SUMMIT SERIES

Operator's manual

SUMMIT SERIES

3632T - HTT13

3522A - HTA13P - 4527A - HTA16P - 5533A - HTA19P

2420341380 E 02.12 USA

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MATERIAL SAFETY

Aerial work platform

This equipment is designed and manufactured in compliance with the duties, responsibilities and standards set forth for manufacturers in the ANSI, CSA, AS and/or CE standards in effect at the time of manufacture.

This equipment meets or exceeds applicable ANSI, CSA, AS and/or CE codes and standards when operated in accordance with manufacturer's recommendations.

It is the responsibility of the user to follow all 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 recommendations as well as all Federal, State, and Local codes and regulations.

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 aerial work platform.

Some countries require that operators are licensed to operate aerial work platforms.

Check with all Federal, State, and Local codes and regulations before operation this machine.

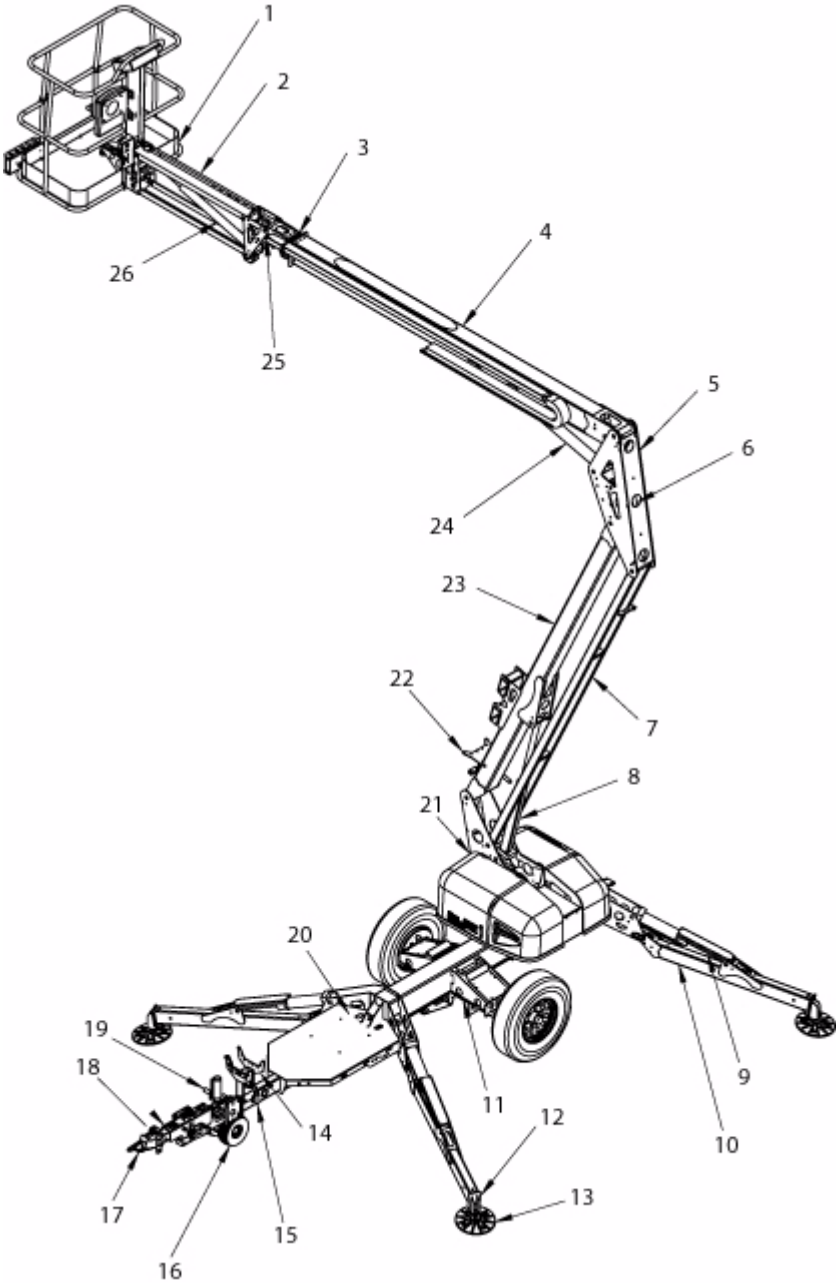
This manual shall be considered a permanent and necessary component of the aerial work platform and shall be kept with the machine at all times.

Owners and Lessors should complete a full inspection of all components and perform a test of all functions, including brake functions, before commissioning or reselling the aerial work platform. Repair or replace all damaged or malfunctioning components. Check local requirements with your manager.

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

CALIFORNIA
Proposition 65 Warning
Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

3522A (HTA13P) - 4527A (HTA16P) - 5533A (HTA19P)



20. Platform
21. Jib boom
22. Extension boom
23. Secondary boom
24. Knuckle
25. Master cylinder
26. Lower link
27. Primary lift cylinder
28. Outrigger cylinder
29. Outrigger leg
30. Axle

31. Outrigger foot
32. Outrigger pad
33. Primary boom rest
34. Latch release
35. Dolly wheel
36. Trailer hitch
37. Coupler
38. Jack
39. Generator interface plate
40. Turntable
41. Secondary boom rest
42. Primary boom
43. Secondary lift cylinder
44. Slave cylinder
45. Jib lift cylinder

Proper training is required for the safe operation of any mechanical device. Failure to follow all instructions and safety precautions in this manual and attached to the aerial work platform will result in death or personal injury.

Prior to operation :

Read, understand and obey all instructions and safety precautions in this manual and attached to the aerial work platform.

Read, understand and obey all Federal, State and Local codes and regulations.

Become familiar with the proper use of all controls.

Inexperienced users should receive instruction by a qualified instructor before attempting to operate or maintain the aerial work platform.

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

1 - Legend : Safety advisories

The following safety advisories are used throughout this manual to indicate specific hazards when operating or maintaining the aerial work platform. Read, understand and obey all safety advisories to prevent improper service, damage to equipment, personal injury or death.

Legend

Symbol	Meaning
	**Indicates a hazardous situation which if not avoided, will result in death or serious injury.**
	**Indicates a hazardous situation which if not avoided, could result in death or serious injury.**
	**Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.**
	**Contains information important in the prevention of errors that could damage the machine or its components.**

N.B.-:-*Contains additional information important for performing a procedure.*

2 - Before operation

Ensure the following general safety precautions are followed before operating the Aerial Work Platform :

- ALWAYS inspect the usage area for potential hazards, such as unstable or unlevel surfaces, overhead obstructions and electrically charged wires or conductors. ALWAYS watch for moving vehicles in the operating area.
- ALWAYS conduct a thorough visual inspection of the aerial work platform before operation. Check for damaged or worn parts, hydraulic leaks, damaged wiring, loose wiring conductors, damaged outriggers, low tire pressure, uneven tire wear or tire damage. Check for any improperly operating components. NEVER operate the aerial work platform if any damage is observed or suspected. Repair damaged or malfunctioning equipment before operation.
- ALWAYS wear proper clothing. Wear protective equipment as required by Federal, State and Local codes and regulations. Keep loose clothing, jewelry, gloves and hair away from moving parts.
- ALWAYS wear a Safety Harness and energy-absorbing Lanyard, such as the Safety Harness and Lanyard available through the HAULOTTE Group.
- ALWAYS inspect platform floor and outrigger footpads for mud, grease, debris or other foreign material. ALWAYS remove any such material from the aerial work platform before operation.
- ALWAYS RED tag any part of the machines known or suspected to be damaged or malfunctioning. ALWAYS remove a malfunctioning, damaged or defective aerial work platform from service. NEVER operate an aerial work platform that has any known or suspected defect.
- ALWAYS comply with the instructions found in Safety and / or Service Bulletins distributed by the manufacturer / factory. Bulletins may contain critical procedures that supersede the information contained in this manual.
- NEVER operate this aerial work platform while under the influence of drugs or alcohol, while taking prescription medications that may leave the operator drowsy or prone to dizziness, or while feeling ill.
- NEVER modify, alter or change the aerial work platform in any way that would affect its original design or operation.
- NEVER deface, modify or obscure any decals or markings on the aerial work platform.
- NEVER operate the aerial work platform in any way for which it is not intended.
- NEVER operate the aerial work platform in explosive or flammable environments.

Before attempting aerial work platform operations, operator(s) should :

- Attend a training program as required by all Federal, State, and Local codes and regulations.
- Obtain, read and obey all safety precautions as indicated by manufacturer's recommendations and all Federal, State and Local codes and 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 aerial work platform.
- Cordon off the area surrounding the aerial work platform to keep personnel, vehicles and moving equipment away from the aerial work platform while in use.
- Position the aerial work platform on a firm and level surface.
- Conduct a Pre-Operation Inspection by performing all recommended Daily Service Checks. "Equipment Maintenance" section.

3 - During operation

Ensure the following general safety precautions are followed while operating the Aerial Work Platform :

- ALWAYS position away from power lines, this ensures that no part of the aerial work platform accidentally reaches into an unsafe area. This includes full extension of the telescoping boom through 700 ° Non-Continuous rotation.

This aerial work platform 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 (3.05 m (10 ft) minimum minimum) and must always allow for platform movement due to gusty winds. Always contact power company before working near power lines. Assume every power line is live. Power lines can be blown by the wind.

Minimum safe approach distances

Voltage range (Phase to phase)	Minimum safe approach distances	
	Feet	Mètre
0 - 300 V	Avoid contact	
300 V - 50 kV	10	3.05
50 - 200 kV	15	4.57
200 - 350 kV	20	6.10
350 - 500 kV	25	7.62
500 - 750 kV	35	10.67
750 - 1000 kV	45	13.72

- ALWAYS check with local electrical authorities regarding any local requirements which may differ from those shown in Table "MINIMUM SAFE APPROACH DISTANCES".
- ALWAYS keep away from an aerial work platform that is exposed to electrically charged power lines. If the aerial work platform comes in contact with electrically charged power lines, NEVER touch or operate aerial work platform from ground level until power lines are shut off.
- ALWAYS operate only on a firm and level surface. NEVER operate on surfaces that do not support the aerial work platform with its rated load capacity or on surfaces that do not support force exerted by the outriggers during aerial work platform operation. Operate only on surfaces that can support a pressure of 1,8 kg/cm² (25 psi) to ensure safe operation.
- ALWAYS keep personnel away from potential pinch and shear points and from potential crush hazards as indicated by decals attached to the aerial work platform.
- ALWAYS keep the safety bar lowered (closed) unless personnel are entering or exiting the work platform.
- ALWAYS use a 3 point contact (both hands and one foot) when entering or exiting the work platform.
- ALWAYS wear proper footgear. ALWAYS keep the platform free of debris.
- ALWAYS keep personnel and obstructions clear of the aerial work platform when repositioning the boom or platform.
- ALWAYS cordon the area surrounding the outriggers to keep personnel, vehicles and moving equipment away from the aerial work platform while in use.
- ALWAYS stay clear of overhead obstructions, including wires and cables.

- ALWAYS unhitch trailer from tow vehicle before operating outriggers.

NOTICE

Failure to unhitch trailer from tow vehicle prior to outrigger deployment could cause damage to trailer tongue and / or tow vehicle.

- ALWAYS disengage aerial work platform travel latches before raising aerial work platform sections and reengage aerial work platform travel latches before transporting.
- ALWAYS exercise caution when rotating the boom from the ground (lower) control panel. ALWAYS watch for personnel inside the radius of the turntable and boom arm when rotating from the ground (lower) or platform (upper) controls.
- ALWAYS remove personnel from the aerial work platform before attempting to free an elevated platform that has become caught or snagged on an adjacent structure or obstacle.
- NEVER operate the aerial work platform from a position on a truck-bed, trailer, floating vessel or scaffolding without written approval from the manufacturer / factory.
- NEVER operate the Drive function (if equipped) on surfaces exceeding 4.5 °, or with more than one person in the platform.
- ALWAYS maintain joystick enable lever during drive operation.
- NEVER allow electrode contact with any part of the aerial work platform while welding from the platform. NEVER use the aerial work platform as a ground for welding.
- NEVER operate without the outriggers fully extended or when the aerial work platform is not level.
- NEVER position an elevated platform against another object to steady the platform.
- 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 platform.
- NEVER raise the outriggers with materials or personnel on board, or while platform is raised or extended.
- NEVER sit, stand or climb on platform railing. ALWAYS keep both feet firmly on the platform floor.
- NEVER attempt to increase the working height with boxes, ladders, stools or any other materials.
- NEVER operate this aerial work platform when exposed to high winds, thunderstorms, ice or any weather conditions that would compromise operator safety.
- NEVER operate aerial work platform in conditions where wind speeds exceed 45 km/h (28 mph or 12.5 m/sec). Steady or gusty winds that exceed the recommended wind speed may affect stability and aerial work platform operation.
- NEVER allow ropes, electric cords, hoses or other equipment to become entangled in the aerial work platform.
- NEVER exceed the load limits set by the manufacturer / factory. Use only the material lifting hook, supplied as an option and manufactured by Haulotte Group when lifting materials. Safely stow all tools and equipment.
- NEVER exceed load ratings by transferring loads to the aerial work platform at elevated heights.
- NEVER use the platform to lift a load that exceeds the platform dimensions. NEVER lift a load in such a way that the center of gravity is higher than the top guardrail of the platform.

- NEVER modify the platform or carry materials that would increase the surface area of the platform. Increasing the area exposed to the wind may affect the aerial work platform stability. NEVER attach overhanging loads when raising or lowering the platform.
- NEVER use the boom or platform to push or pull or to lift any part of the machine.
- NEVER use the boom or platform to place a load against any structure, materials or equipment.
- NEVER climb on the boom.
- NEVER leave an elevated platform unattended.
- NEVER leave the keys in the aerial work platform while unattended or not in use.

4 - Drive safety

ALWAYS maintain an awareness of limited sight and blind spots when operating drive functions.

ALWAYS limit travel speed according to surface conditions, slope, location of personnel and obstructions and any other factors which may result in collision.

NEVER operate drive functions on slopes exceeding 45% (24°).

NEVER engage in stunt driving, horseplay or any other behavior considered unsafe according to employer, job site and all Federal, State, and Local codes and regulations.

NEVER operate the internal combustion engine in an area that is not properly ventilated.

NEVER fuel the internal combustion engine while smoking, or while near spark or open flame.

5 - Fall protection

• Occupants must wear a safety belt or harness in accordance with all Federal, State, and Local codes and regulations. Attach lanyard to the anchor provided on the work platform.

• NEVER sit, stand, or climb on the platform guard rails. Maintain a firm footing on the platform floor at all times.

• NEVER climb down from the platform when raised. If a power failure should occur, ground personnel should use the manual controls to lower the platform. Refer to the "Operation" Section of this manual for manual operation.

• Keep platform floor clear of debris.

• Lower the platform entry mid-rail or close the entry gate before operating.

6 - Manual force

- Never push off or pull toward any object outside the platform.
- Maximum allowable manual force is 400 N (90 lb.).

7 - Wind loading

- Never operate the aerial work platform in strong or winds that exceed 28 mph (12.5 m/s) or 45 km/h. Never increase the surface area of the platform or the load. Increasing the area exposed to the wind will decrease the aerial work platform stability.
- The Beaufort scale of wind force is accepted internationally and is used when communicating weather conditions. It consists of a number 0 - 10 > , each representing a certain strength or velocity of wind at 10 m(32 ft10 in) above ground level in the open. Beaufort scale.

Beaufort scale

Force	Meteorological description	Observed effects	m/s	km/h	mph
0	Calm	Calm; smoke rises vertically	0 - 0,3	0 - 1	0 - 0.62
1	Light Air	Direction of wind shown by smoke.	0,3 - 1,4	1 - 5	0.62 - 3.11
2	Light breeze	Wind felt on the face. Leaves rustle. Ordinary vanes moved by wind.	1,7 - 3,1	6 - 11	3.73 - 6.84
3	Gentle breeze	Leaves and small twigs in constant motion. Wind exceeds light flag.	3,3 - 5,3	12 - 19	7.46 - 11.81
4	Moderate breeze	Raised dust and loose papers. Small branches are moved.	5,6 - 7,8	20 - 28	12.43 - 17.4
5	Fresh breeze	Small trees in leaf to sway. Crested wavelets form on inland waterways.	8,1 - 10,6	29 - 38	18.02 - 23.61
6	Strong breeze	Large branches in motion. Whistling heard in telephone wires. Umbrellas used with difficulty.	10,8 - 13,6	39 - 49	24.23 - 30.45
7	Near gale	Whole trees in motion. Inconvenience felt when walking against wind.	13,9 - 16,9	50 - 61	31.07 - 37.9
8	Gale	Breaks twigs off trees. Generally impedes progress.	17,2 - 20,6	62 - 74	38.52 - 45.98
9	Strong gale	Slight structural damage occurs. Chimney pots and slates removed.	20,8 - 24	75 - 88	46.60 - 54.68
10 >	Storm, Violent Storm, Hurricane	Trees uprooted, widespread damage to structures, widespread devastation.	24,7 >	89 >	55.3 >

8 - Explosion hazard

- NEVER operate aerial work platform if you smell or detect Liquid Petroleum Gas (LPG), gasoline, diesel fuel or other explosive substances.
- ALWAYS charge Batteries only in an open, well-ventilated area away from sparks, flames and lighted tobacco.

If this aerial work platform is equipped with a generator :

- NEVER refuel with the engine running.
- NEVER operate engine unless in a well-ventilated area to avoid carbon monoxide poisoning.

9 - Maintenance

Ensure the following general safety precautions are followed while performing maintenance on the aerial work platform.

9.1 - 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 are in good condition.
- ALWAYS turn the key switch to the "OFF" position and remove key before performing maintenance. Whenever possible, ALWAYS perform maintenance with the boom and platform in its fully lowered, stowed position.
- ALWAYS secure the boom before performing maintenance on hydraulic cylinders.
- ALWAYS disconnect power to the hydraulic pump drive motor before making electrical checks to the hydraulic valves.
- ALWAYS keep all mechanical parts properly adjusted and lubricated according to maintenance schedule and manufacturer / factory specifications. Refer to the "Equipment Maintenance" Section of this manual.
- ALWAYS perform a function check of operating controls before each use and after any repairs have been made.
- ALWAYS locate and protect against possible pinch points before performing any maintenance or repairs. Be aware of personnel under, and around the aerial work platform.
- ALWAYS use only manufacturer-approved parts to repair or maintain aerial work platform. If any portion of this aerial work platform is rebuilt or repaired, retesting is required in accordance with manufacturer / factory instructions.
- ALWAYS maintain a safe distance while testing the hydraulic components. ALWAYS relieve hydraulic pressure before loosening or removing hydraulic components. NEVER test or operate the hydraulic components while personnel are near the aerial work platform.
- 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, refer to the "Motor Drying Instructions" located in the Equipment Maintenance section of this manual or contact the Haulotte Customer Service Department at 1-800-537-0540 for proper drying instructions.
- NEVER add unauthorized fluids to the hydraulic system or battery. NEVER mix hydraulic oils. Consult manufacturer specifications. Refer to the "Equipment Maintenance" Section of this manual for hydraulic system maintenance procedures.
- NEVER exceed the manufacturer's recommended relief valve settings.
- NEVER touch or allow metal tools to contact any 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. ALWAYS consult an authorized HAULOTTE Group technician by contacting the Customer Service Department at 1-800-537-0540 if repairs are necessary.

- NEVER modify, alter or change the aerial work platform without first consulting an authorized HAULOTTE Group technician, and NEVER in any way that would affect its original design or operation.

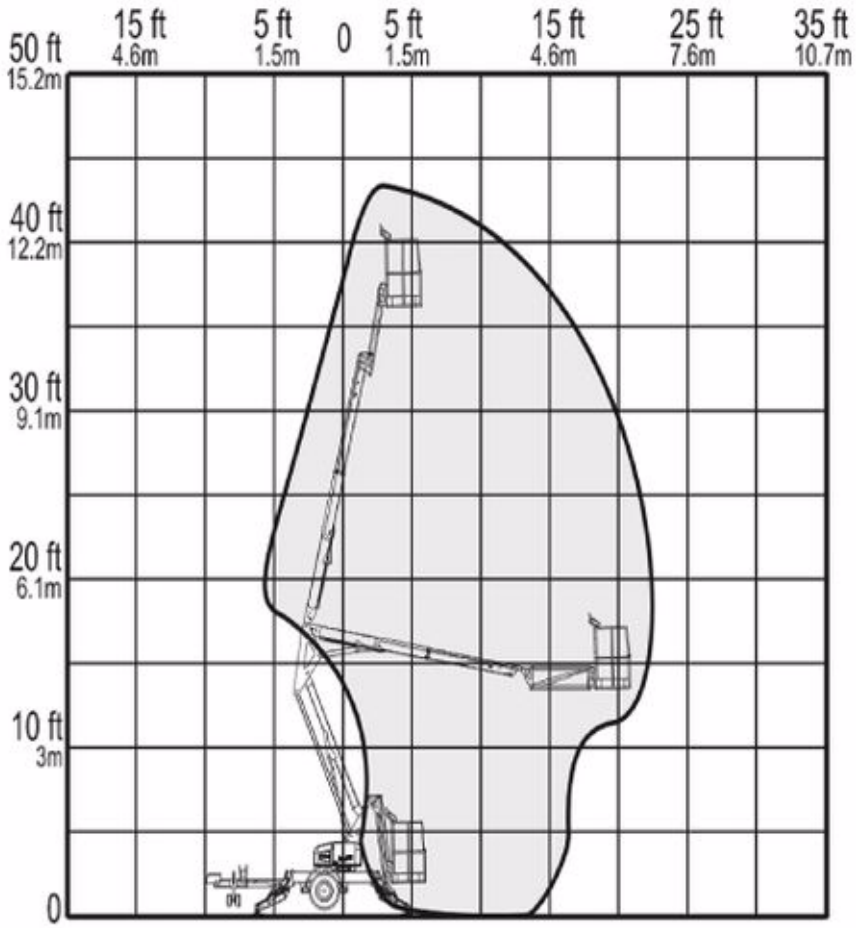
9.2 - BATTERY MAINTENANCE

Ensure the following general safety precautions are followed when performing battery maintenance on the aerial work platform :

- ALWAYS check the battery fluid 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 or 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.
- ALWAYS replace batteries using only parts recommended by manufacturer / factory. ALWAYS use only batteries with sealed caps over cells.
- NEVER smoke while servicing batteries.
- 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 jump-start other vehicles using the aerial work platform batteries.

