

Hy-Brid Lifts

CUSTOM EQUIPMENT



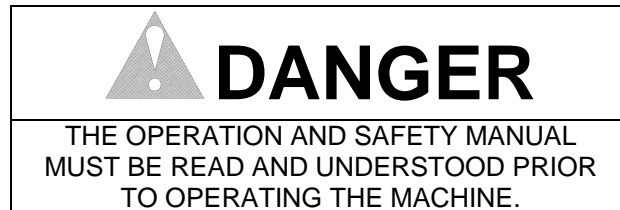
OPERATION, SAFETY, AND MAINTENANCE MANUAL

Hy-Brid Scissors Lift
Models
HB 1030
HB 1430

Self-Propelled
Aerial Work Platform

Foreword

The purpose of this Operations and Safety Manual is to provide users with the instructions and operating procedures essential to properly and safely operate the Custom Equipment Hy-Brid Lift for its intended purpose, to position personnel and their necessary tools and materials.



THE USER/OPERATOR SHOULD NOT ACCEPT OPERATING RESPONSIBILITY UNTIL THE MANUAL HAS BEEN READ AND UNDERSTOOD AS WELL AS HAVING OPERATED THE LIFT UNDER SUPERVISION OF AN EXPERIENCED AND QUALIFIED OPERATOR.

BECAUSE THE MANUFACTURER HAS NO DIRECT CONTROL OVER MACHINE APPLICATION AND OPERATION, PROPER SAFETY PRACTICES ARE THE RESPONSIBILITY OF THE USER AND ALL OPERATING PERSONNEL.



If there is a question on application and/or operation, contact:

Custom Equipment, Inc.
2647 Hwy 175
Richfield, WI 53076
USA
Phone: 262-644-1300
Fax: 262-644-1320

SUPO-602 Revisions
Rev 09: 4/24/09: Decal Location (DE603)
Rev 10: 6/22/09: Curved Railing, Slide Lock Rev (cover, p. 7, 12)

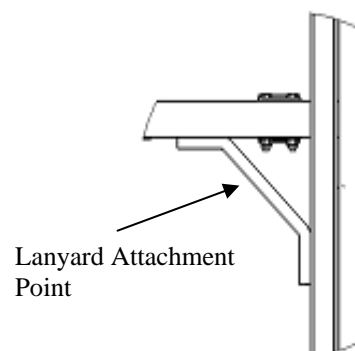
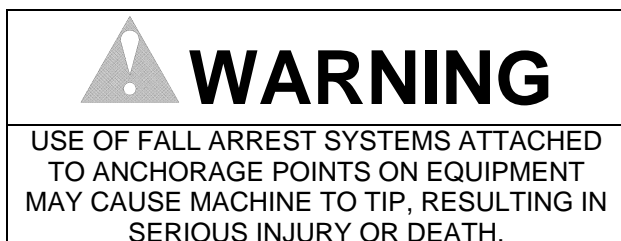
Table of Contents

PRODUCT DESCRIPTION	3
PURPOSE	3
MACHINE SPECIFICATIONS	3
SAFETY	4
SAFETY SYMBOLS	4
GENERAL RULES AND PRECAUTIONS	4
SAFETY FEATURES	6
SAFETY AND CONTROL DECAL LOCATIONS	7
OPERATION	9
UPPER CONTROLS	10
PRE-START INSPECTION	11
DRIVING AND STEERING	11
BRAKING	12
ELEVATING AND LOWERING THE PLATFORM	12
EXTENDING THE SLIDE-OUT DECK	12
SHUTDOWN PROCEDURE	13
EMERGENCY LOWERING	14
MAINTENANCE	15
INSPECTION AND REGULAR MAINTENANCE CHECKLISTS	15
LUBRICATION	19
TROUBLESHOOTING	19
REPLACEMENT PARTS	21
WARRANTY	26

Fall Protection Notice

The guardrail system around the perimeter of the platform is the **fall protection system** for self-propelled elevating work platforms per the American National Standards Institute ANSI/SIA A92.6 Standard. It is **prohibited** to use an Aerial Work Platform manufactured by Custom Equipment, Inc. with any portion, or all, of the guardrails **removed**.

Lanyard anchorage points on this type of equipment are not required to conform to the applicable ANSI/SIA Standard. However, if anchorage points for lanyard attachments are required by site authorities, or other regulations, the anchorage points on all equipment manufactured by Custom Equipment, Inc. are recommended to be used for **work positioning restraints** of personnel only. Lanyard lengths are to be determined by operator/owner to restrict the operator to the confines within the guardrail system.



Product Description

Purpose

Custom Equipment's Hy-Brid Scissors Lift is an aerial work platform designed for compact size, ease of operation, and operator safety. The purpose of the machine is to position personnel and their necessary tools and materials.

Machine Specifications (Subject to Change)

	HB1030		HB1430	
DIMENSIONS				
Working Height (maximum)	16 ft.	4.87 m	20 ft.	6.1 m
Platform Height (maximum)	10 ft.	3 m	14 ft.	4.26 m
Stowed Height	66.88 in.	1.7 m	71 in.	2.16 m
Ground Clearance (Pothole Guard Stowed)	2 in.	5.08 cm	2.75 in.	7 cm
Ground Clearance (Pothole Guard Engaged)	0.75 in.	1.9 cm	0.75 in.	1.9 cm
Overall Width	30 in.	0.76 m	30 in.	0.76 m
Overall Length	63.5 in.	1.61 m	63.5 in.	1.61 m
Platform (Retracted, Inside)	25 in. x 60 in.	0.64 mx1.52 m	25 in. x 60 in.	0.64 mx1.52 m
Slide-Out Deck Length	30 in.	0.76m	30 in.	0.76m
Guard Rail Height	42 in.	1 m	42 in.	1 m
Toe Board Height	4 in.	.1 m	4 in.	.1 m
Platform Entrance	21 in.	0.53 m	25 in.	0.3 m
Step Height	NA	NA	12 in.	0.3 m
Wheel Base	51 in.	1.3 m	51 in.	1.3 m
Wheel Track	23.63 in.	0.6 m	23.63 in.	0.6 m
Turning Radius (Inside)	21 in.	0.53 m	21 in.	0.53 m
Tire Size (Solid, Non-Marking)-Front	8 in.	20.3 cm	10 in.	25.4 cm
Tire Size (Solid, Non-Marking)-Rear	10 in.	25.4 cm	10 in.	25.4 cm
RATED LOAD				
Lift Capacity (Evenly Distributed):	750 lbs.	340.2 kg	670 lb.	304 kg.
Slide-Out Deck Capacity	250 lbs	113.4 kg	250 lb.	113.4 kg.
Horizontal/Manual Force	112.5 lb.	500 N	100.5 lb.	447 N
FLOOR LOADING				
Machine Weight (Unloaded) (Approx.)	1275 lb.	578.kg	1650 lb.	748.4 kg
Minimum Wheel Load	62.2 psi	428.58 kPa	80.5 psi	555 kPa
Maximum Wheel Load	98.8 psi	680.2 kPa	113.2 psi	780.5 kPa
Minimum Machine Loading	96.37 psf	4.61 kPa	124.5 psf	5.96 kPa
Maximum Machine Loading	153.06 psf	7.33 kPa	175 psf	8.38 kPa
ENVIRONMENTAL LIMITATIONS				
Wind	No Windy Conditions/Indoor Use Only (C)		No Windy Conditions/Indoor Use Only (C)	
Rated Slope	Level Surface		Level Surface	
Tilt Sensor Activated	2°	2°	2°	2°
Gradeability	30%	30%	30%	30%
Temperature	-4° F-104° F	-20° C-40° C	-4° F-104° F	-20° C-40° C
Vibration	8.2 ft/s2 max	2.5 m/s2 max	8.2 ft/s2 max	2.5 m/s2 max
POWER SYSTEMS				
<i>Drive System (Proportional Electric):</i>				
Drive Speed (Platform Elevated)	0-0.7 mph	0-.31 m/s	0-0.7 mph	0-.31 m/s
Drive Speed (Platform Lowered)	0-2mph	0-.89 m/s	0-2mph	0-.89 m/s
Lift/Lower Speed	15/22 sec	15/22 sec	21/31 sec	21/31 sec
Hydraulic Pressure (max)	1300 psi	8963 kPa	2000 psi	13 790 kPa
Hydraulic Fluid Capacity	1.325 gal	5.38 L	1.325 gal	5.38 L
Power System-Voltage	24V DC	24V DC	24V DC	24V DC
Batteries-Deep Cycle Marine	(2) 12V	(2) 12V	(2) 12V	(2) 12V

Safety

Safety Symbols

Warnings and instructions that have a direct impact on safety are identified with the following signals:



"DANGER" indicates an imminently hazardous situation, which, if not avoided, *will* result in death or serious injury.



