



Operation and Safety Manual

TOUCAN E33MJ



PROPOSITION 65 WARNING

- **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.**
- **Batteries also contain other chemicals known to the State of California to cause cancer.**
- **Wash hands after handling.**

FOREWORD

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

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

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

Other Publications Available:

Service and maintenance manual	31210020
Illustrated parts.....	31210018
Hydraulic schematic.....	FL0149
Electrical schematic	ELE250

SAFETY ALERT SYMBOLS AND SAFETY SIGNAL WORDS



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

DANGER

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

WARNING

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

CAUTION

INDICATES A POTENTIALITY HAZARDOUS SITUATION. IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO ALERT AGAINST UNSAFE PRACTICES.

INDICATES PROCEDURES ESSENTIAL FOR SAFE OPERATION. THIS DECAL WILL HAVE A YELLOW BACKGROUND.

WARNING

INDICATES PROCEDURES ESSENTIAL FOR SAFE OPERATION. THIS DECAL WILL HAVE A GREEN BACKGROUND. 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.

IMPORTANT

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

IMPORTANT

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

For:

- Accident Reporting
- Product Safety Publications
- Current Owner Updates
- Questions Regarding Product Safety

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SECTION 1. SAFETY PRECAUTIONS

1.1 GENERAL

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

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

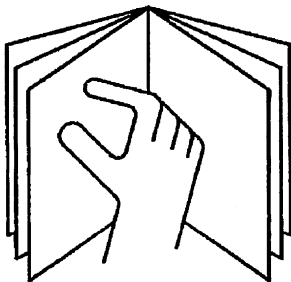
⚠ WARNING

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

1.2 PRE-OPERATION

Operator Training and Knowledge

- Read and understand this manual before operating the machine.



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

Workplace Inspection

- The operator is to take safety measures to avoid all hazards in the work area prior to machine operation.

- Do not operate or raise the platform while on trucks, trailers, railway cars, floating vessels, scaffolds or other equipment unless approved in writing by JLG.
- Do not operate the machine in hazardous environments unless approved for that purpose by JLG.
- Be sure that the ground conditions are able to support the maximum load of the machine.
- This machine can be operated in temperatures of 0°F to 104°F (-20°C to 40°C). Consult JLG for operation outside this range.

Machine Inspection

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

⚠ DANGER

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

- Do not operate any machine on which safety or instruction placards or decals are missing or illegible.
- Avoid any buildup of debris on the platform floor. Keep mud, oil, grease, and other slippery substances from footwear and platform floor.
- Do not clean electrical components with a high pressure cleaner.

1.3 OPERATION

General

- Do not use the machine for any purpose other than positioning personnel, their tools, and equipment.
- Never operate a machine that is not working properly. If a malfunction occurs, shut down the machine.
- Never slam a control switch or lever through neutral to an opposite direction. Always return switch to neutral and stop before moving the switch to the next function. Operate controls with slow and even pressure.
- Park the machine in stowed position when not in service.

SECTION 1 - SAFETY PRECAUTIONS

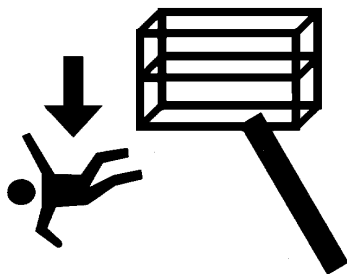
- Do not allow personnel to tamper with or operate the machine from the ground with personnel in the platform, except in an emergency.
- Do not carry materials directly on platform railing unless approved by JLG.
- When two persons are in the platform, the operator shall be responsible for all machine operations.
- Always ensure that power tools are properly stowed and never left hanging by their cord from the platform work area.
- Supplies or tools which extend outside the platform are prohibited unless approved by JLG.
- When driving, always position extending structure over rear axle in line with the direction of travel. Remember, if extending structure is over the front axle, steer and drive functions will be reversed.
- Do not assist a stuck or disabled machine by pushing, pulling, or by using extending structure functions. Only pull the unit from the towing points on the chassis.
- Do not place extending structure or platform against any structure to steady the platform or to support the structure.
- Stow extending structure and shut off all power before leaving machine.

Trip and Fall Hazards

- 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.



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

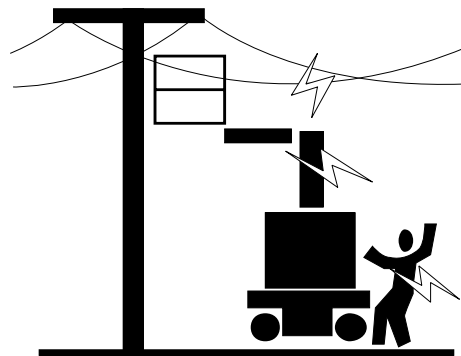
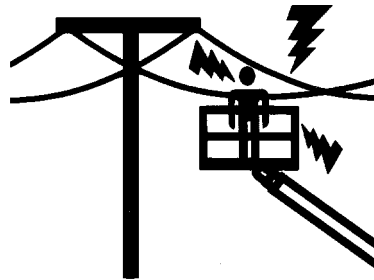


- Keep both feet firmly positioned on the platform floor at all times. Never use ladders, boxes, steps, planks, or similar items on platform to provide additional reach.
- Always enter or leave the platform using the access gate.

- Use extreme caution when entering or leaving platform. Be sure that the mast assembly is fully lowered. Face the machine, maintain “three point contact” with the machine, using two hands and one foot or two feet and one hand during entry and exit.

Electrocution Hazards

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



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

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

Voltage Range (Phase to Phase)	MINIMUM APPROACH DISTANCE in Feet (Meters)
0 to 50V	10 (3)
Over 50V to 200 KV	15 (5)
Over 200KV 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.

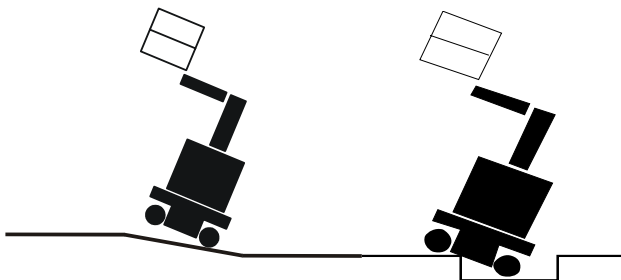
⚠ DANGER

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

- Maintain a clearance of at least 10 ft (3 m) 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. A 1 ft (0.3 m) additional clearance is required for every additional 30,000 volts or less.
- The minimum approach distance may be reduced if insulating barriers are installed to prevent contact and the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of (or attached to) the machine. The minimum approach distance shall be reduced to a distance within the designed working dimensions or the insulating barrier. This determination shall be made by a qualified person in accordance with employer, local or governmental requirements for work practices near energized equipment.

Tipping Hazards

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

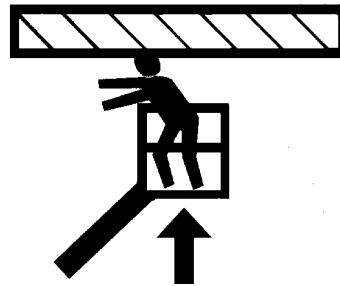


- Never exceed the maximum platform capacity. Distribute loads evenly on platform floor.
- Before driving on floors, bridges, trucks, and other surfaces, check allowable capacity of the surfaces. Check the ramp or slope for good adhesion of the wheels. Ensure that the driving surfaces are free of moisture, ice, grease or from any other substance that could affect wheel adhesion.
- Do not elevate platform or drive with platform elevated while on a sloping, uneven, or soft surface.
- Do not raise the platform or drive from an elevated position unless the machine is on firm, level surfaces and evenly supported.
- Keep the chassis of the machine at least 2 ft (0.6 m) from holes, bumps, drop-offs, obstructions, debris, concealed holes, and other potential hazards on the floor/surface.

- Do not push or pull any object with the extending structure.
- Never attempt to use the machine as a crane. Do not tie-off machine to any adjacent structure.
- Do not increase the surface area of the platform or the load. Increase of the area exposed to the wind will decrease stability.
- Do not increase the platform size with unauthorized deck extensions or attachments.
- If extending structure 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 appropriate equipment to stabilize machine and remove personnel.

Crushing and Collision Hazards

- Approved head gear must be worn by all operating and ground personnel.
- Check work area for clearances overhead, on sides, and bottom of platform when lifting or lowering platform, and driving.



- During operation, keep all body parts inside platform railing.
- Always post a lookout when driving in areas where vision is obstructed.
- Keep non-operating personnel at least 6 ft. (1.8 m) away from machine during all driving and swing operations.
- Limit travel speed according to conditions of ground surface, congestion, visibility, slope, location of personnel, and other factors which may cause collision or injury to personnel.
- Be aware of stopping distances in all drive speeds. When driving in high speed, slow down the machine using the controller before stopping.
- 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.
- Be sure that operators of other overhead and floor level machines are aware of the aerial work platform's presence. Disconnect power to overhead cranes.

SECTION 1 - SAFETY PRECAUTIONS

- Warn personnel not to work, stand, or walk under a raised extending structure 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 extending structure is in the stowed position 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 ADDITIONAL HAZARDS / SAFETY

- 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.
- Battery fluid is highly corrosive. Avoid contact with skin and clothing at all times.
- Charge batteries only in a well ventilated area.

SECTION 2. USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION

2.1 PERSONNEL TRAINING

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

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

Operator Training

Operator training must cover:

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

Training Supervision

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

Operator Responsibility

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

2.2 PREPARATION, INSPECTION, AND MAINTENANCE

The following table covers the periodic machine inspections and maintenance required by JLG Industries, Inc. Consult local regulations for further requirements for aerial work platforms. The frequency of inspections and maintenance must be increased as necessary when the machine is used in a harsh or hostile environment, if the machine is used with increased frequency, or if the machine is used in a severe manner.

SECTION 2 - USER RESPONSIBILITIES, MACHINE PREPARATION, AND INSPECTION

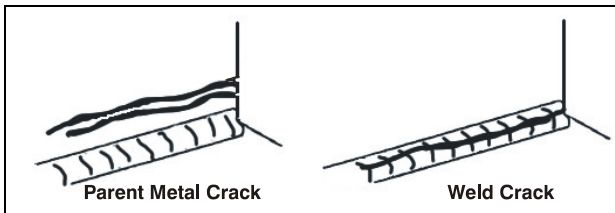
Table 2-1. Inspection and Maintenance Table

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

2.3 PRE-START INSPECTION

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

1. **Cleanliness** – Check all surfaces for leakage (oil 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.



3. **Decals and Placards** – Check all for cleanliness and legibility. Make sure none of the decals and placards are missing. Make sure all illegible decals and placards are cleaned or replaced.
4. **Operation and Safety Manuals** – Make sure a copy of the Operation and Safety Manual, AEM Safety Manual (ANSI markets only), and ANSI Manual of Responsibilities (ANSI markets only) is enclosed in the weather resistant storage container.
5. **“Walk-Around” Inspection** – Refer to Figure 2-1.
6. **Battery** – Charge as required.
7. **Hydraulic Oil** – Check the hydraulic oil level. Ensure hydraulic oil is added as required.
8. **Accessories/Attachments** - Reference the Operation and Safety Manual of each attachment or accessory installed upon the machine for specific inspection, operation, and maintenance instructions.
9. **Function Check** – Once the “Walk-Around” Inspection is complete, perform a function check (section 2.3.2) of all systems in an area free of overhead and ground level obstructions. Refer to Section 4 for more specific operating instructions.

