MAINTENANCE & TROUBLESHOOTING
SELF-PROPELLED AERIAL WORK PLATFORM

HB-1230
SERIES I
The purpose of this Maintenance Manual is to provide qualified service personnel with information for servicing and maintaining Hy-Brid Lifts. All information in this manual must be read and understood before any attempt is made to service this machine.

The operation and safety manual is considered a part of the work platform and contains instructions and operating procedures essential to properly and safely operate the Custom Equipment Hy-Brid Lift. Users must read and understand all information in the Safety and Operations Manual before operation.

**DANGER**

**THE OPERATION AND SAFETY MANUAL MUST BE READ AND UNDERSTOOD PRIOR TO OPERATING THE MACHINE.**

- 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.

**WARNING**

**ANY MODIFICATION ON THIS MACHINE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE MANUFACTURER IS PROHIBITED.**

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

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REVISION LOG
Revision A ................................................................................................................. December 2013
1.1 | SAFETY SYMBOLS

*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.

1.2 | GENERAL RULES AND PRECAUTIONS

Custom Equipment, Inc. designed the Hy-Brid Lift self-propelled scissors 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 American National Standards Institute ANSI/SIA A92.6 Standard, 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 A92.6. If you come across a situation that you think might be unsafe, stop the platform and request further information from qualified sources before proceeding.

*WARNING* indicates maintenance information is for use by trained personnel only.

*WARNING* indicates never reach between scissors links or prop up platform unless maintenance pins are in place.
1.3 | SAFETY GUIDELINES

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.

![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 Operation and Safety 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.
- After maintenance, inspect the machine as described for Pre-delivery.
2.1 | BATTERY MAINTENANCE

Battery cycle life will vary significantly depending on the depth of discharge. The deeper the depth of discharge the fewer cycles a battery will deliver. Conversely, the shallower the depth of discharge the more cycles a battery will deliver. To optimize the health of your battery, limit discharge to 80%.

The performance and life of a battery will vary with application, usage, temperature and depth of discharge. AGM batteries tend to deliver higher than their rated capacity (up to 10-15% higher) for -30 cycles until they are “broken in” and settle at their rated capacity.

Operating batteries above 80°F (27°C) will yield runtimes above the rated capacity and operating batteries below 80°F (27°C) will yield runtimes below the rated capacity. Cold temperatures can significantly reduce battery capacity. Although higher temperatures increase the battery capacity they also accelerate corrosion and reduce overall battery life.

2.2 | CHARGING THE BATTERY

This unit is equipped with a two deep cycle 12-volt AGM maintenance-free batteries.

Batteries should be fully charged after each use. Opportunity charging can be done but the batteries should be fully charged at least every other day if they are used daily. Charge in a ventilated area as gases may be released through the pressure relief valve if the batteries are excessively over-charged.

NOTE: The surrounding temperature greatly affects the power reserve within a battery. Example: A battery that is 100% charged at 80° F (27°C) drops to 65% at 32°F (0°C) At 0°F (-18°C), this battery will drop to 40% efficiency.

![CAUTION]
NEVER ADD ACID TO BATTERY!

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

![WARNING]
LEAD-ACID BATTERIES GENERATE EXPLOSIVE GASES. KEEP SPARKS AND FLAME AWAY FROM BATTERIES. DO NOT SMOKE WHILE CHARGING.

The charger will not begin charging on severely discharged batteries. This will be evident by the three indicators blinking simultaneously.
### HOW TO READ THE BATTERY DISPLAYS

<table>
<thead>
<tr>
<th>POWER</th>
<th>BATTERY 1 STATUS</th>
<th>BATTERY 2 STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHARGING</td>
<td>CHARGING</td>
</tr>
<tr>
<td>Green LED (ON)</td>
<td>Red LED (OFF)</td>
<td>Red LED (OFF)</td>
</tr>
<tr>
<td>Red LED (OFF)</td>
<td>Green LED (OFF)</td>
<td>Green LED (OFF)</td>
</tr>
</tbody>
</table>

This display indicates that the power is on but there is no connection to a battery. The charger must see approximately five (5) volts on a battery to deliver D/C current.

<table>
<thead>
<tr>
<th>POWER</th>
<th>BATTERY 1 STATUS</th>
<th>BATTERY 2 STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHARGING</td>
<td>CHARGING</td>
</tr>
<tr>
<td>Green LED (ON)</td>
<td>Red LED (ON)</td>
<td>Red LED (ON)</td>
</tr>
<tr>
<td>Red LED (ON)</td>
<td>Green LED (OFF)</td>
<td>Green LED (OFF)</td>
</tr>
</tbody>
</table>

This display indicates that power is on and that both outputs are delivering D/C current to the batteries.

<table>
<thead>
<tr>
<th>POWER</th>
<th>BATTERY 1 STATUS</th>
<th>BATTERY 2 STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHARGING</td>
<td>CHARGING</td>
</tr>
<tr>
<td>Green LED (ON)</td>
<td>Red LED (OFF)</td>
<td>Red LED (OFF)</td>
</tr>
<tr>
<td>Red LED (OFF)</td>
<td>Green LED (OFF)</td>
<td>Green LED (ON)</td>
</tr>
</tbody>
</table>

This display indicates that power is on and that both outputs are finished charging and are in a float maintenance mode.

**WARNING**

DO NOT OPERATE UNIT WHILE CHARGING. DO NOT DISABLE CHARGER INTERLOCK.