"WARNING" indicates a potentially hazardous situation, which, if not avoided, *could* result in death or serious injury.



"CAUTION" indicates a potentially hazardous situation which, if not avoided, *could* result in minor or moderate injury or damage to equipment.

General Rules and Precautions

Custom Equipment, Inc. designed the Hy-Brid Lift self-propelled scissor lift to be safe and reliable. It is intended for elevating personnel, along with their necessary tools and materials to overhead work locations.

An operator of any type of work platform is subject to certain hazards that cannot be protected by mechanical means. It is therefore essential that operators be competent, careful, physically and mentally fit and thoroughly trained in safe operation of this machine.

Although Custom Equipment, Inc. conforms to specified ANSI & OSHA requirements, it is the responsibility of the owner to instruct operators with the safety requirements made not only by Custom Equipment, Inc., but by the various safety boards in your area, as well as additional requirements set forth by ANSI & OSHA. If you come across a situation that you think might be unsafe, stop the platform and request further information from qualified sources before proceeding.



Only qualified operators may operate this unit.

- All operators must read and understand the Operation and Safety Manual. They must understand all decals and warning labels on unit.
- ANSI A92.6 and other applicable standards identify requirements of all parties who may be involved with self-propelling elevating work platforms. Owner/user/operator must be familiar with Sections 6, 7, 8, 9, and 10, which contain responsibilities of the owner, users, operators, lessors, and lessees including safety, training, inspection, maintenance and operation. A copy of the ANSI Standard is considered part of this machine.
- Do not work on platform if your physical condition is such that you feel dizzy or unsteady in any way.
- Do not neglect/misuse machine. Report any misuse of equipment to proper personnel.
- Prevent unauthorized use; when unit is not in use, remove key.
- It is recommended all personnel on unit wear headgear (hard hats).

Use machine only for purposes for which it was intended.

- Lift should never be used as a crane.
- Never use unit as electrical grounds for arc welding.
- Do not override any hydraulic, mechanical, or electrical safety devices.

Check job site for unsafe working conditions.

- Unit must be on hard level surface before elevating. Do not operate on incline or uneven surface.
- Do not use outdoors in windy conditions or electrical storms.



- You must maintain a clearance of at least 10 feet between any part of the machine, or its load, and any electrical line or apparatus carrying over 300 volts up to 50000 volts. One-foot additional clearance is required for each additional 30,000 volts.
- Watch out for others. Keep others clear of operating platform. Never allow others to pass under a raised platform or position the platform over someone.

Equipment is only as safe as the operator.

- Do not enter or exit platform while machine is in motion.
- Never mount or dismount a raised platform.
- Make sure entry gate is secured before operating machine from the platform.
- Never belt or tie off to an adjacent structure.
- Do not exceed the load capabilities of the platform.
- Distribute load evenly over platform floor area.
- Secure tools and materials.
- Do not use ladders or scaffolding on the platform to obtain greater height.
- Personnel must maintain a firm footing on the platform floor and work only within the platform area.
- It is recommended to avoid sudden braking or steering. Go slowly and leave more maneuvering room during cold weather operation.

Before operation, ensure that the machine is properly serviced.

- Do not use machine if it is not working properly.
- Make sure platform rails and pins are secured.
- Operator shall use the maintenance lock when performing all types of maintenance procedures.
- Do not smoke while charging the battery.

Safety Features

- **Emergency Stop.** This lift is equipped with two emergency stop switches, one at the platform control and one at the base control, that when activated, will render the unit inoperable until reset. To reset, pull the button out.
- **Automatic Parking Brake.**
- **Free Descent Protection.** A velocity fuse is installed in the hydraulic circuit to prevent the platform from descending in case of a ruptured hydraulic hose. The platform will be hydraulically locked whenever this velocity fuse activates.
- **Emergency Manual Override.** This machine is equipped with a manual override valve. When opened, the platform will descend.
- **Tilt Alarm.** An audible alarm sounds when the machine is tilted. Drive and elevate functions are disabled when the tilt sensor is disconnected. For some models, drive and elevate functions are disabled when tilted.
- **Puncture-proof Wheels.**
- **Guardrails and Kick Plates (42"/4").**
- **Non-slip Deck.**
- **Key Switch Security.**
- **Decals.** Danger, Caution, and Warning decals are displayed at various locations on this unit. These decals are to conform to ANSI-SIA A92.3-1990 standards as interpreted by Custom Equipment, Inc.
- **Entrance Gate.**
- **Pothole Protection.**
- **Maintenance Lock.** The maintenance lock must be placed into position whenever the machine is being serviced in the raised or partially raised position. Serious injury and/or death could result if maintenance lock is not used properly.

