

Operator's Manual

BIL-JAX
A STEP ABOVE®

4527A
Hydraulic Articulating Boom Lift



B33-01-0095

SUMMITSERIES
TRAILER-MOUNTED BOOMS™

BOOM PERSONNEL LIFT

This equipment is designed and manufactured in compliance with the duties, responsibilities and standards set forth for manufacturers in the ANSI 92.2 standard at the time of manufacture.

This equipment will meet or exceed applicable OSHA and ANSI codes and standards when operated in accordance with sections 7, 8, 9 and 10 of ANSI A92.2 and all other manufacturer's recommendations.

It is the responsibility of the user to follow all ANSI, OSHA, federal, state and local codes and regulations that govern the safe operation of this equipment.

Obtain, read and obey all safety precautions before performing maintenance or repairs or attempting to operate this equipment. This includes all manufacturer's recommendations as well as those directives set forth by ANSI, OSHA, federal, state and local authorities.

To ensure proper and safe use of this equipment, it is strongly recommended that only trained and authorized personnel attempt to operate and maintain the boom lift.

This manual shall be considered a permanent and necessary component of the machine and shall be kept with the boom lift at all times.

Bil-Jax, Inc. is dedicated to the continuous improvement of this and all Bil-Jax products. Therefore, equipment information is subject to change without notice. Direct any questions or concerns regarding errors or discrepancies in this manual to the Bil-Jax Service Department.

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1 SAFETY

Familiarity with all equipment and proper training are required for the safe operation of any mechanical device. Attempting to operate any mechanical equipment improperly or without training creates a situation that is potentially hazardous. Prior to operation, read the instructions and safety precautions included in this manual and attached to the lift. Become familiar with the proper use of all controls. Inexperienced operators should receive instruction before attempting to operate or maintain the machine.

Always follow the safety procedures set forth in this manual as well as all applicable ANSI, OSHA, state and local regulations. Persons under the influence of drugs, alcohol or prescription medications should not be allowed on or near this equipment. Do not operate in areas where the machine or its operator may come into contact with a live power source.

The information contained herein is provided to alert Bil-Jax customers to the normal procedures for the operation and maintenance of the Bil-Jax Model 4527A Articulating Boom Lift. This information is not intended to be all-inclusive, nor is it to be considered legal advice. These procedures are to be followed in the care and maintenance of the named Bil-Jax equipment only.

For any questions concerning the safe use of this equipment, contact the Bil-Jax Service Department at 800-537-0540 before attempting operation.

The use of intelligence and common sense is the best practice in following any safety policy.

SAFETY NOTICES

This manual contains a variety of notices that must be observed to prevent the possibility of improper service, personnel injury or death, or damage to the equipment.



DANGER

Warns of operation near electrical power sources that could lead to personal injury or death.



WARNING

Describes conditions or practices that could lead to personal injury or death.



CAUTION

Contains information important in the prevention of errors that could damage machine or components.

NOTE: Contains additional information important for performing a procedure.

BEFORE OPERATION

Ensure the following general safety precautions are followed before operating the Bil-Jax Model 4527A Articulating Boom Lift:

ALWAYS survey the usage area for potential hazards, such as untamped earth fills, unlevel surfaces, overhead obstructions and electrically charged conductors or wires. Maintain awareness of any potential hazards. ALWAYS watch for moving vehicles in the operating area.

ALWAYS read, understand and obey the procedures set forth in this manual before attempting to operate equipment.

ALWAYS inspect the equipment for damaged or worn parts. Check for cracked welds, hydraulic leaks, damaged wiring, loose wire connectors, damaged outriggers, low tire pressure, uneven tire wear or tire damage. Check for any improperly operating components. NEVER operate equipment if any damage is present or suspected. Damaged or malfunctioning equipment must be repaired before operation.

ALWAYS wear proper clothing. Wear protective equipment as required by federal, state and local regulations. Keep loose clothing, jewelry, gloves and hair away from moving parts.

ALWAYS wear a safety harness and lanyard.

ALWAYS locate, read and obey all directions and warnings displayed on the equipment.

ALWAYS inspect the equipment for DO NOT USE tags placed by previous operators or maintenance personnel. NEVER use equipment tagged in this way until all repairs are made and all DO NOT USE tags are removed by authorized personnel.

ALWAYS inspect the platform and the outrigger footpads for mud, grease, or other slippery material. ALWAYS remove any such material from the equipment to reduce the possibility of slippage.

NEVER allow improperly trained personnel to operate this equipment. Only trained and authorized personnel shall operate this equipment.

NEVER operate this equipment while under the influence of drugs or alcohol, while taking prescription medications, while feeling ill or prone to dizziness. Operators must be physically fit and thoroughly trained.

NEVER modify, alter or change the equipment in any way that would affect its original design or operation.

NEVER operate equipment in any way for which it is not intended.

DURING OPERATION

Ensure the following general safety precautions are followed during the operation of the Bil-Jax Model 4527A Articulating Boom Lift:

DO position lift away from power sources to ensure that no part of the lift can accidentally reach into an unsafe area. This includes full extension of the boom through 700 degrees rotation.



DANGER

This machine is not insulated for use near electrical power lines and DOES NOT provide protection from contact with or close proximity to any electrically charged conductor. Operator must maintain safe clearances at all times (10 feet/3.05 meters minimum) and always allow for platform movement such as wind-induced sway. Always contact the power company before performing work near power lines. Assume every power line is live. Remember, power lines can be blown by the wind. Refer to Table 1-1 for minimum safe approach distances between the machine and electrical power lines.

Table 1-1. Minimum Safe Approach Distances

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance	
	(Feet)	(Meters)
0 to 300V	Avoid Contact	
Over 300V to 50KV	10	3.05
Over 50KV to 200KV	15	4.60
Over 200KV to 350KV	20	6.10
Over 350KV to 500KV	25	7.62
Over 500KV to 750KV	35	10.67
Over 750KV to 1000KV	45	13.72

ALWAYS operate only on a firm and level surface. NEVER operate equipment on surfaces that do not support the equipment with its rated load capacity or on surfaces that do not support force exerted on the outriggers during boom extension and rotation.

ALWAYS keep personnel away from potential pinch or shear points.

ALWAYS report any misuse of equipment to the proper authorities.

ALWAYS maintain sure footing on the work platform. ALWAYS wear proper footgear. NEVER wear shoes with slippery or slick soles.

ALWAYS keep personnel and obstructions clear of the machine when repositioning basket.

ALWAYS cordon the area surrounding the outriggers to keep personnel and other equipment away from the machine while in use.

ALWAYS stay clear of wires, cables and other overhead obstructions.

ALWAYS engage the boom travel latches before towing the trailer.

NEVER allow electrode contact with any part of the machine while welding from the platform.

NEVER use without the outriggers fully extended and firmly based.

NEVER override or bypass the manufacturer's safety devices.

NEVER attach a safety harness to an adjacent structure, pole, or to nearby equipment while working from the boom platform.

NEVER raise the outriggers or move the trailer with materials or personnel on board, or while the boom is raised or extended.

NEVER sit, stand or climb on cage bars. ALWAYS keep both feet firmly on work cage floor when working from the elevated platform.

NEVER attempt to increase working height with boxes, ladders, stools or any other materials.

NEVER operate this equipment when exposed to high winds, thunderstorms, ice or any other weather conditions that would compromise operator safety.

NEVER allow ropes, electric cords, hoses or other equipment to become entangled in the machine while raising or lowering the platform.

NEVER exceed the load limits set by the manufacturer. Use only the Material Lifting Hook, supplied as an option and manufactured by Bil-Jax, when lifting materials. Safely stow all tools and equipment.

NEVER exceed load ratings by transferring loads to the lift at elevated heights.

NEVER use cage to carry materials. NEVER allow overhang of materials when raising or lowering the platform.

NEVER use the boom or platform to push or pull or to lift any part of the trailer.

NEVER use the boom or platform to place a load against any structure, materials, or equipment.

NEVER climb on the boom. In the case of power failure or equipment malfunction, refer to the instructions for manual operation.

NEVER leave the keys in the boom lift while unattended or not in use.

MAINTENANCE SAFETY

Ensure the following safety precautions are observed whenever maintenance is performed on the Bil-Jax 4527A Articulating Boom Lift.

General Maintenance

ALWAYS perform maintenance procedures according to manufacturer's guidelines. NEVER disregard or bypass proper maintenance procedures.

ALWAYS inspect hydraulic system to ensure that all lines, connectors and fittings are properly fastened and in good condition.

ALWAYS turn the key switch OFF before performing maintenance on valve solenoids or other electric and electronic devices.

ALWAYS disconnect power to the hydraulic pump drive motor before making electrical checks of the hydraulic valves.

ALWAYS keep all mechanical parts properly adjusted and lubricated according to maintenance schedule and manufacturer's specifications.

ALWAYS perform a function check of operating controls before each use and after repairs have been made.

ALWAYS locate and protect against possible pinch points prior to performing maintenance and repairs.

ALWAYS use factory-approved parts to repair or maintain equipment. If any portion of this equipment is rebuilt or repaired, retesting is required in accordance with factory instructions.

ALWAYS maintain a safe distance while testing the hydraulic components. NEVER test or operate the hydraulic components while personnel are near the equipment.

NEVER allow water or foreign particles into the DC electric motor housing. Inclusion of water or foreign particles may cause serious damage to the motor. If the motor becomes wet, consult Bil-Jax Service Department for proper drying instructions.

NEVER add unauthorized fluids to the hydraulic system or battery. NEVER mix hydraulic oils. Consult manufacturer specifications. Refer to Section 4 for hydraulic system maintenance instructions.

NEVER exceed the manufacturer's recommended relief valve settings.

NEVER touch or allow metal tools to contact any electronic components that are sensitive to static discharge. ALWAYS use static discharge prevention mats and grounding devices when handling electronic components.

NEVER adjust, repair, replace or bypass any hydraulic or electrical control or safety device. These include, but are not limited to, hydraulic load control and flow control valves, solenoid valves and limit switches. Contact the Bil-Jax Service Department at 800-537-0540 if these components require maintenance.

NEVER attempt repairs or maintenance without first consulting manufacturer regarding proper procedures.

Battery Maintenance

Ensure the following general safety precautions are followed whenever performing battery maintenance on the Bil-Jax Model 4527A Articulating Boom Lift:

ALWAYS check battery acid level daily.

ALWAYS wear safety glasses when working with or near batteries.

ALWAYS avoid contact with battery acid. Battery acid causes serious burns and should be kept away from skin and eyes. If contact occurs, flush with water and consult a physician immediately.

ALWAYS disconnect ground cable first when removing battery.

ALWAYS connect ground cable last when installing battery.

ALWAYS charge batteries in open, well-ventilated areas.

NEVER smoke while servicing battery.

NEVER charge batteries near flammable materials.

NEVER allow batteries to overcharge and boil.

NEVER short across battery posts to check for current. NEVER break a live circuit at the battery.

NEVER disconnect battery from charger while charger is connected to a live power source.

NEVER jumpstart other vehicles using boom lift battery.

DAMAGED EQUIPMENT POLICY

Safety Statement

At Bil-Jax, we are dedicated to the safety of all users of our products. All Bil-Jax lifts are designed, manufactured and tested to comply with current applicable federal OSHA and ANSI codes and regulations.

Damage Policy

There may be occasions when a Bil-Jax lift is involved in an incident that results in structural damage to the lift. Such damage can seriously compromise the ability of the lift to perform in a safe manner. Therefore, whenever a Bil-Jax lift is damaged structurally or when there is suspected internal damage to the structure, Bil-Jax may require that the lift be returned to our facility for reconditioning. For any questions concerning structural damage or the Damaged Equipment Policy, please contact the Bil-Jax Service Department at 800-537-0540.

Damage Repair Notice

There may be occasions when a Bil-Jax lift is involved in an accident resulting in damage to non-structural components. When such damage occurs and repairs are made by the owner or area distributor, please notify Bil-Jax of these non-maintenance repairs and request a repair form to be filled out and returned to Bil-Jax.

Bil-Jax, Inc.

125 Taylor Parkway
Archbold, Ohio 43502
800-537-0540

REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect that could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Bil-Jax, Inc.

If the NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, the NHTSA cannot become involved in any individual problems between operators, users, or lessors, and Bil-Jax, Inc.

To contact the NHTSA you may either call the Auto Safety Hotline toll-free at 800-424-9393 (366-0123 in the Washington, DC area) or write to:

NHTSA
U.S. DEPARTMENT of TRANSPORTATION
400 7th Street SW (NSA-11)
Washington, DC 20590

You can also obtain other information regarding motor vehicle safety by calling the Hotline.

2 GENERAL INTRODUCTION

The Bil-Jax 4527A Articulating Boom Lift (Figure 2-1) is a Summit Series™ Trailer-Mounted Boom, designed and manufactured to position personnel with their tools and equipment at overhead work locations. The work platform load capacity is rated at 500 pounds. During all boom operations, four extended outriggers support the unit.

The boom lift is battery powered and operated with electronic pushbutton controls, a hydraulic power unit, a hydraulic gear motor and hydraulic cylinders. The hydraulic power unit includes a reservoir, pump and control valves. Three hydraulic cylinders elevate the lower boom, upper boom and jib boom. A fourth cylinder extends a telescopic boom. A master and slave cylinder maintain the work platform at level while raising and lowering the boom. The hydraulic motor and mating worm gear allow the boom to rotate 700° around a vertical axis.

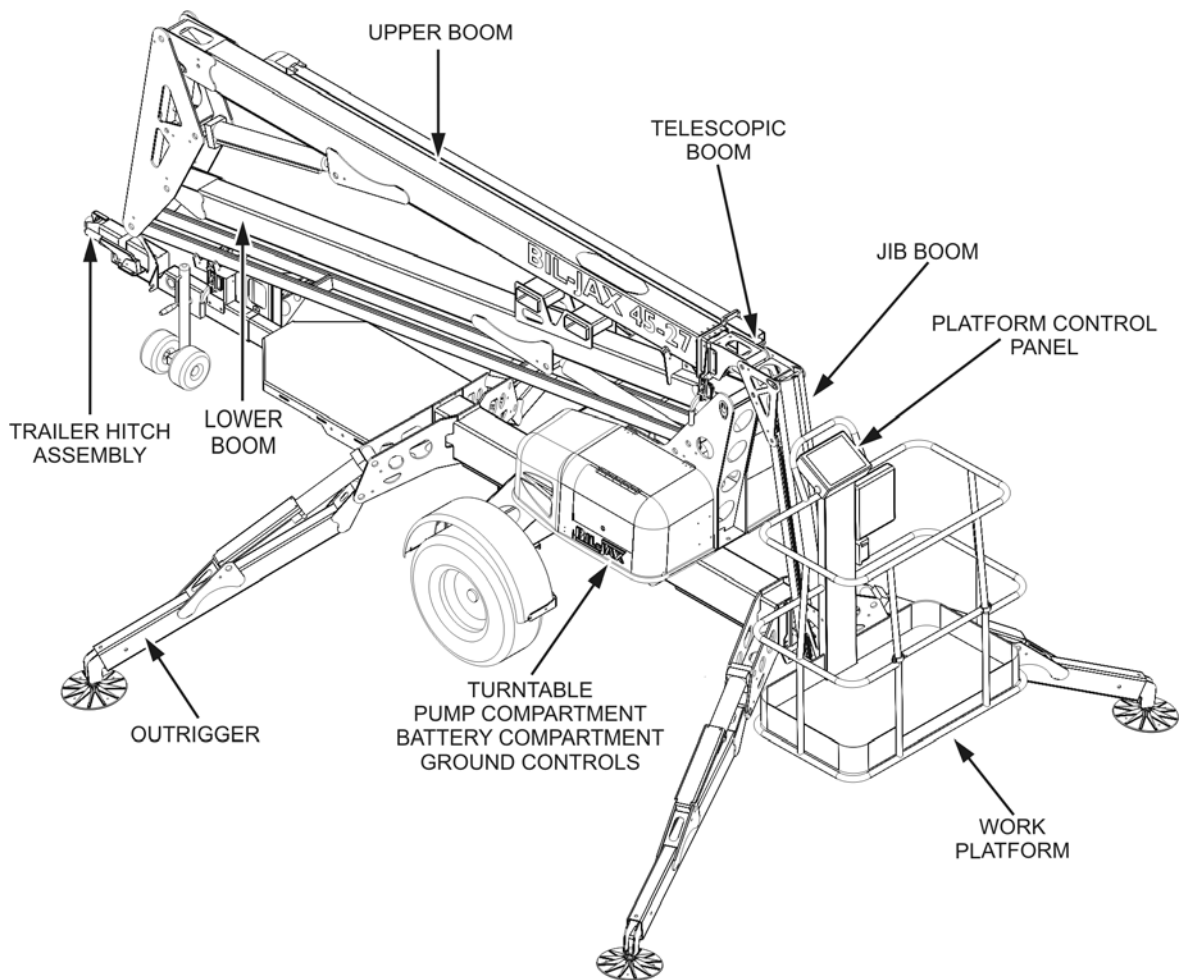


Figure 2-1. Model 4527A Articulating Boom Lift

The hydraulic power unit uses a 24-Volt, one horsepower DC motor to drive the hydraulic pump. The DC motor is powered by four 6-Volt DC, 245 Amp-hour deep charge batteries connected in series. A 40-amp, automatic onboard battery charger is provided with standard models for recharging the batteries at the end of each work period.

