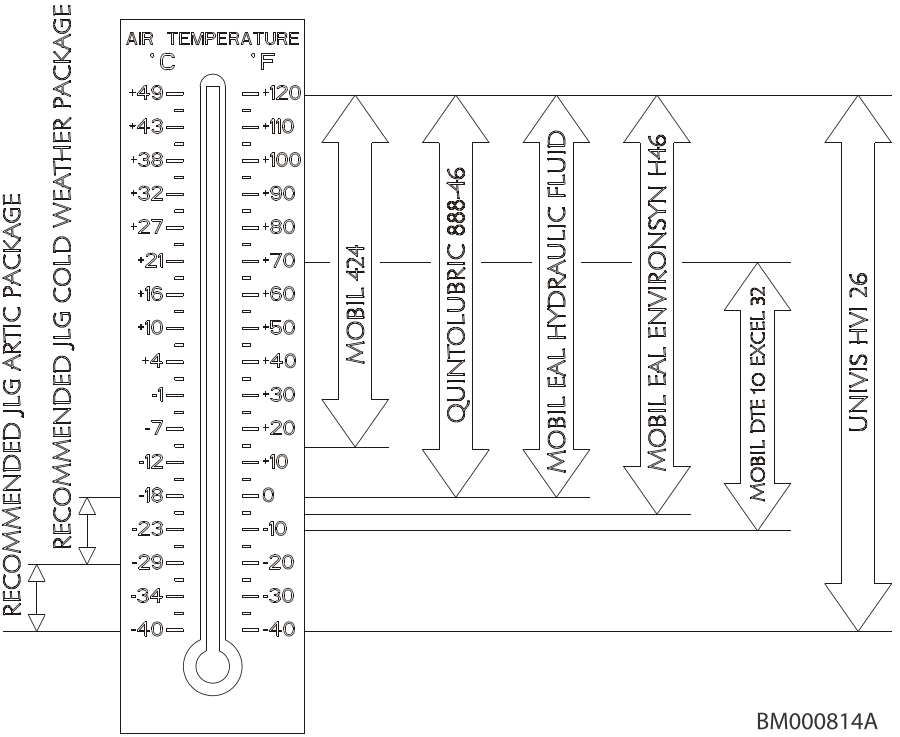
Fluid	Properties		Base				Classifications		
Description	Viscosity at 40° C *	Viscosity Index	Mineral Oils	Vegetable Oils	Synthetic	Synthetic Polyol Esters	Readily Biodegradable**	Virtually Non-toxic †	Fire Resistant ‡
Mobil EAL Envirosyn H32 — ***Optional***	34	146		X			X	X	
Shell Naturelle HF-E46 — Recommended	**46**	**193**			**X**		**X**	**X**	
Mobil EAL Envirosyn H46 — ***Optional***	49	145			X		X	X	
Quintolubric 888-46	48	190				X	X	X	X
Hydrolube HP-5046D	46	192				X	X	X	X

* cSt, Typical
** Readily biodegradeable classification indicates one of the following:

CO2 Conversion > 60% per EPA 560/6-82-003
CO2 Conversion > 80% per CEC-L-33-A-93

† Virtually Non-toxic classification indicates a LC50 > 5000 ppm per OECD 203
‡ Fire Resistant classification indicates Factory Mutual Research Corp. (FMRC) Approval

7.4 HYDRAULIC OIL OPERATING TEMPERATURE SPECIFICATIONS



Oil Sampling

This machine is equipped with an oil sampling port to allow for verification of hydraulic oil condition. Refer to the Service Manual for Oil Sampling procedures.

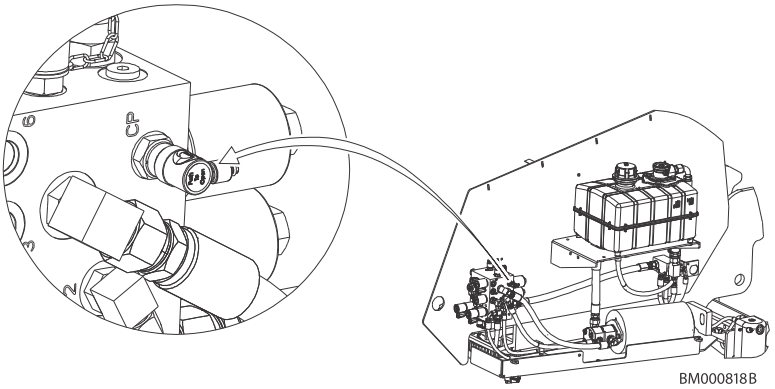
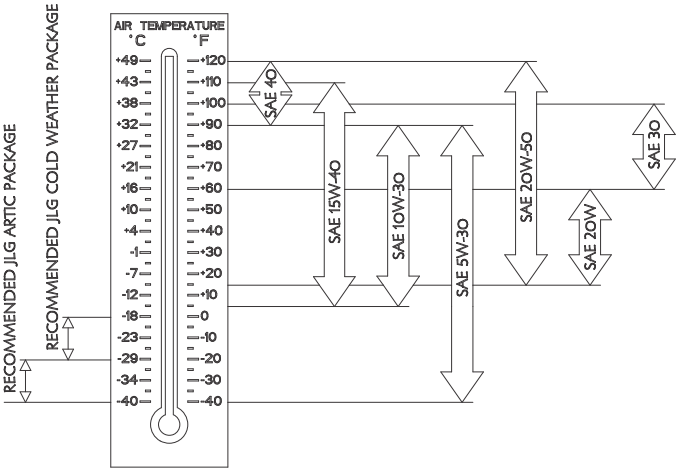