B - Specifications

3522A (HTA13P)



B - Specifications

Technical characteristics-For 3522A (HTA13P)

Machine	3522A (HTA13P)
Characteristics	Metric Imperial
Maximum work height	12.73 m(41 ft9 in)
Maximum platform height	10.90 m(35 ft9 in)
Up and over height	5.79 m(19 ft0 in)
Maximum horizontal outreach	• From centerline : 6.86 m(22 ft6 in) • From outrigger footpad edge : 5.31 m(17 ft5 in)
Rated platform capacity	• Without platform rotation : 227 kg(500 lb) • With platform rotation : 200 kg(440 lb)
Maximum occupants	2
Total weight	Without option : 1542 kg(3400 lb) Drive and set option adds 113 kg(250 lb), Engine option adds 86 kg(190 lb), all other options add 68 kg(150 lb) to weight
Turntable rotation	700 °Non continuous
Leveling capability	12.5 °
Platform dimensions	• Height : 1.09 m(3 ft7 in) • Length : 0.76 m(2 ft6 in) • Width : 1.22 m(4 ft0 in)
Platform rotation / Type (Optional)	120 °-Manual
Stowed dimensions	• Height : 1.96 m(6 ft5 in) • Length : 4.96 m(16 ft3 in) • Width : 1.65 m(5 ft5 in)
Jib dimensions	• Length : 1.3 m(4 ft3 in) • Vertical Motion : 150° (+70° / -80°)
Outrigger footprint (To center of pad)	• Length : 3.38 m(11 ft1 in) • Width : 3.02 m(9 ft11 in) • Footpad diameter : 0.25 m(0 ft10 in)
Parking brake	Mechanical
Towing brake	Hydraulic Surge Mechanical Electrical
Rated towing speed	105 km/h (65 mph)
Tire size	ST 205/75 R14C
Control system	24V DC
Battery	4 x 6V 245 amp-hr
Charger type	• 110 Volt 60 Hz • 220 Volt 50 Hz
Hydraulic pressure	207 bar(3,000 psi)
Reservoir capacity	12 l(3.1 gal US)
Hydraulic system capacity	19 l(5.1 gal US)
Hydraulic oil (Standard)	HVI AW32
Maximum decibel level	• DC mode - Ground : 60 dBA • DC mode - Platform : 55 dBA • Engine mode - Ground : 70 dBA • Engine mode - Platform : 65 dBA

B - Specifications

Machine	3522A (HTA13P)
Characteristics	Metric Imperial
Function speeds	**Primary boom :** • Primary, up - Fast : 14-18 sec • Primary, up - Slow : 33-37 sec • Primary, Down - Fast : 14-18 sec • Primary, Down - Slow : 46-60 sec **Secondary boom :** • Secondary Up - Fast : 12-16 sec • Secondary Up - Slow : 24-28 sec • Secondary Down - Fast : 18-22 sec • Secondary Down - Slow : 62-66 sec **Boom Jib :** • Jib, Up - Fast : 16-10 sec • Jib, Up - Slow : 12-16 sec • Jib, Down - Fast : 10-14 sec • Jib, Down - Slow : 26-30 sec **Extension boom :** • Boom extend - Fast : 10-14 sec • Boom extend - Slow : 22-26 sec • Boom retract - Fast : 14-18 sec • Boom retract - Slow : 30-34 sec **Turntable 700 ° Non Continuous Rotation :** • Turntable rotation - Fast : 154-158 sec • Turntable rotation - Slow : 218-222 sec **Platform :** • Platform compensation up- Fast : 8-12 sec • Platform compensation up - Slow : 10-14 sec • Platform compensation down - Fast : 5-9 sec • Platform compensation down - Slow : 5-9 sec **Outrigger (auto level) :** • Outrigger extend : 12-16 sec • Outrigger retract : 22-26 sec
Localized Pressure per Outrigger	1.76 kg/cm² (25 psi)
Operation temperature range	- 29 °C(-20 °F) to 43 °C(110 °F)

C - Operation

The Haulotte Telescoping Boom Lift model(s) 3632T (HTT13) and Articulating Boom Lift model(s) 3522A-4527A-5533A (HTA13-16-19P) are Summit Series trailer-mounted aerial work platforms, designed and manufactured to position personnel with their tools and equipment at overhead work locations. The platform load capacity is rated at 227 kg(500 lb). During all aerial work platform operations, four extended outriggers support the unit.

The aerial work platform 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. Hydraulic cylinders elevate and extend the telescoping boom and maintain the platform at level during operation. The hydraulic motor and mating worm gear allow the boom to rotate 700 ° Non-Continuous around a vertical axis.

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 Ah deep charge batteries connected in series. An automatic onboard battery charger is provided for recharging the batteries at the end of each work period.

The ground (lower) control panel controls the power, outriggers, boom lift elevation, and rotation functions.

The platform (upper) control panel only controls boom lift elevation, and rotation.

> ***N.B.***-:-*The elevation and rotation controls are operational only when the outriggers are correctly extended and the extension boom is within a programmed safe operating zone.*

The ground (lower) control panel includes a lighted text window that displays the current operating status or an existing error condition.

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, contact the Customer Service Department: at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com.

In the event of power loss, control system failure or other malfunction, boom lowering functions may be accomplished manually.

To manually operate boom retraction, and turntable rotation functions, use the hand pump, and selected valves on the hydraulic pump unit that can be accessed inside the pump compartment.

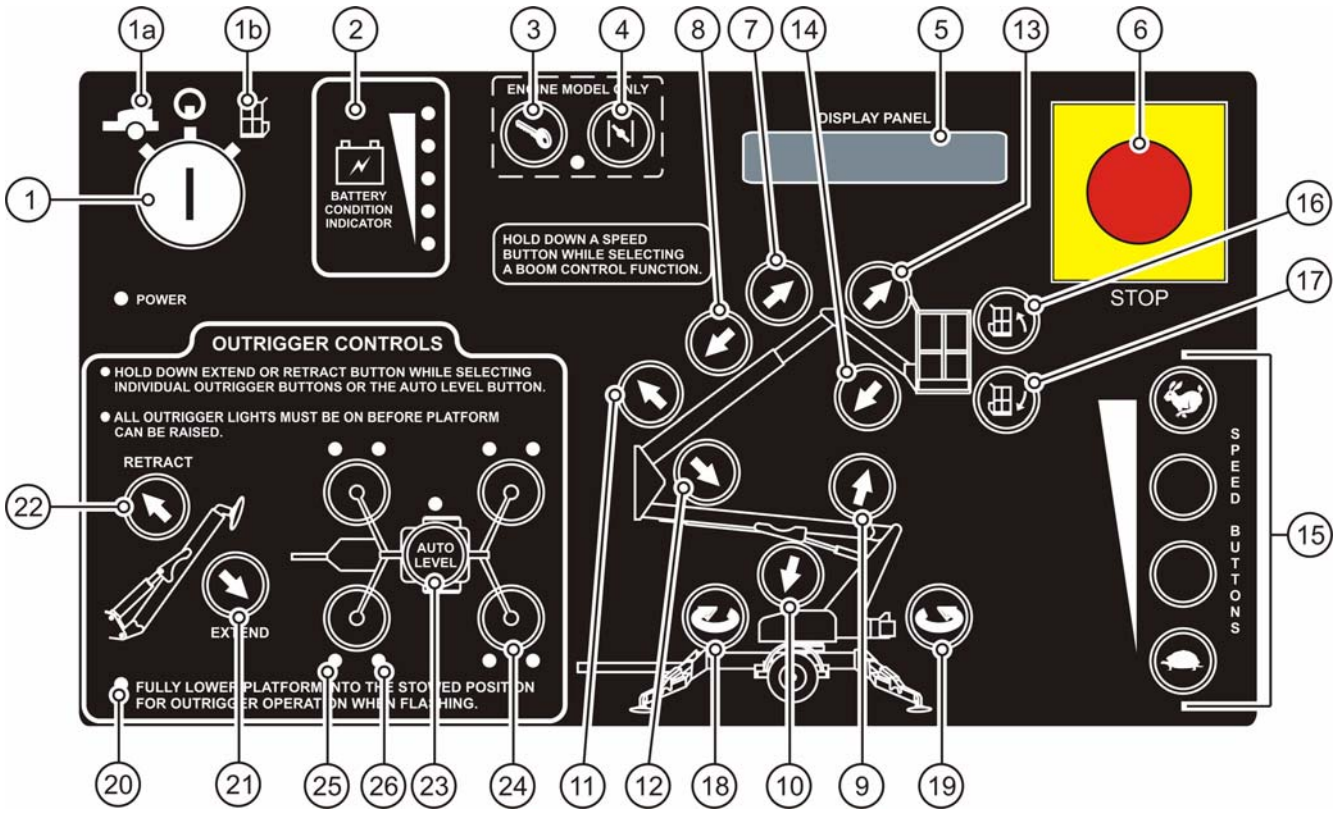
Manual lowering of telescoping aerial work platforms :

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

Manual lowering of articulating aerial work platforms :

Manual lowering of the boom and platform may also be performed by actuating the valve plunger found on the base of each boom lift cylinder. Pushing in and holding the valve "button" on the appropriate cylinder retracts that cylinder, thereby retracting that part of the boom. The boom may need to be rotated to a clear area before lowering.

Ground (lower) control panel-Articulating model(s)

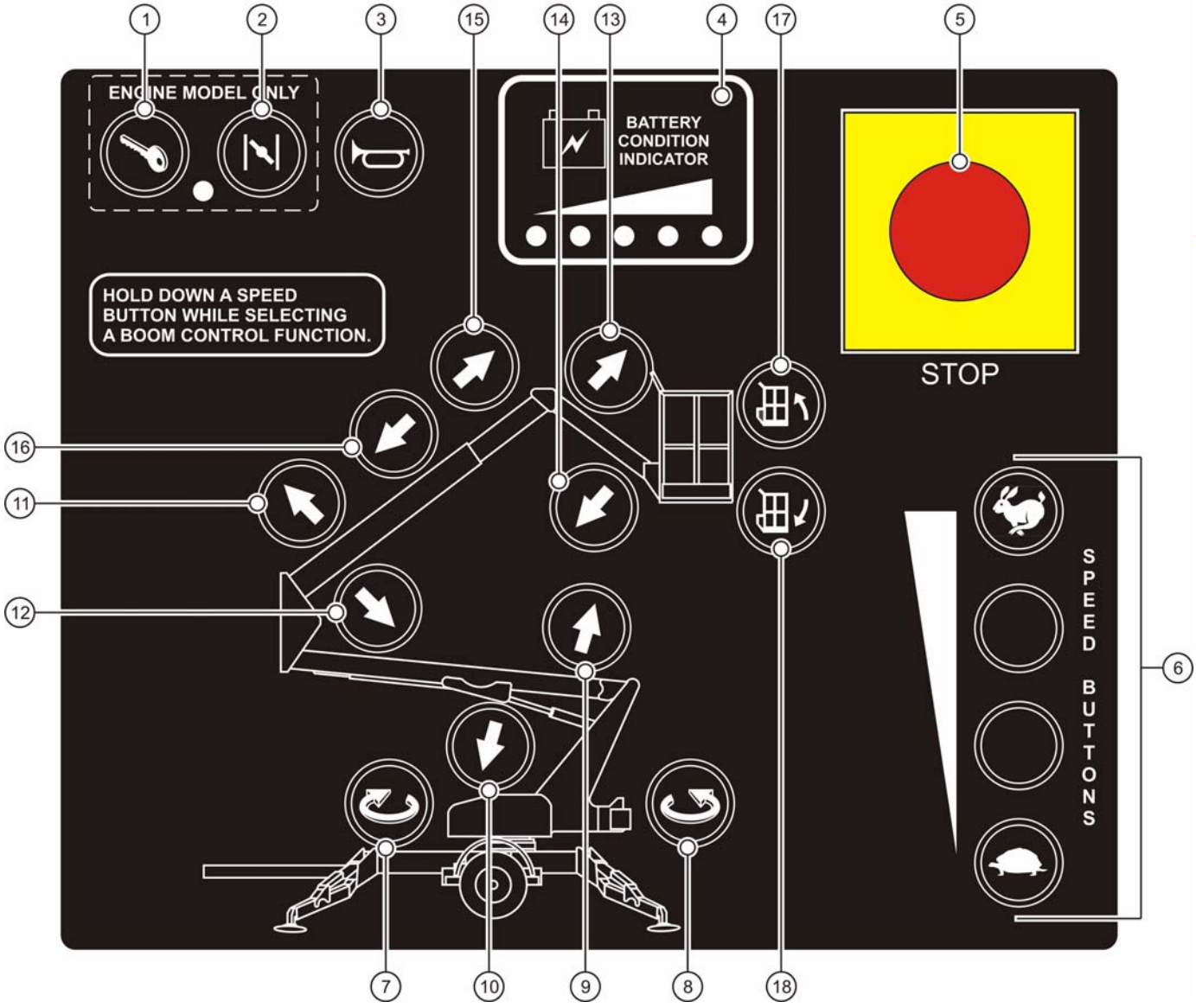


Marking	Description	Function
1	Key Switch	Turning the KEY SWITCH (1) counter clockwise to the GROUND (1a) icon selects operation from the ground (lower) control panel. Turning the KEY SWITCH (1), clockwise to the PLATFORM (1b) icon selects operation from the platform (upper) control panel. Turning the KEY SWITCH (1) to the vertical position (power "OFF") interrupts all electric and hydraulic power operations except emergency lowering. Removal of the KEY protects against any unauthorized persons attempting to operate the aerial work platform. The KEY may be removed with the KEY SWITCH (1) in any selected position
1a	Ground Controls Position	
1b	Platform Controls Position	
2	Battery condition indicator	Indicator LEDs light up to indicate the level of charge in the batteries : • A lighted green LED indicates an adequate charge level. • A lighted yellow LED indicates the need for charging soon. • A lighted red LED warns that the battery charge level is low; all functional operations become non-functional until the batteries are recharged.
3	Engine start (Models with engines only)	Start a cold engine by pressing (pushing) in and holding the CHOKE (4) button then press (push) the ENGINE START (3) button. To start / restart a warm engine, press (push) the ENGINE START (3) button only. Glow plug operation : Press (push) the GLOW PLUG (4) button and hold for 30 - 60 seconds then press (push) the ENGINE START (4) button.
4	Engine choke (Models with engines only)	

Marking	Description	Function
5	Display panel	The DISPLAY PANEL is a lighted text window that displays the current operating status or an existing error condition when the KEY SWITCH (1) is positioned at either (1a) or (1b).
6	Emergency stop button	When pushed in, the EMERGENCY STOP button (6) disconnects electrical power to the ground (lower) and platform (upper) control panels. The EMERGENCY STOP button (6) should only be pressed (pushed in) to immediately stop all aerial work platform motion. To resume control, "pull out" the EMERGENCY STOP button (6).
7	Boom extend button	Pressing (pushing) in and holding a desired SPEED button (15) and the BOOM EXTEND button (7) at the same time extends the secondary boom. Pressing (pushing) in and holding a desired SPEED button (15), and the BOOM RETRACT button (8) at the same time retracts the secondary boom. Telescoping boom motion continues until the buttons are released or until the boom reaches a hard stop or a safe travel limit.
8	Boom retract button	
9	Primary boom raise button	• Pressing (pushing) and holding a desired SPEED (15) button, and the PRIMARY BOOM RAISE (9) button at the same time will raise the primary boom. Pressing (pushing) and holding a desired SPEED (15) button, and the PRIMARY BOOM DOWN (10) button at the same time will retract the primary boom. • Pressing (pushing) and holding a desired SPEED (15) button, and the SECONDARY BOOM RAISE (11) button at the same time will raise the secondary boom. Pressing (pushing) and holding a desired SPEED (15) button, and the SECONDARY BOOM DOWN (12) button at the same time will retract the secondary boom • Pressing (pushing) and holding a desired SPEED (15) button, and the JIB BOOM RAISE (13) button at the same time will raise the JIB BOOM, pressing (pushing) and holding a desired SPEED (15) button, and the JIB BOOM DOWN (14) button at the same time will retract the JIB BOOM. . The selected Boom motion continues until the buttons are released or until the selected boom reaches a hard stop or a safe travel limit
10	Primary boom down button	
11	Secondary boom raise button	
12	Secondary boom down button	
13	Jib boom raise button	
14	Jib boom down button	
15	Speed buttons	The SPEED buttons (15) are located along the lower right side of the control panel, one of the speed buttons must be pressed (pushed) in and held while selecting any boom function. There are four speeds that range from fast (RABBIT), to slow (TURTLE), available to help control the positioning of the Boom and the Jib.
16	Platform tilt button - Up	Press (push) and hold any SPEED button (15), and the desired PLATFORM TILT UP button (16) or PLATFORM TILT DOWN button (17) at the same time to level the work platform. This levels the platform only, NOT the aerial work platform.
17	Platform tilt button - Down	

Marking	Description	Function
18	Boom rotation buttons - Clockwise	Pressing (pushing) and holding a desired SPEED button (15) and the BOOM ROTATION button (18) at the same time enables the boom to rotate in the CLOCKWISE direction. Pressing (pushing) and holding a desired SPEED button (15) and the BOOM ROTATION button (19) at the same time enables the boom to rotate in the COUNTERCLOCKWISE direction. The boom will rotate through 700° of Non-Continuous rotation until the buttons are released or the stop is reached.
19	Boom rotation buttons - Counterclockwise	
20	Auto Level LED	When this LED is "FLASHING" it indicates that the booms are not in the "stowed" position, and the outriggers cannot be operated (non-functional). When this LED is "ON SOLID" it indicates that the booms are in the "stowed" position, and the outriggers can be operated (functional).
21	Outrigger extend button	For simultaneous automatic outrigger extension/retraction of all four (4) outriggers : Select the EXTEND button (21) or RETRACT button (22) and the AUTO LEVEL button (23) at the same time. To individually extend or retract the outriggers : Select the EXTEND button (21) or RETRACT button (22) and one of the four OUTRIGGER buttons (24) at the same time. The outrigger indicator LED (20) lights up when the outriggers are properly deployed and the aerial work platform weight is on the outrigger footpads. (25) : Each of the outer outrigger LEDs indicates load is on the outrigger footpad. (26) : Each of the inner outrigger LEDs, when flashing, indicates that side is low and needs to be further raised for leveling.
22	Outrigger retract button	
23	Auto Level button	
24	Outrigger buttons	

Platform (upper) control panel-Articulating model(s)



Marking	Description	Function
1	Engine start (Models with engines only)	Start a cold engine by pressing (pushing) in and holding the CHOKE (2) button then press (push) the ENGINE START (1) button.
2	Engine choke (Models with engines only)	To start / restart a warm engine, press (push) the ENGINE START (1) button only. Glow plug operation : Press (push) the GLOW PLUG (2) button and hold for 30 - 60 seconds then press (push) the ENGINE START (1) button.
3	Horn button	Pressing (pushing) the HORN button (3) 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.

C - Operation

Marking	Description	Function
4	Battery condition indicator	Indicator LEDs light up to indicate the level of charge in the batteries : • A lighted green LED indicates an adequate charge level. • A lighted yellow LED indicates the need for charging soon. • A lighted red LED warns that the battery charge level is low; all functional operations become non-functional until the batteries are recharged.
5	Emergency stop button	When pushed in, the EMERGENCY STOP button (5) disconnects electrical power to the ground (lower) and platform (upper) control panels. The EMERGENCY STOP button (5) should only be pressed (pushed in) to immediately stop all aerial work platform motion. To resume control, "pull out" the EMERGENCY STOP button (5).
6	Speed buttons	The SPEED buttons (6) are located along the lower right side of the control panel, one of the speed buttons must be pressed (pushed) in and held while selecting any boom function. There are four speeds that range from fast (RABBIT), to slow (TURTLE), available to help control the positioning of the Boom and the Jib.
7	Boom rotation buttons - Clockwise	Pressing (pushing) and holding a desired SPEED button (6) and the BOOM ROTATION button (7) at the same time enables the boom to rotate in the CLOCKWISE direction. Pressing (pushing) and holding a desired SPEED button (6) and the BOOM ROTATION button (8) at the same time enables the boom to rotate in the COUNTERCLOCKWISE direction. The boom will rotate through 700° of Non-Continuous rotation until the buttons are released or the stop is reached.
8	Boom rotation buttons - Counterclockwise	
9	Primary boom raise button	• Pressing (pushing) and holding a desired SPEED (6) button, and the PRIMARY BOOM RAISE (9) button at the same time will raise the primary boom. Pressing (pushing) and holding a desired SPEED (6) button, and the PRIMARY BOOM DOWN (10) button at the same time will retract the primary boom. • Pressing (pushing) and holding a desired SPEED (6) button, and the SECONDARY BOOM RAISE (11) button at the same time will raise the secondary boom. Pressing (pushing) and holding a desired SPEED (6) button, and the SECONDARY BOOM DOWN (12) button at the same time will retract the secondary boom • Pressing (pushing) and holding a desired SPEED (6) button, and the JIB BOOM RAISE (13) button at the same time will raise the JIB BOOM, pressing (pushing) and holding a desired SPEED (6) button, and the JIB BOOM DOWN (14) button at the same time will retract the JIB BOOM. . The selected Boom motion continues until the buttons are released or until the selected boom reaches a hard stop or a safe travel limit
10	Primary boom down button	
11	Secondary boom raise button	
12	Secondary boom down button	
13	Jib boom raise button	
14	Jib boom down button	

Marking	Description	Function
9	Boom raise button	Pressing (pushing) and holding a desired SPEED button (6) and the BOOM RAISE button (9) at the same time will raise the boom. Pressing (pushing) and holding a desired SPEED button (6) and the BOOM DOWN button (10) at the same time will lower the boom. Telescoping boom motion continues until the buttons are released or until the boom reaches a hard stop or a safe travel limit.
10	Boom down button	
15	Boom extend button	Pressing (pushing) in and holding a desired SPEED button (6) and the BOOM EXTEND button (15) at the same time extends the secondary boom. Pressing (pushing) in and holding a desired SPEED button (6), and the BOOM RETRACT button (16) at the same time retracts the secondary boom. Telescoping boom motion continues until the buttons are released or until the boom reaches a hard stop or a safe travel limit.
16	Boom retract button	
17	Platform tilt button - Up	Press (push) and hold any SPEED button (6), and the desired PLATFORM TILT UP button (17) or PLATFORM TILT DOWN button (18) at the same time to level the work platform. This levels the platform only, NOT the aerial work platform.
18	Platform tilt button - Down	
	Outlet	An outlet has been provided as a power source for running electrical power tools, while in the work platform. The power plug is located on the trailer frame, in front of the accessory equipment stowage plate. A connecting power cord must be plugged into a suitable power source. The outlet is rated for a 15 A load. Do not overload the accessory power circuit.

Releasing travel latches-Articulating model(s) :

- Release both travel latches, (1) the primary latch on the boom rest, and (2) the secondary latch on the Primary Boom, by raising the latch handle and swinging the clasp down.

Boom Travel Latches

- At the ground (lower) control panel, turn the KEY SWITCH (1) counter clockwise to the GROUND CONTROLS (1a) icon. If power does not come on, make sure that both of the EMERGENCY STOP buttons; GROUND (6), and PLATFORM (5), are pulled out and the main power disconnect plug 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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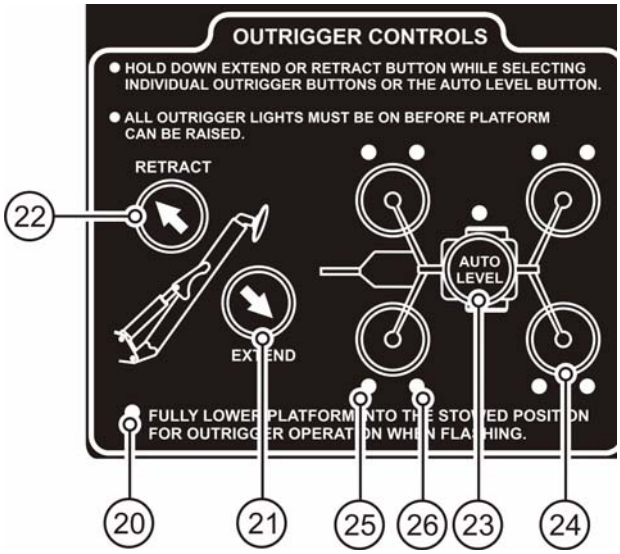
ACCESS SOLUTION

- Monitor the battery condition indicator during operation and charge the batteries as necessary.
- Extend the four outriggers individually, or for simultaneous extension use the AUTO LEVEL (23) button on the ground (lower) control panel. When the aerial work platform is leveled properly, a buzzer will sound, the two LEDs at each OUTRIGGER (25 - 26) button, and the LED at the AUTO LEVEL (23) button will be lit.
    - Auto Level : Press (push) and hold the EXTEND (21) and AUTO LEVEL (23) buttons at the same time.
    - Manual Level : Extend the two outriggers closest to the trailer coupler first. Lower the front pair of outriggers by pressing (pushing) the EXTEND (21) button and the two front OUTRIGGER buttons at the same time. Lower the back pair of outriggers by pressing (pushing) the EXTEND (21) button and the two back OUTRIGGER buttons at the same time.

