

Operator Manual

AB-46 Bi-Energy

SERIAL NO. 1000 TO CURRENT

WARNING

All personnel shall carefully read, understand and follow all safety rules, operating instructions, and the Scaffold Industry Association's MANUAL OF RESPONSIBILITIES (ANSI A92.5) before operating or performing maintenance on any UpRight boom supported aerial work platform.

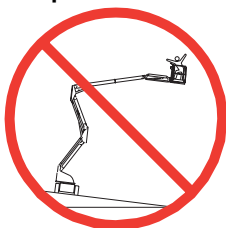
SAFETY RULES

Electrocution Hazard



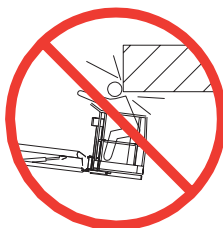
NEVER operate the machine within ten (10) feet of power lines. **THIS MACHINE IS NOT INSULATED.**

Tip Over Hazard



NEVER operate the boom or drive with platform elevated unless on firm level surface.

Collision Hazard



NEVER position the platform without first checking for overhead obstructions or other hazards.

Fall Hazard



NEVER climb, stand or sit on platform guardrails or midrail.

ALL occupants must wear an approved fall restraint properly attached to designated platform anchorage point. Attach only one fall restraint to each anchorage point.

NEVER exceed maximum platform load of 500 lbs. (225 kg) and two (2) occupants.

NEVER exceed 45 lbs. (200 N) of side force per occupant.

DISTRIBUTE all platform loads evenly on the platform.

NEVER operate the machine without first surveying the work area for surface hazards such as holes, drop-offs, bumps, curbs, or debris; and avoiding them.

OPERATE machine only on surfaces capable of supporting wheel loads.

NEVER elevate the machine when wind speeds exceed 28 mph (12.5 m/sec.).

IN CASE OF EMERGENCY push emergency stop button to cut power to all machine functions.

ALWAYS close and secure gate after entering platform.

NEVER exit or enter platform while elevated.

NEVER use ladders, scaffolding, or other items to gain height; work only from the platform floor.

NEVER climb down elevating assembly while platform is elevated.

INSPECT the machine thoroughly for cracked welds, loose or missing hardware, hydraulic leaks, loose wire connections, and damaged cables or hoses before using.

VERIFY that all labels are in place and legible before using. Refer to page 10 & 11 for label identification.

NEVER use a machine that is damaged, not functioning properly, or has damaged or missing labels.

IF ALARM SOUNDS while boom is elevated, **STOP**, carefully retract boom and lower platform without rotating. Move machine to a firm, level surface.

NEVER attach overhanging loads or use boom as a crane.

NEVER alter operating or safety systems without manufacturers written consent.

NEVER charge battery near sparks or open flame. Charging batteries emit explosive hydrogen gas.

NEVER replace any component or part with anything other than original UpRight replacement parts without the manufacturer's written consent.

NEVER tow the machine. Transport by truck or trailer only.

AFTER USE, secure the work platform from unauthorized use by turning both key switches off and removing all keys.

Introduction

This manual covers the operation of Bi-Energy powered models of the AB-46 Articulated Boom. This manual must be stored on the machine at all times.

Pre-Operation and Safety Inspection

Carefully read, understand and follow all safety rules, labels, and operating instructions, then perform the following steps each day before use.

Perform a complete visual inspection of the entire unit prior to operating. Check the following areas for discrepancies:

1. Open panels and check hydraulic components / hoses for damage or leaks. Check electrical components / wiring for damage or loose connections.
2. Inspect chassis, axles, hubs, and steering linkage for damage, deformation, buckled paint, loose or missing hardware, and cracked welds.
3. Check tires for damage, punctures, and inflation; tire pressure must be 75 psi.
4. Check all hoses / cables for wear.
5. Inspect elevating assembly for damage, deformation, buckled paint, loose or missing hardware, and cracked welds.
6. Inspect platform and guardrails for damage, deformation, buckled paint, loose or missing hardware, and cracked welds. Insure that gate operates freely and latches securely.
7. Check Hydraulic fluid level with platform fully lowered.
8. Check battery fluid level (see battery maintenance, page 8).
9. Check fuel level, add fuel if necessary.
10. Ensure that radiator is cold, check coolant level. Add if necessary.



WARNING



NEVER remove the cap from a hot radiator. Hot coolant can cause severe burns.



WARNING



DO NOT use a machine that is damaged or malfunctioning. Tag and remove the unit from service until it is repaired.

SYSTEM FUNCTION INSPECTION

Note: Refer to figures 1 and 2 for chassis and platform control locations.

1. Before performing the following tests, check area around machine and overhead for obstructions, holes, drop-offs, and debris.
2. Turn chassis key switch to chassis, and turn on (rotate clockwise) emergency stop switches at the chassis control panel and at the platform control panel.

Note: The machine may be powered by batteries or by engine. To power the machine by engine, press the engine start button to crank the engine; release when engine starts. If engine is cold: press the preheat button and hold for six seconds prior to starting diesel models.

