

INSTALLATION & OWNER'S MANUAL



! WARNING

DO NOT INSTALL, OPERATE OR SERVICE THIS PRODUCT UNLESS YOU HAVE READ AND FULLY UNDERSTOOD THE ENTIRE CONTENTS OF THIS MANUAL. FAILURE TO DO SO MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY OR DEATH.

SAFETY PROCEDURES

INTRODUCTION

The following is intended to be a quick reference to some of the important procedures to follow while installing and using the Hydraulic Conversion Kit for the Mantis Series Model MTS-M Dock Leveler. It is not intended to cover, or suggest that it does cover, all procedures required to be followed to ensure safe installation & operation. Operators and installers should be aware of and abide by all workplace safety regulations that may apply to the operation and installation of the Mantis Series Model MTS-M Dock Leveler.

These laws and regulations include but are not limited to:

- Occupational Safety and Health Act (USA).
- Occupational Safety and Health Acts for Individual States (USA).
- Canadian Material Handling Regulations.

For further information on these regulations and / or industry standards that may apply to this equipment, please contact:

American National Standards Institute (ANSI)

1430 Broadway

New York, NY 10018

(212) 642-4900



WARNING

1. Untrained personnel shall not be allowed to install, operate and/or service the mechanical dock leveler.
2. Do not install this Conversion Kit, operate and/or service unless you have been trained and authorized to do so.
3. Do not install, operate and/or service this Conversion Kit until you have read and understood all of the safety information and instructions contained herein and on the leveler.
4. Do not operate this leveler until you have checked its condition. Report the need for leveler repairs to your supervisor immediately and do not operate leveler until repairs are made. Neglect may cause a minor repair to become a major service problem and cause the leveler to become unsafe.
5. Do not work under or around A leveler being installed without first placing adequate barriers to positively prevent vehicle traffic from entering the work area.
6. All electrical wiring, hook-up, repair and troubleshooting must be performed by a qualified service personnel. All wiring, hook-up and repairs must be made to meet all applicable codes. Before doing any electrical work, make certain the power is disconnected and properly tagged and / or locked out.
7. Before performing any maintenance, secure maintenance strut in proper place.
8. Do not load leveler beyond capacity shown on serial name plate on leveler.
9. Stay clear of dock leveler and truck when truck is backing in or leaving dock area.
10. Secure Truck by chocking truck wheels or use of vehicle restraint, as detailed by OSHA, before operating dock leveler.

11. Do not use or move the dock leveler if anyone is under, in front and/or on dock leveler.
12. Keep hands and feet clear of the dock leveler pinch points at all times. Never use hands to lift dock ramp and/or lip onto truck or to store dock leveler.
13. Never try to lift or move any part of the Dock Leveler without using the Release Chain.
14. Do not drive on leveler unless lip is securely on truck bed and has a minimum of 4" (100mm) projection on truck bed.
15. Do not exceed 4 mph when driving over dock leveler.
16. Do not drive over edges of the leveler and / or dock bumper blocks (bumpers S/B bumper blocks are not structural).
17. Do not leave equipment or material unattended on the leveler.
18. Do not leave the leveler unattended in the deployed position.
19. Do not use A fork truck or any other material handling equipment to lower leveler ramp.
20. Never attempt to perform repairs. Always defer repairs to a qualified service technician.
21. Do wear safety equipment as required.
22. Do not mix drugs or alcohol with your job.

This manual is intended to be readily available. Keep it near the leveler as a ready reference for anyone who may operate or service it. If the leveler being operated is not equipped with a manual, request to obtain one and have it located near the leveler.

An authorized dealer or distributor is readily available to answer questions about leveler operation and maintenance and will provide additional information should it be required.

EXCLUSION OF LIABILITY

The manufacturer assumes no liability for damage or injury to persons or property which have occurred as a result of defects or faults in the Conversion Kit delivered or due to incorrect use. The manufacturer also assumes no liability for lost profits, operating down times, or similar indirect losses which the buyer has incurred. Damage to third parties, irrespective of its nature, is not subject to compensation.

The operating instructions are not subject to notification of amendment. The descriptions and illustrations included in our operating instructions and replacement parts list are not binding. In the interests of continuing product development, we reserve the right to make any changes at any time to the modules, components and accessories, concurrent with our continuing product improvement program, specifications are subject to change without notice. Please contact manufacturer for latest information.

LOCK-OUT / TAG-OUT PROCEDURE & RULES

LOCK-OUT / TAG-OUT PROCEDURE

The Occupational Safety and Health Administration (OSHA) requires, in addition to posting safety warnings and barricading the work area, (including, but not limited to, trucking office and loading docks), that the power supply must be locked in the OFF position or disconnected. OSHA mandates that an approved lockout device is used. The below example is the proper way to lockout a power source. The proper lockout procedure requires that the person responsible for the repairs is the only person who has the ability to remove the lockout device.

LOCK-OUT RULES

The following is intended to be a quick reference to some of the important procedures to follow by the Occupational Safety and Health Administration (OSHA).

1. Use an appropriate "Lock-Out Device" :
Each person must attach his or her own lock to the Lock-Out Device.

2. Use an appropriate "Tag-Out Device" :
In addition to the lockout device, it is also a requirement to tag the power control in a manner that will clearly note that repairs are under way and that state who is responsible for the lockout condition. Tag-out devices have to be constructed and printed so that exposure to weather conditions, or wet and damp locations, will not cause the tag to deteriorate or become unreadable.

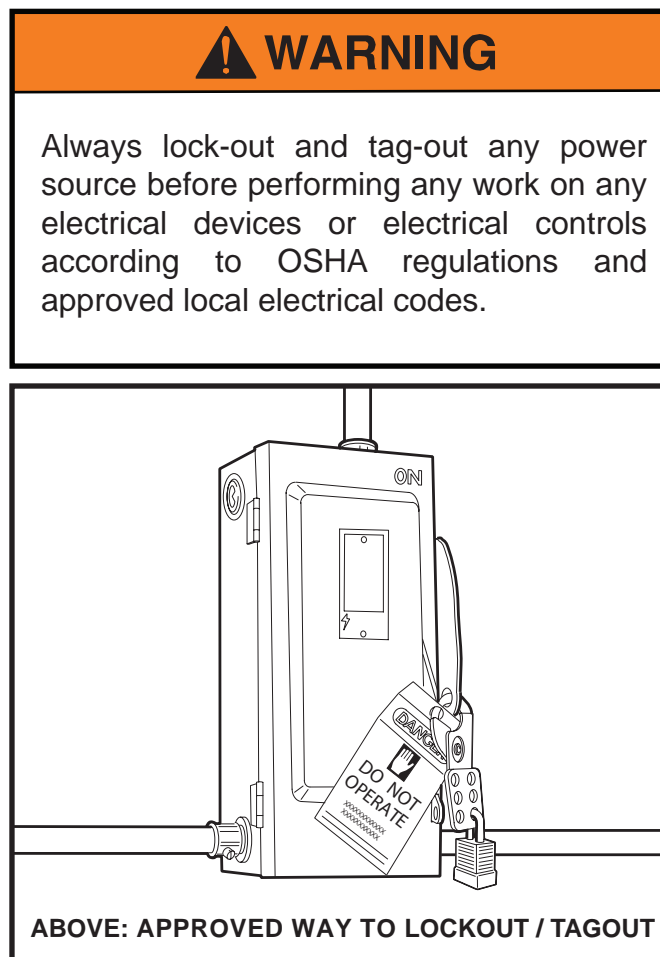
3. Identify Locks :
Each lock will be identified by a number or a name. A lock without a tag is not good enough. Additional information that identifies the person / persons doing the work must be on the tag. Also the type of work that is being performed should be on the tag.

4. Sign The Tag :
In some instances one tag is enough, however, the tag must be signed by each worker. In some circumstances a supervisor will also need to sign the tag.

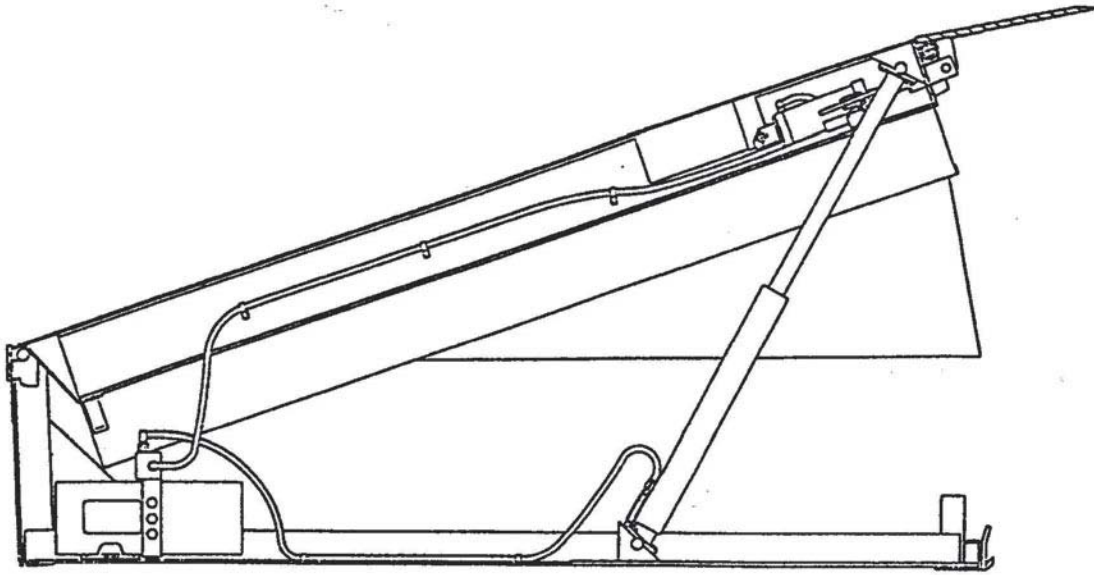
5. One Key Per Lock

6. Never give your key to anyone else :
Recheck controls and return to proper setting

The manufacturer does not recommend any particular lockout device, but recommends the utilization of an OSHA approved device (refer to OSHA regulation 1910.147). The manufacturer also recommends the review and implementation of an entire safety program for the Control of Hazardous Energy (Lockout/Tag-out). These regulations are available through OSHA publication 3120.



UNIVERSAL HYDRAULIC CONVERSION KIT



This is a full feature conversion that provides hydraulic operation of both the deck and lip. Easily adapts to all manufacturers pit style dock levelers. Complete installation instructions supplied with every unit.

Common Reasons for Conversion to Hydraulic

1. **Reliability:** The normal locking and unlocking of all mechanical hold down systems on mechanical dock levelers produces wear on components that eventually causes down time for repairs.
2. **Lower Lifetime Operating Cost:** Maintenance requirements and total lifetime operating costs are significant lower for hydraulic dock levelers compared to mechanical dock levelers.
3. **Safety:** Wall mounted push-button operation of hydraulic units provide easier operator control and a higher degree of safety for the dock attendants, possibly preventing a costly workers compensation claim.
4. **Low Noise Level:** Smooth, quiet operation at the touch of a button contributes to a more pleasant work environment.