---

**Figure 1: Battery Charger LED Display**
SECTION 2 | MAINTENANCE

2.3 | LUBRICATION
There are no components that routinely need lubrication.

2.4 | COMPONENTS REQUIRING ADJUSTMENT
Under normal use, no components should require adjustment. Contact the manufacturer if adjustments are required.

2.5 | EXAMINATION, REPAIR, REPLACEMENT OF LIMITED LIFE COMPONENTS
With proper use, battery maintenance, and regular inspection, there are no limited life components that require routine replacement.

2.6 | SAFETY DEVICES AND SYSTEMS REQUIRING CHECKS
Check safety functions as part of daily inspection. Check that the electromagnetic brakes are holding.

2.7 | STORAGE
After periods of storage, exposure to extremes of ambient conditions-heat, cold, moisture, dust etc., inspect the machine. Refer to the Pre-Delivery/ Frequent Inspection Checklist in the Maintenance Manual.

2.8 | MAJOR ALTERATIONS OR REPAIRS
Any alterations must be approved by the manufacturer. Major repairs, which affect the stability, strength or performance of the machine must also be approved by the manufacturer, recorded, and include machine inspection and testing. Never attach pipe racks, material lifting devices or make any other alteration that is not part of the intended design of the machine.

2.9 | OTHER PROCEDURES

VOLTAGE TEST POINTS
Contact technical assistance for more details.

WIRE CONNECTIONS
When disconnecting or reconnecting any wires, make sure the master power switch is in the OFF position.
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. Make checks at the stated intervals or more frequently if required by local operating conditions. The following inspection checklists are included in this manual:

- **Pre-Start** (required before operation at each work shift)
- **Frequent**
- **Pre-Delivery/Annual** (Required at intervals not more than twelve months)

The rated life of the machine is Light Intermittent Duty (typical use 10 years, 40 weeks per year, 20 hours per week, 5 load cycles per hour).
### 3.1 | PRE-START INSPECTION CHECKLIST

**WARNING**

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

MODEL NUMBER ___________________ SERIAL NUMBER ___________________

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

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

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VISUAL INSPECTIONS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are no loose or missing parts.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Check that warning and instructional labels are legible and secure. Ensure that load capacity is clearly marked.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Check the platform rails and safety gate for damage.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Platform and base controls are not missing, damaged, or disconnected.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Electrical cables and wires are not torn, frayed, or disconnected.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Hydraulic hoses are not torn or loose; there are no leaks; hoses and the cables have no worn areas or chafing.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Check the tires for damage. Check that wheel axle retaining rings and set screw in rear wheel are tight.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Check that all snap rings are secure in grooves on pivot pins.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td><strong>FUNCTIONAL TESTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gate closes automatically and latches (alignment can be adjusted with screw on toe board or railing if necessary).</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td><strong>Platform Controls:</strong> Check all switches and push buttons for proper operation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Stop (Stops all movement)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Drive &amp; Up/Down Mode Switch (Selects drive/steer or elevate mode)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Joystick (Return to neutral, drives forward &amp; reverse, elevates &amp; lowers)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Drive Enable Trigger (Must be activated to drive)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td><strong>Base Controls:</strong> Check all switches and push buttons for proper operation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Stop (Stops all movement)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Key Switch (Selects Platform Control, Ground Control, or Off)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Up/Down Rocker Switch (Elevates, Lowers)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Alarm (Not damaged, sounds for descent, tile)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Wheels: Front and rear wheels rotate freely.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Drives in slow speed when elevated.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Brakes: Machine stops when joystick released.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Pothole guards deploy and lock when platform is elevated.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Lift does not elevate when pothole guards are blocked.</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

---

DATE ___________________ INSPECTED BY ___________________
3.2 | MONTHLY INSPECTION CHECKLIST

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

MODEL NUMBER __________________________ SERIAL NUMBER __________________________

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

**Y** — Yes/Acceptable    **N** — No/Unacceptable    **R** — Repaired

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform all the checks on the Pre-Start Inspection Checklist.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect the condition of hydraulic fluid in reservoir. Oil should have a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clear amber color.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect the entire machine for signs of damage, broken welds,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loose bolts, or improper repairs. (Check for corrosion, cracking,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>abrasion, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check that all snap rings are secure in grooves on pivot pins.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if tires are leaning in or out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check electrical motor brushes (every 150 hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DATE ___________________________ INSPECTED BY ___________________________

Hy-Brid Lifts
Maintenance & Troubleshooting Manual
HB-1230
Part No. SUPO-646
Rev. A
### 3.3 | PRE-DELIVERY/ANNUAL/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.

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>SERIAL NUMBER</th>
</tr>
</thead>
</table>

- ✔ 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.

