

Hy-Brid Lifts[™] by Custom Equipment



MAINTENANCE AND TROUBLESHOOTING MANUAL

Hy-Brid Lifts
Model
HB-P830
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

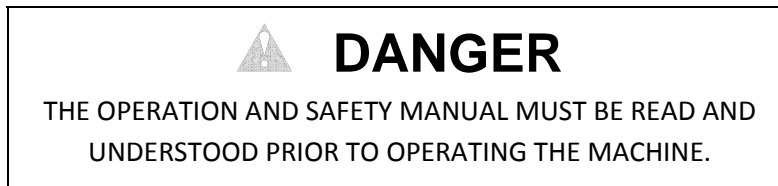
Revision C (6/6/13): Revised p. 3, 31

Original instructions are written in English

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.



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

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




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

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

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

Safety

Safety Symbols

 DANGER FAILURE TO FOLLOW THIS WARNING WILL CAUSE DEATH OR PERSONAL INJURY.	"DANGER" indicates an imminently hazardous situation, which, if not avoided, <i>will</i> result in death or serious injury.
 WARNING FAILURE TO FOLLOW THIS WARNING MAY CAUSE DEATH OR PERSONAL INJURY.	"WARNING" indicates a potentially hazardous situation, which, if not avoided, <i>could</i> result in death or serious injury
 CAUTION FAILURE TO FOLLOW THIS WARNING MAY CAUSE INJURY OR DAMAGE EQUIPMENT	"CAUTION" indicates a potentially hazardous situation which, if not avoided, <i>could</i> 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.

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 A92.3 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 A92.3. 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 MAINTENANCE INFORMATION IS FOR USE BY TRAINED PERSONNEL ONLY

 WARNING NEVER REACH BETWEEN SCISSORS LINKS OR PROP UP PLATFORM UNLESS MAINTENANCE PINS ARE IN PLACE.
--

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.

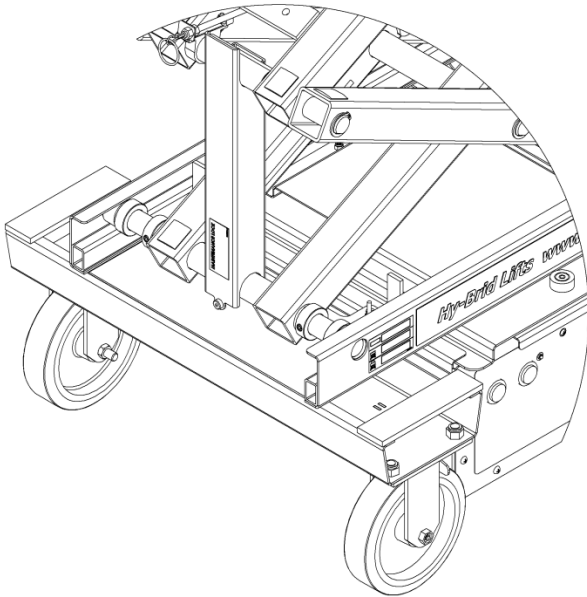


Figure 1: Maintenance Lock Use

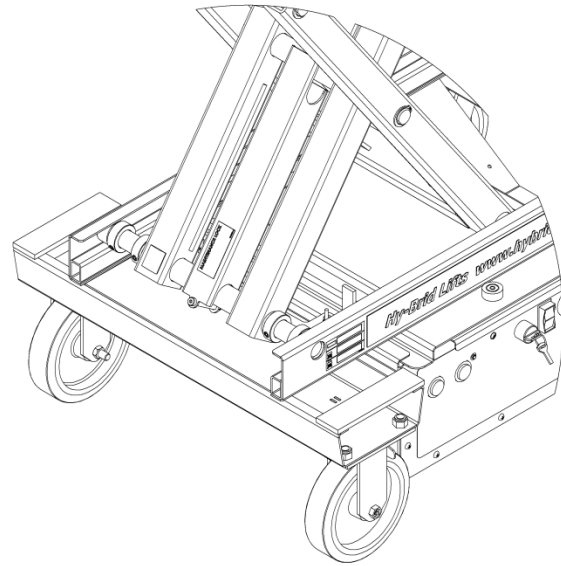


Figure 2: Maintenance Lock Storage



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.

Maintenance

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.

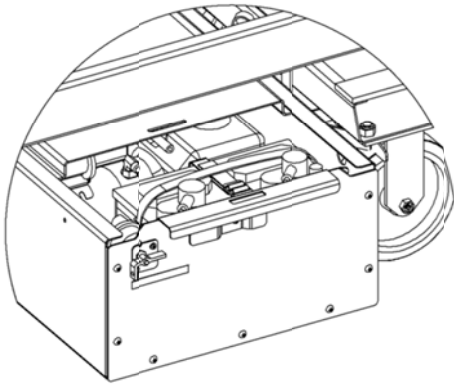




Figure 3: Battery Maintenance

- 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

 WARNING DO NOT OPERATE UNIT WHILE CHARGING.	 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.
- 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.

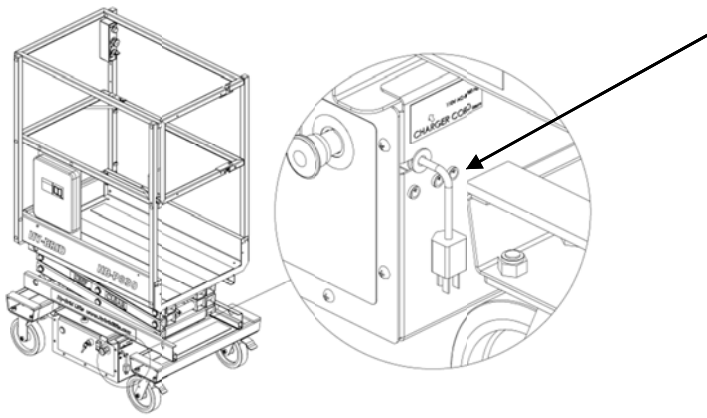
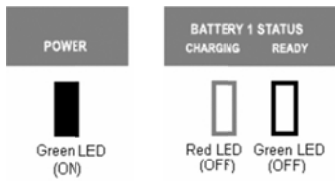
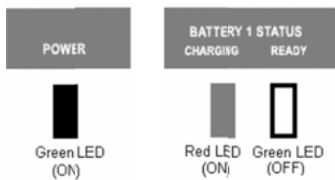


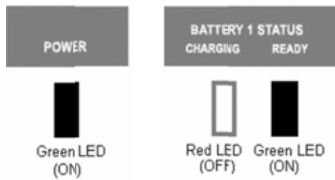
Figure 4: Battery Charger LED Display



This display indicates that power is on but there is no connection to a battery. The charger must see approximately 5 volts on a battery in order to deliver d/c current.



This display indicates that power is on and that the output is delivering d/c current to the batteries.



This display indicates that power is on and that the output is finished charging and is in a float maintenance mode.

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

Item	Specification	Frequency of Lubrication
Wheels	Teflon Spray	Quarterly

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.

Safety devices and systems requiring checks

Check safety functions as part of daily inspection. Check that the brakes are holding.

Safety devices and systems requiring checks

Check safety functions as part of daily inspection. Check that the electromagnetic brakes are holding.


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

 <h3 style="margin: 0;">CAUTION</h3> <p>FAILURE TO PERFORM INSPECTIONS AND PREVENTIVE MAINTENANCE AT RECOMMENDED INTERVALS MAY RESULT IN THE UNIT BEING OPERATED WITH A DEFECT THAT MAY RESULT IN INJURY OR DEATH OF THE OPERATOR.</p>

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)

Monthly Battery Care

 <h3 style="margin: 0;">WARNING</h3> <p>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.</p>
--

MODEL NUMBER _____ SERIAL NUMBER _____

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

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

Description	Y	N	R
1. Remove battery cabinet cover.			
2. Remove battery caps and check fluid level.			
3. Fill each cell (if needed) to split ring with distilled water.			
4. Reinstall caps.			
5. Wash all dirt, debris, acid, etc., off battery whenever corrosion is detected. Use a solution of 5-tsp. baking soda per quart of warm water.			
6. Coat terminals with a commercially available coating.			

DATE _____ INSPECTED BY _____

Prestart Inspection



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-P830 SERIAL NUMBER _____

1. Keep inspection records up-to-date.
 2. Record and report all discrepancies to your supervisor.
 3. A dirty machine cannot be properly inspected.
- Y-Yes/Acceptable N-No/Unacceptable R-Repaired

Description	Y	N	R
<i>Visual Inspections</i>			
Check that there are no damaged, dented, or bent structural members.			
There are no loose or missing parts.			
Check that warning and instructional labels are legible and secure. Ensure that load capacity is clearly marked.			
Check the platform rails and safety gate for damage.			
Platform and base controls are not missing, damaged, or disconnected.			
Electrical cables and wires are not torn, frayed, or disconnected.			
Hydraulic hoses are not torn or loose, and there are no leaks. Check that hoses and the cables have no worn areas or chafing.			
Check the hydraulic fluid level with the platform fully lowered.			
Check the tires for damage.			
Check that all snap rings are secure in grooves on pivot pins.			
<i>Functional Tests</i>			
Gate closes automatically and latches			
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)			
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) Alarm (Not damaged, sounds for descent) Up/Down Rocker Switch (Elevates, Lowers)			
Wheels: Front and rear wheels rotate freely.			
Brakes engage and hold when platform elevated.			