Basic Kit Includes

- Deck cylinder and lip cylinder
- Self contained power pack, variety of voltages
- All required hardware and hoses
- NEMA 4 - control station
- Hydraulic fail-safe
- Complete Installation Instruction
- Standard Blue Giant Warranty

Options Available

- Door / Dock interlock switch kit
- Remote wall mount power pack
- Automatic return to cross traffic
- 60 - 80 K pound capacity kit

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CHECK SHIPMENT BEFORE INSTALLATION

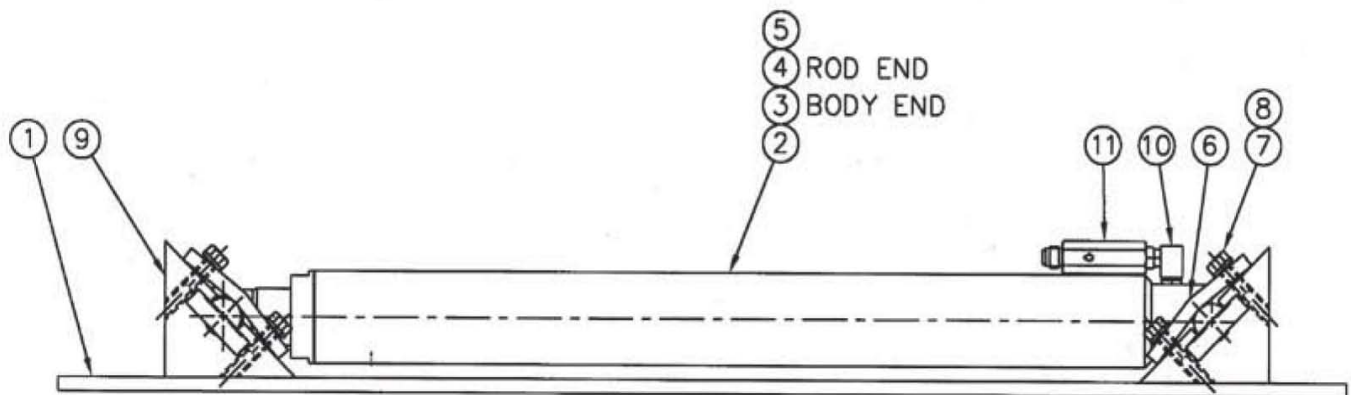
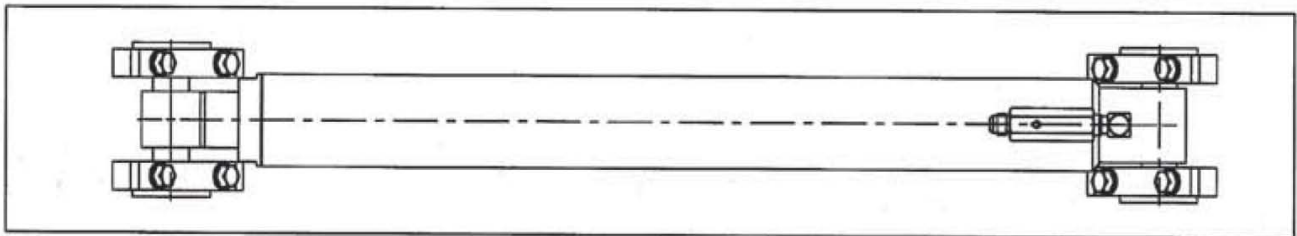
The 'Hydraulic Conversion Kit' has been carefully checked at the manufacturer's plant before shipment. In order to ensure that no damage has occurred during transport, the 'Hydraulic Conversion Kit' should be checked upon receipt for transport damage and to ensure correct operation. Damage due to transport is to be listed on the signed copy on the freight document. The freight forwarder must be notified of any damage within 48 hours. Damaged 'Hydraulic Conversion Kits' must not be put into use.

OWNER'S PURCHASE RECORD
Dealer / Installer :
Order Number:
Serial Number(s):
Date Installed :

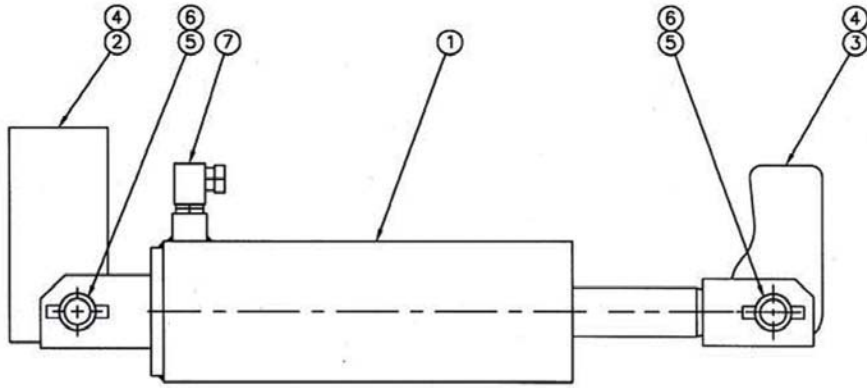
The manufacturer offers a full line of dock levelers, dock safety equipment, accessories, ergonomic and scissor lift equipment, and industrial trucks. Concurrent with our continuing product improvement program, specifications are subject to change without notice. Please contact manufacturer for latest information. Some features illustrated may be optional in certain market areas.

CYLINDER AND BRACKET ASSEMBLY DRAWING

ITEM	QTY	PART ID	DESCRIPTION
1	1	788-038	Bracket Assembly
2	1	788-635-1	2" Cylinder Assembly (for 6' & 8' Long Dock Levelers)
2	1	788-655	2.5" Cylinder Assembly (for 10' & 12' Long Dock Levelers)
3	1	018-018	Bushing
4	2	018-017	Bushing
5	2	113-202A	Cylinder Pin
6	4	113-096A	Pivot Block Top Plate
7	8	010-039	3/8-16 x 1" HHCS
8	8	012-201	3/8" Flat Washer
9	2	113-056A	Cylinder Pivot Block
10	1	034-í Fí Å	Elbowed Fitting
11	1	033-661	Velocity Fuse 5 GPM

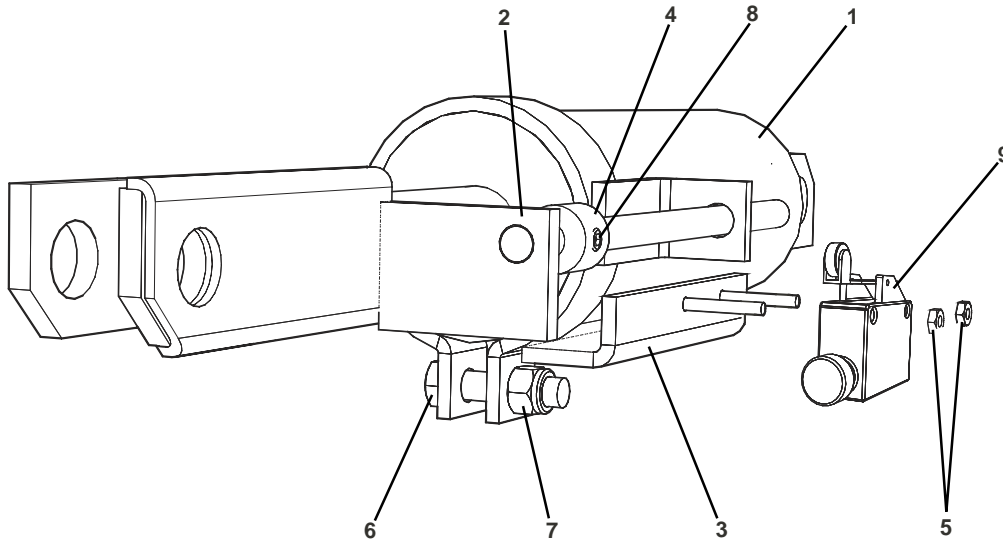


LIP CYLINDER ASSEMBLY



ITEM	QTY	PART ID	DESCRIPTION
1	1	788-599-1	Lip Cylinder Assembly
2	1	109-J18	Bar D/L
3	1	109-011	Flat
4	2	018-001	Bushing
5	2	107-196	Clevis Pin
6	2	013-010	Spring Pin 1/4 x 1-1/4
7	1	034-601	Elbow Fitting

OPTIONAL LIP CYLINDER ASSEMBLY - AUTO-RETURN



ITEM	QTY	PART ID	DESCRIPTION
.	.	213-5027	Lip Cylinder Assembly - Auto Return (16" & 18" Lip)
.	.	213-5027-1	Lip Cylinder Assembly - Auto Return (20" Lip)
1	1	788-599-1	Lip Cylinder
2	1	788-345	Rod Assy (DI)
3	1	788-346	Cylinder Bracket
4	1	113-300	Switch Activator Auto Return
5	2	011-515	Nut, Hex #8-32 Machine Screw
6	1	010-040	Capscrew, Hex Hd. 3/8-16x1-1/2" "
7	1	011-552	Nut, Hex 3/8-16 Nylon Insert "
8	1	014-001	Setscrew, Sckt Hd Cp 1/4-20 X 1/4 "
9	1	025-601	Switch, Micro - Auto Return

PARTS LAYOUT DIAGRAM & PARTS LIST

Complete Hydraulic Conversion Kits for 6' & 8' Long Dock Levelers up to 50,000lbs. Capacity
 Complete kit Includes : 1 HP Power Pack, Motor Starter, Deck & Lip Cylinder, Hoses & Hardware

PART ID	DESCRIPTION
709-0002C	115/1/60Hz Power Pack & Motor Starter (#033-403-1 & 027-006) Deck & Lip Cylinder, Hoses & Hardware
709-0002-1C	208/1/60Hz Power Pack & Motor Starter (#033-403-1 & 027-007) Deck & Lip Cylinder, Hoses & Hardware
709-0002-2C	230/1/60Hz Power Pack & Motor Starter (#033-403-1 & 027-007) Deck & Lip Cylinder, Hoses & Hardware
709-0002-3C	208/3/60Hz Power Pack & Motor Starter (#033-404-1 & 027-008) Deck & Lip Cylinder, Hoses & Hardware
709-0002-4C	230/3/60Hz Power Pack & Motor Starter (#033-404-1 & 027-008) Deck & Lip Cylinder, Hoses & Hardware
709-0002-5-BGE	415/5/50Hz Power Pack & Motor Starter (#033-404-1 & 027-168) Deck & Lip Cylinder, Hoses & Hardware
709-0002-5C	460/3/60Hz Power Pack & Motor Starter (#033-404-1 & 027-005) Deck & Lip Cylinder, Hoses & Hardware
709-0002-6C	575/3/60Hz Power Pack & Motor Starter (#033-405-1 & 027-009) Deck & Lip Cylinder, Hoses & Hardware

Conversion Kit for Self-Contained Power Pack Common Components

PART ID	DESCRIPTION
709-5002	6' & 8' Long Docks Common Components
709-5002-1	10' & 12' Long Docks Common Components

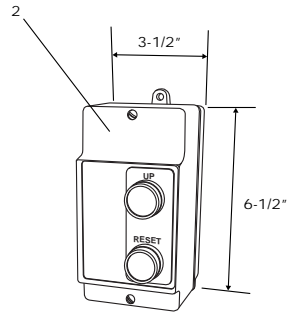
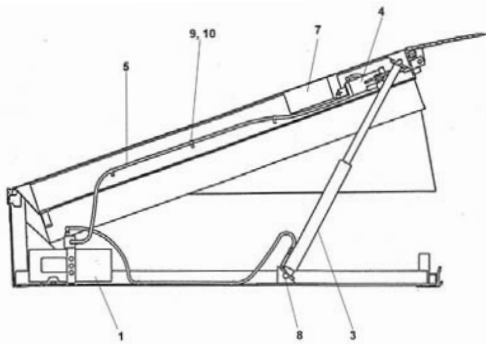
Common Components Includes : Deck & Lip Cylinder, Hoses & Hardware

Conversion Kit for Remote Power Pack Common Components

PART ID	DESCRIPTION
709-5002R	6' & 8' Long Docks Common Components
709-5002-1R	10' & 12' Long Docks Common Components

Common Components Includes : Deck & Lip Cylinder, Hoses & Hardware

Note: When placing an order inform the sales person the size, capacity and power pack location of your specific dock leveler