Two control panels (Figure 2-2) use pushbutton switches and hydraulic valves to control the direction and speed of boom lift and rotation. One set of operator controls is provided for ground operation and another set is provided for operation from the platform. Elevation and rotation controls are operational only when the outriggers are correctly extended and the moving boom section is within a programmed safe operating zone.

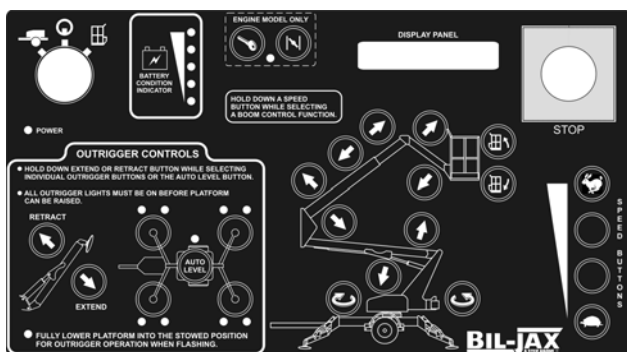


Figure 2-2. Boom Lift Control Panel (Ground)

The ground and platform control panels include CHOKE and START buttons for use with boom models equipped with an optional DC/gasoline hybrid generator for continuous duty. Battery condition indicators show the charge state of the batteries. When pressed, a STOP button at each control panel immediately stops all boom motions. The ground control panel includes a lighted text window that displays the present operating status or an existing error condition. The platform control panel includes a horn button that sounds an audible alarm when pressed.

Boom elevation, extension and rotation speeds are selected from low to high by SPEED buttons. The lift and extension cylinders have load-holding valves in the base of each cylinder in case of a hydraulic hose failure.

Only one boom motion is permitted at a time and only as long as the boom is within the safe operating zone (Figure 2-3). When a selected boom motion exceeds a safe operating limit, the boom motion ceases and another boom motion must be selected within the safe operating zone.

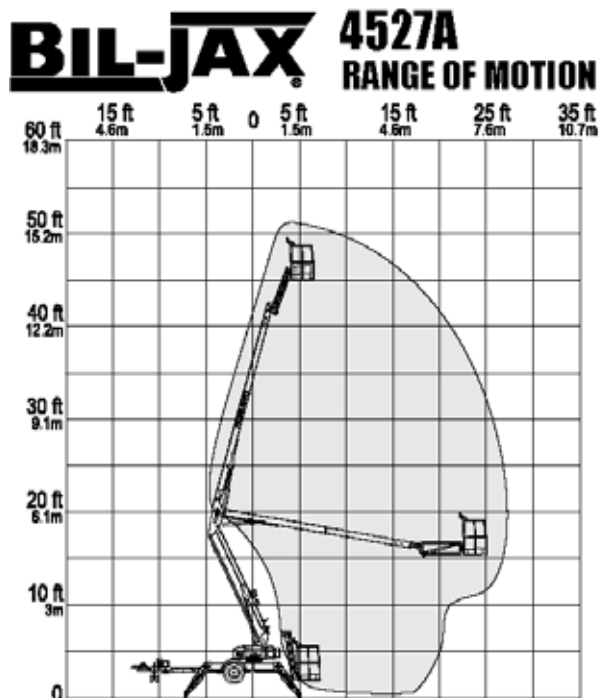


Figure 2-3. Range of Motion

Outrigger load sensing switches and level sensing interlocks prevent all platform boom operations until the four outriggers are properly extended, the trailer is level and the full weight of the boom lift is loaded onto the outriggers. A boom-raised interlock prevents outrigger operation until the platform boom is fully lowered to the stowed position.

Safety devices prevent the boom from retracting suddenly in the event of a hydraulic hose or system failure. It is strongly recommended that no one adjust or tamper with these safety devices. If service is required, please notify Bil-Jax for instructions.

Each cylinder rod is fully immersed in oil to prevent rust or corrosion of the cylinders during storage. It is important that the cylinder rods be kept clean and undamaged for the protection of the cylinder head packings.

In the event of power loss, control system failure or other malfunction, all boom movement functions may be accomplished by manual operations.

Manual lowering of the platform is performed by actuating valve plungers found on the base of each boom lift cylinder. Pushing and holding each valve retracts the corresponding boom lift cylinder. The boom may need to be rotated to a clear area before lowering.

Manual boom retraction and turntable rotation are accessed inside the pump compartment. The hand pump and selected valves on the hydraulic pump unit are used for these functions.

SPECIFICATIONS

Boom Lift Work Platform

Model Number: 4527A Serial Number _____

Manufactured by: Bil-Jax, Inc.
125 Taylor Parkway
Archbold, Ohio 43502
800-537-0540

Feature	Model 4527A	Feature	Model 4527A
Working Height	51 ft (15.7 m)	Outrigger Footprint	
Maximum Platform Height	45 ft (13.7 m)	Length	12 ft 4 in (3.8 m)
Maximum Horizontal Outreach		Width	11 ft 4 in (3.5 m)
From Centerline	27 ft (8.2 m)	Footpad Diameter	12.5 in (0.3 m)
From Outrigger Footpad Edge	21 ft (6.4 m)	Parking Brake	Standard, Mechanical
Up and Over Height	20 ft 9 in (6.3 m)	Towing Brake	Hydraulic Surge
Rated Platform Capacity	500 lbs (227 kg)	Rated Towing Speed	65 mph (105 km/h)
Tongue Weight	170 lbs (77 kg)	Tire Size	ST 225/75 R15D
Total Weight	3,880 lbs (1,760 kg)	Control System	24V DC
Turntable Rotation	700° Non-Continuous	Battery	4 x 6V 245 amp-hr
Leveling Capability	13.5°	Charger	110/120 Volt, 40 Amp
Platform Dimensions		Hydraulic Pressure	3,000 psi (20,684 kPa)
Height	3 ft 7 in (1.1 m)	Reservoir Capacity	4.3 Gallons (16.3 L)
Length	2 ft 6 in (0.8 m)	Hydraulic System Capacity	6.3 Gallons (23.9 L)
Width	4 ft (1.2 m)	Hydraulic Oil (Standard)	Dexron III/Mercon ATF
Stowed Dimensions		Platform Rotation/Type (Optional)	90°/Manual
Height	6 ft 5 in (2.0 m)		
Length	19 ft 6 in (5.9 m)		
Width	5 ft 6 in (1.7 m)		

WARNING

The installation of some optional components may affect the performance and capacities of the boom lift. Failure to obtain, read and observe the safety precautions and rated capacities associated with any optional component may result in damage to equipment, serious injury or death.

WARRANTY

Bil-Jax, Inc. warrants this product for one year, beginning on the date of delivery, to be free from defects of material and workmanship provided the unit is operated and maintained in compliance with the guidelines established in the Operations and Maintenance Manuals. Major structural components, including trailer tongue and boom weldments, are warranted for five years against defects due to material or workmanship. Bil-Jax will, at its option, repair or replace any unit or component part that fails to function properly during normal use.

The warranty does not apply if the lift and/or its components have been altered, changed, or repaired without the consent of Bil-Jax. Repairs, damage, or defects resulting from the following are not covered under the terms of the warranty: negligence, misuse, accidental damage, inadequate or improper maintenance, acts of nature, damage caused by chemicals or abrasive materials, and normal wear and tear, such as rust or corrosion. Components not covered under this warranty include tires, filters, covers, and routine maintenance items. Components not manufactured by Bil-Jax are covered by their respective manufacturer's warranties. A list of those components and their warranties is available upon written request to Bil-Jax.

Bil-Jax shall not in any event be liable for the cost of any special, indirect, or consequential damages to any person, product, or thing. Bil-Jax's maximum liability under this warranty is limited to the amount paid to Bil-Jax for the product. This warranty is in lieu of all other warranties expressed or implied. Bil-Jax neither assumes nor authorizes any or other entity to assume on its behalf any other liability in connection with the sale, rental, or use of this product.

Warranty Claims Process

In order to qualify for warranty coverage, the following conditions must be met:

- 1) Return of completed "Warranty Registration" form to Bil-Jax within 15 days of receipt of product;
- 2) Notification to Bil-Jax within 72 hours of any claimed defect, injury, or damage resulting from the claimed the defect; and
- 3) Warranty is limited to parts that are determined to be defective. This does not include parts worn out due to normal use.

Bil-Jax authorized dealers or distributors are responsible for filing claims under warranty. Listed below is the warranty claims procedure.

- 1) Contact Bil-Jax Service Department at 800-537-0540 to report the claim and verify warranty coverage. Machine serial number must be provided.
- 2) Identify the components to be claimed under warranty along with description of failure. A Returned Merchandise Authorization (RMA) number will be issued by Bil-Jax.
- 3) Replacement parts will then be sent by Bil-Jax to the dealer or distributor. All parts are invoiced at dealer/distributor list price. Credits will be issued when defective parts are returned to Bil-Jax and found to be defective under warranty.
- 4) After completing repairs, submit warranty claim form and defective parts to Bil-Jax. Warranty claim form and parts must be received within 30 days of claim in order to be eligible for credit. RMA number must be referenced on warranty claim form. Returned parts are to be sent prepaid and will be credited when part is received and verified. Warranty labor rate will be paid at current rate set by Bil-Jax. The amount of labor hours reimbursed will be determined by Bil-Jax and will be limited to 4 hours unless approved by Bil-Jax.

Failure to follow the warranty claims process may result in delay in processing claim or denial of the claim. Bil-Jax reserves the right to limit or adjust warranty claims with regard to parts, labor and travel time. Components purchased from suppliers other than Bil-Jax are not covered under the terms of this warranty.

3 OPERATION

The Model 4527A Articulating Boom Lift is equipped with multiple operator control stations. Equipment power and outrigger controls are located at ground level. Boom lift and rotation controls are located at ground level and on the work platform.

Before attempting boom lift operation, Operators should:

- ❑ Obtain, read and obey all safety precautions as indicated by manufacturer's recommendations and all federal, state and local regulations.
- ❑ Become familiar with the location and use of all controls.
- ❑ Verify that there are no overhead obstructions or live power sources in the work area that could interfere with the safe operation of the boom lift.
- ❑ Position the boom lift on a firm and level surface.
- ❑ Unhitch equipment trailer from the tow vehicle.

GROUND CONTROL STATION

The ground control station is used to operate outriggers and control boom motion. To access the ground control station, open the control panel access cover found on the turntable. Turn the key switch to the ground controls setting.

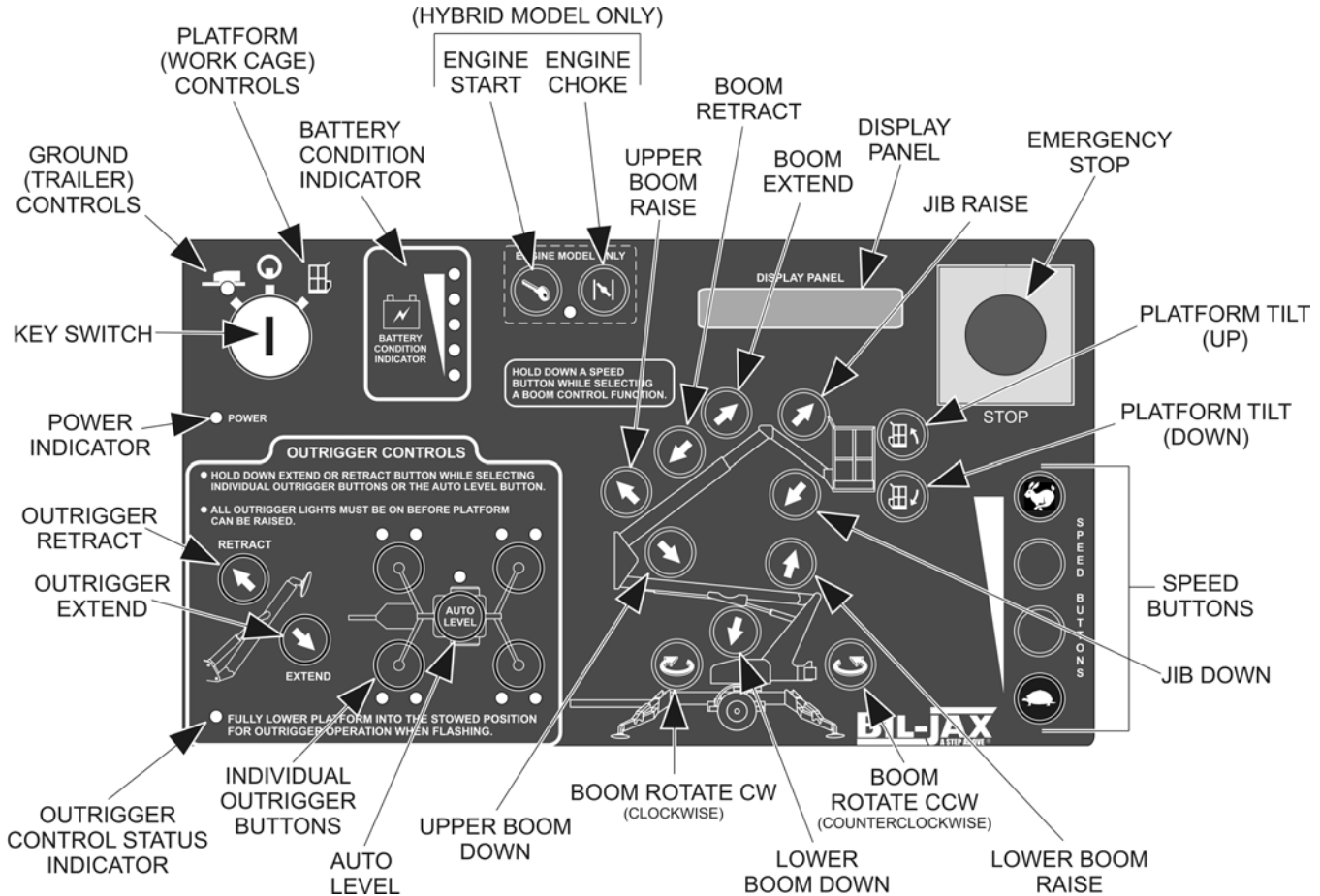


Figure 3-1. Ground Control Station.

The ground control station includes the following controls and Indicators. Refer to Figure 3-1 for control locations.

Key Switch

Turning the key switch to the PLATFORM (WORK CAGE) icon selects operation from the platform. Turning the key switch to the GROUND (TRAILER) icon selects operation from the ground control panel. The center (power off) position interrupts all electric and hydraulic power operations except emergency lowering. Removing the key protects against operation by unauthorized persons. The key may be removed with the key switch in any selected position.

Battery Condition Indicator

Indicator LEDs light up to indicate the level of charge remaining in the batteries. A lighted green LED indicates an adequate charge level. Lighted yellow LEDs indicate the need for charging soon. A lighted red LED warns that the battery charge level is low; boom operations should be halted until the batteries are recharged.

Engine Start and Choke (Hybrid Model only)

Start a cold engine by pressing the Engine START button while pressing and holding the CHOKE button. To start/restart a warm engine, press the START button only.

Display Panel

The DISPLAY PANEL is a lighted text window that displays the present operating status or an existing error condition when the key switch is on.

Emergency Stop Button

When pushed in, the emergency STOP button disconnects electrical power to the ground and platform control stations. The emergency STOP pushbutton should only be pressed to immediately stop all boom motion. To resume control, pull out the emergency STOP button.

Boom Extend/Retract Buttons

Pressing and holding a desired SPEED button and the BOOM EXTEND button at the same time extends the telescopic boom. Pressing and holding a desired SPEED button and the BOOM RETRACT button at the same time retracts the boom. Boom motion continues until the buttons are released or until the boom reaches a hard stop or a safe travel limit.

Boom Raise/Down Buttons

Pressing and holding a desired SPEED button and the LOWER BOOM RAISE or the UPPER BOOM RAISE button at the same time will raise the selected boom. Pressing a desired SPEED button and the LOWER BOOM DOWN or UPPER BOOM DOWN button at the same time will lower the selected boom. Boom motion continues until the buttons are released or until each boom reaches a hard stop or a safe travel limit.

Jib Raise/Down Buttons

Pressing and holding a desired SPEED button and the JIB RAISE button at the same time will raise the jib boom. Pressing a desired SPEED button and the JIB DOWN button at the same time will lower the jib boom. Boom motion continues until the buttons are released or until the jib boom reaches a hard stop or a safe travel limit.