Insert Pins into
Holes in Roller
Track

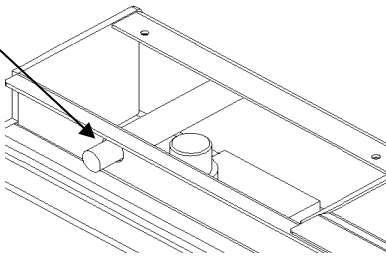


Figure 1: Maintenance Lock Use

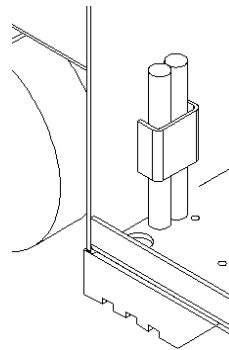


Figure 2: Maintenance Lock Storage

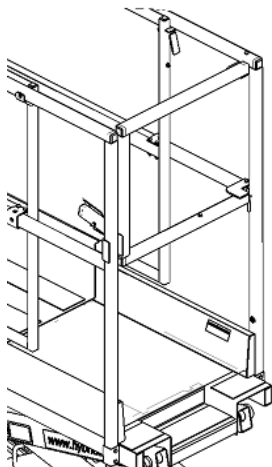


Figure 3: Entry Gate

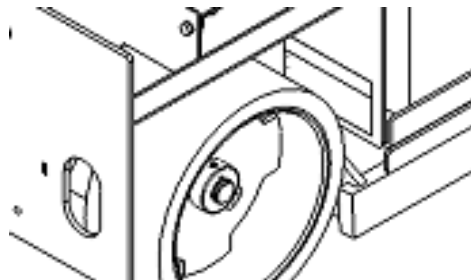
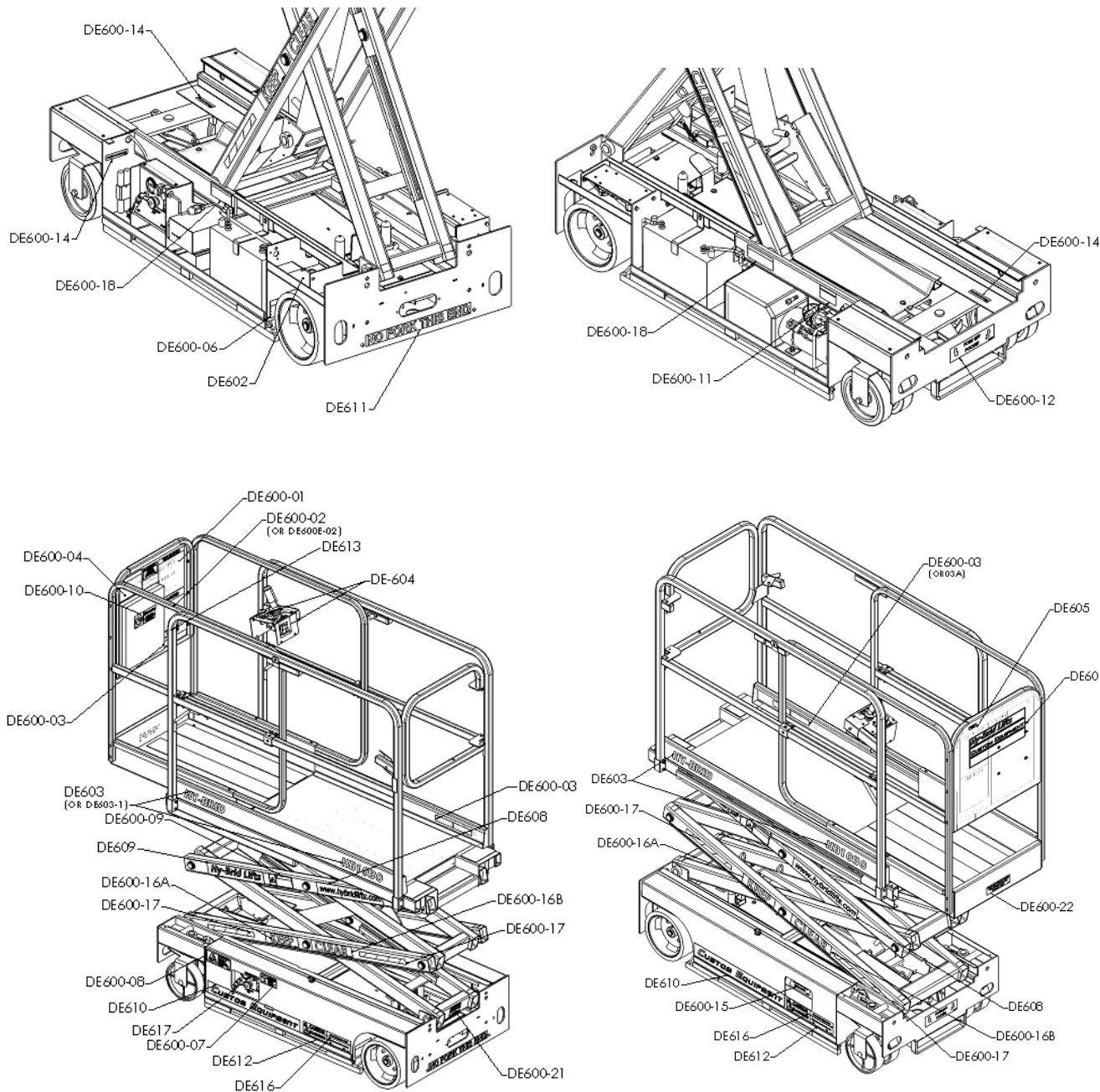


Figure 4: Pothole Protection

Safety and Control Decal Locations



PART #	DESCRIPTION	QTY.
DE600-01	WARNING-INSPECT	1
DE600-02 or DE600E-02	DANGER-IMPROPER USE DECAL	1
DE600-03 or DE600-3A	MAX CAPACITY DECAL	3
DE600-04	PLAT EXT & GATE DECAL	1
DE600-05	DANGER TIP DECAL	1
DE600-06	REPLACE OEM ONLY DECAL	2
DE600-07	DO NOT POWERWASH DECAL	1
DE600-08	WARNING BATTERY GAS DECAL	1
DE600-09	ELECTROCUTION HAZARD DECAL	2
DE600-10	WARNING-IMPROPER USE DECAL	1
DE600-11	E-DOWN TURN BRASS DECAL	1
DE600-12	FORK POCKET DECAL	1
DE600-14	MAINT LOCK PIN DECAL	3
DE600-15	E-DOWN LOCATION DECAL	1
DE600-16A	KEEP CLEAR DECAL (KEEP)	2 or 4
DE600-16B	KEEP CLEAR DECAL (CLEAR)	2 or 4
DE600-17	SAFETY STRIPE	2 or 4
DE600-18	BATTERY WEIGHT DECAL	2
DE600-19	LOWER CONTROL DECAL	1
DE600-21	BRAKE RELEASE DECAL	1
DE-601	NAME LOGO DECAL	1
DE602 OR DE602-1	SERIAL NUMBER PLATE (OR DE602C OR DE602-1C)	1
DE603 OR DE603-1	MODEL NUMBER DECAL (FOR SOME MODELS, ALSO DE603C, DE603J)	2
DE-604	JOYSTICK DECAL (2 PIECES)	1
DE605 OR DE605-1	SMALL SERIAL NO. REFERENCE (OR DE605C OR DE605-1C)	1
DE608	WWW.HYBRIDLIFTS.COM	2
DE609	HY-BRID LIFTS	2
DE610	LOWER CUSTOM EQUIPMENT LOGO	2
DE611	NO FORK DECAL	1
DE612	PH WARNING DECAL	2
DE613	LANYARD ATTACHMENT POINT DECAL	1
DE616	NO FORK DECAL (NOT ON ALL MODELS)	2
DE617	CHARGER CORD LOCATION DECAL	1

Operation

Preliminary Unpacking Instructions and Dealer Inspection

Maintenance locks must be engaged prior to inspecting or servicing the unit when the platform is extended. Inspect machine for any possible damage during shipment; perform a pre-delivery inspection. Reset emergency stop switches, if necessary.

Loading and Unloading Procedures



TIE DOWN WARNING – Do not over-tighten load binders when securing load for transport. Damage will occur due to the design intent of this product.

A forklift pocket and tie down/lift points are provided for loading and unloading and for securing the machine on a trailer or truck bed. Do not use forklift from back of machine.