ITEM	PART ID	DESCRIPTION
1	033-403-1	115/1/60 Power Pack
1	033-403-1	208/1/60 Power Pack
1	033-403-1	230/1/60 Power Pack
1	033-404-1	208/3/60 Power Pack
1	033-404-1	230/3/60 Power Pack
1	033-404-1	415/3/50 Power Pack
1	033-404-1	460/3/60 Power Pack
1	033-405-1	575/3/60 Power Pack

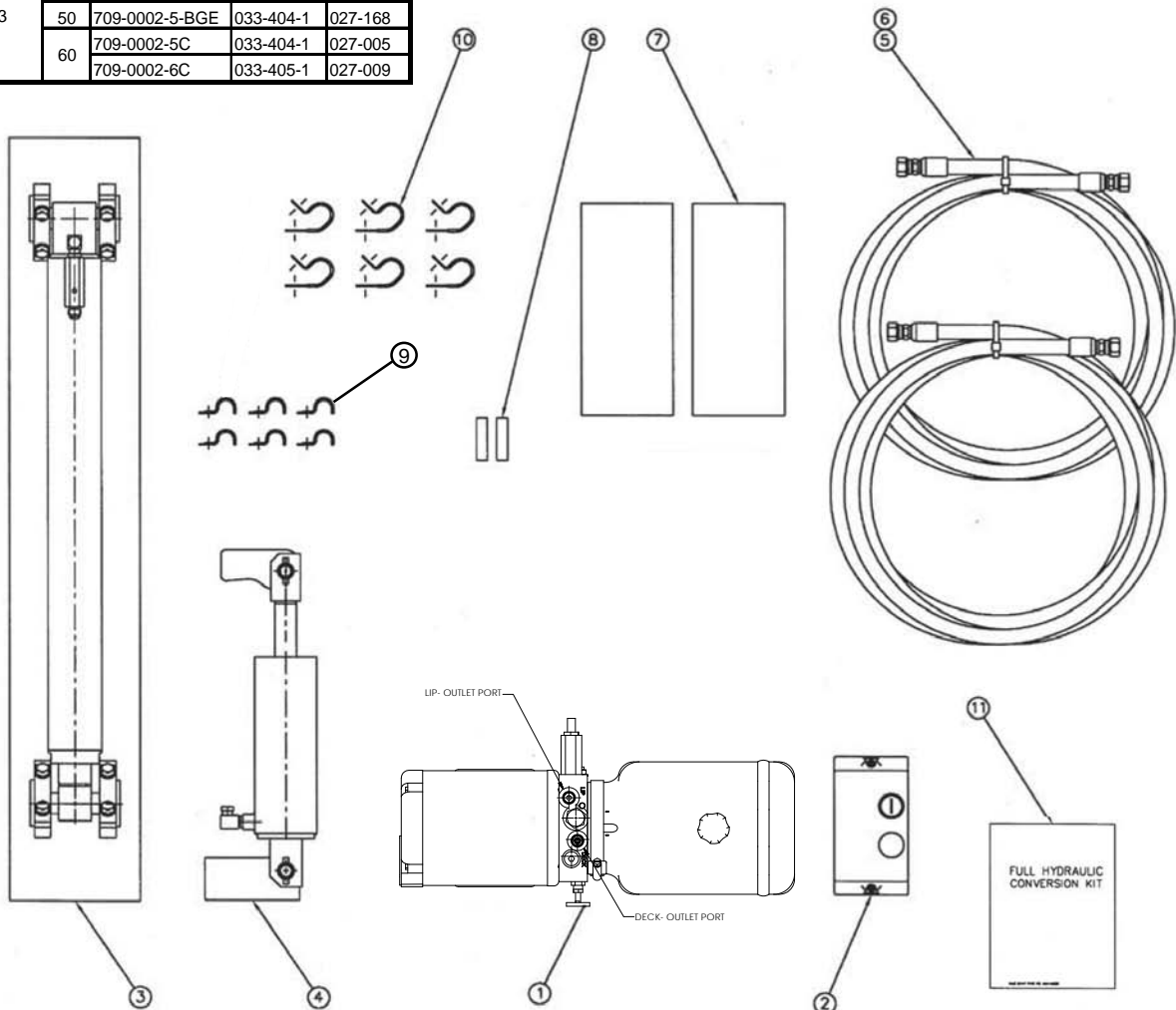
ITEM	PART ID	DESCRIPTION
2	027-006	115/1/60 Motor Starter
2	027-007	208/1/60 Motor Starter
2	027-007	230/1/60 Motor Starter
2	027-008	208/3/60 Motor Starter
2	027-008	230/3/60 Motor Starter
2	027-168	415/3/50 Motor Starter
2	027-005	460/3/60 Motor Starter
2	027-009	575/3/60 Motor Starter

ITEM	QTY	PART ID	DESCRIPTION
3	1	709-5000	Cylinder Bracket Assembly (6' & 8' Long Docks)
3	1	709-5000-1	Cylinder Bracket Assembly (10' & 12' Long Docks)
4	1	709-5001	Lip Cylinder Assembly
5	1	788-329	Hose, #6 High Pressure to Lip Cyl. (102" Long) (6' & 8' Long Docks Self-Contained P.P.)
5	1	788-334	Hose, #6 High Pressure to Lip Cyl. (150" Long) (10' & 12' Long Docks Self-Contained P.P.)
5	1	788-332-2	Hose, #6 High Pressure to Lip Cyl. (318" Long) (6' & 8' Long Docks Remote P.P.)
5	1	788-332-6	Hose, #6 High Pressure to Lip Cyl. (366" Long) (10' & 12' Long Docks Remote P.P.)
6	2	522-002	Ties, NT-1400 HD Wire (} [♂ @ , } ♂ for shipping only)
7	2	109-917	Flat
8	2	103-601	Plate
9	6	035-221	1/2 EMP Hole Strap
10	6	035-205	Clamp
11	1	788-621	Hose, #6 High Pressure to Deck Cyl. (84" Long) (6' & 8' Long Docks Self-Contained P.P.)
11	1	788-331	Hose, #6 High Pressure to Deck Cyl. (132" Long) (10' & 12' Long Docks Self-Contained P.P.)
11	1	788-332-1	Hose, #6 High Pressure to Deck Cyl. (300" Long) (6' & 8' Long Docks Remote P.P.)
11	1	788-332-5	Hose, #6 High Pressure to Deck Cyl. (148" Long) (10' & 12' Long Docks Remote P.P.)

FULLY HYDRAULIC CONVERSION KIT DRAWING

ITEM	QTY	PART ID	DESCRIPTION
1	1	See Chart	1HP Power Pack
2	1	See Chart	Motor Starter
3	1	709-5000	Cylinder & Bracket Assembly
4	1	790-5000	Lip Cylinder Assembly (6' & 8' Long Docks)
4	1	709-5000-1	Lip Cylinder Assembly (10' & 12' Long Docks)
5	1	788-329	Hose, #6 High Pressure to Lip Cyl. (102" Long) (6' & 8' Long Docks Self-Contained P.P.)
5	1	788-334	Hose, #6 High Pressure to Lip Cyl. (150" Long) (10' & 12' Long Docks Self-Contained P.P.)
5	1	788-332-2	Hose, #6 High Pressure to Lip Cyl. (318" Long) (6' & 8' Long Docks Remote P.P.)
5	1	788-332-6	Hose, #6 High Pressure to Lip Cyl. (366" Long) (10' & 12' Long Docks Remote P.P.)
6	1	788-621	Hose, #6 High Pressure to Deck Cyl. (84" Long) (6' & 8' Long Docks Self-Contained P.P.)
6	1	788-331	Hose, #6 High Pressure to Deck Cyl. (132" Long) (10' & 12' Long Docks Self-Contained P.P.)
6	1	788-332-1	Hose, #6 High Pressure to Deck Cyl. (300" Long) (6' & 8' Long Docks Remote P.P.)
6	1	788-332-5	Hose, #6 High Pressure to Deck Cyl. (148" Long) (10' & 12' Long Docks Remote P.P.)
7	2	109-917	Flat Washer
8	2	103-601	Plate
9	6	035-221	1/2" EMT Hole Strap
10	6	035-205	Clamp
11	1	038-703E	Conversion Install Manual

VOLTAGE	PHASE	HZ	PART ID	ITEM 1	ITEM 2
115	1	60	709-0002C	033-403-1	027-006
208			709-0002-1C	033-403-1	027-007
230			709-0002-2C	033-403-1	027-007
208	3	60	709-0002-3C	033-404-1	027-008
230			709-0002-4C	033-404-1	027-008
415			709-0002-5-BGE	033-404-1	027-168
460	60	709-0002-5C	033-404-1	027-005	
575		709-0002-6C	033-405-1	027-009	



INSTALLATION INSTRUCTIONS – FULLY HYDRAULIC CONVERSION KIT

⚠ CAUTION

This procedure requires the dock leveler deck to be maintained in the fully raised position and lip extended without the aid of the main lift springs or lifting arm. Dock leveler to be properly secured with lifting equipment and service maintenance strut.

IMPORTANT

Most Dock Levelers are equipped with a maintenance strut during manufacture, to assist a service technician in the placing of a safety stand under the dock leveler deck. If the unit being converted to hydraulic operation has a damaged or missing maintenance strut or has never had one, consider installing one as a part of the hydraulic conversion. For details of a Maintenance Strut Kit that is available from Blue Giant as part number 200-5001.

1) With the dock leveler in the fully raised position and the lip fully extended, secure the dock leveler with a service maintenance strut and lifting equipment that is capable of lifting 3,500 lbs. Place traffic barriers as required for safety. The manufacturer offers part number 796-710 heavy duty service maintenance strut that is designed to take the full load of the deck and is especially useful for servicing any dock leveler.

⚠ DANGER

Failure to properly secure dock leveler could result in dock leveler deck to fall, and may result in property damage, bodily injury or death.

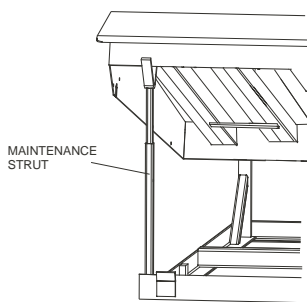


Figure 1

⚠ WARNING

Do not work beneath dock leveler without following proper lock-out procedures on page 2. Disconnect and lock-out electrical power supply as required, to assure there is no electrical power to dock leveler control panel, and that electrical power can not be turned on accidentally. Do not work under dock leveler with power supply turned "ON" - power must be "OFF".

⚠ DANGER

The main lift springs and hold-down (cable) are under tension. Do not attempt to remove them by cutting, until all tension has been removed or controlled.

4) Turn off the four main spring 'U' bolt adjusting nuts, Figure 2, counterclockwise. Maintain approximately the same tension on each nut by making four full turns on each nut and repeating. Check blocking as the weight is transferred onto them to assure they remain in a position that will insure the deck and lip will not lower.

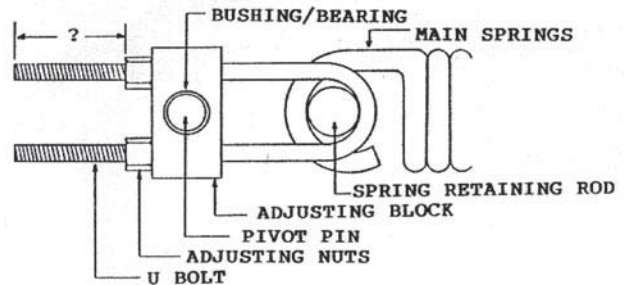


Figure 2

5) When all tension has been removed from the main springs, use appropriate tools and/or cutting torches to remove and discard all deck lifting and lip extension and locking mechanisms.

⚠ CAUTION

The hold-down cable is under tension that is attempting to pull it into the hold-down box.