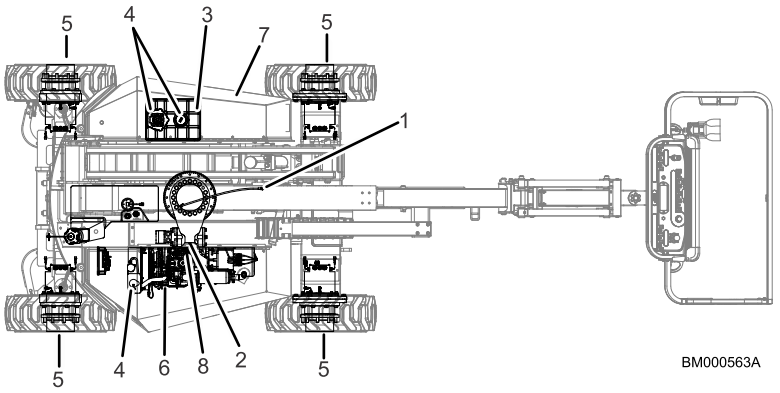
Figure 46. Oil Sampling Port

7.5 ENGINE OIL OPERATING TEMPERATURE SPECIFICATIONS

Note: Machine operation using non-JLG approved engine oil or operation outside of the temperature boundaries outlined in the engine oil operation charts may result in premature wear or damage to components of the engine.



7.6 OPERATOR MAINTENANCE AND LUBRICATION DIAGRAM



7.7 OPERATOR MAINTENANCE

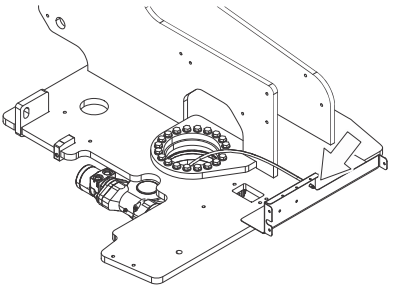
Table 14. Lubrication Specifications

KEY	SPECIFICATIONS
BG*	Bearing Grease (JLG Part No. 3020029) Mobilith SHC 460.
HO	Hydraulic Oil. API service classification GL-4, e.g. standard UTTO.
EPGL	Extreme Pressure Gear Lube (oil) meeting API Service Classification GL-5 or Mil-Spec Mil-L-2105.
MPG	Multipurpose Grease having a minimum dripping point of 350° F (177° C). Excellent water resistance and adhesive qualities, and being of extreme pressure type. (Timken OK 40 pounds minimum.)
EO	Engine (crankcase) Oil. API CI-4
*MPG may be substituted for these lubricants, if necessary, but service intervals will be reduced.	

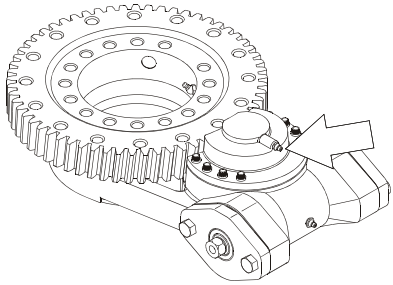
NOTICE

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

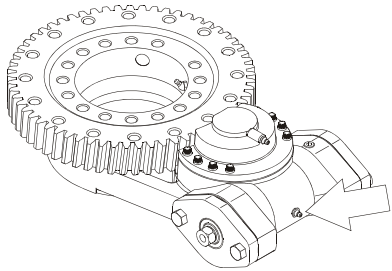
1. Swing Bearing
   Lube Point(s) - Remote Fitting
   Capacity - A/R
   Lube - BG
   Interval - Every 3 months or 150 hours of operation
   Comments - Apply grease and rotate in 90° intervals until bearing is completely lubricated.