⚠ WARNING

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

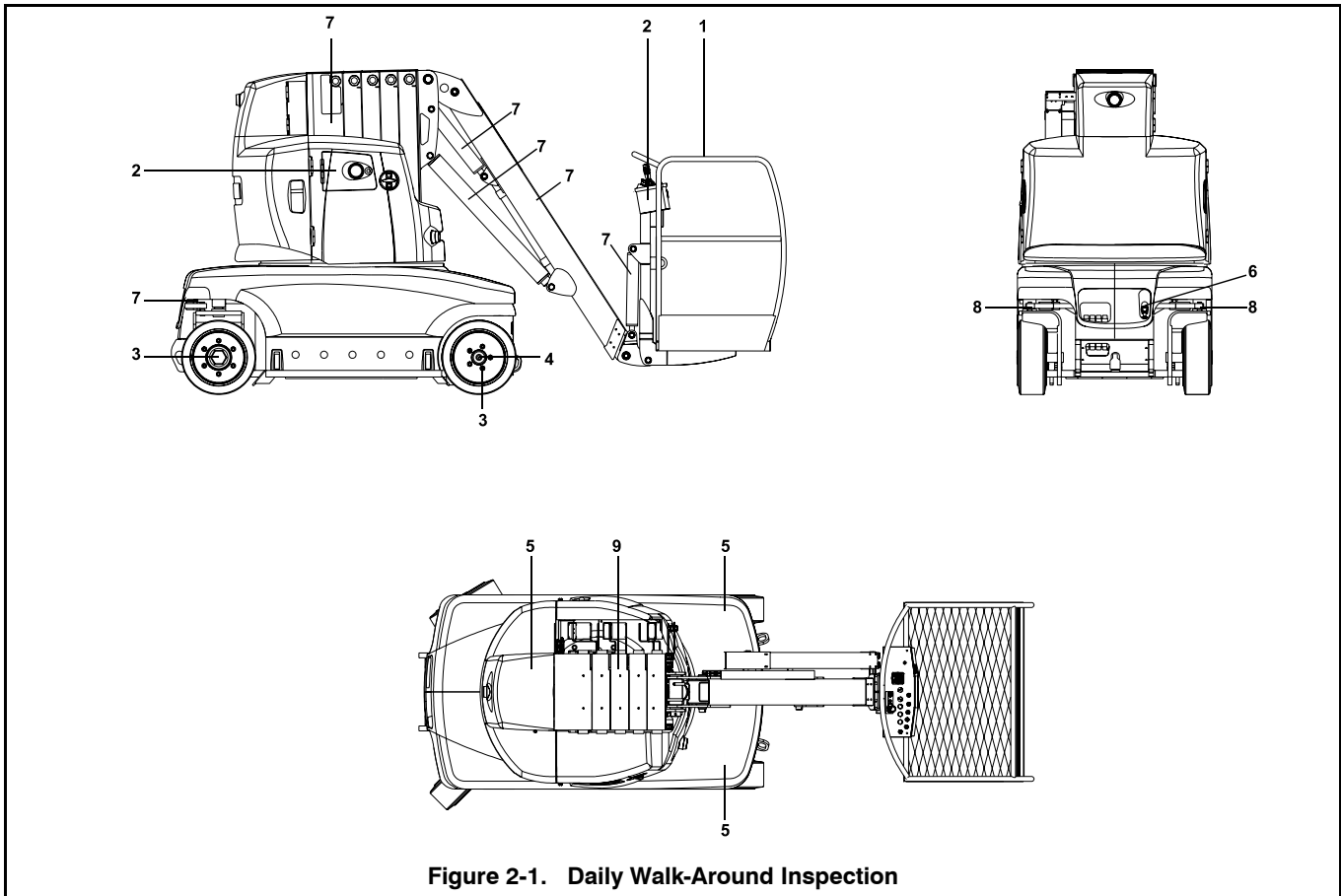


Figure 2-1. Daily Walk-Around Inspection

2.3.1 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.

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 Guardrails and Gate** - Footswitch works properly, not modified, disabled or blocked. The gate opens and closes properly.
- 2. **Platform & Ground Control Consoles** - Switches and levers return to neutral, decals/placards secure and legible, control markings legible.

- 3. **Wheel/Tire Assemblies** - Properly secured, no missing lug nuts.
- 4. **Drive Motor, Brake** - No evidence of leakage.
- 5. **Hood Assemblies** - See Inspection Note.
- 6. **Hand Pump** - See Inspection Note.
- 7. **All Hydraulic Cylinders** - No visible damage; pivot pins and hydraulic hoses undamaged, not leaking.
- 8. **Steering Spindles** - See Inspection Note.
- 9. **Lifting Chains, Chain Yokes and Clevis Pins** - Must be installed and in good condition. Chains must be correctly tensioned and lubricated.

2.3.2 Function Check

Refer to section 3 & 4 for description and operation of machine functions.

⚠ WARNING

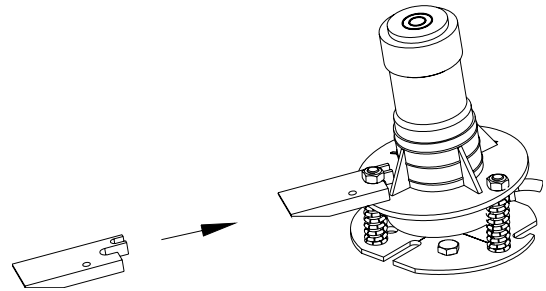
DO NOT OPERATE MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED.

Perform the Function Check as follows:

Control Stations

1. From the Ground Control Console :
 - Operate all functions;
 - Ensure that all machine functions are disabled when the Emergency Stop Button is pushed in;
 - Position the selector switch to Platform Control Console ; try to use the Ground Control Console. No movement shall occur.
2. From the Platform Control Console :
 - Ensure that the platform control console is firmly secured;
 - Ensure proper operation of horn;
 - Ensure proper operation of all functions;
 - Ensure that all machine functions are disabled when the Emergency Stop Button is pushed in;
 - Ensure that no functions can be operated unless the footswitch is depressed.
 - Activate simultaneously a drive movement and superstructure movement. No movement shall occur;
 - Drive the machine on a grade, not to exceed the rated gradeability and stop to ensure the brakes hold;

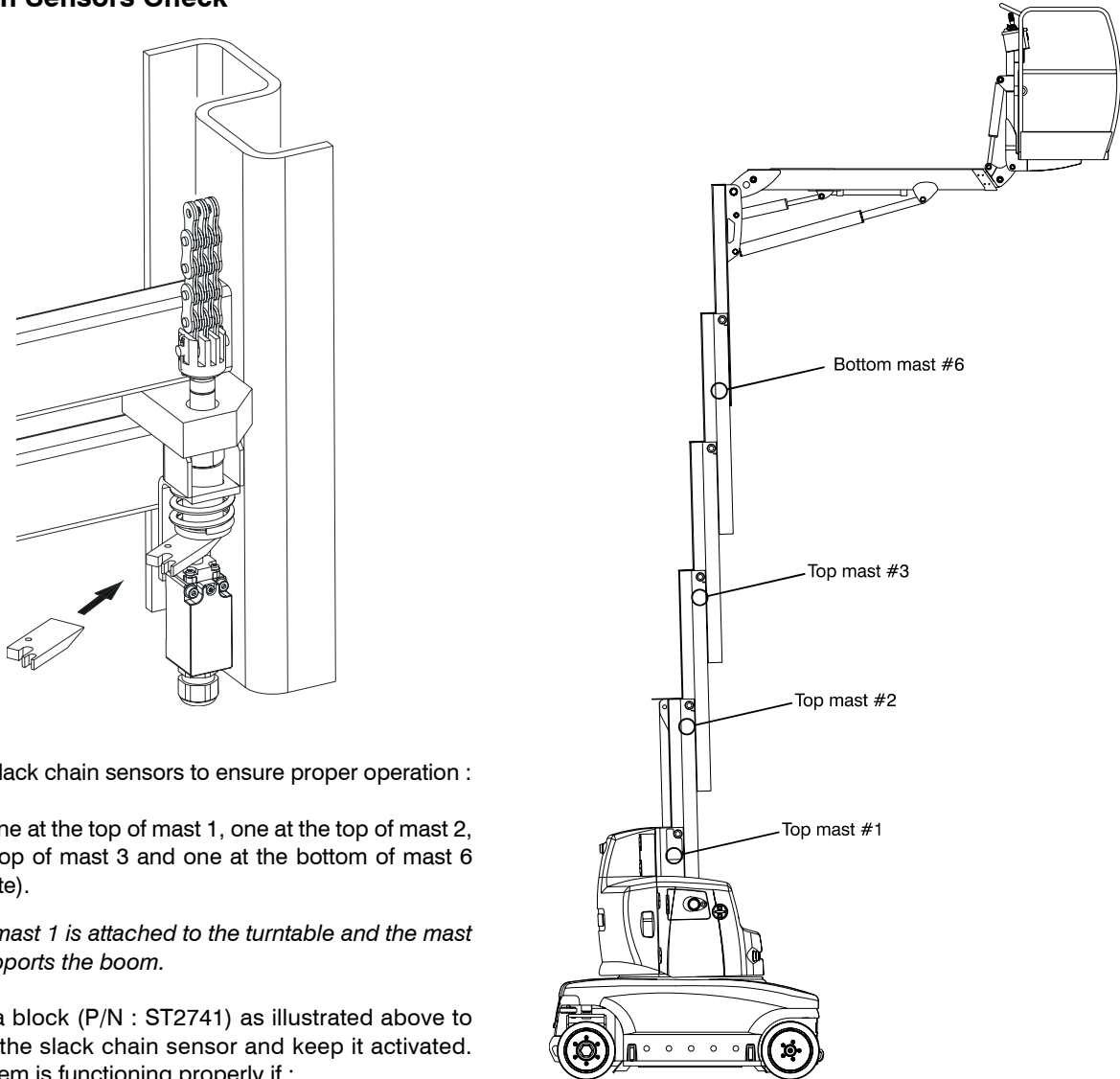
Tilt Sensor Check



Check the tilt sensor, located behind the right steering wheel on machine chassis, to ensure proper operation. From the Platform Control Console, extend the telescope by approximately 4" (10 cm). Wedge a block (P/N: ST2741, location : manual storage container) as illustrated above to activate the tilt sensor and keep it tilted. The system is functioning properly if:

1. From the Platform Control Console :
 - An acoustic alarm sounds.
 - The red tilt indicator lights up on the Platform Control Panel.
 - The drive function is disabled.
 - The telescope out function is disabled.
 - The boom raising function is performed at reduced speed.
 - The boom lowering function is disabled as long as the telescope is not fully retracted.
 - The mast raising function is performed at reduced speed.
 - The slewing movements are performed at reduced speed.
 - All other functions are working normally.
 - Prohibited movements are indicated by the orange light indicator on the platform control panel.
2. From the Ground Control Console :
 - An acoustic alarm sounds.