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-P830 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.

Description	Y	N	R
<i>Visual Inspections</i>			
Perform all checks on the Pre-Start Inspection Checklist.			
Inspect the condition of hydraulic fluid in reservoir. Oil should have a clear amber color.			
Inspect the entire machine for signs of damage, broken welds, loose bolts, or improper repairs. (Check for corrosion, cracking, abrasion, etc.)			
Check that all snap rings are secure in grooves on pivot pins.			
Check if tires are leaning in or out.			
Verify that bubble level is in place.			
Verify that maintenance and inspection records are up to date.			
<i>Functional Tests</i>			
Perform all checks on the Pre-Start Inspection Checklist.			
Functions operate smoothly.			
Functions operate over full range of motion.			
Emergency Lowering—Manual override functions properly.			
Ground Controls override platform controls.			
Check that the platform does not drift down with a full load.			
Wheels lubricated if needed.			
Comments:			

DATE _____ INSPECTED BY _____

Pre-Delivery/Annual 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 12 MONTHS.

MODEL NUMBER: HB-P830 SERIAL NUMBER _____

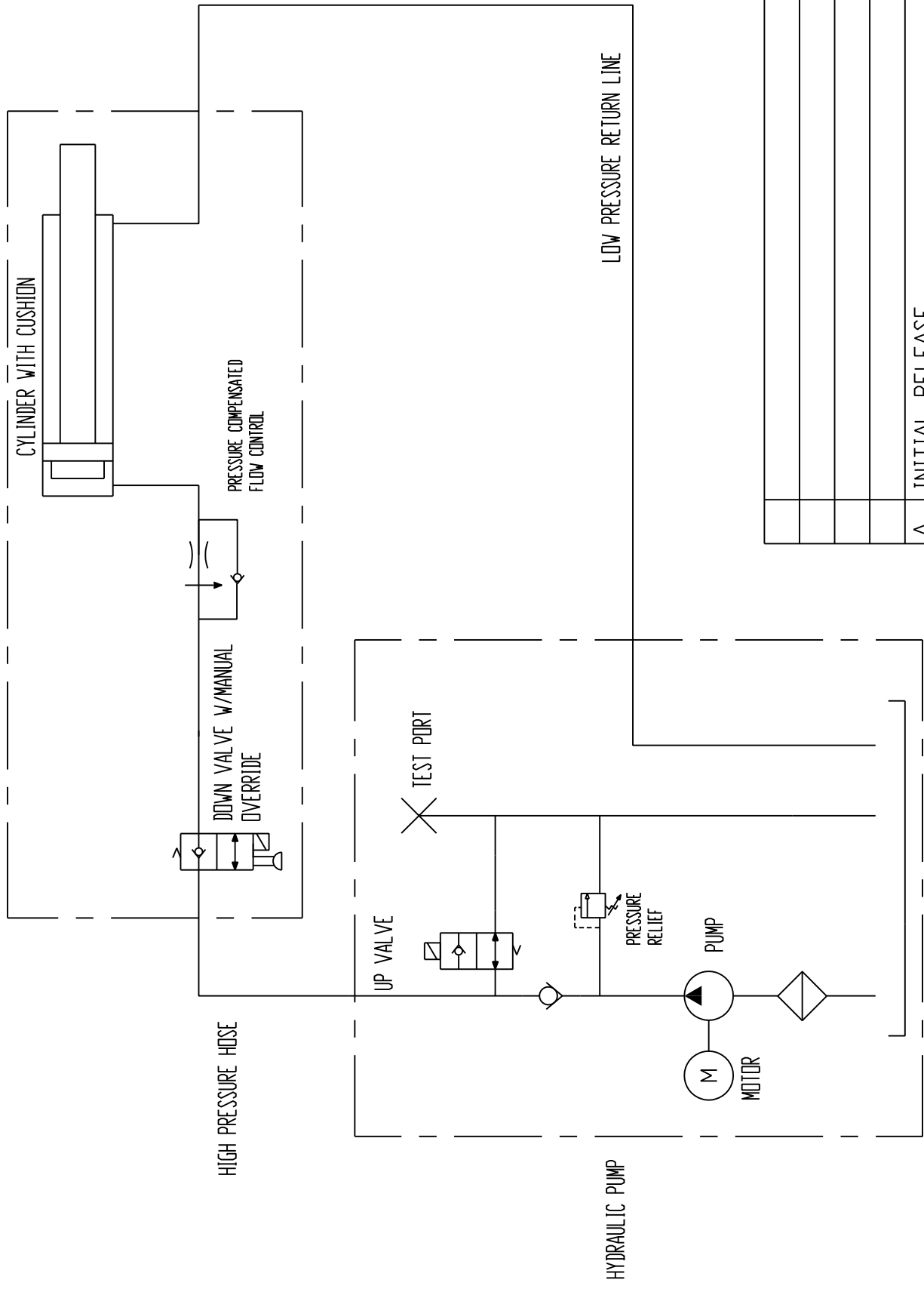
- Check each item listed below.
- Use proper operating, service, and maintenance manual for specific information and settings
- If an item is found to be unacceptable make the necessary repairs and check the "repaired" box.
- When all items are "acceptable", the unit is ready for service.

Check	Y	N	R	Check	Y	N	R
Base:							
Inspect slide tracks for damage				Decals:			
All frame bolts tight				Legibility			
Pump Secure				Correct capacity noted			
DC motor secure				Proper placement quantity			
Battery Hold Downs Secure				Wiring:			
Batteries Fully Charged				Switches secure			
Counterweights secured				Contacto(r)s secure			
Wheels: Grease Casters				Tight on terminals (No loose wiring)			
Wheels: Bolts/Nuts Tight				Functions:			
Maintenance Locks: Pins in storage location				Elevate/Lower Operational			
All Shields/Guards in place				Emergency Stop Breaks Circuits			
Hydraulic Oil Level 1" from top				Emergency Down Operational			
Check all hydraulic hoses for leaks				Battery Charger Secure/Operational			
Check all hydraulic fittings for leaks				Brakes: Operational			
Scissors:				Bubble Level in Place			
Broken Welds							
Bent Beam Members							
All rollers Turn Freely							
Ret. Rings Secure On Pivots							
Broken welds							
Platform:							
All rails in place/secure							
No bent rails							
No broken welds							
Platform power outlet safe/working (if installed)							
Entrance gate Closes Freely							
Operator/Service Manual Included							
Cables in place/secure							
Comments:							

