MAINTENANCE AND TROUBLESHOOTING MANUAL

Hy-Brid Lifts
Model
HB-P830CE
Series 2

Push-Around Aerial Work Platform
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Revision Table:
Revision A (12/17/2012): Initial Release
Revision B(3/11/13): Revised p. 3, 29, 30
Revision C (6/6/13): Revised p. 3, 31
Foreword

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 on application and/or operation, contact:

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

For additional reference and troubleshooting information, please see www.hybridlifts.com.
Safety

Safety Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="DANGER" /> <strong>DANGER</strong></td>
<td>Failure to follow this warning will cause death or personal injury.</td>
</tr>
<tr>
<td><img src="image" alt="WARNING" /> <strong>WARNING</strong></td>
<td>Failure to follow this warning may cause death or personal injury.</td>
</tr>
<tr>
<td><img src="image" alt="CAUTION" /> <strong>CAUTION</strong></td>
<td>Failure to follow this warning may cause injury or damage equipment.</td>
</tr>
</tbody>
</table>

"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 push-around scissor lift to be safe and reliable. It is intended for elevating personnel, along with their necessary tools and materials to overhead work locations.

Vibration does not create significant hazards on this machine.

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 EN: 280 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 EN: 280. 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](image) **WARNING** | Maintenance information is for use by trained personnel only. |
| ![WARNING](image) **WARNING** | Never reach between scissors links or prop up platform unless maintenance pins are in place. |
**Stability Testing**

The HB-P830CE has been stability tested to standards EN280 or AS 14180. The most adverse stability test is the stationary, lateral slope configuration for both units. The overturning moment created by the test loads and forces is equivalent to a test on an unloaded machine on a level surface, as shown in the figure below. For the HB-P830, the test weight/pull force is 22.8 kg /50 lb.

![Stability Testing Diagram]

Figure 1: Stability Testing, Equivalent
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.

Figure 2: Maintenance Lock Pin Use

Figure 3: Maintenance Lock Pin Storage

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.
- After maintenance, inspect the machine as described for Pre-delivery.
Battery Maintenance

This unit is equipped with a deep cycle 12-volt Group 27 battery. 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.** When the cells are too full, fluid will seep out when charging. 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.

- Slide cabinet open to access battery.
- Remove battery caps and check fluid level.
- Fill each cell (if needed) to split ring with distilled water.
- Reinstall caps.
- 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.
- Coat terminals with a commercially available coating.
- Close cabinet and latch in place.

**CAUTION**
NEVER ADD ACID TO BATTERY!

Charging the Battery

This unit is equipped with a deep cycle 12-volt battery. 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.** 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°F (27°C) drops to 65% at 32°F (0°C) At 0°F (-18°C), this battery will drop to 40% efficiency.

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

- Park the machine on a level surface.
- Plug charger into AC outlet until charged. (Indicated by solid lights)
- For best battery life, leave charger plugged in until machine will be used again. The charger will maintain the battery charge.

The charger will not begin charging on severely discharged batteries.
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.

**Lubrication**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
<th>Frequency of Lubrication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheels</td>
<td>Teflon Spray</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

**Components requiring adjustment**

Under normal use, no components should require adjustment. Contact the manufacturer if adjustments are required.

**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.
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.

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.

Inspection and Regular Maintenance Checklists

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

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 required and included in this manual:

Pre-Start (Required before operation at each work shift)
Monthly Battery Maintenance
Frequent (Required at intervals not more than three months)
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, 20h per week, 5 load cycles per h).

Monthly Battery Care

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove battery cabinet cover.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Remove battery caps and check fluid level.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Fill each cell (if needed) to split ring with distilled water.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Reinstall caps.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Coat terminals with a commercially available coating.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 HB-P830CE 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.