3. Push in the chassis emergency stop button and operate any function switch at the chassis control panel, function should NOT activate. Repeat for platform emergency stop button, operating chassis controls. Return both emergency stop switches to the on position.
4. Operate each function switch to raise / lower, extend / retract, rotate left / right, each section of the elevating assembly and observe the operation of the machine. All functions should operate through full cycle smoothly.
5. Turn chassis key switch to platform.
6. Mount the platform, close and latch the gate, and attach approved fall restraint to designated platform anchorage point. Attach only one fall restraint to each point.
7. Without depressing the foot switch, move the drive control handle, machine should not function.
8. Depress the foot switch and move the drive control handle forward and reverse. Observe that proportional functions operate smoothly, and that brakes apply quickly after control is released.
9. While depressing foot switch, operate steer switch to left and right. Observe that steering wheels turn properly.
10. While depressing foot switch, turn function speed control knob to desired setting, and operate boom controls. Observe that boom operates smoothly, and that upper boom, jib, turret rotation, platform level, and platform rotation controls operate proportionally in conjunction with function speed control knob. Observe that platform maintains level when boom is elevated.
11. With the upper boom elevated one foot, operate drive control handle. Observe that drive speed is limited to creep (1/2 foot [.15m] per second). Lower upper boom to stowed position.
12. Press the service horn button. Observe that horn is audible.

Controls and Indicators

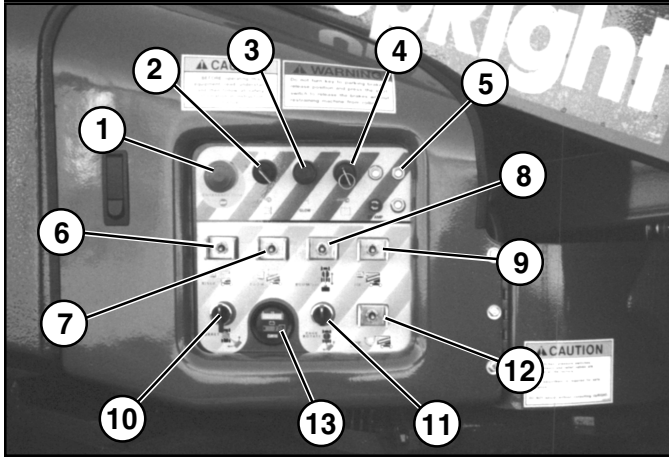


Figure 1: Chassis Controls

Note: The following list corresponds to the numbered items in figures one and two.

1. Emergency stop.
2. Diesel Engine start.
3. Glow Plug button.
4. Keyswitch
5. Control fuses.
6. Riser control.
7. Upper boom control.
8. Boom extension control.
9. Jib control.
10. Turret rotation control.
11. Platform rotation control.
12. Platform level control.
13. Battery condition indicator & Hourmeter.
14. Service horn button.
15. Drive control handle.
16. Function speed control.
17. Foot switch (located on platform floor).
18. Out of level indicator.
19. Low Voltage indicator.

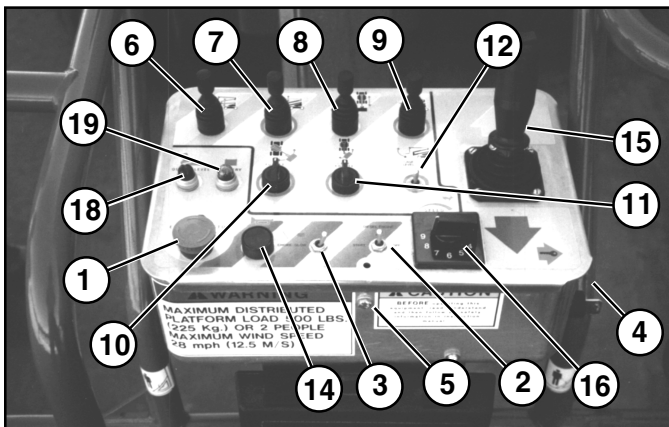


Figure 2: Platform Controls

Operation

Before operating work platform insure that:

Pre-operation and safety inspection has been completed, and any discrepancies have been corrected.

The operator has been thoroughly trained on the operation of the machine.

The work area is clear of all obstructions, holes, drop-offs, or persons in the route of travel.

The surface is capable of supporting wheel loads.

Refer to figures one and two for control locations.



Emergency Stop

At any time during operation, press the emergency stop button to stop all functions in an emergency.



Service Horn

At any time during operation, press the service horn button to sound an audible warning if necessary.



WARNING



Always wear an approved fall restraint properly attached to designated platform anchorage point when driving or elevating the machine (see figure 3).

Attach only one fall restraint to each anchorage point.

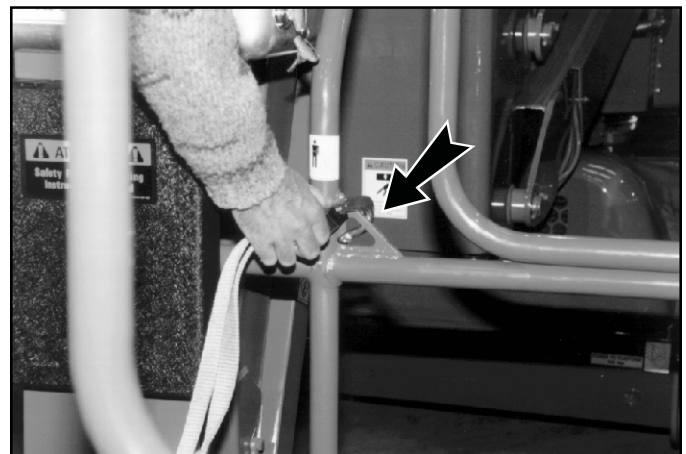


Figure 3: Typical Fall Restraint Anchorage Point



Driving

With Boom Lowered

1. Turn chassis key switch to platform, and turn on (turn clockwise) the chassis emergency stop switch.
2. Mount the platform, close and latch the gate.
3. Attach approved fall restraint to designated platform anchorage point. Attach only one fall restraint to each point.
4. Check that the area around and above the work platform is clear of obstructions, holes, drop-offs, persons in the route of travel, and the surface is capable of supporting wheel loads.
5. Depress the foot switch and move the drive control handle forward to travel forward and reverse to travel in the reverse direction.