DATE _____ INSPECTED BY _____

Part No: HS-HB-P830

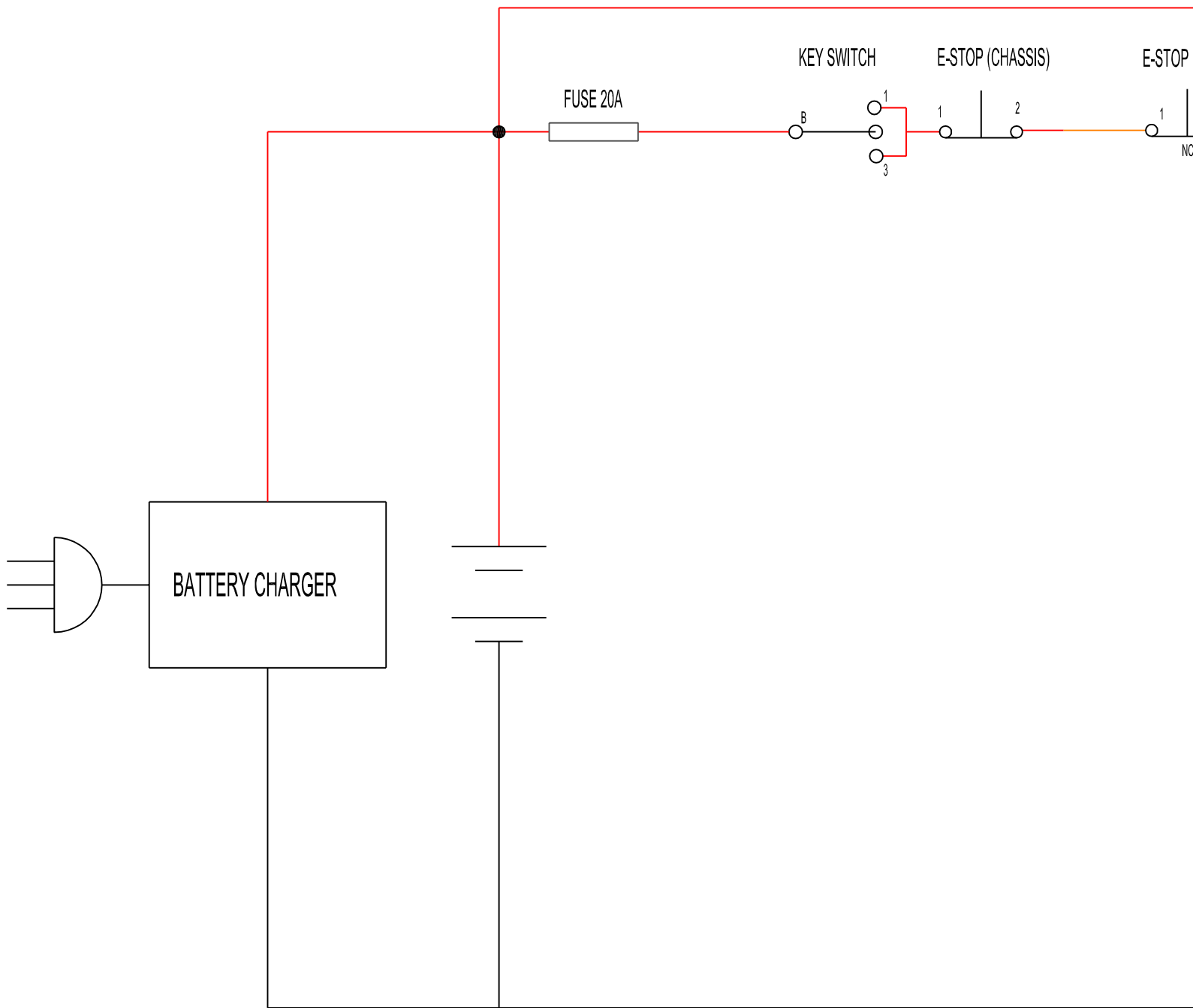
Part #SUPO-633
REV C

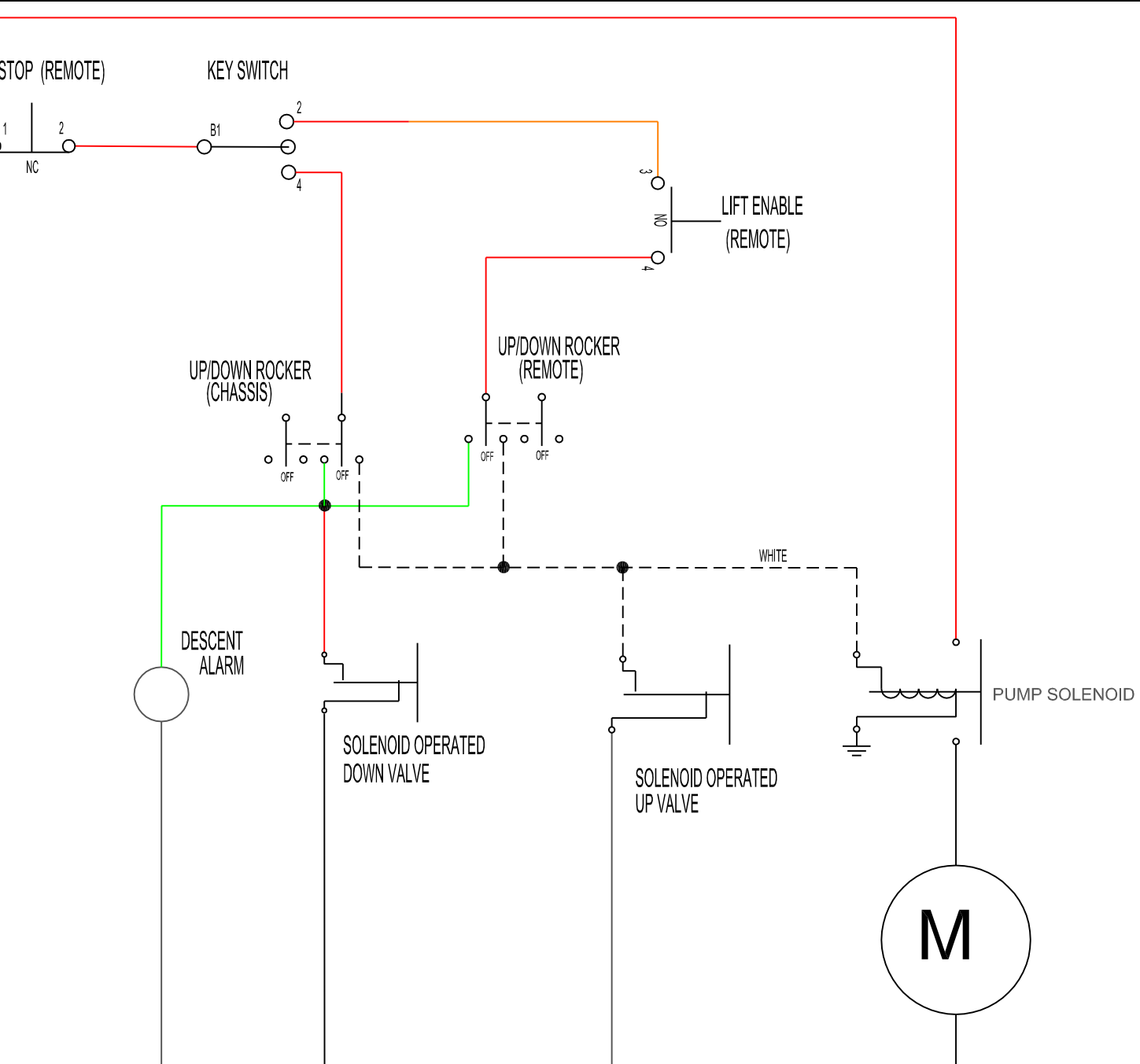


A	INITIAL RELEASE	05/21/2010	Date
No.	Revision		
Custom Equipment, Inc.		West Bend, WI 53095	
Hydraulic Schematic HS-HB-P830			

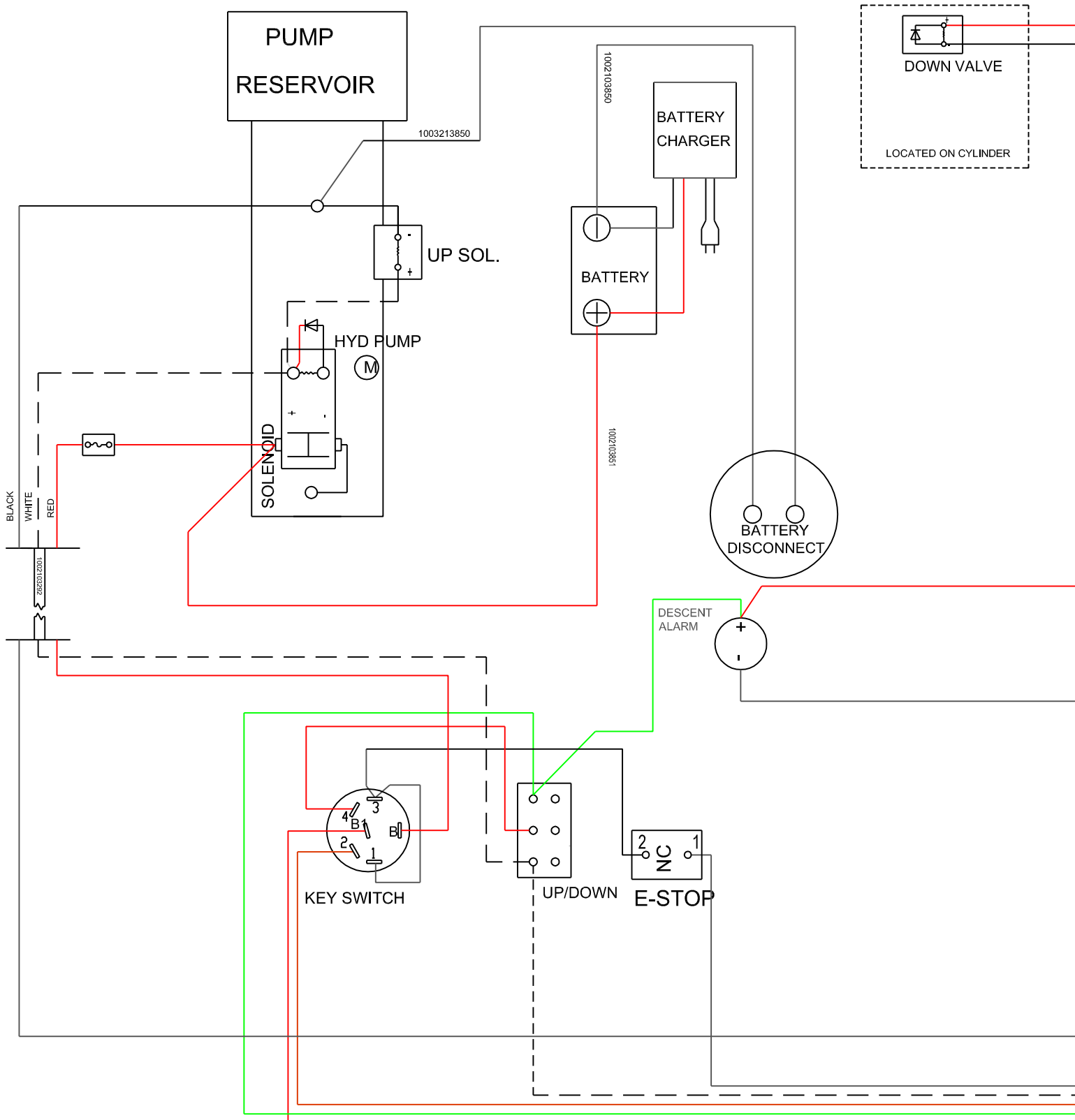
Welding Tolerances: X = ± .060 .XX = ± .030 .XXX = ± .010
Machining Tolerances: X = ± .030 .XX = ± .015 .XXX = ± .005
DD NDT SCALE HB-P830CE
Date: 5/3/10 A-Size
Part No: HS-HB-P830