6) Lock the cable in its present position by securely installing a pair of vice-grips or other suitable clamping device on the cable at the point that it enters the hold-down box. Using appropriate tools and/or cutting torches, remove the cable from the float spring.

⚠ CAUTION

Wire wound cables can become frayed with use and must be handled with care. Use leather gloves or similar protection.

7) Pull the cable down, out of the upper cable roller and back, out of the lower cable roller. Grasp the cable firmly, approximately 18" from the hold-down box, and slowly release the vice-grip clamp. Allow the hold-down box rewind mechanism to slowly wind the cable into the box, hand over hand, until no tension remains. Remove and discard the complete hold-down box assembly.

INSTALLATION INSTRUCTIONS – FULLY HYDRAULIC CONVERSION KIT

8) Inspect the underside of the deck assembly and the lip hinge to select a suitable position for the new lip extension components. This must be to one side of the deck, between two of the main deck beams as shown in Figure 8, and be located so as to allow the lip-lug, Figure 3, to be attached to the lip at a hinge spool that is welded to the lip (when possible).

Figure 3 is a bottom view illustration of a typical location of lip extension components.

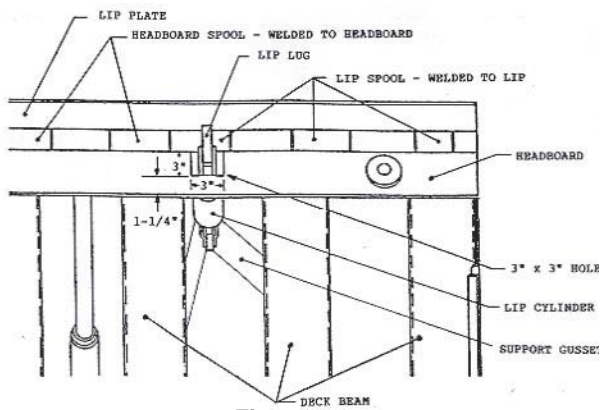


Figure 3

9) Locate the lip lug, in the conversion kit, and remove it from the lip cylinder clevis. Position the lip lug at the location chosen and tack-weld squarely and securely to the lip plate as shown in Figure 4.

Figure 4 is a side view illustration of the lip lug located on, and at 90 degree to the lip plate.

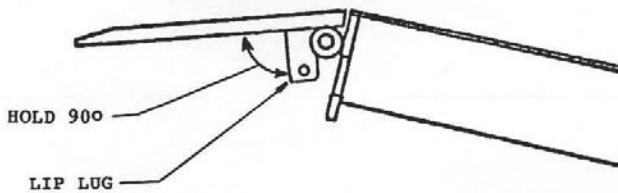


Figure 4

10) Using the lip lug to locate a vertical center line, cut a 3" x 3" hole in the headboard as shown in Figure 3. When completed, there must be no less than 1-1/4" of original headboard material remaining below the 3" square hole. Clean-up all edges of hole when completed.

11) Using the center of the lip lug as a guide, mark a line on the underside of the deck plate, parallel to the deck beams, to be used to locate the center line of the lip cylinder and lip cylinder mounting bracket.

12) Prepare to locate the lip cylinder mounting bracket by adjusting the lip blocking to hold the lip in the fully raised position. Raise and block the tip of the lip as required.

13) Manipulate the lip cylinder assembly through the headboard hole and temporarily attach the cylinder-rod clevis to the lip lug. Completely extend the cylinder and then collapse it 1". Position the cylinder mounting bracket on the deck, center of the bracket on marked line, and tack-weld in this position.

14) Observe the lip lug, lip cylinder and lip cylinder mounting bracket for correct alignment for free movement. If required, break the tack-weld of the misaligned component and move the component to assure free movement with no binding as the lip is raised or lowered. When all is aligned satisfactorily and cylinder is collapsed to 1" shorter than its fully extended length, securely tack-weld all components into position and then tack-weld the two, cylinder mounting bracket, support gussets, Figure 3 and Figure 5, to the deck plate, mounting bracket and beams.

With all components positioned and tack-welded as described, finish-weld all tacked components securely to deck, beams, lip and lip spool (when the lip lug is located at a hinge spool that is welded to the lip).

Figure 5 is a side view illustration of lip cylinder and related components correctly installed.

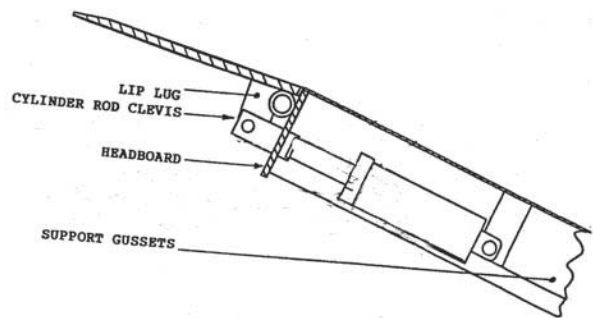


Figure 5

15) The main deck lift cylinder must be installed in the center of the frame and deck width, see Figures 7 and 8, for typical location. Upper mounting brackets to be mounted fully up against the underside of the deck plate and fully forward against the rear face of the headboard, as indicated as Item "A" in Figure 6.

Figure 6 is a side view illustration showing the correct mounting location dimensions of the deck lift cylinder.

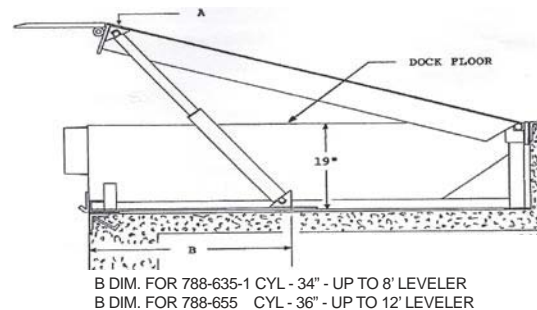


Figure 6

16) As part of the conversion kit, the deck lift cylinder is pre-assembled onto its mounting brackets. Place the complete assembly into the pit. Position the 3/8" x 6" mounting plate and cylinder as shown in Figure 6, centered and squared to the front frame and tack-weld into position.

Extend cylinder rod complete with upper mounting brackets into position against headboard and deck plate. Tack-weld mounting brackets into position.

When satisfied that cylinder is located properly, finish-weld all components securely to deck and frame.

INSTALLATION INSTRUCTIONS – FULLY HYDRAULIC CONVERSION KIT

Figure 7 in a side view illustration of a completed conversion, showing typical locations of power pack, deck cylinder and lip extension cylinder.

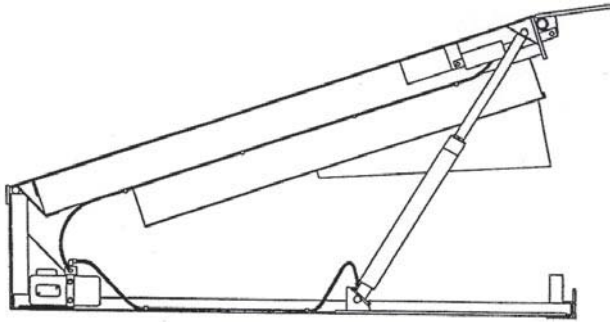


Figure 7

Figure 8 is a front view illustration of a typical completed conversion, showing the location of the deck cylinder and lip extension cylinder, located between deck beams.

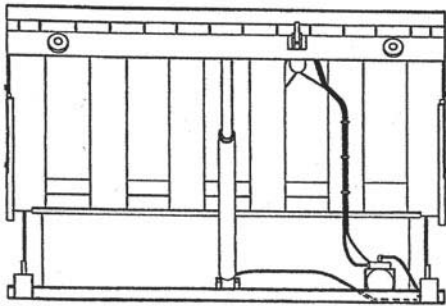


Figure 8

17) Mount the hydraulic power pack and electrical control box as required. All electrical work to be performed by a qualified electrician. Note: Assure correct motor rotation, as indicated on the motor housing, on start-up to prevent pump damage. On 3 phase units, interchange any 2 motor wires to change rotation.

18) Prepare to install the hydraulic hoses between the power pack and the deck and lip cylinders. If the power pack is located in the pit, attach the hose ends to the power pack fittings and tighten securely. Route the hoses to the cylinders but do not attach.

19) If the power pack is mounted outside of the pit, determine the most suitable routing for the hoses. If required, drill a 1-1/8" minimum size hole, for each of the hoses, from the dock floor through to the pit at a location that will offer the greatest protection to the hoses, both in and out of the pit. Mark both ends of one hose for identification purposes. Attach both hoses securely to the power pack fittings and route the hoses to the base of the cylinders in such a way that they can not be damaged. Do not attach the hoses to the cylinders. The power pack elbow fitting that is located on the top surface of the power pack is for the lip cylinder hose. Safety skirts must not touch hoses when deck is fully lowered.

20) Remove the oil reservoir shipping plug and install the attached breather cap.

21) Remove the lower deck cylinder retaining straps and

move the cylinder housing up the rod until the cylinder is completely collapsed.

22) Prepare a container to pump oil into. Place the deck cylinder hose end into the container. Run the power pack, using the 'up' push-button, until the hose is full of hydraulic fluid and the air bubbles are not evident in the oil flow exiting from the hose. With the power pack stopped and the deck cylinder maintained in its completely collapsed position, attach the hose end to the cylinder fitting and tighten securely to prevent any entry of air into the system.

23) Fill the oil reservoir with ISO VG32 hydraulic oil to a level that is 1/2" to 1" below the top of the oil reservoir.

⚠ CAUTION

The next step is to force the cylinder to extend into its lower mounting brackets by running the power pack to pump oil into the cylinder.

24) Be Aware that the oil is free to flow out of the cylinder at all times when the motor is not running. This means that if the cylinder is allowed to lift the deck and the blocking moves out of position, the deck will lower.

Do Not Work Beneath The Deck Without Adequate Blocking To Assure The Deck Will Not Lower Unexpectedly. Perform the following temporary adjustment to the power pack to assist with installation of the cylinder.

25) To prevent the cylinder from collapsing and the deck lowering when the motor stops, close the lowering speed adjustment, see , Page 1H adjustment on the power pack manifold – lower left side.

a) Remove the hex cap to reveal the slotted adjusting screw.
b) Carefully counting the turns, turn the adjusting screw clockwise to the end of its travel. Record the number of turns for later use.

c) Install the hex cap and tighten securely. The deck cylinder will now remain in an extended position because the oil can not flow back into the reservoir.

26) ⚠ * run the power pack motor and pump oil into the deck cylinder to cause the cylinder housing to move down its rod. Guide the base of the cylinder and its pivot pin into position in the lower mounting brackets.

⚠ CAUTION

Run the motor in such a way as to cause the cylinder to extend in short move-stop-move-stop steps. In this way, the cylinder can be stopped immediately as it makes contact with its lower mounting brackets, and will not lift the deck. Be sure not to lift deck off safety stand.

27) Install the lower mounting bracket retaining straps securely. Inspect the hose routing and install retaining clips as required. Check to assure hose fittings are tightened securely.

INSTALLATION INSTRUCTIONS – FULLY HYDRAULIC CONVERSION KIT

⚠ CAUTION

The lip is heavy, handle with care and be alert to pinch points.

29) With the lip fully lowered, loosen hose fitting at the lip cylinder. Run the motor until the lip cylinder hose and cylinder are full of hydraulic fluid and air bubbles are not evident in the oil, then tighten up lip cylinder hose fitting.

30) Fill the oil reservoir to the previously recorded level with ISO VG32 hydraulic fluid and permanently install the reservoir breather.

31) Inspect for proper routing of all hoses and install retaining clips as required. Check to assure all hose fittings are tight. Check all fasteners, etc. to assure they are properly and permanently installed. Inspect for proper wire routing and install retaining clips as required.

