Operators and Safety Manual

Models
100SX
110SXJ
110SX
120SXJ

3121104

June 10, 2003

ANSI

CALIFORNIA PROPOSITION 65

BATTERY WARNING

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

WASH HANDS AFTER HANDLING !

⚠ WARNING: ⚠

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

1702961

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. It is important to stress proper machine usage at all times. All information in this manual must be read and understood before any attempt is made to operate the machine.

Because the manufacturer has no direct control over machine operation and application, proper safety practices are the responsibility of the owners, users, operators, lessors, and lessees.

All instructions in this manual are based upon the use of the machine under proper operating conditions, with no deviations from the original design. Any alteration or modification of the machine is strictly forbidden without written approval from JLG Industries, Inc.

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.

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

The Safety Alert Symbol will be used with the appropriate Safety Signal Word of “DANGER” “WARNING” or “CAUTION” to a potential hazard and designate a level of seriousness. The Safety Signal Words are inserted throughout this manual in Black/White. On the machine, the Safety Signal Words will have either a Red, Orange, or Yellow background as part of a safety sign or decal. The “DANGER”, “WARNING”, and “CAUTION” Safety Signal Words, definitions, and associated colors are as follows:

⚠ DANGER

INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH. THIS SIGNAL WORD IS USED IN THE MOST EXTREME CASES. WHEN INSTALLED ON THE MACHINE, THIS SIGNAL WORD WILL HAVE A RED BACKGROUND AS PART OF A DECAL.

⚠ WARNING

INDICATES A POTENTIALITY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH. WHEN INSTALLED ON THE MACHINE, THIS SIGNAL WORD WILL HAVE AN ORANGE BACKGROUND AS PART OF A DECAL.

⚠ CAUTION

INDICATES A POTENTIALITY HAZARDOUS SITUATION WHICH IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO BE USED TO ALERT AGAINST UNSAFE PRACTICES. WHEN INSTALLED ON THE MACHINE, THIS SIGNAL WORD WILL HAVE A YELLOW BACKGROUND AS PART OF A DECAL.

The “IMPORTANT” Safety Signal Word may also appear in this manual or on the machine. This Safety Signal Word typically will not appear with the Safety Alert Symbol, but contains important information that must be followed for safe and proper operation, The “IMPORTANT” Safety Signal Word definition and associated color is as follows.

IMPORTANT

INDICATES PROCEDURES ESSENTIAL FOR SAFE OPERATION AND WHICH, IF NOT FOLLOWED, MAY RESULT IN A MACHINE MAL-FUNCTIONED DAMAGE. WHEN INSTALLED IN A MACHINE, THIS SIGNAL WORD WILL HAVE A GREEN BACKGROUND AS PART OF A DECAL.

⚠ WARNING

ALL SAFETY-RELATED BULLETINS MUST BE ACCOMPLISHED ON THIS PRODUCT. JLG INDUSTRIES, INC. MAY HAVE ISSUED SAFETY-RELATED BULLETINS FOR THIS JLG PRODUCT. CONTACT JLG INDUSTRIES, INC. OR THE LOCAL AUTHORIZED JLG DEALER FOR INFORMATION REGARDING SAFETY-RELATED BULLETINS WHICH MAY HAVE BEEN ISSUED FOR THIS PRODUCT.

IMPORTANT

FOR THE PURPOSE OF RECEIVING SAFETY-RELATED BULLETINS, IT IS IMPORTANT THAT THE CURRENT OWNER OF THIS UNIT ENSURES JLG INDUSTRIES, INC. HAS UPDATED OWNERSHIP INFORMATION. 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
- Standards and Regulations Compliance Information
- Questions Regarding Special Product Applications
- Questions Regarding Product Modifications

CONTACT :

Product Safety and Reliability Department
JLG Industries, Inc.
1 JLG Drive
McConnellsburg, PA 17233

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

E-mail: ProductSafety@JLG.com

REVISION LOG

Original Issue	- April 1, 2000
Revised	- April 30, 2002
Revised	- May 30, 2002
Revised	- June 10, 2003

TABLE OF CONTENTS

SUBJECT - SECTION, PARAGRAPH **PAGE NO.**

TABLE OF CONTENTS (continued)

SUBJECT - SECTION, PARAGRAPH **PAGE NO.**

TABLE OF CONTENTS (continued)

LIST OF FIGURES

LIST OF TABLES

This page left blank intentionally.

SECTION 1. SAFETY PRECAUTIONS

1.1 GENERAL

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

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

The owner/user/operator/lessor/lessee must be familiar with Sections 6, 7, 8, 9, 10 of ANSI A92.5-1992. These sections contain the responsibilities of the owner, user, operator, lessor, and lessee concerning safety, training, inspection, maintenance, application, and operation.

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

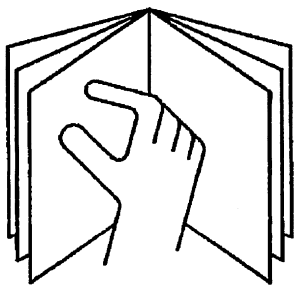
⚠ WARNING

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

1.2 PRE-OPERATION

Operator Training and Knowledge

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



- An operator must not accept operating responsibilities until adequate training has been given by competent and authorized persons.
- Allow only those authorized and qualified personnel to operate the machine who have demonstrated that they understand the safe and proper operation and maintenance of the unit.
- 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 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 your utilization and application of the machine.

Workplace Inspection

- Precautions to avoid all hazards in the work area must be taken by the user before 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 floor 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 operate the machine when wind conditions exceed 30 mph (12.5 m/s).
- This machine can be operated in nominal ambient temperatures of 0^{o} F to 104^{o} F (-20^{o} C to 40^{o} C). Consult JLG to optimize operation outside of this temperature range.

Machine Inspection

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

⚠ WARNING

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

- Do not operate any machine on which the safety or instruction placards or decals are missing or illegible.
- 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 deck.

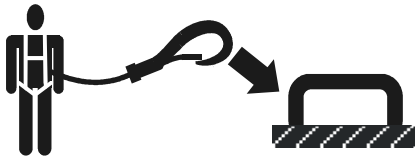
1.3 OPERATION

General

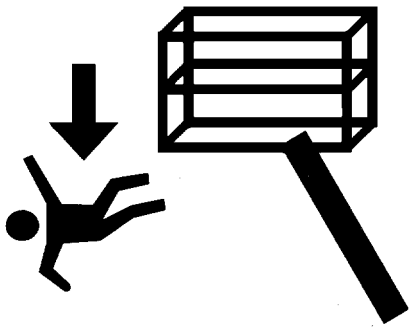
- Do not use the machine for any purpose other than positioning personnel, their tools, and equipment.
- Before operation, the user must be familiar with the machine capabilities and operating characteristics of all functions as specified in Section 4 - Machine Operation.
- Never operate a malfunctioning machine. If a malfunctions occurs, shut down the machine. Remove the unit from service and notify the proper authorities.
- Do not remove, modify, or disable the footswitch or any other 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.
- Hydraulic cylinders should never be left at end of travel (fully extended or fully retracted) before shutdown or for long periods of time. Always "bump" control in opposite direction slightly when function reaches end of travel. This applies both to machines in operation or in the stowed position.
- 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, the direction of steer and drive will be opposite from normal operation.
- Do not assist a stuck or disabled machine by pushing, pulling, or by using boom functions. Assist only by pulling at the chassis tie-down lugs.
- Do not place boom or platform against any structure to steady the platform or to support the structure.
- Stow boom and shut off all power before leaving machine.

Trip and Fall Hazards

JLG Industries, Inc. requires that all persons in the platform wear a full body harness with a lanyard attached to an authorized lanyard anchorage point while operating this machine. For further information regarding fall protection requirements on JLG products, contact JLG Industries, Inc.



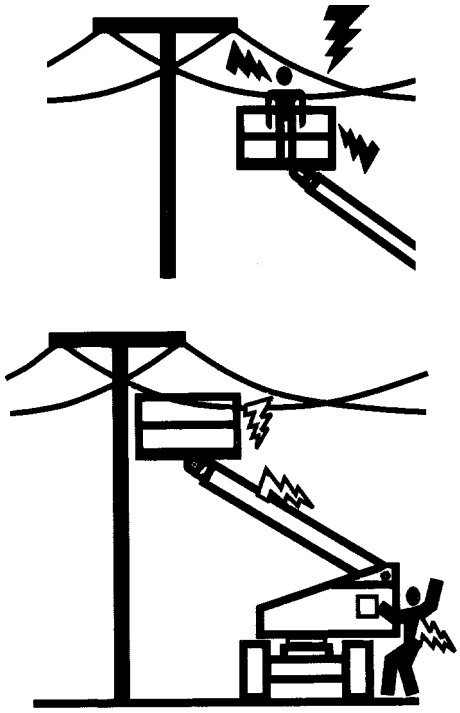
- Prior to operation, ensure all gates are fastened and secured in their proper position. Identify the designated lanyard anchorage point(s) at the platform and securely attach the lanyard. Attach only one (1) lanyard per lanyard anchorage point.



- Keep both feet firmly positioned on the platform floor at all times. Never position ladders, boxes, steps, planks, or similar items on unit to provide additional reach for any purpose.
- Never use the boom assembly to gain access to or leave the platform.
- Use extreme caution when entering or leaving platform. Ensure that the boom is fully lowered. Face the machine when entering or leaving the platform. Always maintain “three point contact” with the machine, using two hands and one foot or two feet and one hand at all times during entry and exit.
- Platform-to-structure transfers at elevated positions are discouraged. Where transfer is necessary, enter/exit through the gate only with the platform within 1 foot (0.3m) of a safe and secure structure. 100% tie-off is also required in this situation utilizing two lanyards. One lanyard must be attached to the platform with the second lanyard attached to the structure. The lanyard connected to the platform must not be disconnected until such time the transfer to the structure is safe and complete.
- Keep oil, mud, and slippery substances cleaned from footwear and the platform floor.

Electrocution Hazards

- This machine is not insulated and does not provide protection from contact with an electrically charged conductor.



- Maintain safe clearance from electrical lines, apparatus, or any energized (exposed or insulated) parts in accordance with the Minimum Safe Approach Distance (MSAD) as specified in Table 1-1. Allow for machine movement and electrical line swaying.

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

Voltage Range (Phase to Phase)	MINIMUM SAFE APPROACH DISTANCE in Feet (Meters)
0 to 300V	AVOID CONTACT
Over 300V to 50 KV	10 (3)
Over 50KV to 200 KV	15 (5)
Over 200 KV to 350 KV	20 (6)
Over 350 KV to 500 KV	25 (8)
Over 500 KV to 750 KV	35 (11)
Over 750 KV to 1000 KV	45 (14)
NOTE: This requirement shall apply except where employer, local or governmental regulations are more stringent.	

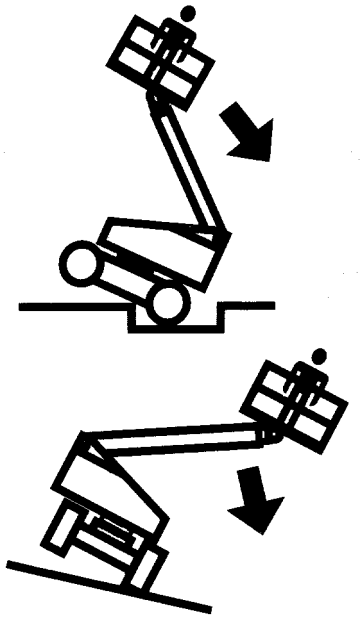
- Maintain a clearance of at least 10 ft (3m) between any part of the machine and its occupants, their tools, and their equipment from any electrical line or apparatus carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less.

⚠ DANGER

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

Tipping Hazards

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

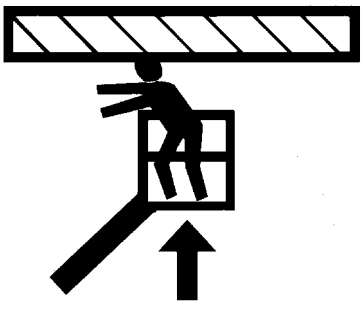


- Do not elevate platform or drive with platform elevated while on a sloping, uneven, or soft surface. Ensure machine is positioned on a firm, level and uniformly supported surface before elevating platform or driving with the platform in the elevated position.
- Before driving on floors, bridges, trucks, and other surfaces, check allowable capacity of the surfaces.
- Never exceed the maximum work load as specified on the platform. Distribute loads evenly on platform floor. Keep all loads within the confines of the platform, unless authorized by JLG.

- Keep the chassis of the machine a minimum distance of 2 ft. (0.6m) from holes, bumps, drop-offs, obstructions, debris, concealed holes, and other potential hazards at the ground level.
- Never push or pull the machine or other objects by telescoping or retracting 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.
- Do not operate the machine when wind conditions exceed 28 mph (12.5 m/s).
- Do not cover the platform sides or carry large surface-area items in the platform when operating outdoors. The addition of such items increases the exposed wind area of the machine.
- Do not increase the platform size with unauthorized deck extensions or attachments.
- If boom assembly or platform is caught so that one or more wheels are off the ground, all persons must be removed before attempting to free the machine. Use cranes, forklift trucks, or other appropriate equipment to stabilize machine and remove personnel.

Crushing and Collision Hazards

- Approved head gear must be worn by all operating and ground personnel.
- Keep hands and limbs away from boom assembly during operation.
- Watch for obstructions around machine and overhead when driving. Check clearances above, on sides, and bottom of platform when lifting or lowering platform.



- During operation, keep all body parts inside platform railing.
- Use the boom functions, not the drive function, to position the platform close to obstacles.
- Always post a lookout when driving in areas where vision is obstructed.
- Keep non-operating personnel at least 6 ft. (1.8m) away from machine during all driving 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 causing hazards of collision or injury to personnel.
- Be aware of stopping distances in all drive speeds. When driving in high speed, switch to low speed before stopping. Travel grades in low speed only.
- Do not use high speed drive in restricted or close quarters or when driving in reverse.
- Exercise extreme caution at all times to prevent obstacles from striking or interfering with operating controls and persons in the platform.
- Ensure that operators of other overhead and floor level machines are aware of the aerial work platform's presence. Disconnect power to overhead cranes. Barricade floor area if necessary.
- Avoid operating over ground personnel. Warn personnel not to work, stand, or walk under a raised boom or platform. Position barricades on floor as 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 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 with lifting equipment of adequate capacity.
- Refer to the Machine Operation section of this manual for lifting information.

1.5 MAINTENANCE

General

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

Maintenance Hazards

- Shut off power to all controls and ensure that all operating systems 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.
- Always relieve hydraulic pressure from all hydraulic circuits before loosening or removing hydraulic components.
- Always disconnect batteries when servicing electrical components or when performing welding on the machine.
- Shut down the engine (if equipped) while fuel tanks are being filled.
- Ensure replacement parts or components are 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.
- Remove all rings, watches, and jewelry when performing any maintenance. Do not wear loose fitting clothing or long hair unrestrained which may become caught or entangled in equipment.
- Use only clean approved non-flammable cleaning solvents.
- Never alter, remove, or substitute any items such as counterweights, tires, batteries, platforms or other items that may reduce or affect the overall weight or stability of the machine. Reference the Service and Maintenance Manual for the weights of critical stability items.

⚠ WARNING

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

Battery Hazards

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

⚠ WARNING

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

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

SECTION 2. PREPARATION AND INSPECTION

2.1 GENERAL

This section provides the necessary information needed by those personnel that are responsible to place the machine in operation readiness, and lists checks that are performed prior to use of the machine. It is important that the information contained in this section be read and understood before any attempt is made to operate the machine. Ensure that all the necessary inspections have been completed successfully before placing the machine into service. These procedures will aid in obtaining maximum service life and safe operation.

⚠ IMPORTANT

SINCE THE MACHINE MANUFACTURER HAS NO DIRECT CONTROL OVER THE FIELD INSPECTION AND MAINTENANCE, SAFETY IS THE RESPONSIBILITY OF THE OWNER/OPERATOR.

2.2 PREPARATION FOR USE

Before a new machine is put into operation it must be carefully inspected for any evidence of damage resulting from shipment and inspected periodically thereafter, as outlined in Delivery and Frequent Inspection (Section 2.3, Delivery and Frequent Inspection). During initial start-up and run, the unit should be thoroughly checked for hydraulic leaks. A check of all components should be made to ensure their security.

All preparation necessary to place the machine in operation readiness status is the responsibility of management personnel. Preparation requires good common sense, (i.e. telescope works smoothly and brakes operate properly) coupled with a series of visual inspections. The mandatory requirements are given in the Daily Walk Around Inspection (Section 2.4, Daily Walk-Around Inspection).

It should be assured that the items appearing in the Delivery and Frequent Inspection and Functional Check are complied with prior to putting the machine into service.

2.3 DELIVERY AND FREQUENT INSPECTION

NOTE: *This machine requires periodic safety and maintenance inspections by an authorized JLG Dealer. A decal located on the turntable provides a place to record (stamp) Annual Inspection dates. Check decal and notify dealer if inspection is overdue.*

The following checklist provides a systematic inspection to assist in detecting defective, damaged, or improperly installed parts. The checklist denotes the items to be inspected and conditions to examine.

Frequent inspection shall be performed every 3 months or 150 hours whichever comes first, or more often when required by environment, severity, and frequency of usage.

This inspection checklist is also applicable and must be followed for all machines that have been in storage or for all machines that will be exposed to harsh or changing climates.

These checks are also performed after maintenance has been performed on the machine.

Chassis

1. Check front tire and wheel assemblies for loose or worn spindles, components and hardware for security, tires for wear and damage.
2. Check steering assembly for loose or bent tie rod, cylinder and hydraulic lines for leaks and security, and hardware for proper installation.
3. Check rear tire and wheel assemblies for security, tires for wear and damage.
4. Check drive hubs, hydraulic motors, brakes and hydraulic lines for damage and leaks.
5. Check oil level in drive hub by removing pipe plug on side and feeling for oil level. (Contact Service Personnel for assistance if needed).

NOTE: *Drive hubs should be one-half full of lubricant.*

6. Check 4WS steering assembly (if equipped) for loose or bent tie rod, cylinder and hydraulic lines for leaks and security, and hardware for proper installation.
7. Check counterbalance, flow divider valves, hydraulic swivel assembly and lines for visible damage, evidence of leakage, and security and electrical connections for corrosion and tightness.
8. Check extending axle assemblies for evidence of leakage and security; pressure lines for abnormal chafing drive hubs, hydraulic motors, brakes and hydraulic lines for damage and leaks.
9. Check extending axles for visible damage and loose or missing parts.

Turntable

1. Check turntable and turntable lock for damage, loose or missing parts, and security. Check swing drive hub, hydraulic motor, and brake for damage, loose or missing parts, hydraulic lines and component housings for evidence of leakage; pinion for proper mesh with swing gear.
2. Check swing bearing for damage, wear, lubrication and loose or missing bearing bolts.
3. Check solenoid valves and hydraulic lines for damage, leakage, security and electrical connections for tightness and evidence of corrosion.
4. Check ground controls for damage, loose or missing parts, security, electrical connections for evidence of corrosion and tightness and wiring for insulation damage. Assure that all switches function properly.
5. Check batteries for damage, loose or missing vent caps, electrical connections for tightness, and evidence of corrosion, holddown brackets for tightness, and electrolyte for proper water level. Add only clean distilled water to battery.
6. Check engine and accessories for damage, loose or missing parts, leakage and security. Check throttle solenoid and linkage for damage, electrical connections for tightness, and evidence of corrosion and wiring for insulation damage.
7. Check fuel lines for damage, leakage and security.
8. Check all access doors for damage, proper operation of latches, props and security.
9. Check fuel tank for damage, leakage and filler cap for security.
10. Check hydraulic reservoir and hydraulic lines for damage, leakage and security.

NOTE: *JLG recommends replacing the hydraulic filter element after the first 50 hours of operation and then every 300 hours thereafter, unless system indicator require earlier replacement.*

11. Check all cylinder pin and shaft retaining hardware for security and wear.
12. Check all electrical cables for defects, damage, loose or corroded connections.

Boom

1. Check all cylinder pin and shaft retaining hardware for security and wear.
2. Check hydraulic lines, electrical cable and track assemblies for damage, missing parts and security.
3. Check lift cylinder and cross pins and hydraulic lines for damage, wear, leakage and security.
4. Check boom pivot pins for damage, wear, and security.
5. Check hydraulic line and electrical cable track assembly for visible damage, loose or missing parts, and security.
6. Check boom for damage, missing parts and security.
7. Check boom wear pads for damage, wear and security.
8. Check boom telescope cylinder and cross pins and hydraulic lines for damage, wear, leakage and security.
9. Check platform leveling cylinder and cross pins and hydraulic lines for damage, wear, leakage and security.
10. Check boom/platform pivot pin for damage, wear and security.
11. Check horizontal and capacity limit switches mounted on turntable for security of mounting, damage to switch arms and rollers; and for debris.
12. Check boom tape for correct length, tearing, or defacing at any point.

Extend-A-Reach (If Equipped)

1. Check the slave cylinder, weld link and cross pins, and lines for visible damage, wear, lubrication, evidence of leakage, and security.
2. Check extend-a-reach for visible damage, loose or missing parts, and security.
3. Check hydraulic lines and electrical cable for damage, missing parts and security.