#### BASE:
- Inspect slide tracks for damage
- All frame bolts tight
- Pump Secure
- DC motors secure
- Covers screwed on
- Batteries Fully Charged

#### EXTENDING PLATFORM:
- Extends freely
- Cables in place/secure
- Locks in Stowed Position
- Locks in Extended Position

#### FUNCTIONS:
- All Functions Operational
- Emergency Stop Breaks Circuits
- Slow Speed limit switch Set properly

#### WIRING:
- Switches secure
- Contacts(s) secure
- Contact(s) secure (No loose wiring)
- Pothole guards deploy when platform elevated
- Pothole interlock functions correctly
- Oil: Level 1" from top
- Brakes: Operational
- Check all hose for leaks
- Check all fittings for leaks

#### SCISSORS:
- Broken Welds
- Bent Beam Members
- All rollers Turn Freely
- Ret. Rings Secure On Pivots
- Emergency Down Operational
- Maintenance Locks:
- Pins in cabinet

#### PLATFORM:
- Bent rails
- Broken welds
- All rails in place/secure
- 110V outlet safe/working (if applicable)
- Entrance gate Closes Freely

#### BATTERY CHARGER:
- Secure/Operational
- Tilt sensor
- Warning Horn (if applicable)
- Hour meter operational
- Battery indication operational
- All Shields/Guards in place
- Operator/Service Manual

#### DECAPS:
- Legibility
- Correct capacity noted
- Proper placement quantity

---

<table>
<thead>
<tr>
<th>DATE</th>
<th>INSPECTED BY</th>
</tr>
</thead>
</table>

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Hy-Brid Lifts  
Maintenance & Troubleshooting Manual  
HB-1230  
Part No. SUPO-646  
Rev. A
4.3 | CONTROL BOARD DIAGNOSTICS

When using the LED for diagnosis, note that a DUAL FLASH code is indicated. The LED will flash on/off a certain number of times, pause off for a short delay, then flash on/off a second certain number of times, followed by a much longer pause off. The sequence will then repeat.

Example: The LED flash code 3-2 will look like: on/off/on/off/on/off-short-delay/on/off/on/off-long-delay/repeat

<table>
<thead>
<tr>
<th>LED CODE</th>
<th>POSSIBLE CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Flash</td>
<td>1. Control Module is not calibrated. Do not operate unit.</td>
</tr>
</tbody>
</table>
| Steady | 1. Unit has just been powered on. You may need to wait for initialization, then re-select function.  
2. Ready to operate, things should be working normally.  
3. A function is selected but the enable trigger is not squeezed. |
| 1-1 | 1. The control module is not calibrated. Do not use this unit. |
| 2-1 | 1. The key switch selector switch indicate the mode in which the TS100 must operate. If neither input is active, or if both are active together, the TS100 does not know how to function.  
2. Check key switch and wiring to P15-1 and P12-1. |
| 2-2 | 1. A safety feature is locking functions or a switch has failed.  
2. Check that platform is not overloaded, operating on a level surface, and pothole guards deploy.  
3. Check that joystick is neutral when powered on.  
4. Check that joystick trigger is not closed for too long without selecting a function.  
5. Check for failed joystick, selector switches, and up/down switches. |
| 3-x | 1. There is a problem with the drive contactor or valve wiring, or with the motor power wiring; disconnect connector P9 to see if the problem is caused by drive contactor or valve wiring (if the fault clears, check for an illegal B+ supply in to P9)  
2. Check motor power wiring; with the drive contactor open the B+ power terminals should be at 10V-15V (significantly lower than B+) If the LED is steady at power-on, and the fault (3-5) occurs after a delay when attempting to drive or lift, the motor may be stalled and causing an overload of the TS100 or there is a power wiring error like connecting the B+ cable to a motor stud |
| 3-2 | 1. Check P9 wiring. One or more signals showing outputs when all should be off. |
| 3-3 | 1. Check B+ stud connections on controller. Voltage is too high. |
| 3-4 | 1. There is voltage on safe pre-valve supply when there should not be.  
2. Controller may need to be replaced. |
| 3-5 | 1. The drive brake current is too high.  
1. Motor overload. Check for a seized motor or for power wiring to motors. |
| 4-x | 1. There is a problem with battery supply, the height and/or pressure sensors, the supply to them, or the temperature sensor inside the TS100  
2. Check battery supply to EMS inputs P15-1 or P12-1 (relative to the B- stud); the battery supply should be between 15V and 32V  
3. Check the output from height sensor (P12-12)  
4. If the TS100 heatsink is very hot then perhaps the controller has temporarily shut down – if so, platform lowering is still allowed, wait for the controller to cool down |
| 4-2 | 1. Functions Locked: Board is overheated. Check pump, drive motor wiring.  
2. Problem with controller internal voltage. Controller may need to be replaced. |
| 4-3 | 1. Problem with controller internal voltage. Controller may need to be replaced. |
### SECTION 4 | TECHNICAL REFERENCES

| 4-4 | 1. Battery supply is too low or too high.  
2. Make sure batteries are fully charged.  
3. Do not operate while charging. |
|-----|----------------------------------------------------------------------------------------------------------------------------------|
| 4-5 | 1. Joystick signal problem.  
| 6-x | 1. There is a problem with the height measurements, or the elevation switch disagrees with the height sensor.  
2. Check that the output from height sensor (P12-12) is in range (between 0.5V and 4.5V) |
| 6-1 | 1. Problem with angle sensor or its connections |
| 6-2 | 1. This feature does not apply on ANSI/CSA models. |
| 6-3 | 1. Problem with elevation switch or its connections |
| 6-6 | 1. This feature does not apply on ANSI/CSA models. |
| 7-x | 1. There is a problem with the power wiring – the voltage on the B+ stud is too low  
2. Check for a short-circuit to the B+ stud |
| 7-1 | 1. Motor A current too high. |
| 7-2 | 1. Motor A current too low. |
| 7-3 | 1. Motor B current too high. |
| 7-4 | 1. Motor B current too low. |
| 7-5 | 1. Check drive connections at both drives—short or multiple wiring faults. |
| 7-7 | 1. Check B+ stud connections on controller. Voltage is too low. |
5.2 | LOWER CONTROLS WIRING DIAGRAM
Part No. 129-20-004-50