32) The lowering (shuttle) valve will now be reset to allow the deck to lower.

⚠ CAUTION

When the valve is turned out to make the adjustment, the oil will be allowed to flow out of the deck cylinder, allowing the deck to lower. Assure blocking is securely in place to prevent deck lowering.

33) Turn power on, raise the dock leveler and carefully remove the safety stand, or blocking, and lower the maintenance strut. Allow the deck to lower.

34) Operate the dock leveler through several up-down cycles, using the 'Up' push button to test functions.

35) Test the dock leveler for correct operating sequence.

- Raise deck with 'Up' push-button. Lip must remain fully lowered as deck raises.
- When deck reaches fully raise position, the lip will extend fully.
- Release the 'Up' push-button. Deck will lower. Lip will remain extended as deck lowers.
- When the deck stops at its fully lowered position, the lip will begin to lower.
- Raise deck with 'Up' push-button – Lip will continue to lower
- When the deck has raised sufficiently to allow the lip to lower fully; release the "Up" button.
- When the "Up" button is released, the deck will lower to the parked position.











36) Note: Do not work under the lip or deck with the power supply turned 'On'. Before performing any work beneath the lip or deck, raise dock leveler and position maintenance strut as required for safety. Place a safety stand between the deck assembly and the lower frame to assure the deck can not lower unexpectedly. Disconnect and lock-out the electrical power supply as required, to assure there is no electrical power to the dock leveler control panel, and that the electrical power can not be turned on accidentally.

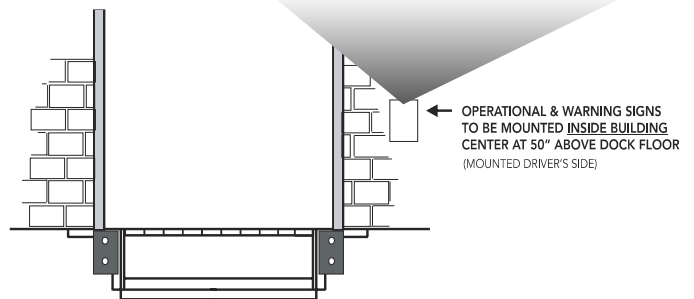
37) Inspect all work performed, paying particular attention to the routing of the hoses and wires, fasteners in place and locked, oil level in reservoir correct, etc.

40) To complete the conversion, lubricate the entire dock leveler and clean-up the work area, including the pit.

Operational Warning & Operating Instructions

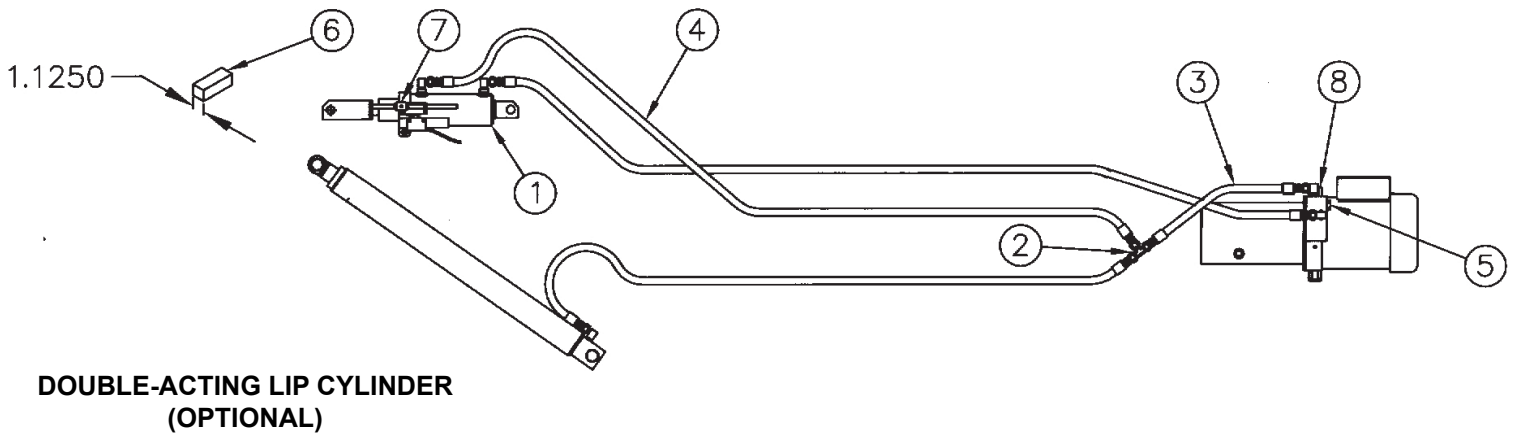
Permanently mount warning and operational instructions to be follow for use of loading dock equipment.

⚠ DANGER	
APPLIES TO BLUE GIANT DOCK LEVELERS	
<small>* Do not operate the dock leveler unless you have been trained to do so. * Know and follow all of these warnings and instructions as well as those contained in the Owner's Manual.</small>	
Stay clear of dock leveler when freight carrier is entering or leaving area.	
Do not use or move the dock leveler if anyone is under or in front.	
Keep hands and feet clear of pinch points.	
Keep a safe distance from both side edges.	
Check or restrain all freight carriers.	
Lip must overlap bed of freight carrier a minimum of 4" (100mm).	
Do not use dock leveler if freight carrier exceeds service range of 12" (305mm) above or 10" (255mm) below dock.	
Do not exceed the rated capacity as indicated on name plate.	
Do not leave equipment or material unattended on dock leveler.	
Do not use a broken or damaged dock leveler.	
BLUE GIANT	
<small>Copyright © 2009, Blue Giant Part # 038-703E</small>	



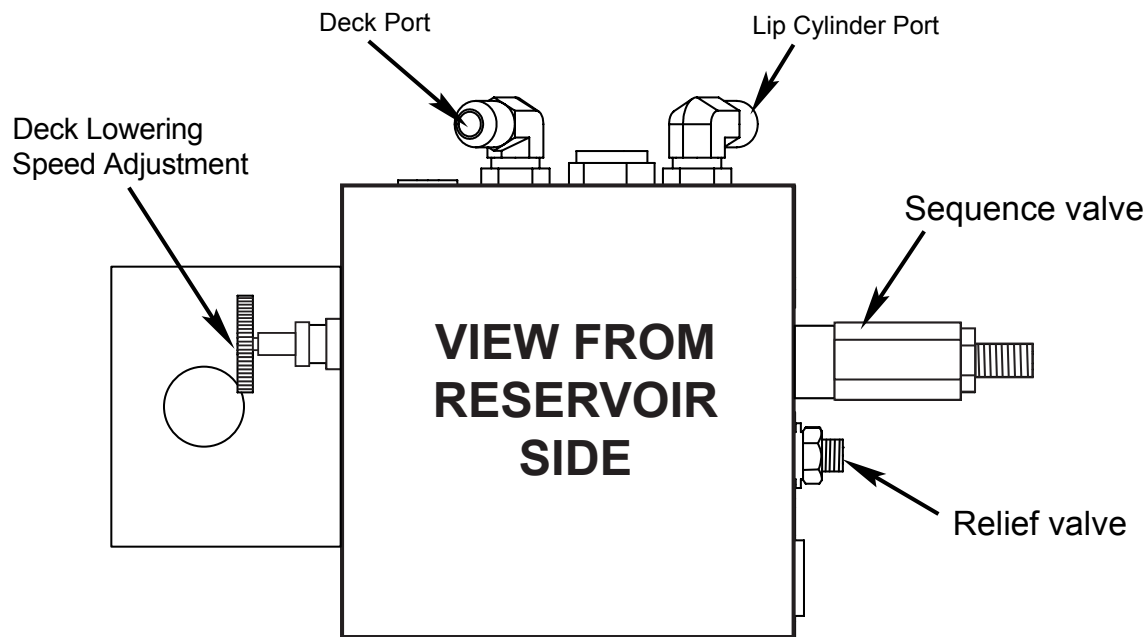
FRONT ELEVATION

DOUBLE-ACTING LIP CYLINDER CONVERSION KIT (OPTIONAL)



NO	QTY	DESCRIPTION	PART NO
1	1	2 1/2" DIA. DOUBLE-ACTING CYLINDER ASSEMBLY	211-7002 B
2	1	FITTING	034-551
3	1	HOSE #6 12" LG	300-5000-7
4	1	HOSE #6 72" LG	300-5000-25
5	1	PLUG, LIP CHECK VALVE	033-667
6	1	SPACER BLOCK	118-905 A
7	1	SWITCH ACTIVATOR (POWER DOWN LIPS)	118-904 A
8	4	WASHER, #6 FLAT ZINC PLATED	012-204

POWER PACK VALVE ADJUSTMENT ILLUSTRATION



All power units are factory tested & pre-set to the following specifications. All adjustable valves (3) are preadjusted and locked by a hexagonal locking nut. Main system relief also c/w sealing washer.

Should readjustments be necessary please follow the procedures as instructed below.

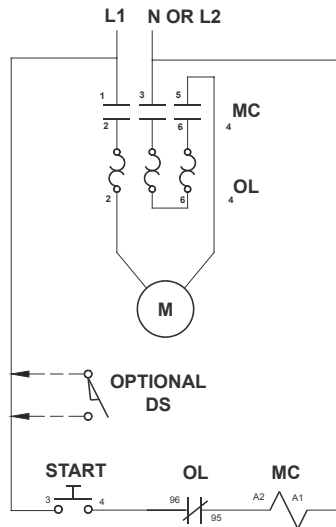
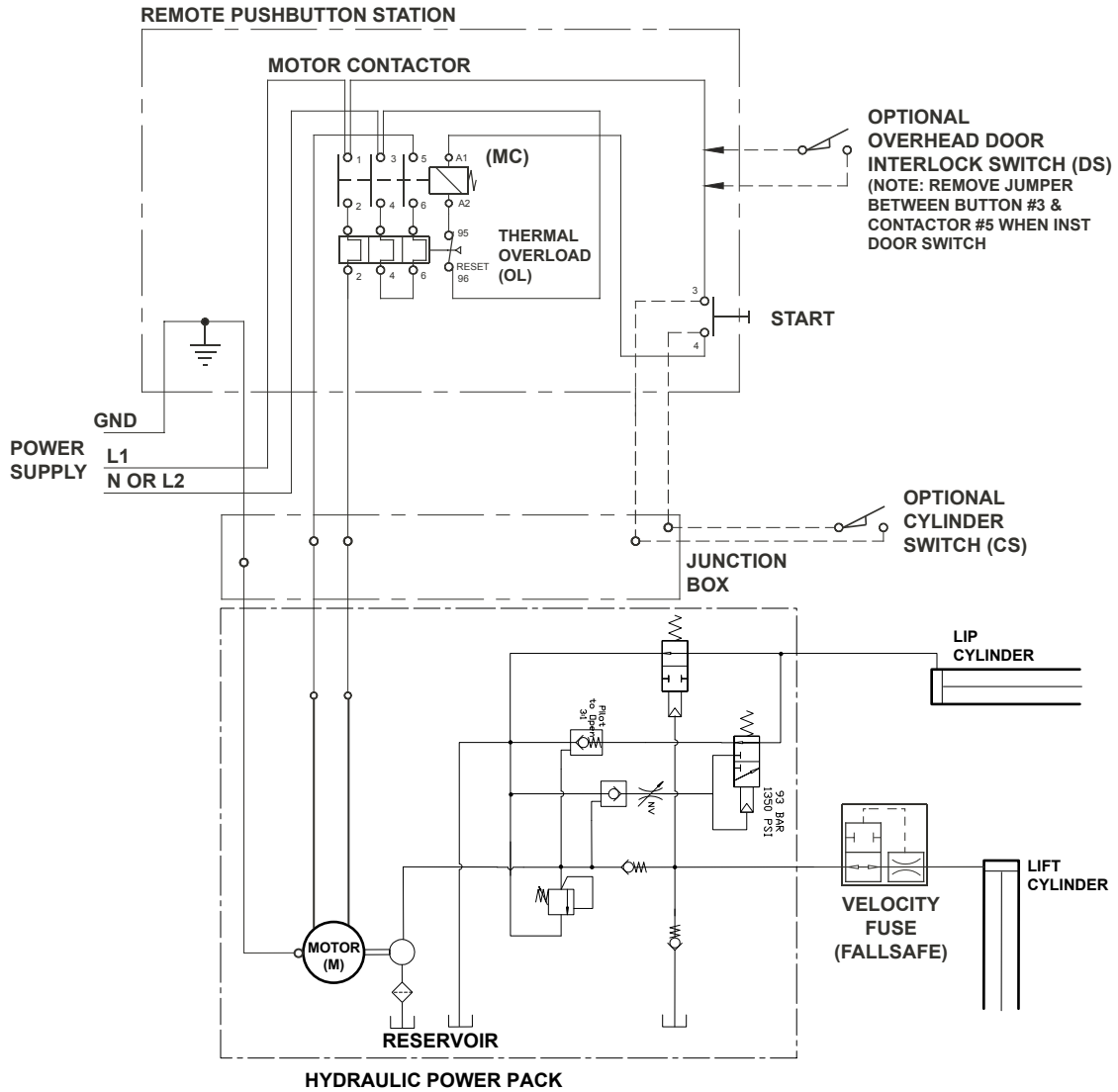
A) Pressure Relief Valve (7) : Loosen locking hex nut. Turn Allen screw clockwise until deck begins to lift & continue 1/2 a turn clockwise & retighten lock nut while holding the Allan screw adjustment in place.