Slack Chain Sensors Check



Check the slack chain sensors to ensure proper operation :
4 sensors

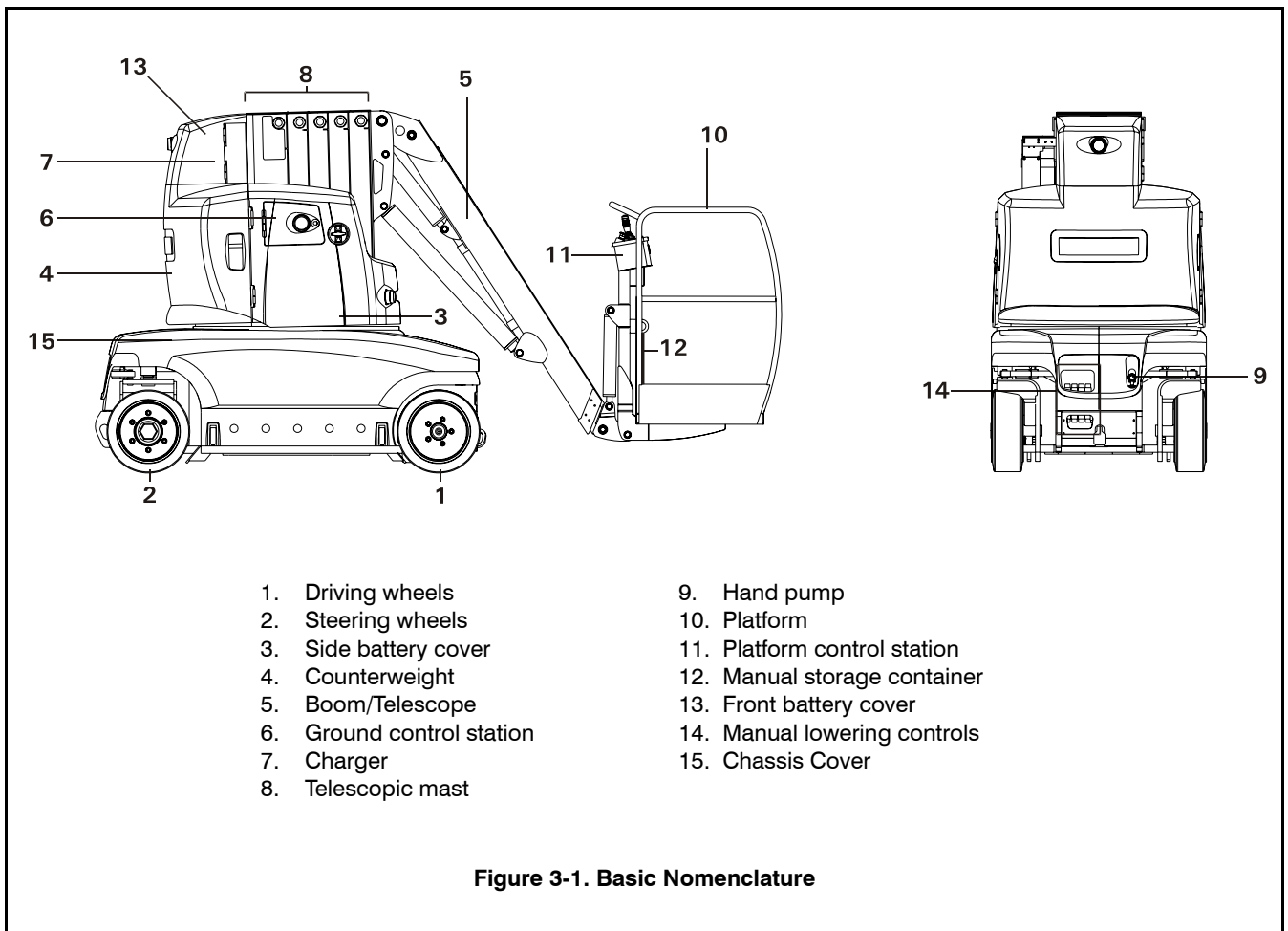
Location : one at the top of mast 1, one at the top of mast 2, one at the top of mast 3 and one at the bottom of mast 6 (see opposite).

NOTE: The mast 1 is attached to the turntable and the mast 6 supports the boom.

Wedge a block (P/N : ST2741) as illustrated above to activate the slack chain sensor and keep it activated. The system is functioning properly if :

1. From the Platform Control Console :
 - An acoustic alarm sounds.
 - The red slack chain indicator lights up on the Platform Control Panel.
 - All functions are disabled except boom and mast raising functions.
 - Prohibited movements are indicated by the orange light indicator on the platform control panel.
2. From the Ground Control Console :
 - An acoustic alarm sounds.
3. Repeat steps 1 to 2 for each slack chain sensor.

SECTION 3. MACHINE CONTROLS AND INDICATORS



3.1 GENERAL

IMPORTANT

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

⚠ WARNING

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

Ground Control Station

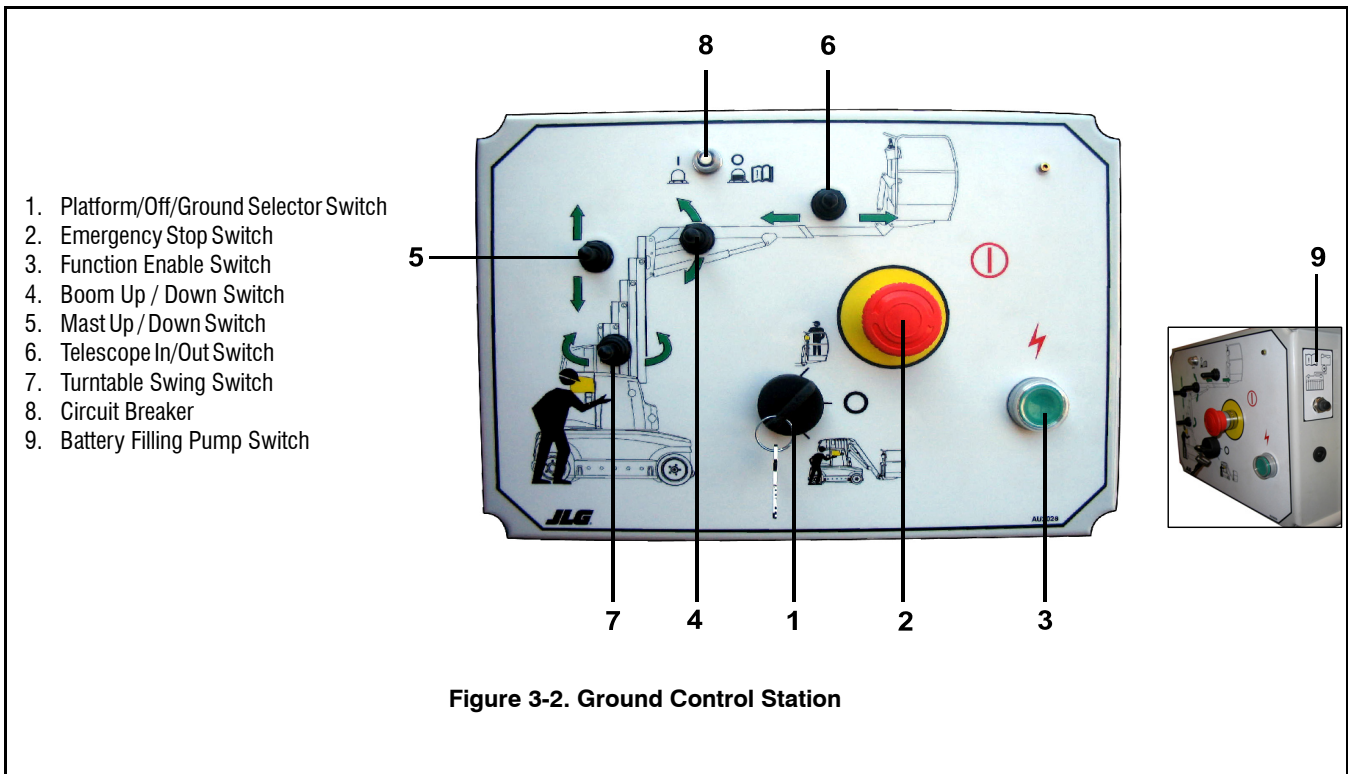


Figure 3-2. Ground Control Station

1. Platform/Off/Ground Selector Switch



Movement Control From The Platform Controls



Control Circuit Off Position



Movement Control From The Ground Controls.

2. Emergency Stop Switch.

Depress the switch to stop all functions. The switch must be turned clockwise to restore the machine's functions.

3. Function Enable Switch.

Must be pushed and held to operate any functions.

4. Boom Up / Down Switch.

Move the switch up to raise the boom. Move the switch down to lower the boom.

5. Mast Up / Down Switch.

Move the switch up to raise the mast. Move the switch down to lower the mast.

6. Telescope In/Out Switch

Move the switch to the right to extend the telescope or to the left to retract the telescope.

7. Turntable Swing Switch.

Move the switch to the right to swing the turntable

to the right or to the left to swing the turntable to the left.

8. Circuit Breaker.

Protection of the control circuit.



Normal position

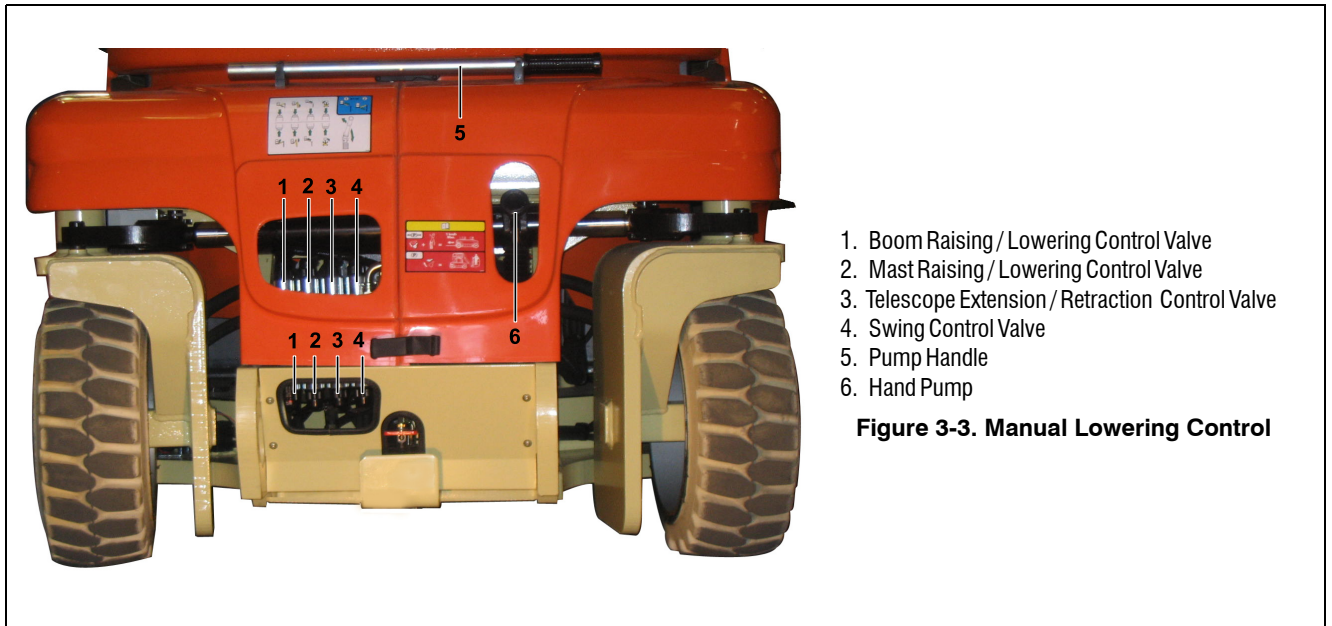


Disconnected position

9. Battery Filling Pump Switch.

Depress the push button to activate the battery filling pump. (See Maintenance section for further instructions).

Manual Lowering Control



1. Boom Raising / Lowering Control Valve
2. Mast Raising / Lowering Control Valve
3. Telescope Extension / Retraction Control Valve
4. Swing Control Valve
5. Pump Handle
6. Hand Pump

Figure 3-3. Manual Lowering Control

Electro-Hydraulic Control Valve With Manual Control Push Buttons

1. Boom Raising / Lowering Control Valve :
Depress and keep depressed the top push button while activating the hand pump to lower the boom. Depress and keep depressed the bottom push button while activating the hand pump to raise the boom.
2. Mast Raising / Lowering Control valve :
Depress and keep depressed the top push button while activating the hand pump to lower the mast. Depress and keep depressed the bottom push button while activating the hand pump to raise the mast.
3. Telescope Extension / Retraction Control valve :
Push and hold the top push button while activating the hand pump to retract the telescope. Push and hold the bottom push button while activating the hand pump to extend the telescope.
4. Swing Control Valve :
Depress and keep depressed the top push button while activating the hand pump to swing the turntable to the right. Depress and keep depressed the bottom push button while activating the hand pump to swing the turntable to the left.
5. Pump Handle :
Insert the pump handle in the hand pump to activate a movement.
6. Hand Pump :
Operate the hand pump while activating the desired movement.