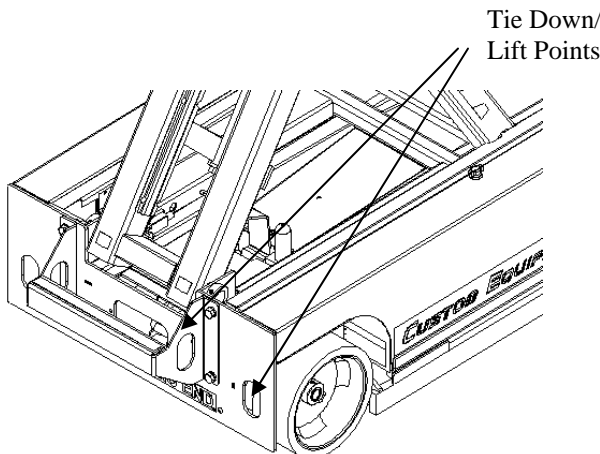


Figure 6: Back Tie Down/Lift Points

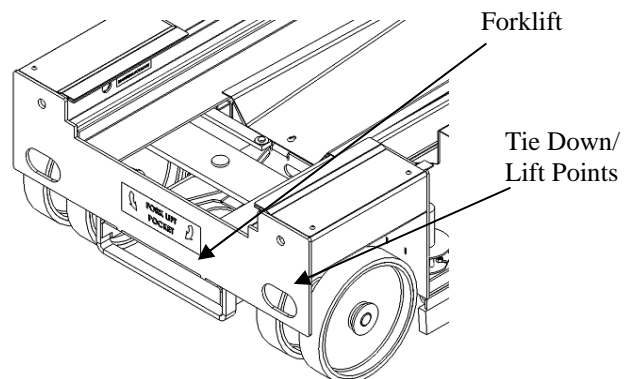


Figure 7: Forklift Pocket, Front Tie Down/Lift Points

Lower Controls

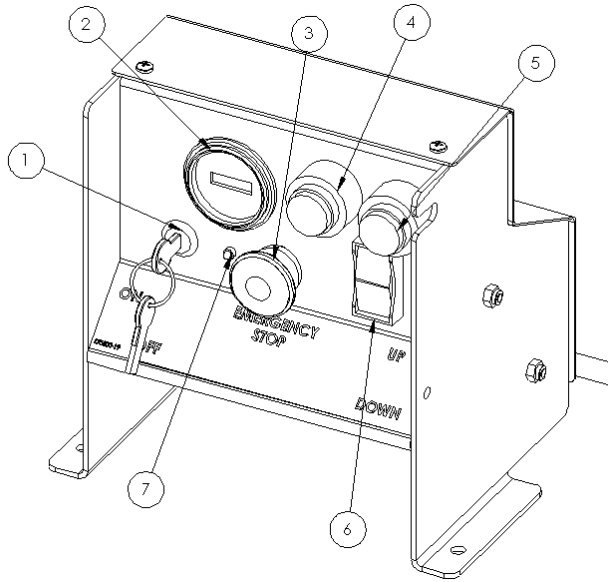


Figure 8: Lower Controls

Item	Control	Description
1	Key	Enables machine controls
2	Hour Meter/ Battery Gauge	Indicates total elapsed time machine has been operated. Indicates charge left in battery.
3	Emergency Stop	Push to stop all functions in emergency. To reset, pull knob out.
4	Tilt Alarm	Sounds audible alarm when machine tilted more than 2°. When alarm sounds, platform should not be elevated or, if elevated, should be lowered immediately.
5	Descent Alarm	Sounds audible alarm when scissors is lowering.
6	Lift/Lower Switch	Controls lifting and lowering of platform from the base.
7	LED	Used for drive motor control troubleshooting diagnostics

Upper Controls

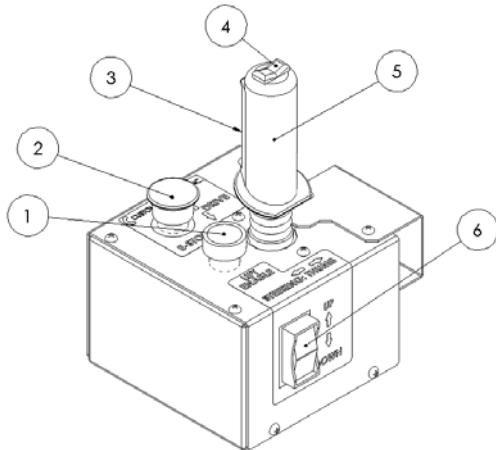


Figure 9: Upper Controls

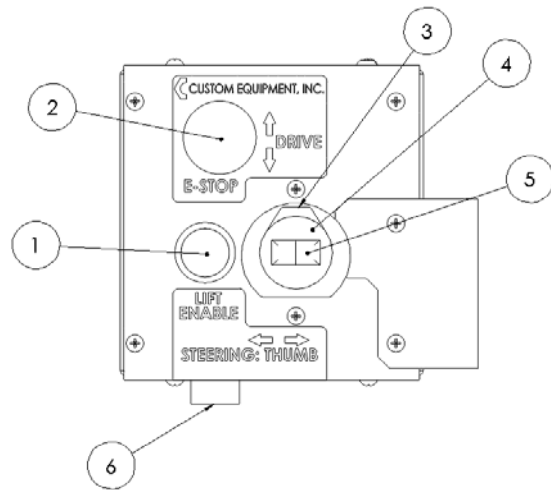


Figure 10: Upper Controls Top View

Item	Control	Description
1	Lift/Lower Enable Button	Must be pressed to lift and lower platform from platform.
2	Emergency Stop	Push to stop all functions in emergency. To reset, pull knob out.
3	Drive Enable Switch	Must be depressed to drive.
4	Thumb Steering Switch	Press switch with thumb to the left to turn wheels left, right to turn wheels right.
5	Joystick	Controls speed and steering.
6	Lift/Lower Switch	Controls lifting and lowering of platform from the base.

Pre-start Inspection

Before use each day or at the beginning of each shift, the machine shall be given a visual inspection and functional test. Repairs (if any) must be made prior to operating the machine, as it is critical to ensure safe operation of the machine. A checklist for pre-start inspection can be found in the Maintenance section of this manual.



To operate, ensure that the key in the lower control panel is in the "ON" position.

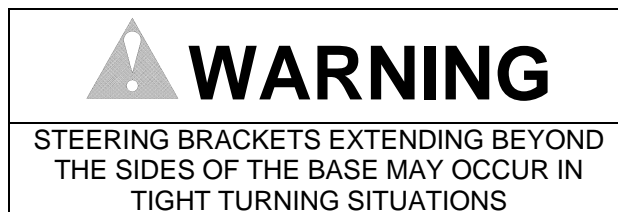
Driving and Steering



Always check front steer wheel direction before driving.

To activate drive function, depress the Drive Enable Bar on the Joystick. Moving the joystick handle away from the operator will cause FORWARD travel and pulling the joystick toward the operator will cause REVERSE travel. Travel speed is proportional and is controlled by the joystick. The farther it is moved, the faster the speed will be. The joystick returns to the neutral position when released.

Use the Thumb Steering Switch on the end of the Joystick to steer left and right. Pressing the switch to the causes wheels to turn left, to the right, wheels turn right. The steer switch returns to neutral position when released. Steer wheels do not center themselves after a turn; they must be returned to the straight-ahead position with the steer switch.



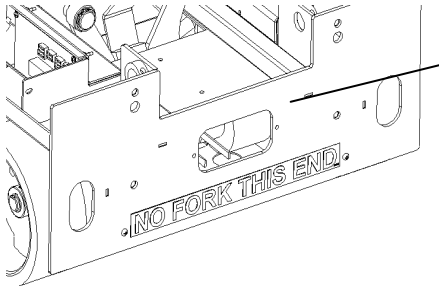
TIGHT TURNING WARNING – Potential damage to walls, etc., may occur in tight turning situations due to the steering brackets extending beyond the sides of the base.

Braking

WARNING

PUSHING THE EMERGENCY STOP BUTTON WILL APPLY BRAKES IMMEDIATELY. THIS MAY CAUSE UNEXPECTED PLATFORM MOVEMENT AS THE MACHINE COMES TO A SUDDEN STOP. BRACE YOURSELF AND SECURE OBJECTS ON THE PLATFORM DURING OPERATION OF THE MACHINE.

For parking, the brake is automatically applied when the forward/reverse drive controller is positioned in the center (neutral) position. In the event of a machine failure, the machine can be pushed by releasing the parking brake at the rear of the machine.



To release brake for winching or pushing, rotate brake handles. Do not push at speeds more than 2 mph

NOTE: The drive system will not function if the parking brake is in the release position.

Elevating and Lowering the Platform

Using Upper Platform Controls

To raise or lower the platform, press the Lift/Lower Enable Button in front of the joystick. While holding down the Enable Button, hold down the Up or Down Button until the platform is in the desired position.

Using Lower Base Controls

The Lift/Lower Switch raises or lowers the platform. Pressing the top of the switch raises the platform, pressing the bottom lowers the platform.

Extending the Slide-Out Deck

WARNING

DO NOT EXCEED THE RATED CAPACITY. THE CAPACITY OF THE SLIDE OUT DECK IS MAXIMUM 250 LBS. OR ONE PERSON.

- Stand on the platform deck.
- Grip the Slide Lock Handle to allow the deck to slide.
- Slide the deck out up to 30 inches.
- Release the Handle to keep deck in place.

WARNING

IF THE SLIDE-OUT DECK IS EXTENDED, CHECK FOR CLEARANCE UNDER AREA BEFORE LOWERING PLATFORM.

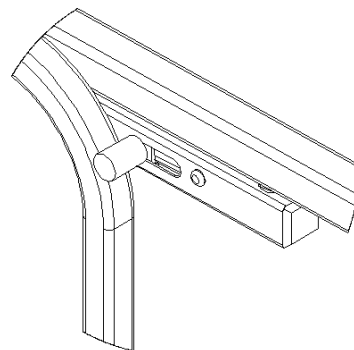


Figure 11: Slide Brake

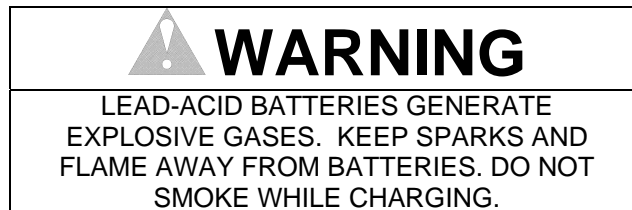
Charging the Battery

This unit is equipped with deep cycle 12-volt batteries. The care and maintenance of your battery has much to do with how well this unit functions. Battery wiring and water level should be checked monthly. **Do not overfill.** The battery fluid will expand as it becomes warm from charging. When the cells are too full, fluid will seep out when charging.

