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

Custom Equipment, LLC
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Richfield, WI 53076
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F: +1-262-644-1320
www.hybridlifts.com
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.

**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.

**ANY MODIFICATION ON THIS MACHINE WITHOUT THE EXPRESS WRITTEN CONSENT OF THE MANUFACTURER IS PROHIBITED.**
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<th>Page</th>
</tr>
</thead>
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</tr>
<tr>
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<td>24</td>
</tr>
</tbody>
</table>
1.1 | SAFETY SYMBOLS

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

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

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

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

1.2 | GENERAL RULES AND PRECAUTIONS

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

**WARNING**
NEVER REACH BETWEEN SCISSOR LINKS OR PROP UP PLATFORM UNLESS MAINTENANCE LOCK IS IN PLACE.

**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.

**Other Guidelines**

<table>
<thead>
<tr>
<th>ALWAYS</th>
<th>observe and obey all warnings and cautions on machine and in manual.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALWAYS</td>
<td>shut off all power controls before making any adjustments, lubricating or performing any other maintenance.</td>
</tr>
<tr>
<td>ALWAYS</td>
<td>disconnect battery during replacement of electrical components.</td>
</tr>
<tr>
<td>ALWAYS</td>
<td>remove all rings, watches, and jewelry when performing any maintenance.</td>
</tr>
<tr>
<td>ALWAYS</td>
<td>keep oil, grease, water, etc. wiped from standing surfaces and handholds.</td>
</tr>
<tr>
<td>ALWAYS</td>
<td>keep all support equipment and attachments stowed in their proper place.</td>
</tr>
<tr>
<td>ALWAYS</td>
<td>use only approved nonflammable cleaning solvents</td>
</tr>
<tr>
<td>NEVER</td>
<td>work under an elevated platform until maintenance locks have been engaged.</td>
</tr>
<tr>
<td>NEVER</td>
<td>wear long hair unrestrained or loose fitting clothing and neckties which may become caught on or entangled in equipment.</td>
</tr>
</tbody>
</table>

After maintenance, inspect the machine as described in the Pre-Delivery Inspection Checklist.
2.1 | CHARGING THE BATTERY

This unit is equipped with either a deep cycle 12-volt AGM maintenance-free battery or a deep cycle Group 27 battery. 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.

WARNING

BATTERIES GENERATE EXPLOSIVE GASES. KEEP SPARKS AND FLAME AWAY FROM BATTERIES. DO NOT SMOKE WHILE CHARGING.

Do not operate unit while charging. Shortened battery life will result.

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

WARNING

DO NOT OPERATE UNIT WHILE CHARGING

CAUTION

NEVER ADD ACID TO BATTERY.
How to read battery display

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.

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

This display indicates that power is on and that both outputs are finished charging and are in a float maintenance mode.
2.2 | BATTERY MAINTENANCE AGM BATTERIES

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 runtime above the rated capacity and operating batteries below 80°F (27°C) will yield runtime 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.

2.3 | BATTERY MAINTENANCE WET CELL BATTERIES

If 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 5ml baking soda per 0.95 liters of warm water.
- Coat terminals with a commercially available coating.
- Close cabinet and latch in place.

FIGURE 4: Battery Location
2.4 | LUBRICATION

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
<th>Frequency of Lubrication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder</td>
<td>Standard Machine Grease</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

![FIGURE 5: Cylinder Grease Points](image)

2.5 | COMPONENTS REQUIRING ADJUSTMENT

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

2.6 | EXAMINATION, REPAIR, REPLACEMENT OF LIMITED LIFE COMPONENTS

With proper use, regular battery charging, and regular inspection, there are no limited life components that require routine replacement.

2.7 | SAFETY DEVICES AND SYSTEMS REQUIRING CHECKS

Check safety functions as part of daily inspection:

Refer to the Pre-Start Inspection Checklist included in this and in the Operations & Safety Manual.