Boom Rotation CW/CCW Buttons

Pressing and holding a desired SPEED button and the BOOM ROTATION CW (clockwise) or CCW (counterclockwise) button at the same time enables the boom to rotate in the direction selected. The boom will rotate through 700 degrees until the buttons are released or the stop is reached.

Speed Buttons

The SPEED buttons along the lower right side of the control panel must be pressed and held while selecting a boom function. Four speeds are available to control the positioning of the boom lift.

Outrigger Controls

For automatic outrigger extension/retraction: Select EXTEND or RETRACT outrigger button and the AUTO LEVEL button at the same time. To manually extend or retract the outriggers: Select EXTEND or RETRACT outrigger button and one of the OUTRIGGER buttons at the same time. The outrigger indicator LEDs light up when the outriggers are properly deployed and the boom weight is on the outriggers. Each of the outer outrigger LEDs indicates load is on the outrigger footpad. Each of the inner outrigger LEDs, when flashing, indicate that side is low and needs to be further raised for leveling. The Auto Level LED lights up and a buzzer sounds when the boom is level.

Platform Tilt Buttons

Press and hold any SPEED button and the desired PLATFORM TILT button at the same time to level the work platform (levels the platform only, not the boom lift).

PLATFORM CONTROL STATION

The platform control station is used to control boom motion. To access the platform control station, turn the key switch at the ground control station to the platform controls setting and enter the work cage.

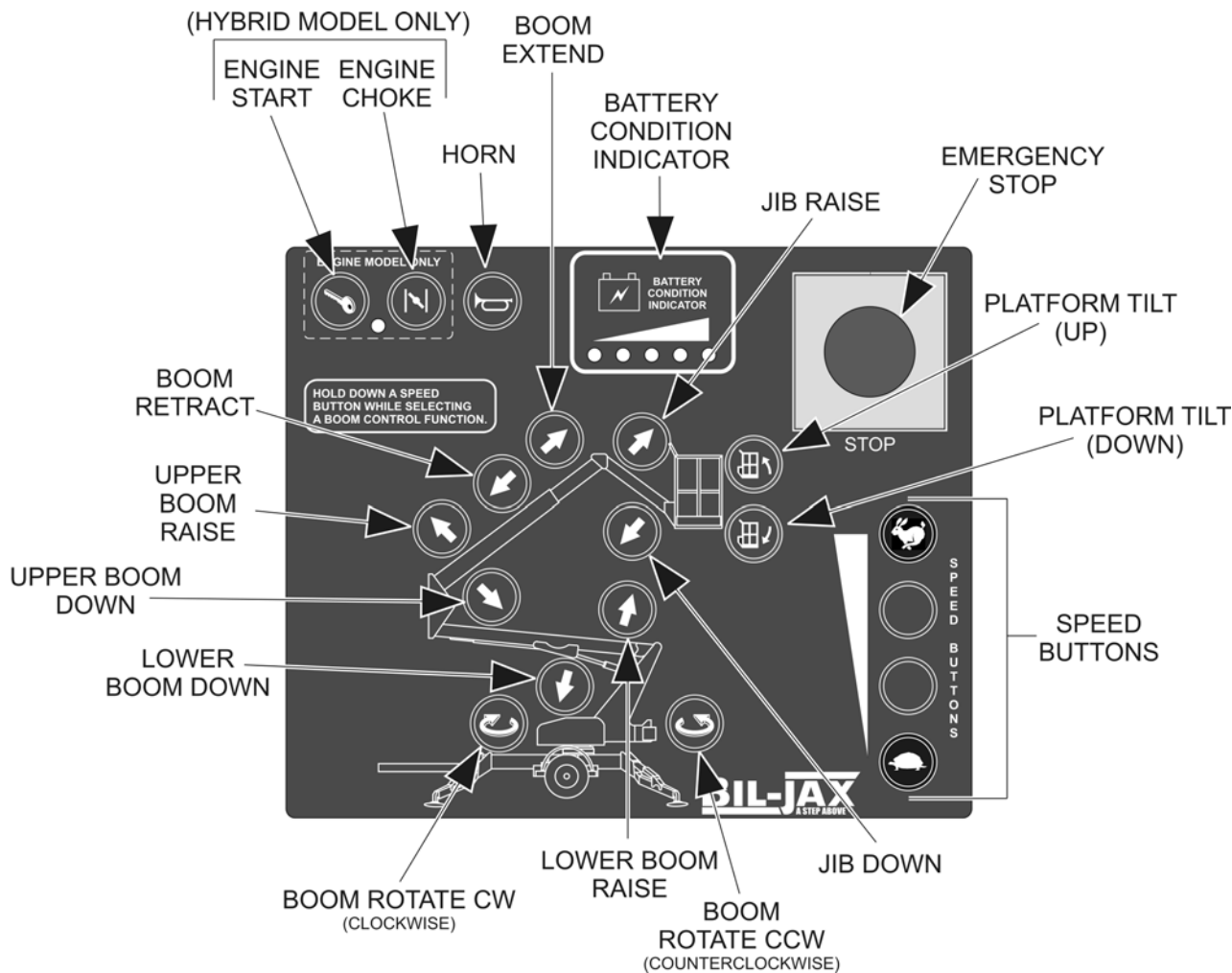


Figure 3-2. Platform Control Station

The platform control station includes the following controls and indicators. Refer to Figure 3-2 for control locations.

Engine Start and Choke (Hybrid Model only)

Start a cold engine by pressing the CHOKE button, then press the engine START button to start the engine. To start/restart a warm engine, press the START button only.

Horn Button

Pressing the button will sound the horn. Use the HORN button to warn personnel in the area of a falling object hazard, impending boom motions, or the need for assistance.

Battery Condition Indicator

Indicator LEDs light up to indicate the level of charge remaining in the batteries. A lighted green LED indicates a good charge level. Lighted yellow LEDs indicate the need for charging soon. A lighted red LED warns that the battery charge level is low; boom operations should be halted until the batteries are recharged.

Emergency Stop Button

When pushed in, the emergency STOP button disconnects electrical power to the ground and platform control stations. The emergency STOP pushbutton should only be pressed to immediately stop all boom motion. To resume control, pull out the emergency STOP button.

Speed Buttons

The SPEED buttons along the lower right side of the control panel must be pressed and held while selecting boom functions. Four speeds are available to control the positioning of the boom lift.

Boom Rotation CW/CCW Buttons

Pressing and holding a desired SPEED button and the BOOM ROTATION CW or CCW button at the same time enables the boom to rotate in the direction selected. The boom will rotate through 700 degrees until the buttons are released or the stop is reached.

Boom Raise/Down Buttons

Pressing and holding a desired SPEED button and the LOWER BOOM RAISE or UPPER BOOM RAISE button at the same time will raise the selected boom. Pressing a desired SPEED button and the LOWER BOOM DOWN or UPPER BOOM DOWN button at the same time will lower the selected boom. Boom motion continues until the buttons are released or until each boom reaches a hard stop or a safe travel limit.

Boom Extend/Retract Buttons

Pressing and holding a desired SPEED button and the BOOM EXTEND button at the same time extends the telescopic boom. Pressing and holding a desired SPEED button and the BOOM RETRACT button at the same time retracts the boom. Boom motion continues until the buttons are released or until the boom reaches a hard stop or a safe travel limit.

Jib Raise/Down Buttons

Pressing and holding a desired SPEED button and the JIB RAISE button at the same time will raise the jib boom. Pressing a desired SPEED button and the JIB DOWN button at the same time will lower the jib boom. Boom motion continues until the buttons are released or until the jib boom reaches a hard stop or a safe travel limit.

Platform Tilt Buttons

Press and hold any SPEED button and the desired PLATFORM TILT button at the same time to level the work platform (levels the platform only, not the boom lift).

115 volt Outlet

The 115 Volt AC outlet is provided for running electrical power tools from the work platform. A connecting power cord must be plugged into a suitable power source. The power plug is located on the trailer frame, in front of the accessory equipment stowage plate. The outlet is rated for a 15-ampere load. Do not overload the accessory power circuit.

NORMAL OPERATING PROCEDURE

Perform the following procedures to operate the Bil-Jax Model 4527A Articulating Boom Lift.

- ❑ Read and obey all safety precautions and operating instructions, as well as all applicable portions of ANSI A92.2, reprinted in Section 6.
- ❑ Position the boom lift at the work area. Make sure the boom lift is on a firm and level surface and there are no potential hazards such as overhead obstructions or electrically charged conductors. Do not operate the boom lift if such hazards exist.
- ❑ Inspect the boom lift for damaged or worn parts. Repair or replace parts as necessary. Never operate a damaged boom lift.
- ❑ Apply the boom lift parking brake or chock the wheels.
- ❑ Lower the tongue jack and unhitch the boom lift from the tow vehicle.

⚠ WARNING
Failing to unhitch the boom lift before operation may lead to damage to equipment or tow vehicle and makes the boom lift unstable, which can cause personnel injury or death.

- ❑ Turn the key switch on the ground control station to operate ground controls. If power does not come on, make sure both emergency STOP buttons (ground and platform) are pulled out and the main power disconnect is plugged in.
- ❑ The control microprocessor will perform self-diagnostics to test the operating system. After several seconds, the DISPLAY PANEL window will read:

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A STEP ABOVE**

- ❑ Verify that the control status indicator LED is lit. If the control status indicator LED is not lit or is flashing, the outrigger buttons will not work. A flashing control status LED indicates that one or more of the booms is raised and needs to be stowed. Refer to Figure 3-1 and Figure 3-3.
- ❑ Extend the outriggers manually or using the AUTO LEVEL button. When the boom is leveled properly, a buzzer will sound and two LEDs at each OUTRIGGER button and the LED at the AUTO LEVEL button will be lit.

Auto Level: Press and hold the EXTEND and AUTO LEVEL buttons at the same time.

Manual Level: Extend the two outriggers closest to the trailer coupler first. Lower each

pair of outriggers by pressing the EXTEND button and the two appropriate OUTRIGGER buttons at the same time.

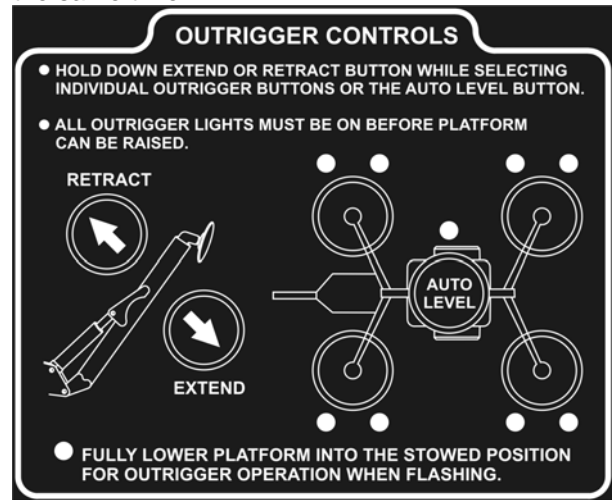


Figure 3-3. Outrigger Controls

NOTE: The safety interlock system prevents all boom operations if the boom is not level or if one or more outriggers are not supporting the vehicle load.

NOTE: The Range of Motion Diagrams at the ground and platform control stations display the range of platform motion (safe operating zone) facing away from the trailer tongue. Verify that the operating zone is clear of obstructions through 700° of turntable rotation.

- ❑ Verify that the auto level indicator LED is lit. If the auto level indicator is not lit, the boom may not be level.
- ❑ On both the upper and lower booms, pull the latch release on the boom travel latch, raise the latch handle and swing the latch U-bolt down. Refer to figure 3-4.

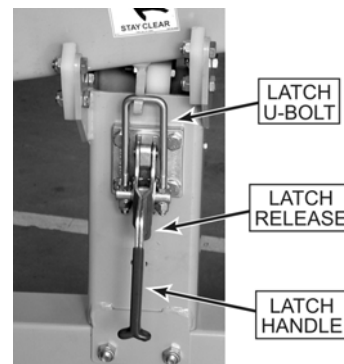


Figure 3-4. Boom Travel Latch

- ❑ Use the ground control panel to operate the boom lift functions. Raise, lower, extend and rotate the booms by pressing and holding the desired SPEED and function buttons at the same time. Become familiar with the location and function of all controls. Learn to smoothly start and stop all boom motions.
- ❑ Fully lower both booms onto the boom rest to position the platform for boarding. Turn the key switch to the platform control position.
- ❑ Raise the safety bar and enter the work platform. Put on the safety harness and attach the lanyard to the Fall Protection Attachment Point on the side of the platform support beam.
- ❑ Use the platform control panel to operate the boom lift functions. Raise, lower, extend and rotate the booms by pressing the desired SPEED and function buttons at the same time. Become familiar with the location and function of all controls. Learn to smoothly start and stop all boom motions.
- ❑ Should the platform become tilted out of the normal vertical axis, press and hold the desired SPEED button and one of the PLATFORM TILT buttons at the same time to adjust.
- ❑ Monitor the Battery Condition Indicator during operation and charge the batteries as necessary.
- ❑ Always fully retract, rotate and lower the booms to their stowed positions before exiting the platform.
- ❑ When all boom lift operations are complete, fully retract the telescoping boom extension. Center booms over the boom rest and fully lower all booms until seated in the stowed position for transport. Safety switches prevent outrigger retraction until all booms are completely lowered and stowed for transport.
- ❑ Unfasten the safety harness and exit platform.
- ❑ Engage the upper and lower boom travel latches.
- ❑ Turn the key switch to the ground controls position.
- ❑ Press and hold the outrigger RETRACT button and the AUTO LEVEL button until all outriggers are fully retracted to their upright positions. Inspect the area beneath lift and trailer for obstructions before retracting outriggers.
- ❑ Turn the key switch to the OFF position and remove key.

MANUAL BOOM OPERATION

Manual retraction, rotation and lowering functions allow the Model 4527A Articulating Boom Lift to be moved and lowered during hydraulic power interruption or failure. In each instance, refer to Figure 3-5.

The following procedures for manual retraction, rotation and lowering require a person on the ground to operate the manual controls and hand pump.

The hydraulic hand pump is located in the pump compartment. In case of a power failure, the hand pump and selected hydraulic valve settings can be used to manually retract the articulating boom or rotate the boom turntable.

To begin manual retraction or rotation, turn Proportional Valve counterclockwise until it stops, and insert pump handle into the pump handle fitting.

Manual Retraction

Pushing and holding the Retract button while simultaneously actuating Hand Pump will retract the extension boom section.

Manual Rotation

To rotate the turntable clockwise: Push and hold the Rotation button and simultaneously actuate Hand Pump.

To rotate the turntable counterclockwise: Pull the Rotation button out and simultaneously actuate Hand Pump.

NOTE: Return proportional valve to its original position before lowering the lift or resuming normal operation.

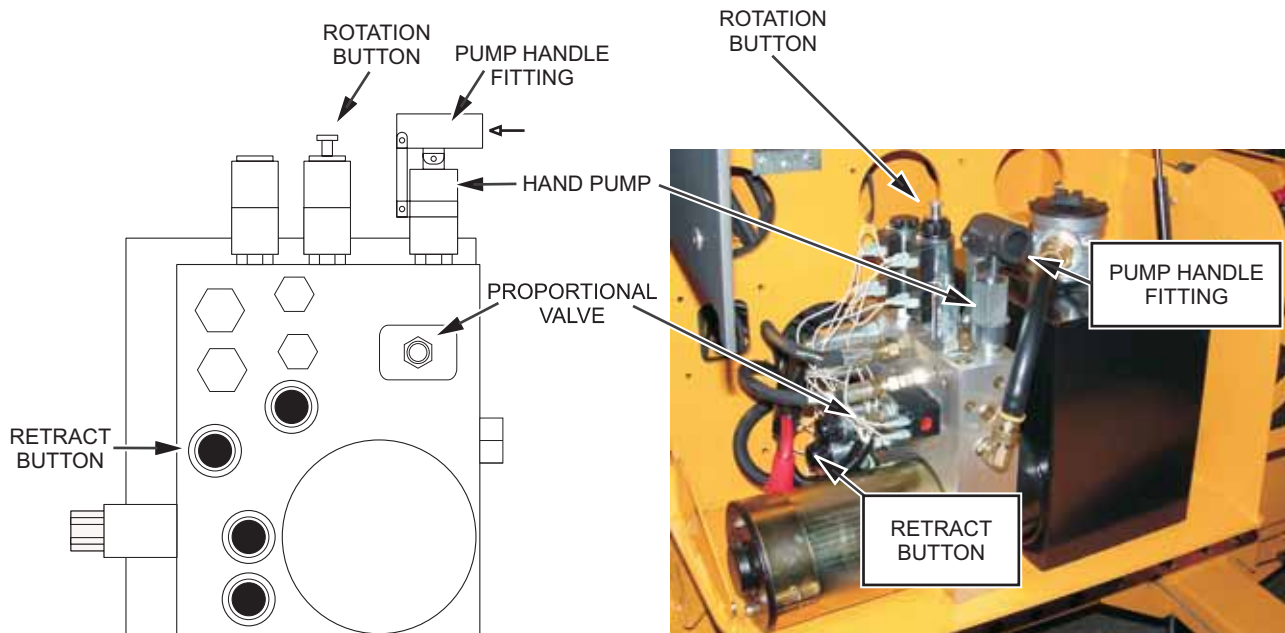


Figure 3-5. Hand Pump and Controls for Manual Lift Operation

Manual Lowering

Each Manual Lowering Valve (Figure 3-6) is equipped with a plunger, found at the base of the lift cylinders and on the back side of the jib boom (Figure 3-7). Use the plungers to lower the platform in case of a complete electrical power failure, a load shift, or other emergency situation. To lower the work platform, push the valve plungers. Continue pushing the plungers to completely lower the booms.