Note: The surrounding temperature greatly affects the power reserve within a battery.

Example: A battery that is 100% charged at 80 degrees Fahrenheit drops to 65% at 32 degrees Fahrenheit.

At 0 degrees, this battery will drop to 40%.



- Park the machine on a level surface.
- Plug charger into a 120V AC outlet until charged.
- Unplug charger.



The solution is at its proper strength when the battery is manufactured. Use distilled water and keep fluid up to proper level. When required, water should be added to battery after charging, unless water level is below the plates.

Shutdown Procedure

- When finished with the machine, place the platform in the stowed position.
- Park the machine on a level surface.
- Carefully exit the platform using a constant three point dismount/grip.
- Remove key from lower control panel to prevent unauthorized use.

Emergency Lowering



WARNING

IF PLATFORM SHOULD FAIL TO LOWER, DO NOT ATTEMPT TO CLIMB DOWN THE BEAM ASSEMBLY. SERIOUS INJURY MAY RESULT. HAVE AN EXPERIENCED OPERATOR USE THE EMERGENCY LOWERING PROCEDURE TO SAFELY LOWER THE PLATFORM.



WARNING

BEFORE LOWERING PLATFORM, RETRACT THE DECK EXTENSION.

Remove side cover and locate hydraulic pump. Push and turn knob located on down valve. Knob will pop up. To reset, push and turn the opposite direction.

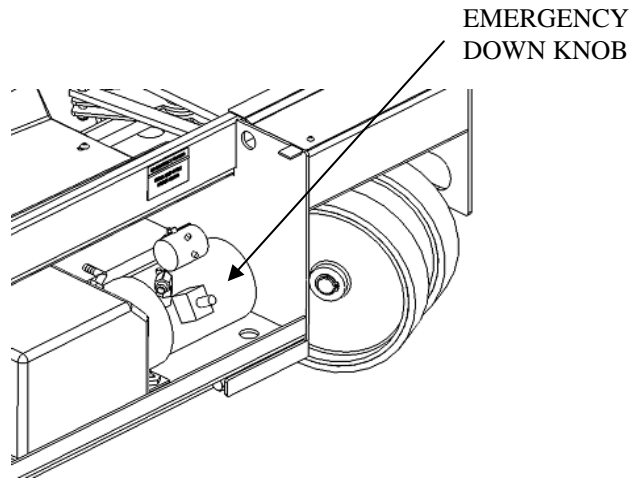



Figure 12: Hydraulic Pump

Maintenance

 WARNING
FAILURE TO COMPLY WITH THE LISTED SAFETY PRECAUTIONS MAY RESULT IN MACHINE DAMAGE, PERSONNEL INJURY OR DEATH.

- Never work under an elevated platform until maintenance locks have been engaged.
- Remove all rings, watches, and jewelry when performing any maintenance.
- Do not wear long hair unrestrained or loose fitting clothing and neckties which may become caught on or entangled in equipment.
- Observe and obey all warnings and cautions on machine and in manual.
- Keep oil, grease, water, etc. wiped from standing surfaces and handholds.
- Before making any adjustments, lubricating or performing any other maintenance, shut off all power controls.
- Battery should always be disconnected during replacement of electrical components.
- Keep all support equipment and attachments stowed in their proper place.
- Use only approved, nonflammable cleaning solvents.

Inspection and Regular Maintenance Checklists

 CAUTION
FAILURE TO PERFORM INSPECTIONS AND PREVENTITIVE MAINTENANCE AT RECOMMENDED INTERVALS MAY RESULT IN THE UNIT BEING OPERATED WITH A DEFECT THAT MAY RESULT IN INJURY OR DEATH OF THE OPERATOR.

Regular inspection and conscientious maintenance is important to efficient economical operation of this machine. It will help to assure that equipment will perform satisfactorily with a minimum of service and repair. The following inspection checklists are included in this manual: Pre-Delivery/Frequent, Pre-Start, and Monthly.

PREDELIVERY/FREQUENT INSPECTION CHECKLIST



WARNING

AERIAL PLATFORMS SHALL BE INSPECTED, SERVICED AND ADJUSTED TO MANUFACTURER'S REQUIREMENTS BY A QUALIFIED MECHANIC PRIOR TO EACH SALE, LEASE, OR RENTAL, AND EVERY 3 MONTHS OR 150 HOURS, WHICHEVER COMES FIRST.

MODEL NUMBER _____ SERIAL NUMBER _____

- Check each item listed below.
- Use proper operating, service, and maintenance manual for specific information and settings
- If an item is found to be unacceptable make the necessary repairs and check the "repaired" box.
- When all items are "acceptable", the unit is ready for service.

Check	Y	N	R	Check	Y	N	R
Base:				Extending platform:			
Steering actuator pinned				Extends freely			
All frame bolts tight				Cables in place/secure			
Pumps Secure				Locks in stowed position			
Tie Rod secure				Locks in Extended Position			
DC motor secure				Functions:			
Battery Hold Downs Secure				All Functions Operational			
Batteries Fully Charged				Emergency Stop			
				Breaks all circuits			
Wheels:				Slow speed limit switch			
				Set properly			
Snap Rings Secure				Wiring:			
Bolts/Nuts Tight				Switches secure			
Pressure Settings:				Contact(s) secure			
Lift pressure set properly				Tight on terminals			
Scissors:				Oil:			
Broken Welds				Level 1" from top			
Bent Beam Members				Check all hose for leaks			
All rollers Turn Freely				Check all fittings for leaks			
Ret. Rings Secure On Pivots				Battery Charger:			
Emergency Down				Secure/Operational			
Operational				Options:			
Maintenance Locks:				Tilt sensor			
Pins in cabinet				Warning Horn			
Platform:				Hour meter operational			
Bent rails				Battery indication operational			
Broken welds				All Shields/Guards in place			
All rails in place/secure				Operator/Service Manual			
110V outlet safe/working				Brakes:			
Entrance gate Closes Freely				Operational			
Decals:				Comments:			
Legibility							
Correct capacity noted							
Proper placement quantity							

DATE _____ INSPECTED BY _____

PRESTART INSPECTION CHECKLIST



WARNING

THIS CHECKLIST MUST BE USED AT THE BEGINNING OF EACH SHIFT OR AFTER EVERY SIX TO EIGHT HOURS OF USE. FAILURE TO DO SO COULD AFFECT THE SAFETY OF THE OPERATOR.

MODEL NUMBER _____ SERIAL NUMBER _____

1. Keep inspection records up-to-date.
2. Record and report all discrepancies to your supervisor.
3. A dirty machine cannot be properly inspected.

Y-Yes/Acceptable N-No/Unacceptable R-Repaired

Description	Y	N	R
Visually inspect all machine components for missing parts and obvious damage including torn or loose hoses, hydraulic fluid leaks, torn, frayed, or disconnected wires, and bent structural members. Replace components as necessary.			
Check the hydraulic fluid level with the platform fully lowered.			
Check the tires for damage. Check wheel axle bolts for tightness.			
Check the hoses and the cables for worn areas or chafing. Replace if necessary.			
Check the platform rails and safety gate for damage. Look at the gate and make sure it closes properly.			
Check that all snap rings are secure in grooves on pivot pins.			
Check that warning and instructional labels are legible and secure.			
Inspect the platform control. Ensure that load capacity is clearly marked.			
Check the base controls for proper operation. Check all switches and push buttons for proper operation.			
Check the platform controls for proper operation. Check all switches and push buttons, as well as ensuring that the drive controller returns to neutral.			
Check that pothole guards deploy when platform is raised.			
Check that ANSI/SIA Manual of Responsibilities, Operators/Safety Manual, and AEM Handbook are located in manual box			

DATE _____ INSPECTED BY _____

MONTHLY INSPECTION CHECKLIST



WARNING

THIS CHECKLIST MUST BE USED AT MONTHLY OR AFTER EVERY 100 HOURS OF USE. FAILURE TO DO SO COULD AFFECT THE SAFETY OF THE OPERATOR.