Platform Control Station

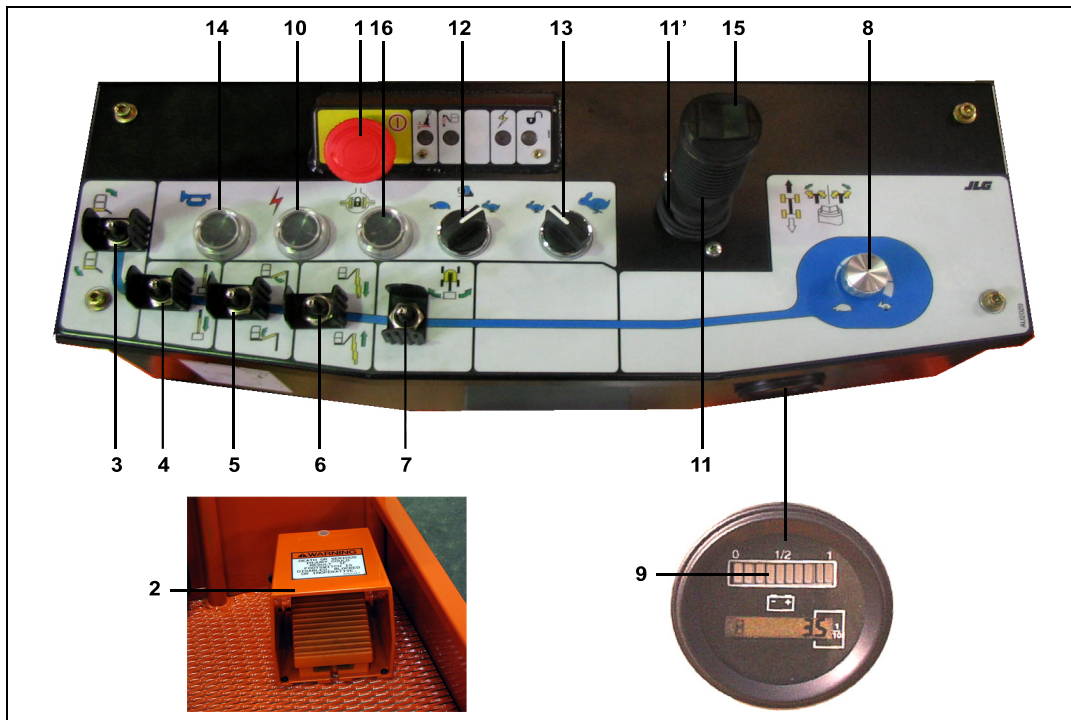


Figure 3-4. Platform Control Console

- | | |
|--------------------------------------|---------------------------------------|
| 1. Emergency Stop Switch | 9. Battery Discharge Indicator |
| 2. Footswitch | 10. Auxiliary Power Button |
| 3. Platform Levelling Control Switch | 11. Drive Control Joystick |
| 4. Telescope Function Control Switch | 11'. Ring |
| 5. Boom Function Control Switch | 12. Drive Speed Selector Switch |
| 6. Mast Function Control Switch | 13. Drive Extra Speed Selector Switch |
| 7. Turntable Swing Control Switch | 14. Horn |
| 8. Function Speed Control | 15. Steering Control |
| | 16. Posi Track Switch |

(See Figure 3-5., Platform Control Indicator Panel)

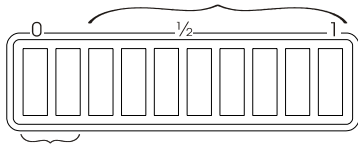
1. Emergency Stop Switch
Depress the switch to stop all the functions of the machine. The switch must be turned clockwise to restore the machine's functions.
2. Footswitch
Must be depressed before any movement is controlled. The controls are enabled for a period of 5 seconds. If no functions are operated within this period, the footswitch must be recycled.
3. Platform Levelling Control Switch
Pull the switch to tilt the platform backwards.
Push the switch to tilt the platform forward.

NOTE: This function is only available when the machine is stowed.

5. Boom Function Control Switch
Pull the switch to raise the boom.
Push the switch to lower the boom.
6. Mast Function Control Switch
Pull the switch to raise the mast.
Push the switch to lower the mast.
7. Turntable Swing Control Switch
Move the switch to the right to swing the turntable to the right.
Move the switch to the left to swing the turntable to the left.
8. Function Speed Control
When the knob is turned counter-clockwise to the left (☹️), the movements (except the drive movement) are performed at low speed. Turn the knob clockwise to the right (☺️) to increase the speed of the movements.

9. Battery Discharge Indicator

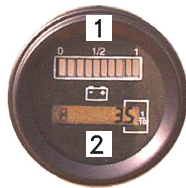
As the battery discharges, the bar lit in (1) moves from the right to the left (5 green bars followed by 3 orange bars).



At this point, the LED flashes indicating "energy reserve" (70% discharged).

The 2 red LEDs most to the left flash indicating "empty" (80% discharged). At this point, power is cut-off. The battery must be recharged.

- 1 - Discharge Indicator
- 2 - Hourmeter



10. Auxiliary Power Button

Once the electrical power is cut due to excessive battery discharge (80%), the Auxiliary Power Button can be pressed to use the remaining battery charge to travel to the charging station.

NOTE: The button must be actuated and held BEFORE the controls are enabled and the desired movement is controlled. An intermittent acoustic signal is actuated when the button is actuated.

IMPORTANT

A TOTAL DISCHARGE WILL RESULT IN IRREVERSIBLE DAMAGE TO THE BATTERY.

11. Drive Control Joystick

Lift the ring (11) up to unlock the joystick. Move the controller forward to drive forward. Move the controller backwards to reverse.

12. Drive Speed Selector Switch.

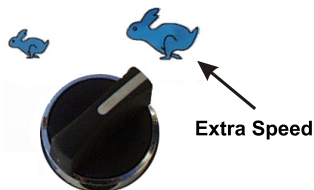
1st gear or slow speed

2nd gear or climbing speed (max. 20% grade)

3rd gear or high speed

13. Drive Extra Speed Selector Switch

This control is operational only when the drive speed selector is on high speed (). When the selector is positioned as figure below, a secondary



hydraulic power unit will start at the end of the joystick travel thus increasing the drive speed. Use

of this control is reserved to travels over long distances and on horizontal grounds. If the machine arrives on a sloped surface, the secondary power unit will stop and start again only when the machine returns to horizontal ground.

14. Horn

Sounds when the button is depressed.

15. Steering control

Push the right side of the thumb switch to steer the wheels to the right. Push the left side of the thumb switch to steer the wheels to the left.

16. Posi Track Switch

When a wheel does not have full traction, this control enables transfer of the hydraulic power to the opposite driving wheel.

NOTE: Maximum efficiency is achieved when the wheels are straight. Use of this control should only be temporary. This function is only available when the machine is stowed. This function is not available if the drive speed selector switch is on low speed ().

Platform Control Indicator Panel.

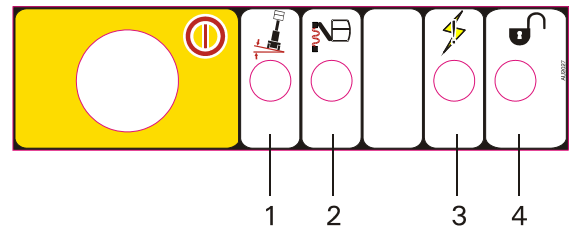


Figure 3-5. Platform Control Indicator Panel

- 1. Tilt Indicator Light And Alarm
- 2. Slack Chain Indicator Light And Alarm
- 3. Unauthorized Movement Indicator
- 4. Power Enable Indicator

1. Tilt Indicator Light and alarm.

Excessive tilt. Red light and audible alarm indicates the rated slope has been exceeded.

2. Slack Chain Indicator Light and alarm.

Slack Lifting chain. Red light and audible alarm indicates slack chain condition has been detected.

3. Unauthorized Movement Indicator.

Orange light which indicates the machine is in a configuration where the activation of movement is not permitted.

4. Power Enable Indicator.

Green light indicates that the controls are ready.

SECTION 4. MACHINE OPERATION

4.1 EMERGENCY CONTROL OPERATION


NOTE: A delay-timer, integrated to the electrical system, disconnects the control boxes approximately 4 hours after the last operation of the machine. This system preserves the battery should the operator forget to disconnect the machine. After cut out, the emergency stop switch on the ground control console must be depressed then turned clockwise to restore the functions of the machine.

The machine has a Ground Control Station which will override the Platform Control Station. Ground Controls operate Lift and Swing, and 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.

Platform/Off/Ground Select Switch

Power is supplied to the ground control station. With the switch in the ground position, power is supplied to the ground control station. When the switch is in the platform position, power is supplied to the Platform Control Station.

Operate the ground controls as follow :




1. Position PLATFORM CONTROLS/OFF/GROUND CONTROLS selector switch to GROUND CONTROLS ().
2. Push and hold the Function Enable Switch.
3. Activate swing, mast, boom or telescope function switch.

Emergency Stop Switch

This switch, when in the On (Out) position, provides electrical power to the ground controls or platform controls, as applicable. In addition, the switch can be used to turn off power (push the switch IN) to the function controls in the event of an emergency.

4.2 PLATFORM CONTROLS

Drive Speed Selector Switch

The DRIVE SPEED selector switch can be positioned either to 3rd gear (), 2nd gear () or 1st () position and that speed will be obtained. When the mast is raised and/or the telescope is out, and/or the boom is raised, the high speed drive (TORQUE or HIGH position) is cut out and only the low drive speed is attainable.

Traveling (Driving)

See Figure ,

NOTE: Refer to the General Specifications (Section 8) for Gradeability and Side slope ratings.

All ratings for Gradeability and Side slope are based upon the machine in transport mode with the mast

boom and telescope being in the stowed position, fully lowered, and retracted.

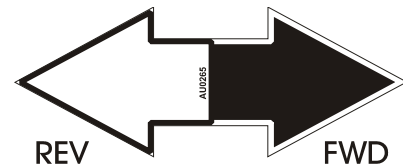
WARNING

DO NOT DRIVE WITH MAST OR BOOM OUT OF TRANSPORT MODE EXCEPT ON A SMOOTH, FIRM AND LEVEL SURFACE.

TO AVOID LOSS OF TRAVEL CONTROL OR "TIP OVER", DO NOT DRIVE MACHINE ON GRADES EXCEEDING THOSE SPECIFIED IN SECTION 8.2.

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.



With the machine in transport mode, traveling is limited by two factors, gradeability and side slope. Gradeability is the percent of grade of the incline the machine can climb. Sideslope, is the angle of the slope the machine can be driven across. Reference section 8 for gradeability and side slope ratings.

When the mast or the boom is raised, the machine must not be operated on grades or side slopes that are greater than those specified in Section 8. The tilt alarm will sound and tilt indicator will light to alert the operator when the machine has exceeded the rated slope. In addition, movement speeds will be reduced and some functions will be cut out (Refer to Tilt Sensor Check section).