Outrigger Control Panel



- Verify that the AUTO LEVEL (23) indicator LED is lit. If the AUTO LEVEL (23) indicator is not lit, the aerial work platform may not be level, and the weight of the machine may not be on the outrigger foot pad.

  ***N.B.**-:-If the boom is not level or if one or more outriggers are not supporting the machines load the safety interlock system prevents all boom operations.*

  ***N.B.**-:-The Range of Motion Diagrams at the ground (lower) and platform (upper) control stations displays 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 Non-Continuous rotation*

- Use the ground (lower) control panel to operate the boom lift functions. Raise, lower, extend and rotate the booms by pressing (pushing) and holding the desired SPEED (6) and function buttons at the same time.
- Fully lower the boom onto the boom rest to enter the platform using a 3 point contact (both hands and one foot).
- Raise the safety bar and enter the work platform by using a 3point contact (both hands and one foot). Put on a safety harness and attach the lanyard to the ANCHORAGE (attachment point) on the side of the platform support beam.
- Should the platform become tilted out of the normal vertical axis, press (push) and hold the desired SPEED button (6) and one of the PLATFORM TILT buttons (16-17) at the same time to level the platform back into the normal vertical axis.
- Use the platform (upper) control panel to operate the boom lift functions. Raise, lower, extend and rotate the booms by pressing (pushing) and holding the desired SPEED (6) 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.
- When all aerial work platform operations are complete, fully retract all boom extension(s). Center the boom over the boom rest and fully lower the boom until seated in the "stowed" position for transport.

  ***N.B.**-:-Always fully retract, rotate and lower the boom to the "stowed" position before exiting the platform.*

- Turn the key switch to the GROUND CONTROL (1a) position.
- Unfasten the safety harness and exit the platform by using a 3 point contact (both hands and one foot).

Telescopic model(s) :

- Disengage the PLATFORM LOCKING PINS by squeezing the LATCH KNOBS together; return the platform to its "stowed" position. Engage the platform travel latch.

Articulating model(s) :

- Engage both travel latches.

***N.B.**-:-Refer back earlier in this section for a visual of these latches.*

- Inspect the area beneath the aerial work platform and trailer for obstructions before retracting outriggers. Press (push) and hold the outrigger RETRACT (22) button and the AUTO LEVEL (23) button until all outriggers are fully retracted to their "stowed" (upright) positions.

***N.B.**-:-Safety switches prevent outrigger retraction until the boom is completely lowered and in the "stowed" position.*

- At the ground (lower) control panel turn the KEY SWITCH (1) to the vertical (power "OFF") position, and remove the key.

4 - Manual boom operation

Manual retraction, rotation and lowering functions allow the boom(s) to be moved and lowered during hydraulic power interruption or failure.

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 can be used to manually retract the booms or rotate the boom turntable.

4.1 - MANUAL RETRACTION

Telescopic model(s) : Begin manual retraction or rotation, by turning the proportional valve counterclockwise until it stops; insert the pump handle into the pump handle fitting. Pushing and holding the RETRACT button while simultaneously actuating the HAND PUMP will retract the extension boom.

Articulating model(s) : Begin manual retraction or rotation, by turning the proportional valve counterclockwise until it stops; insert the pump handle into the pump handle fitting. Pushing and holding the RETRACT button while simultaneously actuating the HAND PUMP will retract the secondary boom.

4.2 - MANUAL ROTATION

To rotate the TURNTABLE clockwise :

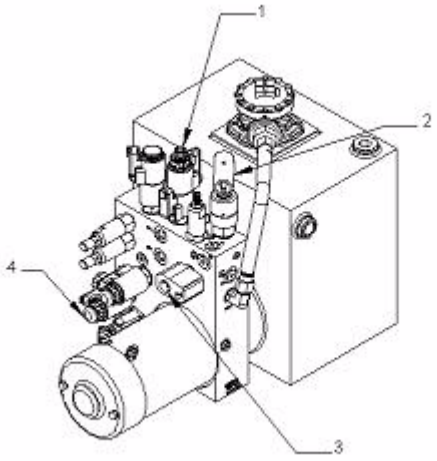
- Push and hold the ROTATION button IN.
- Simultaneously actuate the HAND PUMP.

To rotate the TURNTABLE counterclockwise :

- Pull the ROTATION button OUT.
- Simultaneously actuate the HAND PUMP.

***N.B.**-:-Turn the PROPORTIONAL VALVE clockwise to return it to its original position before lowering the booms or resuming normal operation..*

Hand Pump Controls for Manual Operation



Marking	Description
1	Rotation button
2	Hand pump
3	Proportional valve
4	Retract button

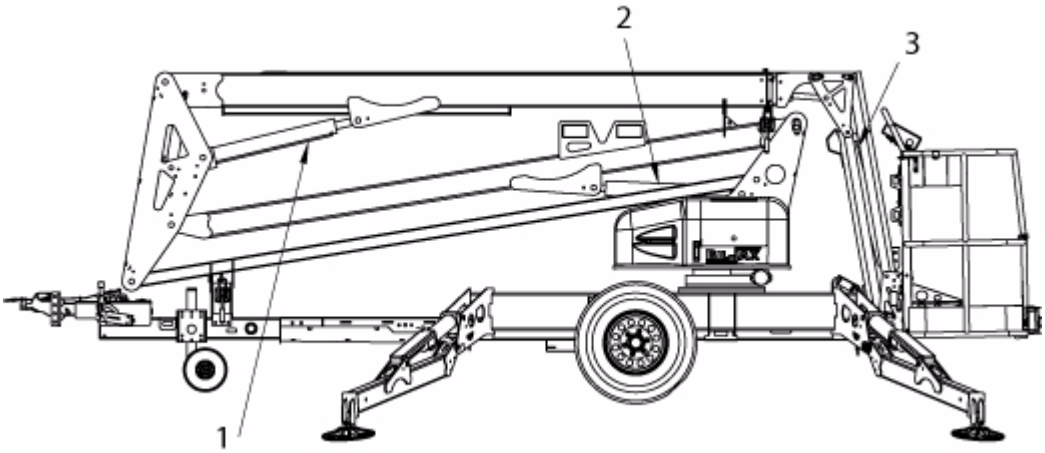
4.4 - MANUAL BOOM LOWERING PROCEDURE-ARTICULATING MODEL(S)

Each lift cylinder is equipped with a MANUAL LOWERING VALVE, found at the base of each lift cylinder. Use the VALVE to lower the platform in case of a complete electrical power failure, a load shift, or any other emergency. The booms may be lowered in any order, but the logical order would be :

- The PRIMARY boom first.
- The SECONDARY boom next.
- The JIB boom last.

To lower the boom, push in on the MANUAL LOWERING VALVE "button" on the cylinder that controls the boom that is to be lowered. Follow this procedure until the boom is completely lowered and in the "stowed" position.

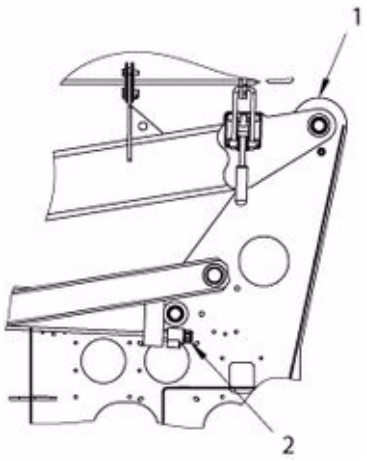
Location of Lift Cylinders for Manual Boom Lowering



Marking	Description
1	Secondary lift cylinder
2	Primary lift cylinder
3	Jib lift cylinder

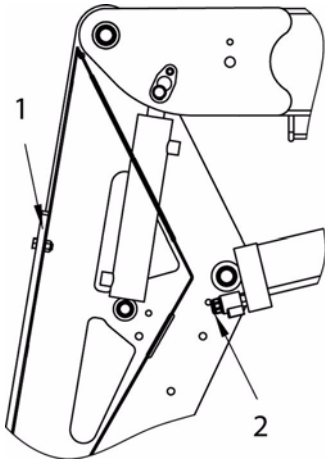
Location of manual lowering valves

Primary lift cylinder



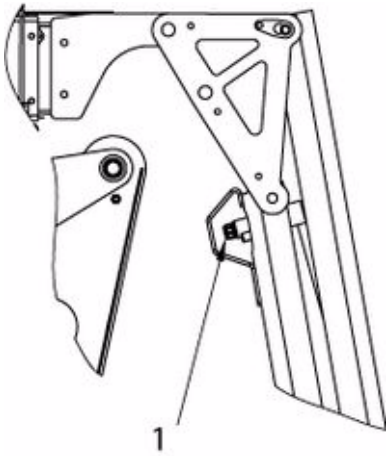
1 : Turntable
2 : Valve "push" button

Secondary lift cylinder



1 : Knuckle
2 : Valve "push" button

Jib lift cylinder



1 : Valve "push" button

5 - Towing the aerial work platform

The aerial work platform trailer includes a single axle, two-inch ball hitch, hydraulic surge brakes, mechanical parking brake, safety chains, brake lights and side marker lights. Proper aerial work platform transport requires the proper attachment and inspection of these components before towing.

Verify the following before towing the aerial work platform. Make adjustments as necessary :

- The TONGUE JACK/DOLLY WHEEL and outriggers are in their travel positions. The TONGUE JACK/DOLLY WHEEL is rotated up so that the TONGUE JACK/DOLLY WHEEL assembly is parallel with the tongue tube. The outrigger cylinders are fully retracted.
- Boom travel latches are engaged, securing the telescoping boom(s) in their fully "stowed" positions.
    - Telescopic model(s) : these include the boom rest latch and the platform travel latch.
    - Articulating model(s) : these include the boom rest latch and the primary boom latch.
- All on-board equipment is secured.
- The key switch is in the OFF position. Remove the key.
- The parking brake is disengaged. When the parking brake is engaged, it is parallel with the tongue tube; when disengaged, it is perpendicular to the tongue.
- The trailer tires are adequately and evenly inflated. See the side wall of the tire for proper inflation.

Periodically check the Wheel Nut torque according to manufacturer's recommendations. Refer to Monthly Service check section, in the Equipment Maintenance of this manual. .

NEVER tow an aerial work platform with worn or damaged wheel components.

NOTICE

Prior to towing, while the trailer wheels are elevated for aerial work platform operation, inspect for loose wheels and for lug nuts wear. If a loose wheel mounting is suspected, remove and inspect lug nuts for damage. If a loose wheel mounting is suspected, remove and inspect lug nuts for damage.

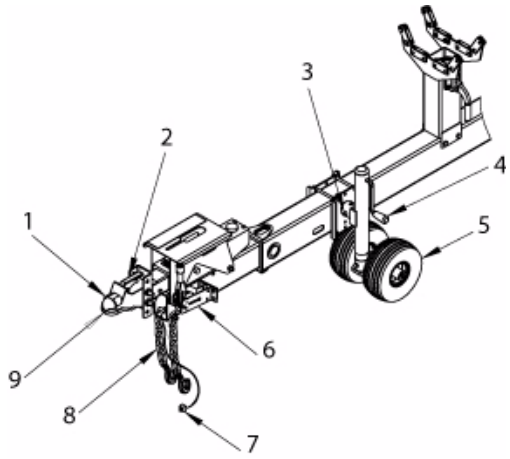
CAUTION

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

6 - Hitch and Tow procedure

Back the tow vehicle to the trailer. Verify that the ball and trailer hitch are aligned and that the trailer hitch has proper clearance above the ball.

Trailer hitching



Marking	Description
1	Breakaway cable
2	Release lever
3	Clevis pin
4	Tongue jack
5	Dolly wheel
6	Parking brake
7	Power plug
8	Safety chains
9	Trailer hitch

- Lift the RELEASE LEVER on the TRAILER HITCH and lower the hitch onto the ball using the TONGUE JACK/DOLLY WHEEL. Push down on the RELEASE LEVER to secure the ball.
- Use the TONGUE JACK/DOLLY WHEEL to verify that the coupling is secure. If using the jack raises the bumper of the tow vehicle 2-3 inches, the ball hitch coupling is secure.
- Release the PARKING BRAKE by rotating the handle down until it is parallel with the tongue tube.
- On the TONGUE JACK/DOLLY WHEEL, pull the CLEVIS PIN and swivel the TONGUE JACK/DOLLY WHEEL 90 ° to the travel position. Re-engage the CLEVIS PIN.
- Attach the safety chains to the tow vehicle. Verify that the chains cross under the trailer tongue.

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 tow vehicle and aerial work platform

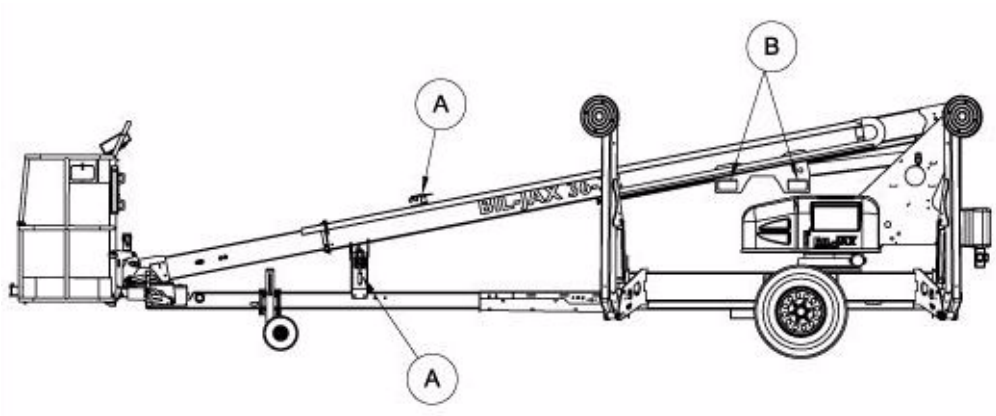
- For models with the breakaway cable; connect it to the tow vehicle. Leave adequate slack to prevent brakes from dragging.
- Connect the trailer lights to the tow vehicle power plug.

7 - Lifting the aerial work platform

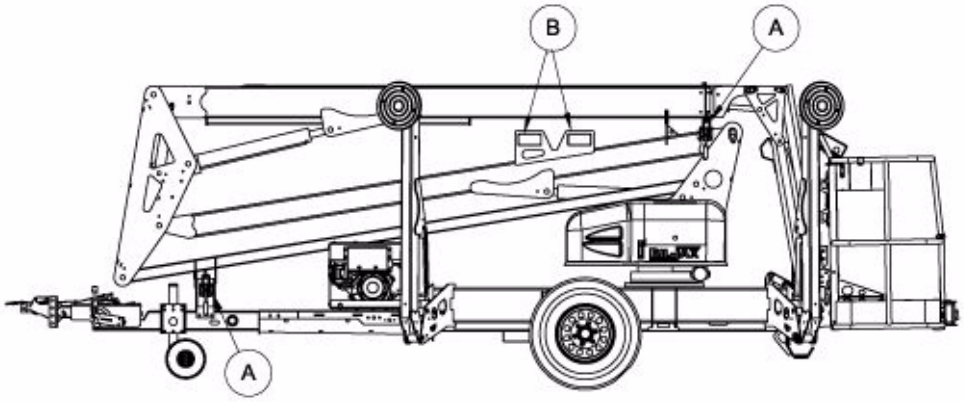
- Completely retract and lower all booms into the "stowed" position.
- Secure both boom travel latches (A).
- Remove all loose materials from machine.
- Retract all outriggers cylinders to fully "stowed" (upright) position.
- When using a crane, use only the designated crane (fork lift) pockets (B). Follow all crane operating instructions as indicated by the crane manufacturer.
- When using a forklift, use only the designated forklift pockets (B). Follow all forklift operating instructions as indicated by the forklift manufacturer.
- Adjust rigging to keep the machine level and to minimize the risk of damage to machine.

***N.B.**-:-Only trained and authorized personnel should attempt to lift the aerial work platform.*

Lifting the Aerial Work Platform-Telescopic model(s)



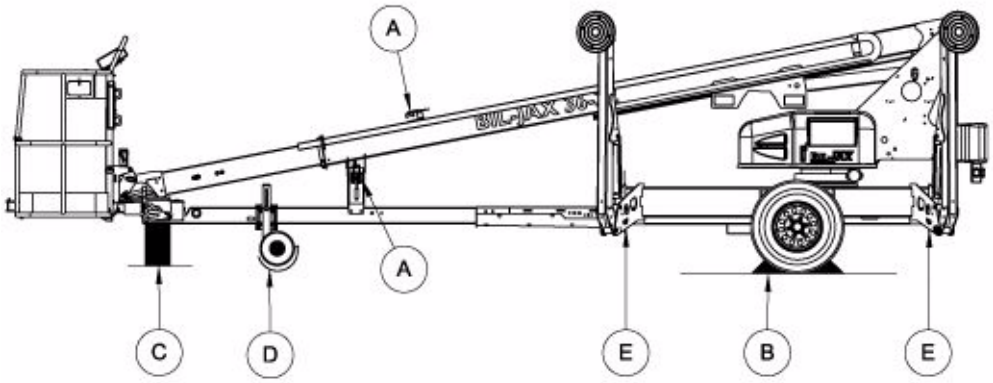
Lifting the Aerial Work Platform-Articulating model(s)



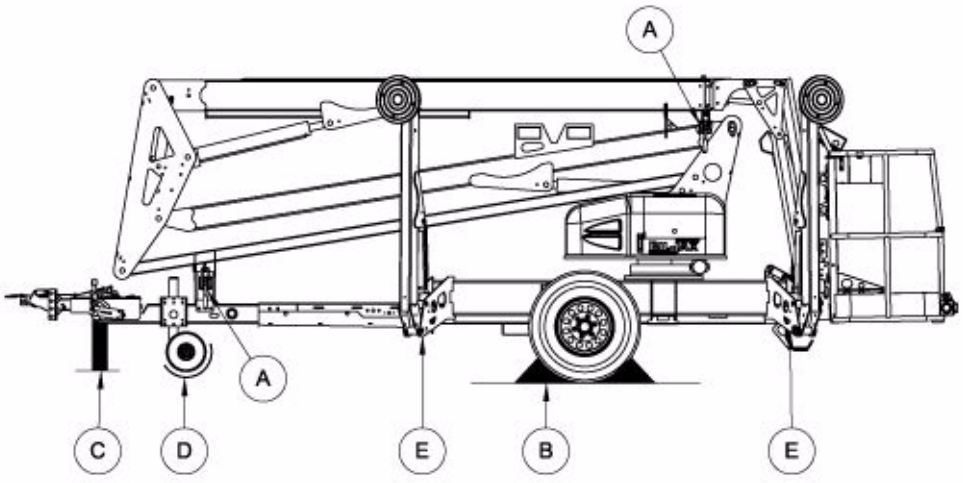
8 - Transporting the aerial work platform on to a truck bed

- Verify that the truck or trailer is parked on a firm and level surface.
- Completely retract and lower all booms into the "stowed" position.
- Secure both boom travel latches (A).
- Retract all OUTRIGGER CYLINDERS to the fully “"stowed" (upright) position.
- Load boom onto the truck bed or trailer.
- Chock the wheels (B) and apply the PARKING BRAKE.
- Place a wooden block (C) under the TONGUE, near the TRAILER HITCH.
- Lower the TONGUE JACK/DOLLY WHEEL (D) until the TRAILER TONGUE rests on the wooden block. Swing up and lock the TONGUE JACK/DOLLY WHEEL (D) so that the weight of the TONGUE now rests on the wooden block.
- Secure the aerial work platform to the trailer bed using straps or chains. Use only the four attachment points (E) beneath the machine, adjacent to the outriggers.
- Adjust as necessary to prevent damage to rigging or machine.

Telescopic model(s)



Articulating model(s)



D - Equipment Maintenance

Performing the appropriate maintenance procedures will extend the life of the aerial work platform and will help ensure the safety of personnel operating the equipment.

Repair, replacement or adjustment of any hydraulic or electrical control device should be performed only by fully trained and authorized personnel. 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 aerial work platform function and result in safety or damage hazards.

Persons performing maintenance or repairs on the aerial work platform should be trained in accordance with the manufacturer's recommendations. Contact Haulotte Group Customer Service Department: at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com for additional information.

Critical or suspect areas identified during any scheduled inspection of the aerial work platform shall be examined by qualified personnel in accordance with all Federal, State, and Local codes and regulations.

NEVER operate the aerial work platform if a defect or malfunction is identified or suspected. All defects and malfunctions must be repaired, and all maintenance performed, before returning an aerial work platform to service.

This manual contains a list of recommended maintenance procedures to be performed daily, weekly, monthly and annually. Refer to it when inspecting this machine.

It is the practice of HAULOTTE Group to issue Service and / or Safety Bulletins, which may include updates to the information contained in this manual. In such instances, procedures contained in Haulotte Group Service Bulletins or Safety Bulletins supersede the information contained in manual.

ALWAYS follow the maintenance schedule, regardless of use.

1 - Battery recharge

Recharge aerial work platform batteries after each 8 hour work shift or as needed. . When the aerial work platform 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 gasses could result in death or serious injury. Always charge aerial work platform batteries away from flammable materials.

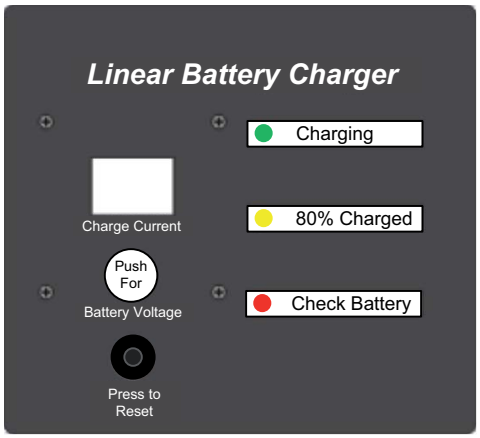
To recharge the aerial work platform batteries :

- Move the aerial work platform to a well-ventilated area with direct access to a AC electrical outlet. Keep the aerial work platform 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 15.24 m(50 ft0 in) to the receptacle located on the GENERATOR INTERFACE PLATE in front of the turntable

  ***N.B.**-:-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 outlet. Verify that the green charging indicator LED is lit on the battery charger faceplate.
- The CHARGING indicator LED remains lit continuously during the first stage of the charge cycle. The charge current will be displayed on the BATTERY CHARGER FACEPLATE.
- To display the Battery Voltage, press (push) in and hold the BATTERY VOLTAGE button.

Battery charger faceplate



- 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.

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 2 hours, this display will fade and the CHARGE CURRENT will read 00.
- Unplug the extension cord from the outlet and the charger receptacle on the aerial work platform. Store the extension cord for next use.

Battery fault codes

Code	Description	Limits	Cause
F0	No battery	< 10 volts	Loose connection or battery missing
F1	Over voltage	More than 112 % charge voltage	Connected to wrong battery voltage
F2	Over current	More than 60 amperes	Operating machine while charging
F3	Bulk mode timeout	Less than 80 % at 16 hours	Battery fault
F4	ARD mode timeout	More than 80 % and less than full charge after 6 hours max	Battery fault
F9	Current Measurement Error Standby		Board fault or charger exposed to extreme cold
FA	Triac Error		Board shorted
FF	Full Power to Transformer, No Current Output		Battery shorted or low AC line voltage or charger fault
CO	Charger Off		Charger resting between pulses (AGM batteries only)
CC	Charge Mode Complete		Batteries charged

Always unplug the battery charger power cord before moving the aerial work platform. Failure to disconnect power cord could cause damage to the equipment.