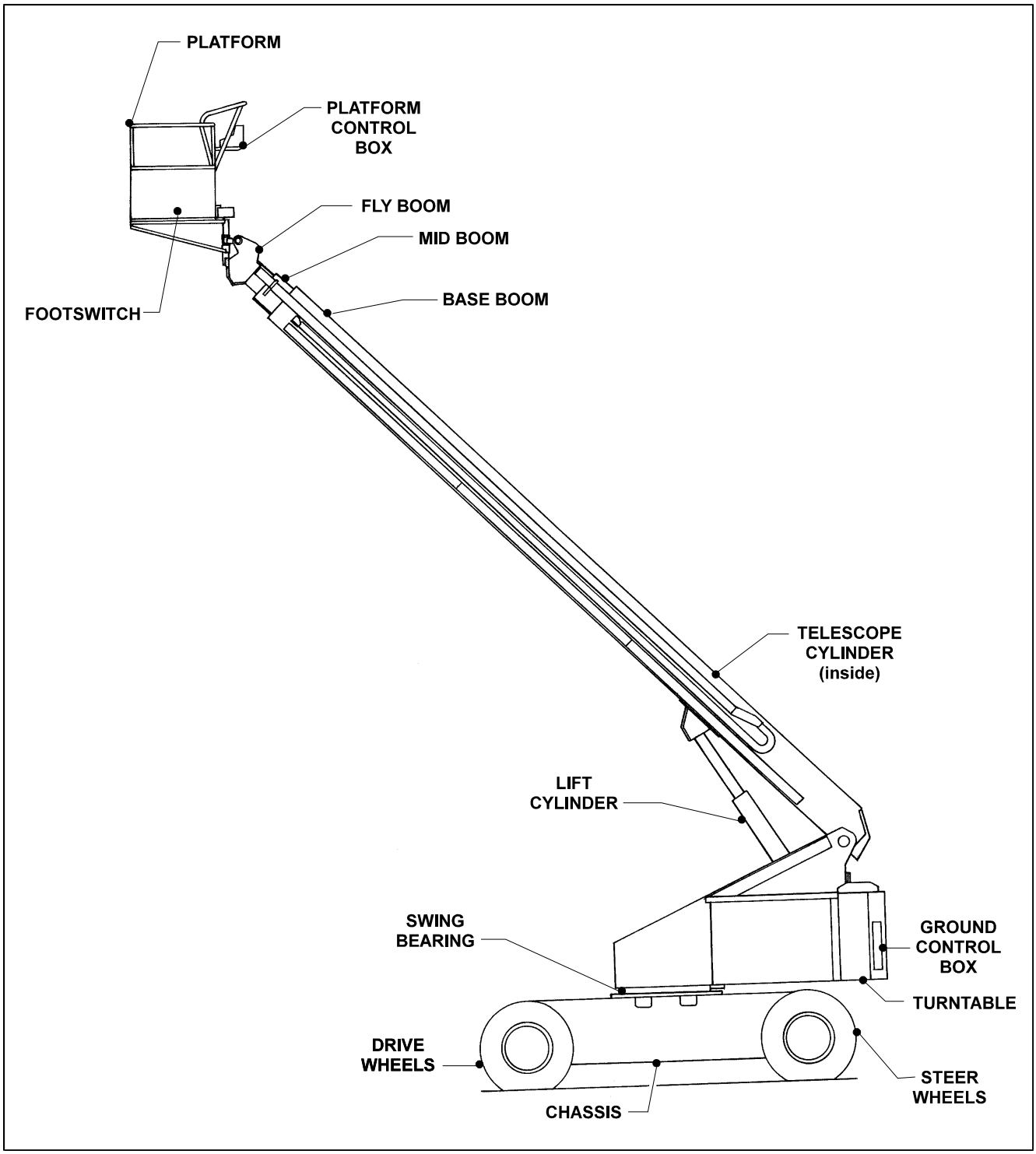


Figure 2-1. Machine Nomenclature - 100SX and 110SX

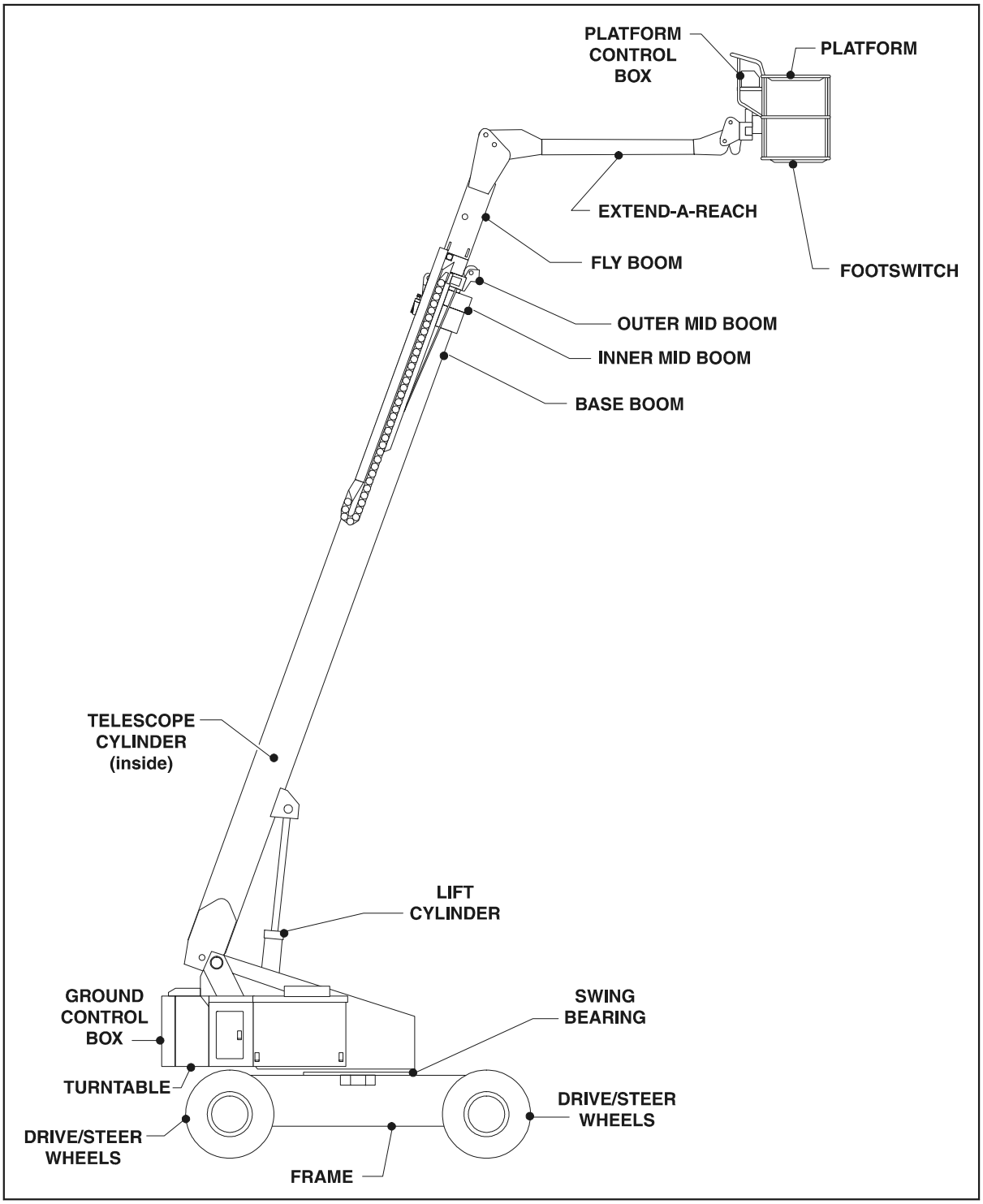


Figure 2-2. Machine Nomenclature - 110SXJ and 120SXJ

Platform

1. Check platform and control console for damage, loose or missing parts, and security.
2. Check control switches and levers for damage, loose or missing parts and security. Assure that all levers function properly.
3. Check control switches, levers and electrical connections for tightness and evidence of corrosion, and wiring for defects and chafing damage. Assure that all switches function properly.
4. Check access gate hinges and latch for proper operation, damage and security.
5. Check platform rotator mechanism for proper operation, damage, security. Check hydraulic lines for leakage, damage and security.

NOTE: *Check all DANGER, WARNING, CAUTION and INSTRUCTION placards for legibility and security on the entire machine.*

Torque Requirements

The Torque Chart (See Figure 2-7.) consists of standard torque values based on bolt diameter and grade, also specifying dry and wet torque values in accordance with recommended shop practices. This chart is provided as an aid to the operator in the event he/she notices a condition that requires prompt attention during the walk-around inspection or during operation, until the proper service personnel can be notified. The Service and Maintenance manual provides specific torque values and periodic maintenance procedures with a listing of individual components. Utilizing this Torque Chart in conjunction with the preventive maintenance section in the Service and Maintenance manual will enhance safety, reliability, and performance of the machine.

2.4 DAILY WALK-AROUND INSPECTION

It is the operator's responsibility to inspect the machine before the start of each workday. It is recommended that each operator inspect the machine before operation, even if the machine has already been put into service under another operator. This Daily Walk-Around Inspection is the preferred method of inspection. (See Figure 2-3.)

In addition to the Daily Walk-Around Inspection, be sure to include the following as part of the daily inspection:

1. Overall cleanliness.

   Check all standing surfaces for oil, fuel and hydraulic oil spillage and foreign objects. Ensure overall cleanliness.

2. Placards.

   Keep all information and operating placards clean and unobstructed. Cover when spray painting or shot blasting to protect legibility.

3. Operator's and Safety Manual.

   Ensure a copy of this manual and the ANSI A92.5-1992 Responsibilities, are enclosed in the manual storage box.

4. Machine Log.

   Ensure a machine operating record or log is kept, check to see that it is current and that no entries have been left uncleared, leaving machine in an unsafe condition for operation.

5. Start each day with a full fuel tank.

⚠ WARNING

TO AVOID INJURY, DO NOT OPERATE A MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED. USE OF A MALFUNCTIONING MACHINE IS A SAFETY VIOLATION.

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

NOTE: *Check boom horizontal limit switch for proper operation and security, both visually and manually. Switch must shut down high engine and high drive speed when boom is raised above horizontal:*

6. Check platform footswitch for proper operation. Switch must be released to start engine and depressed to operate machine.
7. Check that drive brakes hold when machine is driven up a grade and stopped.

NOTE: *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.*

8. Assure that all items requiring lubrication are serviced. Refer to Table 2-1, Lubrication Chart, for specific requirements.

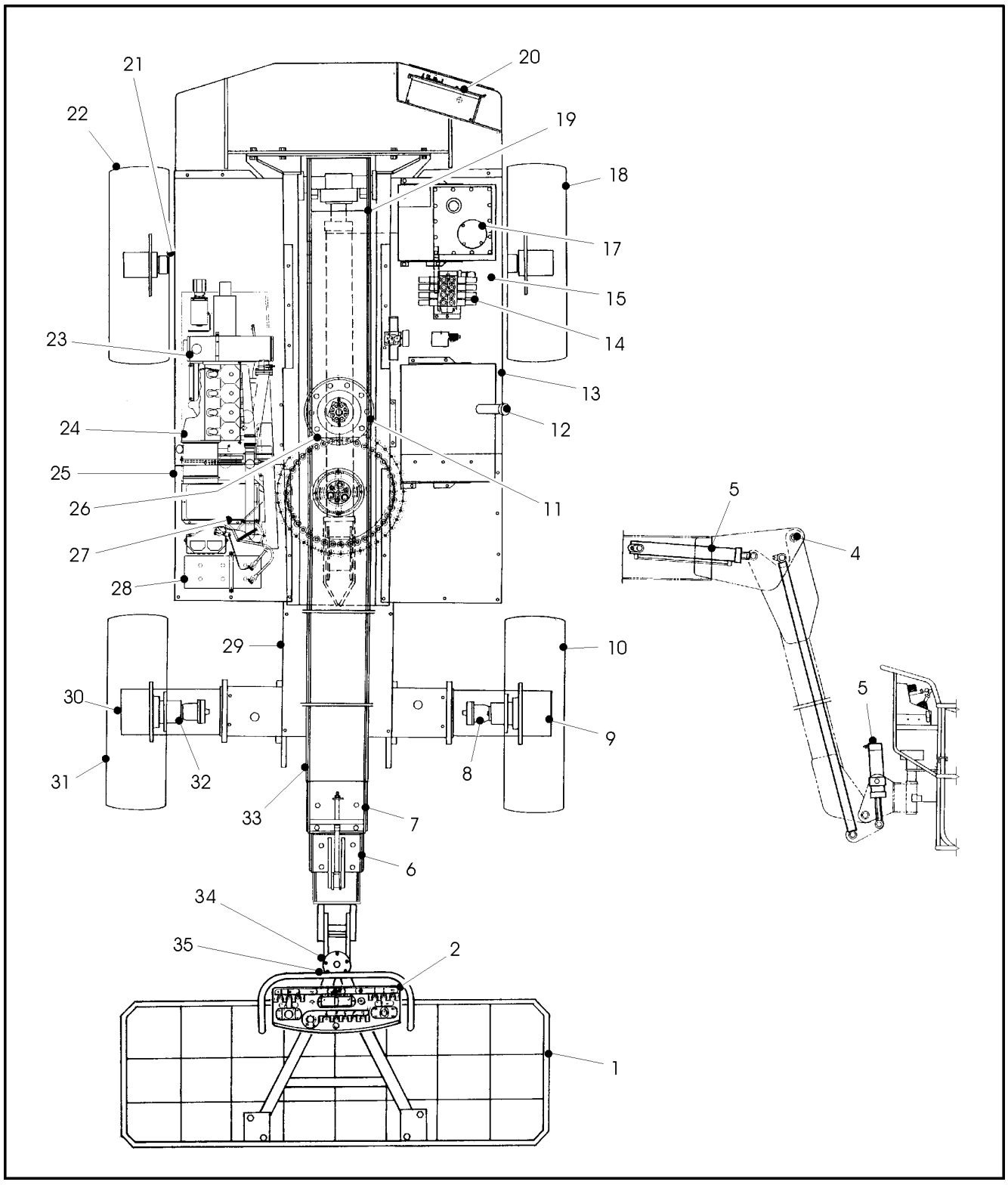


Figure 2-3. Daily Walk-Around Inspection Diagram

GENERAL

Begin the “Walk-Around Inspection” at Item 1, as noted on the diagram. Continue to the right (counterclockwise viewed from top) checking each item in sequence for the conditions listed in the “Walk-Around Inspection Checklist”.

⚠ WARNING

TO AVOID INJURY, DO NOT OPERATE A MACHINE UNTIL ALL MALFUNCTIONS HAVE BEEN CORRECTED. USE OF A MALFUNCTIONING MACHINE IS A SAFETY VIOLATION. TO AVOID POSSIBLE INJURY, BE SURE MACHINE POWER IS “OFF” DURING WALK-AROUND INSPECTION.

NOTE: *Do not overlook visual inspection of chassis underside. Checking this area often results in discovery of conditions which could cause extensive machine damage.*

1. Platform Assembly - No loose or missing parts, no visible damage. Footswitch in good working order, not modified, disabled or blocked. Check area of fly boom nose section above and under platform slave level cylinder for accumulation of foreign material. Remove any foreign material present.
2. Platform Control Console - Switches and levers return to neutral and are properly secured, no loose or missing parts, no visible damage, decals/placards secure and legible, control marking legible.
3. Slave Leveling Cylinder, Extend-A-Reach - Properly secured, no visible damage, no evidence of leakage. (If equipped with Extend-A-Reach)
4. Extend-A-Reach Pivot - No loose, damaged, or missing parts, evidence of proper lubrication. (If equipped with Extend-A-Reach)
5. Extend-A-Reach Lift Cylinder - Properly secured, no visible damage, or signs of leakage, evidence of proper lubrication. (If equipped with Extend-A-Reach)
6. Hose and Cable Guards/Clamps - Properly secured, no visible damage.
7. Power Track - No loose, damaged or missing parts, no visible damage.
8. Drive Motor and Brake, Right Rear - No visible damage, no evidence of leakage.
9. Drive Hub, Right Rear - No visible damage, no evidence of leakage.
10. Wheel/Tire Assembly, Right Rear - Properly secured, no loose or missing lug nuts, no visible damage.
11. Swing Drive Motor and Brake - No visible damage, no evidence of leakage.
12. Fuel Supply - Fuel filler cap secure. Tank - no visible damage; no evidence of leaks.
13. Cowling and Latches - All cowling and latches in working condition, properly secured, no loose or missing part.
14. Control Valve Compartment - No loose or missing parts; evidence of leakage; unsupported wires or hoses; damaged or broken wires.
15. Hydraulic Oil Filter Housing - Housing secure; no visible damage or signs of leakage.
16. Hydraulic Oil Supply - Recommended oil level in sight gauge. (Check level with cold oil, systems shut down, machine in stowed position) Cap in place and secure.
17. Hydraulic Oil Breather - Element in place, not clogged, no signs of overflow.
18. Wheel/Tire Assembly, Right Front - Properly secured, no loose or missing lug nuts, no visible damage.
19. Turntable Springs - Properly secured, no loose or missing nuts or bolts.
20. Ground Controls - Switches operable, no visible damage, decals secure and legible.
21. Tie Rod and Steering Linkage - No loose or missing parts, no visible damage. Tie rod end studs locked.
22. Wheel/Tire Assembly, Left Front - Properly secured, no loose or missing lug nuts, no visible damage.
23. Muffler and Exhaust System - Properly secured, no evidence of leakage.
24. Engine Oil Supply - Full mark on dipstick; filler cap secure.

Figure 2-4. Daily Walk-Around Inspection Points - Sheet 1

25. Cowling and Latches, Right Side - All cowling and latches in working condition, properly secured, no loose or missing part.
26. Turntable Bearing and Pinion - No loose or missing hardware; no visible damage, evidence of proper lubrication. No evidence of loose bolts or looseness between bearing and structure.
27. Engine Air Filter - No loose or missing parts, no visible damage, element clean.
28. Battery - Proper electrolyte levels; cables tight, no visible damage or corrosion.
29. Frame - No visible damage, no loose or missing hardware (top and underside).
30. Drive Hub, Left Rear - No visible damage, no evidence of leakage.
31. Wheel/Tire Assembly, Left Rear - Properly secured, no loose or missing lug nuts, no visible damage.
32. Drive Motor and Brake, Left Rear - No visible damage, no evidence of leakage.
33. Boom Sections - No visible damage; wear pads secure. All cylinders - rod end shafts and barrel-end shafts properly secured.
34. Rotator and Motor - Properly secured, no visible damage, no evidence of leakage.
35. Platform Pivot and Slave Cylinder Attach Pins - Properly secured; evidence of proper lubrication where applicable.

Figure 2-5. Daily Walk-Around Inspection Points - Sheet 2

2.5 DAILY FUNCTIONAL CHECK

⚠ WARNING

THE LOAD MANAGEMENT SYSTEM AND THE AXLES (PROPER EXTENSION AND RETRACTION) MUST BE CHECKED PRIOR TO ANY OTHER SYSTEMS AND/OR FUNCTIONS.

A functional check of all systems should be performed, once the walk-around inspection is complete, in an area free of overhead and ground level obstructions. First, using the ground controls, check all functions controlled by the ground controls. Next, using the platform controls, check all functions controlled by the platform controls.

⚠ WARNING

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

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

NOTE: *Perform checks from ground controls first, where applicable, then from platform controls.*

1. Axles, Extending and Retracting (Machines without Jacks).
   a. From the platform controls, activate the machine hydraulic system and position the boom over the drive wheel end of the machine.
   b. Position the Steer Select switch to the Front Steer position. The boom must be retracted within the limits of the 10 foot cutout switch and below horizontal.

⚠ IMPORTANT

DO NOT USE EXTEND-A-REACH (IF EQUIPPED) TO LIFT MACHINE WHEN EXTENDING AND RETRACTING AXLES.

   c. Position LIFT control to DOWN and hold until drive wheels rise from the ground; it may be necessary to feather the lift control to maintain drive wheel elevation.
   d. Push and hold the Jack/Steer/Axle Select switch in the Axle position.
   e. Position Drive/Steer/Jacks/Axle controller located on platform control console to Extend Axles until axles are fully extended and the Axles Set light is on.
   f. If the light does not illuminate when the axles are fully extended, contact a qualified service technician before continuing operation.
   g. Position LIFT control to UP to lower the machine; elevate the boom sufficiently and reposition the boom over the steer wheel end of the machine.
   h. Repeat steps a thru f for the opposite axle.

Axles, Extending and Retracting (Machines with Jacks)

   a. From the platform controls, activate the machine hydraulic system and position the boom over the drive wheel end of the machine.
   b. Position the Steer Select switch to the Front Steer position. The boom must be retracted within the limits of the 10 foot cutout switch and below horizontal.
   c. Position the Jack Select switch to the desired jack.
   d. Push and hold the Jack/Steer/Axle Select switch in the Jack position.
   e. Position Drive/Steer/Jacks/Axle controller located on platform control console to Extend Jack position until the jack is fully extended.
   f. Push and hold the Jack/Steer/Axle Select switch in the Axle position.
   g. Position Drive/Steer/Jacks/Axle controller located on platform control console to Extend Axles until axles are fully extended and the Axles Set light is on.
   h. If the light does not illuminate when both axles are fully extended, contact a qualified service technician before continuing operation.

NOTE: *If no function is selected and the power is still on, the jack will automatically retract after a period of 7 seconds.*

2. Load Management System.
   a. With the boom fully retracted, raise the boom to horizontal.
   b. Position the toggle switch located on the right side of the ground control box to the P position and hold.
   c. Extend the boom until it stops. The boom must stop on the white band on the mid boom section. Release the toggle switch.

d. Retract the boom until tele out will function. The system is now reset.

e. Position the toggle switch to the M position and hold.

f. Extend the boom until it stops. The boom must stop on the white band on the mid boom section.

⚠ WARNING

IF BOOM CONTINUES TO TELESCOPE BEYOND SECOND MARKING BAND, RETRACT THE BOOM, IMMEDIATELY SHUT DOWN MACHINE AND CONTACT A QUALIFIED SERVICE PERSON.

3. Drive forward and reverse; check for proper operation.

4. Steer left and right; check for proper operation.

5. If equipped with 4 wheel steer, check rear steer left and right for proper operation.

6. Check platform rotator for smooth operation and assure platform will rotate 90 degrees in both directions from centerline of boom.

7. Raise, lower, and swing boom to LEFT and RIGHT a minimum of 45 degrees (Cycle function several times.) Check for smooth elevation and swing motion.

8. If equipped with Extend-A-Reach, raise and lower Extend-A-Reach (Cycle functions several times). check for smooth elevation and swing motion.

9. Telescope boom in and out several cycles at various degrees of elevation lengths. Check for smooth telescope operation.

10. Check that platform automatic self-leveling system functions properly during raising and lowering of the boom.

11. Check platform level adjustment system for proper operation.

NOTE: *Turntable lock is on turntable facing platform. To disengage lock, pull snap pin from lock pin, lift lock pin up to unlock turntable. Return snap pin to lock pin to hold lock pin in the disengaged position. Reverse procedure to engage turntable lock.*

12. Swing turntable to LEFT and RIGHT a minimum of 45 degrees. Check for smooth motion.

13. With the aid of an assistant to monitor the CHASSIS OUT OF LEVEL indicator light on the platform control console, manually activate the indicator light by compressing any one of the three tilt indicator mounting springs. If the light does not illuminate, shut down machine and contact a qualified service technician before continuing operation.

14. Footswitch.

⚠ IMPORTANT

FOOTSWITCH MUST BE ADJUSTED SO THAT FUNCTIONS WILL OPERATE WHEN PEDAL IS APPROXIMATELY AT ITS CENTER OF TRAVEL. IF SWITCH OPERATES WITHIN LAST 1/4" OF TRAVEL, TOP OR BOTTOM, IT SHOULD BE ADJUSTED.

a. Activate hydraulic system. By depressing footswitch. Operate TELESCOPE and hold control. Remove foot from footswitch, motion should stop. If it does not, shut down machine and contact a certified JLG service technician.

b. With footswitch depressed, operate LIFT and hold control. Remove foot from footswitch, motion should stop. If it does not, shut down machine and contact a certified JLG service technician.

c. With engine power shut down, depress the footswitch. Attempt to start engine. Engine should not attempt to start when footswitch is depressed. If starter engages or engine turns over, shut down machine and contact a certified JLG service technician.

15. Auxiliary Power.

    Operate each function control switch (e.g. TELE, LIFT and SWING) to assure that they function in both directions using auxiliary power instead of engine power.

16. Ground Controls.

    Place GROUND/PLATFORM SELECT switch to GROUND. Start engine. Platform controls should not operate.

Load Management System Daily Check

At the beginning of each days' use, perform check with no load (persons or material) in platform from ground control station.

1. Extend all axles fully.
2. With boom fully retracted, raise boom to horizontal.
3. Position toggle switch located on the right side of the ground control station in the "P" position and hold.
4. Extend boom until it stops. Boom must stop on white tape on mid boom. Release toggle switch.
5. Retract boom 10 feet (3 meters) and attempt to extend boom. boom must not extend.
6. Position toggle switch located on the right side of the ground control station in the "M" position and hold.
7. Extend boom until it stops. Boom must stop on white tape on mid boom. Release toggle switch.
8. Retract boom 10 feet (3 meters) and attempt to extend boom. Boom must not extend.
9. If boom does not stop at white tape or boom can be extended after being retracted 10 feet (3 meters) without resetting, system must be repaired by JLG authorized service personnel before machine can be used.

2.6 TORQUE REQUIREMENTS

The Torque Chart (See Figure 2-7.) consists of standard torque values based on bolt diameter and grade, also specifying dry and wet torque values in accordance with recommended shop practices. This chart is provided as an aid to the operator in the event a condition is noticed that requires prompt attention during the walk-around inspection or during operation until the proper service personnel can be notified. The Service and Maintenance manual provides specific torque values and periodic maintenance procedures with a listing of individual components. Utilizing this Torque Chart in conjunction with the preventive maintenance section in the Service and Maintenance manual, will enhance safety, reliability and performance of the machine.

2.7 BATTERY MAINTENANCE

⚠ WARNING

TO AVOID INJURY FROM AN EXPLOSION, DO NOT SMOKE OR ALLOW SPARKS OR A FLAME NEAR BATTERY DURING SERVICING.

ALWAYS WEAR EYE PROTECTION WHEN SERVICING BATTERIES, BATTERY POSTS, AND BATTERY TERMINALS. WASH HANDS AFTER HANDLING BATTERY COMPONENTS.

Battery Maintenance

1. The battery is maintenance free except for occasional battery terminal cleaning, as noted in the following.
2. Remove battery cables from each battery post one at a time, negative first. Clean cables with acid neutralizing solution (e.g. baking soda and water or ammonia) and wire brush. Replace cables and/or cable clamp bolts as required.
3. Clean battery post with wire brush then re-connect cable to post. Coat non-contact surfaces with mineral grease or petroleum jelly (Vaseline).
4. When all cables and terminal posts have been cleaned, ensure all cables are properly positioned and are not pinched. Close battery compartment cover.