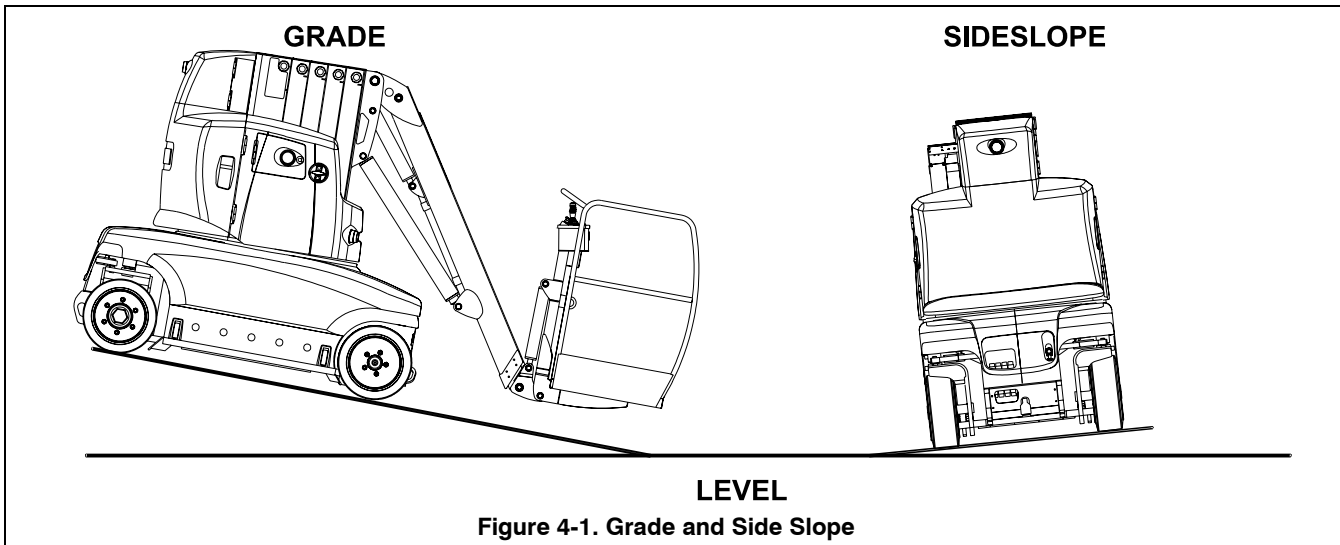





Figure 4-1. Grade and Side Slope

Forward

1. Selection of speed range : 1st gear (, 2nd gear () or 3rd gear () with drive speed selector switch; 4th gear with drive extra speed selector switch.
2. Match the black and white direction arrows on both platform control panel and chassis to determine the direction the machine will travel.
3. Depress footswitch.
4. Lift the ring up to unlock the controller.
5. Push the controller forward within 5 seconds after the footswitch has been depressed.

Stopping

Stopping is accomplished by slowly returning the DRIVE controller to the neutral position. The brakes will apply automatically.

Reverse

Traveling in reverse is accomplished the same way as traveling forward except for pulling the DRIVE controller toward the operator to reverse (REV).

Steering

Steering is accomplished by pressing the left side of the THUMB switch (on top of the controller) to steer to the left or the right side of the THUMB switch (on top on the controller) to steer to the right.

⚠ WARNING

TO AVOID TIP OVER, LOWER PLATFORM TO GROUND LEVEL. THEN DRIVE MACHINE TO A LEVEL SURFACE BEFORE RAISING MAST OR BOOM.

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

IF THE 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.

Raising And Lowering The Mast

Raising the mast :

1. Depress footswitch.
2. To raise the mast, pull the mast function control switch toward the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Lowering the mast :

1. Depress footswitch.
2. To lower the mast, push the mast function control switch away from the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Raising And Lowering The Boom

Raising the boom :

1. Depress footswitch.
2. To raise the boom, pull the boom function control switch toward the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Lowering the boom :

1. Depress footswitch.
2. To lower the boom, push the boom function control switch away from the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Extending And Retracting The Boom Telescope

Extending the telescope :

1. Depress footswitch.
2. To extend the telescope, pull the telescope function control switch towards the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Retracting the telescope :

1. Depress footswitch.
2. To retract the telescope, push the telescope function control switch away from the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Levelling The Platform

Tilting the platform backwards :

1. Depress the footswitch.
2. To tilt the platform backwards, pull the switch towards the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Tilting the platform forward :

1. Depress the footswitch.
2. To tilt the platform forward, push the switch away from the operator within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

NOTE: This function is only available when the machine is stowed.

Swinging the turntable

To swing :

1. Depress footswitch.
2. Move the turntable swing control switch to the right to swing the turntable to the right. Move the turntable swing control switch to the left to swing the turntable to the left. The switch has to be operated within 5 seconds after the footswitch has been depressed.
3. Adjust the speed movement using the function speed control.

Work Platform Functions Combination

A drive movement cannot be combined with a structure movement.

Platform levelling movements cannot be combined with any other structure movement.

4.3 MANUAL LOWERING CONTROLS

The manual lowering controls should be used in emergency situations or mechanical breakdown. The manual lowering controls provide an auxiliary means of lowering and raising the platform and swinging the turntable in the event of primary power loss.

4.4 ALARMS

Horn

Horn is activated when the corresponding push button located on the Platform Control Console is depressed.

Motion Alarm

The machine is fitted with 2 lights (beacons) and an audible motion alarm that come on as soon as a function is controlled from the platform control panel or from the ground control panel.

Tilt Light And Alarm

The alarm is triggered by a tilt sensor located on the right hand side of the chassis under the chassis cover. This alarm is active once the mast has left its lowered position or the boom is over its horizontal position, or the telescope has left its retracted position. It consists of a light on the platform control panel and an alarm. The alarm and light indicate that the work platform is at its maximum out of level limit (refer Table 8.1) and is nearing an unstable position. Drive function is disabled. Telescope extension movement is disabled. The boom lowering function is disabled as long as the telescope is not fully retracted. Boom, mast and turntable swing movements are operable at a reduced speed.

When the tilt light or alarm is activated, it is recommended to place the machine in the following configuration :

1. Telescope retracted.
2. Mast lowered.
3. Boom lowered.

NOTE: The tilt alarm and light are also operational from the ground control panel.

WARNING

DO NOT RAISE MAST OR OPERATE JIB OR TELESCOPE WITH MAST RAISED WHEN MACHINE IS OUT OF LEVEL.

Slack Chain Light And Alarm

The slack chain detection system prevents movements if the platform or the boom come to rest on an obstacle while lowering the mast or the boom.

When a slack chain is detected, the sensor actuates an acoustic alarm and a red light is lit on the platform control panel. All functions of the machine, except the mast and boom raising movements, are disabled.

Procedure to follow in case this feature is activated :

1. Raise the mast or the boom (generally the reverse movements to the one that caused the alarm to sound).
2. Identify the cause.
3. Perform the movement which will clear the machine and prevent contact with the obstacle.

If the examination of the surroundings does not reveal any possible obstacle, the alarm may have been triggered by the telescopic mast jamming which could be due to :

- A foreign body entering the guiding system.
- A lack of lubrication.
- Incorrect operation.

NOTE: *The chain slack and light alarms are also operational from the ground control station.*

DANGER

IF THE SLACK CHAIN ALARM HAS BEEN TRIGGERED BY MAST JAMMING, DISCONTINUE OPERATION IMMEDIATELY. DO NOT USE THE MANUAL LOWERING CONTROLS. PLATFORM OCCUPANTS MUST BE RESCUED AND THE MACHINE SERVICED BY A QUALIFIED TECHNICIAN.

4.5 SHUT DOWN AND PARK

To shut down and park the machine, the procedures are as follow :

1. Drive machine to a reasonably well protected area.
2. Ensure mast is lowered, the boom stowed and the telescope retracted.
3. Push in the Emergency Stop at Platform Control Station.
4. Push in the Emergency Stop at Ground Control Station. Position Platform/Off/Ground select switch to center OFF.
5. Position the circuit-breaker to its OFF position.
6. If necessary, cover Platform Controls to protect instruction placards, warning decals and operating controls from hostile environment.
7. Charge the battery if the LEDs on the discharge indicator are orange or red.

4.6 CHARGER

The work platform on-board electronic charger is designed to automatically charge 24 V DC (wet) lead-acid rechargeable batteries.

The covers of the machine must be open during battery charge.

NOTE: When the charger is connected to the power supply, all functions are cut out.

POWERFINN High Frequency Charger



Charging the battery :

- Plug the charger into the power supply (single phase 110 VAC 2 poles + ground).
- Turn the power on (switch to the "I" position).
- The charger starts automatically.

Once the charge is completed :

- Turn the power off (switch to the "O" position).
- Unplug the charger from the power supply.

NOTE: Once the charger has been unplugged, the machine cannot be operated until after 20 s.

LEDs signal :

Status light			
orange solid	green solid	red flashing	red solid
Charge in process	Charge completed	Charge not completed after 16 hours	Battery voltage < 16V or > 32V (fault)

Stand by light	
lit	lit off
Stand by : Connected to the power supply, switch to "O"	No power supply or switch to "1"

4.7 EMERGENCY TOWING

Towing is discouraged and must only be performed as a last option.

IMPORTANT

VERIFY THE CAPACITY OF THE EQUIPMENT USED TO TOW THE MACHINE.

To tow, release the brakes and the wheel motors as follow :

1. Fully lower the platform.
2. Remove the pump handle (located at the front side of the chassis).
3. Push the lever of the brake release valve (located at the front side of the chassis), toward the ground to "BRAKE UNLOCKED" position (⊗).
4. Insert the handle in the hand pump.
5. Gently activate the hand pump about 8 times.
6. Use a winch to tow the machine (if a winch is not available, use another low speed towing device).

CAUTION

THERE ARE TWO TIE DOWN/EMERGENCY TOW LUGS INSTALLED ON EACH END OF THE CHASSIS OF THE WORK PLATFORM. WHEN USING THESE LUGS, ALWAYS TOW USING BOTH LUGS.

7. At the end of the procedure, return the release valve to NORMAL USE (Ⓟ). The machine and the brakes are operational.

WARNING

MACHINE HAS NO TOWING BRAKES. TOWING VEHICLE MUST BE ABLE TO CONTROL MACHINE AT ALL TIMES, ON-HIGHWAY TOWING NOT PERMITTED, FAILURE TO FOLLOW INSTRUCTIONS COULD CAUSE SERIOUS INJURY OR DEATH. MAXIMUM TOWING GRADE 20%.

CAUTION

BEFORE TOWING, THE BRAKES AND THE WHEEL MOTORS MUST BE RELEASED. TOWING IS LIMITED TO EXTREMELY SHORT DISTANCES AT A MAXIMUM SPEED OF 0.65 MPH (1 KM/H). SEVERE DAMAGE TO THE DRIVE SYSTEM MAY RESULT IF TOWING IS OTHERWISE ACCOMPLISHED.

WARNING

- ENSURE THE MACHINE IS ON LEVEL GROUND BEFORE RELEASING THE BRAKES.

THE MACHINE MUST ALWAYS BE IN STOWED POSITION DURING TOWING PROCEDURE.

NO PERSONNEL IS ALLOWED ON THE PLATFORM DURING TOWING PROCEDURE.

4.8 LIFTING AND TIE DOWN

IMPORTANT

WHEN TRANSPORTING THE MACHINE, THE MACHINE MUST BE STOWED.

Lifting

1. The weight of the machine is stamped on the serial number plate (See § 8.2). If the plate is missing or illegible, call JLG Industries or weigh the individual unit to find out the Gross Vehicle Weight.
2. Place the machine in the stowed position.
3. Remove all loose items from the machine.
4. Attach lifting device and equipment only to the designated lifting points. (See below).



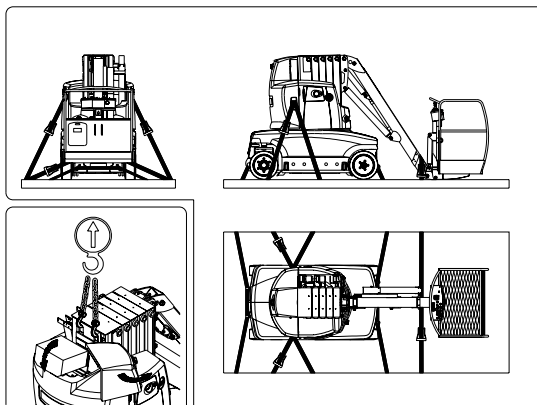
CAUTION

USE BOTH RINGS TO LIFT THE MACHINE.