B) Sequence Valve (6): Loosen locking hex nut. Turn Allen screw counter-clockwise until lip begins to lift & continue 1/8 a turn counter-clockwise & retighten lock nut while holding the Allan screw adjustment in place.

C) Lowering Speed (Deck): Needle Valve (1) Loosen locking hex nut. Turn knob clockwise to slowdown deck lowering speed. Turn knob counter-clockwise to increase deck lowering speed. Retighten lock nut while holding the knob adjustment in place.

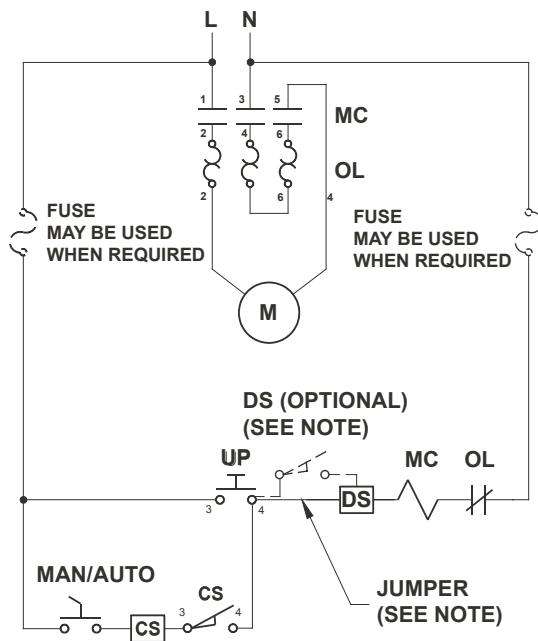
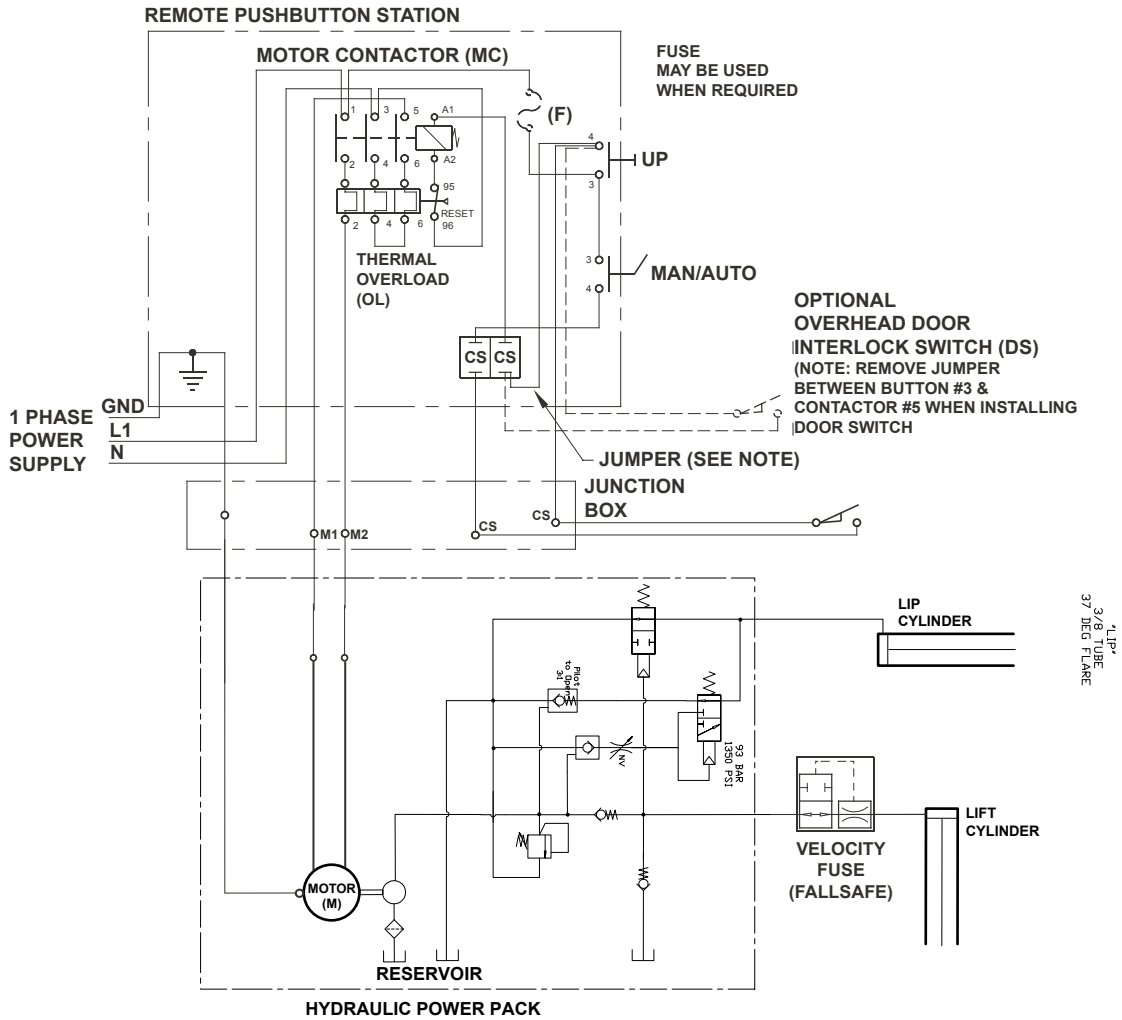
The power unit is now set-up to suit your model dock. If the unit does not perform properly at these settings, locate the specific fault description that suits your operating problem in the following Trouble Shooting information. Re-adjust only the specific valve mentioned and adjust only as instructed in the Trouble Shooting information.

ELECTRICAL AND HYDRAULIC 115 – 240/1/60 – NO AUTO-RETURN

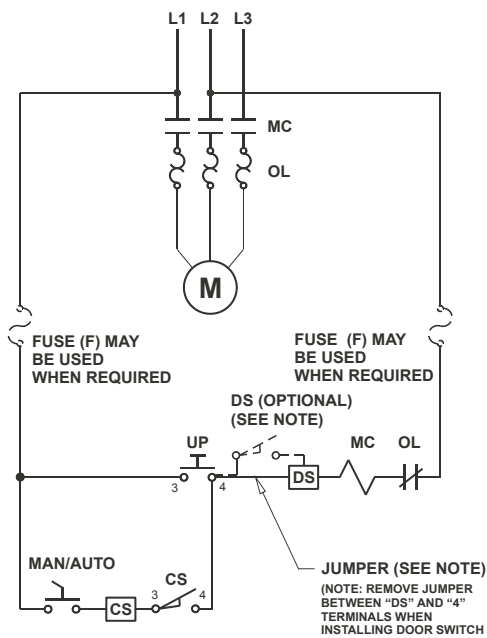
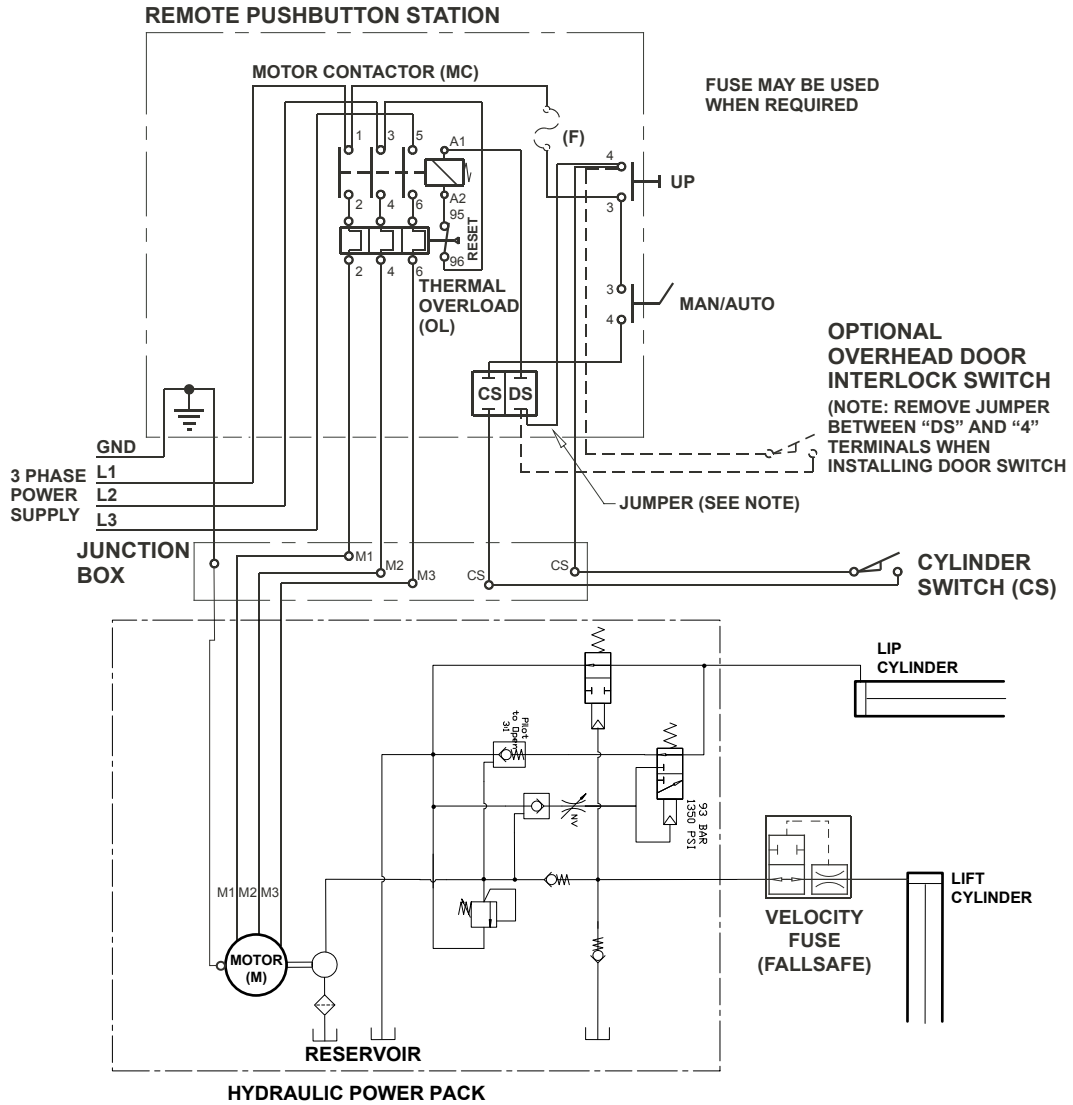