Note: When the boom is rotated to the front of the chassis (steering wheels aft) directions of travel and steering will be reversed. Observe the color coded arrows on the control panel near the drive control handle, and on the chassis. They will indicate the direction of travel when the drive control handle is moved.

With Boom Elevated

Travel with boom elevated is restricted to firm level surfaces only.

When driving elevated, the machine will travel at creep speed (1/2 foot [.15 m] per second).

Steering

1. While depressing the foot switch, push the steering switch (located on top of the control handle) to the left to turn left, and right to turn right.

Note: Steering is not self centering. Wheels must be returned to the straight ahead position by operating the steering switch.

POSITIONING THE PLATFORM

Positioning the platform as close as possible to the work area requires some planning. First, you must survey the work site to find a suitable place to park the machine. This must be a firm level area as close as possible to the work area. Take into consideration all obstructions on the ground and overhead and avoid them.

Once you have moved the machine to a firm level surface as near as possible to the work area, follow the instructions on page 5 to position the platform.

Always, before operating any function, check the area around and overhead for any obstructions or electrical conductors.

Multifunction Controls

The UpRight AB-46 employs the use of multifunction controls. This means that riser or boom extension will function at full speed while simultaneously operating upper boom, jib, turret, or rotating the platform.

The turret may be rotated while driving if necessary to make turns in tight areas. All other boom functions will not operate while driving.

Lower Control Operation

All boom functions will operate at fixed speed.

1. Turn chassis keyswitch to chassis controls.
2. Operate boom control switches to position the platform.



Leveling the Platform



WARNING



DO NOT operate the machine if the platform does not maintain level when elevated.

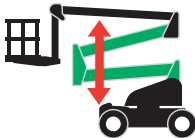
Note: Platform leveling can be performed only with the boom stowed and should be done only to calibrate the automatic leveling system.

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, push the platform level control switch forward to swing the platform upward, rearward to swing the platform downward. Release the switch to stop leveling.



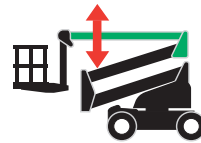
Rotating the Turret

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, turn the turret rotation control switch counterclockwise to rotate left, clockwise to rotate right. Release the switch to stop rotation. Observe the area around the boom when rotating the turret to avoid any obstructions.



Elevating the Riser

1. While depressing the foot switch, push the riser control lever forward to elevate the riser, rearward to lower the riser. Release the control lever to stop elevating / lowering. The riser will function at a constant speed, function speed control setting is not necessary.



Elevating the Upper Boom

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, push the upper boom control lever forward to elevate the upper boom, rearward to lower the upper boom. Release the control lever to stop elevating / lowering.



Extending the Upper Boom

1. While depressing the foot switch, push the boom extension control lever rearward to extend the boom, forward to retract the boom. Release the control lever to stop extending / retracting. The boom extension will function at a constant speed, function speed control setting is not necessary.



Elevating the Jib

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, push the jib control lever forward to elevate the jib, rearward to lower the jib. Release the control lever to stop elevating / lowering.



Rotating the Platform

1. Set the function speed control dial to the desired setting. Rotate the dial clockwise to increase speed, counterclockwise to decrease. If you are not sure what speed to use, start out slow; the speed can be varied while operating the function.
2. While depressing the foot switch, turn the platform rotation control switch counterclockwise to rotate left, clockwise to rotate right. Release the switch to stop rotation.

EMERGENCY OPERATION

In the event of powered function failure, the elevating assembly may be lowered manually by the following procedure.



WARNING



NEVER climb down the elevating assembly. If controls do not respond, ask someone on the ground to lower the boom manually.

Lowering Elevating Assembly

1. Open the cover on the hydraulic module (opposite side of the turret from the chassis control panel).
2. Remove the wire loop retainer from the hand pump lever, and extend the handle upward to gain leverage.
3. Operate the manual override (knurled knob) on the appropriate valve (see figure 4). Push in to lower / extend, pull out to raise / retract as required.
4. While holding the appropriate valve in position, pump the handle in and out until that section of the elevating assembly is lowered / retracted.
5. Repeat as necessary operating each valve until the elevating assembly is fully lowered.

Rotating Turret

1. Obtain a $\frac{7}{8}$ inch ratcheting wrench.
2. Place the socket of the wrench onto the hex shaft stub of the turret rotation gearbox.
3. Turn the wrench clockwise to rotate the turret counterclockwise, turn counterclockwise to rotate the turret clockwise.