<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>Check that there are no damaged, dented, or bent structural members.</td>
<td></td>
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</tr>
<tr>
<td>There are no loose or missing parts.</td>
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</tr>
<tr>
<td>Check that warning and instructional labels are legible and secure. Ensure that load capacity is clearly marked.</td>
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<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, and there are no leaks. Check that hoses and the cables have no worn areas or chafing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check the hydraulic fluid level with the platform fully lowered.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check the tires for damage.</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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platform Controls: Check all switches and push buttons for proper operation. Emergency Stop (Stops all movement) Up/Down Controls (Elevates, Lowers, Enable button must be pressed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base Controls: Check all switches and push buttons for proper operation. Emergency Stop (Stops all movement) Key Switch (Selects Platform Control, Ground Control, or Off) Up/Down Rocker Switch (Elevates, Lowers) Alarm (Not damaged, sounds for descent, overload) LED (Flashes when overloaded)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Wheels: Front and rear wheels rotate freely.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brakes engage and hold when platform elevated.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platform does not elevate when overloaded.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When overloaded, platform stops elevating when at a height between 81cm and 94 cm from the ground.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DATE _______________ INSPECTED BY ____________________________
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 HB-P830CE   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.

<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>Perform all checks on the Pre-Start Inspection Checklist.</td>
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<td></td>
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</tr>
<tr>
<td>Inspect the condition of hydraulic fluid in reservoir. Oil should have a clear amber color.</td>
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</tr>
<tr>
<td>Inspect the entire machine for signs of damage, broken welds, loose bolts, or improper repairs. (Check for corrosion, cracking, 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>Verify that bubble level is in place.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verify that maintenance and inspection records are up to date.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Functional Tests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform all checks on the Pre-Start Inspection Checklist.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functions operate smoothly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functions operate over full range of motion.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Controls override platform controls.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check that the platform does not drift down with a full load.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheels lubricated if needed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

DATE _______________     INSPECTED BY __________________________
**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 12 MONTHS.

**MODEL NUMBER: HB-P830CE  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.

<table>
<thead>
<tr>
<th>Check</th>
<th>Y</th>
<th>N</th>
<th>R</th>
<th></th>
<th>Check</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Decals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect slide tracks for damage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Legibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All frame bolts tight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Correct capacity noted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump Secure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proper placement quantity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC motor secure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Wiring:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery Hold Downs Secure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Swatches secure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Batteries Fully Charged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contactors secure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counterweights secured</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Functions:</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Wheels: Grease Casters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tight on terminals (No loose wiring)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Wheels: Bolts/Nuts Tight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Scissors:</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Maintenance Locks: Pins in storage location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Elevate/Lower Operational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Shields/Guards in place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Emergency Stop Breaks Circuits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic Oil Level 1” from top</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Emergency Down Operational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check all hydraulic hoses for leaks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Motion Alarms Functional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check all hydraulic fittings for leaks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Brakes: Operational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Platform:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bubble Level in Place</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broken Welds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>When overloaded, platform stops elevating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bent Beam Members</td>
<td></td>
<td></td>
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<td></td>
<td>when at a height 81- 94 cm from ground</td>
<td></td>
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</tr>
<tr>
<td>All rollers Turn Freely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Battery Charger Secure/Operational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ret. Rings Secure On Pivots</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Comments:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broken welds</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DATE ______________  INSPECTED BY _______________________________
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Wiring Diagram, Upper Control: HB-P830CE REV B

- Down
- Up
- E-Stop
- Lift Enable

Overload LED

7-Conductor: BLACK, BLUE, GREEN, Brown, RED, ORANGE, WHITE

To Lower Controls
Wiring Diagram, Upper Control: HB-P830CE REV B
Flowchart: HB-P830CE-Power
Troubleshooting Step 1: Main Power

Does the machine function: (Elevate/Lower)
  - Yes
  - No

  Is the battery charger plugged in?
    - Yes
      - Unplug the charger. Machine should not be operated while battery is charging.
    - No

  Is the master power switch off?
    - Yes
    - No
      - Turn master power switch on.

  Is the battery connected?
    - Yes
    - No
      - See Wiring Diagram WD-HB-P830CE

  Is the battery filled with water and fully charged?
    - Yes
    - No
      - See SD-Battery-01

  Is short protection fuse at pump blown?
    - Yes
      - Replace with 20 Amp AGC Fuse.
    - No

  Is key switch turned on in the desired selection? (may select upper controls or lower controls)
    - Yes
    - No
      - Turn key switch on.

  Is the master power switch on?
    - Yes
    - No
      - Turn key switch on.

  Is either E-Stop button depressed/activated?
    - Yes
    - No
      - Reset E-Stop buttons. Pull out at both upper control and lower control locations.

  Is the battery charger plugged in?
    - Yes
    - No
      - Unplug the charger. Machine should not be operated while battery is charging.

  Is the master power switch off?
    - Yes
    - No
      - Turn master power switch on.