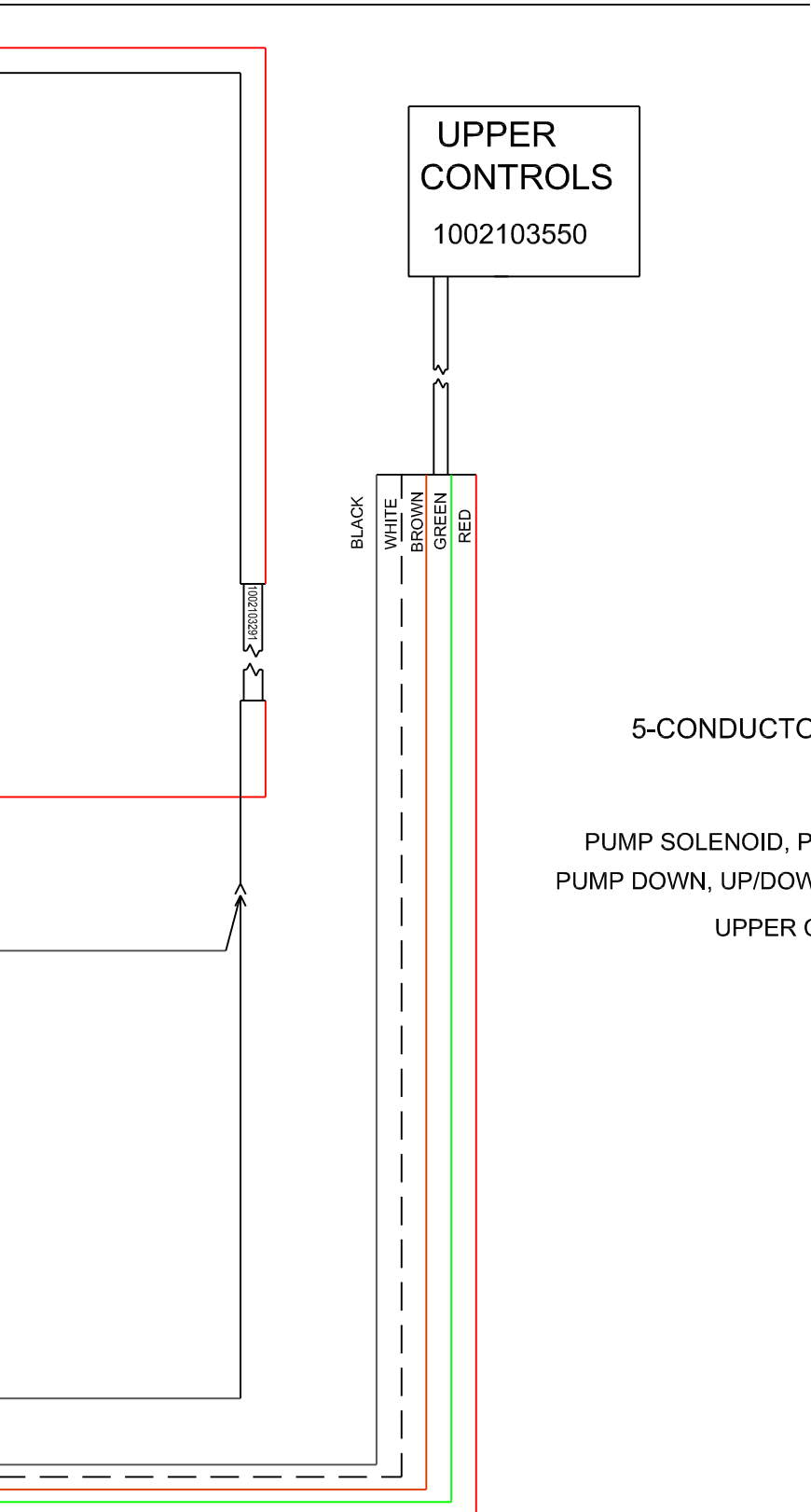
Electrical Schematic: HB-P830, Revision A





Wiring Diagram, Lower Control: HB-P830 Revision A

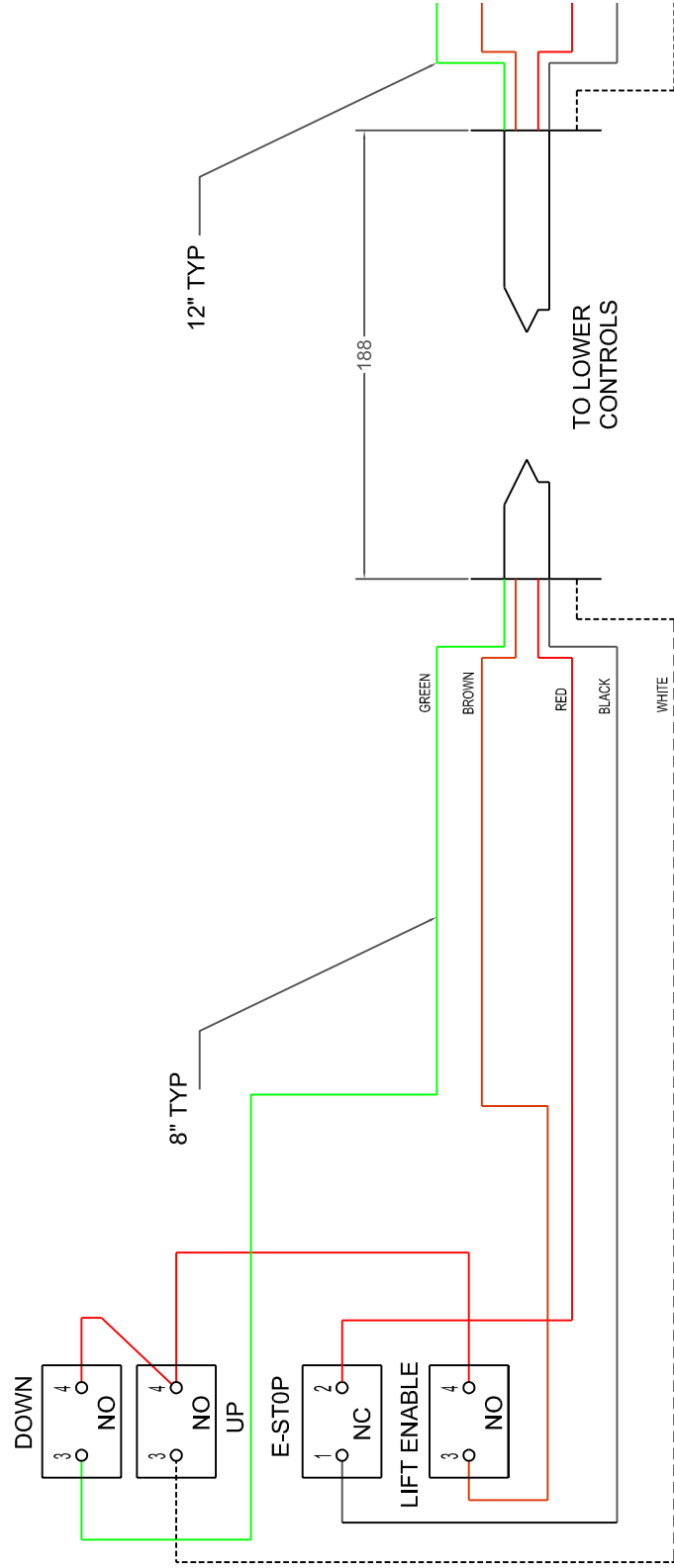




5-CONDUCTOR WIRE FROM UPPER CONTROL:

E-STOP	BLACK	—————
24V+ POWER	RED	—————
PUMP SOLENOID, PUMP UP, UP/DOWN	WHITE	- - - - -
PUMP DOWN, UP/DOWN, DESCENT ALARM	GREEN	—————
UPPER CONTROL ENABLE	BROWN	—————