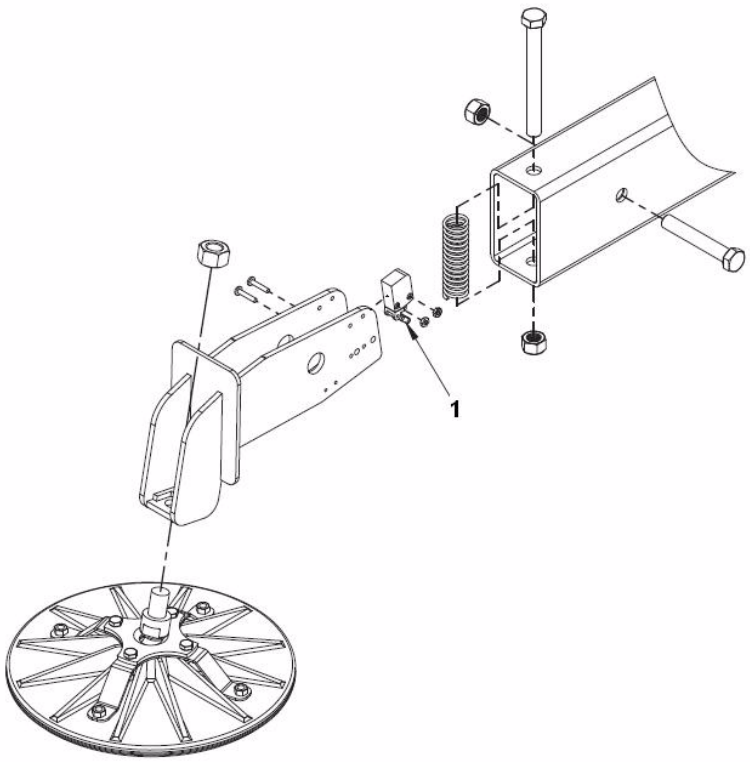
2 - Daily service checks

The following maintenance procedures should be performed daily or before each operation :

- Verify that all decals are legible, correctly applied, and in plain view. "Decal Replacement" section of this manual for decal locations.
- Verify that all controls and indicators at the ground (lower) and platform (upper) control stations operate properly.
    - Lower outriggers to level the aerial work platform.
    - Operate all boom functions, including all jib functions.
    - Press (push) the EMERGENCY STOP button. Verify that all functions are deactivated.
    - Verify that the cylinders are functional and there is no internal leakage, an indication of this is that the booms would not remain elevated, and / or they may drift.
    - Pull out the EMERGENCY STOP button, all functions will now be activated. Lower the booms.
    - If either control panel is unresponsive, refer to the Trouble Shooting procedures. TABLE TROUBLESHOOTING is located later in this section.
    - If the GROUND (LOWER) CONTROL DISPLAY PANEL displays an error code, refer to the Control Panel Error Code definitions. TABLE ERROR CODE DEFINITIONS is located later in this section.
    - If the MOTOR CONTROLLER'S green light is flashing there is an error, refer to the Motor Controller Error Code Definitions. TABLE ERROR CODE DEFINITIONS – MOTOR CONTROLLER, is located later in this section.
    - If the aerial work platform has the Drive and Set option, operate the drive function from the platform (upper) control panel.
- Verify correct operation of turn signals, brakes and running lights.
- Verify proper tire inflation. See the side wall of the tire for proper inflation.
- Inspect tires for damage or loose or missing lug nuts.
    - Repair or replace as necessary.
- Inspect structural components and platform for obvious damage or debris.
    - Repair or replace as necessary.
- Inspect the aerial work platform for missing, loose or damaged fasteners, including pins and bolts.

- Verify that the boom / jib limit switches operate correctly :
  - Limit switches are actuated when the primary, secondary and jib booms are in the fully lowered "stowed" position. Limit switches must be activated to raise or lower outriggers.
  - If outrigger controls are unresponsive when the booms are fully lowered and "stowed", inspect the limit switches for loose mounting or visible damage.
  - Repair or replace as necessary.
- Verify that outrigger safety interlocks operate correctly :
  - Begin with the outriggers fully extended and the aerial work platform leveled. 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 (lower) 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 necessary.

Outrigger Position Switches



Marking	Description
1	Position switch

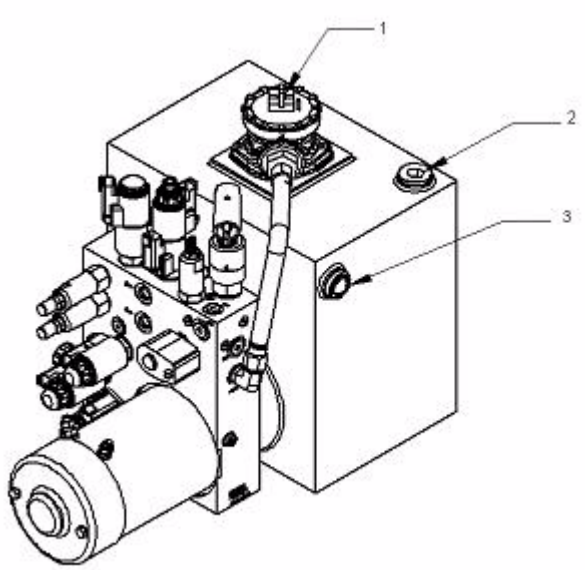
D - Equipment Maintenance

- Inspect hydraulic system and fluid levels :
  - Check all hydraulic hoses and fittings for leaks and / or 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 in the "stowed" (upright) position, and the trailer wheels on a level surface.
  - Hydraulic oil level should be visible in, but not above, the sight gauge.
  - If the hydraulic oil level is not visible to at least half way up the sight gauge, add clean Hydraulic Fluid while all booms are in the "stowed" (down) position, and the outriggers are fully retracted and in the "stowed" (upright) position Pour slowly to avoid creating air pockets in the reservoir. DO NOT fill above the sight gauge.
  - Overfilling the hydraulic reservoir may cause damage to hydraulic lines and may result in aerial work platform malfunction.
  - The hydraulic reservoir is originally filled with HVI AW32 hydraulic oil. A minimum Viscosity Index of 175 is recommended for this aerial lift platform.

NOTICE

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 could cause damage to the aerial work platform.

Hydraulic reservoir



Reference	Description of the components
1	Filter element
2	Fill port
3	Sight gauge

3 - Weekly service checks

Perform the following service checks at least once each week in addition to all recommended daily service checks :

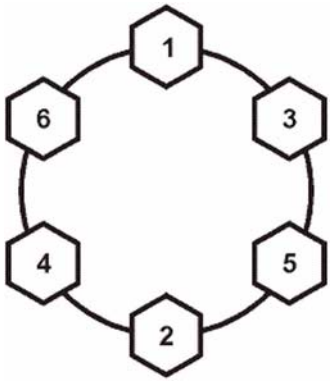
- Check Battery electrolyte level.
    - If battery charge is low, add enough water to bring the electrolyte level to the top of the plates.
    - If batteries are fully charged, raise electrolyte level to full mark in each cell.
- Inspect all electrical wiring.
    - Check for cuts, loose terminals, broken wires, chaffing and corrosion.
    - Repair all damage, remove corrosion and seal with proper materials.
- Inspect transport hitch components for damage. Applicable to trailer mounted aerial lift platforms only.
- Inspect the aerial work platform for missing, loose or damaged hardware :
    - Repair or replace as necessary.
- Inspect all hydraulic system components including the pump, motor and cylinders for damage, leaks, loss of pressure or speed, and unusual noise or vibration.
    - Repair or replace as necessary.
- Inspect Jib Bushings for damage. :
    - Check the Jib Bushings, the bushings should not spin or separate from the retaining bore.
    - Replace annually, or more frequently as necessary.

4 - Monthly service checks

Perform the following service checks at least once each month in addition to all recommended daily and weekly service checks :

- Clean all battery terminals.
- Check battery for loose connections or damaged wires.
- Verify proper operation of manual lowering valves and hand pump.
    - Refer to the "Operation" section for manual boom operating procedures.
- Lubricate slew ring and mating gear
    - Use NLGI Grade 2 multi-purpose grease.
- Check wheel nut torque.
    - Refer to Figure below for correct wheel nut tightening sequence.
    - Evenly tighten wheel nuts to 34 Nm (25 lb-ft) in the tightening sequence shown.
    - Repeat tightening sequence, tighten wheel nuts to 81 Nm (60 lb-ft) and then to 136 Nm (100 lb-ft).

Wheel Nut Tightening Sequence



NOTICE

When wheels are newly installed or replaced, verify wheel nut torque monthly. Follow this procedure each time the wheel is removed and reinstalled. Improperly torqued wheel nuts could result in wheel separation, pre-mature tire wear, or damage to the equipment.

- Check parking brakes.
    - Set up and Adjustment section located in the axle and related components section of this manual for more detailed information.

Verify that the Level Sensor is operating correctly :

- Fully deploy outriggers until all outrigger LEDs and AUTO LEVEL LED's are lit, and the buzzer at the ground (lower) control panel sounds.
- Verify that the aerial work platform is level, and that the level sensor located on the control side of the turntable, is giving an accurate reading.

- Repair or replace as necessary.

For aerial work platforms with material hook option :

- Verify the weight reading displayed on the ground (lower) control panel is within 10% of actual weight tested. Recalibrate load cell if needed. See the "Overload Protection Calibration" procedure located later in this section.

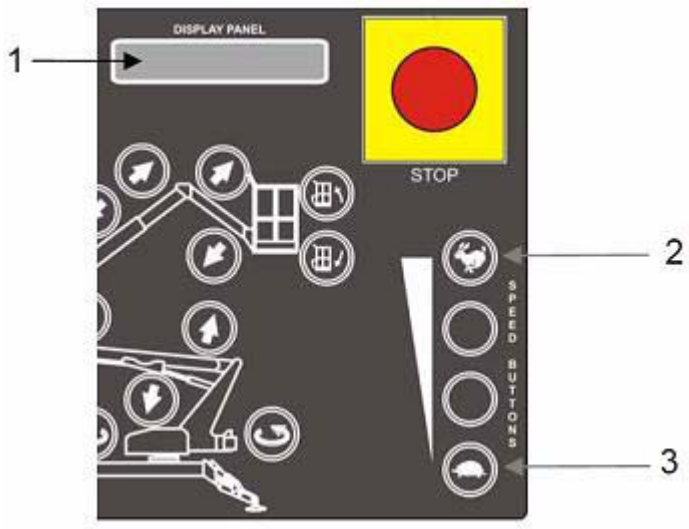
5 - Annual service checks

Perform the following service checks at least once each year.

Replace hydraulic oil and oil filter :

- Wipe away dirt and excess oil from the area around the power unit, hoses and filter(s) using cleaning cloths and alcohol solvent.
- Drain reservoir by removing the hex plug located on the bottom side of the reservoir.
- After oil is drained, remove oil filter(s) from top of tank.
- Replace the filter being careful not to introduce any debris into the system. Do not over-tighten.
- Replace oil with HVI AW32 or equivalent Hydraulic oil with a minimum viscosity rating of 175.
- With the fill port cap on but not tightened, completely raise and lower the telescoping boom to bleed trapped air from the lift cylinders. Repeat as necessary.
- Repeat every 100 RUN hours, or annually, which ever comes first. Run hours are displayed by simultaneous pressing (pushing) the RABBIT (2) and the TURTLE SPEED (3) buttons on the ground (lower) control panel and reading the DISPLAY PANEL (1).

Display Run Time Hours



Inspect pivot pins and cylinders, including rod ends, for wear or damage. Replace as necessary.

Visually inspect welds and structural components for wear, damage and corrosion :

- Follow all manufacturer's recommendations when making repairs to critical components.
- Personnel making repairs to welds should be certified in accordance with the Structural Welding Code AWS D1 and Haulotte design standards.

Inspect outriggers for wear or damage. Repair or replace as necessary.

D - Equipment Maintenance

Inspect and adjust axle and parking brakes

Load test telescoping boom lift operations with 227 kg (500 lb) load.

Machines equipped with Platform Rotator, must be tested with 200 kg (440 lb).

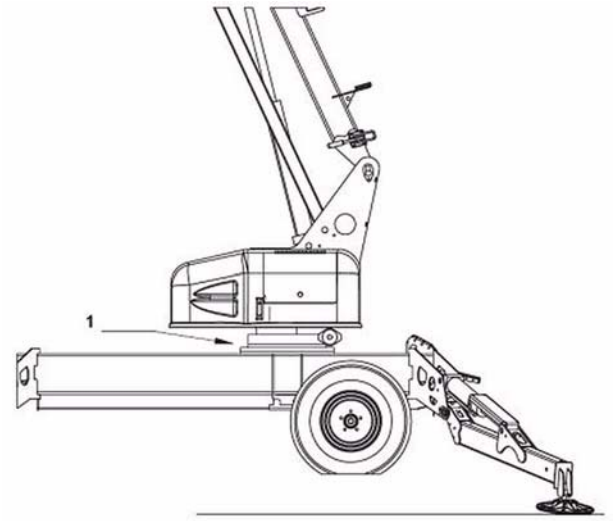
Replace Jib Bushings :

- Check the Jib Bushings weekly, the bushings should not spin or separate from the retaining bore.
- Replace annually, or more frequently as necessary.

Check slew bearing for wear or damage :

- Deploy the outriggers using the AUTO LEVEL and EXTEND buttons on the ground (lower) control panel. The tires will be slightly off the ground in this position.
- Place a 79 kg (175 lb) load in the platform and raise the PRIMARY boom to the full out position.

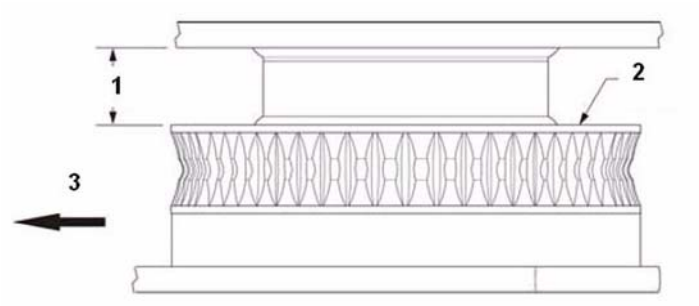
Machine Position for Slew Ring Measurement



Reference	Description of the components
1	Take measurement here

- Measure the distance between the slew ring gear and the horizontal plate above, using a 50 mm (2 in.) caliper or bore micrometer

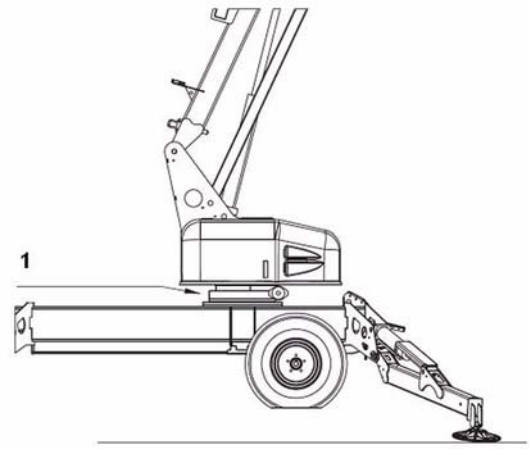
Slew ring position measurement



Reference	Description of the components
1	Take measurement here
2	Slew ring
3	Tow end of trailer

- Record the measurement.
- Rotate the platform 180° and re-record the measurement.
- If the difference in measurements is greater than 6.35 mm (0.25 in) the slew ring bearing should be replaced. Contact Haulotte Group Customer Service Department: at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com for additional information.

Platform Position After Rotation



Reference	Description of the components
1	Take measurement here

6 - Structural inspection

A comprehensive structural inspection of the unit shall be performed under any of the following conditions :

- 10 years from the date of manufacture and every 5 years thereafter.
- After any actual, suspected or potential damage is sustained that could affect the structural integrity or stability of the aerial platform.
- After a change in ownership. Owners should provide a complete service history when reselling the unit. The structural inspection shall include the following considerations :
    - The service history of the unit, including hours of service, work performed and environmental conditions.
    - The inspection and maintenance record of the aerial work platform.
    - The effectiveness of all controls and components.
    - A visual inspection of the aerial work platform for wear or damage.
    - Manufacturer recommendations.
    - A visual weld inspection, to be performed by qualified personnel in accordance with the Structural Welding Code AWS D1 and Haulotte design standards.

7 - Motor drying instructions

Inclusion of water or foreign particles into the DC electric motor housing may cause serious damage to the motor. If the motor becomes wet, follow these instructions or contact an authorized Haulotte Group service technician :

- Remove brush cover band.
- Blow warm air into motor using a heat gun.
- Spray electrical contact cleaner solution into motor armature area.
- Replace brush cover band.

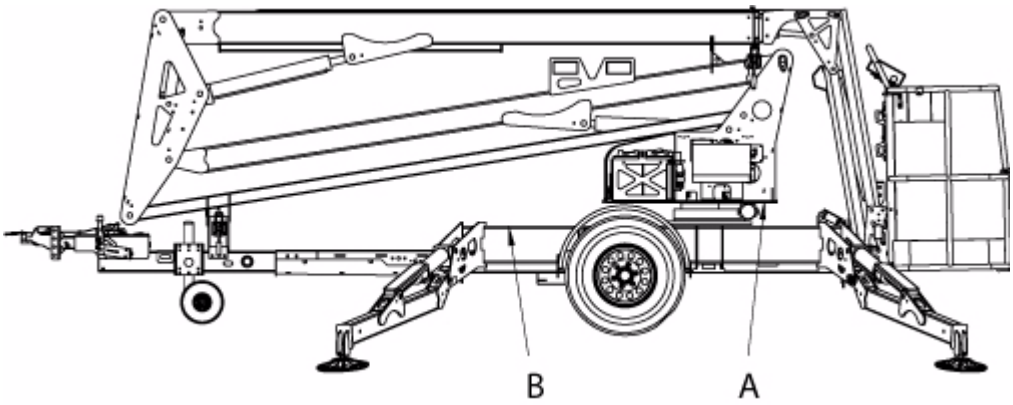
8 - Leveling system calibration procedure

8.1 - MACHINE LEVELLING INSTRUCTIONS

Deploy all of the outriggers, and slightly raise the base of the machine to position it for leveling.

Place a small, standard "level" on the base of the turntable (Level Placement Option A). If a small "level" is not available, place any size, standard "level" on the base of the machine (Level Placement Option B). Using the outriggers individually, level the base of the machine.

Position Machine for Leveling

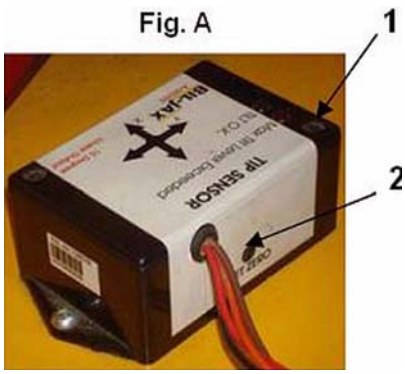


8.2 - LEVEL SENSOR CALIBRATION INSTRUCTIONS

If your level sensor resembles the image in Figure (A), (digitally based level sensor), follow these instructions. Be aware that the LED's (1) on the top of the sensor will need to be observed, the "Max Tilt Level Exceeded" LED is red, and the "TILT OK" LED is green :

- Press (push) and hold the SET ZERO button (2), located on the rear of the sensor, for 5 seconds. Both LED's will begin to flash.
- While they are flashing, release the SET ZERO button, and press (push) again 5 times within the next 3 seconds.
- Both the red and the green LED will be "ON SOLID", after several moments the red LED should turn "OFF", the "green" LED will stay lit. This is an indication that the sensor "recognizes" this level position.
- Proceed to the "Ground (Lower) Control Box Calibration Instructions".

Fig. A



D - Equipment Maintenance

If your level sensor resembles the image in Figure (B) (pendulum based level sensor), follow these instructions. Be aware that the "Bubble Level" on the top of the sensor will need to be observed :

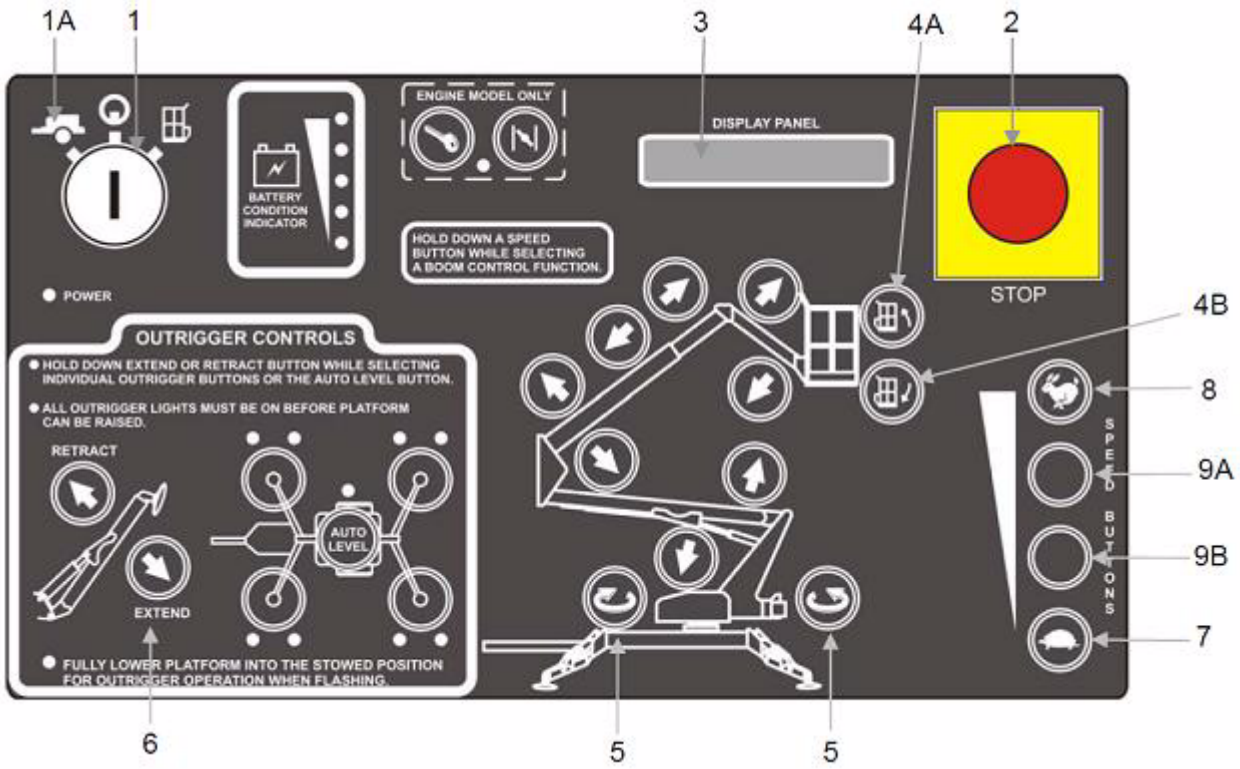
- Using the nuts on the top of sensor adjust the sensor until the bubble is centered in the smallest circle.
- Proceed to the "Ground (Lower) Control Box Calibration Instructions".

Fig. B

8.3 - GROUND (LOWER) CONTROL BOX CALIBRATION INSTRUCTIONS

Use the ground (lower) control panel to access the control box maintenance menu.