  Is the battery connected?
    - Yes
    - No
      - See Wiring Diagram WD-HB-P830CE

  Is the master power switch on?
    - Yes
    - No
      - Turn master power switch on.

  Is short protection fuse at pump blown?
    - Yes
      - Replace with 20 Amp AGC Fuse.
    - No

  Is key switch turned on in the desired selection? (may select upper controls or lower controls)
    - Yes
    - No
      - Turn key switch on.

  Is either E-Stop button depressed/activated?
    - Yes
    - No
      - Reset E-Stop buttons. Pull out at both upper control and lower control locations.

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.

Reference Revision B
Part# SUPO-633E REV C
Page 22 of 34
Does machine elevate?
- Not At All
  - Is up/down switch damaged?
    - Yes, but not properly
      - Replace limit switch.
    - No
      - Is armguard limit switch damaged?
        - Yes
          - Replace armguard limit switch.
        - No
          - Is platform overloaded?
            - Yes
              - Replace the armguard.
            - No
              - Is there a restriction in hydraulic hose?
                - Yes
                  - Replace hydraulic hose.
                - No
                  - Is battery fully charged?
                    - Yes
                      - Charge battery. See SD-Battery-01
                    - No
                      - Ascent speed slow or erratic?
                        - Yes
                          - Contact manufacturer to arrange replacement.
                        - No
                          - Are any structural members bent?
                            - Yes
                              - Contact manufacturer to arrange replacement.
                            - No
                              - Close emergency down valve.
  - Yes
    - Is hydraulic fluid low?
      - Yes
        - Replace OL Enable LS.
      - No
        - Is Overload Enable Limit Switch damaged?
          - Yes
            - Replace OL Enable Limit Switch.
          - No
            - Is platform overloaded?
              - Yes
                - Replace the armguard.
              - No
                - Is there a restriction in hydraulic hose?
                  - Yes
                    - Replace hydraulic hose.
                  - No
                    - Is there a different problem (something is leaking, unusually noisy, etc.)?
                      - Yes
                        - Contact Hy-Brid Lifts.
                      - No
                        - Replace hydraulic hose.
  - Remove obstruction

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.

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.

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.

Reference Revision C

Part# SUPO-633E
REV-C

Reference Revision C
Page 25 of 34
Flowchart: HB-P830CE-Lowering
Troubleshooting Step 2B: Lowering

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.

Troubleshooting Flowcharts—General Notes:
- WARNING: Inspect parts for visible damage as they are encountered. After each step, check if problem has been identified and/or resolved.
- 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.

PART# SUPO-633E
REV C
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Reference Revision A
Part# SUPO-633E
REV C
Page 28 of 34

Troubleshooting Flowcharts—General Notes:
- 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.

Troubleshooting Flowcharts—General Notes:
- WARNING: Inspect parts for visible damage as they are encountered. After each step, check if problem has been identified and/or resolved.
- 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.

Reference Revision A
Flowchart: HB-P830CE-Lowering
Troubleshooting Step 2B: Lowering

**WARNING:** Double check that maintenance pins are in place. Remove load from platform. Check for overhead obstructions. 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 View To identify part number to order.

**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.

- **WARNING:** Check if unit stops drifting. Electrical problem? Disconnect coil. Check voltage at coil—should be 0 V when not energized—may be faulty check valve in pump. Listen carefully near motor when not energized—may be running backwards.
- **WARNING:** Check Hydraulic Circuit. (Additional tools required. Higher level of skill required) Refer to Hydraulic Schematic HS-HB-P830CE.
- **WARNING:** Any wiring or components have been altered from the original manufacture, problems may not be identifiable.

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See also Wiring Diagram WD-HB-P830CE Elevating or Schematic WS-HB-P830CE-Elevating And Hydraulic Schematic HS-HB-P830CE Or Pictorial Hydraulic Circuit HSP-HB-P830CE

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**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.

**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.

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**Flowchart: HB-P830CE-Lowering**
**Troubleshooting Step 2B: Lowering**

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**Reference Revision A**

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**Part SUPO-633E REVC**

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**Reference Revision A**

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Replacement Parts

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

⚠️ DANGER
REPLACEMENT OF THE FOLLOWING COMPONENTS WILL AFFECT THE STRENGTH, STABILITY, OR SAFETY FUNCTION OF THE UNIT: BATTERY, HYDRAULIC CYLINDER, AND ALL STRUCTURAL COMPONENTS.