5. Properly adjust the rigging to prevent damage to the machine.

Tie Down

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 and attached to the designated tie down points.



4.9 LOADING AND UNLOADING

Using a winch for loading

If the work platform cannot be loaded safely using the work platform controls, use a winch (release brakes prior to the operation).

WARNING

NOBODY MUST BE IN THE PLATFORM DURING LOADING OR UNLOADING PROCEDURES.

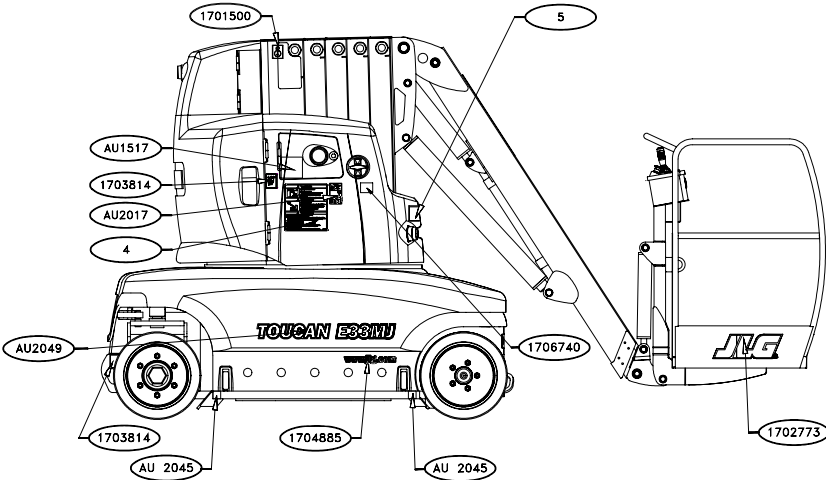
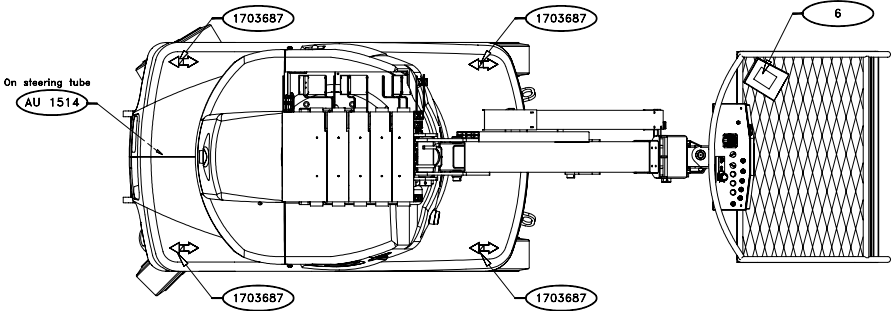
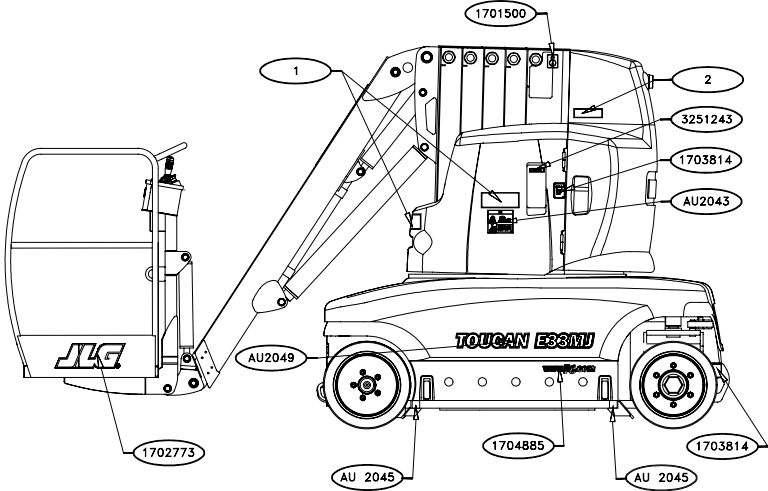
CAUTION

CHECK THE CAPACITY OF THE EQUIPMENT USED. PLACE THE MACHINE IN TOWING MODE (SEE § 4.7) FOR THE LOADING AND UNLOADING PROCEDURES. NOBODY MUST BE IN THE PLATFORM DURING THIS OPERATION.

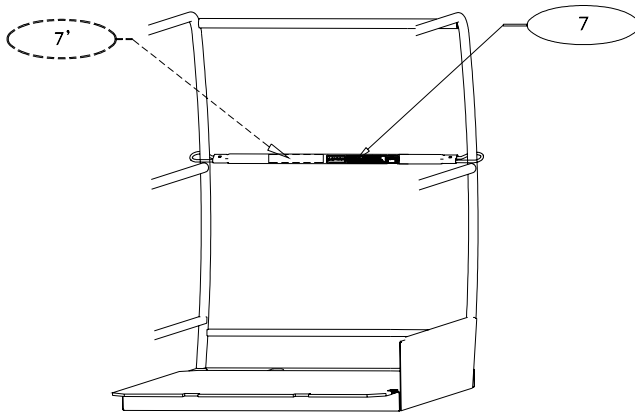
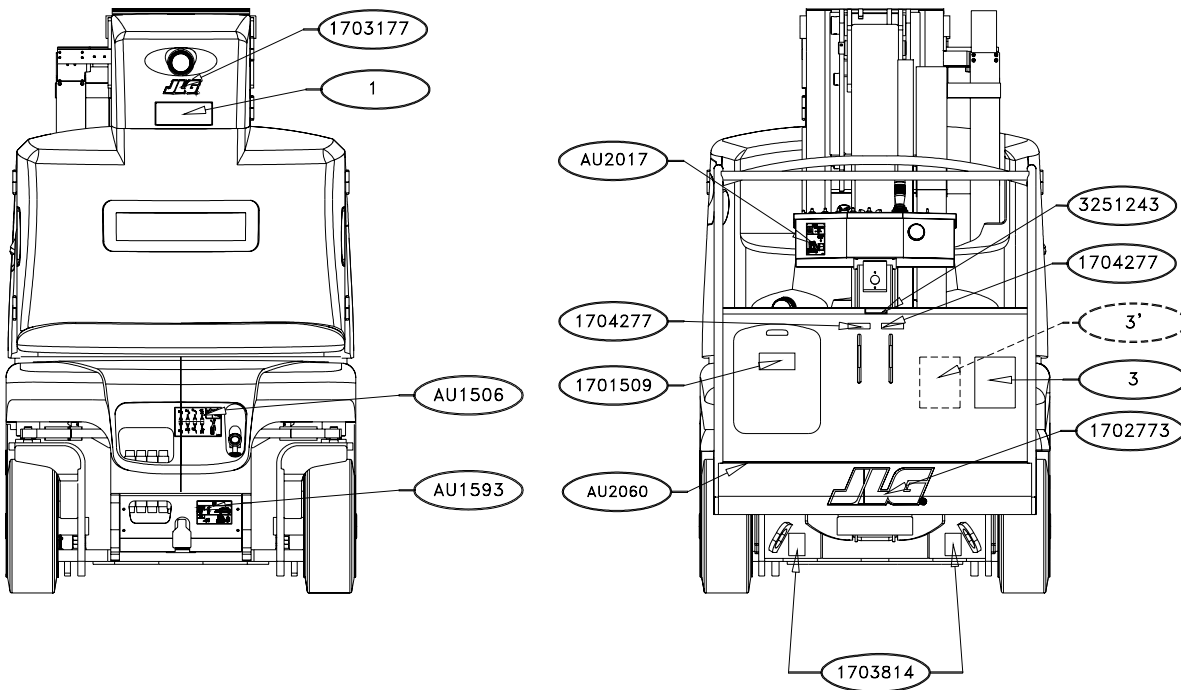
Using a ramp

If the work platform cannot be loaded safely on a ramp using the platform controls, use a winch.

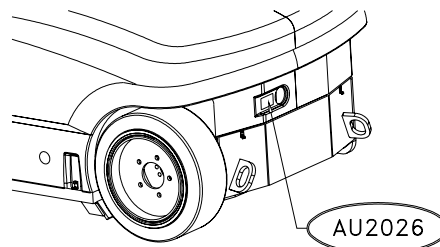
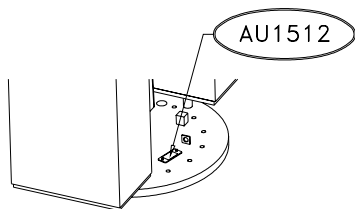
SECTION 5. DECALS



SECTION 5 - DECALS



1	1703805
2	1703813
3 (3')	AU2018
4	1703798
5	1703804
6	3252347
7 (7')	1706385



SECTION 6. EMERGENCY PROCEDURES

6.1 GENERAL

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

6.2 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.

In USA : 877-JLG-SAFE (Toll free)

Outside USA: 717-485-5161

E-mail:ProductSafety@JLG.com

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

IMPORTANT

FOLLOWING ANY ACCIDENT, THOROUGHLY INSPECT THE MACHINE AND TEST ALL FUNCTIONS FIRST FROM THE GROUND CONTROLS, THEN FROM THE PLATFORM CONTROLS. DO NOT LIFT ABOVE 10 FT (3 M) UNTIL YOU ARE SURE THAT ALL DAMAGE HAS BEEN REPAIRED, IF REQUIRED, AND THAT ALL CONTROLS ARE OPERATING CORRECTLY.

6.3 EMERGENCY OPERATION

Operator Unable to Control Machine

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

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

Platform or Mast Caught Overhead

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

6.4 EMERGENCY LOWERING

If primary power is lost, the platform may be lowered manually. Reference section 3 for Manual Lowering Control procedures.

6.5 EMERGENCY TOWING PROCEDURES

Towing this machine is discouraged. However, provisions for towing the machine in emergency situations have been incorporated. For specific procedures, refer to Section 4.