Ground (Lower) Control Panel for Leveling System



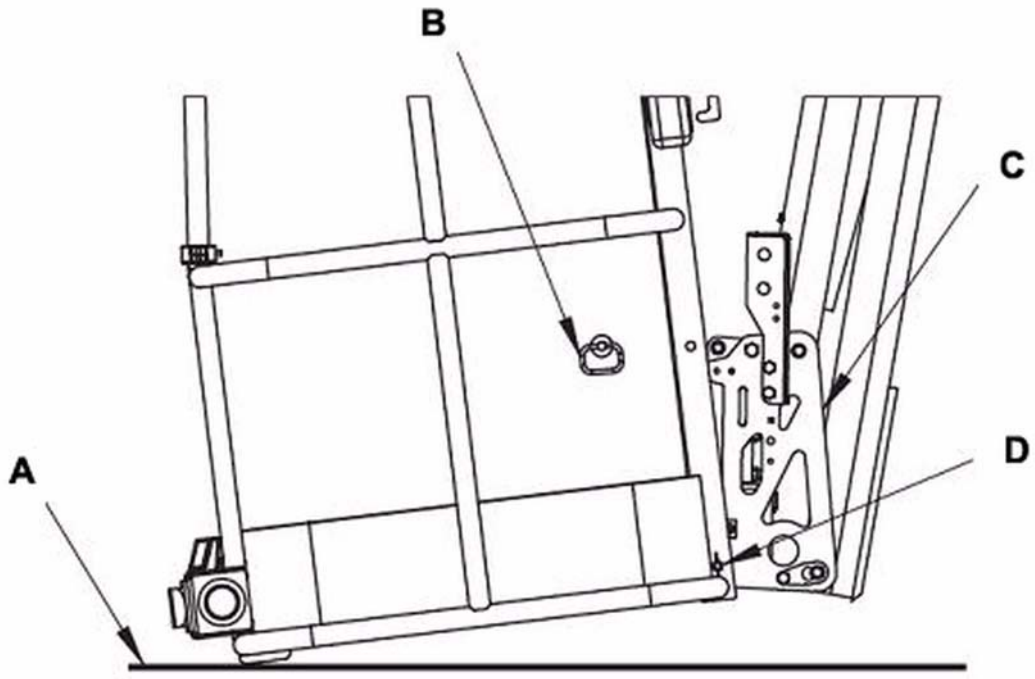
1. Verify that the KEY SWITCH (1) is turned to the GROUND (1A) icon, and that both EMERGENCY STOP (2) buttons (ground and platform) are "pulled out".
2. Enter the maintenance mode by pressing (pushing) both ROTATE (5) buttons and the OUTRIGGER EXTEND (6) button on the ground (lower) control panel simultaneously and holding for 5 seconds.
3. Scroll through the maintenance menu using the TURTLE (7) button to scroll down, use the RABBIT (8) button to scroll back up, until "LEVEL SENSOR CALIBRATION UTILITY" is displayed in the DISPLAY PANEL (3). The display will automatically change to "LEVEL MACHINE THEN PRESS MID-SPEED KEYS".
4. Press (push) both MID SPEED buttons [MID-HIGH (9A) / MID-LOW (9B)] on the ground (lower) control panel simultaneously. 3 consecutive beeps will sound indicating the calibration is confirmed.
5. Exit the maintenance mode by scrolling through the menu using the TURTLE (7) button.

9 - Overload protection calibration procedure

9.1 - LOAD SENSE ZEROING

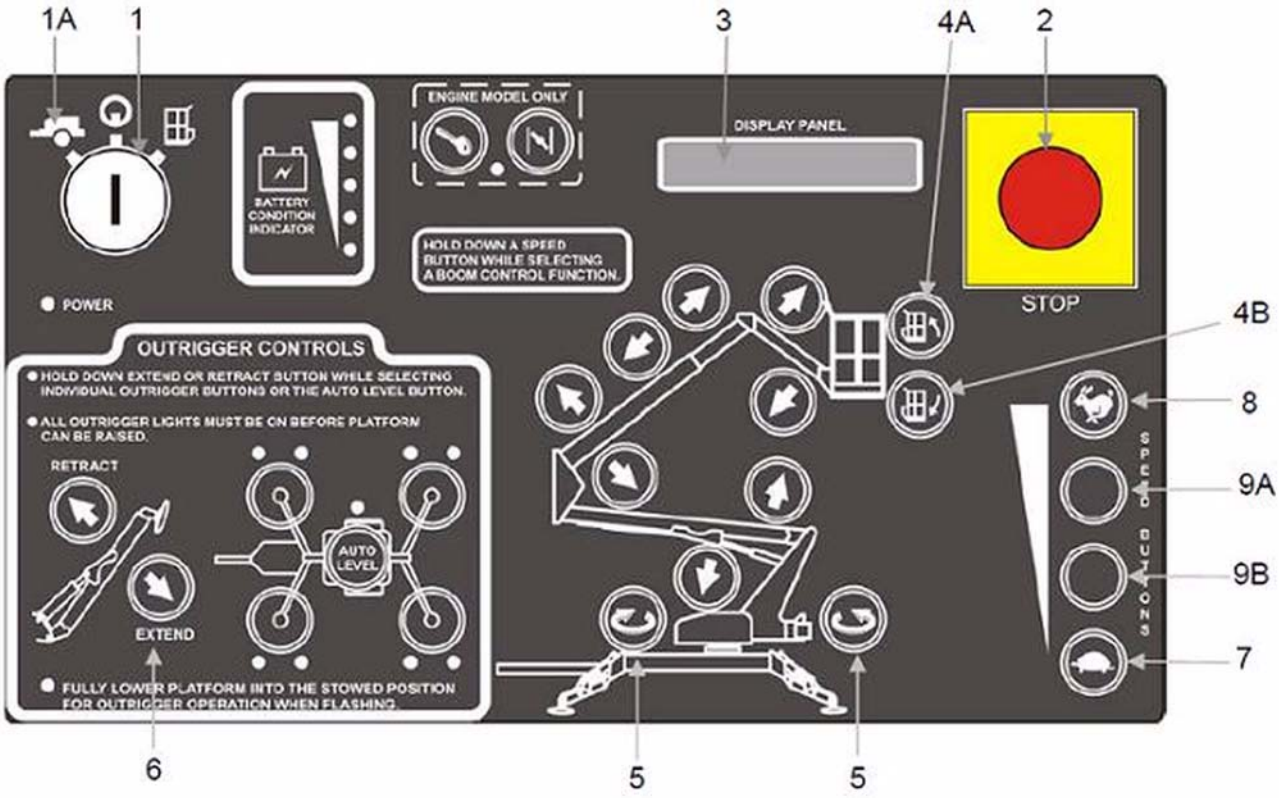
1. Remove the CLEVIS PIN securing the PLATFORM to the PLATFORM MOUNTING BRACKET, allowing the PLATFORM to pivot about the PLATFORM PIN and rest on the ground. This removes the load from the LOAD CELL. Figure Platform Position.
2. Use the ground (lower) control panel to access the control box maintenance menu. Figure ground (lower) control panel for overload protection.
3. Verify that the KEY SWITCH (1) is turned to the GROUND (1A) icon, and that both EMERGENCY STOP (2) buttons (ground and platform) are "pulled out".
4. Enter the maintenance mode by pressing (pushing) both ROTATE (5) buttons and the OUTRIGGER EXTEND (6) button on the ground (lower) control panel simultaneously and holding for 5 seconds.
5. Scroll through the maintenance menu using the TURTLE (7) button to scroll down, use the RABBIT (8) button to scroll back up, until "LOAD SENSE ZERO CALIBRATION UTILITY" is displayed in the DISPLAY PANEL (3). The display will automatically change to "REMOVE WEIGHT THEN PRESS MID-SPEED KEYS"
6. Press (push) both MID SPEED buttons [MID-HIGH (9A) / MID-LOW (9B)] on the ground (lower) control panel simultaneously. 3 consecutive beeps will sound and the DISPLAY PANEL (3) will read "LOAD SENSE HAS BEEN ZERO CALIBRATED" confirming the operation. The maintenance mode will then go to "LOAD SENSE SCALING UTILITY".

Plateform position



Reference	Description of the components
A	Ground
B	Clevis pin
C	Platform mounting bracket
D	Platform pin

Ground (lower) control panel for overload protection



10 - Load Sense Scaling

1. Return the platform to the upright position and re-install the CLEVIS PIN.
2. Exit the maintenance mode by scrolling through the menu using the TURTLE (7) button.
3. Press (push) the PLATFORM TILT UP (4A) button and PLATFORM TILT DOWN (4B) button simultaneously to display the platform's weight (+/- 10%) in the DISPLAY PANEL (3).
    - 4 Foot Platform = 29 kg (65 lbs)
    - 5 Foot Platform = 34 kg (75 lbs)
    - 4 Foot platform with platform rotate = 57 kg (125 lbs)
    - 5 Foot platform with platform rotate = 61 kg (135 lbs)

Note : To change the display from pounds (LBS) to kilograms (KGS), or vice versa :

- Verify that the KEY SWITCH (1) is turned counter clockwise to the GROUND (1A) icon, and that both EMERGENCY STOP (2) buttons (ground and platform) are "pulled out".
- Enter the maintenance mode by pressing (pushing) both ROTATE (5) buttons and the OUTRIGGER EXTEND (6) button on the ground (lower) control panel simultaneously and holding for 5 seconds.
- Scroll through the maintenance menu using the TURTLE (7) button to scroll down, use the RABBIT (8) button to scroll back up, until the DISPLAY PANEL (9A) reads "TO CHANGE LBS TO KGS PRESS MID-SPEED KEYS SIMULTANEOUSLY" [MID-HIGH (9B) / MID-LOW (3)]. Change to the desired mode.
- Exit the maintenance mode by scrolling through the menu using the TURTLE (7) button.

4. Add between 159 - 181 kg (350 - 400 lbs) to platform.
5. Determine the total "Boom Load" (Platform weight plus the added weight), and make a note of it.
6. Press (push) the PLATFORM TILT UP (4A) button and PLATFORM TILT DOWN (4B) button simultaneously to display the platform's weight in the DISPLAY PANEL (3).
    - If the displayed weight is within +/- 10%, of the determined "Boom Load", calibration is complete. Proceed to step (11).
    - If the displayed weight is above +/- 10%, of the determined "Boom Load", calibration is complete. Continue on to step (7).
7. Verify that the KEY SWITCH (1) is turned counter clockwise to the GROUND (1A) icon, and that both EMERGENCY STOP (2) buttons (ground and platform) are "pulled out".
8. Enter the maintenance mode by pressing (pushing) both ROTATE (5) buttons and the OUTRIGGER EXTEND (6) button on the ground (lower) control panel simultaneously and holding for 5 seconds.
9. Scroll through the maintenance menu using the TURTLE (7) button to scroll down, use the RABBIT (8) button to scroll back up, until "LOAD SENSE SCALING UTILITY" is displayed in the DISPLAY PANEL (3). The DISPLAY PANEL (3) should read a ratio of "3.68:1=0XXX" (platform plus load).

10. Adjust displayed weight by pressing (pushing) the MID-HIGH (9A) or MID-LOW (9B) SPEED buttons until the weight is within tolerances. The Ratio should be within 3.50:1 to 4.00:1. If so, continue on to Step 11. If the ratio is not within the above values, contact Haulotte Group Customer Service Department: at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com.
11. Exit the maintenance mode by scrolling through the menu using the TURTLE (7) button. Remove the weight from the platform. The Boom Load should now return to the weight of the platform.
12. Operate all functions in all speeds from both the ground (lower) and platform (upper) control panels to verify proper operation.
13. Recalibration is complete.

11 - Additional service information

Seals on hydraulic cylinders should be replaced every 5 years or as indicated by aerial work platform performance.

All service checks should be performed on an aerial work platform that has been stored without use for a period exceeding 30 days.

Check for air in the hydraulic system if the aerial work platform has been stored without use for a period exceeding 30 days, or if the aerial work platform was stored without use during a seasonal climate change. Air trapped in the hydraulic system will affect aerial work platform performance. Follow procedures for bleeding air from the hydraulic system, found in the "cylinder replacement" section of this manual.

Owners and lessors should complete a full inspection of all components and perform a test of all functions, including brake functions, before commissioning or reselling aerial work platform. Always repair or replace all damaged or malfunctioning components before commissioning or reselling aerial work platform

When a change in ownership occurs, it is the responsibility of the seller to provide the new owner with all manuals for the aerial work platform. It is the responsibility of the buyer to notify the manufacturer of the unit model, serial number and the name and address of the new owner within 60 days of the purchase.

Use the service checklists found at the back of the manual to record all service checks as well as any maintenance, repairs or alterations performed on the aerial work platform.

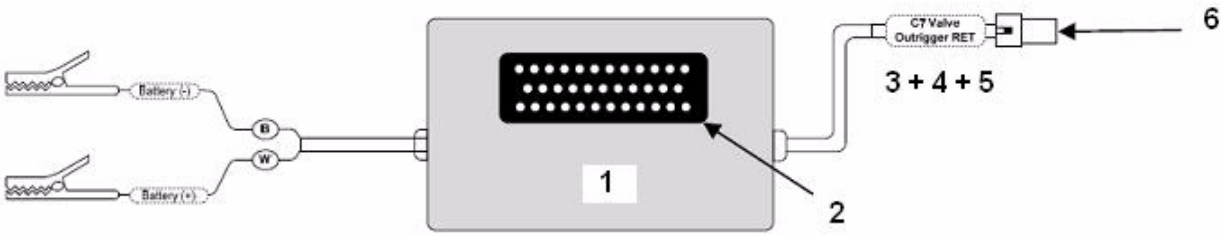
Records of frequent safety checks need not be made. However, where a safety hazard is found, it shall be reported in writing to the owner of the aerial work platform, and a record of any corrective action shall be maintained for 5 years or as required by the authority having jurisdiction.

12 - Manual outrigger retraction

The Manual Outrigger Retraction procedure allows the outriggers to be retracted into the "stowed" (upright) position during hydraulic power interruption or power failure.

The Manual Outrigger Control Kit, Part Number: A-00819, including a wire harness, is required to perform this manual procedure. Figure Manual outrigger control wire harness.

Manual outrigger Control Wire Harness



1. Attach outrigger wire harness
2. Receptacle
3. Ping plug B01-09-0136 2
4. Socket terminal B01-09-0080
5. Wedge B01-09-0137
6. Outrigger controls cable

The hand pump is a component of the hydraulic power unit which is located in the pump compartment. The hand pump and the hydraulic valve (C7); must be used to manually retract the outriggers. Figure Hydraulic Power Unit.

The boom(s) must be completely lowered and in the "stowed" position prior to raising the outriggers. "Manual boom operation" section in this manual, if necessary. .

Procedure to raise the outriggers manually :

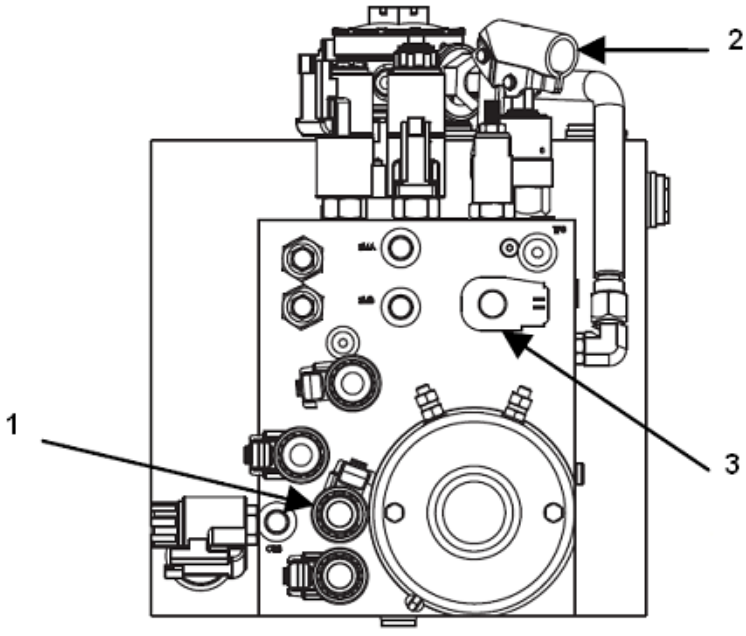
- Disconnect the outrigger's wire harness from the lower control (lower) box. Figure Bottom side of the ground (lower) control box.
- Plug it into the receptacle on the Manual Outrigger Control Wire Harness. Figure Manual outrigger control wire harness.
- Disconnect the wire harness from (C7) VALVE on the hydraulic power unit and replace it with the Outrigger controls cable. Figure Manual outrigger control wire harness-Figure Hydraulic Power Unit.
- Turn the PROPORTIONAL VALVE counterclockwise until it stops.
- Attach battery +/- clips to the battery. If the battery on the lift has no charge, use an alternate 12 V power source.
- Insert the tire iron into the PUMP HANDLE RECEPTACLE on hydraulic power unit and actuate the PUMP HANDLE to raise the outriggers. Figure Hydraulic Power Unit.

***N.B.**-:-Before resuming normal operation, turn the proportional valve clockwise to return it to its original position.*

Bottom Side of the Ground (lower) Control Box

Reference	Description of the components
1	Outrigger wire harness

Hydraulic Power Unit



Reference	Description of the components
1	Valve C7
2	Pump handle receptacle
3	Proportional valve

13 - Hydraulic pressure gauge

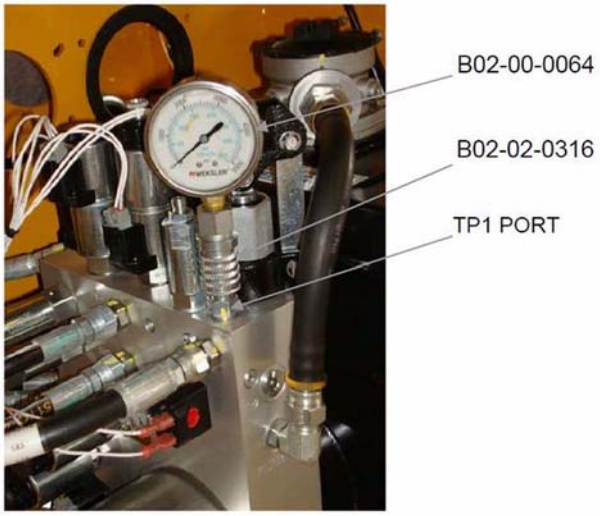
The Hydraulic Pressure Gauge Part Number B02-16-0020 is used to measure the aerial work platform's system pressure. It is used as a diagnostic tool when the Boom is NOT performing as expected.

The female quick disconnect is attached to the Hydraulic Power Unit at the "TP1" port.

The Pressure Gauge is composed of :

- Pressure Gauge that measures from 0-5000 psi (351 kg/cm2) (34473 kPa) : B02-00-0064
- Female Quick Disconnect : B02-02-0316
- Male Quick Disconnect (mates to B02-02-0316) : B02-00-0269

Attaching the Pressure Gauge to the Hydraulic Power Unit



14 - Troubleshooting

Refer to the following table for basic troubleshooting operations. Contact Haulotte Group Customer Service Department at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com with any questions or before attempting any advanced troubleshooting operations.

Troubleshooting

Problem	Cause	Solution
No lights on panel when key switch is turned to the on position	Emergency STOP engaged	Disengage Emergency stop buttons
Battery charge is low	Recharge as needed	
Battery ground or in-series cable is loose	Inspect and repair battery connections	
Battery main disconnect unplugged	Plug in main disconnect	
Blown fuse	Replace fuse as necessary	
Error code displayed on Ground Control Panel	Error detected by Control Box	Refer to the table for error code definitions
Green light flashing on Motor Controller	Error detected by Motor Controller	Refer to the table for error code definitions - motor controller
Hydraulic function does not work and display window shows an error message	Error detected by safety interlock microprocessor	Refer to the table for error code definitions
	Aerial work platform electric or electronic failure	Refer to the table for error code definitions
Outrigger indicator LED lights do not function	Key switch turned to the off or platform controls position	Turn key switch to ground controls position
	Emergency STOP engaged	Disengage emergency stop buttons
	Outriggers not deployed	Deploy all outriggers
One or more Boom controls do not functionOr One or more Boom Controls function improperly Or One or more Boom Controls function intermittently	Key switch is turned to the off or incorrect control position	Turn key switch to ground or platform controls position
	Battery charge is low	Recharge battery
	Emergency STOP engaged	Disengage Emergency stop buttons
	Battery ground or in-series cable is loose	Inspect and repair battery connections
	All outriggers not properly deployed	Deploy all outriggers and level boom lift
	Hydraulic pump inoperative	Inspect pump. Repair or replace as needed.
	Loose wiring connector	Check wiring terminals in control box and at valve manifold. Repair or replace as needed.
	Valve solenoid not operating properly	Clean valve solenoid and recheck function(s). Repair or replace as needed.
	Fault detected by system interlock	Check display for system status. Refer to the table for error code definitions.
	Broken or loose wire	Inspect wiring in control box and at valve manifold and valve coil. Repair or replace as needed.

15 - Error code definitions-Controls

The DISPLAY PANEL located on the ground (lower) control panel indicates the present operating status of the aerial work platform. If an error condition is detected, the appropriate error code will be displayed on this panel.

Refer to Table following paragraph to resolve the error Or Contact Haulotte Group Customer Service Department: at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com for any additional questions.