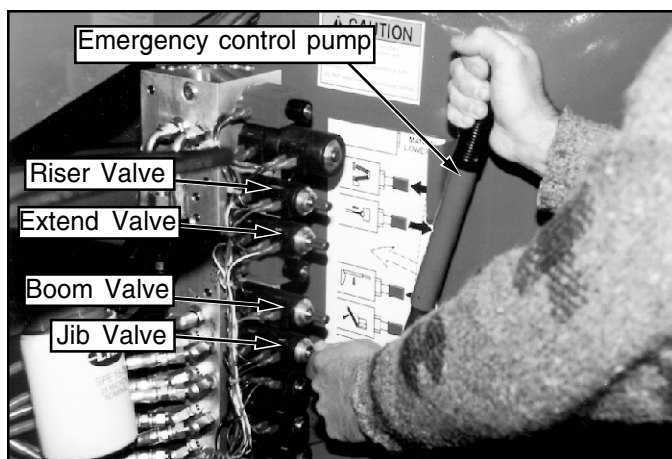


Figure 4: Emergency Control Operation

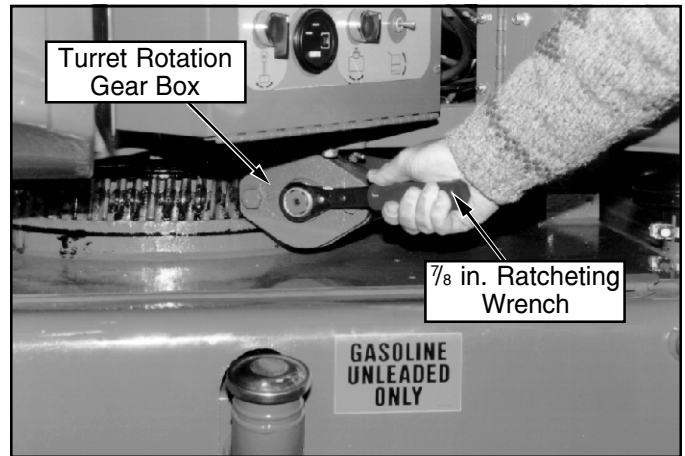


Figure 5: Manual Turret Rotation

EMERGENCY TOWING

Perform the following only when the machine will not operate under its own power and it is necessary to move the machine or when winching onto a trailer for transportation.

1. Insure that the platform is fully lowered, and that the turret is rotated so the platform is to the rear of the machine.
2. Attach chain / cable of sufficient strength for towing the machine to front or rear tie down lugs.
3. Turn the keyswitch to the parking brake release position. Alarm will sound.
4. Operate the emergency control pump four full strokes to release brakes.
5. After moving the machine, return the keyswitch to the off position and remove the key to prevent unauthorized operation. Brakes are now reset. Alarm will stop.



CAUTION



DO NOT move the machine faster than 3 mph. Faster speeds will damage drive components and void warranty.

AFTER USE EACH DAY

1. Ensure that the platform is fully lowered.
2. Park the machine on level ground, preferably under cover, secure against vandals, children or unauthorized operation.
3. Turn the key switch to **OFF** and remove all keys to prevent unauthorized operation.

BATTERY CHARGING

See *Maintenance*, page 8.

Transportation

BY CRANE



WARNING



Stand clear of machine when lifting.

Check specifications on back page, insure that crane and slings are of correct capacity to lift weight of unit.

1. Insure that boom is fully lowered and retracted.
2. Attach straps to chassis lifting lugs only. Insure that straps are adjusted properly to keep unit level when lifting.

BY TRUCK OR TRAILER

1. Insure that boom is fully lowered and retracted.
2. Maneuver the machine onto bed of truck / trailer.
3. When winching, follow instructions for emergency towing on page 6. Attach winch cable to front tie down lugs.



CAUTION



Do not winch machine faster than 3 mph.

4. After winching, insure that brakes are set.
5. Secure the machine to the transport vehicle using chains / straps of adequate load capacity (refer to specifications, back page) attached to chassis tie down lugs (see figure 6).
6. Place a wooden block (7.5" x 4" x 28") under platform support braces as shown (see figure 6).
7. Attach ratchet strap; under platform floor grating, over support braces (see figure 6). Tighten securely, do not overtighten.



WARNING



NEVER elevate the machine while on a truck or trailer.



Figure 6: Securing the Machine for Transportation

Maintenance

TIRES

Tire selection can affect the stability of the machine. Use only tires supplied by UpRight unless approved by the manufacturer in writing.

BATTERY CHARGING



WARNING



Charge batteries only in a well ventilated area.

Hazard of explosive gas mixture. Keep sparks, flame and smoking materials away from batteries.

Always wear safety glasses when working with batteries.

Battery fluid is highly corrosive. Rinse away any spilled fluid thoroughly with clean water.

Always replace batteries with UpRight batteries or manufacturer approved replacements weighing 120 lbs. each.

Charge batteries as follows:

1. Check the batteries fluid level. If the electrolyte level is lower than $\frac{3}{8}$ in. (10 mm) above the plates, add clean, distilled water only.
2. Verify charger voltage switch is set to the correct voltage.
3. Connect extension cord (minimum 12 gauge (1.5 mm) conductor and maximum 50 ft. (15 m) in length) to charger plug located through the opening in front of the chassis (Figure 7). Connect extension cord to properly grounded outlet of proper voltage and frequency.
3. The charger will turn on automatically.
4. When the batteries are fully charged, the charger will turn off automatically.