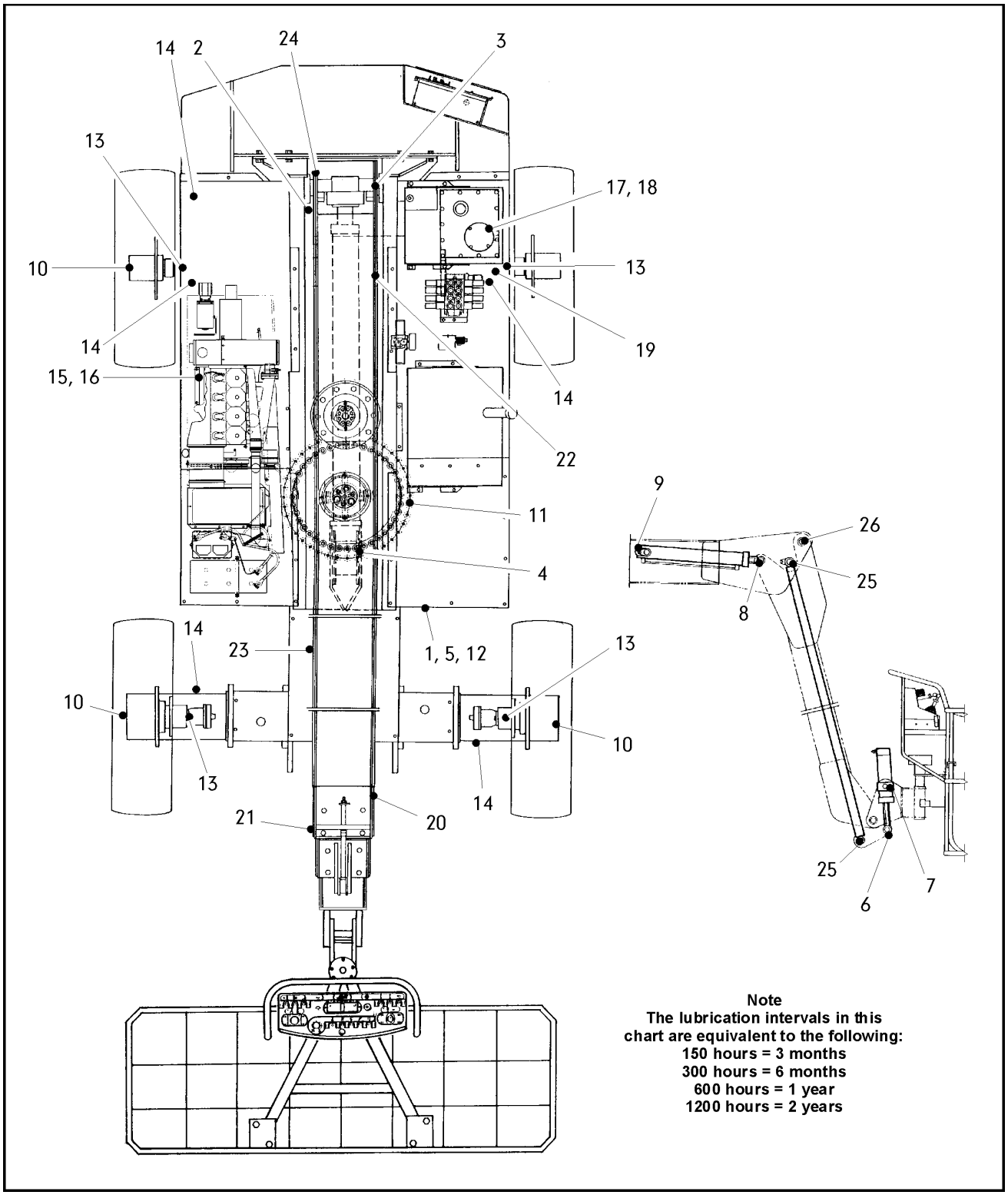


Figure 2-6. Lubrication Point Location

Table 2-1. Lubrication Chart

	Components	Number/Type Lube Points	Lube & Method	Interval Hours	Comments
1	Master Cylinder - Barrel End	1 Grease Fitting	MPG - Pressure Gun	150	Remote Access
2	Master Cylinder - Rod End	1 Grease Fitting	MPG - Pressure Gun	150	
3	Boom Pivot Bushings	2 Grease Fittings	MPG - Pressure Gun	150	
4	Lift Cylinder - Rod End	1 Grease Fitting	MPG - Pressure Gun	150	
5	Lift Cylinder - Barrel End	1 Grease Fitting	MPG - Pressure Gun	150	Remote Access
6	Slave Cylinder - Rod End	1 Grease Fitting	MPG - Pressure Gun	150	
7	Slave Cylinder - Barrel End	2 Grease Fitting	MPG - Pressure Gun	150	
8	Extend-A-Reach Cylinder - Rod End	1 Grease Fitting	MPG- Pressure Gun	150	
9	Extend-A-Reach Cylinder - Attach Pin	2 Grease Fittings	MPG - Pressure Gun	150	
10	Drive Hubs	Fill Plug	EPGL - SAE90	150/1200	Check every 150 hrs. /Change every 1200 hrs.
11	Swing Bearing Gear	N/A	MPG - Brush	150	
12	Swing Bearing	1 Grease Fitting	MPG - Pressure Gun	150	
13	Steer Spindles	2 Grease Fittings	MPG - Pressure Gun	150	
14	Extending Axle Beams	N/A	MPG - Brush	600	As needed
15	Engine Crankcase	Fill Cap	EO-SAE30	10/300	Check daily/Change every 300 hrs.
16	Engine Oil Filter	N/A	Replaceable Cartridge	300	
17	Hydraulic Fluid	Fill Cap	HO	10/1200	Check daily/Change every 1200 hrs.
18	Hyd. Filter Element (Tank)	N/A	N/A	50/300	Replace filter after first 50 hrs. of operation, then every 300 hrs. thereafter
19	Hyd. Filter Element (Inline)	N/A	N/A	50/300	Replace filter after first 50 hrs. of operation, then every 300 hrs. thereafter
20	Telescope Cylinder Sheave	1 Grease Fitting	MPG - Pressure Gun	150	
21	Extend Chain Sheave	1 Grease Fitting	MPG - Pressure Gun	150	
22	Retract Chain Sheave	1 Grease Fitting	MPG - Pressure Gun	150	
23	Boom Chains	N/A	Chain Lube/Hot Oil Dip	1200	Includes extend and retract chains
24	Turntable Pivot Pin	2 Grease Fittings	MPG - Pressure Gun	150	
25	Extend-A-Reach Link Attach Pin	1 Grease Fitting	MPG - Pressure Gun	150	
26	Extend-A-Reach Pivot Pin	2 Grease Fittings	MPG - Pressure Gun	150	

NOTES:

Key to Lubricants:

EO	Engine Oil
EPGL	Extreme Pressure Gear Lube
HO	Hydraulic Fluid (Mobil #424 or equivalent)
MPG t	Multi-Purpose Grease

VALUES FOR ZINC PLATED BOLTS ONLY														UNPLATED CAP SCREWS	
SIZE	THD	BOLT DIA. (IN.)	THREAD STRESS AREA (SQ. IN.)	SAE GRADE 5 BOLTS & GRADE 2 NUTS					SAE GRADE 8 BOLTS & GRADE 8 NUTS					UNBRAKO 1960 SERIES SOCKET HEAD CAP SCREW WITH LOC-WEL PATCH	
				CLAMP LOAD (LB.)	TORQUE				CLAMP LOAD (LB.)	TORQUE				CLAMP LOAD (LB.)	TORQUE (as received)
					(DRY OR LOC. 263)	(LUB.)	(LOCTITE 262)	(LOCTITE 242 OR 271)		(DRY OR LOC. 263)	(LUB.)	(LOCTITE 262)	(LOCTITE 242 OR 271)		
					LB. IN.	LB. IN.	LB. IN.	LB. IN.		LB. IN.	LB. IN.	LB. IN.	LB. IN.		LB. FT.
4	40	0.1120	0.00604	380	8	6	—	—	540	12	9	—	—	—	—
	48		0.00661	420	9	7	—	—	600	13	10	—	—	—	—
6	32	0.1380	0.00909	580	16	12	—	—	820	23	17	—	—	—	—
	40		0.01015	610	18	13	—	—	920	25	19	—	—	—	—
8	32	0.1640	0.01400	900	30	22	—	—	1260	41	31	—	—	—	—
	36		0.01474	940	31	23	—	—	1320	43	32	—	—	—	—
10	24	0.1900	0.01750	1120	43	32	—	—	1580	60	45	—	—	—	—
	32		0.02000	1285	49	36	—	—	1800	68	51	—	—	—	—
1/4	20	0.2500	0.0318	2020	96	75	—	105	2860	144	108	—	160	3180	13
	28		0.0364	2320	120	86	—	135	3280	168	120	—	185	3640	14
					LB. FT.	LB. FT.	LB. FT.	LB. FT.		LB. FT.	LB. FT.	LB. FT.	LB. FT.		
5/16	18	0.3125	0.0524	3340	17	13	16	19	4720	25	18	22	30	5240	25
	24		0.0580	3700	19	14	17	21	5220	25	20	25	30	5800	27
3/8	16	0.3750	0.0775	4940	30	23	28	35	7000	45	35	40	50	7750	45
	24		0.0878	5600	35	25	32	40	7900	50	35	45	55	8780	50
7/16	14	0.4375	0.1063	6800	50	35	45	55	9550	70	55	63	80	10630	70
	20		0.1187	7550	55	40	50	60	10700	80	60	70	90	11870	75
1/2	13	0.5000	0.1419	9050	75	55	68	85	12750	110	80	96	120	14190	110
	20		0.1599	10700	90	65	80	100	14400	120	90	108	135	15990	115
9/16	12	0.5625	0.1820	11600	110	80	98	120	16400	150	110	139	165	18200	155
	18		0.2030	12950	120	90	109	135	18250	170	130	154	190	20300	165
5/8	11	0.6250	0.2260	14400	150	110	135	165	20350	220	170	180	240	22600	210
	18		0.2560	16300	170	130	153	190	23000	240	180	204	265	25600	220
3/4	10	0.7500	0.3340	21300	260	200	240	285	30100	380	280	301	420	33400	365
	16		0.3730	23800	300	220	268	330	33600	420	320	336	465	37300	400
7/8	9	0.8750	0.4620	29400	430	320	386	475	41600	600	460	485	660	46200	585
	14		0.5090	32400	470	350	425	520	45800	660	500	534	725	50900	635
1	8	1.000	0.6060	38600	640	480	579	675	51500	900	680	687	990	60600	865
	12		0.6630	42200	700	530	633	735	59700	1000	740	796	1100	66300	915
1-1/8	7	1.1250	0.7630	42300	800	600	714	840	68700	1280	960	1030	1400	76300	1240
	12		0.8560	47500	880	660	802	925	77000	1440	1080	1155	1575	85600	1380
1-1/4	7	1.2500	0.9690	53800	1120	840	1009	1175	87200	1820	1360	1453	2000	96900	1750
	12		1.0730	59600	1240	920	1118	1300	96600	2000	1500	1610	2200	107300	1880
1-1/2	6	1.500	1.1550	64100	1460	1100	1322	1525	104000	2380	1780	1907	2625	115500	2320
	12		1.3150	73000	1680	1260	1506	1750	118100	2720	2040	2165	3000	131500	2440
1-1/2	6	1.500	1.4050	78000	1940	1460	1755	2025	126500	3160	2360	2530	3475	140500	3040
	12		1.5800	87700	2200	1640	1974	2300	142200	3560	2660	2844	3925	158000	3270

Note: These torque values do not apply to cadium plated fasteners.

SAE GRADE 5

SAE GRADE 8

Figure 2-7. Torque Chart

SECTION 3. USER RESPONSIBILITIES AND MACHINE CONTROL

3.1 GENERAL

IMPORTANT

SINCE THE MANUFACTURER HAS NO DIRECT CONTROL OVER MACHINE APPLICATION AND OPERATION, CONFORMANCE WITH GOOD SAFETY PRACTICES IN THESE AREAS IS THE RESPONSIBILITY OF THE USER AND HIS/HER OPERATING PERSONNEL.

This section provides the necessary information needed to understand control functions. Included in this section are the operating characteristics and limitations, and functions and purposes of controls and indicators. It is important that the operator read and understand the proper procedures before operating the machine. These procedures will aid in obtaining optimum lift service and safe operation.

3.2 PERSONNEL TRAINING

The aerial platform is a personnel handling device; therefore it is essential that it be operated and maintained only by authorized and qualified personnel who have demonstrated that they understand the proper use and maintenance of the machine. It is important that all personnel who are assigned to and responsible for the operation and maintenance of the machine undergo a thorough training program and check out period in order to become familiar with the characteristics prior to operating the machine.

In addition, personnel operating the machine should be familiar with ANSI standard A92.5-1992 Responsibilities Section. This outlines the responsibilities of the owners, users, operators, lessors and lessees concerning safety, training, inspection, maintenance, application and operation.

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

Operator Training

Operator training must include instruction in the following areas:

1. Use and limitations of the platform controls, ground controls, emergency controls and safety systems.
2. Knowledge and understanding of this manual and of the control markings, instructions and warnings on the machine itself.
3. Knowledge and understanding of all safety work rules of the employer and of Federal, State and local statutes, including training in the recognition and avoidance of potential hazards in the work place; with particular attention to the work to be performed.
4. Proper use of all required personnel safety equipment, in particular the wearing of a safety harness or other approved fall protection devices with a lanyard attached to the platform at all times.
5. Sufficient 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, etc. on the supporting surface exist.
7. Means to avoid the hazards of unprotected electrical conductors.
8. Any other requirements of a specific job 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 a machine in congested work locations.

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 and to request further information from his/her supervisor or an authorized JLG Distributor before proceeding.

NOTE: *Manufacturer or distributor will provide qualified persons for training assistance with first unit(s) delivered and thereafter as requested by the user or his/her personnel.*

3.3 CONTROLS AND INDICATORS

Ground Controls

1. Power/Emergency Stop Switch

   Pull out ON-OFF POWER/EMERGENCY STOP SWITCH to turn on engine ignition and power to the electrical system. Push in to shut off engine and remove power from the controls. The Ground Control Emergency Stop Switch must be pulled out to operate the machine from either Ground Control or Platform Control. This allows the machine to be shut down in emergency situations by those untrained in the operation of the lift but who recognize the Emergency Stop Switch.

2. Engine Start/ Auxiliary Power Switch

   The Engine Start/Auxiliary Power switch is a momentary contact switch. With the POWER/EMERGENCY STOP switch in the on (pulled out) position and the switch in the Engine Start position, electrical power is supplied to the start solenoid.

   To use auxiliary power, the switch must be held “down” for duration of auxiliary pump use. This energizes the electrically operated auxiliary hydraulic pump

NOTE: *Auxiliary power will be disabled if the engine is running.*

   a. The auxiliary pump functions to provide sufficient oil flow to operate the basic machine functions should the main pump or engine fail. The auxiliary pump enables the boom lift and telescope and swing to be operated.
   b. It should be noted that the functions will operate at a slower than normal rate because of the lower lpm of hydraulic fluid delivered.

NOTE: *When operating on auxiliary power, do not operate more than one function at a time. (Simultaneous operation can overload the 12-volt auxiliary pump motor.)*

   c. Position PLATFORM/GROUND switch to GROUND.
   d. Position POWER/EMERGENCY STOP switch to ON.
   e. Operate appropriate control switch or lever for desired function and hold.
   f. Position ENGINE START/AUXILIARY POWER switch to DOWN and hold.
   g. Release AUXILIARY POWER switch, allowed by the selected control switch or lever.
   h. Position the POWER/EMERGENCY STOP SWITCH to off.

3. Control Station Selector

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

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

NOTE: *Main Lift, Swing, Platform Level, Main Telescope, Platform Rotator and Auxiliary Power, control switches are spring-loaded and will automatically return to neutral (off) when released.*

⚠ 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 POSITION WHEN RELEASED.

4. Main Lift Control.

   The MAIN LIFT control switch provides raising and lowering of the main boom when positioned to UP or DOWN.

5. Main Telescope Control.

   The MAIN TELESCOPE control switch provides extension and retraction of the boom, when positioned to IN or OUT.

6. Swing Control.

   The SWING control switch provides 360 degrees continuous turntable rotation when positioned to RIGHT or LEFT.

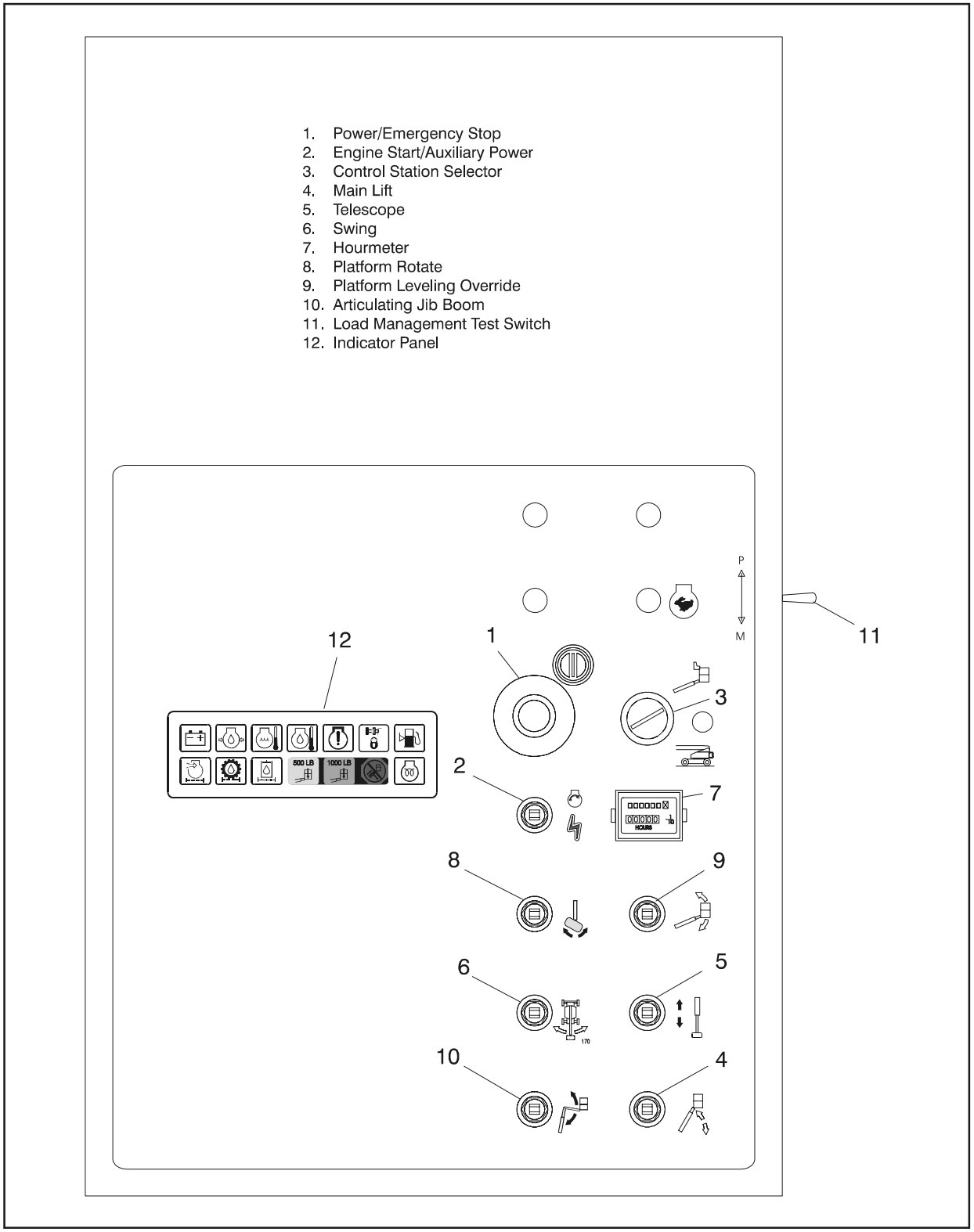


Figure 3-1. Ground Control Console

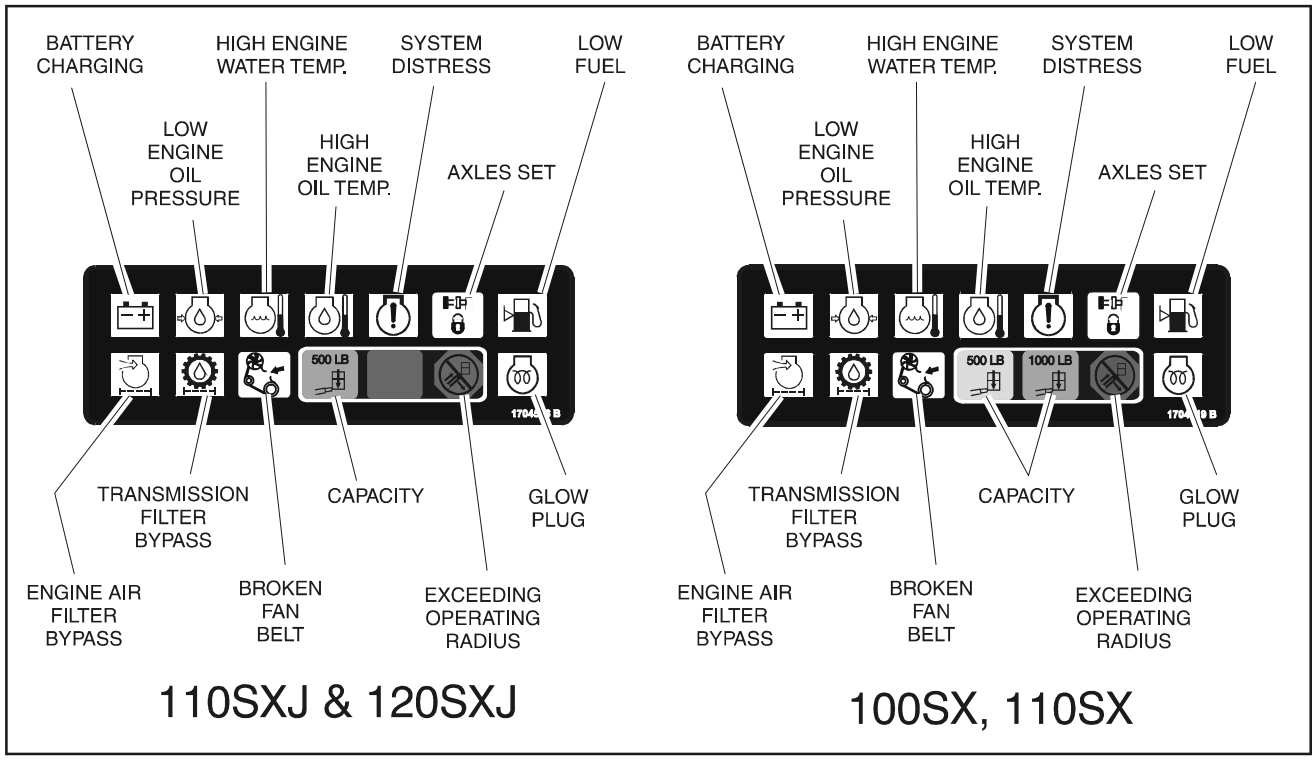


Figure 3-2. Ground Control Indicator Panel

7. Hourmeter

   An hourmeter, installed in the right side of the Ground Control box, registers the amount of time the machine has been in use, with engine running. By connecting into the alternator charging circuit of the engine, only engine run hours are recorded. The hourmeter registers up to 9,999.9 hours and cannot be reset.

8. Platform Rotate

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

9. Platform Leveling Override

   A three position Level control switch allows the operator to compensate for any difference in the automatic self leveling system by positioning the control switch to UP or DOWN.

10. Articulating Jib Boom (If Equipped)

    The Articulating Jib Boom control switch provides raising and lowering of the jib when positioned to UP or DOWN.

11. Load Management Test Switch

    The Load Management Test Switch is used to perform a check of the Load Management System. The switch is spring loaded to the neutral position and has two operating positions; P (for Potentiometer) and M (for Mechanical).

12. Battery Charging Indicator

    When illuminated indicates a problem in the battery or charging circuit, and service is required.

13. Engine Air Filter Indicator (Optional)

    When illuminated indicates that the air filter is too restrictive and needs to be replaced.