Figure 3-6. Manual Lowering Valve (Jib)

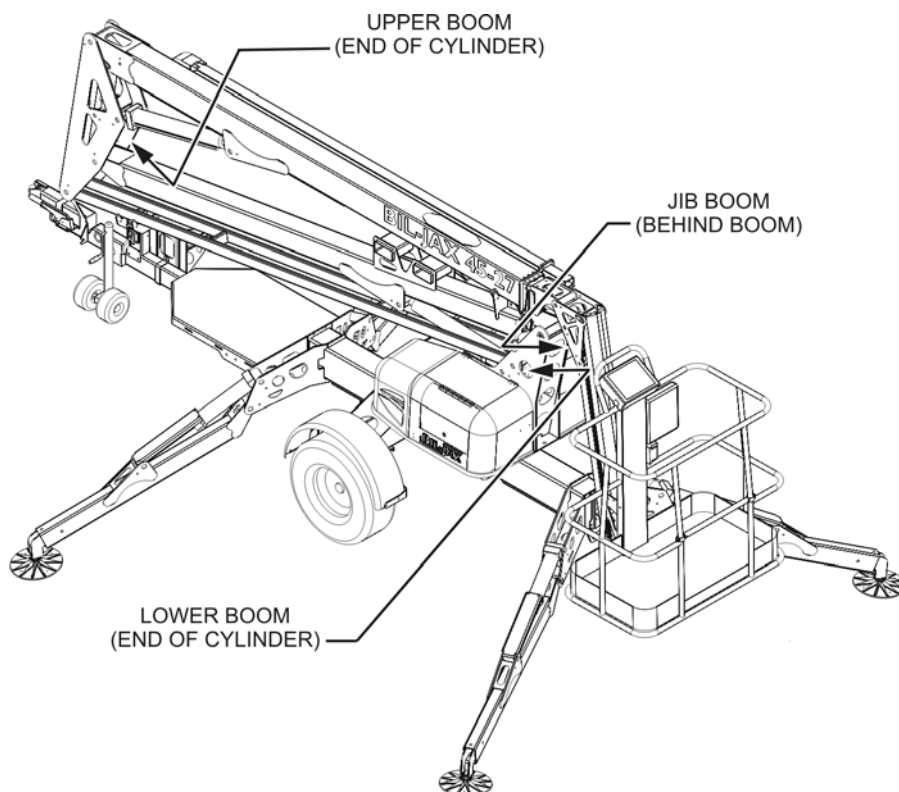


Figure 3-7. Manual Lowering Valve Locations

BATTERY RECHARGE

Recharge boom lift batteries after each 8-hour work shift or as needed. When boom lift is not in use, batteries should be recharged at least once per week. Under normal circumstances, battery recharge should take approximately 10-12 hours. However, a full recharge may take up to 24 hours, if the battery charge is extremely low.

! WARNING
Recharge batteries in a well-ventilated area only. Do not charge batteries near fire, spark or other potential ignition sources. Batteries may emit highly explosive hydrogen gas while charging. Failure to properly ventilate the charge gases may result in serious injury or death. Always charge boom lift batteries away from flammable materials.

To recharge the boom lift batteries:

- ❑ Move the boom lift to a well-ventilated area with direct access to 120 VAC electrical outlet. Keep the boom lift and batteries away from open flame or other potential ignition sources.
- ❑ Attach a 12 AWG multi-strand, grounded extension cord with a maximum length of 50 feet (15 meters) to the receptacle located on the cargo plate in front of the turntable.

NOTE: Using an underrated or long power cord will reduce the output of the battery charger and may extend charge time.

- ❑ Plug the extension cord into a grounded 120 VAC outlet. Verify that the green CHARGING indicator LED is lit on the battery charger faceplate (Figure 3-8).

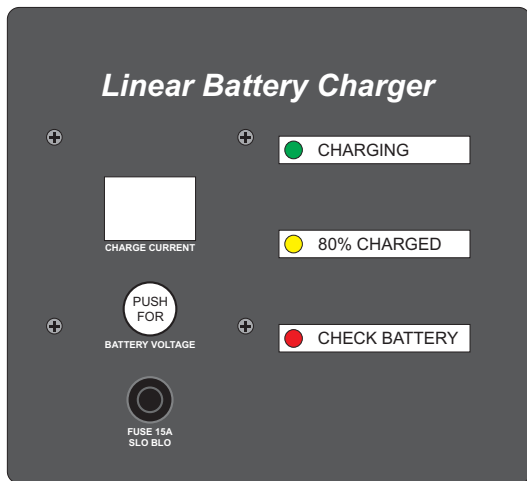


Figure 3-8. Battery Charger Faceplate

- ❑ The CHARGING indicator LED remains lit continuously during the first stage of the charge cycle. The bulk mode CHARGE CURRENT will be displayed on the battery charger faceplate.
- ❑ Press and hold the BATTERY VOLTAGE button to display the detected battery voltage.
- ❑ If a battery fault is detected, the appropriate fault code will appear on the CHARGE CURRENT display. The red CHECK BATTERY indicator LED will become lit. See Table 3-1 for battery charger fault codes.

! WARNING
Do not disconnect any output leads or connectors between the batteries and the charger when the charger is on. To stop a charge in progress, always unplug the extension cord from the AC power source.

- ❑ When the battery charge reaches 80% of capacity, the yellow 80% CHARGED indicator LED will become lit and the green CHARGING indicator LED will begin to flash.
- ❑ When the batteries have reached a full charge, the green and yellow indicator LEDs will turn themselves off. CC (Charge Complete) will appear on the CHARGE CURRENT display. After two hours, this display will fade and the CHARGE CURRENT will read 00.
- ❑ Unplug the extension cord from the 120 VAC outlet and the charger receptacle on the boom lift. Store the extension cord for next use.

! CAUTION
Always unplug the battery charger power cord before moving the boom lift. Failure to disconnect power cord will cause damage to the equipment.

Table 3-1. Charger Fault Codes

Code	Description	Limits	Cause
F1	Over Voltage	>112% charge voltage	Loose battery or charger connection
F2	Over Current	>60 amperes	Battery Fault
F3	Bulk Mode Timeout	14 hrs Max.	Battery Fault
F4	ARD Mode Timeout	6 hrs Max.	Battery Fault
F5	FCT Mode Timeout	2.5 hrs Max.	Battery Fault
F6	Self-Test Error		Charger Fault

BOOM LIFT TRANSPORT

The boom lift trailer includes a single axle, two-inch ball hitch, hydraulic surge brakes, mechanical parking brake, breakaway safety cable, safety chains, brake lights and side marker lights. Proper boom transport requires the proper attachment and inspection of these components before towing. Refer to Figure 3-9.

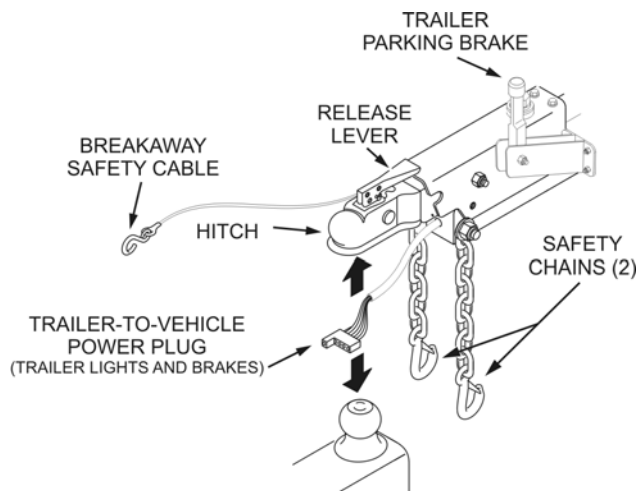


Figure 3-9. Trailer Hitching

Use the following procedure to hitch and tow the boom lift.

- ❑ Back the tow vehicle to the trailer. Verify that the ball and hitch are aligned and that the trailer hitch has proper clearance above the ball. Use the tongue jack as needed.

CAUTION Obtain, read and obey all recommendations set forth by the tow vehicle manufacturer before attempting to transport equipment. Verify that equipment weight does not exceed the vehicle's towing capacity. Exceeding the tow vehicle's rated capacity may result in damage to tow vehicle or boom lift.

- ❑ Fasten the breakaway safety cable to the tow vehicle.
- ❑ Lift release lever and lower the hitch onto the ball using the tongue jack. Push down the release lever to secure the ball.
- ❑ Use the tongue jack to verify secure coupling. If using the jack will raise the bumper of the tow vehicle 2-3 inches, the ball hitch coupling is secure.
- ❑ Release the trailer parking brake.

- ❑ On the tongue jack, pull the pivot locking pin and swivel jack 90 degrees to the travel position. Reengage pivot locking pin.
- ❑ Attach the safety chains to the tow vehicle. Verify that the chains cross under the trailer tongue. If necessary, cross the chains first over then under the tow bar to prevent dragging.

CAUTION Failure to attach safety chains properly before towing will allow trailer tongue to drop in case of ball hitch failure, resulting in damage to trailer and equipment.

- ❑ Connect the trailer lights to the tow vehicle power plug.
- ❑ Verify that the breakaway safety cable has adequate slack to prevent the brakes from dragging.

Verify the following before towing the lift. Make adjustments as necessary.

- ❑ The trailer jack and outriggers are in their travel positions.
- ❑ Boom travel latches are engaged, securing the booms in their fully stowed positions.
- ❑ All on-board equipment is secured.
- ❑ The key switch is in the OFF position. Remove the key.
- ❑ The parking brake is disengaged.
- ❑ The trailer tires are adequately and evenly inflated.

Periodically check the wheel nut torque according to manufacturer's recommendations. Frequent torque checks are required when a wheel is recently installed.

Prior to towing, while the trailer wheels are elevated for boom lift operation, inspect for loose wheels and for wheel lug wear. If a loose wheel mounting is suspected, remove and inspect wheel lugs for damage. DO NOT tow a boom lift with worn or damaged wheel components.

4 OPERATOR SERVICE

Performing the appropriate daily, weekly and monthly service checks and scheduled maintenance procedures will extend the life of the boom lift and will help ensure the safety of personnel operating the equipment.

Additional annual and semi-annual maintenance and repair procedures can be found in the Bil-Jax Model 4527A Parts and Service Manual.

Do not attempt to adjust, repair or replace any hydraulic or electrical control device. These include, but are not limited to, hydraulic load valves, hydraulic flow control valves, solenoid valves and limit switches. These are safety related controls. Improper adjustment or tampering with these devices may impair boom lift function and result in safety or damage hazards. If control adjustments are required, refer to the appropriate Bil-Jax Parts and Service Manual.

Contact the Bil-Jax Service Department at 800-537-0540 if additional information is needed.

DAILY SERVICE CHECKS

The following Maintenance Procedures should be performed daily before operation.

Verify that all decals are correctly applied and in plain view.

- ❑ Refer to Section 5 for decal locations.

Verify that all controls and indicators at ground and platform control stations operate properly.

- ❑ Lower outriggers to level the boom lift.
- ❑ Raise and extend all booms.
- ❑ Press emergency STOP button.
- ❑ Verify that booms remain elevated and do not drift.
- ❑ Pull out STOP button and lower the booms.
- ❑ If either control station is unresponsive, refer to Table 4-1 for troubleshooting procedures.
- ❑ If display panel displays an error code, refer to Table 4-2 for error code definitions.

Verify that boom down limit switches operate correctly.

- ❑ Down limit switches are actuated when the boom is in a fully lowered, stowed position. Limit switches must be operational to raise or lower outriggers.
- ❑ If outrigger controls are unresponsive when boom is fully lowered and stowed, inspect down limit switches for loose mounting or visible damage.
- ❑ Repair or replace as needed.

Verify that outrigger safety interlocks operate correctly.

- ❑ Begin with the outriggers fully extended and the boom lift level. Raise one outrigger until the footpad is not in contact with the ground.
- ❑ Verify that boom functions are unresponsive when one outrigger is raised.
- ❑ Repeat this procedure for each outrigger.
- ❑ Raise all outriggers until the footpads are not in contact with the ground. Verify that all outrigger status LEDs on the ground control panel are unlit.
- ❑ Lower one outrigger until the footpad makes contact with the ground and the outrigger begins lifting the trailer.
- ❑ If the LED is lit before the footpad makes contact with the ground or if the LED remains unlit after the weight is transferred to the outrigger, the position switch or wiring is faulty.
- ❑ Repeat this procedure for each outrigger.
- ❑ Repair or replace as needed. Refer to Figure 4-1.

Verify correct tire inflation.

- ❑ In cold climates, inflate tires to 55 psi.

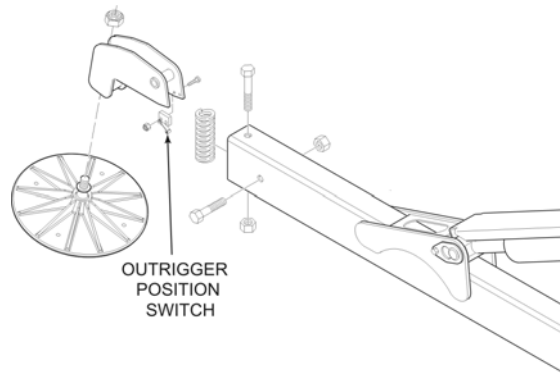


Figure 4-1. Outrigger Position Switches

Verify operation of running and brake lights.

Inspect hydraulic system and fluid levels.

- ❑ Check all hydraulic hoses and fittings for leaks and damage. Tighten or replace as necessary to prevent hydraulic oil or pressure loss.
- ❑ The hydraulic oil level should be checked with the booms down, all outriggers raised and the trailer wheels on a level surface.
- ❑ Hydraulic oil should be visible in the sight gauge.
- ❑ If the hydraulic oil level is not visible to at least half way up the sight gauge (Figure 4-2), add clean hydraulic fluid as necessary while all booms and outriggers are fully retracted and stowed. Pour slowly to avoid creating air pockets in the reservoir.



CAUTION

Do not mix hydraulic oils. Do not add any fluid to the hydraulic system that is not expressly recommended by the manufacturer. Adding unauthorized fluids to the hydraulic system may cause damage to equipment

- ❑ The hydraulic reservoir is originally filled with Dexron III/Mercon ATF with a viscosity rating of 175.
- ❑ Manufacturer recommends a higher viscosity hydraulic oil when operating equipment routinely in extreme climates.

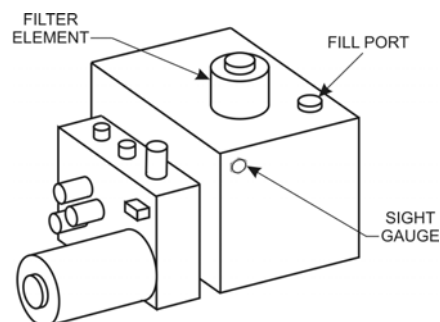


Figure 4-2. Hydraulic Reservoir

WEEKLY SERVICE CHECKS

Perform the following service checks at least once each week:

Check Battery electrolyte level.

- ❑ If battery charge is low, add enough water to bring the electrolyte level to the top of the plates.
- ❑ If batteries are fully charged, raise electrolyte level to full mark in each cell.

Inspect all electrical wiring.

- ❑ Check for cuts, loose terminals, broken wires, chaffing and corrosion.
- ❑ Repair all damage, remove corrosion and seal exposed connections.

Check transport hitch components for damage.

Inspect Boom lift for missing, loose or damaged hardware.

- ❑ Repair or replace as necessary.

MONTHLY SERVICE CHECKS

Perform the following service checks at least once each month:

Clean all battery terminals.

Check battery for loose connections or damaged wires.

Verify proper operation of manual lowering valves and hand pump

- ❑ Refer to Section 3 for manual boom operating procedures.

Lubricate all compartment hinges and latches, slew ring and mating gear.

- ❑ Use NLGI Grade 2 multi-purpose grease.

Check wheel nut torque.

- ❑ Refer to Figure 4-3 for correct wheel nut tightening sequence.
- ❑ Evenly tighten wheel nuts to 25 lb-ft (34 N*m) in the tightening sequence shown.
- ❑ Repeat sequence, tightening wheel nuts to 60 lb-ft (81 N*m) and to 100 lb-ft (136 N*m).