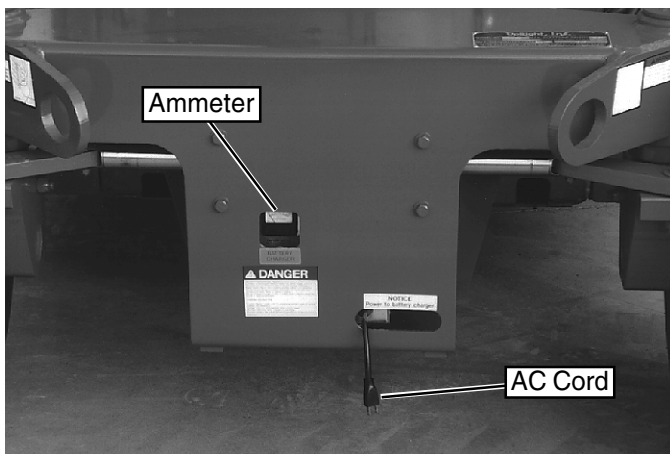


Figure 7: Battery Charger

BATTERY MAINTENANCE

Check battery fluid level daily, especially if work platform is being used in a warm, dry climate.

If electrolyte level is lower than $\frac{3}{8}$ in. (10 mm) above plates add distilled water only. DO NOT use tap water it will shorten battery life.

Keep terminals and top of battery clean.

HYDRAULIC OIL

1. Check oil level at dipstick and/or sight gauge inside engine compartment left hand side with the platform fully lowered.
2. Lift flap located on top of chassis left side (see figure 9).
3. Open filler / breather cap.
4. If necessary, fill to capacity with clean ISO 46 compatible hydraulic oil.
5. Replace cap.

LUBRICATION

Refer to service manual for lubrication chart and guidelines.

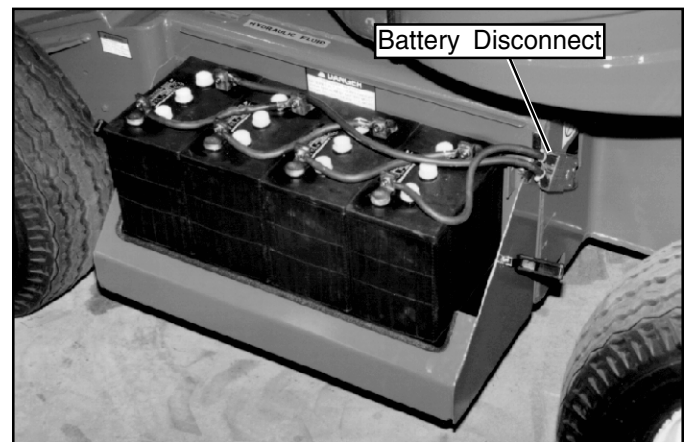


Figure 8: Batteries (Typical Both Sides)

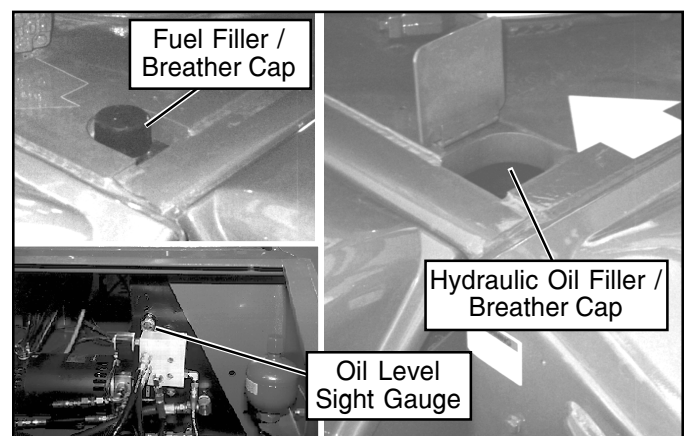


Figure 9: Hydraulic Oil Filler / Breather Cap, Fuel Filler / Breather Cap, and Oil Level Sight Gauge

ROUTINE SERVICE

Use the following table as a guide for routine maintenance. **Inspection and maintenance shall be performed by personnel who are trained and familiar with mechanical and electrical procedures.** Refer to the Service Manual for complete service instructions.

Please copy this page and use the Routine Service Table as a checklist when inspecting a machine for service.