14. Engine Oil Pressure Indicator

    When illuminated indicates that engine oil pressure is below normal and service is required.

15. Transmission Pump Oil Filter Indicator (Optional)

    When illuminated indicates that charge pump filter is too restrictive and needs to be replaced. This indicator has an integral temperature sensor (70 degrees F.) so that false signals are not generated when the hydraulic oil is below normal operating temperature.

16. Engine Coolant Temperature Indicator (Ford)

    When illuminated indicates that engine coolant temperature is abnormally high and service is required.

17. Hydraulic Oil Filter Indicator (Optional)

    When illuminated indicates that the return oil filter is too restrictive and needs to be replaced.

18. Engine Oil Temperature Indicator (Deutz Optional)

    When illuminated indicates that the temperature of the engine oil, which also serves as engine coolant, is abnormally high and service is required.

19. Low Fuel Level Indicator (Optional)

    When illuminated indicates that the fuel level is 1/8 full or less. When the light first turns on, there are approximately four usable gallons of fuel remaining.

20. System Distress Indicator

    When illuminated indicates an abnormal condition with the engine or engine computer.

21. Axles Set Indicator

    When illuminated indicates that the axles are fully extended.

22. Glow Plug Indicator (Deutz)

    When illuminated indicates that the Glow Plugs are operating. After turning on ignition, wait until light goes out before cranking engine.

23. Capacity Indicator

    Illuminates to indicate the maximum platform capacity for the current position of the platform.

24. Exceeding Operating Radius Indicator

    Illuminates to indicate that the platform has exceeded the approved operating radius and the boom must be retracted to bring the platform back into the proper radius.

25. Broken Fan Belt Indicator

    Illuminates to indicate that the engine fan belt has broken. When illuminated, the engine must be shut down immediately to prevent damage.

Remote Control Box (120SXJ Only)

NOTE: *To operate the remote control box, set the SELECT SWITCH to GROUND and start the engine.*

1. Power/Emergency Stop Switch

   Position the Power/Emergency Stop switch to the on position to activate the controls on the remote control box.

2. Front Steer /Jack / Axle Switch

   This switch allows the operator to steer the front or four wheel steering as desired, extend or retract the jacks, or extend or retract the axles depending upon the position of the Jack/Steer/Axle Select Switch. The Speed Control switch does not affect the steer function.

3. Drive Switch

   Position the Drive switch to forward or reverse as desired.

4. Speed Control

   Rotate the speed control when driving to increase or decrease drive speed as desired.

5. Steer Select Switch

   This switch allows the operator to select between four wheel diagonal steering, front wheel steering, or four wheel crab steering.

6. Front/Rear Jack Switch

   This switch allows the operator to select between operation of the front or rear jack.

7. Jack/Steer/Axle Select Switch

   This switch allows the operator to select the Jack, Steer, or Axle function.

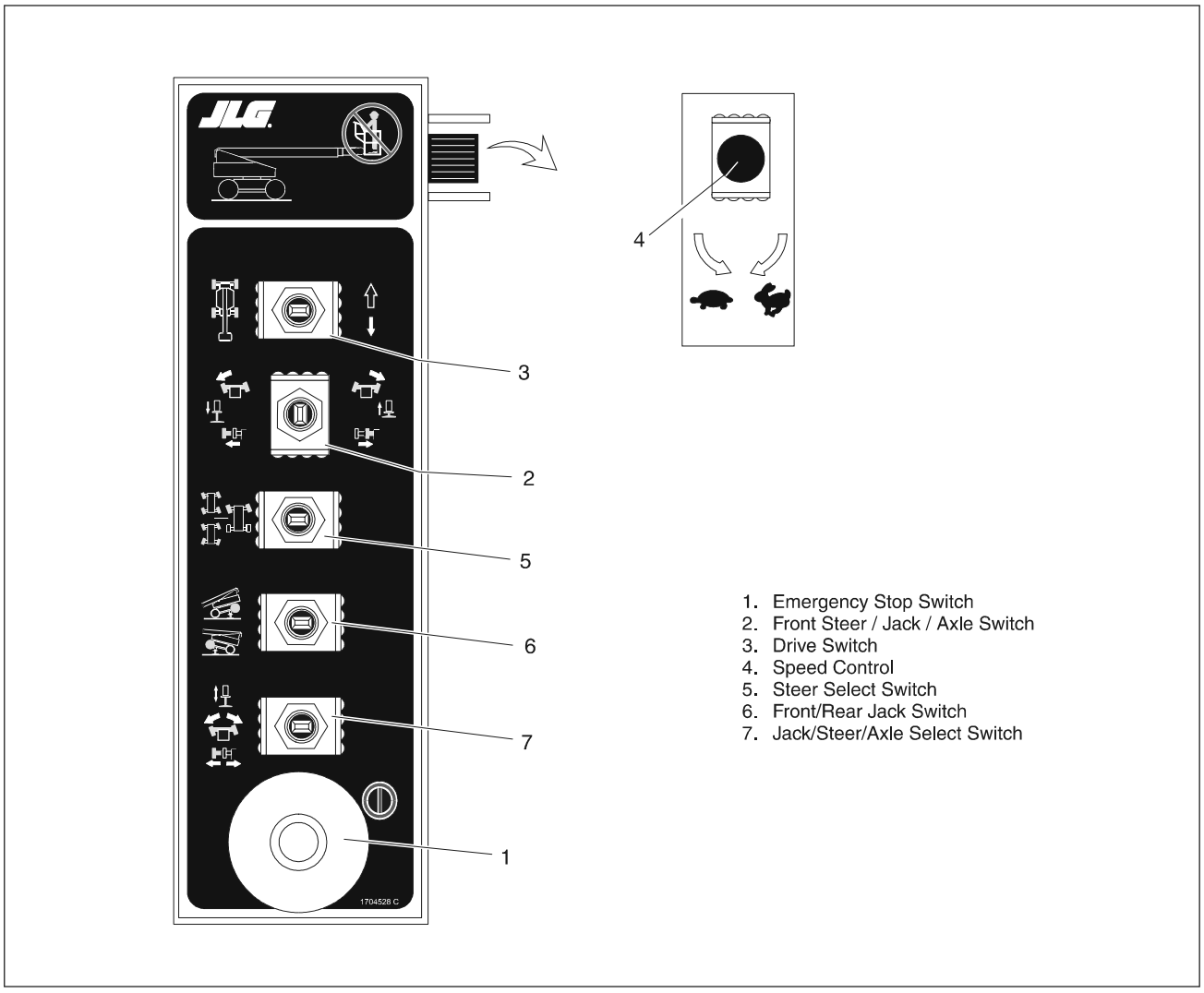


Figure 3-3. Remote Control Box

Platform Station

NOTE: *For engine starting, the footswitch must be in the released (up) position. Footswitch must be actuated in order for controls to function.*

1. Footswitch

   This feature makes it necessary to depress the footswitch to allow operation of the controls.

⚠ WARNING

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

IMPORTANT

THE FOOTSWITCH MUST BE ADJUSTED SO THAT FUNCTIONS WILL OPERATE WHEN THE PEDAL IS APPROXIMATELY AT ITS CENTER OF TRAVEL. IF THE SWITCH OPERATES WITHIN LAST 1/4" OF TRAVEL, TOP OR BOTTOM, IT SHOULD BE ADJUSTED.

2. Power/Emergency Stop

   An on-off IGNITION/EMERGENCY STOP switch and a separate Engine Start switch on the platform console supply electrical power to the starter solenoid, when the power switch is positioned to “on” (pulled out) and the Engine Start switch is actuated. Positioning the switch to off while operating the machine will stop all functions and shut down the engine.

3. Engine Start/Auxiliary Power

   The Engine Start/Auxiliary Power switch is a momentary contact switch. With the POWER/EMERGENCY STOP switch in the on (pulled out) position and the switch in the Engine Start position, electrical power is supplied to the start solenoid.

NOTE: *Auxiliary power will be disabled if the engine is running.*

   When placing the switch in the Auxiliary Power position, the switch energizes the electrically operated hydraulic pump, when actuated. The switch must be held on for duration of auxiliary pump use.

   The auxiliary pump functions to provide sufficient oil flow to operate the basic machine system should the main pump or engine fail. The auxiliary pump will operator boom lift, telescope and swing.

   It should be noted that the functions will operate at a slower than normal rate because of lower hydraulic flow.

IMPORTANT

WHEN OPERATING ON AUXILIARY POWER, DO NOT OPERATE MORE THAN ONE FUNCTION AT THE SAME TIME. SIMULTANEOUS OPERATION CAN OVERLOAD THE AUXILIARY PUMP MOTOR.

NOTE: *The intended function of the auxiliary power is to lower the platform in the event of primary power failure. Determine the reason for primary power failure and have the problem corrected by a qualified service technician.*

4. Warning Horn

   A push-type HORN switch, when pressed, supplies electrical power to activate the horn.

5. Tilt Indicator Light.

   This red indicator lights to indicate that the chassis is on a slope (over 5 degrees). If illuminated when boom is raised or extended, retract and lower to below horizontal then reposition the machine so that it is level before extending the boom or raising the boom above horizontal.

⚠ WARNING

IF THE CHASSIS OUT OF LEVEL WARNING LIGHT IS ILLUMINATED WHEN THE BOOM IS RAISED OR EXTENDED, RETRACT AND LOWER THE PLATFORM TO BELOW HORIZONTAL THEN REPOSITION THE MACHINE SO IT IS LEVEL BEFORE EXTENDING BOOM OR RAISING THE BOOM ABOVE HORIZONTAL

6. Tilt Alarm

   Tilt alarm will sound when machine is tilted 5° and boom is above horizontal.

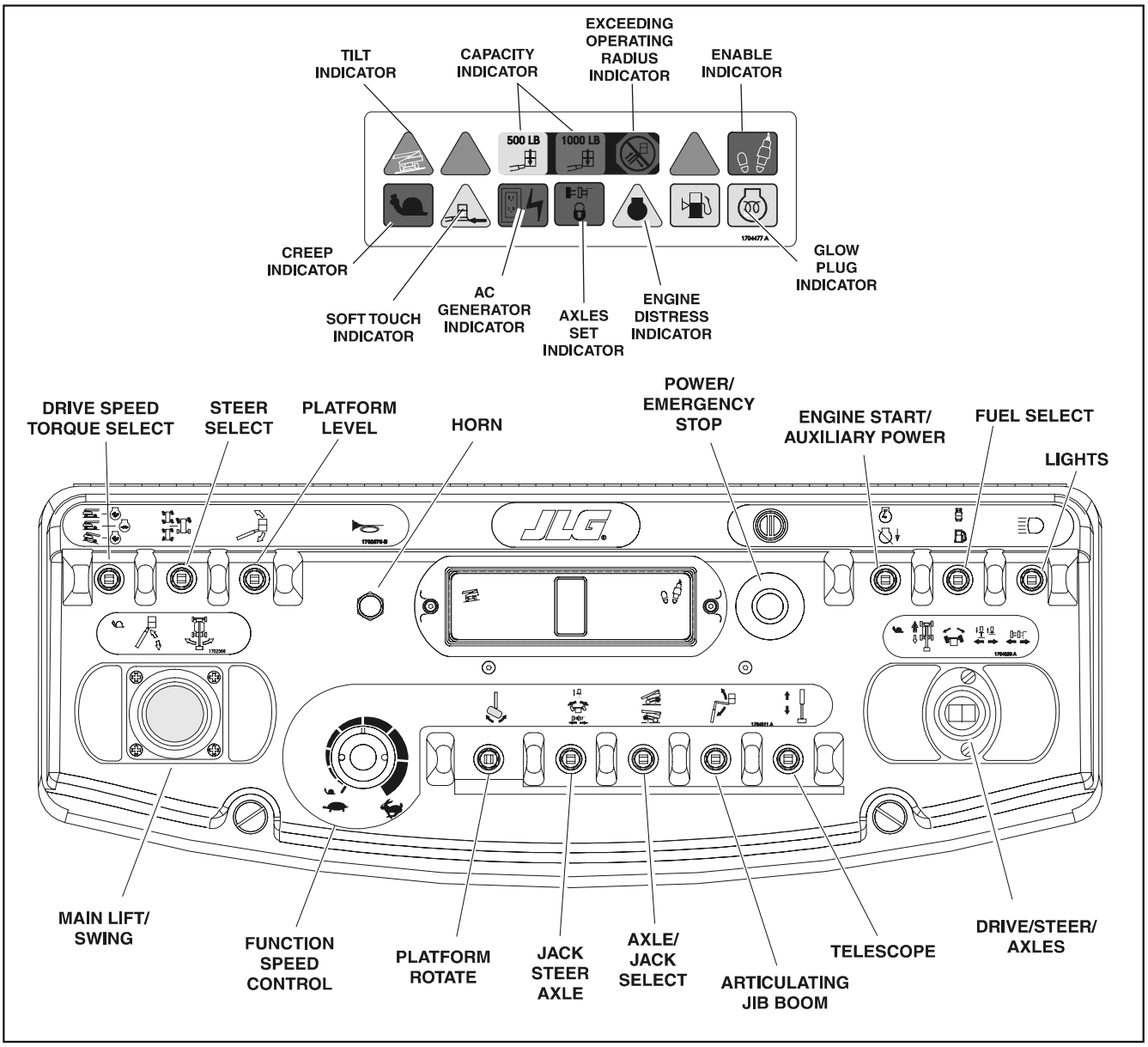


Figure 3-4. Platform Control Console

NOTE: *LIFT, SWING, and DRIVE control levers or switches are spring-loaded and will automatically return to the neutral (OFF) position when released.*

⚠ WARNING

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

6. Main Lift/Swing

   For lift functions, the Main Lift/Swing control lever provides raising and lowering of the boom when positioned to UP or DOWN and automatically returns to off when released.

   For swing functions, the Main Lift/Swing control lever provides 360 degrees continuous swing when positioned to left or right

7. Telescope

   The TELE control switch provides extension and retraction or the boom when positioned to the In or Out positions, and automatically returns to off when released.

8. Jack Steer Axles

   When in the steering mode, positioning the Drive/Steer/Axles controller right or left enables steering the machine to the right or to the left. When in the jack or axles mode, positioning the controller right or left enables extending and retracting of the jacks or axles.

   To select the Jack or Axles mode, the switch must be held in position. The switch is spring loaded to return to the steering mode position.

9. Axle/Jack Select

   The Axle/Jack Select switch is used to select between the extension or retraction of the front or rear axle or jack, depending upon the position of the jack-steer-axle switch.

NOTE: *When the boom is above horizontal, high speed functions are automatically cut out and the machine continues to operate at a lower speed.*

10. Drive Speed/Torque Select

    The Drive Speed/Torque Select switch is a three position switch. The forward position gives maximum drive speed by shifting the drive motors to minimum displacement and giving high engine when drive controller is moved. The back position gives maximum torque for rough terrain and climbing grades by shifting the wheel motors to maximum displacement and giving high engine speed when drive controller is moved. The center position allows the machine to be driven as quietly as possible by leaving the engine at mid speed and the drive motors in maximum displacement.

11. Function Speed

    The knob provides variable speed control of all boom functions grouped together to the right of the knob. For smoothest operation of these functions, use two hands: rotate the knob counterclockwise to the slowest position, select the function switch, and while holding the switch on, rotate the knob to the desired speed. To achieve a smooth stop, rotate the knob ccw to a slow speed prior to letting go of the function switch.

    Rotating the knob fully counterclockwise until a click is heard puts all controls, including drive, main lift, and swing into “creep” speed. This slow speed is used for fine positioning of the platform when close to obstacles. A snail symbol is used to indicate “creep” speed and is shown at the Function Speed knob as well as near the proportional controllers to act as a reminder.

12. Drive/Steer/Jacks/Axles

    The Drive/Steer/Jacks/Axles controller is used to control multiple functions.

    The controller provides driving either forward or backward when positioned to forward or reverse. The controller is ramped to allow infinitely variable driving speed between fast and slow.

    In addition to drive, the controller is used to control steering left or right, extension and retraction of the jacks, or extension and retraction of the axles. The function being operated is dependent upon the position of the Jack/Steer/Axle Select switch.

13. Platform Level

    The PLATFORM LEVEL control switch allows the operator to compensate for any difference in the automatic self-leveling system by positioning the switch up or down.

14. Platform Rotate

    The platform ROTATE control switch allows operator to rotate the basket to the left or right when positioned to the desired direction.

15. Articulating Jib Boom (If Equipped)

    The Articulating Jib Boom control switch allows operator to raise or lower the extend-a-reach, as required.

16. Enable Indicator

    This green illuminator indicates that the footswitch is depressed and the platform controls are ready for use. To enable the controls, depress the footswitch and select any function within seven seconds. The controls will then remain active as long as there is not a delay of seven seconds between stopping one function and starting the next one. If the seven second interval is exceeded, the enable light will go out and the controls will not operate. To enable the controls again, remove your foot from the footswitch and depress the footswitch.

17. Glow Plug Indicator

    When illuminated the glow plugs are operating. After turning on ignition, wait until light goes out before cranking engine.

18. Axles Set Indicator

    The green AXLES SET indicator lights to inform the operator that the axles are set and locked in position.

19. Fuel Select (Dual Fuel Engine Only) (If Equipped)

    Gasoline or liquid propane fuel may be selected by moving the switch to the appropriate position. It is unnecessary to purge the fuel system before switching fuels, so there is no waiting period when switching fuels while the engine is running.

20. Lights Switch (If equipped)

    The LIGHTS switch allows the operator to turn the installed light options on or off.

21. Engine Distress Indicator Light

    The light turns on and an alarm sounds when machine's power system requires immediate service. Any of the following conditions will turn on light and alarm: low engine oil pressure, high engine coolant temperature, clogged engine air filter, low alternator output, clogged hydraulic oil return filter, or clogged charge pump filter.

22. Steer Select (If Equipped)

    When equipped with four wheel steering, the action of the steering system is operator selectable. The center switch position gives conventional front wheel steering with the rear wheels unaffected. This is the best position for normal driving at maximum speeds. The forward position is for "crab" steering. When in this mode both front and rear axles steer in the same direction, which allows the chassis to move sideways as it goes forward. This can be used for positioning the machine in aisle ways or against buildings. The back switch position is for "coordinated" steering. In this mode the front and rear axles steer in the opposite directions to produce the tightest turning circle for maneuvering in confined areas.

NOTE: *If the Drive Speed/Torque Select switch is positioned for maximum drive speed, rear steer is disabled.*

23. Soft Touch Indicator (If Equipped)

    When illuminated (Yellow) the Soft Touch bumper is against an object. All controls are cut out until the override button is pushed, at which time controls are active in the Creep mode.

24. AC Generator Indicator/Switch

    When illuminated (Green), the light indicates the generator is in operation. The generator is controlled by a switch on the right side of the pedestal panel for the platform control box.

25. Creep Speed Indicator.

    Illuminated (Green) 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.

26. Low Fuel Indicator

    When illuminated (Yellow), the fuel tank is 1/8 full or less. When the light first turns on, there are approximately four usable gallons of fuel remaining.

NOTE: *One of the capacity indicator lights should be illuminated at all times during operation. If no capacity lights are on, a bulb could be burned out. Operation of the machine must be halted until the lights are working properly.*

Check the capacity decal in the platform and at the ground control station for the machines operating capacity(s).

27. Capacity Indicator and Exceeding Operating Radius Indicator

    The capacity indicator and exceeding operating radius indicators display to the operator the maximum rated platform capacity and the maximum radius for that capacity using different colored lights. The operator must not exceed the rated capacity or the maximum radius for the load (personnel, tools, and supplies) shown on the indicator.

    A light for each different capacity is used; blue indicates operating within maximum capacity range, yellow indicates operating within reduced capacity range. Models equipped with Extend-A-Reach have a blue and a red light only. When moving the platform from one capacity area to another, one light will go out and another will come on indicating the correct capacity for that area. A steady red light indicates you have exceeded the machines operating radius. You must immediately stop and ''LIFT UP'' or ''TELE IN'' until the red light goes out. A blinking red light and a buzzer sounding indicates you have exceeded the platform load capacity (personnel, tools, and supplies) and maximum radius. You must immediately stop all functions and then ''LIFT UP'' or ''TELE IN'' until the red light goes out and the buzzer stops. Check to make sure the load in the platform does not exceed the rated capacity.

3.4 PLACARDS AND DECALS

Read and understand all placards and decals. Do not operate any machine on which DANGER, WARNING, CAUTION, or INSTRUCTION PLACARDS OR DECALS ARE MISSING OR ILLEGIBLE. Replace placards and decals if damaged, missing, or illegible.

Decals are made of Lexan Pressure Sensitive Adhesive with a protective film on the front. Remove the damaged decal and thoroughly clean the surface before installing a new decal. Simply peel off the backing and press the decal on to the surface.