NOTE: When wheels are newly installed or replaced, verify wheel nut torque after 50 and 100 miles of travel and monthly thereafter. Follow this procedure each time the wheel is removed and reinstalled.

Figure 4-3. Wheel Nut Tightening Sequence

TROUBLESHOOTING

Refer to Table 4-1 for basic troubleshooting operations. Additional information can be found in the Bil-Jax Model 4527A Parts and Service Manual. Contact the Bil-Jax Service Department with any questions or before attempting any advanced troubleshooting operations.

Table 4-1. Troubleshooting Steps

PROBLEM	CAUSE	SOLUTION
No lights on panel when key switch is turned to the on position.	<ul style="list-style-type: none"> a. Emergency STOP engaged. b. Battery charge is low. c. Battery ground or in-series cable is loose. d. Battery main disconnect unplugged. 	<ul style="list-style-type: none"> a. Disengage Emergency STOP buttons. b. Recharge as needed. c. Inspect and repair battery connections. d. Plug in main disconnect.
Hydraulic function does not work and display window shows an error message	<ul style="list-style-type: none"> a. Fault detected by safety interlock microprocessor. b. Boom Lift electric or electronic failure 	<ul style="list-style-type: none"> a. Refer to Table 4-2 for error code definition and correction. b. Refer to Table 4-2 for error code definition and correction.
Outrigger indicator LED lights do not function.	<ul style="list-style-type: none"> a. Key switch turned to the OFF or platform controls position. b. Emergency STOP engaged. c. Outriggers not deployed. 	<ul style="list-style-type: none"> a. Turn key switch to ground controls position. b. Disengage emergency STOP buttons. c. Deploy all outriggers.
<p>One or more boom controls do not function</p> <p>OR</p> <p>One or more boom controls function improperly</p> <p>OR</p> <p>One or more boom controls function intermittently.</p>	<ul style="list-style-type: none"> a. Key switch is turned to the OFF or incorrect control position. b. Battery charge is low. c. Emergency STOP engaged. d. Battery ground or in-series cable loose. e. All outriggers not properly deployed. f. Hydraulic pump inoperative. g. Loose wiring connector. h. Valve solenoid not operating properly. i. Fault detected by system interlock. j. Broken or loose wire. 	<ul style="list-style-type: none"> a. Turn key switch to ground or platform controls position. b. Recharge battery. c. Disengage Emergency STOP buttons. d. Inspect and repair battery connections. e. Deploy all outriggers and level boom lift. f. Inspect pump; replace or repair as needed. g. Check wiring terminals in control box and at valve manifold; replace or repair as needed. h. Clean valve solenoid and recheck function(s); replace or repair as needed. i. Check display for system status. Refer to Table 4-2 for error code definitions and correction. j. Inspect wiring in control box and at valve manifold and valve coil; repair or replace as needed.

ERROR CODE DEFINITIONS

The DISPLAY PANEL located on the ground control panel indicates the present operating status of the boom lift. If an error condition is detected by the control processor during start-up or operation, the appropriate error code will be displayed on this panel.

Refer to Table 4-2 for a comprehensive list of Error Code Definitions and solutions.

Table 4-2. Error Code Definitions

ERROR MESSAGE	DEFINITION OF ERROR	COMMENTS
001 MACHINE IS IN DOWN ONLY MODE	Machine was either never leveled, outriggers not lowered, or machine went out of level with use.	Retract boom to travel position and extend outriggers using AUTO LEVEL button.
002 LOSS OF PLATFORM COMMUNICATION	Ground control lost communication with platform control.	Check for unplugged or damaged platform control cable.
005 PLATFORM CONTROL HAS STUCK KEY	Platform control detected a stuck or pressed key on power up.	Turn key switch off and on again without pressing any buttons.
008 GROUND CONTROL HAS STUCK KEY	Ground control detected a stuck or pressed key on power up.	Turn key switch off and on again without pressing any buttons.
009 BOOM UP WITHOUT OUTRIGGERS ON GROUND	Ground control detected the boom is up and all outriggers are not on the ground	Retract boom to travel position and extend outriggers using AUTO LEVEL button.
010 LEVEL SENSOR HAS ERRATIC OUTPUT	The ground control detected an erratic output from the level sensor.	Retract and extend outriggers using AUTO LEVEL button.
015 MACHINE IS NOT LEVEL	Machine has gone out of level with use.	Retract and extend outriggers using AUTO LEVEL.
016 LIFT BOOM	A boom rotate, extend, or retract function requested with boom down.	Raise boom from travel position.
017 STOW BOOM	An outrigger function requested with boom up.	Retract and lower boom to travel position.
021 OPEN CIRCUIT PRIMARY UP	A load of less than 70mA detected in primary up circuit on power-up.	Check for faulty boom up solenoid coil and wiring.
022 SHORTED CIRCUIT PRIMARY UP	Excessive load detected in primary up circuit on power-up.	Check for faulty boom up solenoid coil and wiring.
023 OPEN CIRCUIT PRIMARY DOWN	A load of less than 70mA was detected when primary down circuit was energized	Check for faulty boom down solenoid coil and wiring.
024 SHORTED CIRCUIT PRIMARY DOWN	Excessive load detected when primary down circuit was energized.	Check for faulty boom down solenoid coil and wiring.
025 OPEN CIRCUIT SECONDARY UP	A load of less than 70mA detected in secondary up circuit on power-up.	Check for faulty boom up solenoid coil and wiring.
026 SHORTED CIRCUIT SECONDARY UP	Excessive load detected in secondary up circuit on power-up.	Check for faulty boom up solenoid coil and wiring.
027 OPEN CIRCUIT SECONDARY DOWN	A load of less than 70mA detected when secondary down circuit was energized	Check for faulty boom down solenoid coil and wiring.
028 SHORTED CIRCUIT SECONDARY DOWN	Excessive load detected when secondary down circuit was energized.	Check for faulty boom down solenoid coil and wiring.
029 OPEN CIRCUIT JIB UP	A load of less than 70mA detected in jib up circuit on power-up.	Check for faulty jib up solenoid coil and wiring.
030 SHORTED CIRCUIT JIB UP	Excessive load detected in jib up circuit on power-up.	Check for faulty jib up solenoid coil and wiring.

ERROR MESSAGE	DEFINITION OF ERROR	COMMENTS
031 OPEN CIRCUIT JIB DOWN	A load of less than 70mA detected when jib down circuit was energized	Check for faulty jib down solenoid coil and wiring.
032 SHORTED CIRCUIT JIB DOWN	Excessive load detected when jib down circuit was energized.	Check for faulty jib down solenoid coil and wiring.
033 OPEN CIRCUIT EXTEND	A load of less than 70mA detected in extend circuit on power-up.	Check for faulty boom extend solenoid coil/wiring.
034 SHORTED CIRCUIT EXTEND	Excessive load detected in extend circuit on power-up.	Check for faulty boom extend solenoid coil/wiring.
035 OPEN CIRCUIT RETRACT	A load of less than 70mA detected in retract circuit on power-up.	Check for faulty boom retract solenoid coil/wiring.
036 SHORTED CIRCUIT RETRACT	Excessive load detected in retract circuit on power-up.	Check for faulty boom retract solenoid coil/wiring.
037 OPEN CIRCUIT PLATFORM LEVEL UP	A load of less than 70mA detected in platform level up circuit on power-up.	Check for faulty level up solenoid coil/wiring.
038 SHORTED CIRCUIT PLATFORM LEVEL UP	Excessive load detected in platform level up circuit on power-up.	Check for faulty level up solenoid coil/wiring.
039 OPEN CIRCUIT PLATFORM LEVEL DOWN	A load of less than 70mA detected in platform level down circuit on power-up.	Check for faulty level down solenoid coil/wiring.
040 SHORTED CIRCUIT PLATFORM LEVEL DOWN	Excessive load detected in platform level down circuit on power-up.	Check for faulty level down solenoid coil/wiring.
041 OPEN CIRCUIT PLATFORM CW	A load of less than 70mA detected in platform CW circuit on power-up.	Check for faulty boom rotate solenoid coil/wiring.
042 SHORTED CIRCUIT PLATFORM CW	Excessive load detected in platform CW circuit on power-up.	Check for faulty boom rotate solenoid coil/wiring.
043 OPEN CIRCUIT PLATFORM CCW	A load of less than 70mA detected in platform CCW circuit on power-up.	Check for faulty boom rotate solenoid coil/wiring.
044 SHORTED CIRCUIT PLATFORM CCW	Excessive load detected in platform CCW circuit on power-up.	Check for faulty boom rotate solenoid coil/wiring.
045 OPEN CIRCUIT TURNTABLE CW	A load of less than 70mA detected in rotate CW circuit on power-up.	Check for faulty rotate CW solenoid coil/wiring.
046 SHORTED CIRCUIT TURNTABLE CW	Excessive load detected in rotate CW circuit on power-up.	Check for faulty rotate CW solenoid coil/wiring.
047 OPEN CIRCUIT TURNTABLE CCW	A load of less than 70mA detected in rotate CCW circuit on power-up.	Check for faulty rotate CCW solenoid coil/wiring.
048 SHORTED CIRCUIT TURNTABLE CCW	Excessive load detected in rotate CCW circuit on power-up.	Check for faulty rotate CCW solenoid coil/wiring.
049 OPEN CIRCUIT OUTRIGGER RETRACT	A load of less than 70mA detected in outrigger retract circuit on power-up.	Check for faulty outrigger retract solenoid coil/wiring.
050 SHORTED CIRCUIT OUTRIGGER RETRACT	Excessive load was detected when Outrigger Retract circuit was energized.	Check for faulty outrigger retract solenoid coil/wiring.
051 OPEN CIRCUIT OUTRIGGER EXTEND	A load of less than 70mA detected in outrigger retract circuit on power-up.	Check for faulty outrigger extend solenoid coil/wiring.
052 SHORTED CIRCUIT OUTRIGGER EXTEND	Excessive load was detected in outrigger extend circuit on power-up.	Check for faulty outrigger extend solenoid coil/wiring.
053 OPEN CIRCUIT LF OUTRIGGER	A load of less than 70mA detected in left front outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
054 SHORTED CIRCUIT LF OUTRIGGER	Excessive load was detected in left front outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
055 OPEN CIRCUIT RF OUTRIGGER	A load of less than 70mA detected in right front outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.

ERROR MESSAGE	DEFINITION OF ERROR	COMMENTS
056 SHORTED CIRCUIT RF OUTRIGGER	Excessive load detected in right front outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
057 OPEN CIRCUIT LR OUTRIGGER	A load of less than 70mA detected in left rear outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
058 SHORTED CIRCUIT LR OUTRIGGER	Excessive load detected in left rear outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
059 OPEN CIRCUIT RR OUTRIGGER	A load of less than 70mA detected in right rear outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
060 SHORTED CIRCUIT RR OUTRIGGER	Excessive load detected in right rear outrigger circuit on power-up.	Check for faulty solenoid coil/wiring at outrigger.
069 OPEN CIRCUIT PROPORTIONAL	A load of less than 70mA detected in proportional valve circuit on power-up.	Check for faulty solenoid coil/wiring at proportional valve.
070 SHORTED CIRCUIT PROPORTIONAL	Excessive load detected in proportional valve circuit on power-up.	Check for faulty solenoid coil/wiring at proportional valve.

5 REPLACEMENT DECALS

Refer to Table 5-1 and Figure 5-1 for descriptions and locations of decals on the Bil-Jax Model 4527A Articulating Boom Lift.

Table 5-1. Replacement Decal Descriptions

Decal No.	Decal Description	Qty
0202-0523	Made in USA	1
B06-00-0034	DANGER: Electric Shock	1
B06-00-0037	Lubricate Semi-Annually	1
B06-00-0062	NOTICE: AC Power	2
B06-00-0068	NOTICE: Hydraulic System Oil	1
B06-00-0161B	Bil-Jax Logo, 6" Black Transfer	2
B06-00-0173	NOTICE: Fall Protection Attachment Point	2
B06-00-0403	NOTICE: Emergency Lowering	4
B06-00-0404	WARNING: Outrigger Crush Toe	8
B06-00-0405	WARNING: Pinch Point	17
B06-00-0471	DANGER: Before Use/Main Instruction/Hazards (Platform)	1
B06-00-0473	NOTICE: Operator's Manual Missing	1
B06-00-0474	NOTICE: Max. Load	1
B06-00-0475	WARNING: Read/Understand Operator's Manual	1
B06-00-0477	WARNING: Forklift Pockets	2
B06-00-0478	NOTICE: Platform Charger/Power Plug Here	1
B06-00-0481	CAUTION: Transport Safety Latch	3
B06-00-0482	DANGER: Electrocutation Hazard	2
B06-00-0484	DANGER: Battery/Charger Safety	1

Decal No.	Decal Description	Qty
B06-00-0494	NOTICE: Hazardous Materials	1
B06-00-0495	CAUTION: Compartment Access Restricted	2
B06-00-0496	CAUTION: Generator Plate Capacity 200 lbs.	1
B06-00-0503	NOTICE: Handle Applications	1
B06-00-0504	NOTICE: Emergency Hand Pump	1
B06-00-0505	DANGER: Before Use/Main Instruction/Hazards (ground)	1
B06-00-0521	DANGER: Tip Over Hazard	7
B06-00-0533	WARNING: Operating Instructions (Ground)	2
B06-00-0534	WARNING: Operating Instructions (Platform)	1
B06-00-0536	NOTICE: Range of Motion	2
B06-00-0539	4527A, 6" Black Transfer	2
B06-00-0541	CAUTION: Manual Boom Functions	1
B06-00-0542	WARNING: Max. Towing Speed	2
B06-00-0543	WARNING: Wheel Crush Toe	2
B06-00-0544	WARNING: Towing Hazards	2
B06-00-0545	Bil-Jax Website Transfer	2
B06-00-0550	WARNING: Unhitch Lift Before Use	2
B06-00-0551	CAUTION: Prior to Towing	1

Identification Plates

B06-00-0490	VIN Plate	1
B06-00-0499	ANSI ID Plate	1
B06-00-0524	Annual Inspection Plate	1
B06-00-0526	Key Tag	1

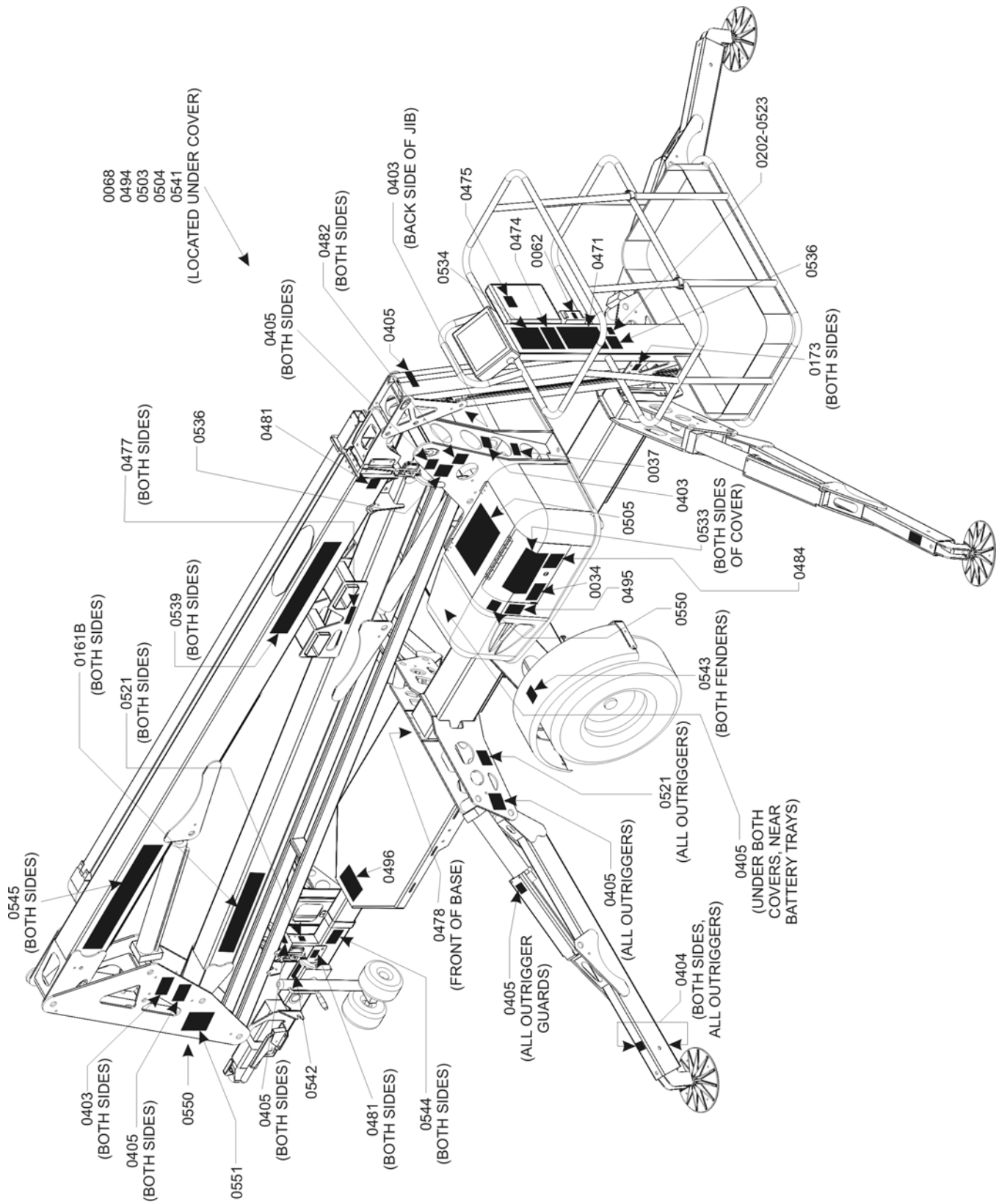


Figure 5-1. Decal Locations

6 ANSI REPRINT

The following sections are reprinted from the ANSI A92.2-2001 code in effect at the time of manufacture and govern the safe use of the Bil-Jax Model 4527A Articulating Boom Lift.