Error message	Error definition	To simulate error	To clear error	Comments
001 MACHINE IS IN DOWN ONLY MODE	Machine went out of level with use, moment sense or load sense circuits have detected an overload	Level machine, raise boom and tilt level sensor	This is a self clearing error. When error condition is corrected, error is cleared.	Error will be displayed only if boom is raised
002LOSS OF PLATFORM COMMUNICATION	Lower Control has lost RS485 communication with Platform Control	Open Platform Control and remove green wire from J1	This is a latched error. Power must be cycled to clear error.	The Platform Control "Engine On" LED will also blink a 2 blink error code
003 LOSS OF DRIVE COMMUNICATION	Lower Control has lost RS485 communication with Drive Control	Open Drive Control and remove green wire from J1	This is a latched error. Power must be cycled to clear error.	Machines with Drive option only. The Drive Control "Engine On" LED will also blink a 2 blink error code
004 LOSS OF PC COMMUNICATION	Lower Control has lost RS232 communication with PC	Connect a PC without running the configuration program	This is a self clearing error. When error condition is corrected, error is cleared.	Error message will only be display if connected to a PC that is not communicating
005 PLATFORM CONTROL HAS STUCK KEY	Platform Control has detected a stuck or pressed key on power up	On Platform Control hold down a key at power up	This is a latched error. Power must be cycled to clear error.	The Platform Control "Engine On" LED will also blink a 1 blink error code
006DRIVE CONTROL HAS STUCK KEY	Drive Control has detected a stuck or pressed key on power up	On Drive Control hold down a key at power up	This is a latched error. Power must be cycled to clear error.	Machines with Drive option only. The Drive Control "Engine On"LED will also blink a 1 blink error code
007 DRIVE CONTROL HAS STUCK JOYSTICK	Drive Control has detected a stuck or pressed joystick on power up	On Drive Control hold joystick to side at power up	This is a latched error. Power must be cycled to clear error.	Machines with Drive option only. The Drive Control "Engine On"LED will also blink a 3 blink error code
008 GROUND CONTROL HAS STUCK KEY	Lower Control has detected a stuck or pressed key on power up	On Lower Control hold down a key at power up	This is a latched error. Power must be cycled to clear error.	The Lower Control "Power" LED will also blink a 1 blink error code

009 BOOM UP WITHOUT OUTRIGGERS ON GROUND	Lower Control has detected the boom is up and all four outriggers are not on the ground	Disconnect a wire from either the boom down or any outrigger switch and turn on machine	This is a self clearing error. When error condition is corrected, error is cleared.	
010LEVEL SENSOR HAS ERRATIC OUTPUT	The Lower Control has detected an erratic output from the level sensor	Shaking the level sensor after machine has been leveled	This is a self clearing error. When error condition is corrected, error is cleared.	This error is suppressed during extending and retracting outriggers
011 TRYING TO DRIVE W/ TRAILER BRAKE OFF	An attempt was made to drive machine without engaging the trailer brake	Trying to drive machine with trailer brake off	This is a self clearing error. When error condition is corrected, error is cleared.	Machines with Drive and Set option only
012ANGLE SENSOR IS DISCONNECTED OR BAD	Angle sensor output is out of range	Disconnect Angle Sensor	This is a self clearing error. When error condition is corrected, error is cleared.	Machines with Moment Sense option only
013PRESSURE SENSOR IS DISCONNECTED OR BAD	Pressure sensor output is out of range	Disconnect Pressure Sensor	This is a self clearing error. When error condition is corrected, error is cleared.	Machines with Moment Sense option only
014CHECK ENGINE LOW OIL PRESSURE	Engine had low oil pressure while running	Kawasaki Engine : While engine is running, disconnect engine oil pressure sense wire Kubota Engine : While engine is running, disconnect engine oil pressure sense wire and connect wire to ground	This is a latched error. Power must be cycled to clear error.	X-Boom Machines with Kawasaki or Kubota engines
015MACHINE IS NOT LEVEL	Machine has gone out of level with use	Tilt level sensor	This is a self clearing error. When error condition is corrected, error is cleared.	
016LIFT BOOM	A Boom Rotate, Extend or Retract function has been requested while boom is down	Try to Rotate, Extend or Retract the boom while boom is down	This is a self clearing error. When error condition is corrected, error is cleared.	
017STOW BOOM	An Outrigger function has been requested while boom is up	Try to move an outrigger while boom is up	This is a self clearing error. When error condition is corrected, error is cleared.	
018LOSS OF LOAD SENSE COMMUNICATION	Lower Control has lost RS485 communication with Load Sense Module	Remove Load Sense Module from machine	This is a latched error. Power must be cycled to clear error.	Machines with Load Sense option only

019 BOOM FUNCTION DISABLED	Load Sense Module has detected an overloaded boom and disabled boom functions	Overload Boom	This is a latched error. Power must be cycled to clear error.	Machines with Load Sense option only
020LOSS OF LOAD CELL CONNECTIO N	Load Sense Module has lost connection with Load Cell	Disconnect Load Cell from Load Sense Module	This is a self clearing error. When error condition is corrected, error is cleared.	Machines with Load Sense option only
021 OPEN CIRCUIT PRIMARY UP	A load of less than 70 mA was detected when Primary Up circuit was energized	Disconnect a wire from Primary Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
022 SHORTED CIRCUIT PRIMARY UP	Excessive load was detected when Primary Up circuit was energized	Use a piece of wire to short the Primary Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
023 OPEN CIRCUIT PRIMARY DOWN	A load of less than 70 mA was detected when Primary Down circuit was energized	Disconnect a wire from Primary Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
024 SHORTED CIRCUIT PRIMARY DOWN	Excessive load detected when primary down circuit was energized	Use a piece of wire to short the Primary Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
025 OPEN CIRCUIT SECONDARY UP	A load of less than 70 mA was detected when Secondary Up circuit was energized	Disconnect a wire from Secondary Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
026 SHORTED CIRCUIT SECONDARY UP	A load of less than 70 mA was detected when Secondary Up circuit was energized	Use a piece of wire to short the Secondary Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
027 OPEN CIRCUIT SECONDARY DOWN	A load of less than 70 mA detected when secondary down circuit was energized	Disconnect a wire from Secondary Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
028 SHORTED CIRCUIT SECONDARY DOWN	Excessive load was detected when Secondary Down circuit was energized	Use a piece of wire to short the Secondary Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
029 OPEN CIRCUIT JIB UP	A load of less than 70 mA was detected when Jib Up circuit was energized	Disconnect a wire from Jib Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
030 SHORTED CIRCUIT JIB UP	Excessive load was detected when Jib Up circuit was energized	Use a piece of wire to short the Jib Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models

031 OPEN CIRCUIT JIB DOWN	A load of less than 70 mA was detected when Jib Down circuit was energized	Disconnect a wire from Jib Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
032 SHORTED CIRCUIT JIB DOWN	Excessive load was detected when Jib Down circuit was energized	Use a piece of wire to short the Jib Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
033 OPEN CIRCUIT EXTEND	A load of less than 70 mA was detected when Extend circuit was energized	Disconnect a wire from Extend coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
034 SHORTED CIRCUIT EXTEND	Excessive load was detected when Extend circuit was energized	Use a piece of wire to short the Extend coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
035 OPEN CIRCUIT RETRACT	A load of less than 70 mA was detected when Retract circuit was energized	Disconnect a wire from Retract coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
036 SHORTED CIRCUIT RETRACT	Excessive load was detected when Retract circuit was energized	Use a piece of wire to short the Retract coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
037 OPEN CIRCUIT PLATFORM LEVEL UP	A load of less than 70 mA was detected when Platform Level Up circuit was energized	Disconnect a wire from Platform Level Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
038 SHORTED CIRCUIT PLATFORM LEVEL UP	Excessive load was detected when Platform Level Up circuit was energized	Use a piece of wire to short the Platform Level Up coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
039OPEN CIRCUIT PLATFORM LEVEL DOWN	A load of less than 70 mA was detected when Platform Level Down circuit was energized	Disconnect a wire from Platform Level Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
040SHORTED CIRCUIT PLATFORM LEVEL DOWN	Excessive load was detected when Platform Level Down circuit was energized	Use a piece of wire to short the Platform Level Down coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
041OPEN CIRCUIT PLATFORM CW	A load of less than 70 mA was detected when Platform CW circuit was energized	Disconnect a wire from Platform CW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
042SHORTED CIRCUIT PLATFORM CW	Excessive load was detected when Platform CW circuit was energized	Use a piece of wire to short the Platform CW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models

043OPEN CIRCUIT PLATFORM CCW	A load of less than 70 mA was detected when Platform CCW circuit was energized	Disconnect a wire from Platform CCW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
044SHORTED CIRCUIT PLATFORM CCW	Excessive load was detected when Platform CCW circuit was energized	Use a piece of wire to short the Platform CCW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Articulating Boom Models
045OPEN CIRCUIT TURNTABLE CW	A load of less than 70 mA was detected when Turntable CW circuit was energized	Disconnect a wire from Turntable CW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
046SHORTED CIRCUIT TURNTABLE CW	Excessive load was detected when Turntable CW circuit was energized	Use a piece of wire to short the Turntable CW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
047OPEN CIRCUIT TURNTABLE CCW	A load of less than 70 mA was detected when Turntable CCW circuit was energized	Disconnect a wire from Turntable CCW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
048SHORTED CIRCUIT TURNTABLE CCW	Excessive load was detected when Turntable CCW circuit was energized	Use a piece of wire to short the Turntable CCW coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
049OPEN CIRCUIT OUTRIGGER RETRACT	A load of less than 70 mA was detected when Outrigger Retract circuit was energized	Disconnect a wire from Outrigger Retract coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
050SHORTED CIRCUIT OUTRIGGER RETRACT	Excessive load was detected when Outrigger Retract circuit was energized	Use a piece of wire to short the Outrigger Retract coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
051OPEN CIRCUIT OUTRIGGER EXTEND	A load of less than 70 mA was detected when Outrigger Extend circuit was energized	Disconnect a wire from Outrigger Extend coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
052SHORTED CIRCUIT OUTRIGGER EXTEND	Excessive load was detected when Outrigger Extend circuit was energized	Use a piece of wire to short the Outrigger Extend coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
053OPEN CIRCUIT LF OUTRIGGER	A load of less than 70 mA was detected when LF Outrigger circuit was energized	Disconnect a wire from LF Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
054SHORTED CIRCUIT LF OUTRIGGER	Excessive load was detected when LF Outrigger circuit was energized	Use a piece of wire to short the LF Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
055OPEN CIRCUIT RF OUTRIGGER	A load of less than 70 mA was detected when RF Outrigger circuit was energized	Disconnect a wire from RF Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up

056SHORTED CIRCUIT RF OUTRIGGER	Excessive load was detected when RF Outrigger circuit was energized	Use a piece of wire to short the RF Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
057OPEN CIRCUIT LR OUTRIGGER	A load of less than 70 mA was detected when LR Outrigger circuit was energized	Disconnect a wire from LR Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
058SHORTED CIRCUIT LR OUTRIGGER	Excessive load was detected when LR Outrigger circuit was energized	Use a piece of wire to short the LR Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
059OPEN CIRCUIT RR OUTRIGGER	A load of less than 70 mA was detected when RR Outrigger circuit was energized	Disconnect a wire from RR Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
060SHORTED CIRCUIT RR OUTRIGGER	Excessive load was detected when RR Outrigger circuit was energized	Use a piece of wire to short the RR Outrigger coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
061OPEN CIRCUIT ENGINE THROTTLE	A load of less than 70 mA was detected when Engine Throttle circuit was energized	Disconnect a wire from Engine Throttle coil	This is a latched error. Power must be cycled to clear error.	Error Suppressed due to low current draw
062SHORTED CIRCUIT ENGINE THROTTLE	Excessive load was detected when Engine Throttle circuit was energized	Use a piece of wire to short the Engine Throttle coil	This is a latched error. Power must be cycled to clear error.	Error Suppressed due to low current draw
063OPEN CIRCUIT ENGINE STARTER	A load of less than 70 mA was detected when Engine Starter circuit was energized	Disconnect a wire from Engine Starter coil	This is a latched error. Power must be cycled to clear error.	Not tested. Do not want to crank engine on power up
064SHORTED CIRCUIT ENGINE STARTER	Excessive load was detected when Engine Starter circuit was energized	Use a piece of wire to short the Engine Starter coil	This is a latched error. Power must be cycled to clear error.	Not tested. Do not want to crank engine on power up
065OPEN CIRCUIT ENGINE CHOKE	A load of less than 70 mA was detected when Engine Choke circuit was energized	Disconnect a wire from Engine Choke coil	This is a latched error. Power must be cycled to clear error.	Error Suppressed due to low current draw
066SHORTED CIRCUIT ENGINE CHOKE	Excessive load was detected when Engine Choke circuit was energized	Use a piece of wire to short the Engine Choke coil	This is a latched error. Power must be cycled to clear error.	Error Suppressed due to low current draw
067OPEN CIRCUIT ENGINE STOP	A load of less than 70 mA was detected when Engine Stop circuit was energized	Disconnect a wire from Engine Stop coil	This is a latched error. Power must be cycled to clear error.	Error Suppressed due to low current draw
068SHORTED CIRCUIT ENGINE STOP	Excessive load was detected when Engine Stop circuit was energized	Use a piece of wire to short the Engine Stop coil	This is a latched error. Power must be cycled to clear error.	Error Suppressed due to low current draw

069OPEN CIRCUIT PROPORTIONAL	A load of less than 70 mA was detected when Proportional circuit was energized	Disconnect a wire from Proportional coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
070SHORTED CIRCUIT PROPORTIONAL	Excessive load was detected when Proportional circuit was energized	Use a piece of wire to short the Proportional coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up
071OPEN CIRCUIT MOTOR CONTROL ENABLE	A load of less than 70 mA was detected when Motor Control Enable circuit was energized	Disconnect a wire from Motor Control Enable coil		Error Suppressed due to low current draw
072SHORTED CIRCUIT MOTOR CONTROL ENABLE	Excessive load was detected when Motor Control Enable circuit was energized	Use a piece of wire to short the Motor Control Enable coil		Error Suppressed due to low current draw
073OPEN CIRCUIT SPARE OUTPUT	A load of less than 70 mA was detected when Spare Output circuit was energized	Disconnect a wire from Spare Output coil	This is a latched error. Power must be cycled to clear error.	Not used
074SHORTED CIRCUIT SPARE OUTPUT	Excessive load was detected when Spare Output circuit was energized	Use a piece of wire to short the Spare Output coil	This is a latched error. Power must be cycled to clear error.	Not used
075OPEN CIRCUIT AC SWITCH	A load of less than 70 mA was detected when AC Switch circuit was energized	Disconnect a wire from AC Switch coil		Error Suppressed due to low current draw
076SHORTED CIRCUIT AC SWITCH	Excessive load was detected when AC Switch circuit was energized	Use a piece of wire to short the AC Switch coil		Error Suppressed due to low current draw
077OPEN CIRCUIT STROBE	A load of less than 70 mA was detected when Strobe circuit was energized	Disconnect a wire from Strobe		Error Suppressed due to low current draw
078SHORTED CIRCUIT STROBE	Excessive load was detected when Strobe circuit was energized	Use a piece of wire to short the Strobe coil		Error Suppressed due to low current draw
079OPEN CIRCUIT DRIVE PWM	A load of less than 70 mA was detected when Drive PWM circuit was energized	Disconnect a wire from Drive PWM coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with Drive option only
080SHORTED CIRCUIT DRIVE PWM	Excessive load was detected when Drive PWM circuit was energized	Use a piece of wire to short the Drive PWM coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with Drive option only

081OPEN CIRCUIT DRIVE ENABLE	A load of less than 70 mA was detected when Drive Enable circuit was energized	Disconnect a wire from Drive Enable coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with Drive option only
082SHORTED CIRCUIT DRIVE ENABLE	Excessive load was detected when Drive Enable circuit was energized	Use a piece of wire to short the Drive Enable coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with Drive option only
083OPEN CIRCUIT DRIVE DUMP (C21)	A load of less than 70 mA was detected when Drive Dump (C21) circuit was energized	Disconnect a wire from Drive Dump (C21) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
084SHORTED CIRCUIT DRIVE DUMP (C21)	Excessive load was detected when Drive Dump (C21) circuit was energized	Use a piece of wire to short the Drive Engage coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
085OPEN CIRCUIT TURN LEFT (C22)	A load of less than 70 mA was detected when Turn Left (C22) circuit was energized	Disconnect a wire from Turn Left (C22) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
086SHORTED CIRCUIT TURN LEFT (C22)	Excessive load was detected when Turn Left (C22) circuit was energized	Use a piece of wire to short the Turn Left (C22) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
087OPEN CIRCUIT TURN RIGHT (C23)	A load of less than 70 mA was detected when Turn Right (C23) circuit was energized	Disconnect a wire from Turn Right (C23) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
088SHORTED CIRCUIT TURN RIGHT (C23)	Excessive load was detected when Turn Right (C23) circuit was energized	Use a piece of wire to short the Turn Right (C23) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
089OPEN CIRCUIT FORWARD 1 (C24)	A load of less than 70 mA was detected when Forward 1 (C24) circuit was energized	Disconnect a wire from Forward 1 (C24) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
090SHORTED CIRCUIT FORWARD 1 (C24)	Excessive load was detected when Forward 1 (C24) circuit was energized	Use a piece of wire to short the Forward 1 (C24) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
091OPEN CIRCUIT REVERSE 1 (C25)	A load of less than 70 mA was detected when Reverse 1 (C25) circuit was energized	Disconnect a wire from Reverse 1 (C25) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
092SHORTED CIRCUIT REVERSE 1 (C25)	Excessive load was detected when Reverse 1 (C25) circuit was energized	Use a piece of wire to short the Reverse 1 (C25) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
093OPEN CIRCUIT FORWARD 2 (C27)	A load of less than 70 mA was detected when Forward 2 (C27) circuit was energized	Disconnect a wire from Forward 2 (C27) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only

094SHORTED CIRCUITFORWARD 2 (C27)	Excessive load was detected when Forward 2 (C27) circuit was energized	Use a piece of wire to short the Forward 2 (C27) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
095OPEN CIRCUIT REVERSE 2 (C28)	A load of less than 70 mA was detected when Reverse 2 (C28) circuit was energized	Disconnect a wire from Reverse 2 (C28) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
096SHORTED CIRCUIT REVERSE 2 (C28)	Excessive load was detected when Reverse 2 (C28) circuit was energized	Use a piece of wire to short the Reverse 2 (C28) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
097OPEN CIRCUIT TORQUE H/L (C29)	A load of less than 70 mA was detected when Torque H/L (C29) circuit was energized	Disconnect a wire from Torque H/L (C29) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
098SHORTED CIRCUIT TORQUE H/L (C29)	Excessive load was detected when Torque H/L (C29) circuit was energized	Use a piece of wire to short the Torque H/L (C29) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
099OPEN CIRCUIT TORQUE H/L (C30)	A load of less than 70 mA was detected when Torque H/L (C30) circuit was energized	Disconnect a wire from Torque H/L (C30) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
100SHORTED CIRCUIT TORQUE H/L (C30)	Excessive load was detected when Torque H/L (C30) circuit was energized	Use a piece of wire to short the Torque H/L (C30) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
101OPEN CIRCUIT TORQUE H/L (C31)	A load of less than 70 mA was detected when Torque H/L (C31) circuit was energized	Disconnect a wire from Torque H/L (C31) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
102SHORTED CIRCUIT TORQUE H/L (C31)	Excessive load was detected when Torque H/L (C31) circuit was energized	Use a piece of wire to short the Torque H/L (C31) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WD option only
103OUTREACH NEAR MAXIMUM	Boom has exceeded 95% of maximum outreach	Put 500 lbs in boom, level boom and extend until alarm sounds and error is displayed	This is a latched error. Power must be cycled to clear error.	Machines with Moment Sense option only
104OUTREACH AT MAXIMUM	Boom has reached maximum outreach setting	Put 500 lbs in boom, level boom and extend until alarm sounds and error is displayed	This is a latched error. Power must be cycled to clear error.	Machines with Moment Sense option only
105OVER MAXIMUM CYLINDER PRESSURE	Cylinder pressure has exceeded maximum pressure setting	Put 500 lbs in boom, lower cylinder pressure setting using configuration program and extend boom until alarm sounds and error is displayed	This is a latched error. Power must be cycled to clear error.	Machines with Moment Sense option only

106OUTREACH SENSING FAULT	Cylinder safety pressure switch has detected maximum pressure setting	Disconnect safety pressure switch wires	This is a latched error. Power must be cycled to clear error.	Machines with Moment Sense option only
107ENGINE TEMP HIGH CHECK WATER LEVEL	Excessive engine temperature was detected	Remove wire from engine temperature sensor and connect wire to ground	This is a latched error. Power must be cycled to clear error.	Machines with 4WS option only
108CHECK ALTERNATOR NOT CHARGING	Engine alternator is not charging	Remove P wire from alternator and connect wire to ground	This is a latched error. Power must be cycled to clear error.	Machines with 4WS option only
109ENGINE RPM FAULT HIGH RPM IS TOO LOW	When driving, engine high RPM was too low	Misadjust engine high RPM to a value less than 3000 RPM and attempt to drive	This is a latched error. Power must be cycled to clear error.	Machines with 4WS option only
121OPEN CIRCUIT BRAKE (FWS C21)	A load of less than 70 mA was detected when Brake (FWS C21) circuit was energized	Disconnect a wire from Brake (FWS C21) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
122SHORTED CIRCUIT BRAKE (FWS C21)	Excessive load was detected when Brake (FWS C21) circuit was energized	Use a piece of wire to short the Brake (FWS C21) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
123OPEN CIRCUIT RS RET (FWS C22)	A load of less than 70 mA was detected when RS Ret (FWS C22) circuit was energized	Disconnect a wire from RS Ret (FWS C22) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
124SHORTED CIRCUIT RS RET (FWS C22)	Excessive load was detected when RS Ret (FWS C22) circuit was energized	Use a piece of wire to short the RS Ret (FWS C22) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
125OPEN CIRCUIT RS EXT (FWS C23)	A load of less than 70 mA was detected when RS Ext (FWS C23) circuit was energized	Disconnect a wire from RS Ext (FWS C23) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
126SHORTED CIRCUIT RS RET (FWS C23)	Excessive load was detected when RS Ext (FWS C23) circuit was energized	Use a piece of wire to short the RS Ext (FWS C23) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
127OPEN CIRCUIT FS RET (FWS C24)	A load of less than 70 mA was detected when FS Ret (FWS C24) circuit was energized	Disconnect a wire from FS Ret (FWS C24) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
128SHORTED CIRCUIT FS RET (FWS C24)	Excessive load was detected when FS Ret (FWS C24) circuit was energized	Use a piece of wire to short the FS Ret (FWS C24) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only

129OPEN CIRCUIT FS EXT (FWS C25)	A load of less than 70 mA was detected when FS Ext (FWS C25) circuit was energized	Disconnect a wire from FS Ext (FWS C25) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
130SHORTED CIRCUIT FS RET (FWS C25)	Excessive load was detected when FS Ext (FWS C25) circuit was energized	Use a piece of wire to short the FS Ext (FWS C25) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
131OPEN CIRCUIT DC D FWD (FWS C26)	A load of less than 70 mA was detected when DC D Fwd (FWS C26) circuit was energized	Disconnect a wire from DC D Fwd (FWS C26) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
132SHORTED CIRCUIT DC D FWD (FWS C26)	Excessive load was detected when DC D Fwd (FWS C26) circuit was energized	Use a piece of wire to short the DC D Fwd (FWS C26) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
133OPEN CIRCUIT DC D REV (FWS C27)	A load of less than 70 mA was detected when DC D Rev (FWS C27) circuit was energized	Disconnect a wire from DC D Rev (FWS C27) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
134SHORTED CIRCUIT DC D REV (FWS C27)	Excessive load was detected when DC D Rev (FWS C27) circuit was energized	Use a piece of wire to short the DC D Rev (FWS C27) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
135OPEN CIRCUIT DC D (FWS C28)	A load of less than 70 mA was detected when DC D (FWS C28) circuit was energized	Disconnect a wire from DC D (FWS C28) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
136SHORTED CIRCUIT DC D (FWS C28)	Excessive load was detected when DC D (FWS C28) circuit was energized	Use a piece of wire to short the DC D (FWS C28) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
137OPEN CIRCUIT DC D (FWS C29)	A load of less than 70 mA was detected when DC D (FWS C29) circuit was energized	Disconnect a wire from DC D (FWS C29) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
138SHORTED CIRCUIT DC D (FWS C29)	Excessive load was detected when DC D (FWS C29) circuit was energized	Use a piece of wire to short the DC D (FWS C29) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
139OPEN CIRCUIT DC D (FWS C30)	A load of less than 70 mA was detected when DC D (FWS C30) circuit was energized	Disconnect a wire from DC D (FWS C30) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
140SHORTED CIRCUIT DC D (FWS C30)	Excessive load was detected when DC D (FWS C30) circuit was energized	Use a piece of wire to short the DC D (FWS C30) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
141OPEN CIRCUIT DC D (FWS C31)	A load of less than 70 mA was detected when DC D (FWS C31) circuit was energized	Disconnect a wire from DC D (FWS C31) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only

142SHORTED CIRCUIT DC D (FWS C31)	Excessive load was detected when DC D (FWS C31) circuit was energized	Use a piece of wire to short the DC D (FWS C31) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
143OPEN CIRCUIT (FWS C32)	A load of less than 70 mA was detected when (FWS C32) circuit was energized	Disconnect a wire from (FWS C32) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
144SHORTED CIRCUIT (FWS C32)	Excessive load was detected when (FWS C32) circuit was energized	Use a piece of wire to short the (FWS C32) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
145OPEN CIRCUIT (FWS C33)	A load of less than 70 mA was detected when (FWS C33) circuit was energized	Disconnect a wire from (FWS C33) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
146SHORTED CIRCUIT (FWS C33)	Excessive load was detected when (FWS C33) circuit was energized	Use a piece of wire to short the (FWS C33) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
147OPEN CIRCUIT (FWS C34)	A load of less than 70 mA was detected when (FWS C34) circuit was energized	Disconnect a wire from (FWS C34) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
148SHORTED CIRCUIT (FWS C34)	Excessive load was detected when (FWS C34) circuit was energized	Use a piece of wire to short the (FWS C34) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
149OPEN CIRCUIT (FWS R2)	A load of less than 70 mA was detected when (FWS R2) circuit was energized	Disconnect a wire from (FWS R2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
150SHORTED CIRCUIT (FWS R2)	Excessive load was detected when (FWS R2) circuit was energized	Use a piece of wire to short the (FWS R2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
151OPEN CIRCUIT (FWS GEN G1)	A load of less than 70 mA was detected when (FWS GEN G1) circuit was energized	Disconnect a wire from (FWS GEN G1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
152SHORTED CIRCUIT (FWS GEN G1)	Excessive load was detected when (FWS GEN G1) circuit was energized	Use a piece of wire to short the (FWS GEN G1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
153OPEN CIRCUIT (FWS CON 24V)	A load of less than 70 mA was detected when (FWS CON 24V) circuit was energized	Disconnect a wire from (FWS CON 24V) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
154SHORTED CIRCUIT (FWS CON 24V)	Excessive load was detected when (FWS CON 24V) circuit was energized	Use a piece of wire to short the (FWS CON 24V) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only