NOTE: *Placards and Decals can be ordered by using the part numbers located by each placard or decal. See Figure 3-5., Caution, Danger, Warning Decal Location - Sheet 1 of 2 and Figure 3-6., Caution, Danger, Warning Decal Location - Sheet 2 of 2.*

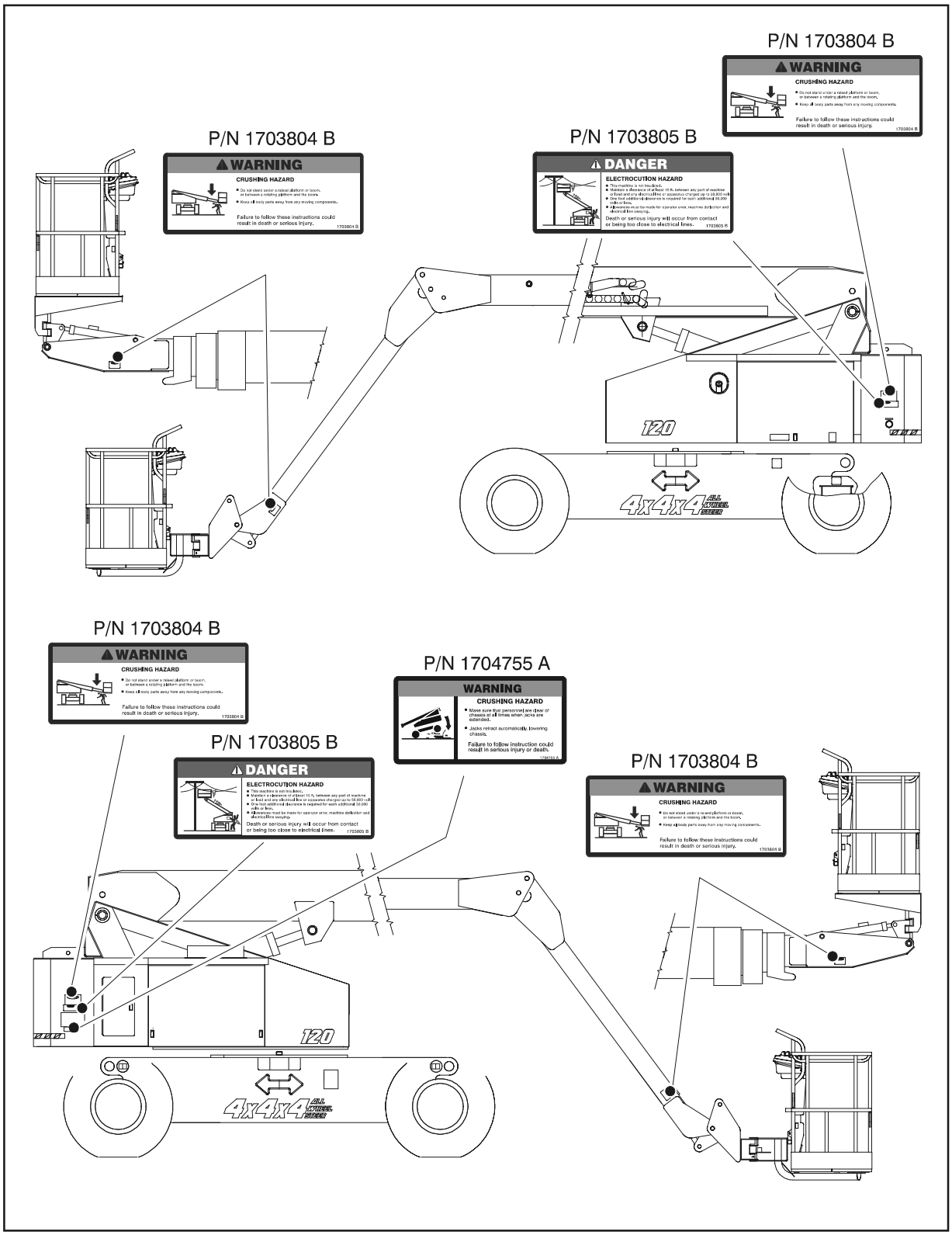


Figure 3-5. Caution, Danger, Warning Decal Location - Sheet 1 of 2

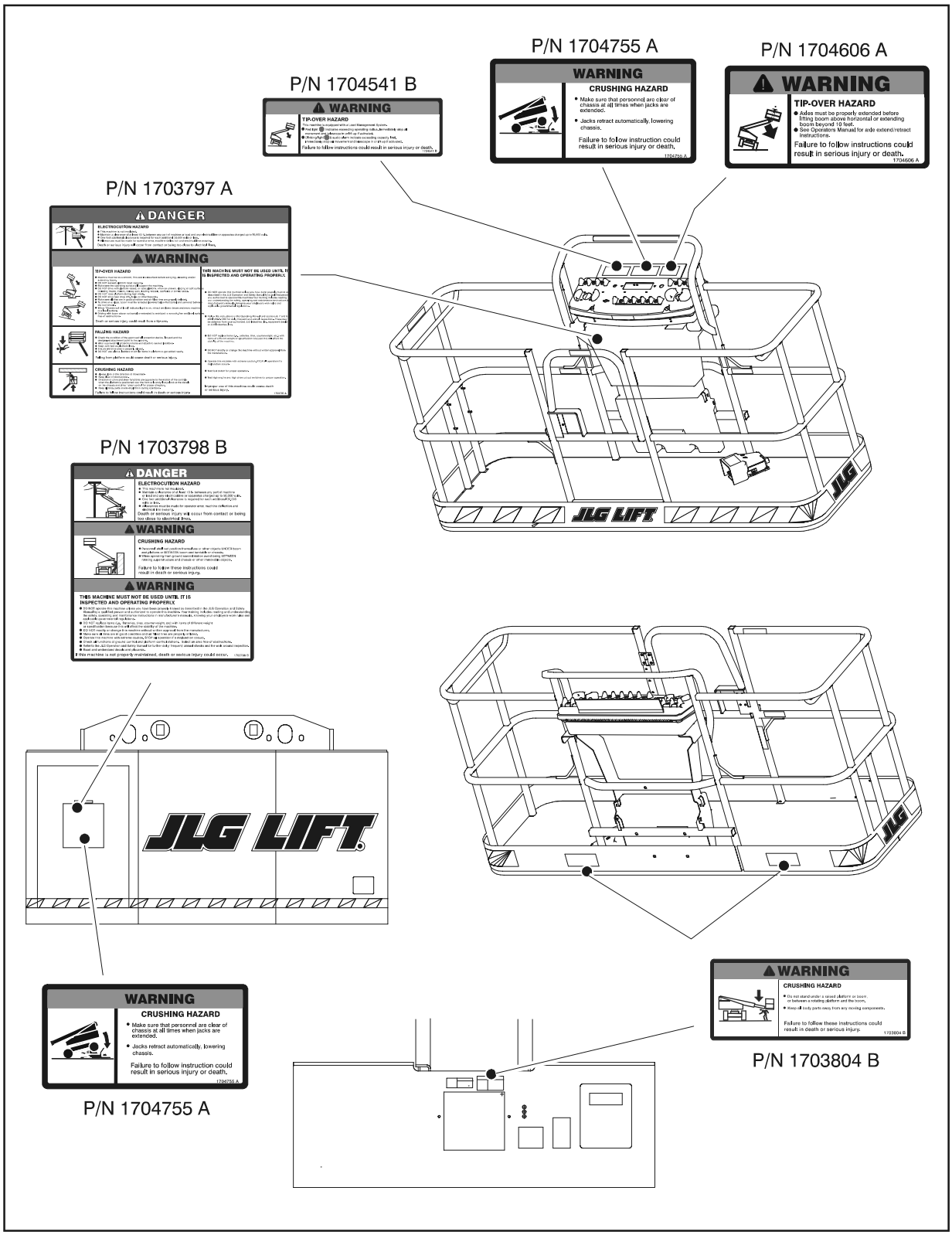


Figure 3-6. Caution, Danger, Warning Decal Location - Sheet 2 of 2

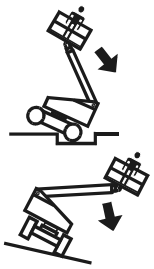
⚠ DANGER

ELECTROCUTION HAZARD

- This machine is not insulated.
- Maintain a clearance of at least 10 ft. between any part of machine or load and any electrical line or apparatus charged up to 50,000 volts.
- One foot additional clearance is required for each additional 30,000 volts or less.
- Allowances must be made for operator error, machine deflection and electrical line swaying.

Death or serious injury will occur from contact or being too close to electrical lines.

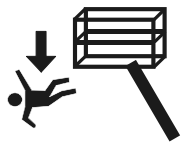
⚠ WARNING



TIP-OVER HAZARD

- Machine must be on a smooth, firm and level surface before swinging, elevating and/or extending boom.
- DO NOT exceed platform rated capacity.
- Make sure the operating surface will support the machine.
- DO NOT drive with platform raised, or raise platform, when on uneven, sloping or soft surfaces including trucks, trailers, railway cars, floating vessels, scaffolds or similar areas.
- DO NOT raise platform during high winds.
- DO NOT drive near drop offs, holes or other hazards.
- Make sure all tires are in good condition and air filled tires are properly inflated.
- To drive on a slope, boom must be retracted, lowered below horizontal and centered between the rear wheels.
- When "Chassis out of level" indicator light is on, retract and lower boom and move machine to a level surface.
- Driving with boom above horizontal or extended is restricted to smooth, firm and level surfaces free of obstructions.

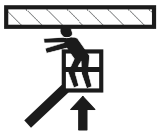
Death or serious injury could result from a tip-over.



FALLING HAZARD

- Check the condition of the approved fall protection device, lanyard and the designated attachment point to the platform.
- Wear approved fall protection items and attach to marked locations.
- Keep both feet on platform floor.
- Ensure entrance area is properly closed.
- DO NOT use planks, ladders or similar items in platform to get added reach.

Falling from platform could cause death or serious injury.



CRUSHING HAZARD

- Always look in the direction of movement.
- Keep clear of obstructions.
- Direction of drive and steer functions are opposite to the motion of the controls when the platform is positioned over the front axle end. Always look at the decals on the chassis and drive / steer control for proper direction.
- Keep all body parts inside of platform during operation.

Failure to follow instructions could result in death or serious injury.

THIS MACHINE MUST NOT BE USED UNTIL IT IS INSPECTED AND OPERATING PROPERLY.

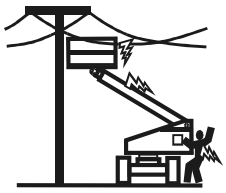
- DO NOT operate this machine unless you have been properly trained as described in the JLG Operation and Safety Manual by a qualified person and authorized to operate this machine. Your training includes reading and understanding the safety, operating and maintenance instructions in manufacturer's manuals, knowing your employers work rules and applicable governmental regulations.
- Follow the instructions in the Operating Manual and sections 6, 7 and 8 of ANSI A92.5-1992 for daily, frequent and annual inspections. These may be obtained from your authorized JLG Industries, Inc. equipment dealer or JLG Industries, Inc.
- DO NOT replace items (i.e., batteries, tires, counterweight, etc.) with items of different weight or specification because this will affect the stability of the machine.
- DO NOT modify or change this machine without written approval from the manufacturer.
- Operate this machine with extreme caution. STOP all operation if a malfunction occurs.
- Test foot switch for proper operation.
- Test high engine and high drive cut out switches for proper operation.

Improper use of this machine could cause death or serious injury.

1703797 A

P/N 1703797 A

⚠ DANGER

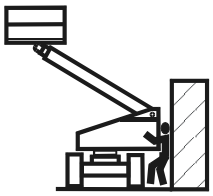


ELECTROCUTION HAZARD

- This machine is not insulated.
- Maintain a clearance of at least 10 ft. between any part of machine or load and any electrical line or apparatus charged up to 50,000 volts.
- One foot additional clearance is required for each additional 30,000 volts or less.
- Allowances must be made for operator error, machine deflection and electrical line swaying.

Death or serious injury will occur from contact or being too close to electrical lines.

⚠ WARNING



CRUSHING HAZARD

- Personnel shall not position themselves or other objects UNDER boom and platform or BETWEEN boom and turntable or chassis.
- When operating from ground control station avoid being BETWEEN rotating superstructure and chassis or other immovable objects.

Failure to follow these instructions could result in death or serious injury.

⚠ WARNING

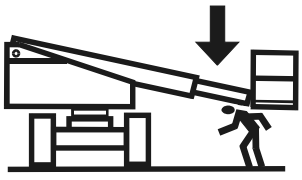
THIS MACHINE MUST NOT BE USED UNTIL IT IS INSPECTED AND OPERATING PROPERLY.

- DO NOT operate this machine unless you have been properly trained as described in the JLG Operation and Safety Manual by a qualified person and authorized to operate this machine. Your training includes reading and understanding the safety, operating and maintenance instructions in manufacturer's manuals, knowing your employers work rules and applicable governmental regulations.
- DO NOT replace items (i.e., Batteries, tires, counterweight, etc) with items of different weight or specification because this will affect the stability of the machine.
- DO NOT modify or change this machine without written approval from the manufacturer.
- Make sure all tires are in good condition and air filled tires are properly inflated.
- Operate this machine with extreme caution. STOP all operation if a malfunction occurs.
- Check all functions at ground control and platform control stations. Select an area free of obstructions.
- Refer to the JLG Operation and Safety Manual for further daily/ frequent/ annual checks and the walk around inspection.
- Read and understand decals and placards.

If this machine is not properly maintained, death or serious injury could occur. 1703798 B

P/N 1703798 B

⚠ WARNING



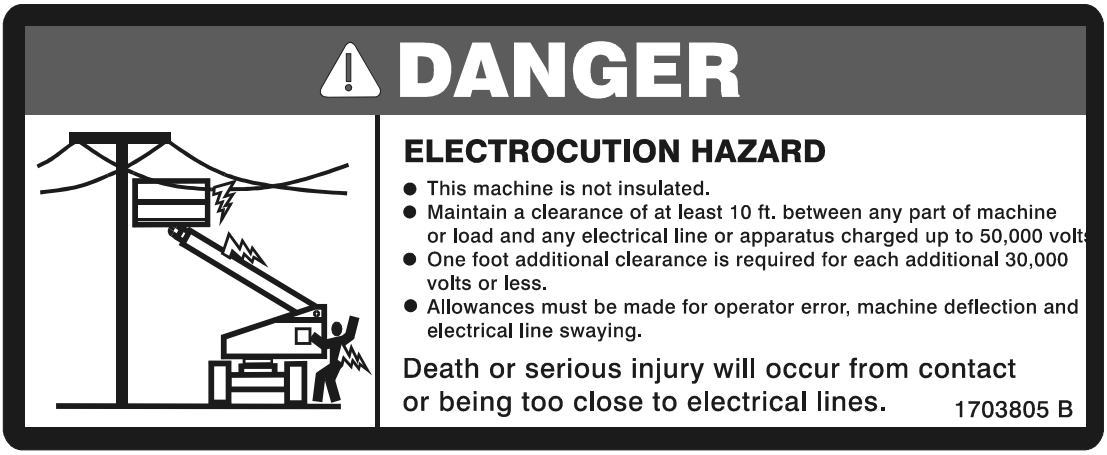
CRUSHING HAZARD

- Do not stand under a raised platform or boom, or between a rotating platform and the boom.
- Keep all body parts away from any moving components.

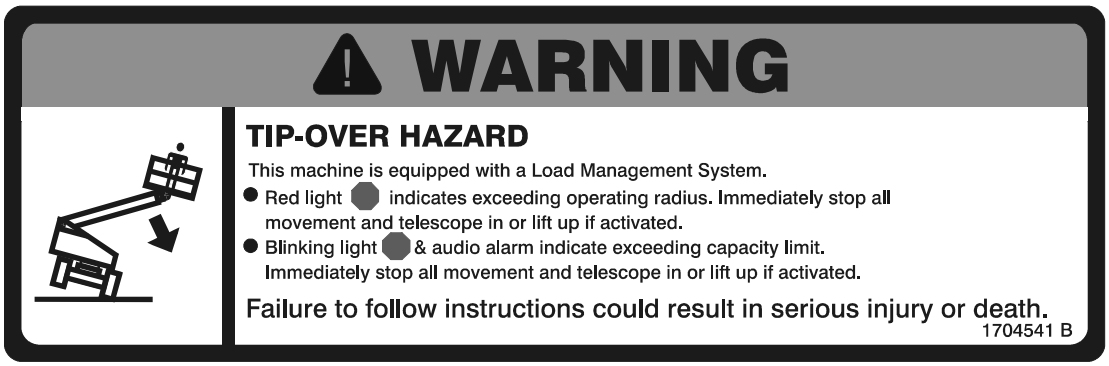
Failure to follow these instructions could result in death or serious injury.

1703804 B

P/N 1703804 B

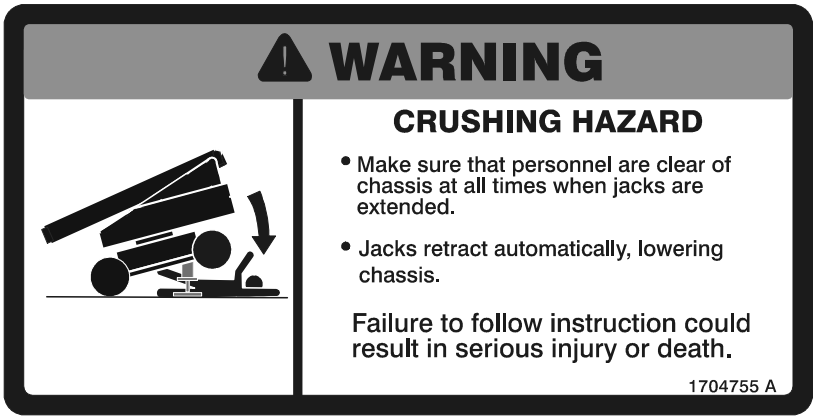


P/N 1703805 B



P/N 1703804 B

P/N 1704606 A



P/N 1704755 A

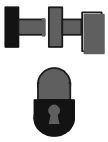
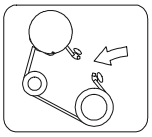
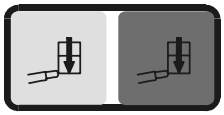
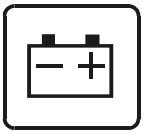
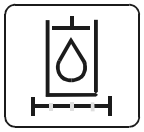
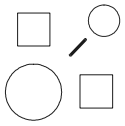
FUNCTION	SYMBOL	FUNCTION	SYMBOL
AXLE SET		BROKEN FAN BELT	
PLATFORM CAPACITY INDICATOR		GLOW PLUG INDICATOR	
EXCEEDING OPERATING RADIUS		ENGINE MALFUNCTION INDICATOR	
BATTERY CHARGING CONDITION		HYDRAULIC OIL FILTER	
ENGINE OIL PRESSURE		LOW FUEL LEVEL	
TRANSMISSION OIL FILTER		START	
ENGINE COOLANT TEMPERATURE		AUXILIARY POWER	
ENGINE OIL TEMPERATURE		POWER EMERGENCY STOP	
ENGINE INTAKE AIR FILTER		PLATFORM CONTROL OFF GROUND CONTROL	

Figure 3-7. Control Panel Symbols - Sheet 1

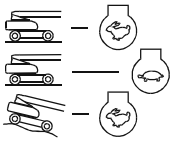
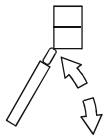
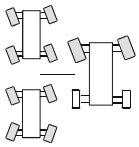
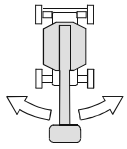
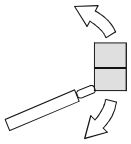
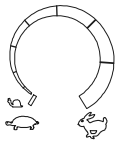
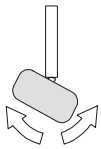
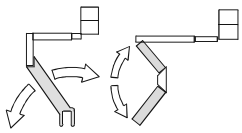
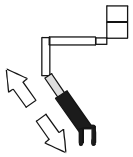
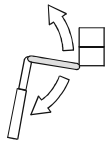
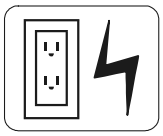
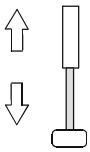
FUNCTION	SYMBOL	FUNCTION	SYMBOL
DRIVE SELECT		MAIN LIFT	
STEER SELECT		SWING	
PLATFORM LEVEL		FUNCTION SPEED CONTROL	
CHASSIS OUT OF LEVEL		PLATFORM ROTATE	
CREEP		TOWER LIFT	
ENGINE DISTRESS		TOWER TELESCOPE	
LOW FUEL LEVEL		ARTICULATING FLY BOOM	
AC GENERATOR ON		MAIN TELESCOPE	
		FUEL SELECT	

Figure 3-8. Control Panel Symbols - Sheet 2

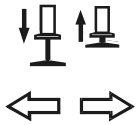
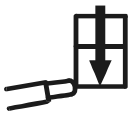
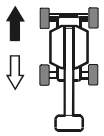
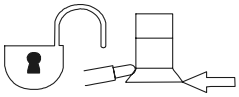
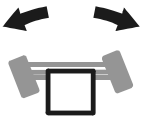
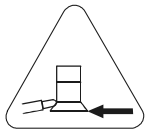
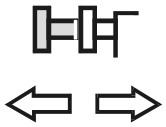
FUNCTION	SYMBOL	FUNCTION	SYMBOL
GLOW PLUG INDICATOR		JACK EXTEND/ RETRACT	
ENABLE INDICATOR		MAXIMUM CAPACITY	
POWER EMERGENCY STOP		DRIVE	
START AUXILIARY POWER		JACK, STEER, OR AXLE SELECT	
SOFT TOUCH OVERRIDE		STEER	
SOFT TOUCH INDICATOR		AXLE SET	
AXLE EXTEND/ RETRACT			

Figure 3-9. Control Panel Symbols - Sheet 3

SECTION 4. MACHINE OPERATION

4.1 DESCRIPTION

This machine is a self-propelled aerial work platform on the end of an elevating, telescoping and rotating boom. The JLG Lift's intended purpose is to position personnel with their tools and supplies at positions above ground level. The machine can be used to reach work areas located above and over machinery or equipment.

The JLG Lift has a primary operator Control Station in the platform. From this Control Station, the operator can drive and steer the machine in both forward and reverse directions. The operator can raise, lower, extend or retract the boom; swing the boom to the left or right; and when equipped with a platform rotator, can rotate the platform around the boom end. Standard boom swing is 360° 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 boom lift, telescope and swing and are to be used only in an emergency to lower the platform to the ground should the operator in the platform be unable to do so.

Instruction and hazard warnings are posted adjacent to both operator control stations and at other places on the machine. It is extremely important that operators know what instructions and warnings are placed on the machine, and review these periodically so that they are fresh in their minds. Vibrations emitted by these machines are not hazardous to an operator in the work platform.

The JLG Lift is designed to provide efficient and safe operation when maintained and operated in accordance with warnings on the machine, in the Operators and Safety Manual, and all jobsite and government rules and regulations. As with any type of machinery, the operator is very important to efficient and safe operation. Owner/user/operator must be familiar with Sections 6, 7, 8, 9, and 10 of ANSI A92.5-1992. These sections contain the responsibilities of the owner, users, operators, lessors and lessees concerning safety, training, inspection, maintenance, application and operation. It is absolutely necessary that the JLG Lift be regularly maintained in accordance with this manual and the machine Service and Maintenance manual, and that any evidence of lack of maintenance, malfunction, excessive wear, damage or modification to the machine be reported immediately to the machine owner or the jobsite supervisor or safety manager and that the machine be taken out of service until all discrepancies are corrected.

The JLG Lift is not intended to be used to lift material other than supplies which personnel in the platform require to do their job. Supplies or tools which extend outside the platform are prohibited. It must not be used as a forklift, crane, support for overhead structure, or to push or pull another object or the lift itself.

The machine is equipped with an auxiliary battery operated power unit which will provide hydraulic power in the event of a primary engine power loss. Auxiliary power can be controlled from either the Platform Control Station or the Ground Control Station. Follow the instructions placed at the control stations.

The JLG Lift is hydraulically powered using hydraulic motors and cylinders for various machine motions. The hydraulic components are controlled by electrically activated hydraulic valves using switches and control levers. The speeds of functions controlled by control levers are variable from zero to maximum speed depending upon the position of the control lever. Functions controlled by toggle switches are either on or off and higher or lower speed is possible when the Function Speed control switch is used in conjunction with the function toggle switch. A foot operated switch in the platform must be depressed before any controls will function and provides a means of emergency stop when the operator's foot is removed from the footswitch.

The JLG Lift is a four wheel drive machine with drive power being supplied by a hydraulic motor for each drive wheel. Each drive wheel is supplied with a hydraulically released, spring-applied brake. The swing drive is also equipped with such a brake. These brakes are automatically applied any time the Drive or Swing Control lever are returned to the neutral position.

Refer to the capacity decal in the platform and at the ground control station for the rated capacity. See instructions in this manual and on the machine for checking procedures.

Table 4-1. Operating Specifications - 100SX, 110SX & 110SXJ

Maximum Work Load (Capacity) Restricted (110SX Only): Unrestricted:	 1000 lb (455 kg) 500 lb (230 kg)
Maximum Travel Grade (Gradeablility	45%
Maximum Travel Grade (Side Slope)	5°
Max Vertical Platform Height, 100SX:	100 ft. (30.5 m)
Max Vertical Platform Height 110SX, 110SXJ:	110 ft. (33.5 m)
Maximum Horizontal Platform Reach	60 ft. (18.3 m)
Turning Radius (inside) - 4WS Axles Retracted Axles Extended	 9.5 ft. (2.9 m) 9.8 ft. (3.0 m)
Turning Radius (Outside) - 4WS Axles Retracted Axles Extended	 17.5 ft.(5.3 m) 20 ft. (6.1 m)
Maximum Tire Load:	Reference Decal on Machine
Max Ground Bearing Pressure:	90 psi (6.3 kg/cm^2)
Maximum Drive Speed:	3 mph (4.8 km/h)
Drive Speed - Creep	0.4 mph (0.64 kph)
Gross Machine Weight (approx.) 100SX 110SX 110SXJ	 37,700 lb. (17,136 kg) 41,900 lb. (19,006 kg) 41,800 lb. (18,960 kg)

Table 4-2. Operating Specifications - 120SXJ

Maximum Work Load (Capacity)	500 lb (230 kg)
Maximum Travel Grade (Gradeablility)	45%
Maximum Travel Grade (Side Slope)	5°
Maximum Vertical Platform Height:	120 ft. (36.6 m)
Maximum Horizontal Platform Reach	60 ft. (18.3 m)
Turning Radius (inside) Axles Retracted Axles Extended	 19 ft. (5.79 m) 19.5 ft. (5.92 m)
Turning Radius (Outside) Axles Retracted Axles Extended	 35 ft.(10.67 m) 40 ft. (12.19 m)
Maximum Tire Load:	Reference Decal on Machine
Maximum Drive Speed:	3 mph (4.8 km/h)
Drive Speed - Creep	0.4 mph (0.64 kph)
Gross Machine Weight (approx.)	43,500 lb. (19,732 kg)

4.2 OPERATING CHARACTERISTICS AND LIMITATIONS

General

A thorough knowledge of the operating characteristics and limitations of the machine is always the first requirement for any operator, regardless of the user's experience with similar types of equipment.

Placards

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

Capacities

Raising the boom above horizontal and/or the extension of the boom beyond the retracted position with or without any load in the platform, is based on the following criteria:

1. Machine is positioned on a smooth, firm and level surface.
2. Load is within manufacturer's rated design capacity.
3. All machine systems are functioning properly.
4. Machine is as originally equipped from JLG.

Stability

This machine as originally manufactured by JLG Industries Inc., when operated within its rated capacity on a smooth, firm and level supporting surface, and in accordance with the instructions provided on the machine and this manual, provides a stable machine for all platform positions.