Permission to reprint this material has been granted by the Scaffold Industry Association.

7. Responsibilities of Dealers and Installers

- 7.1 **General Responsibilities.** Each dealer or installer as applicable shall comply with the requirements of this section.
- 7.2 **Vehicle Specifications.** Each dealer or installer, or both, who sells an aerial device shall inform the owner or user, or both, of the manufacturer's minimum vehicle specifications.
- 7.3 **Vehicle Weight Distribution.** The installer shall be responsible for the weight distribution of the completed mobile unit in accordance with the requirements of the aerial device and the applicable regulations. Allowance shall be made for the weight of readily removable tools and material specified by the user.
- 7.4 **Manuals.** Upon delivery of the equipment to the owner or user, the dealer or installer shall provide the manuals as required by Paragraph 6.4 of this standard and manuals for auxiliary equipment added by the installer.
- 7.5 **Installations.** The installer shall comply with Sections 5 and 6 of this standard relating to proper installation and shall follow the instructions of the manufacturer. In the event the original manufacturer no longer exists, an equivalent entity may provide these instructions. The installer of an aerial device shall, before the mobile unit is placed in operation, perform stability tests in accordance with the requirements of 4.5.1 and 4.5.2, the operational and visual tests in accordance with the requirements of 6.6.1 and 6.6.2 a, and the appropriate electrical tests required in 5.4.3 of this standard. The installer shall, when installing an aerial device on a chassis which is a highway vehicle, comply with all requirements of the Federal Motor Vehicle Safety Standards in effect at the time of installation. Certification as a manufacturer (alteration, intermediate or final) of a motor vehicle under the Federal Motor Vehicle Safety Standards is required. The travel height of a mobile unit shall be posted in a location that is readily visible to the vehicle operator. For insulated aerial devices, the installer shall assure conformance to the Qualification test requirements of 5.3.2 by either obtaining certification of the test and performing a periodic test after insulation, or by performing the Qualification test.
- 7.6 **Quality Assurance.** The installer shall have a documented quality assurance program which will ensure compliance with this standard.
- 7.7 **Welding.** All welds made by the installer, whose failure could result in motion of the platform(s) shall meet the Structural Welding Code AWS D1.1-98 and AWS D1.2-98. The installer shall establish applicable welding quality assurance procedures for all weldments.
- 7.8 **Training.** The dealer or installer shall offer training or training materials that aid owners and users in the operation, inspection, testing and maintenance of the aerial device. The training shall be offered initially and subsequently on request.

- 7.8.1 **Dealer or Installer as User.** Whenever a dealer or installer directs personnel to operate the aerial device (inspecting, sales demonstrations, or any form of use), the dealer or installer shall assume the responsibilities of users as specified in Section 9 of this standard. All personnel authorized to operate this aerial device shall have been trained.

8. Responsibilities of Owners

- 8.1 **General Responsibilities.** Each owner shall comply with the requirements of this section. The following responsibilities pertain to the owner's inspection, testing, maintenance, modification, training and transfer of ownership. These activities shall be performed by qualified person(s).
- 8.2 **Inspection and Testing Classifications.**
- 8.2.1 **Initial Inspection and Test.** Prior to initial use, all new or modified mobile units shall be inspected and tested to ensure compliance with the provisions of this standard. Verification by the manufacturer, the installer, or an equivalent entity(s) meets this requirement.
- 8.2.2 **Regular Inspection and Tests.** The inspection procedure for mobile units is divided into two classifications based upon the intervals at which inspections and tests shall be performed. Intervals shall be set by the owner in accordance with the manufacturer's recommendations. Such intervals are dependant upon component function and exposure to wear, deterioration and other agents which adversely affect component life. Two classifications are designated:
- (1) Frequent Inspection and Test: Daily to Monthly intervals.
 - (2) Periodic Inspection and Test: One to Twelve Month intervals.
- 8.2.3 **Frequent Inspection and Test.** Items determined to by the owner in accordance with the manufacturer's recommendations for each specific aerial device shall be inspected for defects. The following tests and inspections shall be performed by the operator once daily, prior to first use:
- (1) Operating controls and associated mechanisms for conditions interfering with proper operation.
 - (2) Visual and audible safety devices for malfunction.
 - (3) Hydraulic and pneumatic systems for observable deterioration or excessive leakage.
 - (4) Fiberglass and other insulating components for visible damage or contamination.
 - (5) Missing or illegible operational and instructional markings.
 - (6) Electrical systems of/or related to the aerial device for malfunction, signs of excessive deterioration, dirt and moisture accumulation.
 - (7) Visual inspection of bolts, pins and other fasteners for loose, deformed or missing fasteners and other

locking devices. Any suspected items shall be carefully examined or tested and a determination made by a qualified person as to whether they constitute a safety hazard. All unsafe items shall be replaced or repaired before use.

- 8.2.4 **Periodic Inspection or Test.** An inspection of the mobile unit shall be performed at the intervals defined in 8.2.2 depending upon its activity, severity of service, and environment, or as specifically indicated below. (These inspections shall include the requirements of 8.2.3):
- (1) Structural members for deformation, cracks or corrosion.
 - (2) Parts, such as pins, bearings, shafts, gears, rollers, locking devices, chains, chain sprockets, wire and synthetic ropes and sheaves, for wear, cracks or distortion.
 - (3) Hydraulic and pneumatic relief valve settings.
 - (4) Hydraulic system for proper oil level.
 - (5) Hydraulic and pneumatic fittings, hoses and tubing for evidence of leakage, abnormal deformation or excessive abrasion.
 - (6) Compressors, pumps, motors and generators for loose fasteners, leaks, unusual noises or vibrations, loss of operating speed and excessive heating.
 - (7) Hydraulic and pneumatic valves for malfunction and visible cracks in the external valve housing, for leaks and sticking spools.
 - (8) Visually inspect any vacuum prevention systems and verify function of such systems on Category "A" aerial devices.
 - (9) Hydraulic and pneumatic cylinders and holding valves for malfunction and visible damage.
 - (10) Hydraulic and pneumatic filters for cleanliness and the presence of foreign material in the system indicating other component deterioration.
 - (11) Electrical systems and components for deterioration or wear including those not readily visible on a frequent inspection.
 - (12) Performance test of all boom movements.
 - (13) Condition and tightness of bolts and other fasteners.
 - (14) Welds, as specified by the manufacturer.
 - (15) Legible and proper identification, operational and instructional markings.
 - (16) If the aerial device is rated as an insulated device, the electrical insulating components and system(s) shall be thoroughly inspected for lack of cleanliness and other components that compromise insulation. Then these components and system(s) shall be tested for compliance with the rating of the aerial device in accordance with one of the applicable methods and procedures as outlined in Section 5.4.3 of this standard:
 - (a) If the aerial device is used for AC bare-hand work, the unit shall undergo a 60 Hz test as shown in Table 2 at least every three years;
 - (b) If the aerial device is used for DC bare-hand work, the unit shall undergo a DC test as shown in Table 2 at least every three years.
 - (c) After repair or modification of any component that crosses the insulating system(s), or the repair or replacement of an insulating component(s), the unit shall be dielectrically tested in accordance with section 5.4.3;
 - (d) An insulated replacement boom shall be tested to insure conformance to 5.3.3 by the supplier;
 - (e) Bare-hand work units shall be tested as shown in Table I after any major repair to the insulated boom or any insulated boom replacement. Any suspected items shall be carefully examined or tested and a determination made by a qualified person as to whether they constitute a safety hazard. All

unsafe items shall be replaced or repaired before use.

8.3 Inspection and Test Records.

- (1) Items to be inspected shall be designated to the operator or other authorized person making frequent inspections. Records of frequent inspections need not be made. However, where a safety hazard is found, it shall be reported in writing to a person responsible for the corrective action and that report and a record of the correction shall be maintained for five years, or as required by applicable regulations.
- (2) Written, dated and signed reports and records shall be made of periodic inspections and tests and retained for a period of five years or as required by applicable regulations.

8.4 **Maintenance.** Maintenance and frequency of maintenance shall be determined by the owner in accordance with the manufacturer's recommendations. Welding repairs of components or welds, designated as critical in the manufacturer's manual, shall be made in accordance with the manufacturer's recommendations. Should the original manufacturer no longer exist an equivalent entity may determine the required procedure.

8.4.1 **Maintenance Training.** The owner shall train their maintenance personnel in inspection and maintenance of the aerial device in accordance with the manufacturer's recommendations and Section 8 of this standard.

8.5 **Modifications.** No modifications or additions which affect the stability, mechanical, hydraulic, or electrical integrity or the safe operation of the aerial device shall be made without the written approval of the manufacturer. If such modifications or changes are made, the capacity, operation, and maintenance instruction markings shall be changed accordingly. In no case shall the safety factors be reduced below those specified in this standard or below the manufacturer's design safety factors, whichever are greater. Should the original manufacturer no longer exist, an equivalent entity may approve required modification.

8.6 **Weight Distribution.** Changes in loading or additions made to the mobile unit after the final acceptance that affect weight distribution shall meet applicable regulations by governmental agencies. In no case shall axle loads of the fully loaded vehicle exceed the Gross Axle Weight Ratings (GAWR) assigned by the manufacturer. Note: Any change in weight distribution may adversely affect stability.

8.7 **Transfer of Ownership.** When a change in ownership of an aerial device occurs, it shall be the responsibility of the seller to provide the manufacturer's manual(s) for that aerial device to the purchaser. It is the responsibility of the purchaser to notify the manufacturer of the unit model and serial number and the name and address of the new owner within 60 days.

8.8 **Markings.** The markings on the aerial device shall not be removed, defaced, or altered. All missing or illegible markings shall be promptly replaced.

8.9 **Parts.** When parts or components are replaced they shall be identical in specification and function to the original aerial device parts or components or shall provide an equal or greater factor of safety.

8.10 **Safety Bulletins.** Owners shall comply with safety related bulletins as received from the manufacturer, dealer or installer.

8.11 **Manuals.** The owner shall insure that the operating manual(s) is stored on the mobile unit.

8.12 Training, Retraining, and Familiarization of Operators.

8.12.1 **Owner as a Renter or Lessor.** When an owner functions as a renter or lessor he shall have the same responsibilities as specified under Section 11 of this standard.

8.12.2 **General Training.** Only personnel who have received general instructions regarding the inspection, application and operation of aerial devices, including recognition and avoidance of hazards associated with their operation, shall operate an aerial device. Such items covered shall include, but not necessarily be limited to, the following issues and requirements:

- (1) The purpose and use of manuals.
- (2) That operating manuals are an integral part of the aerial device and must be properly stored on the vehicle when not in use.
- (3) A pre-start inspection.
- (4) Responsibilities associated with problems or malfunctions affecting the operation of the aerial device.
- (5) Factors affecting stability.
- (6) The purpose of placards and decals.
- (7) Workplace inspection.
- (8) Applicable safety rules and regulations, such as Part 4, ANSI C2-1997, National Electrical Safety Code (applies to utility workers as defined in ANSI C2). The above standard is an example; other industries using aerial devices have safety rules pertinent to that industry.
- (9) Authorization to operate.
- (10) Operator warnings and instructions.
- (11) Actual operation of the aerial device. Under the direction of a qualified person, the trainee shall operate the aerial device for a sufficient period of time to demonstrate proficiency in the actual operation of the aerial device.
- (12) Proper use of personal fall protection equipment.

8.12.3 **Retraining.** The operator shall be retrained, when so directed by the user, based on the user's observation and evaluation of the operator.

8.12.4 **Familiarization.** When an operator is directed to operate an aerial device he/she is not familiar with, the operator, prior to operating, shall be instructed regarding the following items and issues:

- (1) The location of the manuals.
- (2) The purpose and function of all controls.
- (3) Safety devices and operating characteristics specific to the aerial device.

9. Responsibility of Users.

9.1 **General Responsibilities.** Each User shall comply with the requirements of this section.

9.2 **Personnel.** Only trained and authorized personnel shall be permitted to operate the aerial device.

9.3 Training, Retraining, and Familiarization of Operators.

9.3.1 **General Training.** Only personnel who have received general instructions regarding the inspection, application and operation of aerial devices, including recognition and avoidance of hazards associated with their operation, shall operate an aerial device. Such items covered shall include, but not necessarily be limited to, the following issues and requirements:

- (1) The purpose and use of manuals.
- (2) That operating manuals are an integral part of the aerial device and must be properly stored on the vehicle when not in use.
- (3) A pre-start inspection.

- (4) Responsibilities associated with problems or malfunctions affecting the operation of the aerial device.
- (5) Factors affecting stability.
- (6) The purpose of placards and decals.
- (7) Workplace inspection.
- (8) Applicable safety rules and regulations, such as Part 4, ANSI C2-1997, National Electrical Safety Code. (Applies to utility workers as defined in ANSI C2). The above standard is an example; other industries using aerial devices have safety rules pertinent to that industry.
- (9) Authorization to operate.
- (10) Operator warnings and instructions.
- (11) Actual operation of the aerial device. Under the direction of a qualified person, the trainee shall operate the aerial device for a sufficient period of time to demonstrate proficiency in the actual operation of the aerial device.
- (12) Proper use of personal fall protection equipment.

9.3.2 **Retraining.** The operator shall be retrained, when so directed by the user, based on the user's observation and evaluation of the operator.

9.3.3 **Familiarization.** When an operator is directed to operate an aerial device he/she is not familiar with, the operator, prior to operating, shall be instructed regarding the following items and issues:

- (1) The location of the manuals.
- (2) The purpose and function of all controls.
- (3) Safety devices and operating characteristics specific to the aerial device.

9.4 **Application.** The employer and assigned operator shall insure that the aerial device is used only for intended applications as defined in the operating manual, and that recognized safety practices are observed.

9.5 **Mobile Operation.** Before and during driving, the driver shall:

- (1) Avoid traveling on any surface that adversely affects vehicle stability.
- (2) Maintain a safe distance from obstacles and overhead lines.
- (3) Maintain communications between the driver and the operator.
- (4) Under all travel conditions, the driver shall limit travel speed in accordance with conditions of the ground surface, congestion, and slope.

9.6 **Alterations.** Altering or disabling of safety devices, guards, or interlocks if so equipped shall be prohibited.

9.7.1 **Bare-Hand Work.** For bare-hand work, a Category "A" aerial device shall be used.

9.8 **Lower Controls.** The lower controls of aerial devices shall not be used for continuous operation with personnel in the platform.

10. Responsibilities of Operators

10.1 **General Responsibilities.** Each operator shall comply with the requirements of this section.

10.2 **Operation.** During operation of the aerial device all platform occupants shall use appropriate fall protection connected to the aerial device at the platform position.

10.3 **Work Platform.** The operator shall not use railings, planks, ladders or any other device in or on the work platform for achieving additional working height or reach.