Routine Service Table Key

Interval

Daily=each shift (every day) or every eight hours

30D=every month (30 days) or every 50 hours

3M=every 3 months or 125 hours

6M=every 6 months or 250 hours

1Y=every year or 500 hours

2Y=every 2 years or 1000 hours

Y=Yes/Acceptable

N=No/Not Acceptable

R=Repaired/Acceptable

Routine Service Table

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Engine Oil	Check level and condition	Daily			
	Check for leaks	Daily			
	Change oil & filter	100 HOURS			
Engine Fuel System	Check fuel level	Daily			
	Check for leaks	Daily			
	Replace fuel filter	100 HOURS			
	Check air cleaner	Daily			
Engine Coolant	Check coolant level (with engine cold)	Daily			
	Replace coolant	2Y			
Battery System	Check electrolyte level	Daily			
	Check specific gravity	30D			
	Clean exterior	3M			
	Check battery cable condition	Daily			
	Clean terminals	3M			
Hydraulic Oil	Check oil level	Daily			
	Change filter	6M			
	Drain and replace with ISO 46 compatible oil	2Y			
Hydraulic System	Check for leaks	Daily			
	Check hose connections	30D			
	Check hoses for exterior wear	30D			
Emergency Hydraulic System	Check operation of emergency override valves and hand pump	Daily			
	Check operation of brake release hand pump	Daily			
Controller	Check operation of all controls	Daily			
Platform	Check fasteners for proper torque	Daily			
Floor and Rails	Check welds for cracks	Daily			
	Check condition of platform	Daily			
	Check condition of anchorage points	Daily			
	Check condition of operators manual	Daily			
Tires	Check for damage	Daily			
	Check air pressure (75 psi)	Daily			
	Check lug nuts (torque to 90 ft. lbs. [123 Nm])	30D			
Hydraulic Pump	Wipe clean	30D			
	Check for leaks at mating surfaces	30D			
	Check for hose fitting leaks	Daily			
	Check mounting bolts for proper torque	30D			
Steering System	Check fittings for proper torque	6M			
	Oil all pivot points	30D			
	Check steering cylinder for leaks	30D			
	Check linkage for wear areas	30D			
	Check for missing / loose retainers	Daily			
Electric Drive System	Check electric drive motors for operation	Daily			
	Check cables, contactors, and connections	Daily			

COMPONENT	INSPECTION OR SERVICES	INTERVAL	Y	N	R
Elevating Assembly	Inspect for structural cracks	Daily			
	Check pivot points for wear	30D			
	Check pivot pin retaining bolts for proper torque	30D			
	Check members for deformation	Daily			
Chassis	Check hoses for pinch or rubbing points	Daily			
	Check component mounting for proper torque	6M			
	Check welds for cracks	Daily			
Turret	Check ring gear for proper lubrication and wear	Daily			
	Lubricate worm gear bearings	150H/3M			
	Lubricate ring gear (MoS ₂ grease)	150H/3M			
Torque Hubs	Check for leaks	Daily			
	Check oil level	250H/6M			
	Change oil after break-in period	50H/30D			
	Change oil (SAE 90 wt. gear oil)	2000H/2Y			
Lift Cylinders	Check the cylinder rods for wear	30D			
	Check pivot pin retaining bolts for proper torque	30D			
	Check seals for leaks	30D			
	Inspect pivot points for wear	30D			
	Check fittings for proper torque	30D			
Entire Unit	Check for and repair collision damage	Daily			
	Check fasteners for proper torque	3M			
	Check for corrosion, remove and repaint	3M			
	Lubricate	30D			
Labels	Check for peeling, missing, or unreadable labels & replace	Daily			

Service Report

Date: _____

Owner: _____

Model No: _____ Serial No: _____

Serviced By: _____

Service Interval: _____

**Note: Labels can be ordered by using Part Number located by each label.
For machines equipped with options, consult the Service Manual.**