2. Swing Bearing/Worm Gear Teeth
   Lube Point(s) - Grease Fitting
   Capacity - A/R
   Lube - Lubriplate 930-AAA
   Interval - A/R



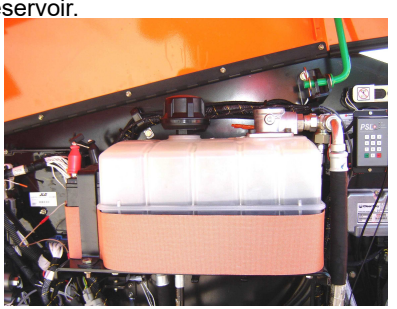
   Lube Point(s) - Grease Fitting
   Capacity - A/R
   Lube - Mobil SHC 007
   Interval - A/R



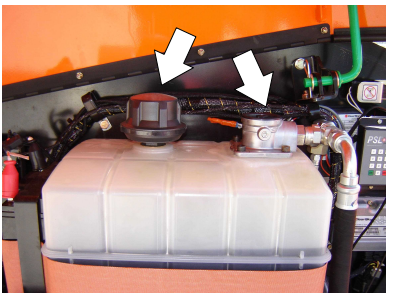
⚠ CAUTION

Do not overgrease bearings. Overgreasing bearings will result in damage to outer seal in housing.

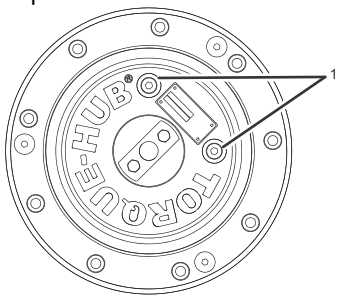
3. Hydraulic Tank
   Lube Point(s) - Fill Cap
   Capacity - 5 gal (18.9 L) maximum
   Lube - HO
   Interval - Check Level daily; Change every 2 years or 1200 hours of operation.
   Comments - On new machines, those recently overhauled, or after changing hydraulic oil, operate all systems a minimum of two complete cycles and recheck oil level in reservoir.



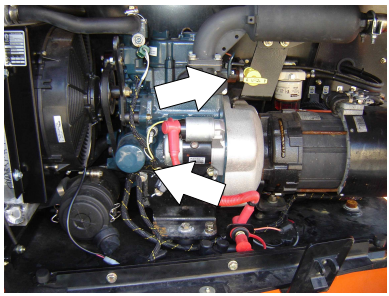
4. Hydraulic Tank Return Filter and Breather
   Interval - Change after first 50 hours and every 6 months or 300 hours thereafter.
   Comments - For breather element, twist top to replace. Under certain conditions, it may be necessary to replace both elements on a more frequent basis.



5. Wheel Drive Hub
   Lube Point(s) - Level/Fill Plug **(1)**
   Capacity - 30.4 oz (0.9 L)(1/2 Full)
   Lube - EPGL
   Interval - Check level every 3 months or 150 hours of operation; change every 2 years or 1200 hours of operation



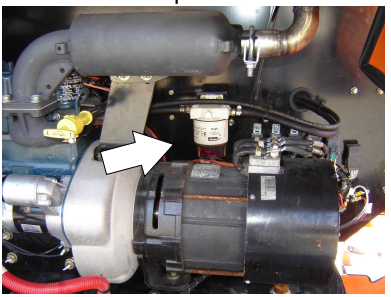
6. Oil Change with Filter - Kubota
   Lube Point(s) - Fill Cap/Spin-on Element
   Capacity - 2.6 qt (2.5 L) with Filter
   Lube - EO
   Interval - Check level daily; change in accordance with engine manual. Adjust final oil level by mark on dipstick. Refer to Service Manual for engine hour retrieval.



7. Engine Coolant - Kubota
   Lube Point(s) - Fill Cap
   Capacity - 1.6 gal (6.0 L)
   Lube - Anti-Freeze
   Interval - Check level daily; change every 1000 hours or two years, whichever comes first.



8. Fuel Filter/Water Separator - Kubota
   Lube Point(s) - Replaceable Element
   Interval - Every year or 600 hours of operation



7.8 TIRES AND WHEELS

7.8.1 Tire Damage

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

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

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

7.8.2 Tire Replacement

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

- Equal or greater ply/load rating and size of original
- Tire tread contact width equal or greater than original
- Wheel diameter, width, and offset dimensions equal to the original

- Approved for the application by the tire manufacturer (including inflation pressure and maximum tire load)

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

7.8.3 Wheel Replacement

The rims installed on each product model have been designed for stability requirements which consist of track width and load capacity. Size changes such as rim width, center piece location, larger or smaller diameter, etc., without written factory recommendations, may result in an unsafe condition regarding stability.