SECTION 7 - INSPECTION AND REPAIR LOG

SECTION 8. GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

8.1 INTRODUCTION

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

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

Other Publications Available :

Illustrated parts 31210018

Service and maintenance manual..... 31210020

8.2 OPERATING SPECIFICATIONS

Table 8-1. Operating Specifications And Dimensions

Maximum Work Load	500 lbs	227 kg
Swing	360° (not continuous)	
Max. Platform Height	33'	10,10 m
Horizontal Reach (from centerline of machine)	14.76'	4,50 m
(from rear wheel edge)	11.15'	3,40 m
(from side wheel edge)	12.6'	3,84 m
Up and Over Clearance	23.65'	7,21 m
Max. Hydraulic System Pressure	3480 PSI	24 MPa
Maximum Horizontal Manual Force	150 lbs	666 N
Electrical System Voltage	24 VDC	
Gross Machine Weight (Platform Empty)	11795 lbs	5350 kg
Overall Length	12.63'	3,85 m
Overall Height	6.56'	2,00 m
Overall Width	3.94'	1,20 m
Maximum Wheel Load	4740 lbs	2150 kg
Maximum Travel Grade (Gradeability) With mast and jib in stowed position and telescope retracted	11°	20%
Maximum Travel Grade (Side slope) With mast and jib in stowed position and telescope retracted	5°	9%
Maximum chassis inclination	5°	
Turning Radius		
Inside :	5.02'	1,53 m
Outside :	10.5'	3,20 m

Fluid Capacities

Table 8-2. Capacities

Main Hydraulic Tank	9.25 gallons	35 l
---------------------	--------------	------

Electric power unit

Table 8-3. Electric Power Unit Specifications

			Maximum 3480 psi	Maximum 240 Bar	
Main Power Unit	Motor	Power	4.8 kW		
		Voltage	24 VDC		
	Pump	Flow Rate	4.6 gal/min at 725 psi	17,5 l/min. at 5MPa	
		Displacement	0.32 cu.in/rev.	5,2 cm³/t	
Secondary Unit	Motor	Power	4.8 kW		
		Voltage	24 VDC		
	Pump	Flow Rate	3.7 gal/min at 725 psi	14 l/min. at 5MPa	
		Displacement	0.21 cu. in/rev.	3,5 cm³/t	

Batteries

Table 8-4. Battery Specifications

Voltage	24-Volt
Amp Hour Rating	930Ah (5h rate)
Life Cycle Rating	1200 Cycles

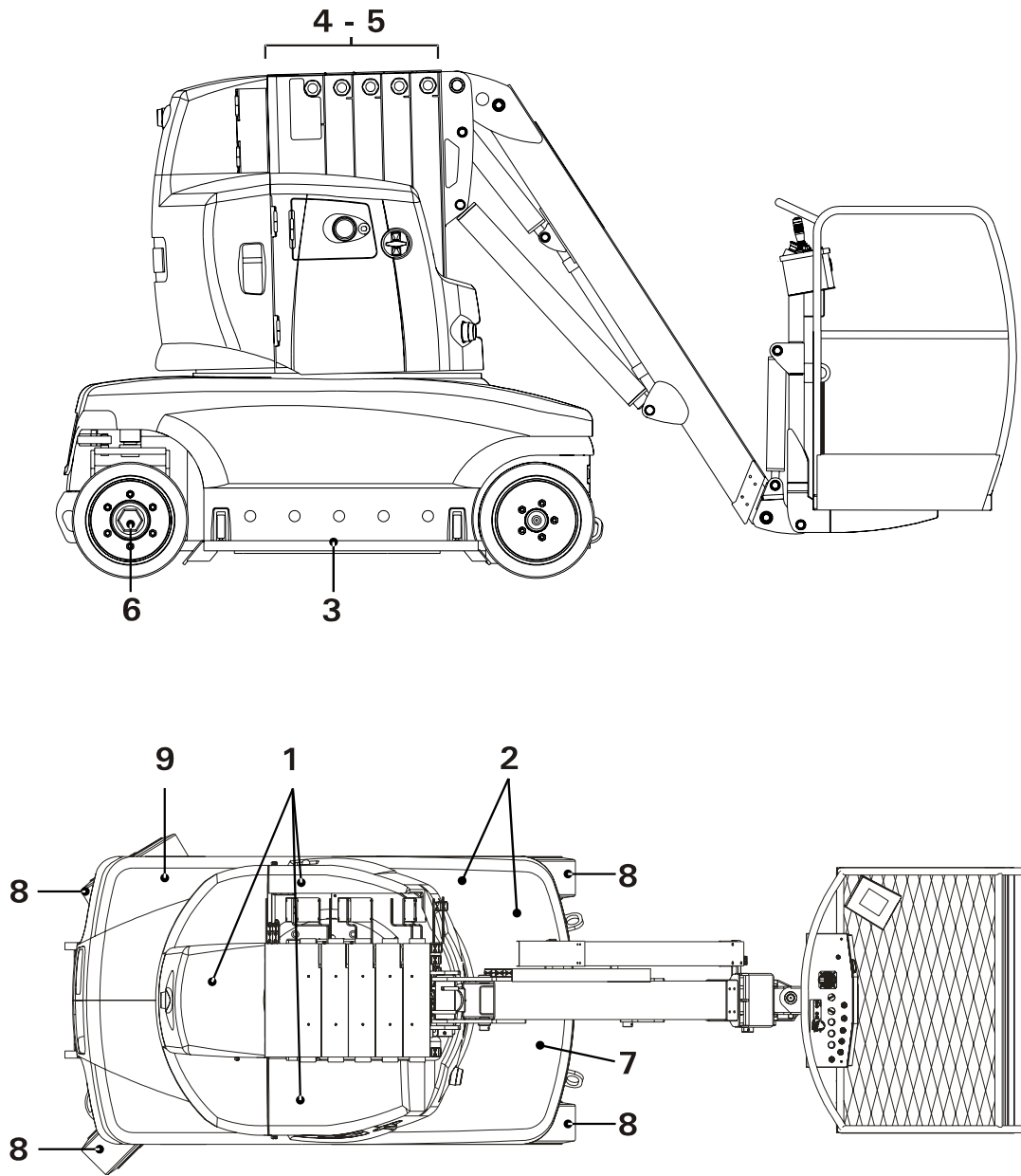


Table 8-5. Operator Maintenance & Lubrication Diagram

1- Batteries	6- Wheel bearing Lubrication
2- Hydraulic filters	7- Hydraulic oil Reservoir
3- Turntable Lubrication	8- Tires & Wheels
4- Lifting chains lubrication	9- Verification of the tilt alarm setting
5- Mast Sections Lubrication	

8.3 OPERATOR MAINTENANCE

1. Batteries

⚠ WARNING

DRAINED WATER MAY HAVE BEEN IN CONTACT WITH ACID AND MAY HAVE BECOME CORROSIVE. DO NOT ALLOW DRAIN WATER TO CONTACT THE SKIN OR EYES. IF IT OCCURS, FLUSH THE CONTACTED AREA WITH WATER AND CONSULT A DOCTOR IMMEDIATELY. APPROPRIATE EQUIPMENT MUST BE WORN (GLOVES, GOGGLES, RUBBER APRON) TO PREVENT THE DRAINED WATER FROM CONTACTING THE SKIN OR ANY PART OF THE BODY.

⚠ WARNING

BATTERY ELECTROLYTE MUST NOT BE ALLOWED TO CONTACT THE SKIN OR EYES. IF IT DOES OCCUR, FLUSH THE CONTACTED AREA WITH WATER AND CONSULT A DOCTOR IMMEDIATELY. APPROPRIATE EQUIPMENT MUST BE WORN (GLOVES, GOGGLES, RUBBER APRON) TO PREVENT THE ELECTROLYTE FROM CONTACTING THE SKIN OR ANY OTHER PART OF THE BODY DURING ANY SERVICING OPERATION ON THE BATTERY.

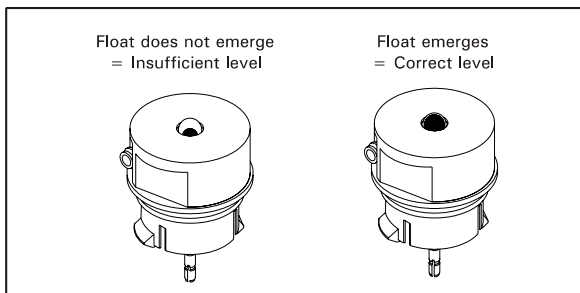
⚠ WARNING

DURING MAINTENANCE OR ANY SERVICING OPERATION ON THE BATTERY, RINGS, WATCHES OR ANY OTHER JEWELLERY MUST BE REMOVED.

Daily maintenance

Electrolyte level

Verify the electrolyte level after the charge using the floats in the center of each filling cap.



NOTE: Tilt the charger to gain access to the front battery pack.

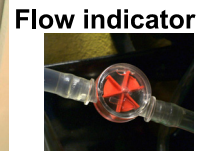
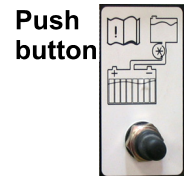
Fill the battery cells, if necessary, after the charge using the filling system.

IMPORTANT

USE ONLY DISTILLED OR DEMINERALIZED WATER TO FILL THE BATTERY CELLS. BATTERY CELLS MUST BE FILLED ONLY AFTER THE CHARGE (DURING THE CHARGE, THE ELECTROLYTE LEVEL INCREASES AND CAN OVERFLOW).

- Fill the can with distilled water.

- Depress and hold the push button to activate the battery filling pump until the flow indicator slows down.



- Check that the level is correct in each battery cell.

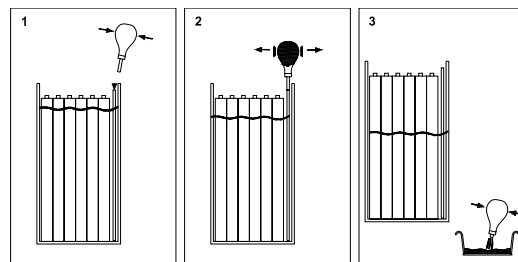
Weekly maintenance

Cleaning - Battery maintenance

It is necessary to clean the battery regularly to prevent salt formation and current arcing which could damage the machine.

- Clean and dry the battery top.
- Ensure the connections are clean and tight.
- Keep the metallic containers clean. In case of corrosion, clean, neutralize corrosion and apply anti-acid paint on the affected area.
- Drain the water that can accumulate at the bottom of the container (electrolyte overflow, leak in the centralized filling circuit, battery cleaning...).

To drain the water :



- A draining bulb is supplied with the work platform

NOTE: The water that contacted a battery is classified as industrial waste, it must be disposed of according to regulations in force.

Monthly maintenance

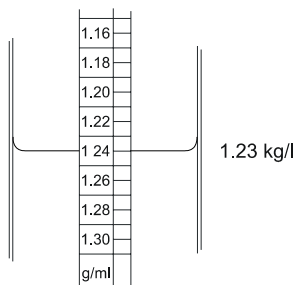
Checking voltage and electrolyte specific gravity

NOTE: Voltage and specific gravity measures should not be performed after battery cells have been filled. These measures must be done after a complete charge once the charger has been unplugged and the machine has been standing for 15 mn.

- Open the battery cell filling cap.

SECTION 8 - GENERAL SPECIFICATIONS & OPERATOR MAINTENANCE

- Using the hydrometer, take a quantity of electrolyte sufficient so that the float emerges. Ensure the float top does not touch the rubber bulb or that the float does not stick by capillarity to the glass wall.
- Read the value as indicated on the example below :



- Disconnect and clean the filter by reversing the water flow from the normal direction.
- Check the hoses for flexibility. In case of hardening in the connection areas, replace the hose.
- Check every fitting for tightness and leakage.
- Check the cell caps individually. Ensure the perfect mobility of the floats. In case of excessive clogging, replace the cap. In any case, it is recommended to replace the caps every 2 to 3 years.

Various recommendations

Use of a battery in a cold chamber or in a cold climate

Low temperatures decrease battery capacity. The battery must be fully charged when the work platform is operated in a cold chamber or in cold weather condition.

Battery not working continuously or inactive battery

A battery that is not used or used intermittently must be stored charged in a dry area away from freezing temperatures. A charge must be performed once a month.

- Unplug the battery to insulate it electrically.
- Keep the top of the battery clean and dry to prevent self discharge.

IMPORTANT

**IF THE BATTERY IS NOT USED CONTINUOUSLY, IT MUST BE RECHARGED BEFORE USE AND AT LEAST ONCE A MONTH, EVEN IF THE ELECTROLYTE SPECIFIC GRAVITY MEASURES ARE HIGH.
BEFORE PLACING IN SERVICE A BATTERY WHICH REMAINED INACTIVE FOR A LONG PERIOD OF TIME, YOU MUST RECHARGE THE BATTERY AND CHECK THE ELECTROLYTE LEVEL IN THE CELLS**

- Return the electrolyte in the cell and record cell electrolyte specific gravity in the battery service log.
- Repeat operation for each battery cell.
- Contact JLG Industries if important disparities are noticed between the gravity of the different cells and if the values are lower than 1.24.
- Check each cell voltage.
- Contact JLG Industries if important disparities are noticed between the voltage of the different cells.

Annual maintenance

Filling system maintenance

It is necessary to service the centralized filling system at least once a year. Cleaning frequency must be increased in case of premature clogging of the filter or a reduction in water flow.