MODEL NUMBER _____ SERIAL NUMBER _____

1. Keep inspection records up-to-date.
2. Record and report all discrepancies to your supervisor.
3. A dirty machine cannot be properly inspected.

Y-Yes/Acceptable N-No/Unacceptable R-Repaired

Description	Y	N	R
Perform all checks on the Pre-Start Inspection Checklist.			
Inspect the condition of hydraulic fluid in reservoir. Oil should have a clear amber color.			
Inspect the entire machine for signs of damage, broken welds, loose bolts, or improper repairs.			
Check that all snap rings are secure in grooves on pivot pins.			
Check if tires are leaning in or out.			
Check that the platform does not drift down with a full load.			
Check electrical motor brushes (every 150 hours)			
Monthly Battery Care: 1) Remove battery cabinet cover. 2) Remove battery caps and check fluid level. 3) Fill each cell (if needed) to split ring with distilled water. 4) Reinstall caps. 5) Wash all dirt, debris, acid, etc., off battery whenever corrosion is detected. Use a solution of 5-tsp. baking soda per quart of warm water. 6) Coat terminals with a commercially available coating.			
Check suppression diodes (every 6 months).			

DATE _____ INSPECTED BY _____

Lubrication

Item	Specification	Frequency
Front Wheels (For HB1030 Models With Roller Bearings) No lubrication necessary for Models with DU Bearings	Light Grease	Quarterly

Troubleshooting

If unit is not functioning, check the following:

- Battery is connected.
- Key Switch is turned on.
- Emergency stop switches are reset.
- Enable Switch is held in for driving.

Drive Control Board LED Diagnostics

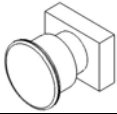
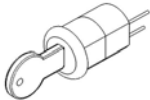
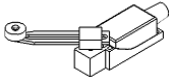
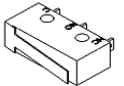


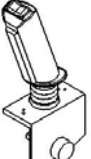

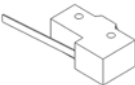
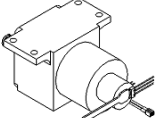
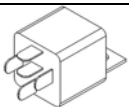

Programmer Display	LED Code	Explanation	Possible Cause
THERMAL CUTBACK	α α	Over-/under-temp. cutback	1. Temperature >92° C or <-25°C. 2. Excessive load on vehicle. 3. Electromagnetic brake not releasing properly.
THROTTLE FAULT 1	α αα	Pot high or pot low signal out of range	1. Throttle input wire open or shorted. 2. Throttle pot device. 3. Wrong type selected
SPD LIMIT POT FAULT	α ααα	Speed limit pot fault	1. Speed limit pot wire(s) broken or shorted. 2. Broken speed limit pot.
LOW BATTERY VOLTAGE	α αααα	Battery voltage too low	1. Battery voltage <17 volts. 2. Bad connection at battery or controller.
OVERVOLTAGE	α ααααα	Battery voltage too high	1. Battery voltage >36 volts. 2. Vehicle operating with charger attached. 3. Intermittent battery connection.
MAIN OFF FAULT	αα α	Main cont. Off fault	1. Main contactor drive failed open.
MAIN CONT WELDED	αα αα	Main contactor did not open	1. Main contactor welded. 2. Main contactor driver fault. 3. Brake coil resistance too high.
MAIN CONT DNC	αα ααα	Main contactor did not close	1. Main contactor stuck open. 2. Main contactor driver fault. 3. Brake coil resistance too high.
MAIN ON FAULT	αα αααα	Main cont. driver On fault	1. Main contactor driver failed closed.
PROC/WIRING FAULT	ααα α	HPD fault present > 100 sec.	1. Misadjusted throttle. 2. Broken throttle pot or throttle mechanism.
BRAKE ON FAULT	ααα αα	Brake on fault	1. Electromagnetic brake driver shorted. 2. Electromagnetic brake coil open.
PRECHARGE FAULT	ααα ααα	Brake off fault	1. Controller failure. 2. Low battery voltage.
BRAKE OFF FAULT	ααα αααα	Precharge fault	1. Electromagnetic brake driver open. 2. Electromagnetic brake coil shorted.
HPD	ααα ααααα	HPD fault	1. Improper sequence of throttle and KSI, push, or inhibit inputs. 2. Misadjusted throttle pot.
CURRENT SENSE FAULT	αααα α	Current sense voltage fault	1. Short in motor or in motor wiring. 2. Controller failure.
HW FAILSAFE	αααα αα	Motor voltage fault	1. Motor voltage does not correspond to throttle request. 2. Short in motor or in motor wiring. 3. Controller failure.
EEPROM FAULT	αααα ααα	EEPROM fault	1. EEPROM failure or fault.
POWER SECTION FAULT	αααα αααα	Output section fault	1. EEPROM failure or fault. 2. Short in motor or motor wiring. 3. Controller failure.


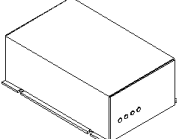




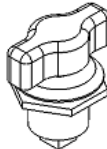



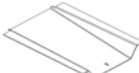
Troubleshooting Table




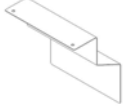









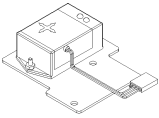

Problem	Possible Cause	Solution
Pump will not operate.	Key switch in OFF position.	Turn key switch to ON position.
	Emergency stop activated.	Pull out emergency stop button.
	Battery not sufficiently charged.	Fully charge battery.
	Electrical circuitry defective.	Repair or replace wiring as needed.
	Defective pump motor.	Remove pump assembly and obtain replacement pump from factory.
Pump operates; lift will not ascend.	Hydraulic fluid level low.	With platform lowered, fill pump reservoir to 1" below top of reservoir.
	Dump valve on pump stuck open.	Flush valve by simultaneously pressing the up switch at base and the down switch on platform control for 30 sec.
	Emergency down valve open.	Close emergency down valve.
Ascent speed slow or erratic.	Battery not sufficiently charged.	Fully charge battery.
	Emergency down valve open.	Close emergency down valve.
	Loose electrical connection.	Inspect & ensure all connections are secure.
	Momentary short in wiring.	Repair or replace wiring as needed.
	Foreign matter lodged in dump valve.	Flush valve by simultaneously pressing the up switch at base and the down switch on platform control for 30 sec. If problem continues, replace dump valve.
	Bent structural member(s).	Make arrangements ^{w/} factory to have member(s) replaced.
	Restriction in hydraulic hose.	Replace defective hydraulic hose.
	Gears in pump worn or defective.	Return pump assembly to factory for replacement.
Descent speed slow.	Obstruction in hydraulic hose.	Replace defective hydraulic hose.
	Obstruction in dump valve.	Flush valve by simultaneously pressing the up switch at base and the down switch on platform control for 30 sec. If problem continues, replace dump valve.
Unit will not descend.	Key switch on OFF position.	Turn key to ON position.
	Emergency stop activated.	Pull out emergency stop button.
	Battery not sufficiently charged.	Fully charge battery.
	Loose electrical connection.	Inspect & ensure all connections are secure.
	Faulty dump solenoid.	Replace dump solenoid.
	Actuated velocity fuse.	Check for hydraulic leak and repair as needed. Reset velocity fuse by elevating platform ^{w/} hydraulic pump. Check that the unit has proper hydraulic fluid. Replace if needed.
Unit creeps down.	Emergency down valve open.	Close emergency down valve.
	Foreign matter lodged in dump valve.	Flush valve by simultaneously pressing the up switch at base and the down switch on platform control for 30 sec.
	Defective down valve.	Replace down valve.
	Damaged seal in hydraulic cylinder.	Replace hydraulic seals in cylinder ^{w/} seal kit available from factory (KIT-240). Note: If walls inside cylinder are scratched or pitted, cylinder must be replaced.
No Drive, Steer or Lift Functions	Key Switch is off.	Turn on key switch.
	E-Stop is on.	Pull E-Stop button out.
	Fuse at Pump Blown	Replace with 20 Amp AGC Fuse.
	Tilt Sensor Disconnected.	Replace Tilt Sensor.