- Emergency Stop
- Enable Buttons
- Emergency Lowering
- Automatic Brakes
- Tilt Interlock

Check that the machine will not elevate if overloaded as part of routine inspection. (Refer to the Pre-delivery/Annual Checklist included in this manual.)
2.8 | STORAGE

After periods of storage, exposure to extremes of ambient conditions—heat, cold, moisture, dust etc.—inspect the machine. Batteries will need to be charged. Refer to the Pre-Delivery/ Frequent Inspection Checklist in this manual.

2.9 | 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.
3.1 | INSPECTION & MAINTENANCE SCHEDULE

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.

Frequency and extent of periodic examinations may depend on national regulations.

<table>
<thead>
<tr>
<th>Inspection/Maintenance</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Start Inspection</td>
<td>Daily</td>
</tr>
<tr>
<td>Battery (Wet Cell Batteries Only)</td>
<td>Monthly</td>
</tr>
<tr>
<td>Cylinder Lubrication</td>
<td>Monthly</td>
</tr>
<tr>
<td>Check Hydraulic Fluid Level</td>
<td>Monthly</td>
</tr>
<tr>
<td>Pre-Delivery Inspection</td>
<td>Annually (or as needed)</td>
</tr>
<tr>
<td>Contact the manufacturer for additional information</td>
<td>After major alterations or repairs which affect stability, strength or performance.</td>
</tr>
</tbody>
</table>

**CAUTION**

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

The following inspection checklists are required and included in this manual:

- Pre-Start (Required before operation at each work shift)
- Pre-Delivery/Annual (Required at intervals not more than twelve months. This checklist may also be used when a Frequent (every 3 months ) Inspection is needed, or after periods of storage.)
MAINTENANCE ACCESS
The control tray can be opened for routine inspection (checking hydraulic fluid level, batteries, etc.). If additional access is needed, the side panel may be removed.
3.2 | PRE-START INSPECTION CHECKLIST

Pre-start Inspection (Push-Around Models)

**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: ____________________ Serial Number: ____________________

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

<table>
<thead>
<tr>
<th>Y-Yes/Acceptable</th>
<th>N-No/Unacceptable</th>
<th>R-Repaired</th>
</tr>
</thead>
<tbody>
<tr>
<td>VISUAL INSPECTIONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check that there are no damaged, dented, or bent structural members.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>There are no loose or missing parts.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Check that warning and instructional labels are legible and secure. Ensure the load capacity is clearly marked.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Check the platform rails and safety gate for damage.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Platform and base controls are not missing, damaged, frayed, or disconnected.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Hydraulic hoses are not torn or loose, and there are no leaks. Check that hoses and cables have no worn areas or chafing.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Check the tires for damage.</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>
</tr>
<tr>
<td>FUNCTIONAL TESTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gate closes automatically and latches (alignment can be adjusted with screw-on toe board or railing).</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Platform Controls: Check all switches and push buttons for proper operation.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Emergency Stop (Stops all movement)</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Up/Down Controls (Elevates, Lowers, Enable button must be pressed).</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Base Controls: Check all switches and push buttons for proper operation.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Emergency Stop (Stops all movement)</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Key Switch (Selects Platform Control, Ground Control, or Off).</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Alarm (Not damaged, sounds for descent).</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Up/Down Rocker Switch (Elevates/Lowers).</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Wheels: Front and rear wheels rotate freely.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
<tr>
<td>Brakes engage and hold when platform is elevated.</td>
<td>☒ ☐ ☒</td>
<td></td>
</tr>
</tbody>
</table>

Date: ____________________ Inspected by: ____________________
3.3 | PRE-DELIVERY / FREQUENT / ANNUAL INSPECTION CHECKLIST

**CAUTION**

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, AND ANNUALLY.