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.

Safety and Control Decals
Refer to Operator’s Manual for decal part numbers and locations
### Main Power/Safety Circuit

![Diagram of Main Power/Safety Circuit]

<table>
<thead>
<tr>
<th>Item #</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(ELEC-047)</td>
<td>Not available as a replacement part. Replace battery with 12V, Group 27 Deep Cycle Marine Battery. Replacement weight must be minimum 50 lb.</td>
</tr>
<tr>
<td>2</td>
<td>1002103551-KIT</td>
<td>Upper Control Assembly</td>
</tr>
<tr>
<td>3</td>
<td>ELEC-071-KIT</td>
<td>Emergency Stop Button with Contact Block</td>
</tr>
<tr>
<td>4</td>
<td>ELEC-633-KIT</td>
<td>Battery Disconnect Lever</td>
</tr>
<tr>
<td>4</td>
<td>ELEC-633-1</td>
<td>Battery Disconnect Lever</td>
</tr>
<tr>
<td>5</td>
<td>NA</td>
<td>B+ Power Connection Location on Pump</td>
</tr>
<tr>
<td>6</td>
<td>ELEC-639-5</td>
<td>Charger Cord (Bare Wire/IEC-320 C-13)</td>
</tr>
<tr>
<td>7</td>
<td>ELEC-071-KIT</td>
<td>Emergency Stop Button with Contact Block</td>
</tr>
<tr>
<td>8</td>
<td>ELEC-746</td>
<td>Battery Charger</td>
</tr>
<tr>
<td>9</td>
<td>ELEC-073E</td>
<td>Key Switch</td>
</tr>
<tr>
<td>9</td>
<td>ELEC-073E-KEY</td>
<td>Spare Key</td>
</tr>
<tr>
<td>10</td>
<td>NA</td>
<td>B-“Ground” Connection Location on Pump (Not Pictured)</td>
</tr>
<tr>
<td>(Not Pictured)</td>
<td>1002103850</td>
<td>Battery Cables</td>
</tr>
<tr>
<td>(Not Pictured)</td>
<td>1002103851</td>
<td>Battery Cables</td>
</tr>
<tr>
<td>(Not Pictured)</td>
<td>ELEC-670-2</td>
<td>20A AGC Fuse</td>
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</table>
## Elevate/Lower Circuit Parts

<table>
<thead>
<tr>
<th>Item #</th>
<th>Part #</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>ELEC-635</td>
<td>Descent Alarm</td>
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<tr>
<td>2</td>
<td>HYDR-050-7</td>
<td>Hydraulic Pump</td>
</tr>
<tr>
<td>3</td>
<td>ELEC-635-1</td>
<td>Overload Alarm</td>
</tr>
<tr>
<td>4</td>
<td>ELEC-636</td>
<td>Overload Indicator Light</td>
</tr>
<tr>
<td>5</td>
<td>ELEC-632</td>
<td>Time Delay Relay</td>
</tr>
<tr>
<td>6</td>
<td>ELEC-133B</td>
<td>Rocker Switch</td>
</tr>
<tr>
<td>7</td>
<td>HARD-644-03</td>
<td>Emergency Down Cable</td>
</tr>
<tr>
<td>8</td>
<td>ELEC-002A-KIT</td>
<td>Up/Down Rotary Switch</td>
</tr>
<tr>
<td>9</td>
<td>ELEC-636</td>
<td>Overload Indicator Light</td>
</tr>
<tr>
<td>10</td>
<td>ELEC-602-KIT</td>
<td>Enable Button</td>
</tr>
<tr>
<td>11</td>
<td>1002103651-KIT</td>
<td>Hydraulic Cylinder</td>
</tr>
<tr>
<td>12</td>
<td>HYDR-671</td>
<td>Pressure Switch</td>
</tr>
<tr>
<td>13</td>
<td>1002103691</td>
<td>Manifold Block Assembly</td>
</tr>
<tr>
<td></td>
<td>(Not Pictured)</td>
<td>Hirschmann Connector with Diode</td>
</tr>
<tr>
<td>14</td>
<td>HYDR-007-2F</td>
<td>Down Valve &amp; Coil</td>
</tr>
<tr>
<td>14</td>
<td>HYDR-007-2E-5</td>
<td>Down Valve</td>
</tr>
<tr>
<td>14</td>
<td>HYDR-007-2E-6</td>
<td>Down Valve Coil (12V)</td>
</tr>
<tr>
<td>15</td>
<td>HARD-650</td>
<td>1/16 Shaft Collar</td>
</tr>
<tr>
<td>16</td>
<td>LAS-M115</td>
<td>Emergency Down Lever</td>
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<tr>
<td></td>
<td>(Not Labeled)</td>
<td>Hydraulic Hose</td>
</tr>
<tr>
<td>17</td>
<td>HYDR-674</td>
<td>Start Solenoid (12 V)</td>
</tr>
<tr>
<td>18</td>
<td>HYDR-677</td>
<td>Hydraulic Fitting</td>
</tr>
<tr>
<td>19</td>
<td>HYDR-022-3</td>
<td>Low Pressure Hydraulic Line</td>
</tr>
<tr>
<td>20</td>
<td>(HYDR-032)</td>
<td>Hydraulic Fluid: Not available as a replacement part. Replace with Flomite #150, Dexron II, Mobil-DTE 2, or equivalent.</td>
</tr>
<tr>
<td>21</td>
<td>HYDR-665</td>
<td>Up Valve</td>
</tr>
<tr>
<td>21</td>
<td>HYDR-673</td>
<td>Up Valve Coil</td>
</tr>
<tr>
<td>22</td>
<td>ELEC-123-5</td>
<td>Armguard Switch</td>
</tr>
<tr>
<td>23</td>
<td>ELEC-123-5</td>
<td>Overload Switch</td>
</tr>
<tr>
<td></td>
<td>(Not Pictured)</td>
<td>Retaining Ring, 1.25”</td>
</tr>
</tbody>
</table>
### Wheels/Brakes