Wiring Diagram, Upper Control: HB-P830 Revision A



5-CONDUCTOR

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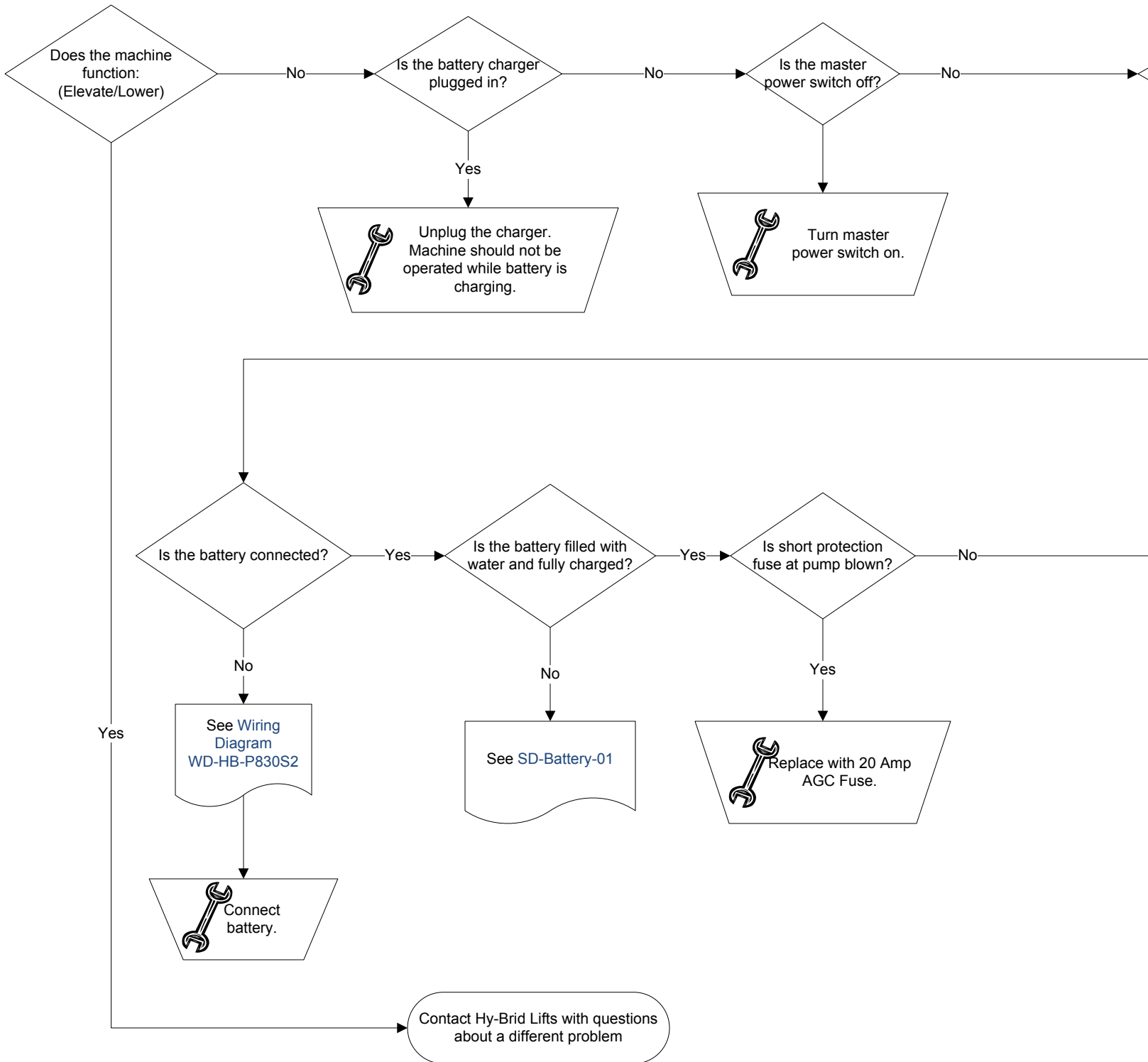
Flowchart: HB-P830S2-Power

Troubleshooting Step 1: Main Power

See also Main Power & Safety Circuit
 Wiring Diagram: [WD-HB-P830S2 Power](#)
 Or
 Schematic: [WS-HB-P830S2-Power](#)



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

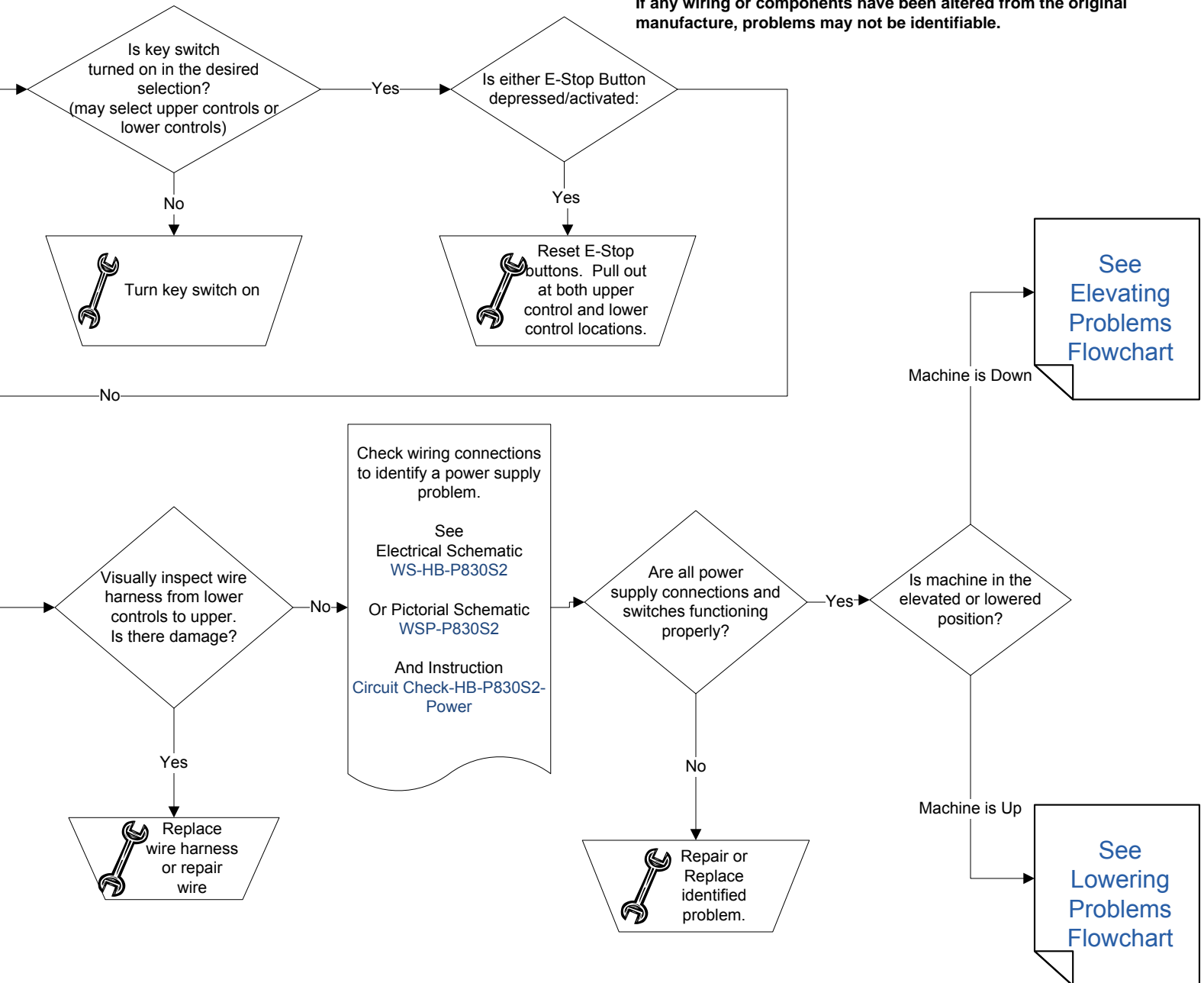
Troubleshooting Flowcharts--General Notes:

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.

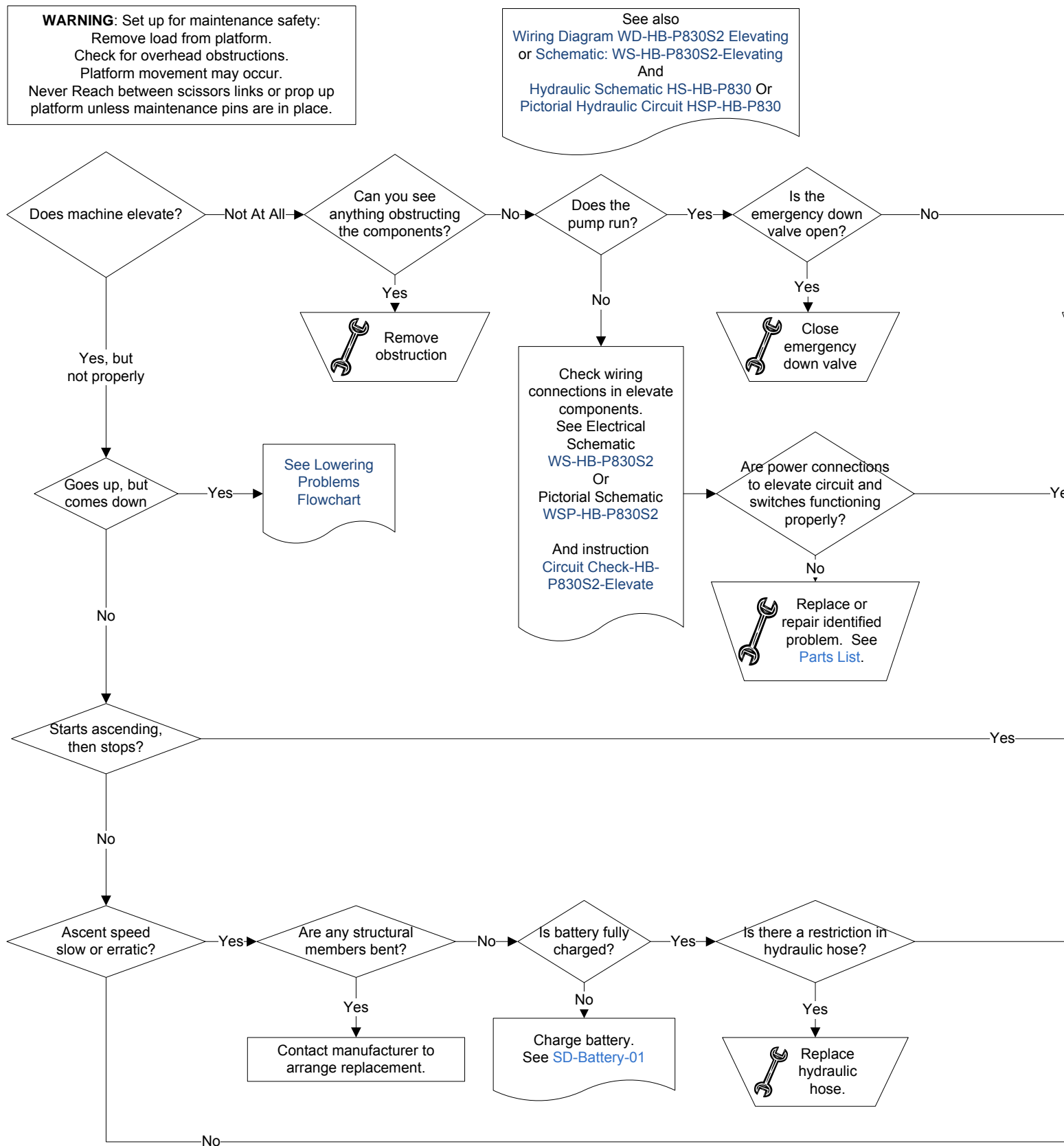
If a part has been identified as needing replacement, see the [Parts View](#) to identify part number to order.