Model: ___________________________ 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.
- 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></th>
<th>Y — Yes/Acceptable</th>
<th>N — No/Unacceptable</th>
<th>R — Repaired</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BASE:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect slide tracks for damage</td>
<td>Y N R</td>
<td>All rails in place/secure</td>
<td>Y N R</td>
</tr>
<tr>
<td>All frame bolts tight</td>
<td>Y N R</td>
<td>No bent rails</td>
<td>Y N R</td>
</tr>
<tr>
<td>Pump Secure</td>
<td>Y N R</td>
<td>No broken welds</td>
<td>Y N R</td>
</tr>
<tr>
<td>DC motor secure</td>
<td>Y N R</td>
<td>Platform power outlet safe/working (if installed)</td>
<td>Y N R</td>
</tr>
<tr>
<td>Battery Hold Downs Secure</td>
<td>Y N R</td>
<td>Entrance gate closes freely</td>
<td>Y N R</td>
</tr>
<tr>
<td>Batteries Fully Charged</td>
<td>Y N R</td>
<td>Cables in place/secure</td>
<td>Y N R</td>
</tr>
<tr>
<td>Counterweights secured</td>
<td>Y N R</td>
<td>Functions:</td>
<td>Y N R</td>
</tr>
<tr>
<td>Wheels: Grease casters</td>
<td>Y N R</td>
<td>Elevate/Lower Operational</td>
<td>Y N R</td>
</tr>
<tr>
<td>Wheels: Bolts/Nuts Tight</td>
<td>Y N R</td>
<td>Master Power Switch Breaks Circuits</td>
<td>Y N R</td>
</tr>
<tr>
<td>Maintenance Locks: Pins storage location</td>
<td>Y N R</td>
<td>Emergency Stop Breaks Circuits</td>
<td>Y N R</td>
</tr>
<tr>
<td>All Shields/Guards in place</td>
<td>Y N R</td>
<td>Emergency Down Operational</td>
<td>Y N R</td>
</tr>
<tr>
<td>Hydraulic Oil Level</td>
<td>Y N R</td>
<td>Motion Alarms Functional</td>
<td>Y N R</td>
</tr>
<tr>
<td>Check all hydraulic hoses for leaks</td>
<td>Y N R</td>
<td>Brakes: Operational</td>
<td>Y N R</td>
</tr>
<tr>
<td>Check all hydraulic fittings for leaks</td>
<td>Y N R</td>
<td>Bubble Level in Place</td>
<td>Y N R</td>
</tr>
<tr>
<td><strong>SCISSORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Broken Welds</td>
<td>Y N R</td>
<td>When overloaded, platform stops elevating.</td>
<td>Y N R</td>
</tr>
<tr>
<td>Ret. Rings Secure on Pivots</td>
<td>Y N R</td>
<td>Check battery Voltage: &lt;12.5V, charge.</td>
<td>Y N R</td>
</tr>
<tr>
<td>No Bent Beam Members</td>
<td>Y N R</td>
<td>WIRING / OTHER:</td>
<td></td>
</tr>
<tr>
<td>All rollers turn freely</td>
<td>Y N R</td>
<td>Switches secure</td>
<td>Y N R</td>
</tr>
<tr>
<td><strong>DECALS:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legibility</td>
<td>Y N R</td>
<td>Contactor(s) secure</td>
<td>Y N R</td>
</tr>
<tr>
<td>Correct capacity noted</td>
<td>Y N R</td>
<td>Tight on terminals (no loose wiring)</td>
<td>Y N R</td>
</tr>
<tr>
<td>Proper placement quantity</td>
<td>Y N R</td>
<td>Operator / Service Manual Included</td>
<td>Y N R</td>
</tr>
<tr>
<td><strong>COMMENTS:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date: _________________________ Inspected by: ___________________________
4.1 | HYDRAULIC SCHEMATIC
Part No HS-177-20-001-55

- Test Port
- Hydraulic Pump Assembly
- Pressure Relief Set During Assembly Approx. 1800 PSI
- 0.627 CC/REV
- 0.038 IN^3/REV
- SAE ORM #4 Hex Socket 3/16
- 1.0 GPM
- 3.79 LPM

This drawing is confidential and proprietary to the manufacturer and is loaned in expectation that it will be kept confidential and used only for the purpose for which it is loaned.
HYDRAULIC SCHEMATIC

Part No HS-177-20-001-55

M STAGED DURING ASSEMBLY

APPROX. 1800 PSI

TEST PORT

HYDRAULIC PUMP ASSEMBLY

0.627 CC/REV

0.038 IN^3/REV

PRESSURE RELIEF

TEST PORT

SAE ORM #4

HEX SOCKET 3/16

1.0GPM

3.79 LPM

CUSTOM EQUIPMENT, LLC

ORIGINALLY DRAWN BY:

DATE:

SCALE: 1:1

DO NOT SCALE DRAWING

WEIGHT: APPROX. 0.00 LB.