- SOCKET: ANGLE SENS #1
- SOCKET: ANGLE SENS #2
- SOCKET: PRESSURE SENS
- SOCKET: PH LS
- SOCKET: 12-PIN SOCKET: 9-PIN

- B- at TS100
- TO TS-100
- TO TS-100

- BATTERY GAUGE (-)
- CHARGER INTERLOCK
- ENABLE PWR SOL
- B+ PWR SOL

REV. DESCRIPTION: DJS
- TERMINAL ON P12-8: ECO 1707 10/24/2013
- KEYSWITCH STYLE CHANGED: GH 11/12/2013
- ADDED BATTERY GAUGE GROUND WIRE: GH 11/15/2013
**SECTION 5 | WIRING DIAGRAMS**

**5-2 | LOWER CONTROLS WIRING DIAGRAM**

- **NC 1 2 NC**
- **HOURMETER**
- **KEY SWITCH**
- **LWR CTL ROCKER SW.**
- **E-STOP**
- **PUMP SOL./COIL CONNECTIONS**

**MP SOL./COIL CONNECTIONS**

**REV. DESCRIPTION DATE BY**

<table>
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<th>REV.</th>
<th>DESCRIPTION</th>
<th>DATE</th>
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5.3 | UPPER CONTROLS WIRING DIAGRAM
Part No. 129-20-006-50
SECTION 5 | WIRING DIAGRAMS

5.4 | MAIN POWER/SAFETY CIRCUIT
Part Nos. WS-129-20-001-50-PWR, Part No. WD-129-20-001-50-PWR
SECTION 5 | WIRING DIAGRAMS

Part Nos. WD-129-20-004-50-PWR, WD-129-20-004-50-PWR

REV. DESCRIPTION DATE BY
A INITIAL RELEASE 8/19/2013 DJS
B REVISED CONTACT BLOCKS (ECO 1703) 10/11/2013 DJS
C ADDED BATTERY GAUGE 11/15/2013 GH

Maintenance & Troubleshooting Manual
Hy-Brid Lifts
HB-1230

Part No. SUPO-646
Rev. A
5.5 | DRIVE CIRCUIT

---

SECTION 5 | WIRING DIAGRAMS
5.6 | ELEVATE/LOWER CIRCUIT
Part Nos. WS-129-20-001-50-ELV, WD-129-20-001-50-ELV

[Diagram of wiring connections]

**SECTION 5 | WIRING DIAGRAMS**

**Hy-Brid Lifts**

Maintenance & Troubleshooting Manual

HB-1230

Part No. SUPO-646

Rev. A
6.1 | MAIN POWER/SAFETY CIRCUIT

---

**WARNING**
Any modification on this machine without the express consent of the manufacturer is prohibited.

---

**6.1.1 | MAIN POWER/SAFETY CIRCUIT**

- **Does the machine have any function:** (Drive, Elevate/Lower) → No → **Is the battery charger plugged in?** → Yes → Unplug the charger. Machine cannot be operated while battery is charging. → No → **Is the master power switch turned off or the key missing?** → No → **Is the master power switch turned on in the desired selection?** (may select upper controls or lower controls) → No → **Is key switch turned on in the desired selection?** → No → **Turn key switch on**
- **Are batteries fully charged?** → Yes → **Are the batteries connected?** → Yes → **Is short protection fuse blown?** → No → **Replace with 20 Amp AGC Fuse.** → Yes → **Visual wire harness controls. Is there a** → Yes → **See Wiring Diagram WD-129-20-001-50** → **Connect battery.** → No → **Charge batteries.** → **See also Main Power & Safety Circuit Wiring Diagram: WD-129-20-001-50 Power** Or **Schematic: WS-129-20-001-50-Power**
- **Yes, but some function(s) are not working properly**

---

*Hy-Brid Lifts*

Maintenance & Troubleshooting Manual
HB-1230
Part No. SUPO-646
Rev. A
WARNING
Failure to comply with safety precautions may result in damage, injury, or death. Refer to Maintenance Manual for complete warnings.

Troubleshooting Flowcharts--General Notes:
Inspect parts for visible damage as they are encountered. After each step, check if problem has been indentified and/or resolved. If so, make the recommended fix or see a referenced document. If not, continue troubleshooting. If a part has been identified as needing replacement, see the Parts View to identify part number to order. If any wiring or components have been altered from the original manufacture, problems may not be identifiable.

Troubleshooting Flowcharts:

Part No. SUPO-646
Rev. A
Hy-Brid Lifts
Maintenance & Troubleshooting Manual
HB-1230
 SECTION 6 | TROUBLESHOOTING FLOWCHARTS

6.2 | DRIVE CIRCUIT

Does the machine drive?

Yes

Is there a trouble code flashing?

Yes

Is either or two brakes manually released?

No

Is either of two brake switches damaged or disconnected?

No

Is drive unit damaged?

Yes

Replace brake switch.

Note that brake limit switch tabs are delicate. Use caution not to break off.

Replace drive unit

Yes

Flip brake handle(s) at rear of machine to engage brakes.

Yes

Is drive unit damaged?

Yes

Replace drive unit.

No

Is there moisture or corrosion in any connections?

No

Are all connections to drive joystick and drive control board secure?

No

Is there a trouble code flashing?

Yes

Are either or both brakes manually released?