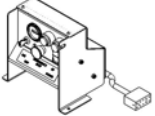
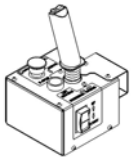




Replacement Parts

Listed below are replacement parts that may be available and listed for reference. These represent current revisions. Refer to our website, www.hybridlifts.com for more complete part listings and earlier revisions. Several parts are model, serial number, or manufacture date specific. Contact your dealer for replacement part availability and pricing.

ELEC-071-KIT	Emergency Stop Button (Red)	
ELEC-073B	Key Switch	
ELEC-123	Limit Switch	
ELEC-126-7	Micro Switch for Brake	
ELEC-901	Drive Control Board	
ELEC-133B	Rocker Switch	
ELEC-601	Joystick	
ELEC-602-KIT	Enable Button-Green	
ELEC-624	Snap Switch	
ELEC-626-3L ELEC-626-3R	Drive Asm.	
ELEC-631	Relay 24V (cube style)	
ELEC-635 or ELEC-635-1	Beeper	

ELEC-636	LED	
ELEC-645	24 Volt Charger	
HARD-091	1.25" Furniture Plug	
HARD-603	Manual Box	
HARD-606-1	Gate Spring	
HARD-633A	Cabinet Latch Cam	
HARD-633B	Cabinet Latch Handle	
HB-ML	Maintenance Lock Pin	
HYDR-022-1	Return Hose	
HYDR-600 or HYDR-600-1	High Pressure Hose	
HYDR-663	Down Valve Cartridge	
HYDR-664	Coil for Down & Up Valves	
HYDR-665	Up Valve	
HYDR-666	Solenoid, 24V	
LAS-M024	Rear Drain Pan	

LAS-M025	Front Drain Pan	
LAS-M026	Base Steer Top Cover	
LAS-M078	Slide Out Channel	
LAS-M079	Control Panel Cover	
LAS-M088	Drive Cover (Style Rev 1)	
LAS-M089	Gate Latch (Style Rev 1)	
LAS-M092	Slide Brake Handle	
MISC-600	Aerials Manual (green)	
MISC-601	Manual of Responsibility	
SUB A1	Actuator Assembly	
SUB A11-L or SUB A11-L-1	Cover Assembly (Control Side)	
SUB A11-R-1	Cover Assembly (Pump Side)	
SUB A12	Tilt Sensor Assembly	
SUB A12-10 OR SUB A12-11	Tilt Sensor Assembly	
SUB A13 OR SUB A13-3	Main Wire Harness	
SUB A2 or SUB A2A	Center Steer Assembly	

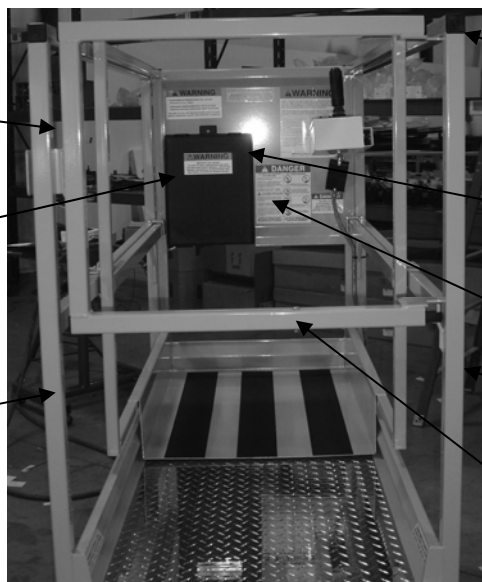
SUB A3	8" Dual Caster Assembly	
SUB A3-1	10" Dual Caster Assembly	
SUB A7 OR SUB A7-1	Hydraulic Cylinder Assembly	
SUB A8A	Lower Control Panel Assembly	
SUB A9	Joystick Box Assembly	
SUPO-602	Hybrid Manual	
WHEEL-600-1	10" Drive Wheel (Rear) (for 1" axle)	
WHEEL-044	8" Wheel (Front)	
WHEEL-603	10": Wheel (Front)	

Note: Parts may vary from photograph for different models.

HB-WC-SO-D
Slide-Out Assembly

MISC-601
Manual of
Responsibilities
(Inside)

HB-WC-L-D
W/C Left Assembly



HARD-092
Square Plug

MISC-600
Aerial Platform Manual
(Inside)

HARD-603
Manual Box

HB-WC-R-D
W/C Right Assembly

HB-WC-G
Gate Assembly

LAS-M061-PC & LAS-M062-PC
Battery Hold Down

ELEC-047
Battery



HYDR-050-1
Pump



SUB A11-L-1
Cabinet Cover-Control Side



SUB A11-R-1
Cabinet Cover-Pump Side

LAS-M026
Steer Top
Covers

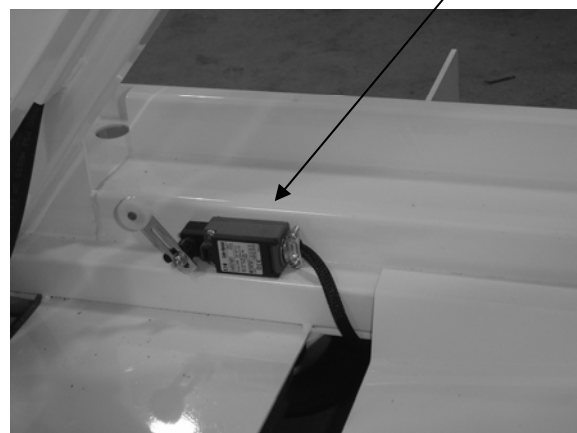
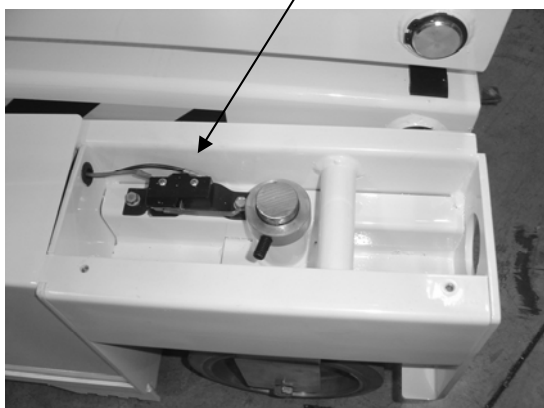
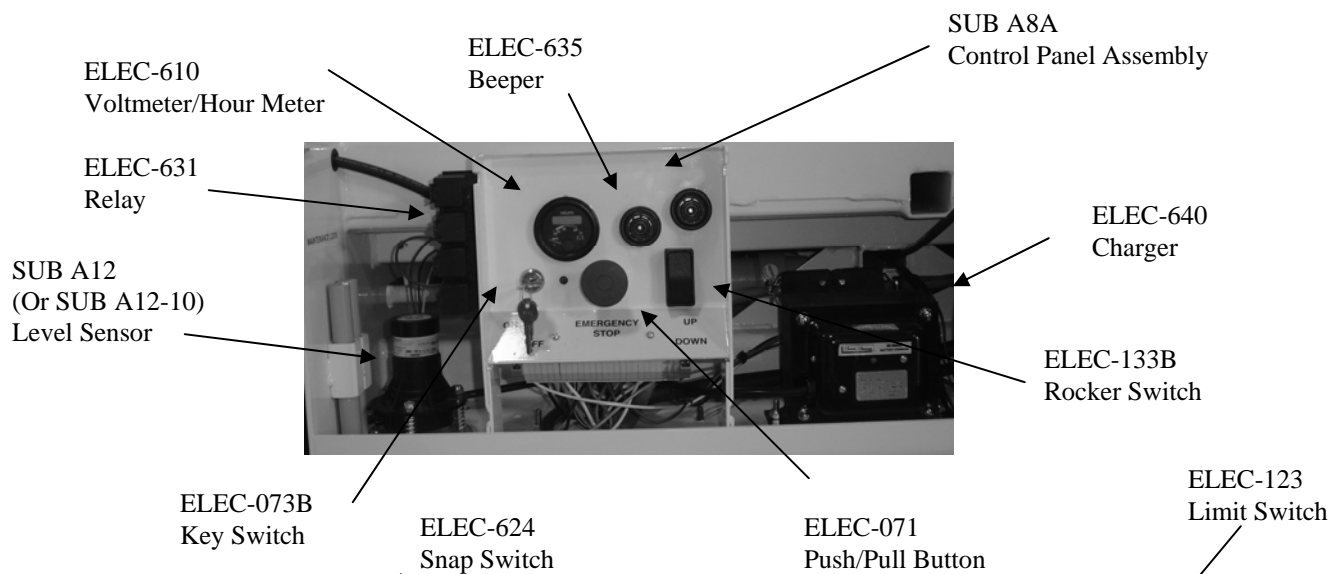
Note: Parts may vary from photograph for different models.