- 10.4 **Brakes.** The vehicle parking brake(s) shall be set at all times that the boom is elevated except when the aerial device is being used in accordance with 9.5.
- 10.5 **Loading.** Any loading which includes a horizontal load shall be avoided unless the mobile unit is designed for that application.
- 10.6 **Observations.** Observations during operation for any defects shall be conducted on an ongoing basis.
- 10.6.1 **Pre-start Inspection.** Items determined by the owner in accordance with the manufacturer's recommendations for each specific aerial device shall be inspected for defects prior to each day's operation. The following tests and inspections shall be performed by the operator once daily, prior to first use:
- (1) Operating controls and associated mechanisms for conditions interfering with proper operation.
 - (2) Visual and audible safety devices for malfunction.
 - (3) Hydraulic or pneumatic systems for observable deterioration or excessive leakage.
 - (4) Fiberglass and other insulating components for visible damage or contamination.
 - (5) Missing or illegible operational and instructional markings.
 - (6) Electrical systems of/or related to the aerial device for malfunction, signs of excessive deterioration, dirt and moisture accumulation.
 - (7) Visual inspection of bolts, pins, and other fasteners for loose, deformed or missing fasteners and other locking devices. Any suspected items shall be carefully examined or tested and a determination made by a qualified person as to whether they constitute a safety hazard. All unsafe items shall be replaced or repaired before use.
- 10.7 **Worksite.** Before the aerial device is used the worksite shall be surveyed for hazards such as:
- (1) Untamped earth fills.
 - (2) Ditches.
 - (3) Drop-offs and floor obstructions.
 - (4) Debris.
 - (5) Overhead obstructions and electrical conductors.
 - (6) Weather conditions.
 - (7) Presence of unauthorized persons.
- 10.8 **Precautions.** Before and during each use the operator shall:
- (1) Check for overhead obstructions and electrical conductors.
 - (2) Insure that the load on the platform and/or load lifting devices are in accordance with the manufacturer's rated capacity.
 - (3) Insure that outriggers and stabilizers are used if the manufacturer's instructions require their use.
 - (4) Insure that guardrails are properly installed, and the gates are closed.
 - (5) Use outrigger pads when necessary to provide firm footing.
- 10.9 **Mobile Operation.** Before engaging in mobile operation the operator shall determine that the aerial device is specifically designed for mobile operation.
- 10.10 **Personnel.** Only trained and authorized personnel shall be permitted to operate the aerial device.
- 10.11 **Training, Retraining, and Familiarization of Operators.**
- 10.11.1 **General Training.** Only personnel who have received general instructions regarding the inspection, application and operation of aerial devices, including recognition and avoidance of hazards associated with their operation, shall operate an aerial device. Such items covered shall include, but not necessarily be limited to, the following issues and requirements:
- (1) The purpose and use of manuals.
 - (2) That operating manuals are an integral part of the aerial device and must be properly stored on the vehicle when not in use.
 - (3) A pre-start inspection.
 - (4) Responsibilities associated with problems or malfunctions affecting the operation of the aerial device.
 - (5) Factors affecting stability.
 - (6) The purpose of placards and decals.
 - (7) Workplace inspection.
 - (8) Applicable safety rules and regulations, such as Part 4, ANSI C2-1997, National Electrical Safety Code (applies to utility workers as defined in ANSI C2). The above standard is an example; other industries using aerial devices have safety rules pertinent to that industry.
 - (9) Authorization to operate.
 - (10) Operator warnings and instructions.
 - (11) Actual operation of the aerial device. Under the direction of a qualified person, the trainee shall operate the aerial device for a sufficient period of time to demonstrate proficiency in the actual operation of the aerial device.
 - (12) Proper use of personal fall protection equipment.
- 10.11.2 **Retraining.** The operator shall be retrained, when so directed by the user, based on the user's observation and evaluation of the operator.
- 10.11.3 **Familiarization.** When an operator is directed to operate an aerial device he/she is not familiar with, the operator, prior to operating, shall be instructed regarding the following items and issues:
- (1) The location of the manuals.
 - (2) The purpose and function of all controls.
 - (3) Safety devices and operating characteristics specific to the aerial device.
- ## 11. Responsibilities of Renters, Lessors or Lessees
- 11.1 **General Responsibilities.** Each renter or lessor or lessee shall comply with the requirements of the applicable section or sections below.
- 11.1.1 **Lessor or Lessee as Dealer or Installer.** When a lessor or lessee uses the aerial device as a dealer or installer he shall have the same responsibilities as specified under Section 7 of this standard.
- 11.1.2 **Lessor or Lessee as Owner.** When a lessor or lessee uses the aerial device as an owner he shall have the same responsibilities as specified under Section 8 of this standard.
- 11.1.3 **Lessor or Lessee as User.** When a lessor or lessee uses the aerial device as a user he shall have the same responsibilities as specified under Section 9 of this standard.
- 11.1.4 **Lessor or Lessee as Operator.** When a lessor or lessee uses the aerial device as an operator he shall have the same responsibilities as specified under Section 10 of this standard.
- 11.2 **Ownership Duties.** The renter or lessor shall carry out the duties of ownership specified in this standard which are not assigned to the renting entity or lessee as the user.
- 11.3 **Obligations.** Upon delivery each renter or lessor of an aerial device shall provide the operators manual and the ANSI/SIA A92.2-xxxx Manual of Responsibilities for dealers, owners, users, operators, lessors and lessees of Vehicle Mounted

Elevating and Rotating Aerial Devices. These manuals shall be stored on the mobile unit.

11.4 **Training.** The renter or lessor shall offer training or training materials that aid the renting entity or lessee in the operation, inspection, testing and maintenance of the aerial device. This training shall be offered initially and subsequently on request.

11.4.1 **General Training.** Only personnel who have received general instructions regarding the inspection, application and operation of aerial devices, including recognition and avoidance of hazards associated with their operation, shall operate an aerial device. Such items covered shall include, but not necessarily be limited to, the following issues and requirements:

- (1) The purpose and use of manuals.
- (2) That operating manuals are an integral part of the aerial device and must be properly stored on the vehicle when not in use.
- (3) A pre-start inspection.
- (4) Responsibilities associated with problems or malfunctions affecting the operation of the aerial device.
- (5) Factors affecting stability.
- (6) The purpose of placards and decals.
- (7) Workplace inspection.
- (8) Applicable safety rules and regulations, such as Part 4, ANSI C2-1997, National Electrical Safety Code

(applies to utility workers as defined in ANSI C2). The above standard is an example; other industries using aerial devices have safety rules pertinent to that industry.

- (9) Authorization to operate.
- (10) Operator warnings and instructions.
- (11) Actual operation of the aerial device. Under the direction of a qualified person, the trainee shall operate the aerial device for a sufficient period of time to demonstrate proficiency in the actual operation of the aerial device.
- (12) Proper use of personal fall protection equipment.

11.4.2 **Familiarization.** When an operator is directed to operate an aerial device he/she is not familiar with, the operator, prior to operating, shall be instructed regarding the following items and issues:

- (1) The location of the manuals.
- (2) The purpose and function of all controls.
- (4) Safety devices and operating characteristics specific to the aerial device.

11.5 **Communications.** In the event the manufacturer or installer provides the renter or lessor manuals, bulletins, or other materials for the information of the user of an aerial device, the renter or lessor shall pass them on to the user without any undue delay.

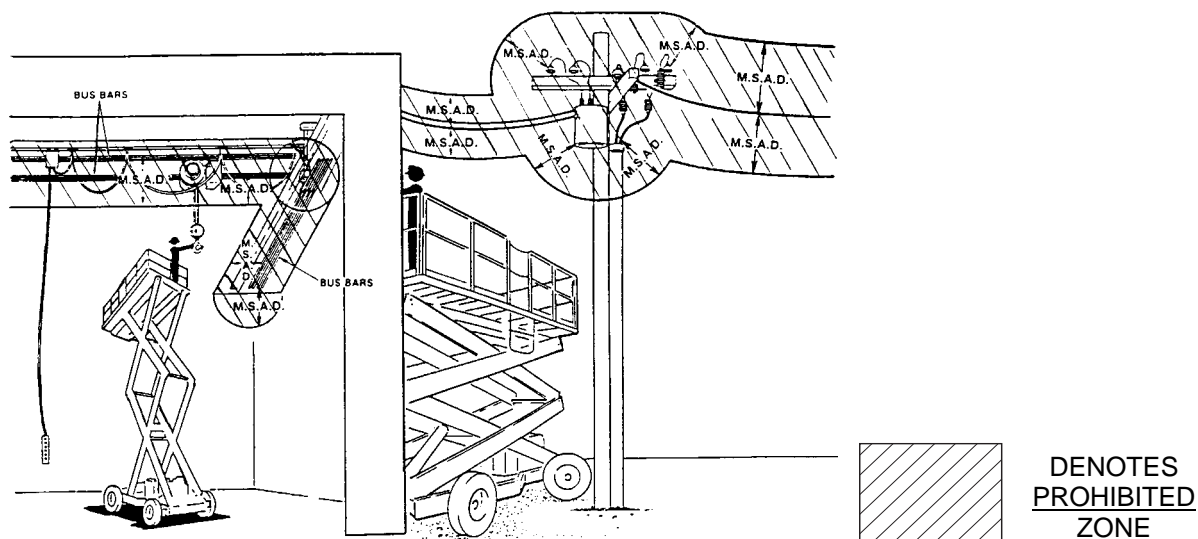


Figure 6-1. Minimum Safe Approach Distances

⚡ DANGER

Do not allow machine, personnel, or conductive materials inside prohibited zone. Maintain M.S.A.D. from all energized lines and parts as well as those shown. Assume all electrical parts and wires are energized unless known otherwise.

⚠ CAUTION

Diagrams shown are only for purposes of illustrating M.S.A.D. work positions, not all work positions.

Minimum Safe Approach Distances

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance	
	(Feet)	(Meters)
0 to 300V	Avoid Contact	
Over 300V to 50KV	10	3.05
Over 50KV to 200KV	15	4.60
Over 200KV to 350KV	20	6.10
Over 350KV to 500KV	25	7.62
Over 500KV to 750KV	35	10.67
Over 750KV to 1000KV	45	13.72

7 MATERIAL SAFETY DATA

The following Material Safety Data Sheets describe the correct procedures for the safe handling of chemical components within the Model 4527A Articulating Boom Lift, as well as any potential health and safety hazards related to these chemicals. Material Safety Data Sheets are included here in accordance with applicable federal and state regulations. Read and observe all safety precautions. Maintain awareness of potential health and safety hazards.

MATERIAL SAFETY DATA SHEET FOR LEAD ACID BATTERIES, WET, FILLED WITH ACID

SECTION I – GENERAL INFORMATION					
Manufacturer's Name:	Crown Battery Mfg. Company	EMERGENCY NO: 800 487-2879			
Street Address:	1445 Majestic Drive	OR		800 OIL-TANK	
City, State, Zip	Fremont, Ohio 43420	REVISION DATE: 5/18/2000			
Phone Number:	419 334-7181				
SECTION II -- MATERIAL IDENTIFICATION AND INFORMATION					
COMPONENTS	PERCENT	OSHA PEL	ACGIH TLV	OTHER LIMITS	CAS NUMBER
Hazardous Components 1% or greater Carcinogens 0.01% or greater					
METALLIC LEAD METAL	25.5%	0.05 mg/m3	0.05 mg/m3	NONE	7439-92-1
LEAD SULFATES	18.2%	0.05 mg/m3	0.05 mg/m3	NONE	7439-92-1
LEAD OXIDES	18.0%	0.05 mg/m3	0.05 mg/m3	NONE	7439-92-1
POLYPROPYLENE CASE MTL	6.4%				
SEPARATORS	3.5%				
SULFURIC ACID (H2SO4)	5.2%	1.0 mg/m3	1.0 mg/m3	NONE	7664-93-9
WATER	19.2%				
REGULATORY INFORMATION:	Those ingredients listed above are not subject to the reporting requirements of 313 of Title III of the Superfund Amendments and Reauthorization Act. The items are covered in an exemption as a "Manufactured Article". 372.30(b)				
SECTION III -- PHYSICAL / CHEMICAL CHARACTERISTICS					
Boiling Point	Approximately 203F	Vapor Density:	Greater Than 1		
Vapor Pressure	14 @ 37% @ 80 F	Melting Point:	-36 F to -10.6 F		
Solubility in Water	100%	Water Reactive:	Yes, Produces Heat		
Specific Gravity	1.245 - 1.295 Battery Electrolyte				
Appearance & Odor	Clear Liquid with Sharp Pungent Odor				
SECTION IV -- FIRE AND EXPLOSION HAZARD DATA					
Flash Point:	Not Combustible				
Auto Ignition Temperature	N/A	Flammability Limits in Air % by Volume:	N/A		
Extinguishing Media:	Dry Chemical Carbon Dioxide, Water Fog, Water				
Special Fire Fighting Procedures:	Sulfuric Acid Fumes, Sulfur Dioxide Gas or Carbon Monoxide may be released when acid decomposes. Wear NIOSH approved self-contained breathing apparatus.				
Unusual Hazards:	Water applied to sulfuric acid generates heat and causes acid to splatter. Wear full-cover acid resistant clothing. Sulfuric acid reacts violently with metals, nitrates, chlorates, carbides, fulminates, picrates and other organic materials. Reacts with most metals to yield explosive/flammable hydrogen gas. This reaction is intensified when sulfuric acid is diluted with water to form battery electrolyte.				

MATERIAL SAFETY DATA SHEET

FOR LEAD ACID BATTERIES, WET, FILLED WITH ACID (Continued)

SECTION V -- HEALTH HAZARD DATA

Primary Routes of Entry:	Inhalation: YES Skin: YES Ingestion: YES
Health Hazards:	Acute EYES, SKIN, RESPIRATORY SYSTEM & DIGESTIVE SYSTEM Chronic: EYES, SKIN, RESPIRATORY SYSTEM & DIGESTIVE SYSTEM
Signs and Symptoms of Exposure:	IRRITATION OF EXPOSED AREA, BURNS AND RESPIRATORY PROBLEMS NO POSSIBILITY OF EXPOSURE OF LEAD WILL OCCUR UNLESS BATTERY IS DESTROYED.
Medical Conditions Generally Aggravated By Exposure:	EXPOSURE TO MIST MAY CAUSE LUNG DAMAGE & AGGRAVATE PULMONARY CONDITION.
Emergency First Aid Procedures:	SEEK MEDICAL ASSISTANCE FOR FURTHER TREATMENT, OBSERVATION AND SUPPORT IF NECESSARY.
Eye Contact:	WASH WITH COPIOUS QUANTITIES OF COOL WATER FOR AT LEAST 15 MINUTES
Skin Contact:	FLUSH AREA WITH LARGE AMOUNTS OF COOL WATER FOR AT LEAST 15 MINUTES
Inhalation:	REMOVE TO FRESH AIR, IF BREATHING IS DIFFICULT - GIVE OXYGEN
Ingestion:	GIVE MILK TO DRINK, <u>DO NOT</u> INDUCE VOMITTING. CALL PHYSICIAN

SECTION VI -- REACTIVITY DATA

Stability:	STABLE	Conditions to Avoid: N/A
Incompatibility:	AVOID COMBUSTIBLES, ORGANIC MATERIALS, AND STRONG REDUCING AGENTS	
Hazardous Decomposition Products:	SULFUR TRIOXIDE, CARBON MONOXIDE, SULFURIC ACID FUMES, & SULFUR DIOXIDE	
Hazardous Polymerization:	MAY OCCUR	Conditions to Avoid: N/A

SECTION VII -- SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:
CONTAIN SPILL, USING NON-COMBUSTIBLE MATERIALS: VERMICULITE, DRY SAND & EARTH. NEUTRALIZE
WITH LIME, SODA ASH, SODIUM BICARBONATE, ETC.

Waste disposal method: CONSULT STATE ENVIRONMENTAL AGENCY. INDIVIDUAL STATE REGULATIONS VARY

Precautions to be taken in Handling & Storage: SEPARATE FROM INCOMPATIBLE MATERIALS, KEEP AWAY
FROM FIRE, SPARKS AND HEAT

Other Precautions and/or Special Hazards:
CONTACT WITH METALS MAY PRODUCE TOXIC SULFUR DIOXIDE FUMES & MAY ALSO RELEASE FLAMMABLE
HYDROGEN GAS. THIS REACTION IS INTENSIFIED WHEN DILUTED.