If any wiring or components have been altered from the original manufacture, problems may not be identifiable.



Flowchart-HB-P830S2-Elevating

Troubleshooting Step 2A: Elevating





WARNING

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



WARNING

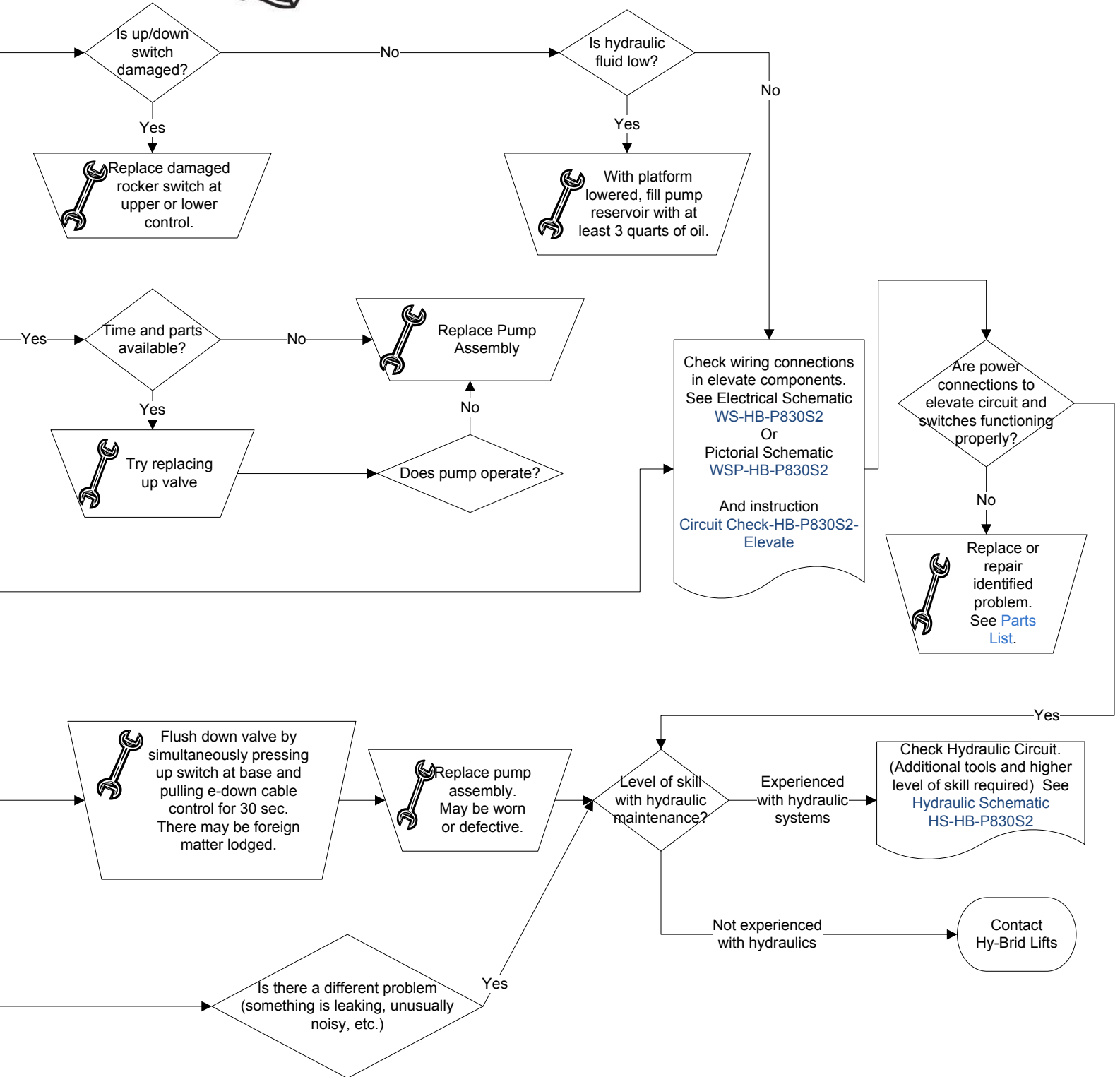
Failure to comply with safety precautions may result in damage, injury, or death. Refer to Maintenance Manual for complete warnings

Troubleshooting Flowcharts--General Notes:

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If a part has been identified as needing replacement, see the [Parts View](#) To identify part number to order.

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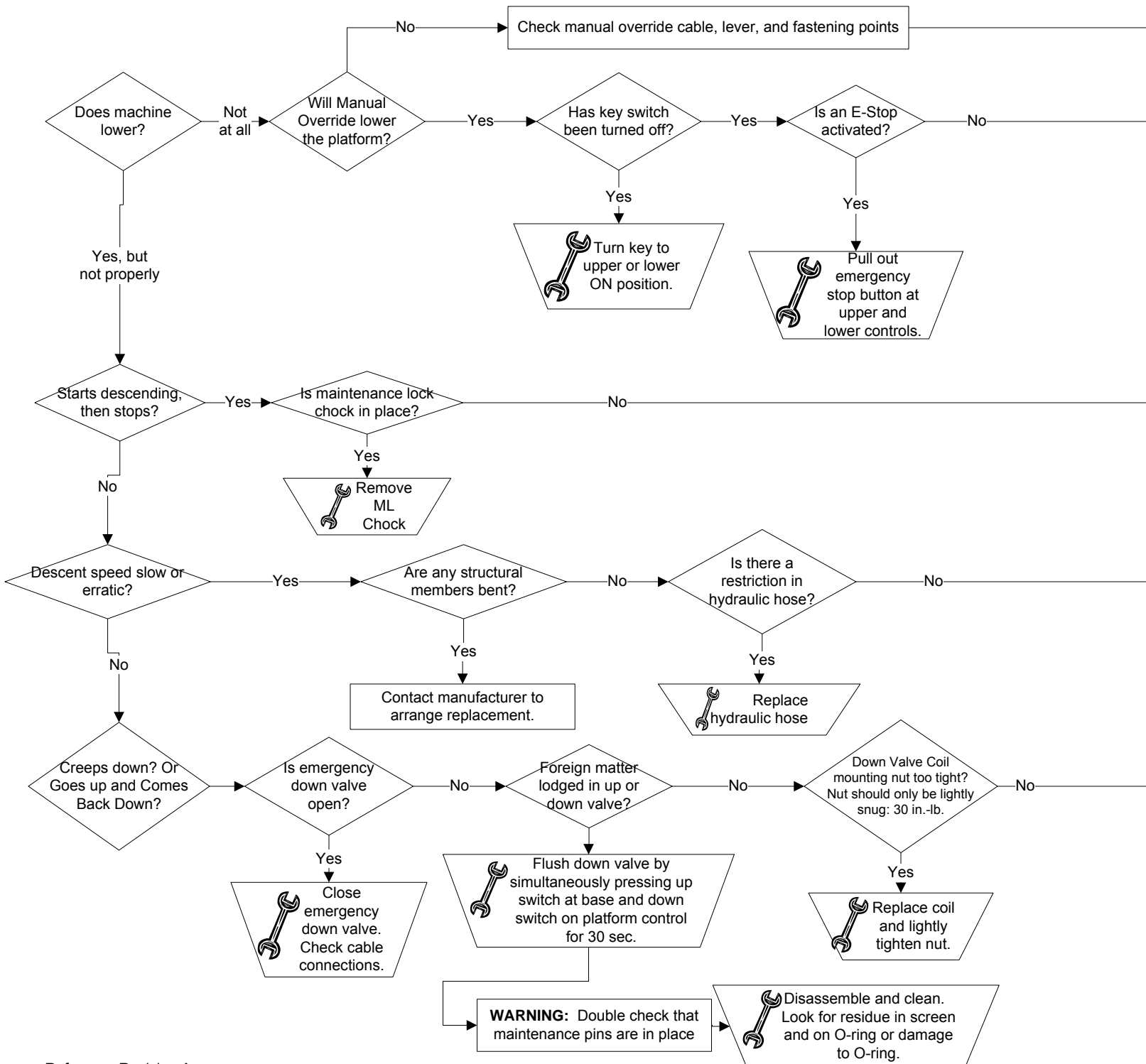