Machine stability is based on two positions which are called FORWARD STABILITY and BACKWARD STABILITY. The machines position of least forward stability is shown in Figure 4-1. and its position of least backward stability is shown in Figure 4-2.

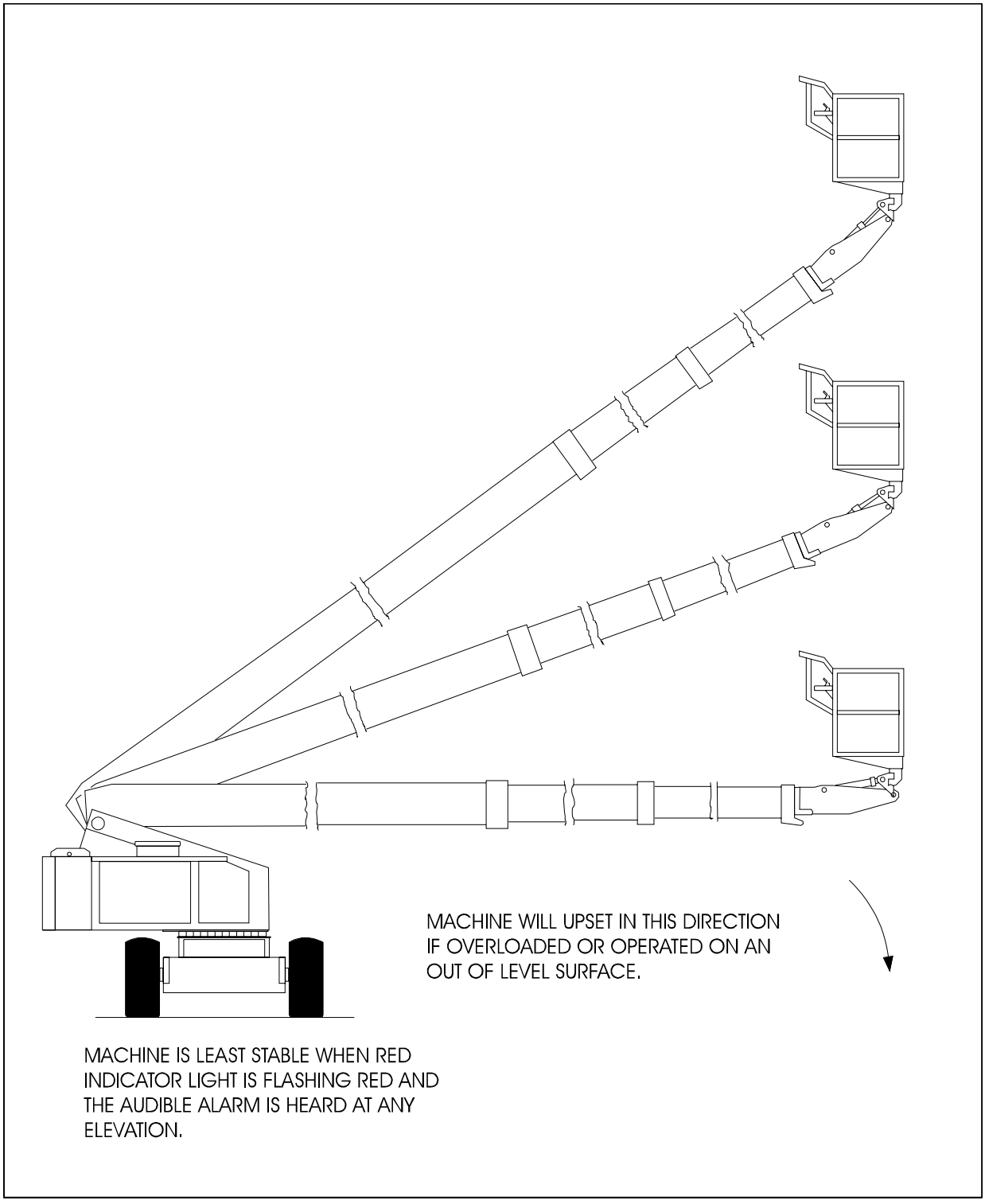


Figure 4-1. Position of Least Forward Stability

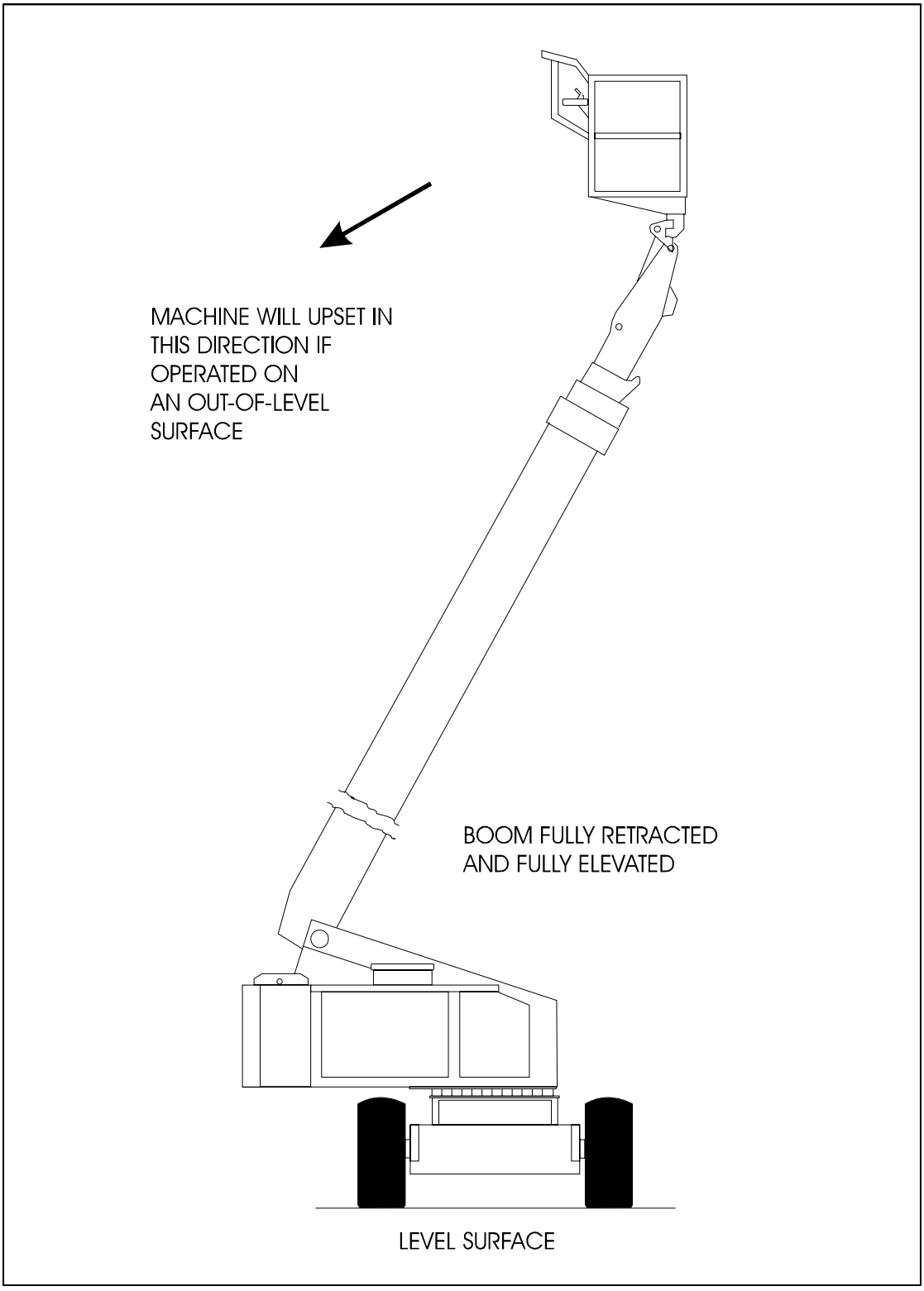


Figure 4-2. Position of Least Backward Stability - 100SX and 110SX

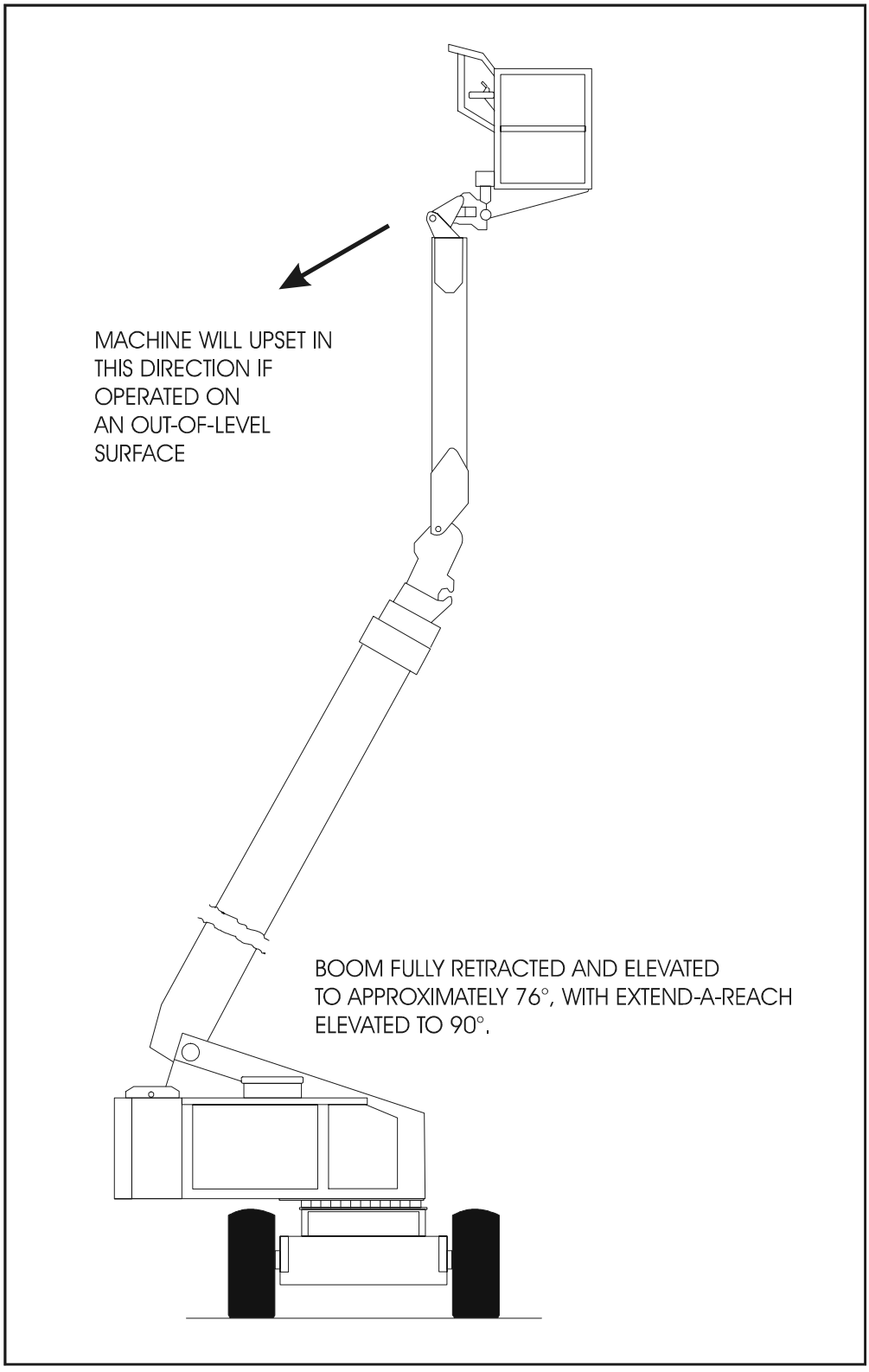


Figure 4-3. Position of Least Backward Stability - 110SXJ & 120SXJ

4.3 GENERAL

This section provides the necessary information needed to operate the machine. Included in this section are the procedures for starting, stopping, traveling, steering, parking, platform loading and transporting. It is important that the user read and understand the proper procedures before operating the machine.

4.4 ENGINE OPERATION

NOTE: *Initial starting should always be performed from the Ground Control station.*

Starting Procedure

1. Check engine oil. If necessary, add oil in accordance with the Engine Manufacturer's manual.
2. Check fuel level. Add fuel if necessary.
3. Check that air cleaner components are in place and securely fastened.

⚠ CAUTION

IF ENGINE FAILS TO START PROMPTLY, DO NOT CRANK FOR AN EXTENDED PERIOD. SHOULD ENGINE FAIL TO START ONCE AGAIN, ALLOW STARTER TO "COOL OFF" FOR 2-3 MINUTES. IF ENGINE FAILS AFTER SEVERAL ATTEMPTS, REFER TO ENGINE MAINTENANCE MANUAL.

NOTE: *Machines with diesel engines. After turning on ignition, operator must wait until glow plug indicator light goes out before cranking engine.*

4. Turn key of SELECT switch to GROUND. Position POWER/EMERGENCY STOP switch to ON, then push the ENGINE START switch to the upward position until engine starts.

⚠ CAUTION

ALLOW ENGINE TO WARM-UP FOR A FEW MINUTES AT LOW SPEED BEFORE APPLYING ANY LOAD.

5. After engine has had sufficient time to warm up, shut engine off.
6. Turn key of SELECT switch to PLATFORM.
7. From Platform position POWER/EMERGENCY STOP switch to ON, then push the ENGINE START switch to the forward position until engine starts.

NOTE: *Footswitch must be in released (up) position before starter will operate. If starter operates with footswitch in the depressed position, DO NOT OPERATE MACHINE.*

Shutdown Procedure

⚠ CAUTION

IF AN ENGINE MALFUNCTION NECESSITATES UNSCHEDULED SHUTDOWN, DETERMINE AND CORRECT CAUSE BEFORE RESUMING ANY OPERATION.

1. Remove all load and allow engine to operate at low speed setting for 3-5 minutes; this allows for further reduction of internal engine temperature.
2. Position POWER/EMERGENCY STOP switch to OFF.
3. Turn key of MASTER switch to OFF position.

NOTE: *Refer to Engine Manufacturer's manual for detailed information.*

4.5 TRAVELING (DRIVING)

⚠ WARNING

DO NOT DRIVE WITH BOOM EXTENDED OR ABOVE HORIZONTAL EXCEPT ON A SMOOTH, FIRM AND LEVEL SURFACE.

TO AVOID LOSS OF TRAVEL CONTROL OR UPSET ON GRADES AND SIDESLOPES, DO NOT DRIVE MACHINE ON GRADES OR SIDESLOPES EXCEEDING THOSE SPECIFIED ON MACHINE INFORMATION PLACARD ON THE LEFT SIDE OF THE FRAME.

ASSURE THAT TURNTABLE LOCK IS ENGAGED BEFORE BEGINNING ANY EXTENDED TRAVELING. AVOID ANY TERRAIN FEATURES WHICH COULD CAUSE THE MACHINE TO UPSET.

TRAVEL GRADES WITH DRIVE SPEED/TORQUE SELECT SWITCH IN THE BACKWARD POSITION. USE EXTREME CAUTION WHEN DRIVING IN REVERSE AND AT ALL TIMES WHEN DRIVING WITH PLATFORM ELEVATED AND ESPECIALLY WHEN DRIVING WITH ANY PART OF MACHINE WITHIN 6 FEET (2 M) OF AN OBSTRUCTION. DO NOT USE DRIVE TO MANEUVER PLATFORM CLOSE TO AN OBSTRUCTION...USE ONE OF THE BOOM FUNCTIONS.

DO NOT DRIVE ON SIDE SLOPES WHICH EXCEED 5 DEGREES.

⚠ CAUTION

BEFORE DRIVING, MAKE SURE BOOM IS POSITIONED OVER REAR AXLE. IF BOOM IS OVER FRONT AXLE (STEER WHEELS), STEER AND DRIVE CONTROLS WILL MOVE IN OPPOSITE DIRECTIONS TO MACHINE CONTROLS.

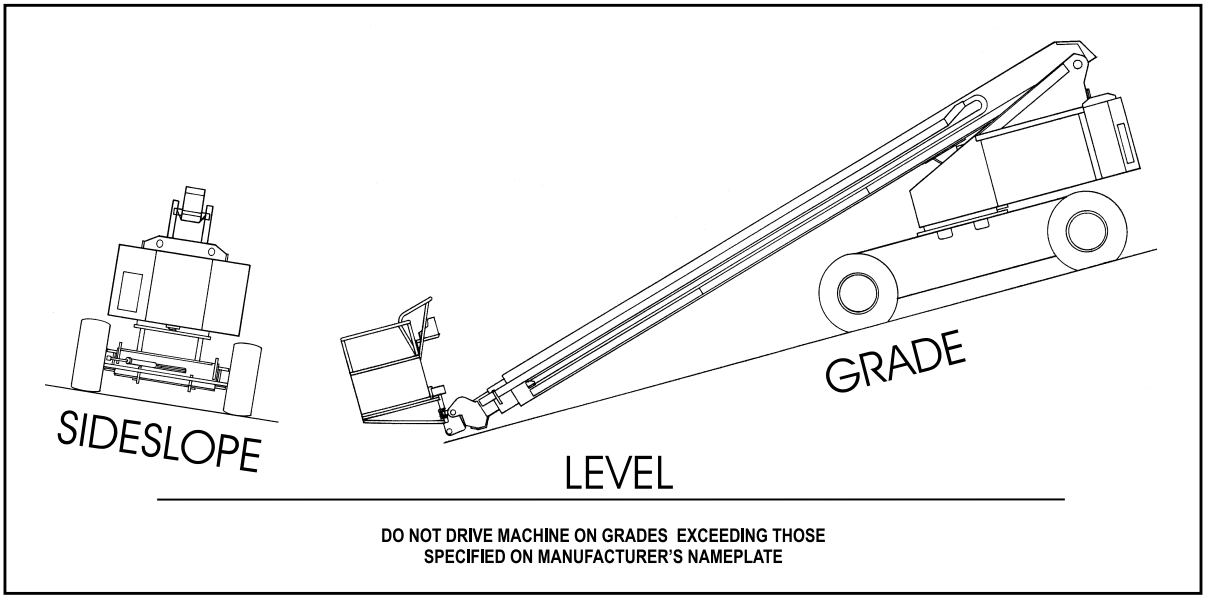


Figure 4-4. Grade and Side Slope

Traveling Forward or Reverse

4. With engine running, depress footswitch and position DRIVE control to FORWARD and hold for the duration of forward travel desired.
5. Depress footswitch and position DRIVE control to REVERSE and hold for duration of reverse travel desired.
6. Depress footswitch and position STEER control to RIGHT for traveling right and LEFT for traveling left.
7. To obtain maximum travel speed, position the DRIVE controller to FAST and activate the following switches:
   a. Position DRIVE SPEED/TORQUE SELECT switch to HIGH. (Forward Position)
8. Prior to stopping the machine, position switches as follows:
   a. Position DRIVE SPEED/TORQUE SELECT switch to LOW. (Middle Position)
9. For traveling up grades, position switches as follows:
   a. Position DRIVE SPEED/TORQUE SELECT switch to HIGH.

NOTE: *For smoother operation when driving with fully extended boom, place DRIVE control to SLOW before stopping.*

4.6 STEERING

To steer the machine, depress footswitch, then push on the steer controller left to steer left, and right to steer right.

⚠ CAUTION

BEFORE OPERATING MACHINE, MAKE SURE BOOM IS POSITIONED OVER REAR AXLE. IF BOOM IS OVER FRONT AXLE (STEER WHEELS), STEER AND DRIVE CONTROLS WILL MOVE IN OPPOSITE DIRECTION THAN INDICATED ON MACHINE PLACARDS.

4.7 PARKING AND STOWING

Park and stow machine as follows:

1. Park machine in travel position; boom lowered over rear, all access panels and doors closed and secured, ignition off, turntable locked.
2. Check that brakes hold machine in position.
3. Chock wheels front and rear.
4. Turn off SELECT switch and remove key.

4.8 PLATFORM

Loading From Ground Level

1. Position chassis on a smooth, firm and level surface.
2. If total load (personnel, tools and supplies) is less then rated capacity, distribute load uniformly on platform floor and proceed to work position.

Loading From Positions Above Ground Level

Before loading weight to platform above ground level:

1. Determine what the total rated capacity weight will be after additional weight is loaded (personnel, tools and supplies).
2. If total weight in platform will be less then rated capacity, proceed with adding weight.

Platform Level Adjustment

1. Leveling UP. Depress footswitch to raise platform, position PLATFORM LEVEL control switch UP and hold until platform is level.
2. Leveling DOWN. Depress footswitch to lower platform, position PLATFORM LEVEL control switch to DOWN and hold until platform is level.

Platform Rotation

1. Depress footswitch to rotate platform to the left, PLATFORM ROTATE control is positioned to the LEFT and held until desired position is reached.
2. Depress footswitch to rotate platform to the right, PLATFORM ROTATE control is positioned to the RIGHT and held until desired position is reached.

4.9 AXLES, EXTENDING AND RETRACTING

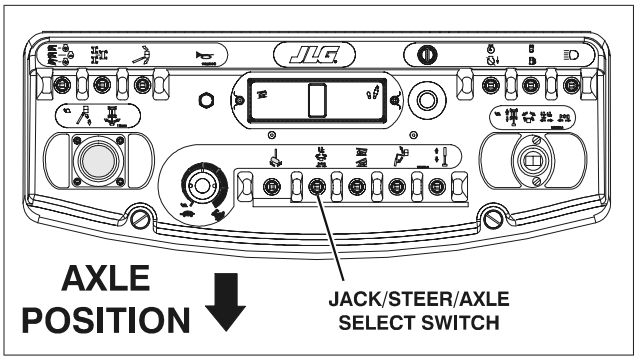
Machines without Jacks

1. From the platform controls, activate the machine hydraulic system and position the boom over the drive wheel end of the machine.
2. Position the Steer Select switch to the Front Steer position. The boom must be retracted within the limits of the 10 foot cutout switch and below horizontal.

IMPORTANT

DO NOT USE EXTEND-A-REACH (IF EQUIPPED) TO LIFT MACHINE WHEN EXTENDING AND RETRACTING AXLES.

3. Position LIFT control to DOWN and hold until drive wheels rise from the ground; it may be necessary to feather the lift control to maintain drive wheel elevation.



4. Push and hold the Jack/Steer/Axle Select switch in the Axle position.

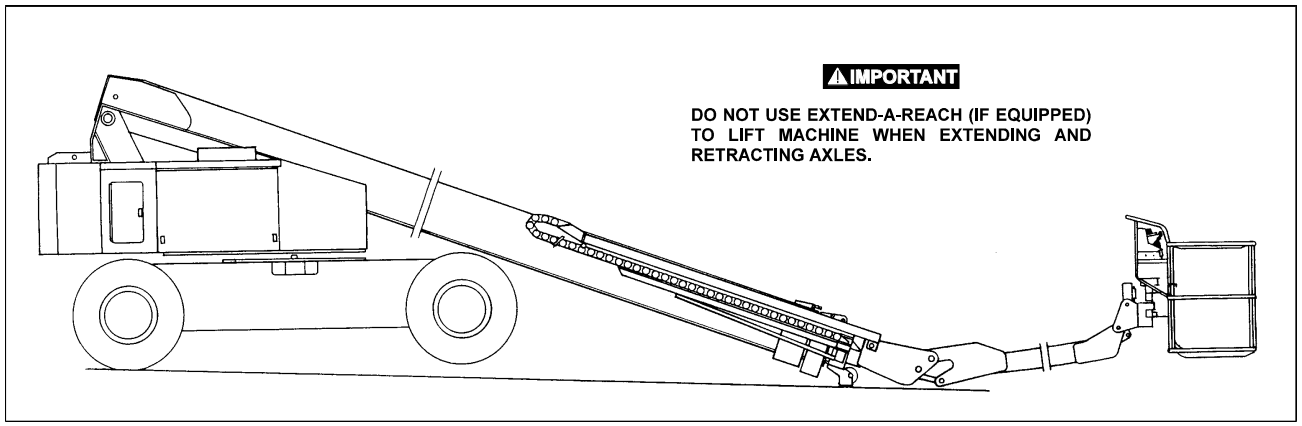
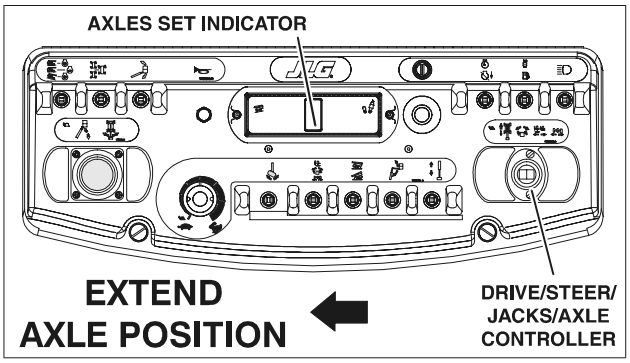


Figure 4-5. Lifting the Axle



5. Position Drive/Steer/Jacks/Axle controller located on platform control console to Extend Axles until axles are fully extended and the Axles Set light is on.
6. If the light does not illuminate when the axles are fully extended, contact a qualified service technician before continuing operation.
7. Position LIFT control to UP to lower the machine; elevate the boom sufficiently and reposition the boom over the steer wheel end of the machine.
8. Repeat steps 1 thru 6 for the opposite axle.