No

Is either of two brake switches damaged or disconnected?

No

Is drive unit damaged?

Yes

Replace drive unit.

Yes

Are batteries fully charged?

Yes

Are brakes hot?

No

Are batteries fully charged?

No

Charge batteries.

No

Drives slow when lowered?

Yes

Is angle sensor damaged?

Yes

Replace sensor.

No

Check for proper connection to sensor.

Yes

Check wiring connections in drive components.

See Electrical Schematic WS-129-20-001-50 or Pictorial Schematic hypnotic Circuit Check-129-20-001-50-Drive.

No

Check brake connections. Replace brake if damaged.

Yes

Some models have tilt interlock installed. Lower platform and move to a flat surface.

Check wiring connections. See Electrical Schematic and Pictorial Schematic. Consider Circuit Check.

No

Does not drive when elevated?

Yes

Is machine tilted?

Yes

Consider board failure, pothole interlock limit switch failure.

No

Contact CEI for further troubleshooting.

Is machine tilted?

No

Contact Hy-Brid Lifts for further troubleshooting.

Consider brake damage, broken joystick handle (drive enable), bad hour meter, loose connections in lower and upper control, and control board failure.

Still no drive?

Driving slowly?

No

Drives fast when elevated?

Yes

Does not drive when elevated?

No

Contact Hy-Brid Lifts for further troubleshooting.

Drives intermittently?

Check connections at both pump and board. See wiring diagrams.

Reference Revision A
Troubleshooting Flowcharts—General Notes:
Inspect parts for visible damage as they are encountered. After each step, check if problem has been identified and/or resolved. If so, make the recommended fix or see a referenced document. If not, continue troubleshooting.
If a part has been identified as needing replacement, see the Parts View To identify part number to order.
If any wiring or components have been altered from the original manufacture, problems may not be identifiable.

**SECTION 6 | TROUBLESHOOTING FLOWCHARTS**

**WARNING**
Any modification on this machine without the express consent of the manufacturer is prohibited.

**WARNING**
Failure to comply with safety precautions may result in damage, injury, or death. Refer to Maintenance Manual for complete warnings.

1. **Are all connections to drive joystick and drive control board secure?**
   - No → **Is a drive motor damaged?**
   - Yes → **Is there moisture or corrosion in any connections?**

2. **Still no drive?**
   - Yes → **Contact Hy-Brid Lifts for further troubleshooting.**
   - No → **Is there a trouble code flashing?**

3. **Is there a trouble code flashing?**
   - Yes → **Is a drive motor damaged?**
   - No → **Check for proper connection to sensor. Replace sensor.**

4. **Do pothole guards and lock deploy properly?**
   - Yes → **Clean any debris from pothole arm mechanism.**
   - No → **Contact CEI for further troubleshooting.**

5. **Contact CEI for further troubleshooting.**
   - Upper board failure, pothole interlock limit switch failure

6. **Some models have tilt interlock installed.**
   - Lower platform and move to a flat surface.

7. **Contact Hy-Brid Lifts for further troubleshooting.**
   - Consider board failure or incorrect wiring.

8. **Contact Hy-Brid Lifts for further troubleshooting.**
   - Consider board failure or loose wiring.

**Reference Revision A**
6.3 ELEVATE CIRCUIT

Does the machine elevate?
- Yes
  - Does the pump run?
    - Yes
      - Is the emergency down valve open?
        - Yes
          - Is up/down switch damaged?
            - Yes
              - Replace
            - No
        - No
          - Remove overload. Lower to stowed position before continuing use.
    - No
  - No
    - Does the pump run?
      - Yes
        - Check wiring connections in elevate components. See Electrical Schematic WS-129-20-001-50 or Pictorial Schematic WSP-129-20-0050 and instruction Circuit Check-129-20-001-50-Elevate
      - No
        - Is platform overloaded?
          - Yes
            - Remove overload. Lower to stowed position before continuing use.
          - No
            - Is there anything obstructing the components? (Something is leaking, unusually noisy, etc.)
              - Yes
                - See Lowering Problems Flowchart
              - No

Does machine elevate? Not At All
- Yes, but not properly
  - Goes up, but comes down
    - Yes
      - See Lowering Problems Flowchart
    - No
      - Starts ascending, then drifts back down?
        - Yes
          - Do pothole guards deploy?
            - Yes
              - Is pothole limit switch operating?
                - Yes
                  - Are power connections to elevate circuit and switches functioning properly?
                    - Yes
                      - Replace or repair identified problem. See Parts List.
                    - No
                      - Replace or repair identified problem. See Parts List.
                - No
                  - Replace or repair identified problem. See Parts List.
            - No
              - Remove obstruction
        - No
          - Ascent speed slow or erratic?
            - Yes
              - Is the emergency down valve open?
                - Yes
                  - Is up/down switch damaged?
                    - Yes
                      - Replace
                    - No
                      - Replace switch
                - No
                  - Replace switch
            - No
              - Are any structural members bent?
                - Yes
                  - Contact manufacturer to arrange replacement.
                - No
                  - Remove obstruction

Starts ascending, then drifts back down?
- Yes
  - See Lowering Problems Flowchart
- No
  - Ascent speed slow or erratic?
    - Yes
      - Is platform overloaded?
        - Yes
          - Replace
        - No
          - Are any structural members bent?
            - Yes
              - Contact manufacturer to arrange replacement.
            - No
              - Is the emergency down valve open?
                - Yes
                  - Is up/down switch damaged?
                    - Yes
                      - Replace
                    - No
                      - Replace switch
                - No
                  - Replace switch
  - No
    - Is battery fully charged?
      - Yes
        - Replace hydraulic hose.
      - No
        - Charge batteries.