Flowchart: HB-P830S2-Lowering

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 WD-HB-P830S2 Elevating
 or Schematic: WS-HB-P830S2-Elevating
 And
 Hydraulic Schematic HS-HB-P830 Or
 Pictorial Hydraulic Circuit HSP-HB-P830





WARNING

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



WARNING

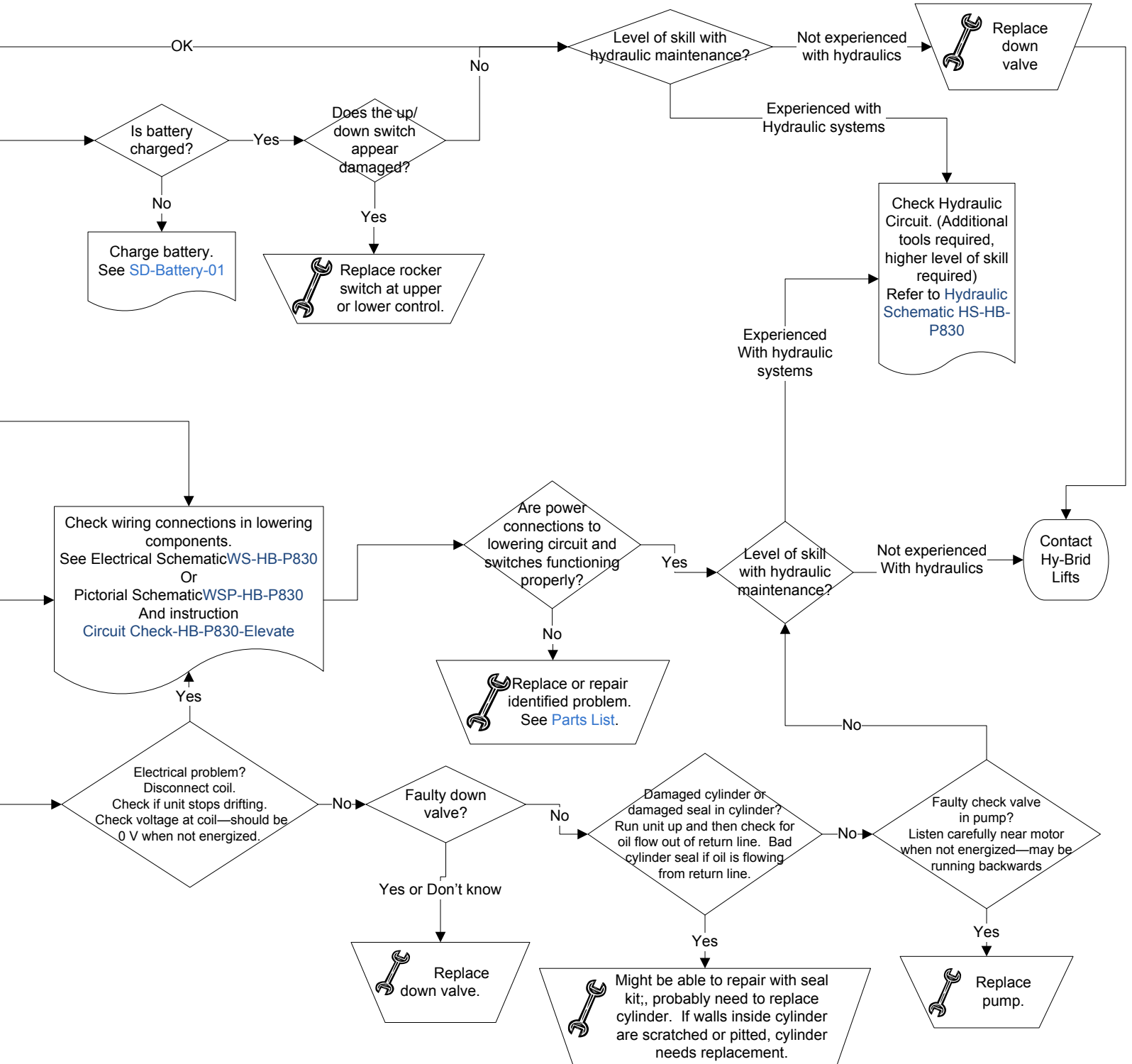
Failure to comply with safety precautions may result in damage, injury, or death. Refer to Maintenance Manual for complete warnings

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.



Replacement Parts



CAUTION

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



DANGER

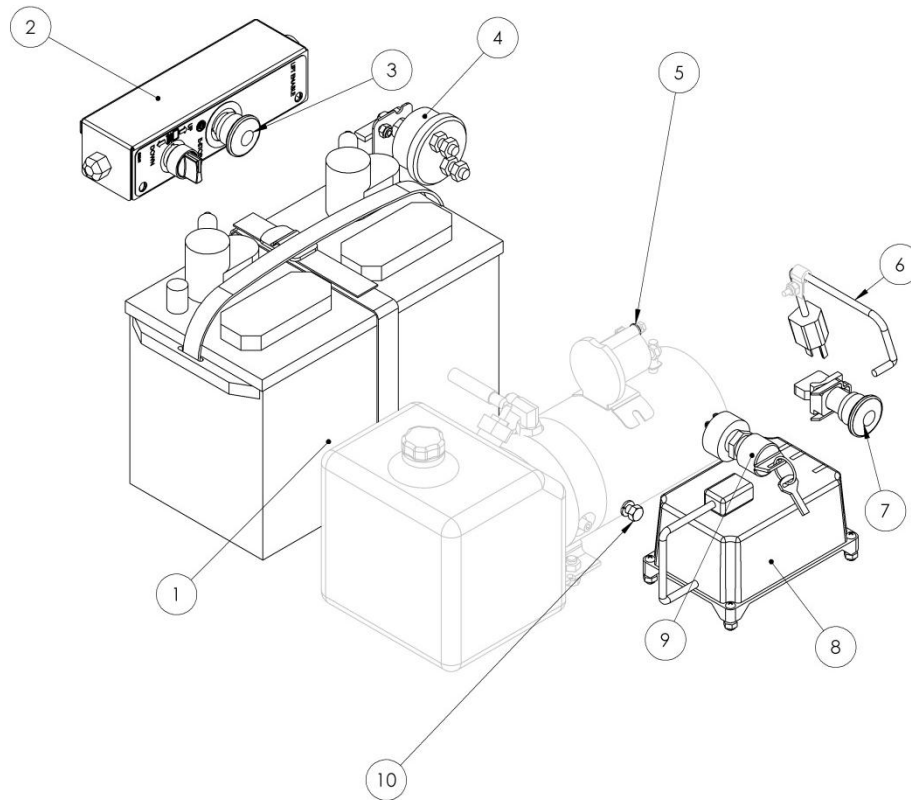
REPLACEMENT OF THE FOLLOWING COMPONENTS WILL AFFECT THE STRENGTH, STABILITY, OR SAFETY FUNCTION OF THE UNIT: BATTERY , HYDRAULIC CYLINDER, AND ALL STRUCTURAL COMPONENTS.

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

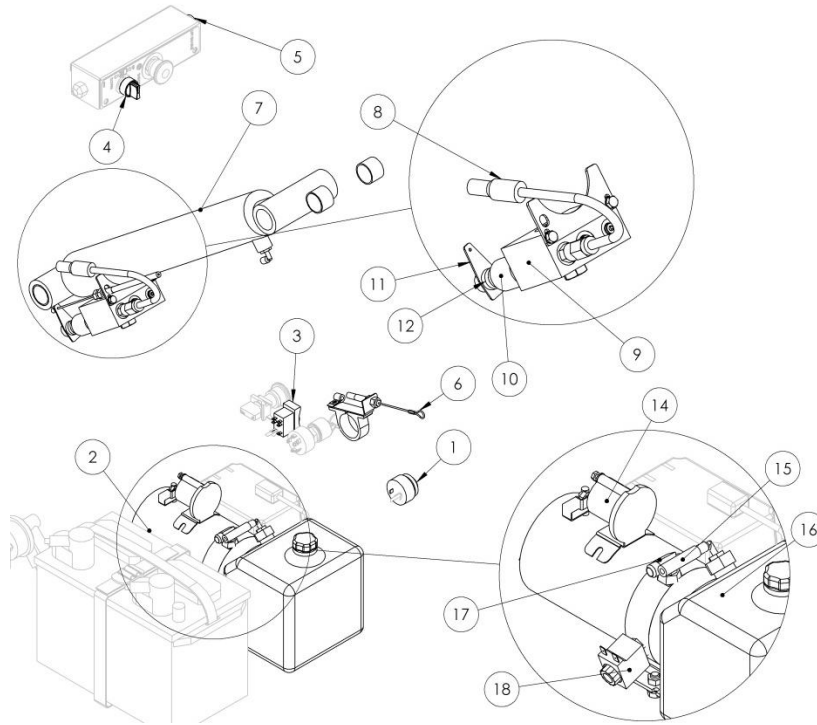
Refer to Operator's Manual for decal part numbers and locations.