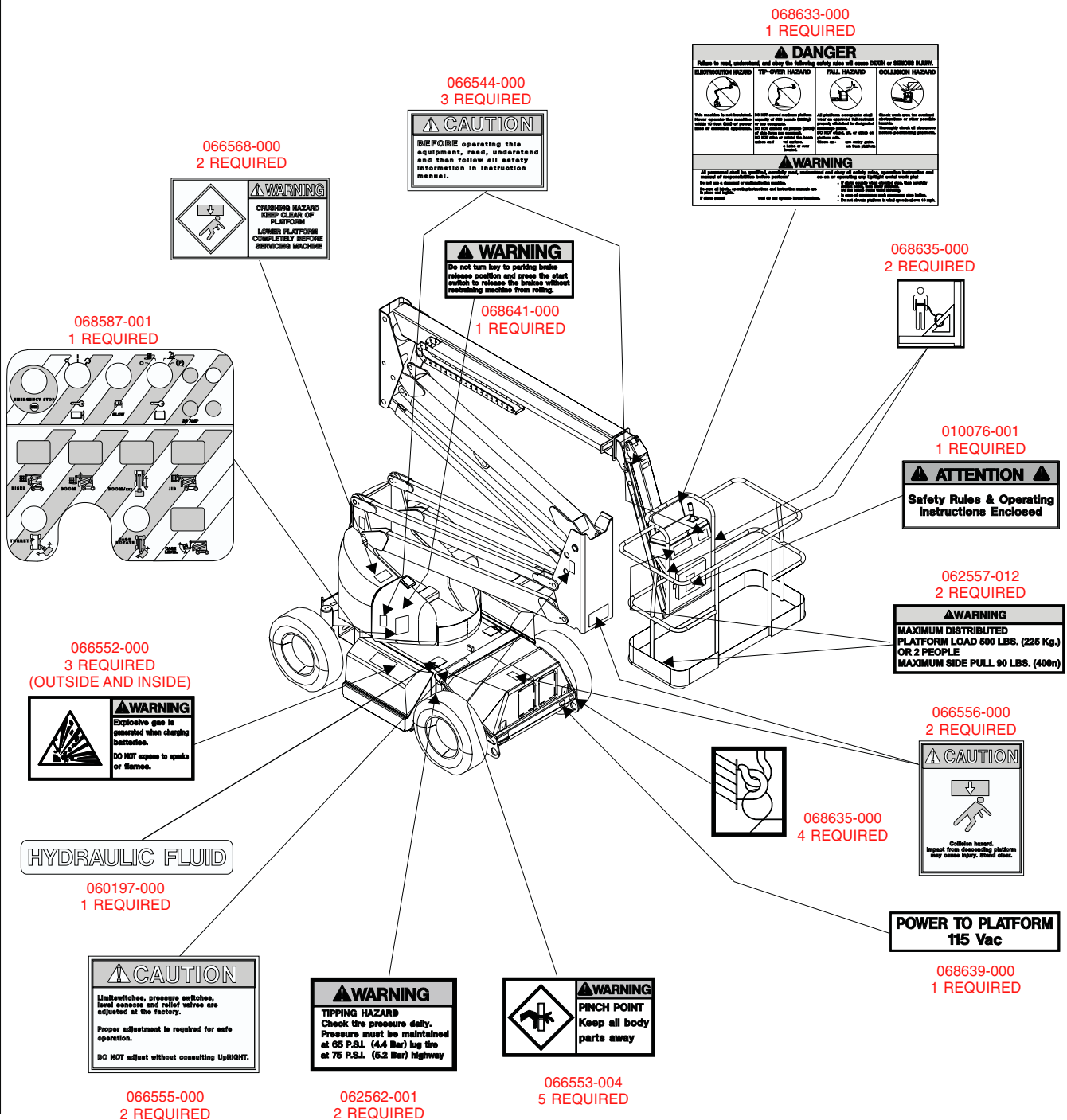
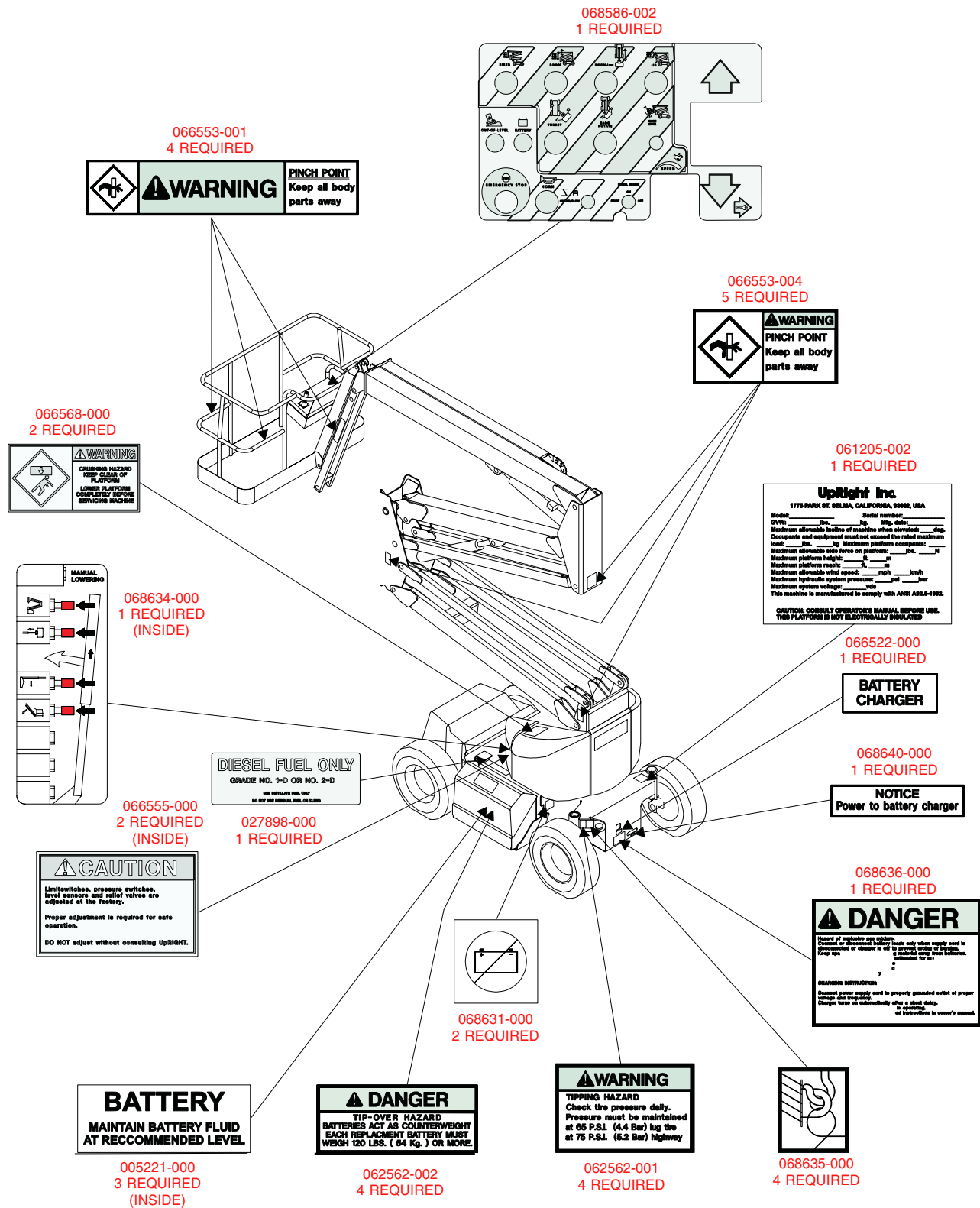