WARNING: Set up for maintenance safety:
- Remove overload. Lower to stowed position before continuing use.
- Check for overhead obstructions. Platform movement may occur.
- Never reach between scissors links or prop up platform unless maintenance pins are in place.
Troubleshooting Flowcharts--General Notes:
Inspect parts for visible damage as they are encountered. After each step, check if problem has been identified and/or resolved. If so, make the recommended fix or see a referenced document. If not, continue troubleshooting. If a part has been identified as needing replacement, see the Parts List. To identify part number to order. If any wiring or components have been altered from the original manufacture, problems may not be identifiable.

**WARNING**
Any modification on this machine without the express consent of the manufacturer is prohibited.

**WARNING**
Failure to comply with safety precautions may result in damage, injury, or death. Refer to Maintenance Manual for complete warnings.
6.4 | LOWER CIRCUIT

WARNING: Set up for maintenance safety: Remove load from platform. Check for overhead obstructions. Platform movement may occur. Never Reach between scissors links or prop up platform unless maintenance pins are in place.

Refer to Diagnostic Light Codes in Maintenance Manual

What does the diagnostic LED show?

Does machine lower? Not at all Yes, but not properly

Does machine lower? Yes 

Has key switch been turned off? Yes 

Starts descending, then stops? Yes

Is maintenance lock chock in place? 

Is there a restriction in hydraulic hose? Yes

Contact manufacturer to arrange replacement.

Is emergency down valve open? Yes 

Close emergency down valve. Check cable connections.

Flush down valve by simultaneously pressing up switch at base and down switch on platform control for 30 sec.

Does the up/down switch appear to be activated? Yes

Pull out emergency stop button at upper and lower controls.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Is maintenance lock in place? No

Remove ML Chock

Turn key to upper or lower ON position.

Check wiring connections in lowering circuit and connections to hydraulic hose?

Does the up/down switch appear to be activated? No

Pull out emergency stop button at upper and lower controls.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Does the up/down switch appear to be activated? Yes

Pull out emergency stop button at upper and lower controls.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Has a velocity fuse been activated? Yes

Pull out emergency stop button at upper and lower controls.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Remove ML Chock

Turn key to upper or lower ON position.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Is maintenance lock in place? No

Remove ML Chock

Turn key to upper or lower ON position.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Is maintenance lock in place? Yes

Remove ML Chock

Turn key to upper or lower ON position.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Descent speed slow or erratic? Yes

Is maintenance lock chock in place? Yes

Remove ML Chock

Turn key to upper or lower ON position.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Descent speed slow or erratic? No

No

Does machine lower? Yes 

Will Manual Override lower the platform? Yes

Has key switch been turned off? Yes

Starts descending, then stops? Yes

Is maintenance lock chock in place? Yes

Remove ML Chock

Turn key to upper or lower ON position.

Check for hydraulic leak and repair as needed. Replace coil and lightly tighten nut.

Descent speed slow or erratic? No

No

Creeps down? Or Goes up and Comes Back Down? Yes

Is emergency down valve open? Yes

Close emergency down valve. Check cable connections.

Flush down valve by simultaneously pressing up switch at base and down switch on platform control for 30 sec.

WARNING: Double check that maintenance pins are in place or that platform is all the way down.

WARNING: Set up for maintenance safety: Remove load from platform. Check for overhead obstructions. Platform movement may occur. Never Reach between scissors links or prop up platform unless maintenance pins are in place.


Reference Revision A
WARNING
Any modification on this machine without the express consent of the manufacturer is prohibited.

WARNING
Failure to comply with safety precautions may result in damage, injury, or death. Refer to Maintenance Manual for complete warnings.

Troubleshooting Flowcharts--General Notes:
Inspect parts for visible damage as they are encountered. After each step, check if problem has been identified and/or resolved. If so, make the recommended fix or see a referenced document. If not, continue troubleshooting. If a part has been identified as needing replacement, see the Parts View To identify part number to order. If any wiring or components have been altered from the original manufacture, problems may not be identifiable.

Level of skill with hydraulic maintenance?

Not experienced with hydraulics
Replace down valve

Experienced with Hydraulic systems

Check Hydraulic Circuit. (Additional tools required, higher level of skill required)
Refer to Hydraulic Schematic HS-129-20-001-50

Replace or repair identified problem. See Parts List.

Level of skill with hydraulic maintenance?

Not experienced
With hydraulics
Contact Hy-Brid Lifts

Experienced
With hydraulic systems

Are power connections to lowering circuit and switches functioning properly?

Yes

Level of skill with hydraulic maintenance?

Not experienced
With hydraulics
Contact Hy-Brid Lifts

Experienced
With hydraulic systems

No

Faulty down valve?

No

No

Yes or Don't know

Replace down valve.

Faulty check valve in pump?

Yes

Listen carefully near motor when not energized—may be running backwards

Replace pump.

No

Yes

Faulty down valve?

No

Yes

Might be able to repair with seal kit, probably need to replace cylinder. If walls inside cylinder are scratched or pitted, cylinder needs replacement.

Replace down valve.

Damaged cylinder or damaged seal in cylinder? Run unit up and then check for oil flow out of return line. Bad cylinder seal if oil is flowing from return line.