REVISION HISTORY

REV | DESCRIPTION OF CHANGE | ECO # | DATE | REV BY
A | INITIAL RELEASE | 2019-320 | 06/21/2018 | DJS

CUSTOM EQUIPMENT, LLC

Richfield, WI 53076

Phone: (262)644-1300

HYD SCH, IQ LIFT

SPEC/MATL: Schematic

ECO #: HS-177-20-001-55

REV A

MAINTENANCE & TROUBLESHOOTING
PA-1030

SUPO-744
REV A
4.2 | ELECTRICAL SCHEMATIC

Part No WS-177-20-001-55
5.2 | EZ LIFT DIAGNOSTICS

An EZcal tool can be connected to the diagnostic port on the lower control panel to provide access to a number of menus for diagnostic purposes.

If an EZcal is not available, an LED on the control board may be viewed to display flash codes.
<table>
<thead>
<tr>
<th>Flash Code</th>
<th>Message</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady</td>
<td>EVERYTHING OK</td>
<td>No problems detected</td>
</tr>
<tr>
<td>Steady</td>
<td>LIFTING/LOWERING</td>
<td>Elevating or Lowering in progress</td>
</tr>
<tr>
<td>9/9</td>
<td>FAULT: CHECK EMS</td>
<td>Fault detected with P1-1 and P1-2: Power—E-stop, key switch, 20 A fuse, etc.</td>
</tr>
<tr>
<td>2/2</td>
<td>FUNCTIONS LOCKED-ENABLE FIRST</td>
<td>Attempting to activate up/down movement without enable</td>
</tr>
<tr>
<td>2/2</td>
<td>FUNCTIONS FAULTY</td>
<td>Up and Down movements activated together</td>
</tr>
<tr>
<td>2/2</td>
<td>FUNCTIONS LOCKED-EXTERNAL SHUTDOWN</td>
<td>Not used on this model. (A programmed interlock)</td>
</tr>
<tr>
<td>2/2</td>
<td>FUNCTIONS LOCKED-TILTED</td>
<td>Vehicle is on a slope. (Or calibrated incorrectly)</td>
</tr>
<tr>
<td>2/2</td>
<td>FUNCTIONS LOCKED-ARMGUARD</td>
<td>Vehicle being lowered to the height that the elevation switch activated to temporarily stop movement.</td>
</tr>
<tr>
<td>2/2</td>
<td>ENABLE LOCKED</td>
<td>The enable button has been active for too long without requesting movement. (This would happen if someone tried to override the enable button to keep it in the active position, or inadvertently pushed the button, etc.)</td>
</tr>
<tr>
<td>4/4</td>
<td>FUNCTIONS LOCKED-BATTERY</td>
<td>Battery charge is less than 10.8V</td>
</tr>
<tr>
<td>6/3</td>
<td>FUNCTIONS LOCKED-ELEVATION SWITCH</td>
<td>Problem with the elevation switch. Lift did not get up in the expected time.</td>
</tr>
<tr>
<td>3/5</td>
<td>FUNCTIONS LOCKED-MOTOR LOADED</td>
<td>Problem with the pump motor</td>
</tr>
<tr>
<td>3/5</td>
<td>FAULT: MOTOR OVERLOAD!</td>
<td>Problem with the pump motor</td>
</tr>
<tr>
<td>3/5</td>
<td>FAULT: MOTOR/WIRING S/C</td>
<td>Problem with the pump motor</td>
</tr>
<tr>
<td>3/4</td>
<td>FAULT: POWERED OUTPUTS WHEN OFF</td>
<td>Problem with P2-5 (Up), 6 (Down), 7 (Main Contactor), 8 (Beacon Light) powered when it should not be.</td>
</tr>
<tr>
<td>3/3</td>
<td>FAULT: LINE CONTACTOR WELDED</td>
<td>Problem with the pump motor or main contactor connections.</td>
</tr>
<tr>
<td>4/2</td>
<td>FAULT: BAD INTERNAL SLAVE!</td>
<td>Internal control module fault.</td>
</tr>
<tr>
<td>3/3</td>
<td>FAULT: BAD INTERNAL 10V!</td>
<td>Internal control module fault.</td>
</tr>
<tr>
<td>1/1</td>
<td>TEST MODE ACTIVE</td>
<td>Test mode has been enabled on the EZCal. Cycle power to clear.</td>
</tr>
<tr>
<td>4/4</td>
<td>FAULT: SUPPLY TOO HIGH</td>
<td>Battery Voltage &gt;32V</td>
</tr>
<tr>
<td>4/4</td>
<td>FAULT: SUPPLY TOO LOW</td>
<td>Battery Voltage &lt;8V</td>
</tr>
</tbody>
</table>
6.1 TROUBLESHOOTING FLOWCHART: POWER
Troubleshooting Step 1: Main Power