<table>
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<tr>
<th>Item #</th>
<th>Part #</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1002103160</td>
<td>Rigid Caster Assembly</td>
</tr>
<tr>
<td>1</td>
<td>WHEE-706-KIT</td>
<td>Wheel (8”)</td>
</tr>
<tr>
<td>1</td>
<td>WHEE-002-1</td>
<td>Bearing Kit</td>
</tr>
<tr>
<td>2</td>
<td>1002103161</td>
<td>Swivel Caster Assembly</td>
</tr>
<tr>
<td>2</td>
<td>WHEE-706</td>
<td>Wheel (8”)</td>
</tr>
<tr>
<td>2</td>
<td>WHEE-002-1</td>
<td>Bearing Kit</td>
</tr>
<tr>
<td>3</td>
<td>HARD-687</td>
<td>Spring</td>
</tr>
<tr>
<td>4</td>
<td>1000116002</td>
<td>Brake Actuator</td>
</tr>
<tr>
<td>5</td>
<td>1000132402</td>
<td>Brake Weldment</td>
</tr>
<tr>
<td>6</td>
<td>143-01-028-02</td>
<td>Brake Cam</td>
</tr>
</tbody>
</table>
### Other

<table>
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<tr>
<th>Item #</th>
<th>Part #</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>HARD-086</td>
<td>Level</td>
</tr>
<tr>
<td>2</td>
<td>MISC-031</td>
<td>Anti-Slip Tape</td>
</tr>
<tr>
<td>3</td>
<td>HARD-603</td>
<td>Manual Box</td>
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<tr>
<td>4</td>
<td>1000307601</td>
<td>Gate Latch</td>
</tr>
<tr>
<td>5</td>
<td>1000132101</td>
<td>Cabinet Latch</td>
</tr>
</tbody>
</table>
Warranty

LIMITED PRODUCT WARRANTY

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 24 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:
   (a) 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;
   (b) Damage or loss resulting from or caused by carrier handling;
   (c) Damage or loss resulting from or caused by normal wear and tear, weathering, lack of use or use with incompatible equipment or software;
   (d) 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;
   (e) Any part, component or assembly altered or modified in any way not approved in writing by the Company;
   (f) Damage to any equipment or parts not manufactured by the Company; and
   (g) 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. Buyer shall retain all defective Products or parts, components or assemblies thereof for a minimum period of six (6) months. 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 Repair or Replace Warranty 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, remanufactured 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 necessary to remedy such defect. Buyer shall be responsible for payment of any costs or fees due to the authorized dealer to perform any warranty service.

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.