No

Yes

Faulty check valve in pump?

Listen carefully near motor when not energized—may be running backwards

Replace pump.

No

Yes

Faulty check valve in pump?

Listen carefully near motor when not energized—may be running backwards

Replace pump.

No

Yes

Faulty check valve in pump?

Listen carefully near motor when not energized—may be running backwards

Replace pump.

No

Yes

Faulty check valve in pump?

Listen carefully near motor when not energized—may be running backwards

Replace pump.

No

Yes

Faulty check valve in pump?

Listen carefully near motor when not energized—may be running backwards

Replace pump.
SECTION 7 | PARTS DIAGRAMS

Listed in the following section are diagrams for parts that may be available for replacement and for reference. These represent current model 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.

⚠️ CAUTION

USE ONLY MANUFACTURER APPROVED REPLACEMENT PARTS. USE OF NON-OEM PARTS WILL VOID WARRANTY.

7.1 | SAFETY AND CONTROL DECALS

Refer to the Hy-Brid Lifts Operation and Safety Manual for decal part numbers and locations.

⚠️ DANGER

REPLACEMENT OF THE FOLLOWING COMPONENTS WILL AFFECT THE STRENGTH, STABILITY, OR SAFETY FUNCTION OF THE UNIT: BATTERY (ELEC-047-6), HYDRAULIC CYLINDER (HYDR-012 OR HYDR-013), CONTROL BOARD (129-21-010-50), AND ALL STRUCTURAL COMPONENTS.
## 7.2 | MAIN POWER/SAFETY CIRCUIT

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<th>DESCRIPTION</th>
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<td>ELEC-641C</td>
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</tbody>
</table>
### 7.3 DRIVE CIRCUIT

**ITEM # | PART # | DESCRIPTION**
--- | --- | ---
1 | WHEE-618 | Drive Wheel
2 | ELEC-626-5L | Drive Motor (Right)
3 | ELEC-626-5R | Drive Motor (Left)
4 | ELEC-002C-KIT | Drive/Elevate Selector Switch
5 | ELEC-606 | Joystick
6 | WHEE-714-05 | Swivel Caster Hub
7 | 129-01-071-01 | Swivel Caster
8 | 129-21-010-50 | Drive Control Board
9 | WHEE-706-KIT | Steer Wheel
10 | ELEC-610-2 | Hour Meter
11 | ELEC-627-5L | Brake (Right)
12 | ELEC-627-5R | Brake (Left)
13 | ELEC-627-5 | Brake Switch
14 | ELEC-647 | Angle Sensor
15 | 129-01-101-05, 129-01-102-03 | Caster Lock Pin
(Not called out) | ELEC-627-COVER | Brake Dust Cover
(Not called out) | HARD-021 | 1” Retaining Ring
SECTION 7 | PARTS DIAGRAMS

7.4 | ELEVATE / LOWER CIRCUIT
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### Elevate / Lower Circuit (continued)

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<td>Up Valve</td>
<td>Cartridge</td>
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<td>HYDR-664</td>
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<td>Tilt/Descent Alarm</td>
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<td>Maintenance Lock Pin</td>
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<td>Control Module</td>
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<td>RND-HB-002-P</td>
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<td>HARD-022</td>
<td>Retaining Ring</td>
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<td>MISC-007-01-KIT</td>
<td>Beam Bumper</td>
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### 7.5 | COVERS

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<td>129-21-001-81-K</td>
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<td>129-21-001-80-K</td>
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<td>129-01-075-01</td>
<td>Cover, Top</td>
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<td>129-01-083-01</td>
<td>Cover, Switch</td>
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<td>129-05-009-01</td>
<td>Cover, Tube Cap</td>
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SECTION 7 | PARTS DIAGRAMS

7.6 | RAILINGS

[Diagram of railings with numbered parts]
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<td>LAS-M078-KIT</td>
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<td>HARD-606-2</td>
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<td>11</td>
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<td>Manual, Aerial Platform Safety</td>
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<td>HARD-603</td>
<td>Manual Box</td>
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<td>HARD-092</td>
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<td>HARD-645</td>
<td>Finishing Plug</td>
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LIMITED WARRANTY
WARRANTY STATEMENT—NORTH AMERICA ONLY

1. LIMITED WARRANTIES
Subject to the terms, conditions and limitations set forth herein, Custom Equipment, Inc. (the “Company”) warrants to the first end-user (“Buyer”) that:

a. Limited Product Warranty
   For a period of 12 months from the date that a new product manufactured by the Company (“Product”) is delivered to the Buyer, the Product will (i) conform to the specifications published by the Company for such Product as of the date of delivery; and (ii) be free of any defect in material and/or workmanship under normal use and maintenance; and

b. Extended Structural and Chassis Warranty
   For a period of 60 months from the date that the Product is delivered to the Buyer, the chassis and other structural components of such Product will be free from defects in material and/or workmanship under normal use and maintenance.

2. EXCLUSIONS / WHAT IS NOT COVERED
The following items are NOT covered under this Limited Warranty:

• Defects in, and damage or loss relating to, any batteries incorporated by the Company into or made a part of the Product. Any such defects, damage or loss shall be exclusively covered by the battery manufacturer’s warranty, if any. For more information regarding the battery warranty, the Buyer should contact the battery manufacturer using the contact information shown on the battery;
• Damage or loss resulting from or caused by carrier handling;
• Damage or loss resulting from or caused by normal wear and tear, weathering, lack of use or use with incompatible equipment or software;
• Damage resulting from or caused by improper maintenance, improper handling or storage, improper use, abuse, neglect, operation beyond rated capacity, or operation after discovery of defective or worn parts;
• Any part, component or assembly altered or modified in any way not approved in writing by the Company;
• Damage to any equipment or parts not manufactured by the Company; and
• Acts of God, accidents or any other causes beyond the Company’s reasonable control.