7.8.4 Wheel Installation

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

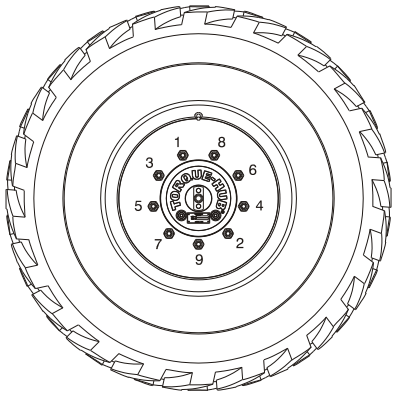
⚠ WARNING

Wheel nuts must be installed and maintained at the proper torque to prevent loose wheels, broken studs, and possible dangerous separation of wheel from the axle. Be sure to use only the nuts matched to the cone angle of the wheel.

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

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

2. Tighten nuts in the following sequence:



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

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

Table 15. Wheel Torque Chart

TORQUE SEQUENCE		
1st Stage	2nd Stage	3rd Stage
40 ft. lbs. (55 Nm)	95 ft. lbs. (130 Nm)	170 ft. lbs. (230 Nm)

7.9 OSCILLATING AXLE LOCKOUT TEST (IF EQUIPPED)

NOTICE

Lockout system test must be performed quarterly, any time a system component is replaced, or when improper system operation is suspected.

Note: Ensure boom is fully retracted, lowered, and centered between drive wheels prior to beginning lockout cylinder test.

1. Place a 6 in (15.2 cm) high block with ascension ramp in front of left front wheel.

2. From platform control station, start engine

3. Place the Drive control lever to the forward position and carefully drive machine up ascension ramp until left front wheel is on top of block.

4. Carefully activate Swing control lever and position boom over right side of machine.

5. With boom over right side of machine, place Drive control lever to Reverse and drive machine off of block and ramp.

6. Have an assistant check to see that left front wheel remains locked in position off of ground.

7. Carefully activate Swing control lever and return boom to stowed position (centered between drive wheels). When boom reaches center, stowed position, lockout cylinders should release and allow wheel to rest on ground, it may be necessary to activate Drive to release cylinders.

8. Place the 6 in (15.2 cm) high block with ascension ramp in front of right front wheel.

9. Place Drive control lever to Forward and carefully drive machine up ascension ramp until right front wheel is on top of block.

10. With boom over left side of machine, place Drive control lever to Reverse and drive machine off of block and ramp.

11. Have an assistant check to see that right front wheel remains locked in position off of ground.

12. Carefully activate Swing control lever and return boom to stowed position (centered between drive wheels). When boom reaches center, stowed position, lockout cylinders should release and allow wheel to rest on ground, it may be necessary to activate Drive to release cylinders.

13. If lockout cylinders do not function properly, have qualified personnel correct the malfunction prior to any further operation.

7.10 RADIO FREQUENCY (RF) INFORMATION

Note: The ClearSky Smart Fleet™ CS550 connectivity module antenna is internal to the assembly. The CS550 connectivity module complies with the wireless certification regulations in the regions of sale. Machines equipped with Clear-Sky Smart Fleet telematics must be received by countries that are certified to have ClearSky Smart Fleet. For a full listing of ClearSky Smart Fleet certified countries, please refer to the ClearSky webpage on the JLG website.

7.10.1 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.

7.10.2 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.

7.10.3 European Union Conformity (CE)

CE Interference Statement

JLG Industries, Inc. declares that the radio equipment ClearSky Smart Fleet CS550 Connectivity Module complies with Directive 2014/53/EU. Full details can be found on the declaration of conformity. The CS550 is intended to be mounted on JLG machines and has integrated beacon functionality. Additionally, it provides telematics data via WiFi or Cell, and provides local diagnostic data exchange with a mobile device connected via WiFi and BLE. Mobile device software is obtained through Google Play Store or Apple App Store.

Frequencies of Operation [and maximum power output]:

- LTE Cat M1: 700/750/800/850/900/1700/1800/1900/2100 MHz [23 dBm±2 dB]
- 2G GPRS: 900MHz [Class 4, 33 dBm ±3 dB], 1800MHz [Class 1, 30 dBm ±3 dB]
- 2G EGPRS: 900MHz [Class E2, 27 dBm ±3 dB], 1800MHz [Class E2, 26 dBm ±3 dB]
- WiFi (IEEE 802.11b/g/n): 2400-2483.5 MHz [18 dBm e.i.r.p]
- Bluetooth (BLE, Mesh 1.0 and proprietary GATT): 2400-2483.5 MHz [12.1 dBm e.i.r.p]
- GNSS (receive only: GPS, GLONASS, BeiDou, Galileo): 1575.42MHz, 1561.098MHz, 1602MHz

Ensure at least 20 cm separation distance is maintained between user's body and CS550 module to meet Maximum Permissible Exposure (MPE) restrictions for RF exposure.

Contact: JLG EMEA B.V., Polaris Avenue 63, 2132 JH Hoofddorp, Netherlands

Serial Number _____

Any additional required certificates can be attached to the rear cover of this manual or stored in the manual box.

Date	Comments



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