Battery troubleshooting

Symptoms	Probable causes	Solutions
Electrolyte overflow.	Filling done before the charge. Cells overfilled.	Fill battery cells after the charge.
	Overcharge.	Never charge battery if electrolyte specific gravity is above 1,240 kg/l.
Inequal electrolyte specific gravity or electrolyte specific gravity too low.	Filling done before the charge.	Fill battery cells after the charge.
	Loss of electrolyte due to overflow.	Perform an equalization charge.
	Stratification of the electrolyte.	Contact your JLG Distributor/Product Support.
Low voltage in the cells in open circuit.	Electrolyte specific gravity too low.	Refer to "electrolyte specific gravity too low".
	Short-circuit.	Clean battery top.
Battery cells temperature too high (over 113°F (45°C)).	Problem with the charger.	Get the charger checked by a technician.
	Bad air circulation during charge.	Open access doors to batteries during charge. Reduce temperature of the area where the battery is charged (artificial ventilation).
	Cell weak or faulty Cells shorted.	Change battery cell.
Battery incapable of supporting regular operation.	Battery under charged.	Perform an equalization charge.
	Cell faulty.	Replace faulty cell.
	Faulty cable or connection.	Check wire condition and connection.
	Battery at the end of its service life.	Replace the battery.

Lubrication Specification

A	STANDARD
	NERVOFLUID VG 32
	NERVOFLUID DVG 32
	MOBIL DTE 13M
B	STANDARD
	COMPLEX EP2
	MOBILUX EP2
C	STANDARD
	MOBILTAC 81
D	STANDARD
	MOBIL DTE 16M
E	STANDARD
	MOBILUX EP2
	COMPLEX EP2

2. Hydraulic filters

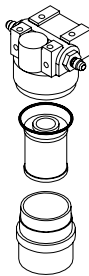
IMPORTANT

ALWAYS REPLACE BOTH FILTERS AT THE SAME TIME.

Pressure Filter

Interval - After first 50 hours of operation and every 250 hours thereafter

- Position the Platform/Off/Ground Selector Switch to "O" position.
- Activate the release valve (located at the front side of the machine) to release the pressure in the hydraulic circuit (position the release valve lever to "release position" (⊗)).
- Unscrew the filter container.



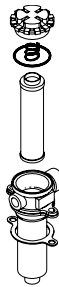
⚠ WARNING

HIGH PRESSURE OIL COULD PENETRATE SKIN AND CAUSE INJURIES OR BURNS.
 LOOSEN THE FILTER TANK VERY SLOWLY TO ALLOW THE OIL PRESSURE TO DROP GRADUALLY.

NOTE: Use a container to collect the oil from the hydraulic lines or from the filter and prevent it from spilling on the work platform or on the ground.

- Install a new filter cartridge.
- Install the filter container.

Return Filter



Interval - After first 50 hours of operation and every 250 hours thereafter.

- Position the Platform/Off/Ground Selector Switch to "O".
- Remove the return filter cap and remove the spring.
- Replace the filter cartridge with a new one.
- Check the presence and condition of the O ring, close the filter cover. Do not forget to install the spring.

IMPORTANT

AFTER INSTALLATION, PERFORM A FEW MOVEMENTS TO BLEED THE AIR FROM THE HYDRAULIC CIRCUIT, CHECK THE OIL LEVEL IN THE TANK (PLATFORM IN RETRACTED POSITION).

NOTE: Used oils and cartridges must be disposed of according to regulations in force.

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 or grease other than recommended in the previous chart, contact JLG Industries for proper recommendations.

IMPORTANT

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

3. Turntable Lubrication

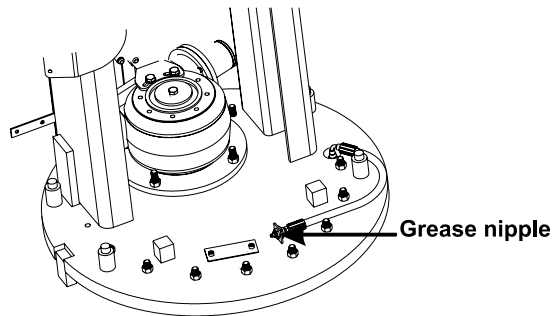
Bearing Track :

Lube Point - Grease Nipple

Lube - TYPE E

Interval - Every 250 hours of operation.

- Grease the bearing track using a grease pump.



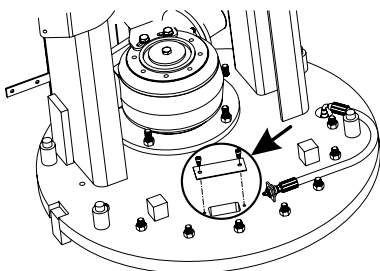
Turntable Teeth :

Lube Point(s) - Coat each tooth.

Lube - TYPE C

Interval - Every 1000 hours of operation

- Remove the protection cover to access internal teeth of bearing.



⚠ CAUTION

OPERATION MUST BE PERFORMED ON FLAT AND HORIZONTAL GROUND, IN AN AREA ALLOWING FULL ROTATION OF THE STRUCTURE.

- Apply new grease with a brush on the turntable teeth through the hole. Rotate the structure using the ground control station to ensure all the teeth have been greased.

4. Lifting chains lubrication

Lube - TYPE D

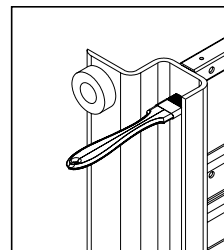
Interval - Before 50 hours of operation, then every 125 hours or once every 30 days of operation.

Comments - Lubricant can be applied manually with a brush or by spraying. Apply lubricant :

- Longitudinally : in areas where joints are under small load to facilitate penetration of the lubricant.
- Transversally : between the plates to enable the lubricant to reach the joint and between the internal plates.

Temperature		Recommended viscosity grades ISO - VG
C°	F°	
-15 < T ≤ 0	5 < T ≤ 32	15 to 32
0 < T ≤ 50	32 < T ≤ 122	46 to 150
50 < T < 80	122 < T < 176	220 to 320

5. Mast Section Lubrication

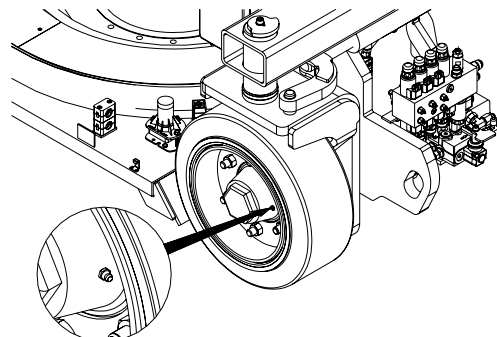


Lube - TYPE B

Interval - every 125 hours of operation or after each cleaning.

Comments - Clean the inside wall of mast to remove the old grease. Lubricate the mast inside wall using a brush.

6. Wheel Bearing Lubrication



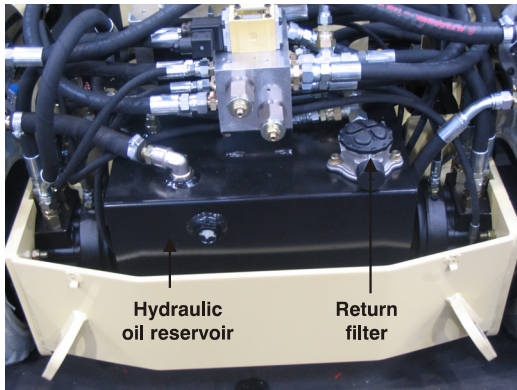
Lube point(s) - Grease Nipple

Lube - TYPE E

Interval - every 250 hours of operation.

Comments - One nipple on each hub.

7. Hydraulic Oil Reservoir



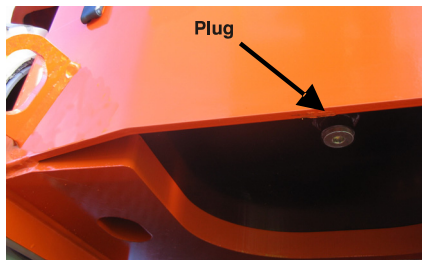
Lube Point(s) - Return filter
 Capacity - 9.25 gallons (35 liters)
 Lube - TYPE A
 Interval - Check oil daily, change after every 1000 hours of operation or at least every 2 years.

Reservoir Draining :

IMPORTANT

THE FILTERS MUST BE REPLACED WHEN THE OIL IS CHANGED IN THE MAIN RESERVOIR.

- a. Position the Platform/Off/Ground Selector Switch to "O" position.
- b. Place a container with a minimum capacity of 10 gallons (38 liters) under the oil reservoir plug.



- c. Unscrew the drain plug.

NOTE: Do not let the oil spill on the work platform or on the ground.

- d. Tighten the drain plug once all the oil has been drained.
- e. Used oils must be disposed of according to regulations in force.

Reservoir Filling :

- f. Unscrew the return filter cover and remove the spring.
- g. Remove the filter cartridge.
- h. Fill the tank with new oil to the maximum level.
- i. Install a new filter cartridge, check the presence of the O-ring and close the filter lid.

- j. Perform a few movements to bleed the air from the hydraulic circuit.
- k. Check oil level in the tank through sight gauge on the reservoir and add oil if necessary, with THE WORK PLATFORM IN RETRACTED POSITION, without exceeding maximum level.

8. Tires And Wheels

Tire wear and damage :

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

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 SEPARATION OF WHEEL FROM THE AXLE. BE SURE THAT THE LUG NUTS ARE SEATED PROPERLY TO THE WHEEL.

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 :

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

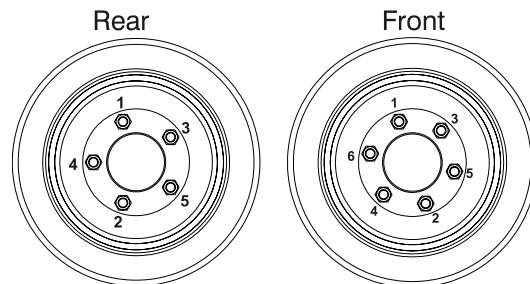


Table 8-6. Wheel Torque Chart

Torque Values			
Front Wheels		Rear Wheels	
184 lb ft	250 Nm	125 lb ft	170 Nm

- Tightening of the nuts should be done in stages. Following the recommended sequence, tighten nuts as follow :

Torque Stages

	1st stage		2nd stage		3rd stage	
Front	59 lb ft	80 Nm	125 lb ft	170 Nm	184 lb ft	250 Nm
Rear	41 lb ft	55 Nm	81 lb ft	110 Nm	125 lb ft	170 Nm

- Wheel nuts should be torqued after 50 hours or after each wheel removal. Check and torque every 3 months or 125 hours of operation.

IMPORTANT

TIGHTEN THE NUTS USING A TORQUE WRENCH. DO NOT USE AN IMPACT WRENCH.

9. Verification of the tilt alarm setting

Interval - Check after every 6 months of operation.

- Place machine on a known level surface.
- Position the selector switch to "Ground controls".
- Chock both rear wheels.
- Place a spirit level (digital display) on the chassis positioned lengthways.
- With a jack of appropriate capacity, lift the front of the chassis to tilt level specified in Table 8.1 and ensure that :
 - An acoustic alarm sounds when the chassis is tilted at its max value.
 - The corresponding LED lights up on the platform controls.
- Repeat steps (c) to (e) with the front wheels chocked and lift at the rear.
- Place a spirit level (digital display) across the chassis.
- With a jack of appropriate capacity, lift the right hand side of the chassis to tilt level specified in Table 8.1 and ensure that :
 - An acoustic alarm sounds when the chassis is tilted at its max value.
 - The corresponding LED lights up on the platform controls
- Repeat steps (g) and (h) with the left side of the chassis lifted.
- Remove the blocks.



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