3. MAKING A WARRANTY CLAIM
As a prerequisite to making any claim under this Limited Warranty, Buyer must give the Company written notice of any suspected defect promptly after discovery. Such notice shall specifically identify the suspected defect, the original delivery date and complete Buyer identification and location information. The Company will not accept any Product for warranty service without receiving Buyer’s written notice and issuing a return goods authorization. If requested by the Company, Buyer shall return the defective Product, or parts, components or assemblies thereof, to the Company, F.O.B, Company’s designated location. All returned Products or parts, components or assemblies thereof that are replaced under this Limited Warranty shall become the property of the Company. The Company reserves the right to review Buyer’s maintenance and operation records and procedures to determine if the alleged defect(s) were due to any of the items listed in Sections 2 of this Limited Warranty. The Company shall not be liable for any claim under this Limited Warranty if Buyer fails to satisfy the conditions set forth in this Section.

4. EXCLUSIVE WARRANTY REMEDIES
a. Exclusive Repair or Replace Remedy
   The Company’s sole obligation and Buyer’s exclusive remedy with respect to any defect in the Product occurring during the warranty periods set forth in Section 1 of this Limited Warranty shall be for the Company, at its option, to repair or replace (or have one of its designated authorized dealers repair
or replace) the Product or part, component or assembly thereof that contains a defect in materials or workmanship. The Company reserves the right, at its discretion, to use new, re-manufactured or refurbished replacement parts. Notwithstanding anything in this Limited Warranty to the contrary, the Company shall not be obligated to replace the entire Product if a covered defect can be remedied by the repair or replacement of a defective part, component or assembly. The Company shall be responsible for the cost of all parts and labor charges, up to the Maximum Labor Amount determined in accordance with Section 4(b) of this Limited Warranty, necessary to remedy such defect.

b. **Labor Charges**  
If field repairs or parts replacement are necessary on any Product covered by this Limited Warranty, the Company will reimburse its designated authorized dealer for those direct labor costs incurred to perform such field repairs or parts replacement up to the maximum amount specified in the Company’s current Field Service Rate (hereinafter, the “FSR”) or in any ‘Flat Rate Guides’ or similar agreement established with the authorized dealer (such maximum amount shall be referred to in this Limited Warranty as the “Maximum Labor Amount”). Current versions of the Company’s FSR and Flat Rate Guides are incorporated by reference into this Limited Warranty. For a current copy of the Company’s FSR and Flat Rate Guides, Buyer should contact the Company at 1-866-334-0756. Buyer shall be responsible for any costs or fees due to the authorized dealer in excess of the Maximum Labor Amount.

5. **DISCLAIMER OF OTHER EXPRESS AND IMPLIED WARRANTIES**  
EXCEPT FOR THE LIMITED WARRANTIES SET FORTH IN SECTION 1 ABOVE, THE COMPANY MAKES NO OTHER REPRESENTATIONS OR WARRANTIES AND HEREBY DISCLAIMS ALL EXPRESS OR IMPLIED REPRESENTATIONS OR WARRANTIES REGARDING THE PRODUCT, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT OF PROPRIETARY OR THIRD-PARTY RIGHTS OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. No employee or representative of the Company or any of its authorized dealers is authorized to modify any term, condition or limitation in this Limited Warranty unless such modification is made in writing and signed by an officer of the Company.

6. **LIMITATION OF LIABILITY**  
NOTWITHSTANDING ANYTHING IN THIS WARRANTY TO THE CONTRARY, IN NO EVENT SHALL THE COMPANY OR ANY OF ITS AFFILIATES OR SUBSIDIARIES BE LIABLE TO BUYER FOR ANY INDIRECT, SPECIAL, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS, LOST REVENUE, DOWN TIME, LOSS OF BUSINESS OPPORTUNITY OR OTHER ECONOMIC LOSSES), WHETHER IN AN ACTION IN CONTRACT OR TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHERWISE, EVEN IF THE COMPANY HAS BEEN SPECIFICALLY ADVISED OF THE POSSIBILITIES OF SUCH DAMAGES.

Version of 2.1.13
SECTION 9 | ADDITIONAL RESOURCES

The following section lists important documents and information related to your Hy-Brid Lift. For smartphone users, simply scan the QR codes with your smartphone to access the documents on your mobile device. For desktop access, please use the URLs provided (shortened "bit.ly" URLs have been used for your convenience. These URLs will direct you to the specified document on our website).

GENERAL LIFT INFORMATION

FAMILY BROCHURE

HB-1230 BROCHURE
http://bit.ly/1eBXvg0

OPERATIONS MANUAL

TECHNICAL REFERENCES

DIAGRAMS

DECALS

CHECKLISTS

PARTS DIAGRAMS

MAIN POWER CIRCUIT
http://bit.ly/19xagBi

DRIVE CIRCUIT
http://bit.ly/1aZ3982

COVERS / OTHER

RAILINGS

ELEVATE / LOWER CIRCUIT
http://bit.ly/16tl41A