Flowchart: PA-1030 Power
Troubleshooting Step 1: Main Power

See also Wiring Diagram Or Electrical Schematic

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

Does the machine function at all: (Elevate/Lower) 

Is the power light on the lower control on? 

Is either E-Stop Button depressed/activated? 

Is key switch turned on in the desired selection? (may select upper controls or lower controls) 

Reset E-Stop buttons. Pull out at both upper control and lower control locations. 

Turn key switch on 

Is the battery charger plugged in? 

Is the battery connected? 

Is the battery fully charged? 

Unplug the charger. Machine should not be operated while battery is charging. 

See Wiring Diagram 

Connect battery. 

Further questions?

Is there a diagnostic flash code or message? 

Use diagnostic message to identify problem 

Replace battery 

Further questions?
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 Manual to identify part number to order. If any wiring or components have been altered from the original manufacture, problems may not be identifiable.

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

**Flowchart: PA-1030 Power Troubleshooting Step 1: Main Power**

- **Is the power light on the lower control on?**
  - No
  - **Is there a diagnostic flash code or message?**
    - No
    - **Is 20 AMP fuse blown?**
      - Yes
        - Replace with 20 Amp Fuse.
      - No
        - **Is 250A fuse blown?**
          - Yes
            - Replace with 250 Amp Fuse.
          - No
            - Yes or Unknown
              - **Visually inspect wire harness from lower controls to upper. Is there damage?**
                - Yes
                  - Replace wire harness or repair wire
                - No
                  - **Check wiring connections to identify a power supply problem.**
                    - See Electrical Schematic

- **Further questions?**

- **Contact the manufacturer with questions about a different problem or for troubleshooting assistance.**

**Fault indicates problem with an elevate or lower signal.**

---

**Revision: P01**

---

See Elevating Problems Flowchart

See Lowering Problems Flowchart

Machine is Down

Machine is Up

See Elevating Problems Flowchart

See Lowering Problems Flowchart

---

HY-BRID LIFTS

MAINTENANCE & TROUBLESHOOTING
PA-1030

SUPO-744
REV A

27
# 6.2 Troubleshooting Flowchart: Elevating

## Troubleshooting Step 2A: Elevating

**Flowchart: PA-1030 Elevating**  
Troubleshooting Step 2A: Elevating

**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 chock is in place.

- **Is there a diagnostic flash code or message?**
  - Use diagnostic message to identify problem
  - Yes, but not properly

- **Does the machine elevate?**
  - Not At All
  - Yes: Remove obstruction
  - No: See Lowering Troubleshooting Flowchart

- **Starts ascending, then stops?**
  - Yes: Is platform overloaded?
    - Yes: Replace hydraulic hose.
    - No: Replace or repair identified problem. See Parts Manual.