NFPA Rating:	HEALTH: 3	FLAMMABILITY: 0	REACTIVITY: 2	SPECIAL: 0
HMIS Rating:	HEALTH: 3	FLAMMABILITY: 0	REACTIVITY: 2	PERSONAL PROTECTION: X

SECTION VIII -- CONTROL AND PROTECTIVE MEASURES

Respiratory Protection:	ABOVE P.E.L.: NIOSH APPROVED, FITTED, FULL FACE RESPIRATOR
Protective Gloves:	ACID RESISTANT
Eye Protection:	FULL FACE PROTECTION
Ventilation:	LOCAL EXHAUST: VENTILATED AREA PREFERRED MECHANICAL: IF BELOW P.E.L. SPECIAL: MUST BE ACID & EXPLOSIVE RESISTANT OTHER: MUST BE ACID & EXPLOSIVE RESISTANT
Other Protective Equipment:	ACID RESISTANT CLOTHING AND BOOTS
Hygienic Work Practices:	N/A

MATERIAL SAFETY DATA SHEET

DEXRON III/MERCON AUTOMATIC TRANSMISSION FLUID (HYDRAULIC OIL)

SECTION I -- GENERAL INFORMATION	
TRADE NAME:	CITGO TRANSGARD™ ATF, DEXRON III/MERCON
EMERGENCY TELEPHONE NUMBERS:	918.495.4700 (medical); 800.424.9300 (chemical)
CHEMICAL FAMILY:	AUTOMATIC TRANSMISSION FLUID, LUBRICATING OIL
CAS NUMBER: MIXTURE.	REVISION DATE: 10/29/98
HAZARDOUS INGREDIENTS:	CONTAINS NO INGREDIENTS NOW KNOWN TO BE HAZARDOUS AS DEFINED IN OSHA 29 CFR 1910.1000 AND OSHA 29 CFR 1910.1200.
SECTION II -- HEALTH HAZARD DATA	
PRIMARY ROUTES OF ENTRY:	INHALATION, SKIN ABRASION AND INGESTION.
CARCINOGENIC:	NO
SYMPTOMS (INGESTION, CONTACT, INHALATION):	MILD, TRANSIENT SKIN OR EYE IRRITATION MAY OCCUR.
EYES:	FLUSH WITH WATER FOR 15 MINUTES
SKIN:	WASH THOROUGHLY WITH WARM SOAPY WATER.
INGESTION:	DO NOT INDUCE VOMITTING-SEEK MEDICAL ATTENTION.
CONDITIONS AGGRAVATED BY EXPOSURE:	NONE KNOWN
AIR EXPOSURE LIMITS: P.E.L. 5 mg/m3 (OSHA) T.L.V. 10mg/m3 (ACGIH)	
HEALTH: 0 FIRE: 1 SPECIFIC: X REACTIVITY: 0	
SECTION III -- PHYSICAL DATA	
BOILING POINT/FREEZING POINT:	N/A
VAPOR PRESSURE (PSIA):	N/A
SPECIFIC GRAVITY (H20=1):	0.86
SOLUBILITY IN WATER:	NEGLIGIBLE; INSOLUBLE IN COLD WATER
PH OF CONCENTRATE:	N/A
APPEARANCE AND ODOR:	RED LIQUID, MILD PETROLEUM ODOR
SECTION IV -- FIRE AND EXPLOSION HAZARD DATA	
FLASH POINT (METHOD USED):	CLOSED: 339° F (Pensky-Martens); OPEN: 390° F (Cleveland).
FLAMMABLE LIMITS:	NOT DETERMINED
LEL: N/A UEL: N/A	
EXTINGUISHING MEDIA:	DRY CHEMICAL, FOAM, CO2, WATER FOG. TREAT AS CLASS B FIRE.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	PRODUCES COMBUSTIBLE VAPOR AT TEMPERATURES ABOVE FLASH POINT
SECTION V -- REACTIVITY DATA	
STABILITY:	STABLE
CONDITIONS TO AVOID:	AVOID EXTREMES OF HEAT; IGNITION SOURCES.
INCOMPATIBILITY (MATERIALS TO AVOID):	STRONG OXIDIZING MATERIALS.
HAZARDOUS DECOMPOSITION PRODUCTS:	INCOMPLETE COMBUSTION MAY CAUSE CARBON OXIDES.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR.
SECTION VI -- SPECIAL PROTECTION INFORMATION	
RESPIRATORY PROTECTION (SPECIFIC TYPE):	NONE REQUIRED
VENTILATION:	NORMAL
LOCAL EXHAUST:	NORMAL
MECHANICAL EXHAUST (GENERAL):	X
PROTECTIVE GLOVES:	OIL IMPERVIOUS GLOVES RECOMMENDED
EYE PROTECTION:	SAFETY GLASSES RECOMMENDED
OTHER PROTECTIVE EQUIPMENT:	PROTECTIVE CLOTHING RECOMMENDED
SPECIAL LABELLING INSTRUCTIONS:	NOT REQUIRED
SPECIAL PACKAGING RECOMMENDATIONS:	NONE
HANDLING AND STORAGE RECOMMENDATIONS:	AVOID EXTREMES OF COLD OR HEAT. STORE IN CLEAN DRY AREA.
SPILL OR LEAK PROCEDURES:	IN CASE OF LEAK OR SPILL, DIKE AND ABSORB WITH INERT MATERIAL. FOLLOW ALL LOCAL, STATE AND FEDERAL REGULATIONS FOR DISPOSAL.
<p>DISCLAIMER: THE INFORMATION CONTAINED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF THE SELLER'S KNOWLEDGE. THE SELLER MAKES NO WARRANTY WHATSOEVER, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.</p>	

8 EQUIPMENT OPTIONS

The Bil-Jax Model 4527A may be equipped with one or more optional components designed for the convenience and safety of operators when using the equipment to accomplish specific tasks.

Always use only those components manufactured and/or authorized by Bil-Jax, Inc. Never make any adjustments or modifications or otherwise alter the equipment in any way that is not expressly recommended by the manufacturer.

When operating a machine equipped with optional components, observe all safety precautions set forth by the manufacturer, as well as all OSHA, ANSI, federal, state and local codes and regulations governing this equipment and its components.

Consult rental agency or equipment manufacturer regarding which optional components may be installed on the boom lift. For questions regarding safe use, call 800-537-0540 before attempting operation.

MATERIAL LIFTING HOOK

If the boom lift is equipped with a material lifting hook, observe the following procedure for material lift operation:

- ❑ Remove platform controls from the work platform by releasing the latch on the back of the platform control box.
- ❑ Disconnect platform control box from the load sense module located on the boom lift bulkhead.
- ❑ Remove the electric loopback plug from the receptacle on the bottom right of the ground control panel (Figure 8-1) and insert the platform control cable into the open receptacle.

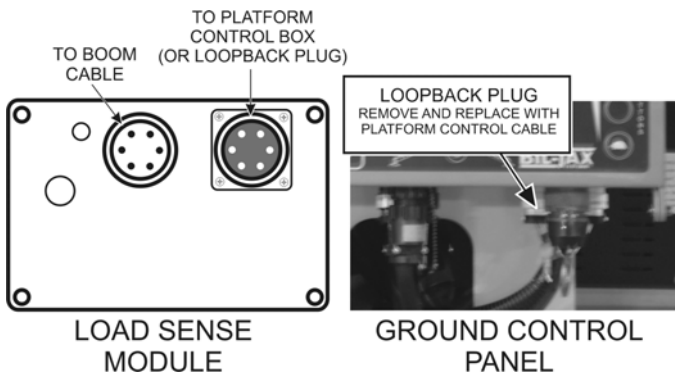


Figure 8-1. Material Lifting Hook Configuration

- ❑ Insert the removed electric loopback plug into the open receptacle on the load sense module, replacing the platform control cable.
- ❑ Remove the retaining pin holding the platform to boom lift. Firmly secure platform to prevent equipment damage.
- ❑ Remove the platform from the boom by lifting cage up and away from the mounting bracket on the boom nose.
- ❑ Attach the material lifting hook to the mounting bracket on the boom nose and insert the retaining pin (Figure 8-2).

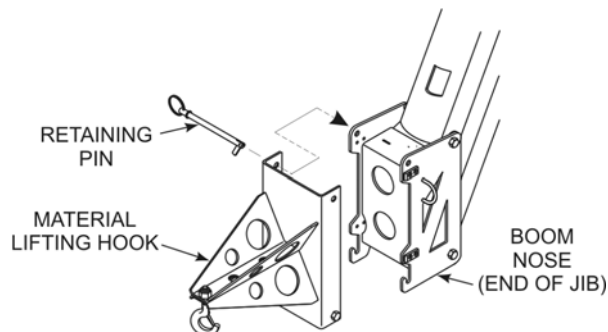


Figure 8-2. Material Lifting Hook Installation

- ❑ Operate the material lifting hook remotely, using the platform control box for optimal control.

! WARNING

Always observe the manufacturer's weight lifting limitations when using the material lifting hook. Always use lifting straps or wire rope slings that are rated at a minimum 500 lbs lifting capacity. Never stand beneath an elevated load or position an elevated load above personnel. Falling objects can cause serious injury or death.

⚡ DANGER

This machine is not insulated for use near electrical power lines and DOES NOT provide protection from contact with or close proximity to any electrically charged conductor. Operator must maintain safe clearances at all times and always allow for platform movement such as wind-induced sway. Refer to Table 1-1 for minimum safe approach distances between the machine and electrical power lines.

- ❑ Reverse the procedure to reattach the work platform.

HORIZONTAL JIB ROTATOR

The optional jib rotator allows the jib boom and work platform to be rotated clockwise or counterclockwise around a vertical axis. Boom lifts equipped with jib rotator option will have additional controls on the ground and platform control panels (Figure 8-3).

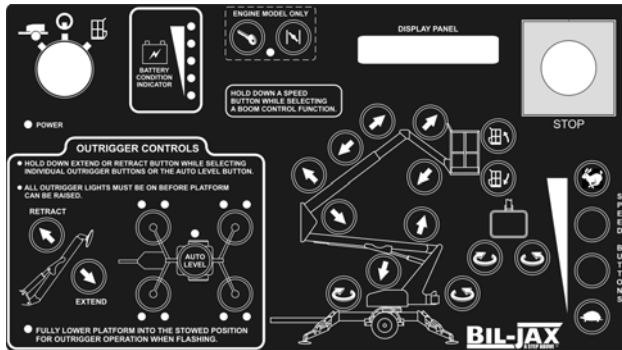


Figure 8-3. Ground Controls with Jib Rotator

Pressing and holding the desired SPEED button and Jib Rotate CLOCKWISE or Jib Rotate COUNTERCLOCKWISE button (Figure 8-4) at the same time enables the boom to rotate in the direction selected. Motion continues until buttons are released or until the jib boom reaches a hard stop or a safe travel limit.

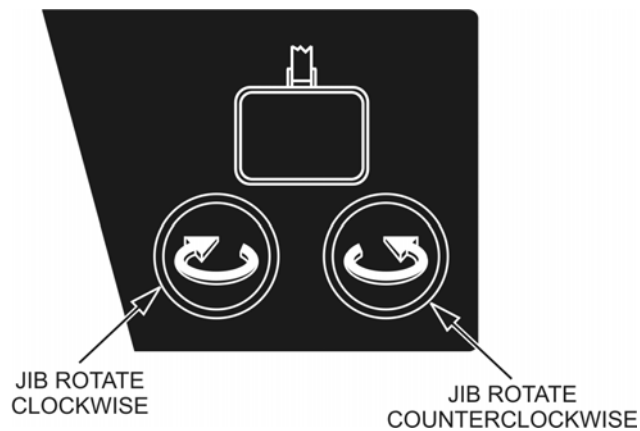


Figure 8-4. Jib Rotate Buttons (Detail)

PLATFORM ROTATOR

The optional platform rotator allows the operator to rotate the elevated work platform 90° around a vertical axis by actuating a rotator handle found below the platform control panel.

To operate manual platform rotator, turn the rotator handle in the direction of desired rotation (clockwise or counterclockwise). Motion continues in the desired direction until rotator handle is released or the platform reaches a safe travel limit.

! WARNING
Installation of a manual platform rotator may reduce the rated load limit of the work platform. Follow all manufacturer's recommendations and safety precautions when operating a boom lift equipped for platform rotation.

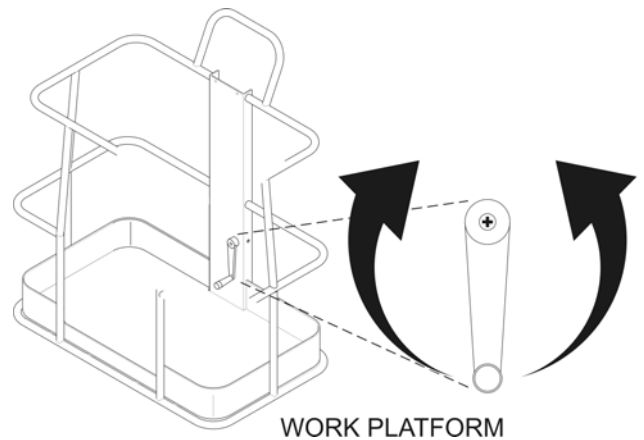


Figure 8-5. Manual Platform Rotator

COMBINATION HITCH

Observe the following procedure to change the hitch coupler on lifts equipped with an optional combination hitch:

- ❑ Choose the desired hitch coupler from among the following: 2-inch ball hitch, 2 ⁵/₁₆-inch ball hitch, 2 ½-inch Pintle Ring, or Clevis hitch.
- ❑ Insert the hitch coupler into the hitch bracket found at the end of the trailer tongue (Figure 8-6).

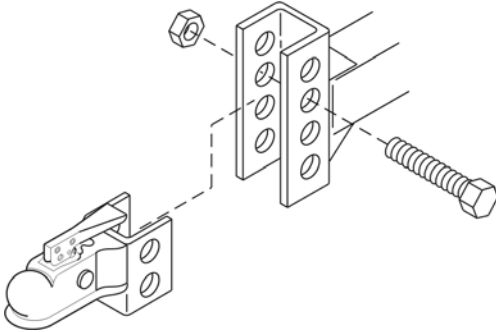


Figure 8-6. Combination Hitch Installation

- ❑ Choose the desired height for the hitch coupler and secure with the two included bolts.
- ❑ Tighten the hex nuts to 150 lb-ft (200 N.m) torque.
- ❑ Attach trailer to tow vehicle according to normal operating procedure.



CAUTION —————
Failure to verify correct torque when installing or reinstalling a coupler on the combination hitch bracket may cause the fasteners to shear and could result in damage to equipment.

REPLACEMENT DECALS

Refer to Table 8-1 and Figure 8-7 to Figure 8-8 for a descriptions and locations of replacement decals for optional components. Refer to Section 5 for a comprehensive list of standard decals on the Bil-Jax Model 4527A Articulating Boom Lift.

All decals related to optional equipment have a quantity of one (1) unless otherwise noted.

Table 8-1. Replacement Decals

Decal No.	Description of Decal
B06-00-0474	NOTICE: Max. Load (All Configurations)
B06-00-0485	NOTICE: Material/Lifting Configuration Set-Up (Material Lift Option Only)
B06-00-0497	NOTICE: Load Capacity for Material Lifting Hook (Material Lift Option Only)
B06-00-0529	NOTICE: Manual Platform Rotation (Manual Rotation Option Only)

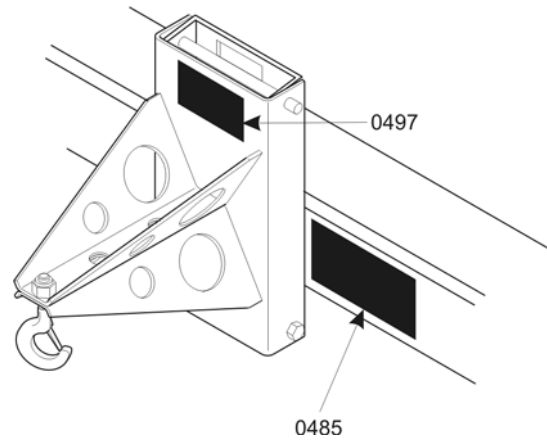


Figure 8-7. Material Lifting Hook Decals

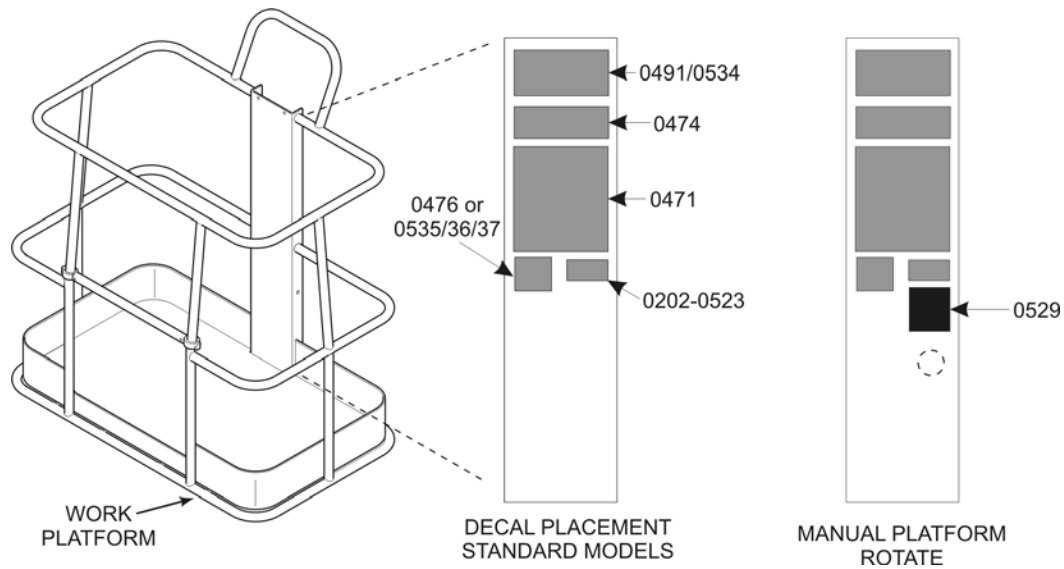


Figure 8-8. Optional Component Decal Locations



125 Taylor Parkway
Archbold, OH 43502
Phone (419) 445-8915
(800) 537-0540
Fax (419) 445-0367

<http://www.biljax.com>

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