Machines with Jacks

⚠ WARNING

MAKE SURE THAT PERSONNEL ARE CLEAR OF CHASSIS AT ALL TIMES WHEN JACKS ARE EXTENDED.

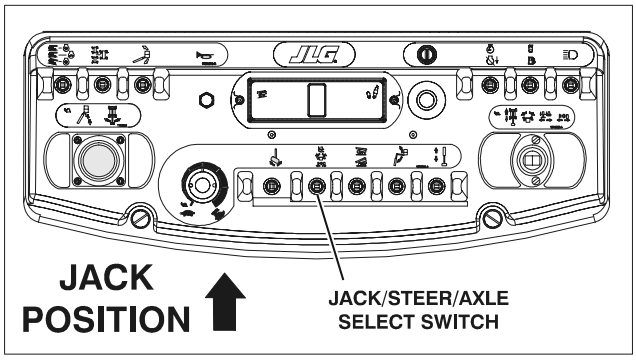
⚠ WARNING

JACKS RETRACT AUTOMATICALLY, LOWERING THE CHASSIS.

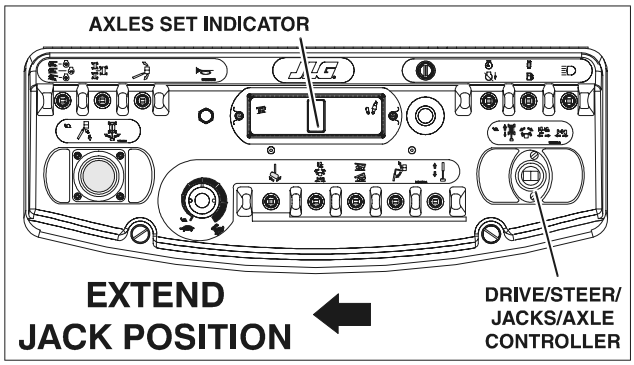
⚠ WARNING

THE JACKS ARE TO BE USED FOR EXTENDING AND RETRACTING THE AXLES. THEY ARE NOT TO BE USED AS A MAINTENANCE TOOL.

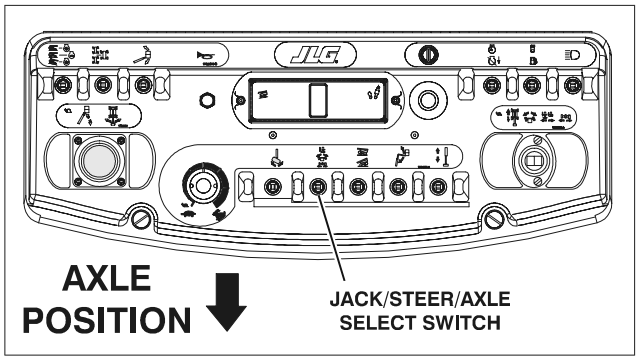
1. From the platform controls, activate the machine hydraulic system and position the boom over the drive wheel end of the machine.
2. Position the Steer Select switch to the Front Steer position. The boom must be retracted within the limits of the 10 foot cutout switch and below horizontal.
3. Position the Axle/Jack Select switch to the desired jack.



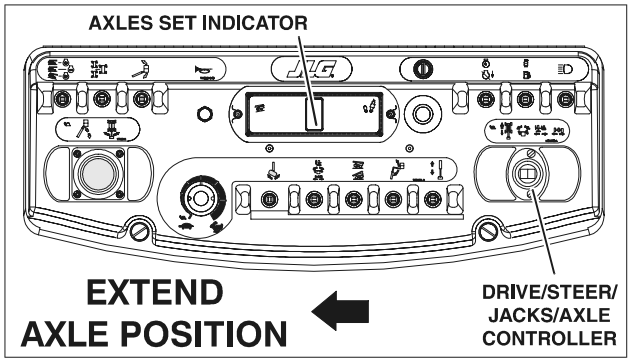
4. Push and hold the Jack/Steer/Axle Select switch in the Jack position.



5. Position Drive/Steer/Jacks/Axle controller located on platform control console to Extend Jack position until the jack is fully extended.



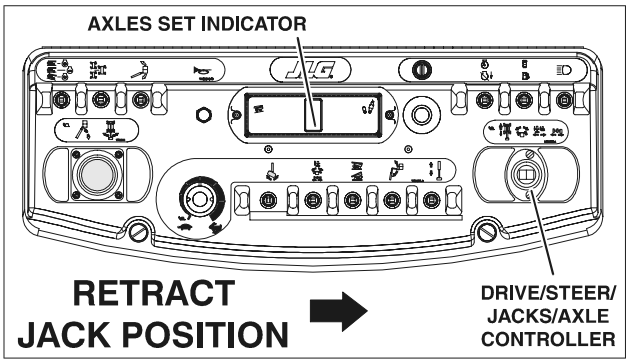
6. Push and hold the Jack/Steer/Axle Select switch in the Axle position.



7. Position Drive/Steer/Jacks/Axle controller located on platform control console to Extend Axles until axles are fully extended and the Axles Set light is on.
8. If the light does not illuminate when the axles are fully extended, contact a qualified service technician before continuing operation.

NOTE: *If no function is selected and the power is still on, the jack will automatically retract after a period of 7 seconds.*

9. Push and hold the Jack/Steer/Axle Select switch in the Jack position.



10. Position Drive/Steer/Jacks/Axle controller located on platform control console to Retract Jack position until the jack is fully retracted.
11. Repeat steps 1 thru 10 for the opposite axle.

4.10 AXLES, EXTENDING AND RETRACTING W/REMOTE CONTROL BOX

⚠ WARNING

MAKE SURE THAT PERSONNEL ARE CLEAR OF CHASSIS AT ALL TIMES WHEN JACKS ARE EXTENDED.

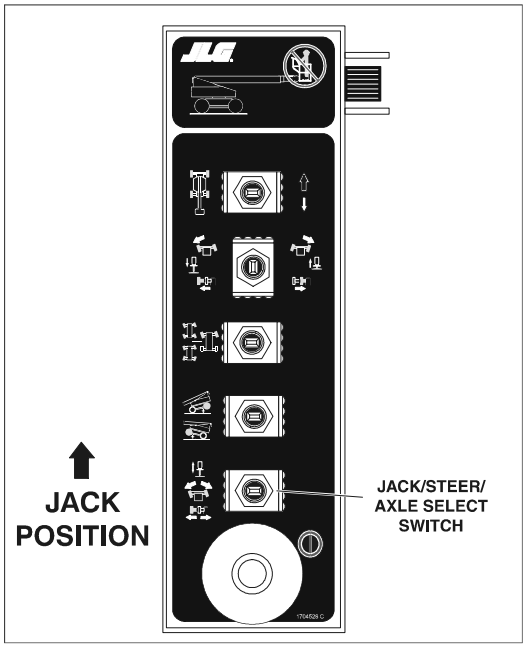
⚠ WARNING

JACKS RETRACT AUTOMATICALLY, LOWERING THE CHASSIS.

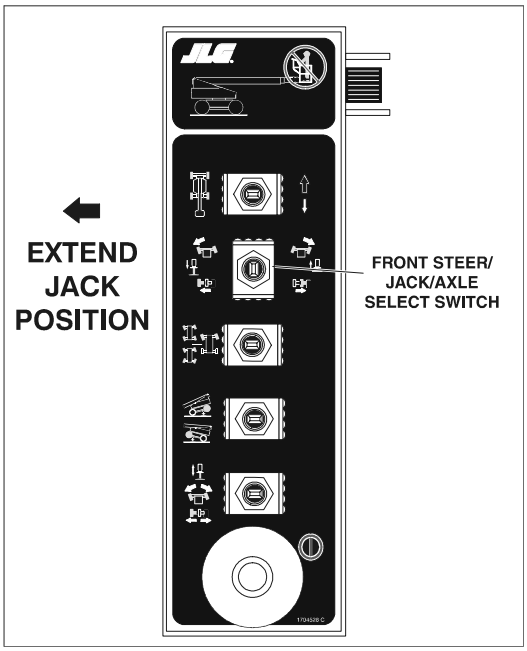
⚠ WARNING

THE JACKS ARE TO BE USED FOR EXTENDING AND RETRACTING THE AXLES. THEY ARE NOT TO BE USED AS A MAINTENANCE TOOL.

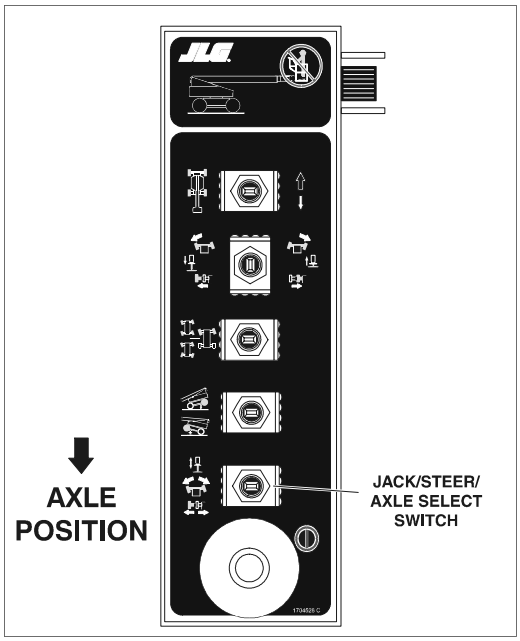
1. Activate the machine hydraulic system and position the boom over the drive wheel end of the machine.
2. Position the Steer Select switch to the Front Steer position. The boom must be retracted within the limits of the 10 foot cutout switch and below horizontal.
3. Position the Front/Rear Jack switch to the desired jack.



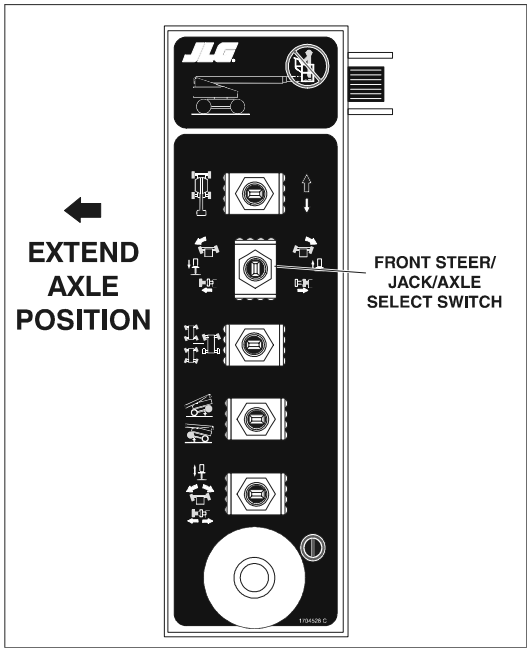
4. Push and hold the Jack/Steer/Axle Select switch in the Jack position.



5. Position the Front Steer/Jacks/Axle switch to the Extend Jack position until the jack is fully extended.



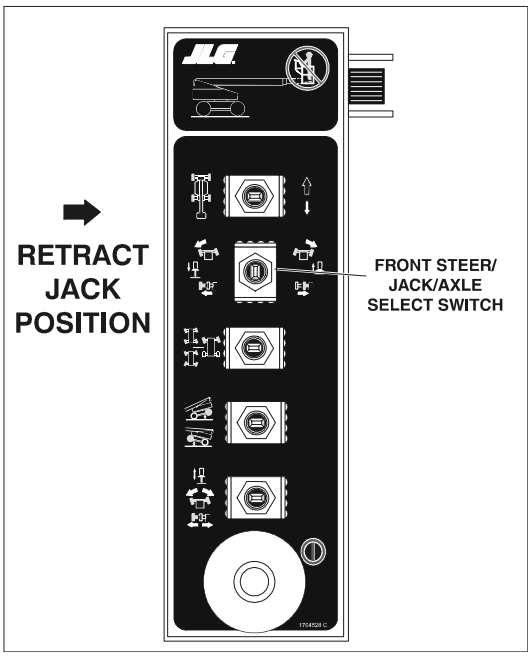
6. Push and hold the Jack/Steer/Axle Select switch in the Axle position.



7. Position Front Steer/Jacks/Axle switch to the Extend Axle position until axles are fully extended and the Axles Set light is on.
8. If the light does not illuminate when the axles are fully extended, contact a qualified service technician before continuing operation.

NOTE: *If no function is selected and the power is still on, the jack will automatically retract after a period of 7 seconds.*

9. Push and hold the Jack/Steer/Axle Select switch in the Jack position.



10. Position the Front Steer/Jacks/Axle switch to the Retract Jack position until the jack is fully retracted.
11. Repeat steps 1 thru 10 for the opposite axle.

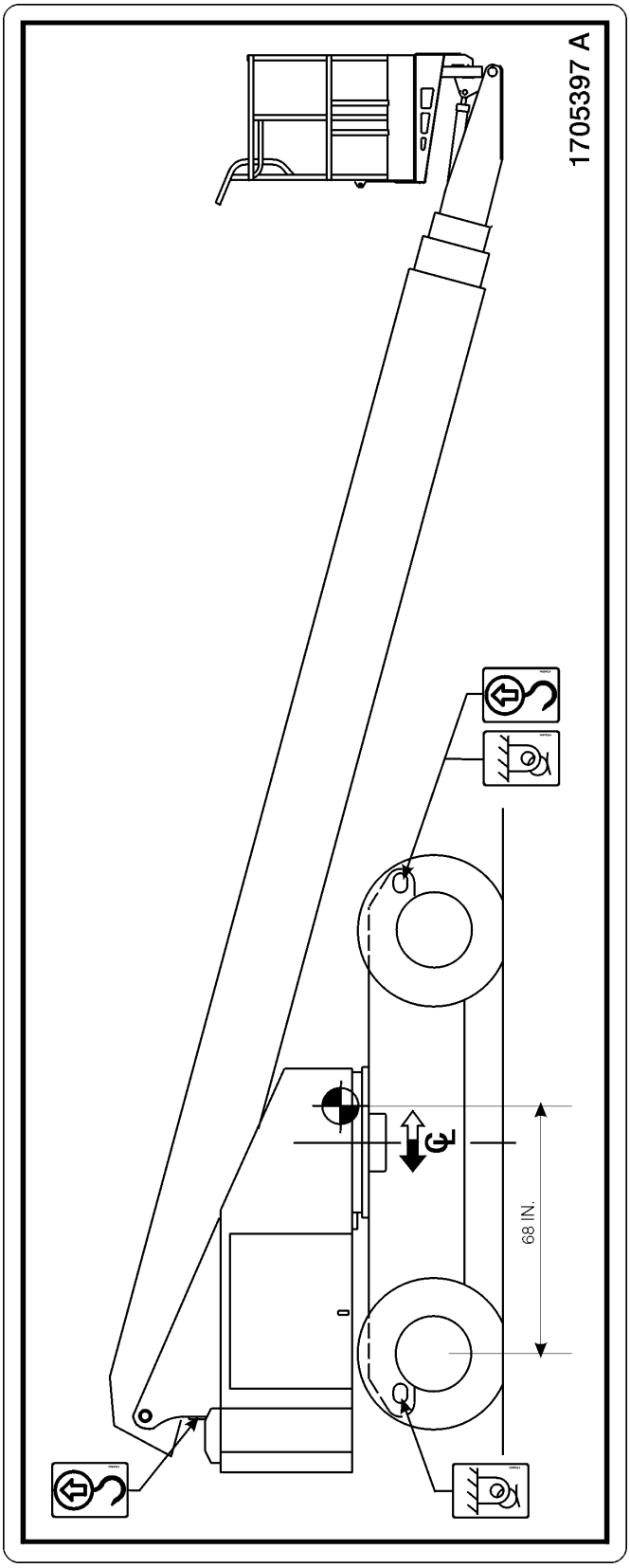


Figure 4-6. Lifting Chart - 100SX and 110SX

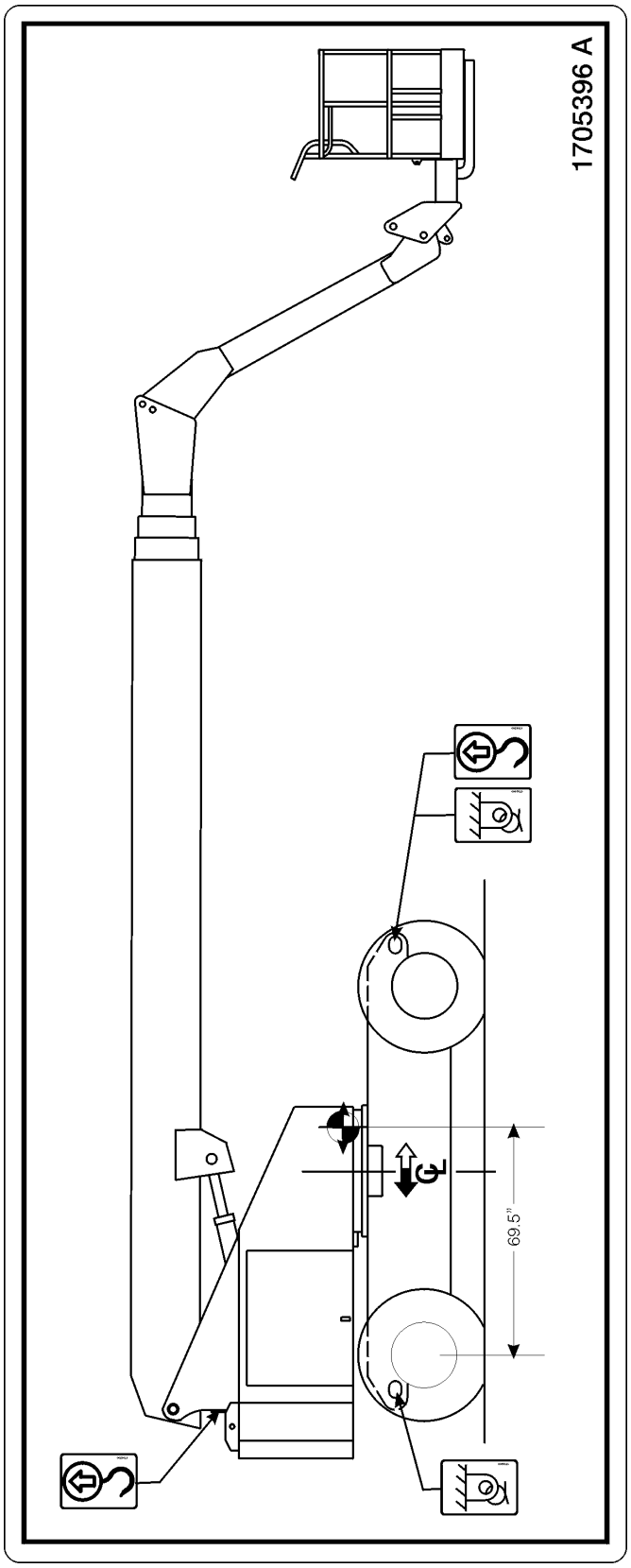


Figure 4-7. Lifting Chart - 110SXJ

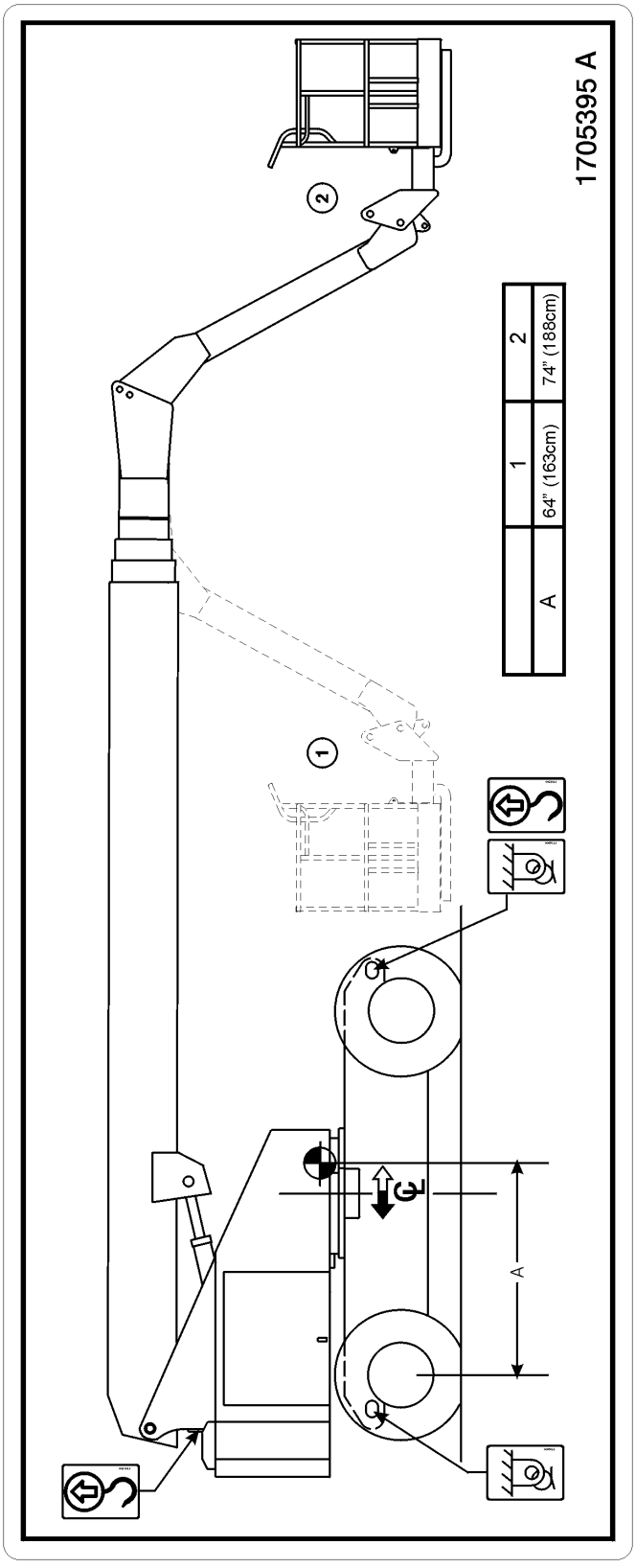


Figure 4-8. Lifting Chart - 120SXJ

4.11 BOOM

⚠ WARNING

A RED TILT ALARM WARNING LIGHT, LOCATED ON THE CONTROL CONSOLE, LIGHTS WHEN THE CHASSIS IS ON A SEVERE SLOPE (5 DEGREES OR GREATER). DO NOT SWING, EXTEND OR RAISE BOOM ABOVE HORIZONTAL WHEN LIT.

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

TO AVOID UPSET, IF RED TILT ALARM WARNING LIGHT LIGHTS WHEN MAIN BOOM IS EXTENDED OR RAISED ABOVE HORIZONTAL, RETRACT AND LOWER PLATFORM TO NEAR GROUND LEVEL. THEN REPOSITION MACHINE SO THAT CHASSIS IS LEVEL BEFORE EXTENDING OR RAISING BOOM.

TRAVELING WITH BOOM RETRACTED AND BELOW HORIZONTAL IS PERMITTED ON GRADES AND SIDE SLOPES SPECIFIED ON CAUTION PLACARD AT PLATFORM.

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

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

Swinging the Boom

IMPORTANT

ASSURE THAT TURNTABLE LOCK IS DISENGAGED BEFORE STARTING ANY SWING OPERATION.