Figure 10: Label Identification

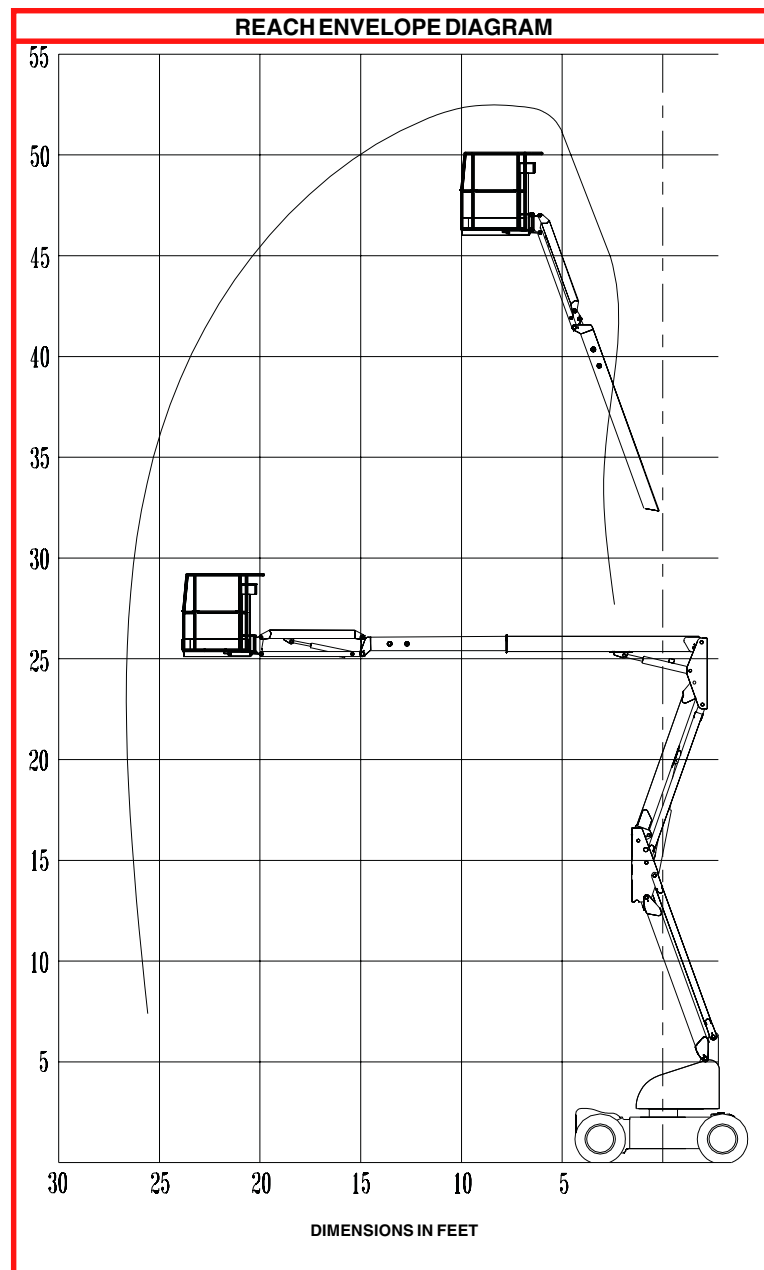
Figure 10: Label Identification (cont.)



AB - 46 Label Installation: All of the labels shown in figure 10 shall be present and in good condition before operating the work platform. Be sure to read, understand and follow these labels when operating the work platform.

Specifications*

ITEM	SPECIFICATION
Height	
Working height maximum	52ft.
Platform height maximum	46ft.
Platform step in height	9in.
Up and over height	25ft.
Drivable height	46ft.
Horizontal outreach	24ft. 6in.
Turret rotation	360deg. non-continuous
Platform rotation	160deg.
Tail swing	N/A
Jib length	5ft.
Jib arc	140deg.
Inside turning radius	2ft.
Outside turning radius	9ft. 10in.
Drive speed (lowered)	3.5mph
Drive speed (elevated)	3.4mph
Gradeability	30%
Dimensions (boom stowed)	
Platform size	69in. x 39in.
Guardrail height	43 1/2in.
Toeboards	6in.
Maximum platform capacity	500lbs.
Maximum no. of occupants	2
Weight	14,300lbs.
Overall height	6ft. 6in.
Overall length	17ft. 10in.
Overall width	5ft. 9in.
Wheelbase	73in.
Wheeltrack	59in.
Ground clearance	6in.
Power source	Eight 6V, 350AH Batteries One Kubota 12HP Diesel
System voltage	48VDC
Maximum Hyd. Pressure	2400psi
Controls	Electric Proportional
Tires	9.5x16.5 10ply highway tread



* Specifications subject to change without notice.

Refer to Service Manual for complete parts and service information.

Meets or exceeds all applicable requirements of OSHA and ANSI A92.5-1992

FOR MORE INFORMATION

UpRight

Local Distributor:

TEL: (800) 926-5438 or (209) 891-5200

FAX: (209) 896-9012

PARTS: (888) UR-PARTS

PARTS FAX: (209) 896-9244

1775 Park St., Selma, CA 93662

<http://www.upright.com>