WD1305 - Rev.C - 04/18/01

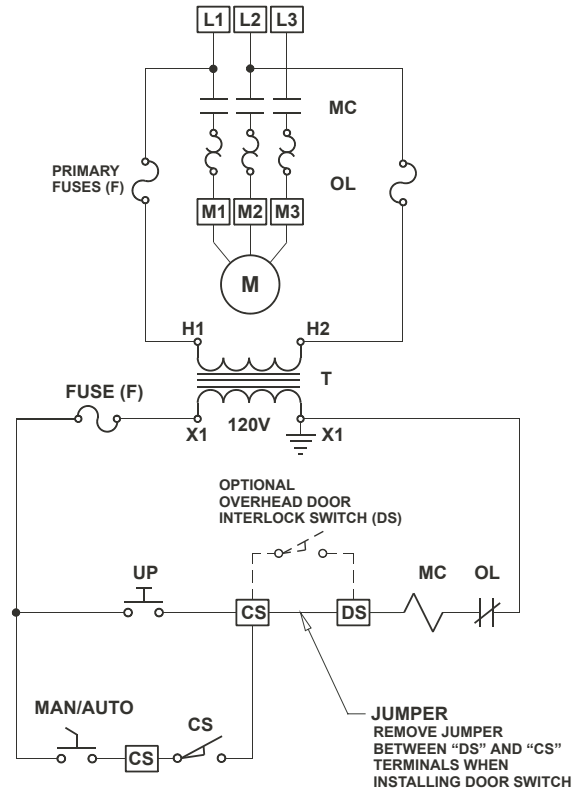
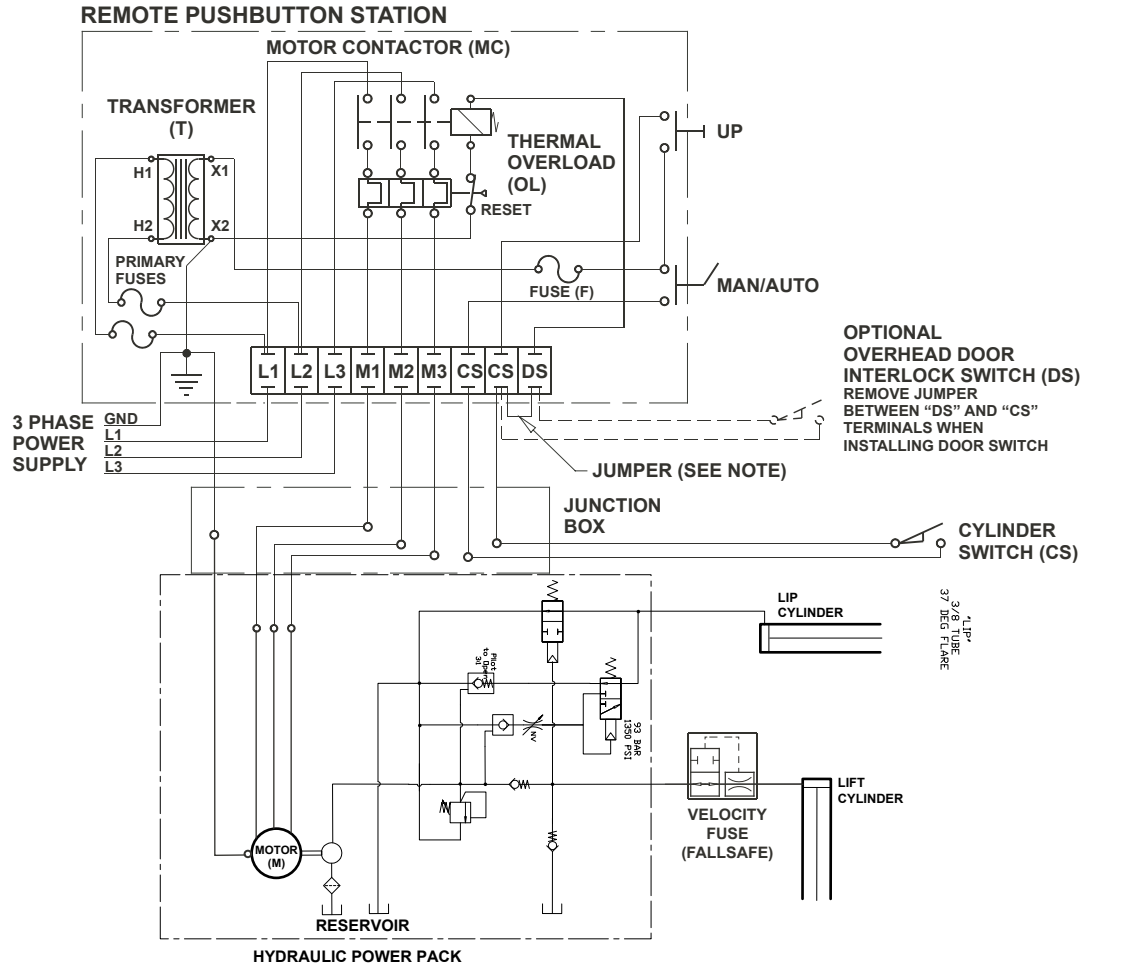
ELECTRICAL AND HYDRAULIC 115 - 240/1/60 - WITH AUTO-RETURN



ELECTRICAL AND HYDRAULIC 208-230/3/50/60 - WITH AUTO-RETURN

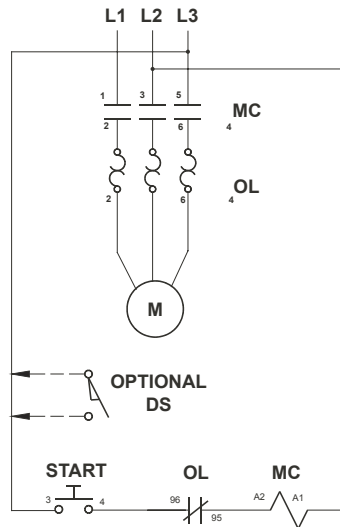
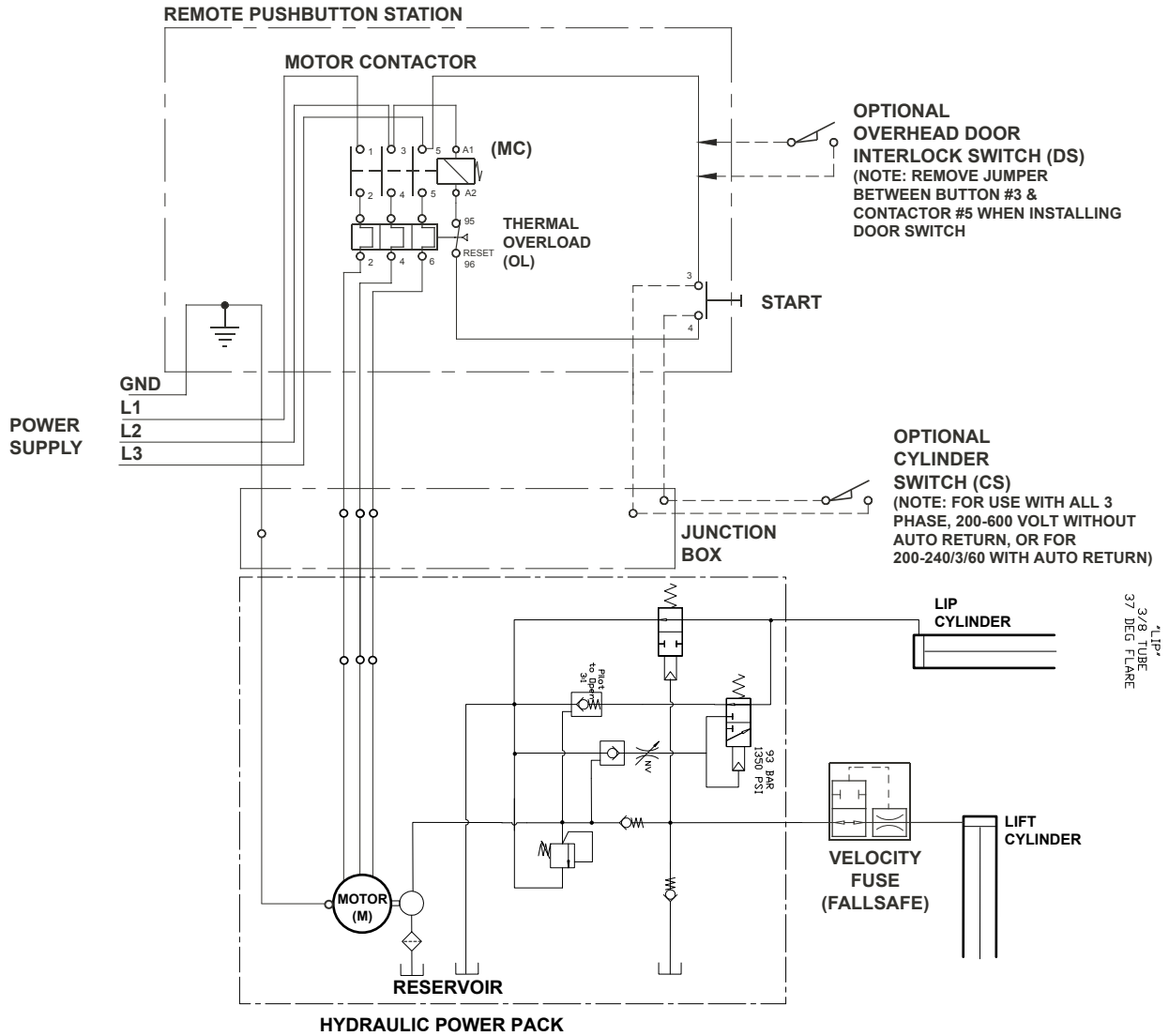


ELECTRICAL AND HYDRAULIC 240 - 600/3/50/60 - WITH AUTO-RETURN



WD1487 Rev. E 10/18/00

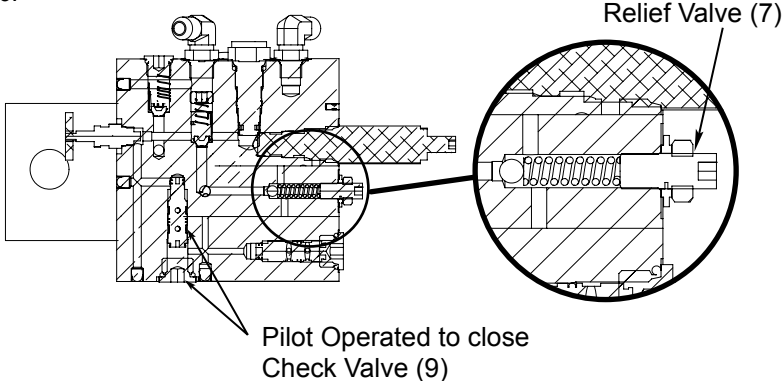
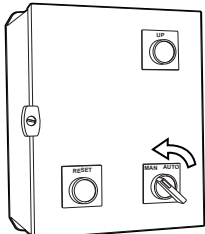
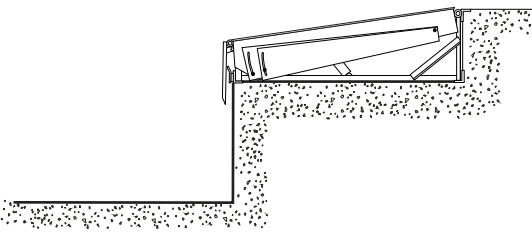
ELECTRICAL AND HYDRAULIC 200 – 600/3/60 – NO AUTO-RETURN



TROUBLE SHOOTING

⚠ WARNING

Do Not attempt to install, make repairs or adjustments. Only a trained and authorized service technician should perform the installation process. Contact your local dealer or distributor for assistance.