- **Ascent speed slow or erratic?**
  - Yes: Is battery fully charged?
    - Yes: Replace hydraulic hose.
    - No: Charge battery.
  - No: Are any structural members bent?
    - Yes: Replace damaged switch at upper control.
    - No: Check e-down cable and down valve.

- **Is there a restriction in hydraulic hose?**
  - Yes: Check e-down cable and down valve.
  - No: **Is the emergency down valve open?**
    - Yes: Replace pump assembly.
    - No: Is up/down switch damaged?
      - Yes: Replace OL Enable LS
      - No: Is there a different problem (something is leaking, unusually noisy, etc.)?  
        - Yes: Remove overload. Lower to stowed position before continuing use.
        - No: **Does the pump run?**
          - Yes: Remove obstruction
          - No: See also Wiring Diagram or Electrical Schematic and Hydraulic Schematic

**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 P01**

**WARNING:** Set up for maintenance safety:  
Remove load from platform.  
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Platform movement may occur.  
Never Reach between scissors links or prop up platform unless maintenance chock is in place.

- **Is there a diagnostic flash code or message?**
  - Use diagnostic message to identify problem
  - Yes, but not properly

- **Does the machine elevate?**
  - Not At All
  - Yes: Remove obstruction
  - No: See Lowering Troubleshooting Flowchart

- **Starts ascending, then stops?**
  - Yes: Is platform overloaded?
    - Yes: Replace hydraulic hose.
    - No: Replace or repair identified problem. See Parts Manual.

- **Ascent speed slow or erratic?**
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      - Yes: Replace OL Enable LS
      - No: Is there a different problem (something is leaking, unusually noisy, etc.)?  
        - Yes: Remove overload. Lower to stowed position before continuing use.
        - No: **Does the pump run?**
          - Yes: Remove obstruction
          - No: See also Wiring Diagram or Electrical Schematic and Hydraulic Schematic

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

**Reference Revision P01**

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Remove load from platform.  
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Platform movement may occur.  
Never Reach between scissors links or prop up platform unless maintenance chock is in place.

- **Is there a diagnostic flash code or message?**
  - Use diagnostic message to identify problem
  - Yes, but not properly

- **Does the machine elevate?**
  - Not At All
  - Yes: Remove obstruction
  - No: See Lowering Troubleshooting Flowchart

- **Starts ascending, then stops?**
  - Yes: Is platform overloaded?
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    - No: Replace or repair identified problem. See Parts Manual.

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    - No: Charge battery.
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        - No: **Does the pump run?**
          - Yes: Remove obstruction
          - No: See also Wiring Diagram or Electrical Schematic and Hydraulic Schematic

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- **Is there a diagnostic flash code or message?**
  - Use diagnostic message to identify problem
  - Yes, but not properly

- **Does the machine elevate?**
  - Not At All
  - Yes: Remove obstruction
  - No: See Lowering Troubleshooting Flowchart

- **Starts ascending, then stops?**
  - Yes: Is platform overloaded?
    - Yes: Replace hydraulic hose.
    - No: Replace or repair identified problem. See Parts Manual.

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        - No: **Does the pump run?**
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**Reference Revision P01**

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- **Is there a diagnostic flash code or message?**
  - Use diagnostic message to identify problem
  - Yes, but not properly

- **Does the machine elevate?**
  - Not At All
  - Yes: Remove obstruction
  - No: See Lowering Troubleshooting Flowchart

- **Starts ascending, then stops?**
  - Yes: Is platform overloaded?
    - Yes: Replace hydraulic hose.
    - No: Replace or repair identified problem. See Parts Manual.

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        - Yes: Remove overload. Lower to stowed position before continuing use.
        - No: **Does the pump run?**
          - Yes: Remove obstruction
          - No: See also Wiring Diagram or Electrical Schematic and Hydraulic Schematic

**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 P01**
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 Manual To identify part number to order.