Main Power/Safety Circuit



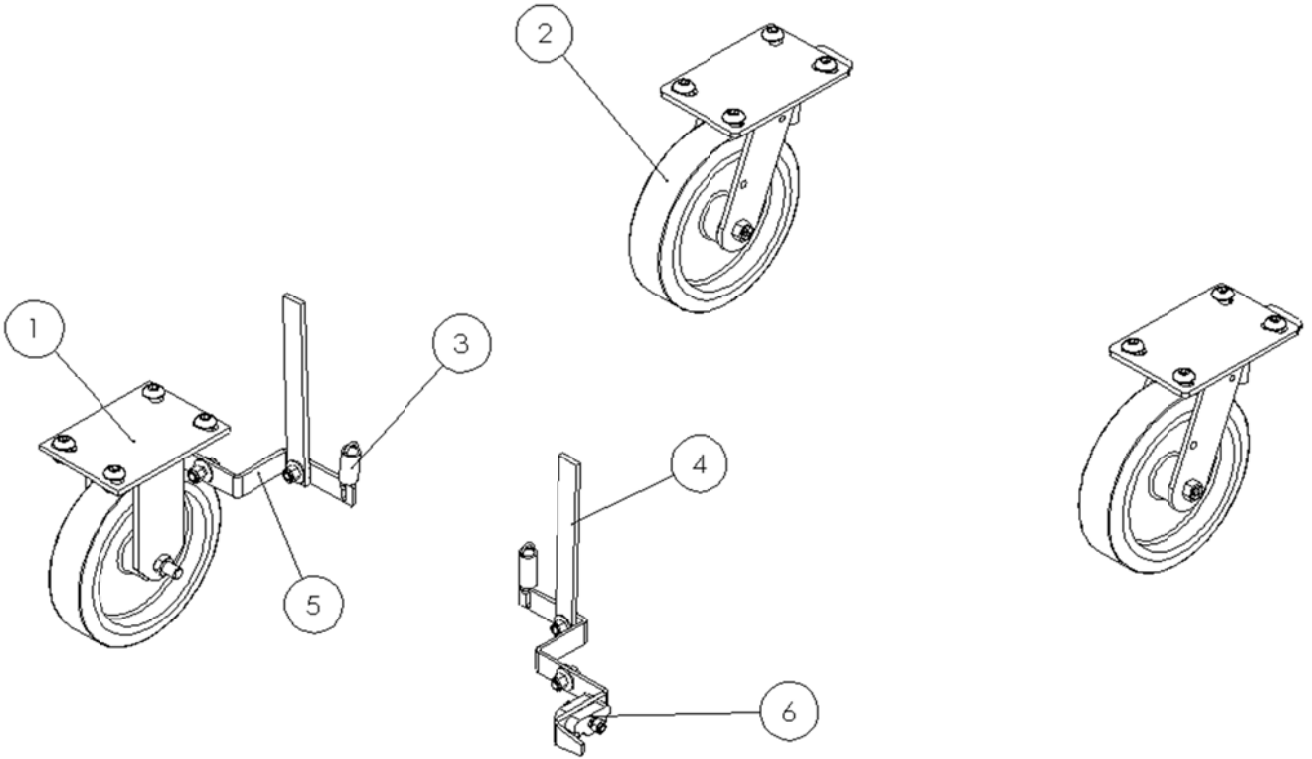
Item #	Part #	Description
1	(ELEC-047)	Not available as a replacement part. Replace batteries with 12V, Group 27 Deep Cycle Marine Battery. Replacement weight must be minimum 50 lb.
2	1002103550-KIT	Upper Control Assembly
3	ELEC-071-KIT	Emergency Stop Button with Contact Block
4	ELEC-633-1	Battery Disconnect Lever
4	ELEC-633-KIT	Master Power Switch
5	NA	B+ Power Connection Location on Pump
6	ELEC-639-4	Charger Cord (NEMA 5-15P/IEC-320 C-13)
7	ELEC-071-KIT	Emergency Stop Button with Contact Block
8	ELEC-746	Battery Charger
9	ELEC-073E-KEY	Spare Key
9	ELEC-073E	Key Switch (with key)
10	NA	B-“Ground” Connection Location on Pump
(Not Pictured)	1002103850 1002103851	Battery Cables
(Not Pictured)	(No Part #)	20A AGC Fuse

Elevate/Lower Circuit



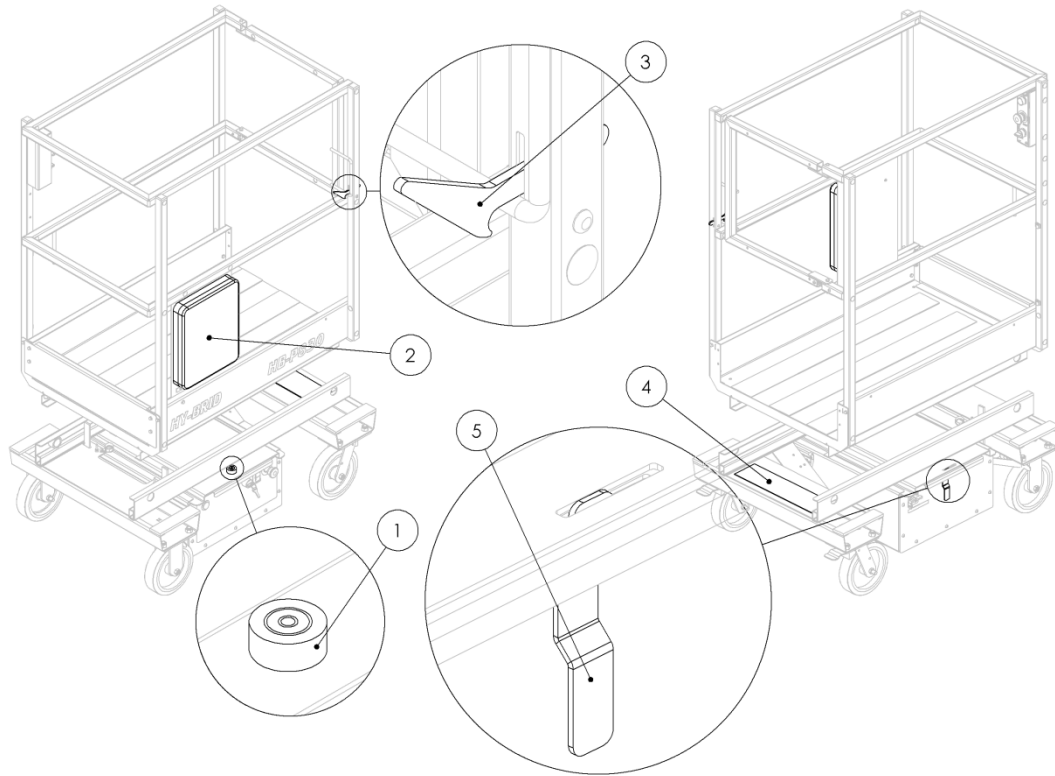
Item #	Part #	Description
1	ELEC-635	Descent Alarm
2	HYDR-050-4	Hydraulic Pump
3	ELEC-133B	Up/Down Rocker Switch
4	ELEC-002C-KIT1	Up/Down Rotary Switch
5	ELEC-602-KIT	Enable Button
6	HARD-644-03	Emergency Down Cable
7	1002103650-KIT	Hydraulic Cylinder
8	HYDR-600-5	Hydraulic Hose
9	1002103690	Manifold Block Assembly
10	HYDR-007-2F-KIT	Down Valve & Coil
10	HYDR-007-2E-5	Down Valve
10	HYDR-007-2E-6	Down Valve Coil
11	LAS-M115	E-Down Valve Actuator
12	HARD-650	1/16 Shaft Collar
(Not Pictured)	HYDR-044-FL3	Hirschmann Connector with Diode
14	HYDR-674	12V Solenoid
15	HYDR-022-3	Low Pressure Hydraulic Line
16	(HYDR-032)	Hydraulic Fluid: Not available as a replacement part. Replace with Flomite #150, Dexron II, Mobil-DTE 2, or equivalent.
17	HYDR-677	Hydraulic Fitting
18	HYDR-665	Up Valve
18	HYDR-673	10V Coil
(Not Pictured)	HARD-022	Retaining Ring, 1.25"

Wheels/Brakes



Item #	Part #	Description
1	1002103160	Rigid Caster Assembly
1	WHEE-706-KIT	Wheel (8")
1	WHEE-002-1	Bearing Kit
2	1002103161	Swivel Caster Assembly
2	WHEE-706	Wheel (8")
2	WHEE-002-1	Bearing Kit
3	HARD-687	Spring
4	1000116002	Brake Actuator
5	1000132402	Brake Weldment
6	143-01-028-02	Brake Cam

Other



Item #	Part #	Description
1	HARD-086	Level
2	HARD-603	Manual Box
3	1000307601	Gate Latch
4	MISC-031	Anti-Slip Tape
5	1000132101	Cabinet Latch

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 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:

- (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. 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, 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 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.

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