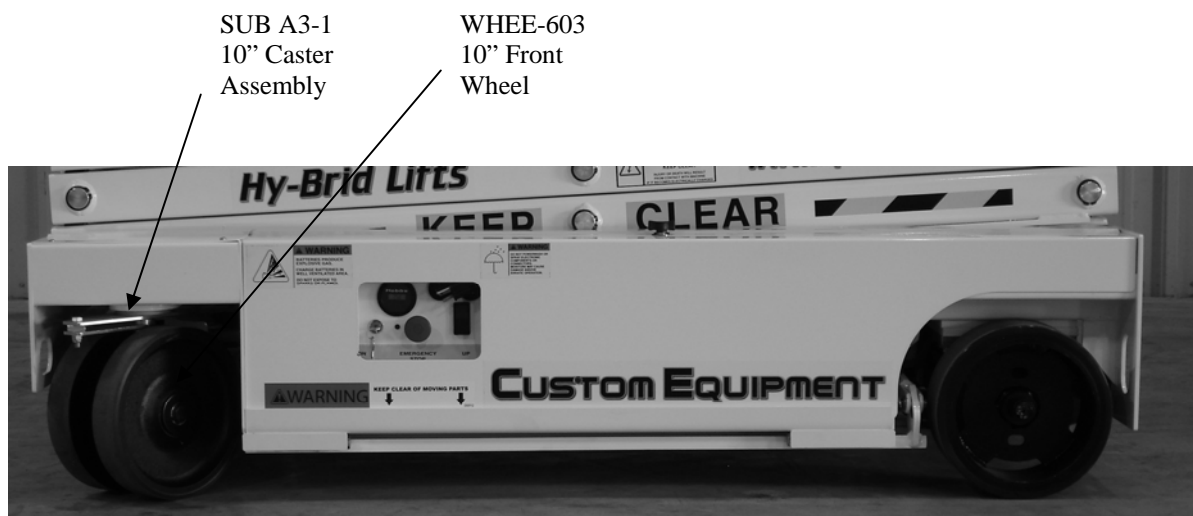
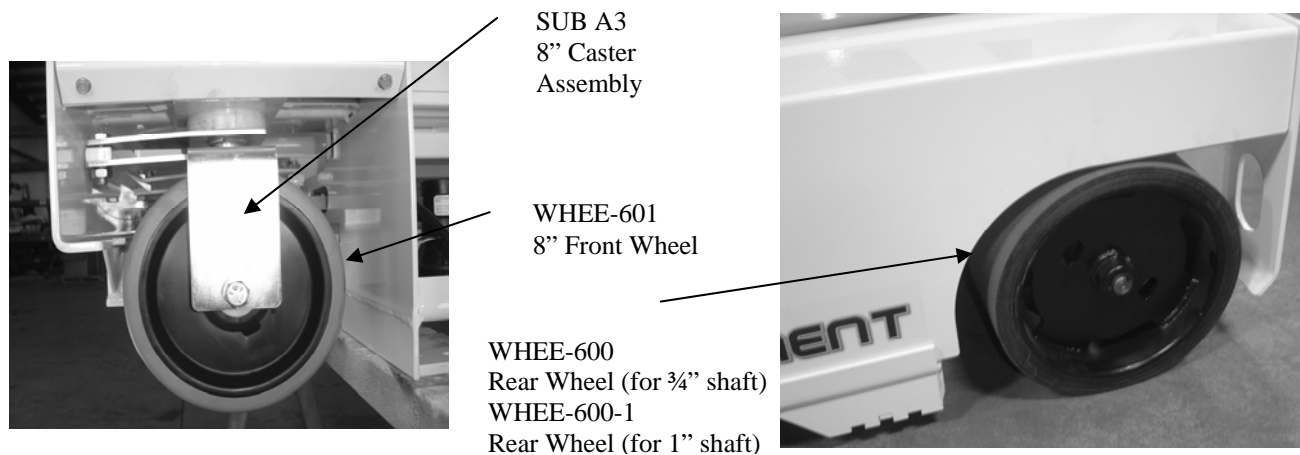
SUB A9
Upper Control Box



HB-P
Platform
Assembly



Note: Parts may vary from photograph for different models.



LAS-L055 Upper Conduit

HYDR-007 Hydraulic Cylinder (HB1030)
HYDR-041 Hydraulic Cylinder (HB1430)

HYDR-600 Hydraulic Hose (HB1030)
HYDR-601 Hydraulic Hose (HB1430)



Warranty

LIMITED WARRANTY – Warranty Statement

Custom Equipment, Inc. (the "Company") warrants that all new units of equipment manufactured and sold by it conform to the Company's latest published specifications. Also, that all purchased components and sub-assembled parts and assemblies shall be free from defect in material and/or workmanship for a period of 12 months from the date a new unit is placed into service, with the exception of batteries which are covered by the battery manufacturer for a period of ninety (90) days (pro-rated for one (1) year) on batteries. Further, that all structural components manufactured, purchased, and installed by Custom Equipment, Inc. shall be free of any defect in material and/or workmanship for a period of 60 months from the date a new unit is placed into service.

If the equipment owner/end-user experiences a failure or deficiency within the specified warranty period they must promptly notify an authorized Dealer service repair facility.

During the Warranty period, Custom Equipment, Inc. reserves the right to replace, repair, exchange, or to provide a new, used, or rebuilt component, assembly, sub-assembly, or weldment at their discretion, dependant upon circumstance, situation, and/or availability. For battery warranty, call the number listed on the battery for further instructions.

This Warranty Policy does NOT cover damage caused by; shipment, misuse of unit (includes operation beyond Factory established limits, loads, and/or specifications), failure to properly service and maintain the unit in accordance with the Company's manuals or Factory Service Bulletins. Custom Equipment, Inc. DOES NOT accept any responsibility for alterations or modifications to the unit, or, damages caused by any natural disasters (such as fire, flood, wind and lightning).

THE PREVIOUS WARRANTY STATEMENT IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

If field repair or parts replacement is necessary on any warranted components, Custom Equipment, Inc. will reimburse Authorized Dealers for direct labor costs incurred according to the Company's current authorized Field Service Rate (FSR) and/or any established '*Flat Rate Guides*'. Custom Equipment does not pay labor on any consumable items such as batteries, brakes, or tire wear. In no event shall the Company be liable for any indirect, incidental, consequential, or special damage (including without limitation to loss of profits, loss of revenue, cost of capital, cost of substitute equipment, downtime, examination fees, claims of third parties, and injury to person or property) based upon any claim of breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory. This limited warranty statement recognizes the risks and limitations of product failure between Custom Equipment, Inc. and the Buyer.

This written warranty is also understood to be the complete and exclusive agreement between the parties, superseding all prior agreements, oral or written and all other communications between the parties relating to the subject matter of this warranty. No employee, agent or distributor of the Company, or any other person is authorized to state or imply any additional warranties on behalf of the Company, nor to assume for the Company any other liability in connection with any of its products, unless made in writing, dated, and signed by an officer of the Company.