If any wiring or components have been altered from the original manufacture, problems may not be identifiable.
6.3 | TROUBLESHOOTING FLOWCHART: LOWERING
Troubleshooting Step 2B: Lowering

Flowchart: PA-1030 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.

See also Wiring Diagram Electrical Schematic
And Hydraulic Schematic

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

Reference Revision P01
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 Manual to identify part number to order.
If any wiring or components have been altered from the original manufacturer, problems may not be identifiable.
SECTION 7 | PARTS

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

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

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

In addition to the decals listed in the Operation and Safety Manual, a partial list of replacement parts is included in this manual. These represent current model revisions. A full parts manual is available on our website, www.hybridlifts.com.

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.

7.1 | SELECTED REPLACEMENT PARTS

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

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

Refer to the Operation & Safety Manual for decal part numbers and locations.

In addition to the decals listed in the Operation & Safety Manual a partial list of replacement parts is included in this manual. These represent current model revisions. A full parts manual is available on our website hybridlifts.com.

The following materials require special means of disposal:
HYDR-032: Hydraulic fluid: Do not dispose in a drain to water source. Take to a recycling center.
ELEC-047-4 or ELEC-047-5: Batteries: Take to a recycling center.

The following list is a partial list of common replacement parts. A more complete parts handbook is available on request. Some parts are model-, serial number-, or manufacture date-specific. Contact your dealer for replacement part availability and pricing.
<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECAL KIT, PA-1030</td>
<td>177-21-080-55-K</td>
<td></td>
</tr>
<tr>
<td>PLATFORM CONTROL ASSEMBLY</td>
<td>177-21-006-55</td>
<td></td>
</tr>
<tr>
<td>MAIN WIRE HARNESS</td>
<td>177-21-019-50</td>
<td></td>
</tr>
<tr>
<td>BUTTON, PUSH GREEN</td>
<td>ELEC-602-K</td>
<td></td>
</tr>
<tr>
<td>BUTTON, PUSH/PULL RED E-STOP</td>
<td>ELEC-071-K</td>
<td></td>
</tr>
<tr>
<td>CONTACT BLOCK, NC</td>
<td>ELEC-072</td>
<td></td>
</tr>
<tr>
<td>CONTACT BLOCK, NO</td>
<td>ELEC-603</td>
<td></td>
</tr>
<tr>
<td>ROCKER SWITCH</td>
<td>ELEC-133B</td>
<td></td>
</tr>
<tr>
<td>CHARGER, 12V, 06A PCS</td>
<td>ELEC-746</td>
<td></td>
</tr>
<tr>
<td>GATE SPRING</td>
<td>HARD-302</td>
<td></td>
</tr>
<tr>
<td>BRAKE SPRING</td>
<td>HARD-690</td>
<td></td>
</tr>
<tr>
<td>HYDRAULIC OIL FLUID</td>
<td>HYDR-032</td>
<td>Not available as a replacement part. Replace with Flomite #150, Dexron II, Mobil-DTE 2 or equivalent 32 weight implement oil.</td>
</tr>
<tr>
<td>DOWN VALVE</td>
<td>HYDR-007-2E-5</td>
<td></td>
</tr>
<tr>
<td>SWIVEL CASTER ASSEMBLY</td>
<td>WHEE-764</td>
<td></td>
</tr>
<tr>
<td>WHEEL, 700 MM</td>
<td>WHEE-765</td>
<td></td>
</tr>
<tr>
<td>MANUAL BOX 8.5X11X1 W/GASKET</td>
<td>HARD-603</td>
<td></td>
</tr>
</tbody>
</table>
LIMITED WARRANTY

Warranty Statement—Two Year Agreement

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

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

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.

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.

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.
EXCLUSIVE WARRANTY REMEDIES

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.

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.

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.

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.
<table>
<thead>
<tr>
<th>DATE</th>
<th>BY</th>
<th>MAINTENANCE, EXAMINATION, OR REPAIR</th>
<th>COMMENTS</th>
</tr>
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<tbody>
<tr>
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