1. Depress footswitch to swing boom, position SWING control switch or controller to RIGHT or LEFT for direction desired.

Raising and Lowering the Main Boom

To raise and lower Boom, position LIFT control switch or controller to UP OR DOWN and hold until desired height is reached.

Telescoping the Main Boom

To extend or retract Boom, position TELESCOPE control switch to IN or OUT and hold until platform reaches desired position.

4.12 SHUT DOWN AND PARK

1. Drive machine to a protected area.
2. Position HIGH ENGINE speed control switch on Platform Control Console to LOW.
3. Assure main boom is fully retracted and lowered over rear (Drive) axle; all access panels and doors closed and secured.
4. Remove all load and allow engine to operate 3-5 minutes at LOW setting to permit reduction of engine internal temperatures.
5. At Ground Controls, turn MASTER SWITCH to (center) OFF. Position, the emergency stop switch (down) to OFF.
6. Cover the Platform Control Console to protect instruction placards, warning decals and operating controls from hostile environment.

4.13 TIE DOWN AND LIFTING

When transporting machine, boom must be in the stowed mode with turntable lock pin engaged and machine securely tied down to truck or trailer deck. Four tie down eyes are provided in the frame slab, one at each corner of the machine.

If it becomes necessary to lift the machine using an overhead or mobile crane, it is very important that the lifting devices are attached only to the designated lifting eyes, and that the turntable lock pin is engaged. See Figure 4-6., Lifting Chart - 100SX and 110SX, Figure 4-7., Lifting Chart - 110SXJ, and Figure 4-8., Lifting Chart - 120SXJ.

NOTE: *Lifting eyes are provided at the front and rear in the frame slab. Each of the four chains or slings used for lifting machine must be adjusted individually so machine remains level when elevated.*

IMPORTANT

SECURE TURNTABLE WITH TURNTABLE LOCK BEFORE TRAVELING LONG DISTANCES OR HAULING MACHINE ON TRUCK/ TRAILER.

4.14 STEER/TOW SELECTOR (IF EQUIPPED)

⚠ CAUTION

DO NOT ATTEMPT TO TOW MACHINE UNLESS EQUIPPED WITH COMPLETE TOW PACKAGE FROM MANUFACTURER. FAILURE TO DO SO COULD DAMAGE THE MACHINE.

A push-pull type selector valve located adjacent to the steer cylinder assembly and linkage regulates oil flow in the steer circuit for steering and towing applications. When steering the unit (self-propelled operation) the valve knob is pushed IN. When towing the unit the valve knob is pulled OUT to the float position.

4.15 TOWING (IF EQUIPPED)

⚠ WARNING

RUNAWAY VEHICLE/MACHINE HAZARD. 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 SPEED 5 M.P.H. (8 K.M.H.).

Prior to towing the machine, complete the following:

⚠ CAUTION

DO NOT TOW MACHINE WITH ENGINE OPERATING OR DRIVE HUBS ENGAGED.

1. Retract, lower and position boom over rear drive wheels in line with direction of travel; lock turntable.
2. Connect towbar to front of frame with attach pins, and towbar to towing vehicle.
3. Disconnect drive hubs by inverting disconnect cap. (See Figure 4-9., Drive Disconnect Hub.)
4. Actuate steer/tow selector valve for towing; pull valve knob OUT to float position. (This opens the steer circuit to reservoir, allowing the steer cylinder rod free travel.) The machine is now in the towing mode.

After towing the machine, complete the following:

1. Actuate steer/tow selector valve for steering; push valve knob IN to the actuated position.
2. Reconnect drive hubs by inverting disconnect cap. (See Figure 4-9., Drive Disconnect Hub.)
3. Disconnect towbar from steering hitch and from towing vehicle. The machine is now in the driving mode.

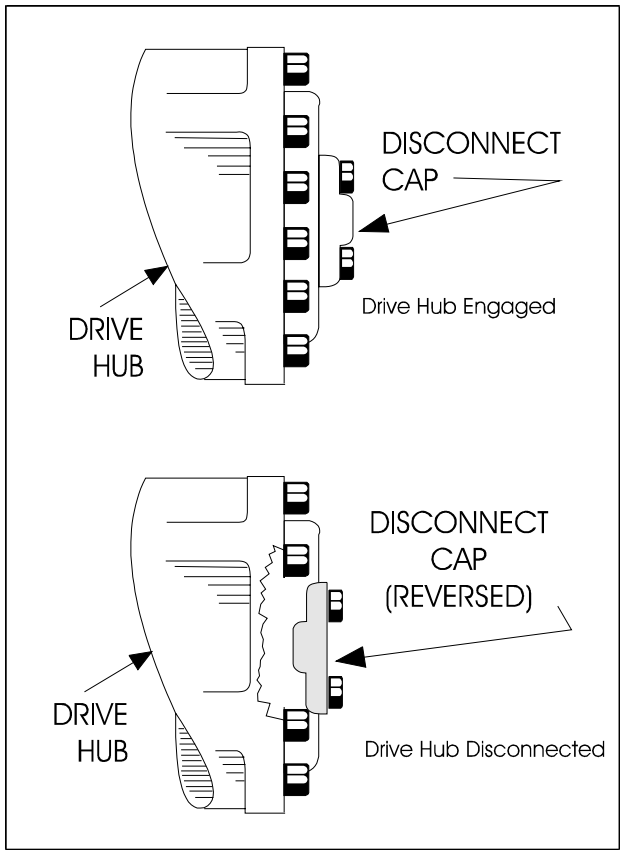
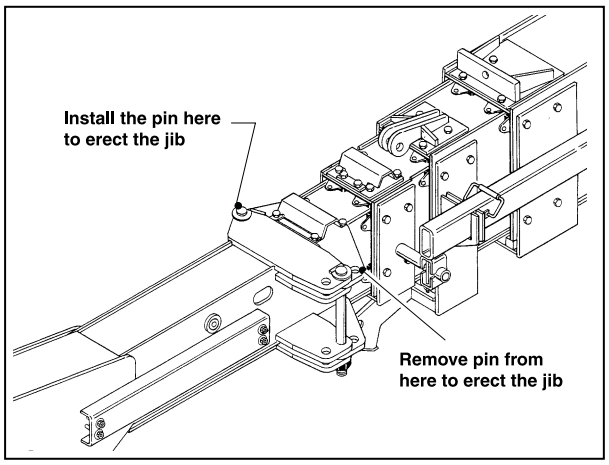


Figure 4-9. Drive Disconnect Hub

4.16 SWING-AWAY JIB (120SXJ ONLY)

To Erect the Jib

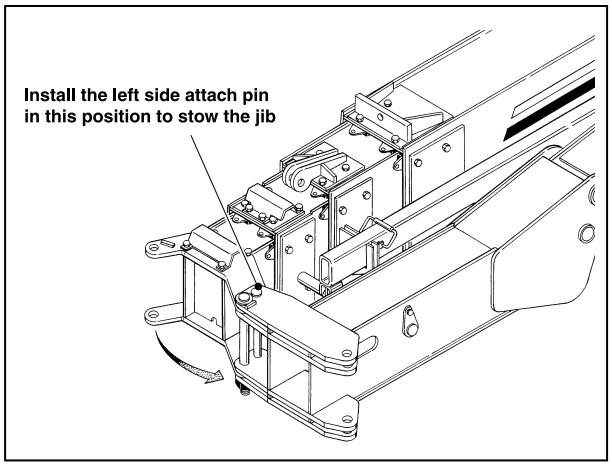
1. Remove the lockpin from the jib plates.
2. With the aid of an assistant, swing the jib until straight with the boom and the holes in the jib plates align.



3. Install the lockpin through aligned holes in the jib plates. The machine can now be operated from the platform controls.

To Stow the Jib

1. Remove the lockpin from the jib plates.
2. With the aid of an assistant, swing the jib closed until its alongside the boom and the holes in the jib plates align.



3. Install the lockpin through the aligned holes in the jib plates. The machine must now be operated from the ground controls or the remote control box.

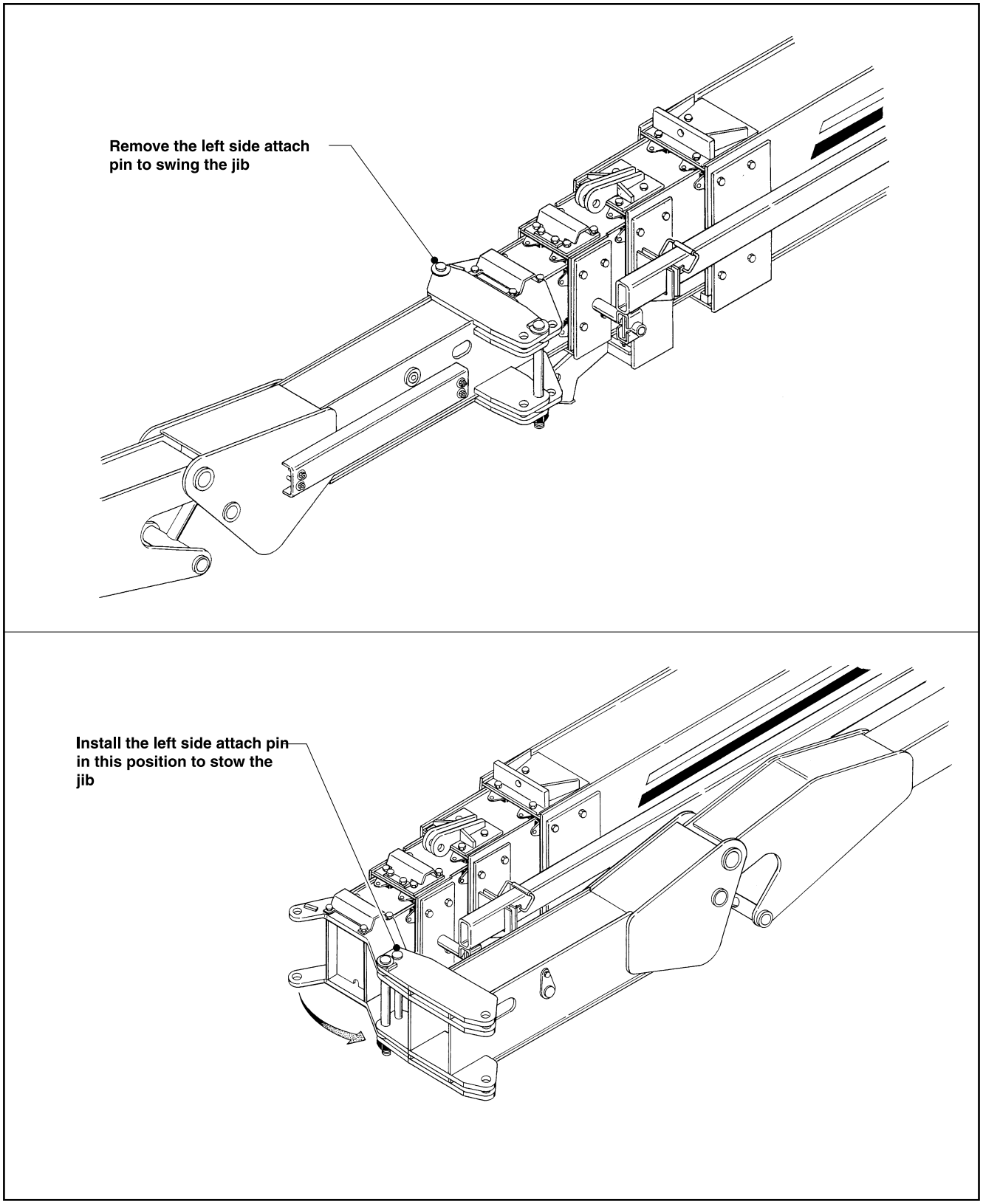


Figure 4-10. Swing-Away Jib

This page left blank intentionally.

SECTION 5. OPTIONAL EQUIPMENT

5.1 DUAL FUEL SYSTEM (GAS ENGINE ONLY)

Description

The dual fuel system enables the standard gasoline engine to run on either gasoline or LP gas. The system includes pressurized cylinders mounted on the frame, and the valves and switches needed to switch the fuel supply from gasoline to LP gas or from LP gas to gasoline.

A two position, FUEL toggle switch at the ground control station supplies electrical power to open the gasoline gas shut-off solenoid and close the LP gas shut off solenoid when positioned to the GASOLINE position. This switch supplies electrical power to open the LP gas shut-off solenoid and close the gasoline shut-off solenoid when positioned to the LP position.

IT IS POSSIBLE TO SWITCH FROM ONE FUEL SOURCE TO THE OTHER WITHOUT ALLOWING THE ENGINE TO STOP. EXTREME CARE MUST BE TAKEN AND THE FOLLOWING INSTRUCTIONS MUST BE FOLLOWED.

Changing From Gasoline to LP Gas

1. Start engine from Ground Control Station.
2. Open hand valve on LP gas supply tank by turning counterclockwise.

⚠ CAUTION

BE SURE GASOLINE IS EXHAUSTED BEFORE SWITCHING TO LP GAS. SEE STEP (3) BELOW.

3. While engine is operating, place DUAL FUEL switch at Ground Control to center OFF position. Allow engine to operate without load, until engine begins to stumble from lack of gasoline. As engine begins to stumble, place the switch to LP position, allowing LP gas to flow to the fuel regulator.

Changing From LP Gas to Gasoline

1. With engine operating on LP under a no-load condition, position DUAL FUEL switch at Ground Control Station to GASOLINE position.
2. If engine stumbles because of lack of gasoline, place the switch to LP position until engine regains smoothness, then return switch to GASOLINE position. Repeat as necessary until engine runs smoothly on gasoline.
3. Close hand valve on LP gas supply tank by turning clockwise.

5.2 MOTION ALARM

A 12-volt alarm horn, mounted on the turntable, provides an audible warning when the machine is in the travel (DRIVE) mode. It will function in FORWARD or REVERSE and for boom functions to warn jobsite personnel the machine is traveling.

5.3 ELECTRIC GENERATOR

An electric generator mounted on the machine functions to supply electrical power to the platform. This device will provide enough power to run assorted power tools.

5.4 STROBE LIGHT

An amber or red rotating beacon may be installed on the hood or platform. The light will come on when the ignition switch is in the on position.

5.5 CYLINDER BELLOWS

A one piece accordion shaped rubber bellows may be attached to the rod end of the cylinder barrel and to the cylinder rod as close to the rod attach bushing as possible. The bellows affords protection to the cylinder rod in either the extended or retracted position. The bellows are installed on the lift cylinder, slave cylinder, master cylinder and steer cylinder.

5.6 BOOM WIPERS

A one piece U-shaped neoprene strip, be attached to the front of the base boom section, wipes the top and both sides of the fly section. The bottom side of the fly section is protected by a straight neoprene strip which also attaches to the base section.

5.7 110 VOLT/60HZ GENERATOR

A 110 volt generator, mounted beside the engine, is belt driven from the output shaft of the engine. This application provides for a 110 volt receptacle at the ground control and also at the platform. The lead from the ground control and also at the platform. The lead from the ground control to the platform is routed along the boom power track thus eliminating the use of extension cords hanging freely from the platform.

5.8 220 VOLT RECEPTACLE

A 220 volt receptacle may be mounted on the platform support to eliminate extension cords hanging from the platform. The lead from the receptacle is routed along the boom power track to the engine compartment. In the engine compartment, a plug is installed on the lead for attachment to an extension cord or a receptacle from a 220 volt power source. When not in use the plug is stored in a junction box mounted on the engine compartment frame.

5.9 SPARK ARRESTOR MUFFLER

The spark arrestor is mounted directly aft of the standard muffler and serves to contain any sparks the engine might emit that a standard muffler normally would not. The spark arrestor is a vital option for machines which are operated in areas where combustible materials are used. The spark arrestor is available for gasoline, LP gas, and diesel engines.

5.10 110 VOLT RECEPTACLE

A 110 volt receptacle may be mounted on the platform control console to eliminate extension cords hanging from the platform. The lead from the receptacle is routed along the boom power track to the battery and ground control compartment at the front of the machine. A plug is installed on the end of the lead for attachment to an extension cord or a receptacle from a 110 volt power source. When not in use the excess wire and plug are to be stowed.

SECTION 6. EMERGENCY PROCEDURES

6.1 GENERAL

This section provides information on the procedures to be followed and on the systems and controls to be used in the event an emergency situation is encountered during machine operation. Prior to operation of the machine and periodically thereafter, the entire operating manual, including this section, should be reviewed by all personnel whose responsibilities include any work or contact with the machine.

6.2 EMERGENCY TOWING PROCEDURES

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

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

After moving machine, complete the following procedures:

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

6.3 EMERGENCY CONTROLS AND THEIR LOCATIONS

Emergency Stop Switches

There is an emergency stop switch at both the Ground Controls and Platform Controls. When positioned to OFF it will immediately stop the machine.

⚠ WARNING

CHECK MACHINE DAILY TO MAKE SURE EMERGENCY STOP SWITCH GUARD IS IN PLACE AND THAT GROUND CONTROL INSTRUCTIONS ARE IN PLACE AND LEGIBLE.

Ground Control Station

The Ground Control Station is located on the right front side of the turntable. The controls on this panel provide the means for overriding the platform controls, and for controlling the platform level, boom and swing functions from the ground. Place the SELECT switch to GROUND position and operate the proper switch to lift, swing, or telescope the boom, or level the platform.

Auxiliary Power

A toggle type auxiliary power control switch is located on the platform control station and another is located on the ground control station. Operation of either switch turns on the electrically driven auxiliary hydraulic pump. This should be used in case of failure of the main power plant. The auxiliary pump will operate boom lift, telescope and swing. To activate auxiliary power:

1. Position the platform/ground SELECT SWITCH to PLATFORM.
2. Position the EMERGENCY STOP switch to ON.
3. Depress and hold footswitch.
4. Operate appropriate control switch, lever or controller for desired function and hold.
5. Position the AUXILIARY POWER switch to ON and hold.
6. Release the AUXILIARY POWER switch, selected control switch, lever or controller, and footswitch.
7. Position the EMERGENCY STOP switch to OFF.

To activate auxiliary power from the ground control station:

1. Position the platform/ground SELECT SWITCH to GROUND.
2. Position EMERGENCY STOP switch to ON.
3. Operate appropriate control switch or controller for desired function and hold.
4. Position the AUXILIARY POWER switch to ON and hold.
5. Release the AUXILIARY POWER switch, and appropriate control switch or controller.
6. Position the EMERGENCY STOP switch to OFF.

6.4 EMERGENCY OPERATION

Use of Ground Controls

KNOW HOW TO USE THE GROUND CONTROLS IN AN EMERGENCY SITUATION.

Ground personnel must be thoroughly familiar with the machine operating characteristics and the ground control

functions. Training should include operation of the machine, review and understanding of this section and hands-on operation of the controls in simulated emergencies.

Operator Unable to Control Machine

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

⚠ WARNING

DO NOT OPERATE WITH PRIMARY POWER SOURCE (ENGINE) IF PERSONS ARE PINNED OR TRAPPED. USE AUXILIARY POWER INSTEAD.

1. Operate the machine from ground controls ONLY with the assistance of other personnel and equipment (cranes, overhead hoists, etc.) as may be required to safely remove the danger or emergency condition.
2. Other qualified personnel on the platform may use the platform controls with regular or auxiliary power. DO NOT CONTINUE OPERATION IF CONTROLS DO NOT FUNCTION NORMALLY.
3. Cranes, forklift trucks or other equipment which may be available are to be used to remove platform occupants and stabilize motion of the machine in case machine controls are inadequate or malfunction when used.

Platform or Boom Caught Overhead

If the platform or boom becomes jammed or snagged in overhead structures or equipment, do not continue operation of the machine from either the platform or the ground until the operator and all personnel are safely moved to a secure location. Only then should an attempt be made to free the platform using any necessary equipment and personnel. Do not operate controls to cause one or more wheels to leave the ground.

Righting a Tipped Machine

No attempt should be made to right the machine using platform or ground controls. A fork truck of suitable capacity or equivalent equipment may be placed under the elevated side of the chassis. A crane or other lifting equipment may also be used to lift the platform while the chassis is lowered by a fork truck, jacks, or other means. Remove all personnel and equipment from the area before starting operation.

Post Incident Inspection and Repair

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 10 feet (3 m) until you are sure that all damage has been repaired, if required, and that all controls are operating correctly.

6.5 INCIDENT NOTIFICATION

It is imperative that JLG Industries, Inc. 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.

JLG Phone:877-JLG-SAFE (554-7233)
(8am till 4:45pm EST)

It should be noted that 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.

SECTION 7. INSPECTION AND REPAIR LOG

Table 7-1.Inspection and Repair Log

Date	Comments

Table 7-1.Inspection and Repair Log

Date	Comments

JLG Industries, Inc.

TRANSFER OF OWNERSHIP

To: JLG, Gradall, Lull and Sky Trak product owner:

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

Please use this form to provide JLG with updated information with regard to the current ownership of JLG Products. Please return completed form to the JLG Product Safety & Reliability Department via facsimile (717) 485-6573 or mail to address as specified on the back of this form.

Thank you,
Product Safety & Reliability Department
JLG Industries, Inc.
1 JLG Drive
McConnellsburg, PA 17233-9533
Telephone: (717) 485-5161
Fax: (717) 485-6573

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

Mfg. Model: _____

Serial Number: _____

Previous Owner: _____

Address: _____

City: _____ State: _____

Zip: _____ Telephone: (_____) _____

Date Of Transfer: _____

Current Owner: _____

Address: _____

City: _____ State: _____

Zip: _____ Telephone: (_____) _____

Who in your organization should we notify?

Name: _____

Title: _____

Please cut on the dotted line and fax to 717-485-6573

Corporate Office
JLG Industries, Inc.
1 JLG Drive
McConnellsburg PA. 17233-9533
USA
Phone: (717) 485-5161
Customer Support Toll Free: (877) 554-5438
Fax: (717) 485-6417

JLG Worldwide Locations

JLG Industries (Australia)
P.O. Box 5119
11 Bolwarra Road
Port Macquarie
N.S.W. 2444
Australia
Phone: (61) 2 65 811111
Fax: (61) 2 65 810122

JLG Industries (UK)
Unit 12, Southside
Bredbury Park Industrial Estate
Bredbury
Stockport
SK6 2sP
England
Phone: (44) 870 200 7700
Fax: (44) 870 200 7711

JLG Deutschland GmbH
Max Planck Strasse 21
D-27721 Ritterhude/Ihlpohl
Bei Bremen
Germany
Phone: (49) 421 693 500
Fax: (49) 421 693 5035

JLG Industries (Italia)
Via Po. 22
20010 Pregnana Milanese - MI
Italy
Phone: (39) 02 9359 5210
Fax: (39) 02 9359 5845

JLG Latino Americana Ltda.
Rua Eng. Carlos Stevenson,
80-Suite 71
13092-310 Campinas-SP
Brazil
Phone: (55) 19 3295 0407
Fax: (55) 19 3295 1025

JLG Europe B.V.
Jupiterstraat 234
2132 HJ Foofddorp
The Netherlands
Phone: (31) 23 565 5665
Fax: (31) 23 557 2493

JLG Industries (Norge AS)
Sofeimyrveien 12
N-1412 Sofienyr
Norway
Phone: (47) 6682 2000
Fax: (47) 6682 2001

JLG Polska
Ul. Krolewska
00-060 Warsawa
Poland
Phone: (48) 91 4320 245
Fax: (48) 91 4358 200

JLG Industries (Europe)
Kilmartin Place,
Tannochside Park
Uddingston G71 5PH
Scotland
Phone: (44) 1 698 811005
Fax: (44) 1 698 811055

JLG Industries (Pty) Ltd.
Unit 1, 24 Industrial Complex
Herman Street
Meadowdale
Germiston
South Africa
Phone: (27) 11 453 1334
Fax: (27) 11 453 1342

Plataformas Elevadoras
JLG Iberica, S.L.
Trapadella, 2
P.I. Castellbisbal Sur
08755Castellbisbal
Spain
Phone: (34) 93 77 24700
Fax: (34) 93 77 11762

JLG Industries (Sweden)
Enkopingsvagen 150
Box 704
SE - 175 27 Jarfalla
Sweden
Phone: (46) 8 506 59500
Fax: (46) 8 506 59534