155OPEN CIRCUIT (FWS SPARE 1)	A load of less than 70 mA was detected when (FWS SPARE 1) circuit was energized	Disconnect a wire from (FWS SPARE 1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
156SHORTED CIRCUIT (FWS SPARE 1)	Excessive load was detected when (FWS SPARE 1) circuit was energized	Use a piece of wire to short the (FWS SPARE 1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
157OPEN CIRCUIT (FWS SPARE 2)	A load of less than 70 mA was detected when (FWS SPARE 2) circuit was energized	Disconnect a wire from (FWS SPARE 2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
158SHORTED CIRCUIT(FWS SPARE 2)	Excessive load was detected when (FWS SPARE 2) circuit was energized	Use a piece of wire to short the (FWS SPARE 2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
159OPEN CIRCUIT (FWS SPARE 3)	A load of less than 70 mA was detected when (FWS SPARE 3) circuit was energized	Disconnect a wire from (FWS SPARE 3) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
160SHORTED CIRCUIT (FWS SPARE 3)	Excessive load was detected when (FWS SPARE 3) circuit was energized	Use a piece of wire to short the (FWS SPARE 3) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
161OPEN CIRCUIT (FWS PROP A1)	A load of less than 70 mA was detected when (FWS PROP A1) circuit was energized	Disconnect a wire from (FWS PROP A1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
162SHORTED CIRCUIT (FWS PROP A1)	Excessive load was detected when (FWS PROP A1) circuit was energized	Use a piece of wire to short the (FWS PROP A1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
163OPEN CIRCUIT (FWS PROP A2)	A load of less than 70 mA was detected when (FWS PROP A2) circuit was energized	Disconnect a wire from (FWS PROP A2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
164SHORTED CIRCUIT (FWS PROP A2)	Excessive load was detected when (FWS PROP A2) circuit was energized	Use a piece of wire to short the (FWS PROP A2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
165OPEN CIRCUIT (FWS PROP B1)	A load of less than 70 mA was detected when (FWS PROP B1) circuit was energized	Disconnect a wire from (FWS PROP B1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
166SHORTED CIRCUIT (FWS PROP B1)	Excessive load was detected when (FWS PROP B1) circuit was energized	Use a piece of wire to short the (FWS PROP B1) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only
167OPEN CIRCUIT (FWS PROP B2)	A load of less than 70 mA was detected when (FWS PROP B2) circuit was energized	Disconnect a wire from (FWS PROP B2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only

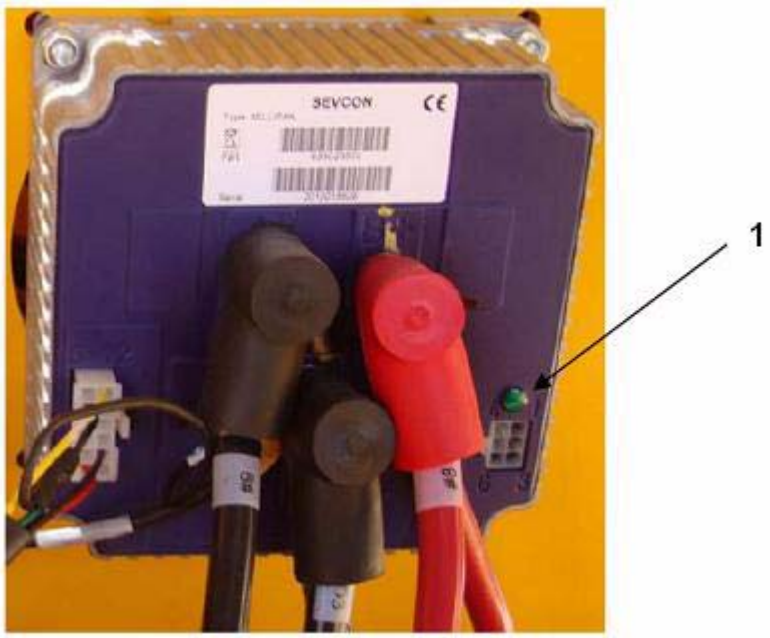
168SHORTED CIRCUIT (FWS PROP B2)	Excessive load was detected when (FWS PROP B2) circuit was energized	Use a piece of wire to short the (FWS PROP B2) coil	This is a latched error. Power must be cycled to clear error.	Checked only at power up Machines with 4WS option only

16 - Error code definitions - Motor controller

The Motor Controller indicates the operational status of the controller, it is located under the power compartment cover (left / drivers side), and behind the ground (lower) control panel. If an error condition is detected, the appropriate error code will be displayed by a flashing indicator light. Figure Motor controller for a visual of the controller.

Table "Error code definitions - Motor controller" to resolve the Fault, or contact Haulotte Group Customer Service Department: at 1-800-537-0540 or visit Haulotte Group online at www.haulotte-usa.com with any questions.

Motor controller



Reference	Description of the components
1	Indicator light

D - Equipment Maintenance

Error code definitions - Motor controller

Flash fault	Priority ID	Fault	Description	Solution
Steady ON, no flashing	1	None	System is operating normally	None required
1	11	Configuration Range Error	One or more controller personality settings are out of range	Use Sevcon calibrator to enter correct settings from latest Personality Sheet
1	12	CRC Error	The controller personality checksum is incorrect	Use Sevcon calibrator to enter correct settings from latest Personality Sheet. Otherwise, replace motor controller.
2	5	Sequence Fault	Enable line is active at power up	Check enable line, B- wiring, and Molex connector
2	6	Accelerator Fault	Invalid accelerator personality setting	Check speed input line, B- wiring, Molex connector, and 1000 Ohm resistor
3	17	MOSFET Short Circuit	MOSFET short circuit or controller miswire detected	Check for miswired B+, B-, or pump cables. Make sure pump terminals are not shorted to frame. If cables and pump are OK, then replace motor controller.
4	14	Line Contactor Welded	The line contactor is welded or otherwise shorted	Check line contactor wiring. If wiring is OK, then replace line contactor.
4	15	Line Contactor did not Close	Line contactor did not close or is otherwise open circuit	Check line contactor wiring and Molex connector. Measure the contactor coil resistance; it should be around 50 Ohm. If contactor and wiring are OK, then replace motor controller.
5	16	Motor open circuit	Pump motor cable disconnected	Check pump-motor and controller cables. Measure pump motor resistance it should be near zero ohms
6	N/A	Not used in this application	N/A	N/A
7	7	Low battery	Battery voltage is too low	Recharge the batteries.
7	8	High battery	Battery voltage is too high	Make sure battery charger is off. Check for poor or corroded battery connections.
7	10	High Battery with Line Contactor Open	High battery voltage was detected at power up before line contactor closed	Make sure battery charger is off or that the battery is not overcharged.
8	1	Thermal Cutback	Maximum power available to motor has been reduced due to excessive heat sink temperature	Remove power and allow controller to cool. If fault repeatedly occurs, look for binding on the hydraulic cylinders or sticking valves. Otherwise, the pump motor may be failing.

8	3	Pump ITT Current Limit Cutback	Maximum power available to pump motor has been reduced by the Current Limit Cutback function.	Recycle power. If fault repeatedly occurs, look for binding on the hydraulic cylinders or sticking valves. If fault repeatedly occurs, look for binding on the hydraulic cylinders or sticking valves.
9	N/A	Not used in this application	N/A	N/A
10	N/A	Not used in this application	N/A	N/A
11	18	Auto Zero Out of Range	Internal pump current measurement circuit could not be calibrated.	Replace motor controller.
11	24	System Monitor	Illegal system condition sensed due to internal hardware fault. .	Replace motor controller.
Single flash then off	19	MOSFETs Off	MOSFETs did not pulse when the internal failsafe circuit was enabled.	Check for reversed cables among B+, B-, and A terminals. If no miswire is found, replace motor controller.
Single flash then off	20	MOSFETs On	MOSFETs pulsed while the internal failsafe circuit was disabled.	MOSFETs pulsed while the internal failsafe circuit was disabled. If no miswire is found, replace motor controller.
Single flash then off	22	Contactor Drive Off	Contactor output did not pulse with the internal failsafe circuit enabled.	Replace motor controller.
Single flash then off	23	Contactor Drive On	Contactor output pulsed while the internal failsafe circuit was disabled.	Replace motor controller.

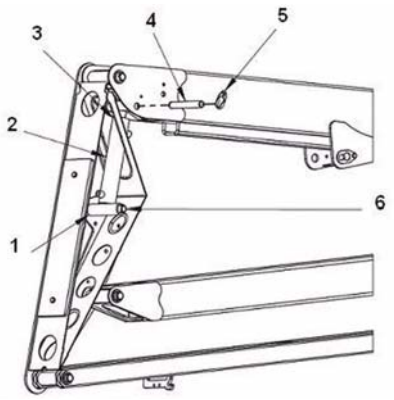
1 - Master / slave cylinder replacement - Articulating models

Use the following procedure to remove and replace faulty cylinders.

1.1 - MASTER CYLINDER

- With the boom in the "stowed" position, raise the upper boom until there is adequate exposure of the pin retainer and pivot pin.
- Verify that the upper boom is supported by lifting straps and an overhead hoist or equivalent.
- Unbolt and remove the pin retainer at the rod end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Tag and number all hydraulic hoses that attach to the cylinder valve block.
- Use a marker to label the valve block ports with the appropriate hose numbers.

Location of master cylinder



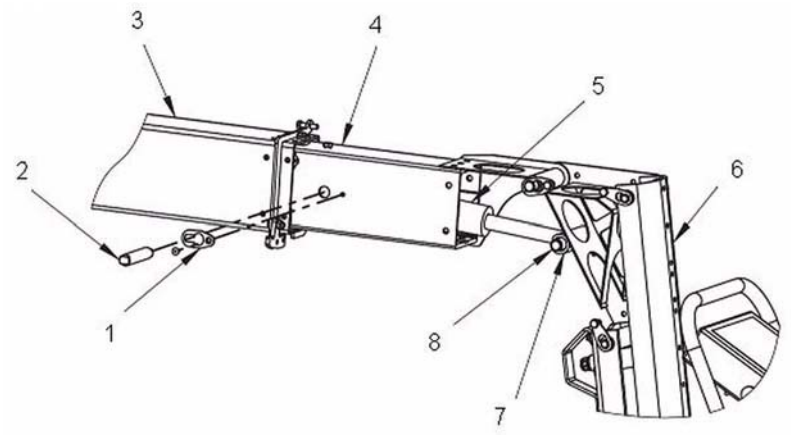
Reference	Description of the components
1	Cylinder base end
2	Master cylinder
3	Cylinder rod end
4	Pivot pin
5	Pin retainer
6	Pivot pin

- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.
- Unbolt and remove the pin retainer at the base end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Actuate the hydraulic system and check for leakage. Tighten hydraulic fittings as needed.
- Bleed trapped air from the hydraulic system by raising and lowering the telescoping boom with the reservoir fill port cap on, but not tightened. Allow several cycles of operation for trapped air to escape. Repeat as necessary.

1.2 - SLAVE CYLINDER

- With the boom in the "stowed" position, extend the telescoping boom until there is adequate exposure of the pin retainer and pivot pin (Approximately 0.7 m (2 ft)).
- Verify that the upper boom is supported by lifting straps and an overhead hoist or equivalent.
- Unbolt and remove the pin retainer at the rod end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Tag and number all hydraulic hoses that attach to the cylinder valve block. Use a marker to label the valve block ports with the appropriate hose numbers.
- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.
- Unbolt and remove both pin retainers at the base end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Actuate the hydraulic system and check for leakage. Tighten hydraulic fittings as needed.
- Bleed trapped air from the hydraulic system by raising and lowering the telescoping boom with the reservoir fill port cap on, but not tightened. . Repeat as necessary.

Location of slave cylinder

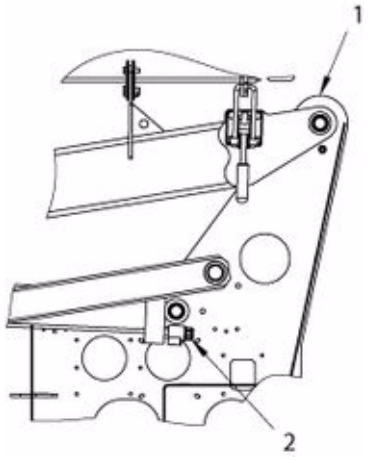


Reference	Description of the components
1	Cylinder base end
2	Master cylinder
3	Cylinder rod end
4	Pivot pin
5	Pin retainer
6	Pivot pin

1.3 - LIFT CYLINDER REPLACEMENT - ARTICULATING MODELS

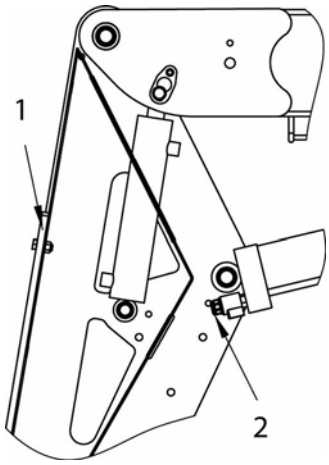
HLA16PX, 45XA, HLA19PX, 55XA, HTA13P, 3522A, HTA16P, 4527A, HTA19P, 5533A Aerial Work Platforms have three (3) lift cylinders, use the following procedure to remove and replace faulty or damaged hydraulic cylinders.

location of manual lowering valves for lift cylinder replacement - Primary lift cylinder



Reference	Description of the components
1	Turntable
2	Valve "push button"

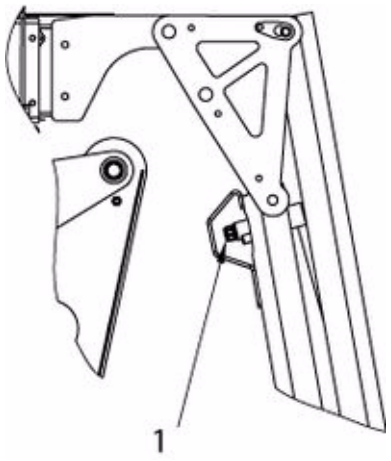
location of manual lowering valves for lift cylinder replacement - Secondary lift cylinder



Reference	Description of the components
1	Knuckle
2	Valve "push button"

E - Cylinder replacement

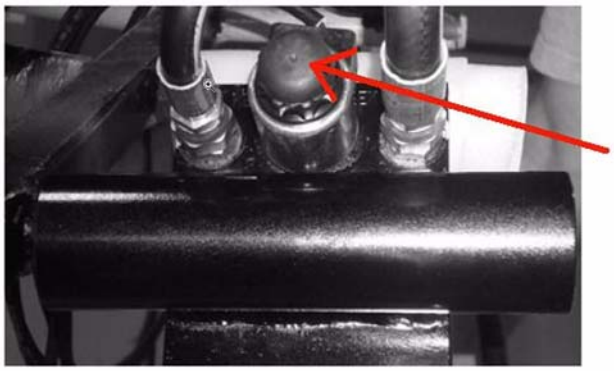
location of manual lowering valves for lift cylinder replacement - Jib lift cylinder



Reference	Description of the components
3	Valve "push button"

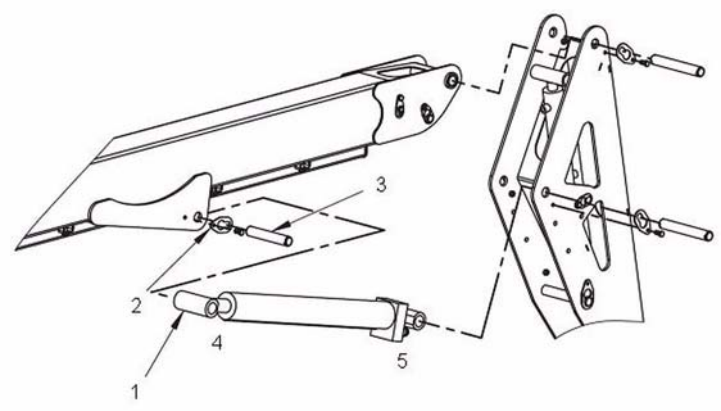
- With the boom in the "stowed" position, press (push) in and hold the emergency lowering valve "button" on the lift cylinder to relieve all hydraulic pressure to the cylinder.
- Turn the key switch at the ground (lower) control panel, to the "OFF" position and remove the key.
- Locate the piston rod end of the cylinder to be removed. Unbolt and remove the pin retainer from each side of the pivot pin.

Push "Button" lowering valve



E - Cylinder replacement

Lift cylinder replacement



Reference	Description of the components
1	Cylinder
2	Pin retainer
3	Pin
4	Piston end
5	Base end

- Verify that the cylinder is supported by lifting straps and an overhead hoist or equivalent.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Use an overhead crane or lifting gear to raise the boom section. Adequate clearance is necessary to reach the cylinder valve block (base end) and hydraulic hose ports.
- Remove the valve solenoid by unscrewing the cap, sliding the coil off, then unscrewing the valve.
- Tag and number all hydraulic hoses that attach to the cylinder valve block. Use a marker to label the valve block ports with the appropriate hose numbers.
- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.
- At the base of the cylinder, unbolt and remove the pin retainer from each side of the pivot pin.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Lift and remove the cylinder using an overhead hoist and lifting straps or equivalent. .
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Actuate the hydraulic system and check for leakage. Tighten hydraulic fittings as needed.
- Bleed trapped air from the hydraulic system by raising and lowering the boom with the reservoir fill port cap on, but not tightened. Allow several cycles of operation for trapped air to escape. Repeat as necessary.

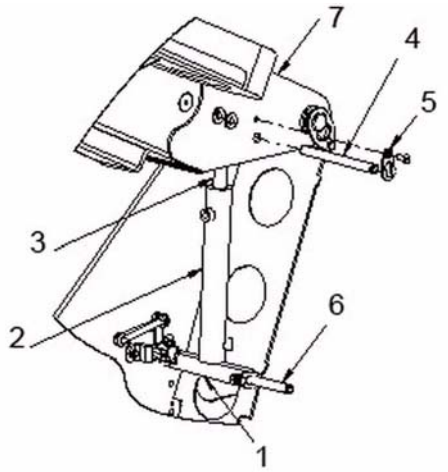
2 - Master / slave cylinder replacement - Telescopic models

Use the following procedure to remove and replace faulty cylinders.

2.1 - MASTER CYLINDER

- With the boom in the "stowed" position, raise the boom until there is adequate exposure of the pin retainer and pivot pin.
- Verify that the boom is supported by lifting straps and an overhead hoist or equivalent.
- Unbolt and remove the pin retainer at the rod end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Tag and number all hydraulic hoses that attach to the cylinder valve block.
- Use a marker to label the valve block ports with the appropriate hose numbers.

Location of master cylinder



Reference	Description of the components
1	Cylinder base end
2	Master cylinder
3	Cylinder rod end
4	Pivot pin
5	Pin retainer
6	Pivot pin
7	Pivot pin

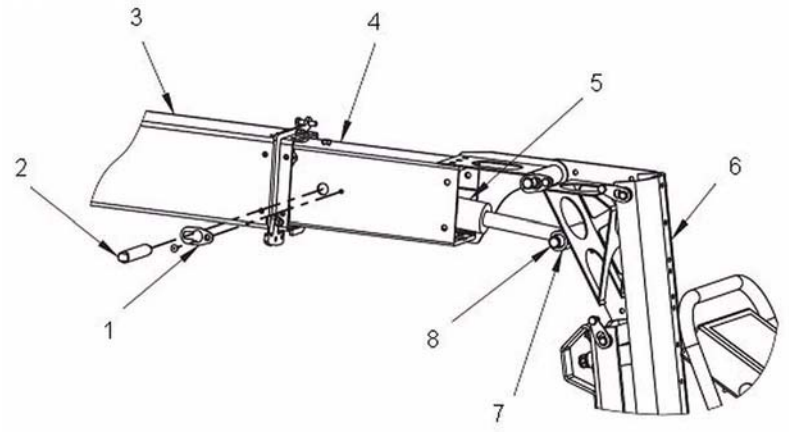
- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.
- Unbolt and remove the pin retainer at the base end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Actuate the hydraulic system and check for leakage. Tighten hydraulic fittings as needed.

- Bleed trapped air from the hydraulic system by raising and lowering the telescoping boom with the reservoir fill port cap on, but not tightened. Allow several cycles of operation for trapped air to escape. Repeat as necessary.

2.2 - SLAVE CYLINDER

- With the boom in the "stowed" position, extend the boom until there is adequate exposure of the pin retainer and pivot pin (approximately 0,7 m (2 ft)).
- Verify that the upper boom is supported by lifting straps and an overhead hoist or equivalent.
- Unbolt and remove the pin retainer at the rod end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Tag and number all hydraulic hoses that attach to the cylinder valve block. Use a marker to label the valve block ports with the appropriate hose numbers.
- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.
- Unbolt and remove both pin retainers at the base end of the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Actuate the hydraulic system and check for leakage. Tighten hydraulic fittings as needed.
- Bleed trapped air from the hydraulic system by raising and lowering the telescoping boom with the reservoir fill port cap on, but not tightened. . Repeat as necessary.

Location of slave cylinder



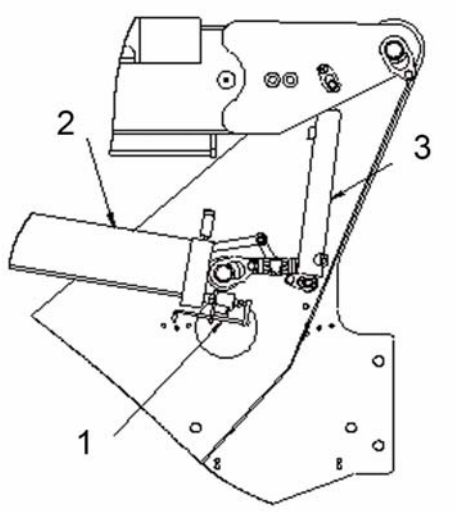
Reference	Description of the components
1	Cylinder base end
2	Master cylinder
3	Cylinder rod end
4	Pivot pin
5	Pin retainer
6	Pivot pin

3 - Lift cylinder replacement - Telescopic models

Use the following procedure to remove and replace a faulty or damaged hydraulic cylinder on the aerial work platform :

- Lower the boom until it is resting in the "stowed" position.
- Pull and hold the emergency lowering valve handle on the lift cylinder to relieve all hydraulic pressure to the cylinder.
- Turn key switch at the ground (lower) control panel, to the "OFF" position and remove the key.
- Locate the piston rod end of the cylinder to be removed. Unbolt and remove the pin retainer from each side of the pivot pin.
- Verify that the cylinder is supported by lifting straps and an overhead hoist or equivalent.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Use an overhead crane or lifting gear to raise the boom section. Adequate clearance is necessary to reach the cylinder valve block (base end) and hydraulic hose ports.

Location of Emergency Lowering Valve Handle

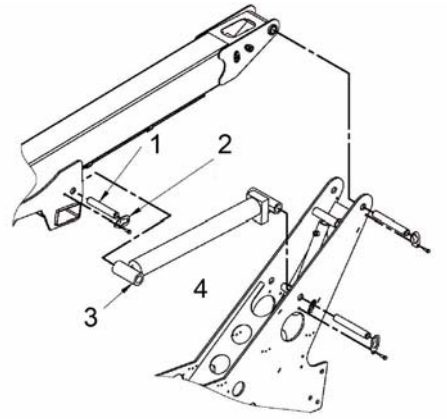


Reference	Description of the components
1	Valve handle
2	Lift cylinder
3	Master cylinder

- Remove the valve solenoid by unscrewing the set screw in the top of the valve handle; then slide the valve handle, coil and guide off the solenoid, unscrew the valve solenoid.
- Tag and number all hydraulic hoses that attach to the cylinder valve block. Use a marker to label the valve block ports with the appropriate hose numbers.
- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.
- At the base of the cylinder, unbolt and remove the pin retainer from each side of the pivot pin.
- Remove the pivot pin using a hammer and a brass or hardwood drift.

E - Cylinder replacement

Lift cylinder replacement



Reference	Description of the components
1	Pin
2	Pin retainer
3	Cylinder
3	Piston end

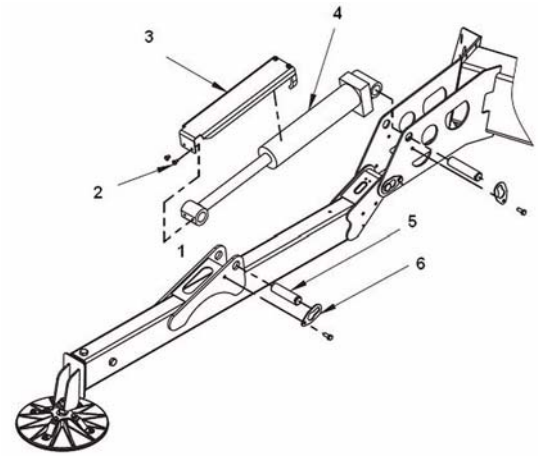
- Lift and remove the cylinder using an overhead hoist and lifting straps or equivalent.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal. Tighten hydraulic fittings as needed.
- Bleed trapped air from the hydraulic system by raising and lowering the telescoping boom with the reservoir fill port cap on, but not tightened. Allow several cycles of operation for trapped air to escape. Repeat as necessary.

4 - Outrigger cylinder replacement

Use the following procedure to remove and replace faulty or damaged hydraulic cylinders on theoutriggers :

- Lower the outrigger until the footpad is touching the ground. DO NOT transfer the weight of the aerial work platform onto the outrigger. Leave the weight of the aerial work platform on the trailer wheels.
- Remove the bolts securing the outrigger cylinder guard. Remove the cylinder guardRemove the cylinder guard.

Outrigger cylinder replacement

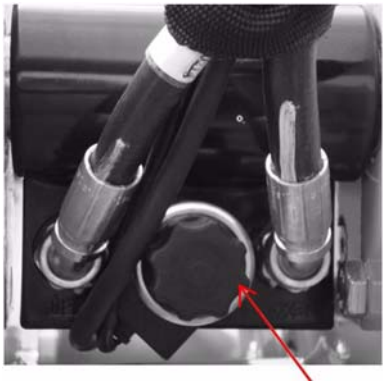


Reference	Description of the components
1	Piston end
2	Bolts
3	Cylinder guard
4	Cylinder
5	Pin
6	Pin retainer

- At the piston rod end of the cylinder, unbolt and remove the pin retainer from each side of the pivot pin.
- Place a block of wood shoring between the outrigger tube and the cylinder.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Fully retract the cylinder.
- Turn the key at the ground (lower) control station to the "OFF" position and remove the key.
- Tag and number all hydraulic hoses that attach to the cylinder valve block. Use a marker to label the valve block ports with the appropriate hose numbers.
- Remove the valve solenoid by unscrewing the cap, sliding the coil off, then unscrewing the valve.
- Place absorbent cloths below the cylinder ports and detach hydraulic hoses from the cylinder. Elevate hoses to prevent leakage. Plug or cap exposed hose fittings and cylinder ports.

E - Cylinder replacement

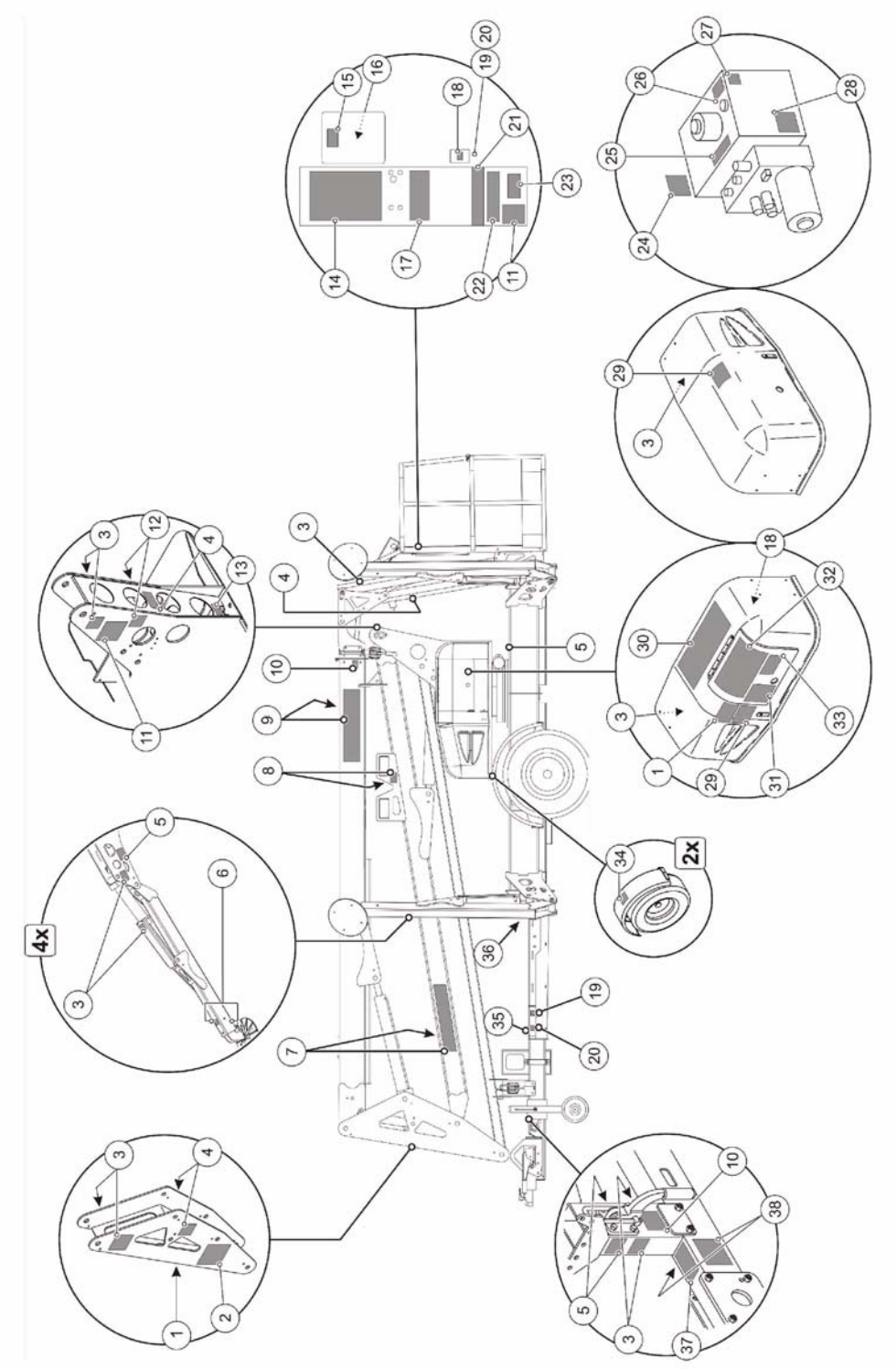
Cylinder valve removal



- At the base of the cylinder, unbolt and remove the pin retainer from each side of the pivot pin.
- Remove the pivot pin using a hammer and a brass or hardwood drift.
- Lift and remove the cylinder using an overhead hoist and lifting straps or equivalent.
- Replace or reinstall the cylinder by following the above instructions in the reverse order of removal.
- Actuate the hydraulic system and check for leakage. Tighten hydraulic fittings as necessary.
- Bleed trapped air from the hydraulic system by extending and retracting the outrigger with the reservoir fill port cap on but not tightened. Allow several cycles of operation for trapped air to escape. Repeat as necessary.

F - Decals replacement

Decal Replacement - Decal kit - ANSI standard - Articulating aerial work platform



F - Decals replacement

Decal Replacement - Decal kit - ANSI standard - HTA13P - 3522A

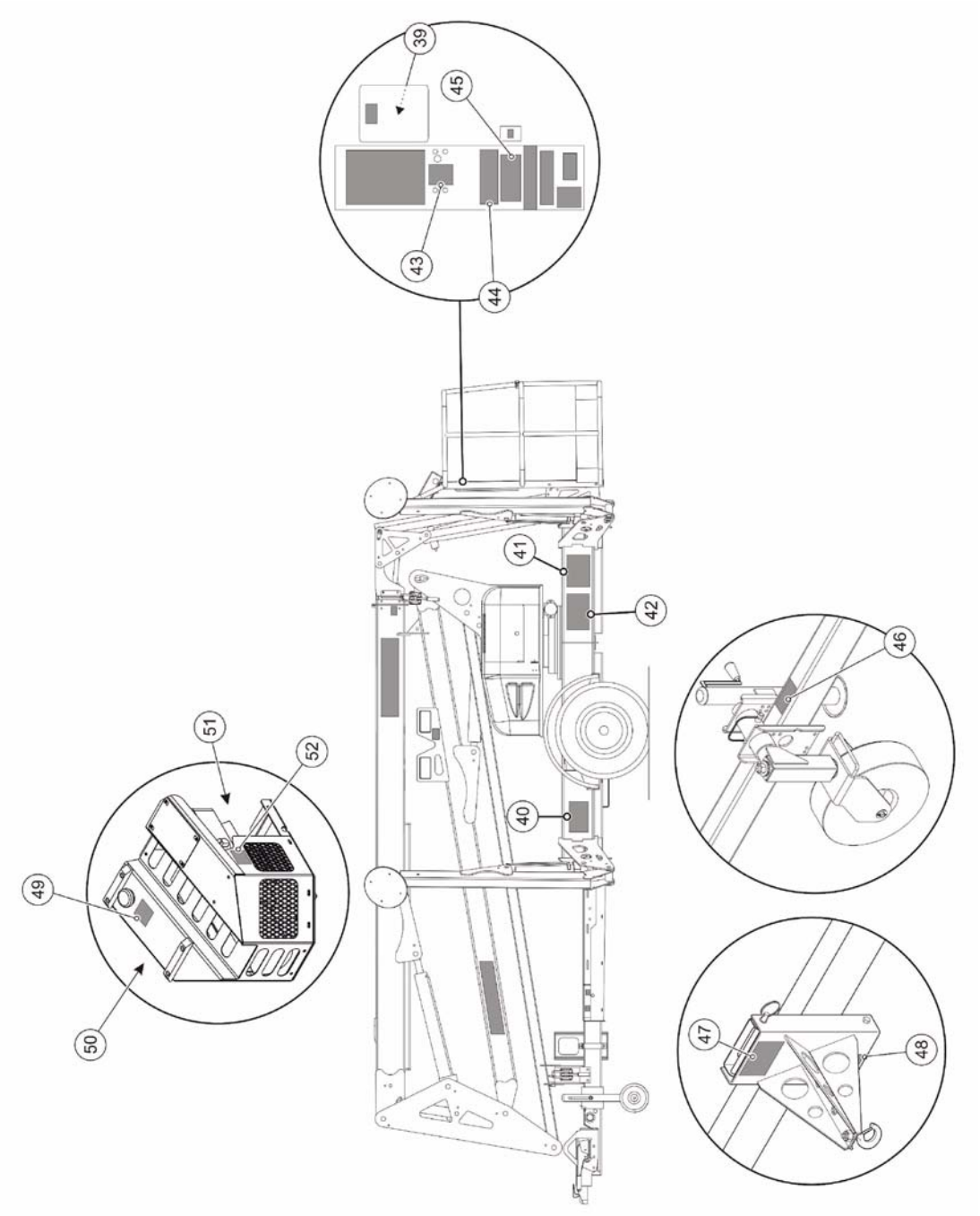
Item no.	Part number	Description	Quantity
B06-01-4012		Decal kit - Includes the following	
1	B06-00-0550	Decal (s) - Warning - Unhitch To Operate	2
2	B06-00-0551	Decal (s) - Caution - Latch / Jack / Brake	1
3	B06-00-0405	Decal (s) - Warning - Hand Pinch Point	16
4	B06-00-0403	Decal (s) - Emergency Lower Valve	6
5	B06-00-0521	Decal (s) - Danger - Tip Over Hazard	6
6	B06-00-0404	Decal (s) - Warning - Outrigger Crush Foot	8
7	B06-00-0161b	Decal (s) - HAULOTTE Biljax - 5 inBlack / Red on clear	2
8	B06-00-0477	Decal (s) - Warning - Fork Lift Use	2
9	B06-00-0539	Decal (s) - HTA13P - 3522A - Black clear vinyl with black letters	2
10	B06-00-0481	Decal (s) - Transport latch	1
11	B06-00-0535	Decal (s) - Notice - Range of motion - 3522A	2
12	B06-00-0482	Decal (s) - Danger - Electrocution	2
13	B06-00-0037	Decal (s) - Lubricate Semi - Annually	1
14	B06-00-0471	Decal (s) - Danger - Main Instruction / Hazard - Platform	1
15	B06-00-0475	Decal (s) - Warning - Read / Understand Manual	1
16	B06-00-0473	Decal (s) - Notice - Operator Manual Missing	1
17	B06-00-0534	Decal (s) - Warning - Platform operation	1
18	B06-00-0062	Decal (s) - Notice - AC Power	2
19	B06-00-0530	Decal (s) - Air - 120 PSI	2
20	B06-00-0531	Decal (s) - Water - 3000 PSI	2
21	B06-00-0552	Decal (s) - Notice - La,yard attachment	1
22	B06-00-0474	Decal (s) - Notice - Platform maximum load	1
23	0202-0523	Decal (s) - Flag, Made In USA	1
24	B06-00-0503	Decal (s) - Notice - Handle applications	1
25	B06-00-0504	Decal (s) - Notice - Emergency hand pump	1
26	B06-00-0068	Decal (s) - Notice - Loaw Foam Hyd Oil	1
27	B06-00-0494	Decal (s) - Notice - Contains hazardous material	1
28	B06-00-0541	Decal (s) - Manual Rotate / Retract	1
29	B06-00-0495	Decal (s) - Caution - Compartment Access	2
30	B06-00-0505	Decal (s) - Danger - Main instruction / Hazard - Base	1
31	B06-00-0034	Decal (s) - Danger - Battery / Charger Safety	1

F - Decals replacement

Item no.	Part number	Description	Quantity
32	B06-00-0533	Decal (s) - Warning - Ground operation instructions - Articulating	2
33	B06-00-0484	Decal (s) - Danger - Battery / Charger instruction	1
34	B06-00-0543	Decal (s) - Warning - Crush hazard	2
35	B06-00-0496	Decal (s) - Generator Plate Maximum 200	1
36	B06-00-0478	Decal (s) - Notice - AC Power Connection	1
37	B06-00-0542	Decal (s) - Warning - Maximum Tow Speed 65	1
38	B06-00-0544	Decal (s) - Warning - Tow hazard 65 mph	2

F - Decals replacement

Identification plates and optional equipment - Articulating aerial work platform



F - Decals replacement

Decal Replacement - Identification plate - ANSI standard - Used on all standard equimpent

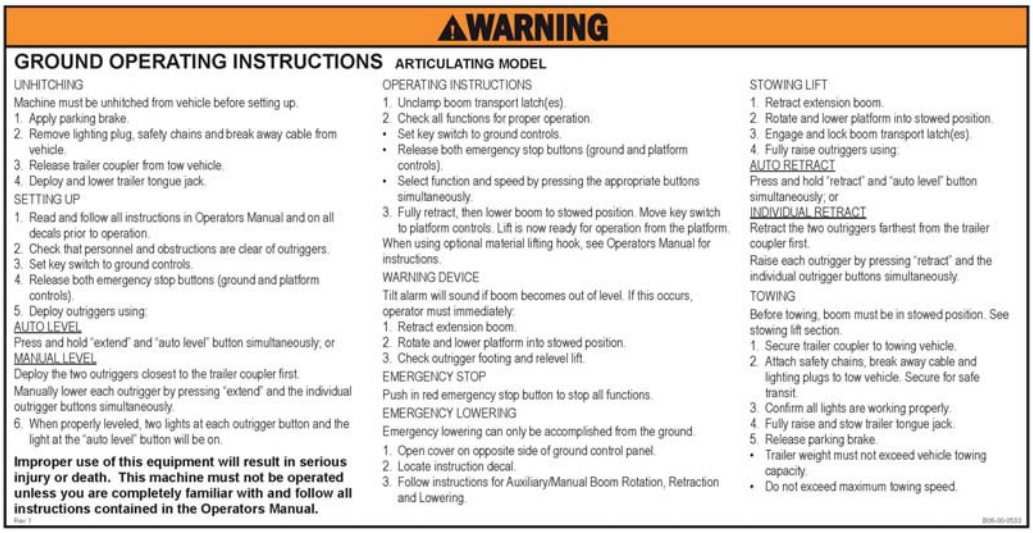
Item no.	Part number	Description	Quantity
39	B06-00-0526	Key ring tag	1
40	B06-00-0524	Annual Inspection Plate	1
41	B06-00-0490	VIN Plate	1
42	B06-00-0499	ANSI ID Plate	1

Decal Replacement - Decals for optional equipment - ANSI standard

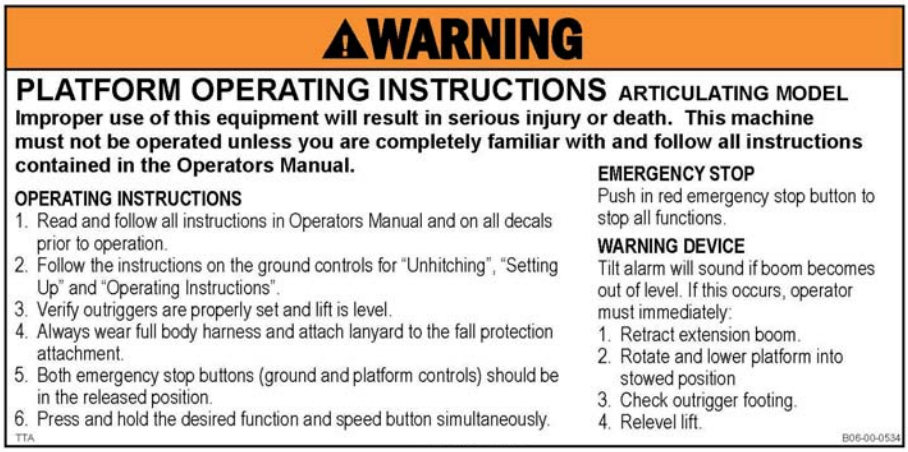
Item no.	Part number	Description	Quantity
43	B06-00-0529	Decal (s) - Notice - Platform rotate - (Manual rotation option)	1
44	B06-00-0527	Decal (s) - Warning - Drive and set - (Drive and set option)	1
45	B06-00-0528	Decal (s) - Notice - Drive and set - (Drive and set option)	1
46	B06-00-0553	Decal (s) - Warning - Jockey wheel - (Drive and set option)	1
47	B06-00-0485	Decal (s) - Notice - Material lift set up - (Material lift option)	1
48	B06-00-0497	Decal (s) - Notice - Material lift max 500 - (Material lift option)	1
49	B06-00-0487	Decal (s) - Notice - unleaded fuel only - (Gas engine option)	1
50	B06-00-0488	Decal (s) - Caution - Component damage - (Gas engine option)	1
51	B06-00-0486	Decal (s) - Notice - Engine specifics - (Gas engine option)	1
52	B06-00-0547	Decal (s) - Warning - Engine operate - Hot - (Gas engine option)	1

F - Decals replacement

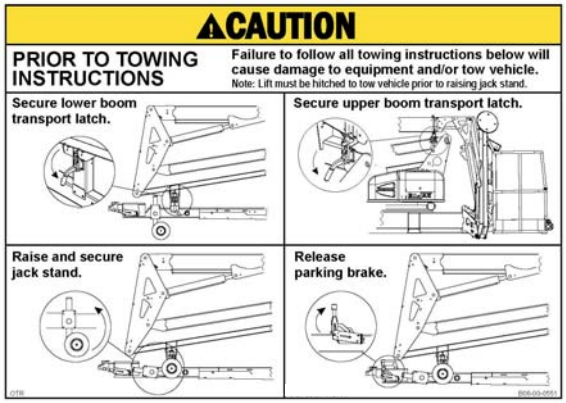
Decal (s) - ANSIAll aerial work platforms



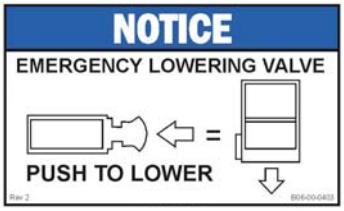
B06-00-0533



B06-00-0534



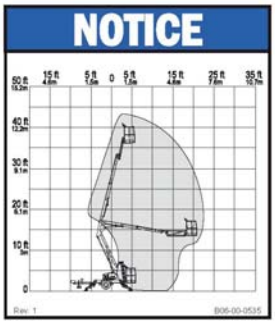
B06-00-0551



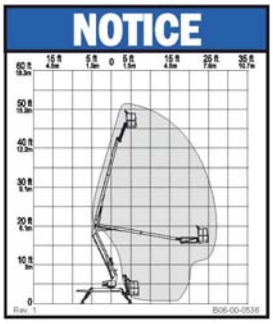
B06-00-0403

F - Decals replacement

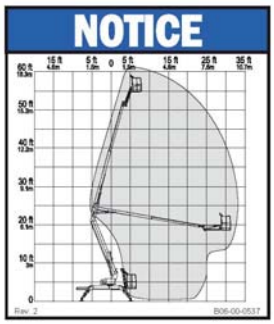
Decal (s) - ANSIAll aerial work platforms



B06-00-0535
3522A / HTA 13 P



B06-00-0536
4527A / HTA 16 P



B06-00-0537
5533A / HTA 19 P

B06-00-0538

B06-00-0539

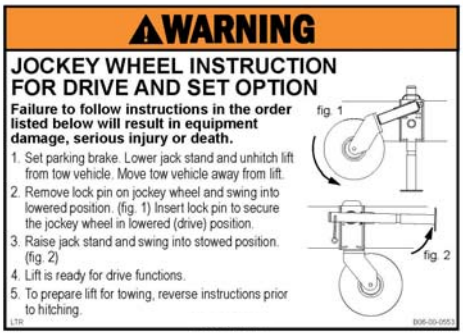
B06-00-0540

F - Decals replacement

Decal (s) - ANSIOptional equipment

B06-00-0529

B06-00-0527



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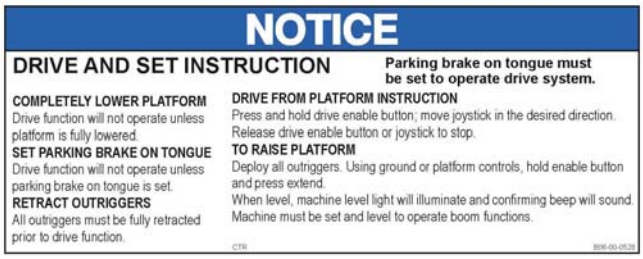
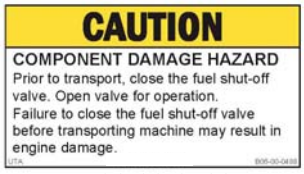


B06-00-0528

B06-00-0485

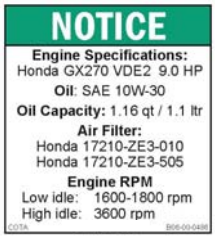
B06-00-0497

B06-00-0547



B06-00-0488

B06-00-0487



B06-00-0486