PROBLEM	PROBLEM CAUSE
<p>Deck will not raise when push button is operated. - Motor does start and run.</p>	<ol style="list-style-type: none"> 1. Foreign material lodged between side of deck and pit wall. - Remove and discard foreign material as required. 2. Damaged or missing bumpers allowing truck to contact and hold lip. - Move truck as required and replace bumpers 3. Equipment or goods parked on dock leveler deck. - Remove. 4. Low hydraulic oil fluid in power unit. - Damaged hose or other oil leak, repair and refill with approved hydraulic oil as required. 5. Incorrect motor rotation, three phase power supply only. - Qualified personnel to interchange any two motor leads. 6. Relief valve is bypassing. - Re-set relief valve (7) adjustment. Turn adjusting screw clockwise until deck lifts then continue 1/2 turn & relock - Contamination between relief ball and seat, holding valve open. Remove, disassemble, clean thoroughly, reassemble, replace, reset adjustment, test operate. 7. Pilot Operated to close Check Valve (9) will not close. - Foreign material in hydraulic fluid causing check valve seat to be held open. Remove SAE plug, remove zero profile valve assembly from cavity. Clean all parts thoroughly, clean bore thoroughly, change oil, replace all components. Adjust to original settings, test operate. <div style="text-align: center; margin-top: 20px;">  </div>
<p>Deck will not begin to raise immediately when motor begins to run. - Usually occurs only after the deck cylinder hose has been replaced with a new hose that was not pre-filled with oil.</p>	<p>Air is trapped in the deck lifting cylinder. Bleed as follows:</p> <p>METHOD #1</p> <ol style="list-style-type: none"> 1. Place selector switch in 'MAN' position if applicable. 2. Operate dock leveler and place in fully below level position. 3. Allow to rest in place for 60 – 90 seconds, and repeat as required until deck begins to raise immediately the motor starts to run. <p>METHOD #2</p> <ol style="list-style-type: none"> 1. Raise Dock and let Dock rest on maintenance stand. Remove and invert Cylinder the collapse ram fully. Power up to extend ram then re-install. <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div>

TROUBLE SHOOTING



WARNING

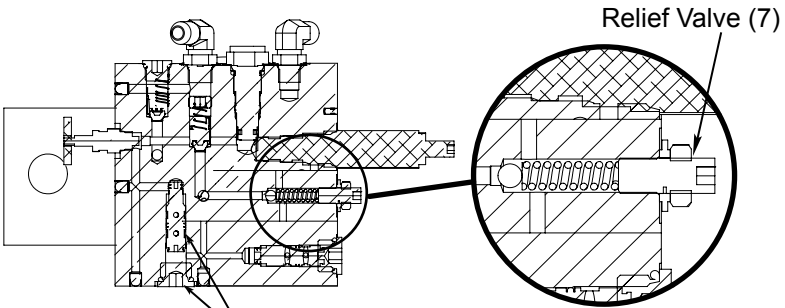
Do Not attempt to install, make repairs or adjustments. Only a trained and authorized service technician should perform the installation process. Contact your local dealer or distributor for assistance.

PROBLEM	PROBLEM CAUSE
<p>Deck will not raise when push button is operated.</p> <p>- Motor does not attempt to run, no sound is heard from motor / power pack and control box.</p>	<ol style="list-style-type: none"> 1. Interlock devices not operated, Eg . Overhead door interlock or vehicle restraint. <ul style="list-style-type: none"> - Open overhead door or repair sensor. - Engage vehicle restraint or chock wheels and key switch bypass. 2. No power supply to control station. <ul style="list-style-type: none"> - Breaker tripped. - Fuse blown. - (Disconnect) switch open. 3. Thermal overload tripped open. <ul style="list-style-type: none"> - Reset by pushing the reset button on the control station. - If trip-off recurs, repair motor circuit as required. 4. Faulty control box component – fuse, push button, contactor, transformer. <ul style="list-style-type: none"> - Repairs by qualified personnel as required. - Single phase condition on a three phase system. <div style="text-align: center;"> </div>
<p>Deck will not raise when push button is operated.</p> <p>-Motor attempts to run, but power supply breaker switch trips to the off position, turning the power off before the motor reaches full running speed</p>	<ol style="list-style-type: none"> 1. Not normally a fault in the controls or power unit. 2. Occurrence is more prevalent with 115/1/60 power supply. 3. Power supply circuit is overloaded by other equipment or components being used on a branch circuit controlled by the same breaker switch. 4. For permanent correction of this problem, the power supply line circuit must be upgraded to meet the requirements of the power unit. 5. A temporary measure to allow use of the dock leveler is to purposely misadjust the pressure relief valve to allow a minimal bypass of oil at motor start up, to cause a reduction of amperage draw during start up. <ul style="list-style-type: none"> - Turn relief valve adjusting screw counter-clockwise 1/4 turn and test operate. Repeat as required to a setting that will allow motor to start and deck and lip to raise and extend fully. Readjust to normal settings after line voltage problem has been corrected. <p>Failure to readjust to normal setting will result in unnecessary, frequent, service call backs.</p> <div style="text-align: center;"> </div>

TROUBLE SHOOTING

⚠ WARNING

Do Not attempt to install, make repairs or adjustments. Only a trained and authorized service technician should perform the installation process. Contact your local dealer or distributor for assistance.

PROBLEM	PROBLEM CAUSE
<p>Deck raises slower than normal. - Fluid level in reservoir is normal.</p>	<p>1. Deck or damaged skirts dragging on side of pit. - Repair as required. <i>Note:</i> (1) Hydraulic oil must be replaced if contaminated by foreign material. (2) Count and record turns when removing or replacing adjustable parts.</p> <p>2. Pressure Relief Bypassing. - Foreign material lodged between ball and seat. Change oil. Flush by raising deck and lip to maximum height and continue to run motor for 30 seconds maximum. - Remove relief valve (7), disassemble clean thoroughly, change oil, replace valve, adjust to original setting, test operate. - Ball seat is damaged and must be re seated. Remove relief valve, disassemble, clean thoroughly, using a brass punch firmly hit the ball onto its seat, re-clean, change oil, replace valve, adjust to original setting, test operate.</p> <p>3. Pilot Operated to close Check Valve (9) will not close. - Foreign material in hydraulic fluid causing check valve seat to be held open. Remove SAE plug, remove zero profile valve assembly from cavity. Clean all parts thoroughly, clean bore thoroughly, change oil, replace all components. Adjust to original settings, test operate.</p> <p>4. Faulty Power Pack - Replace Power Pack</p> <div style="text-align: center; margin-top: 20px;">  <p style="text-align: right; margin-right: 100px;">Relief Valve (7)</p> <p style="text-align: center;">Pilot Operated to close Check Valve (9) Deck Lowering</p> </div>
<p>Deck raises partially and stops. - Motor continues to run and power unit makes more noise than normal.</p>	<p>1. Oil level in reservoir is low. - Add appropriate hydraulic oil to the reservoir. - Locate oil leak and repair as required. Top-up oil reservoir with dock leveler in parked position. - Correct oil level is 1" below top of reservoir when dock leveler is in parked position.</p>

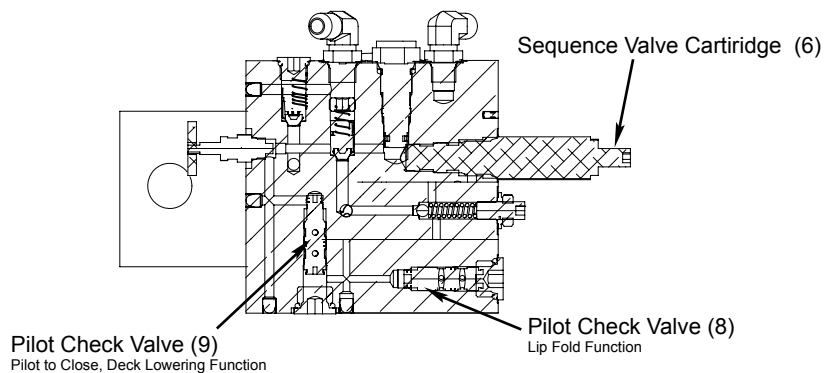
TROUBLE SHOOTING



WARNING

Do Not attempt to install, make repairs or adjustments. Only a trained and authorized service technician should perform the installation process. Contact your local dealer or distributor for assistance.

PROBLEM	PROBLEM CAUSE
Lip extends before deck is fully raised.	<p>1. Sequence valve operating pressure setting too low.</p> <ul style="list-style-type: none"> - Adjust to operate at higher pressure. - Turn adjusting screw clockwise in 1/2 turn increments until lip does not extend until after deck has reached fully raised height. <p><i>Note: Lip must extend with no hesitation after deck has reached fully raised height.</i></p>
Lip will not remain extended - Lowers as deck is floating down.	<p>1. Sequence valve shuttle sticking.</p> <ul style="list-style-type: none"> - Foreign material in hydraulic fluid causing sequence spool to stick in bore. Remove Sequence Valve Cartridge (6) from manifold cavity, clean all components thoroughly, change oil, replace all components, adjust to original settings, test operate. (The Sequence Valve Cartridge (6) should not be disassembled.)
Lip remains extended after deck has lowered to bottom of pit. (Lip will not auto-return).	<p>1. A valve adjustment will not correct this problem.</p> <p>2. The lip lowers by gravity only and must pivot freely on hinge.</p> <ul style="list-style-type: none"> - Thoroughly clean and lubricate hinge. - Disconnect lip cylinder and move lip by hand through full arc to 'feel' if it pivots freely. Lip may have been bent by truck backing into it. Replace or repair as required. Extend and retract lip cylinder by hand. Cylinder rod may be bent and binding because of worn hinge pin. <p>3. Inspect for pinched hose restricting oil flow.</p> <p>4. Pilot Operated Check Valves (8 & 9) are sticking due to contamination.</p> <ul style="list-style-type: none"> - Remove, inspect, test and clean as required
Lip does not lower when deck is raising, or does not lower with smooth motion.	<p>1. Sequence Valve Cartridge (6) operating pressure set too low</p> <ul style="list-style-type: none"> - Adjust to operate at higher pressure. - Turn adjusting screw clockwise in 1/2 turn increments until lip lowers smoothly as deck is raising. <p>2. Lip must lower by gravity, check for bent or damaged lip, thoroughly clean and lubricate.</p>
Deck raises fully - Lip does not attempt to extend.	<p>1. Sequence valve operating pressure set too high.</p> <ul style="list-style-type: none"> - Adjust to operate at lower pressure. - Turn adjusting screw counter-clockwise out 1/2 turn increments until lip will extend with no hesitation after deck has reached fully raised height. <p>2. Check oil level in reservoir.</p> <ul style="list-style-type: none"> - Power unit sound will be louder than normal if oil level is low. - Top-up oil tank with appropriate hydraulic oil if required see the maintenance section 7.6 for recommended oil.



TROUBLE SHOOTING

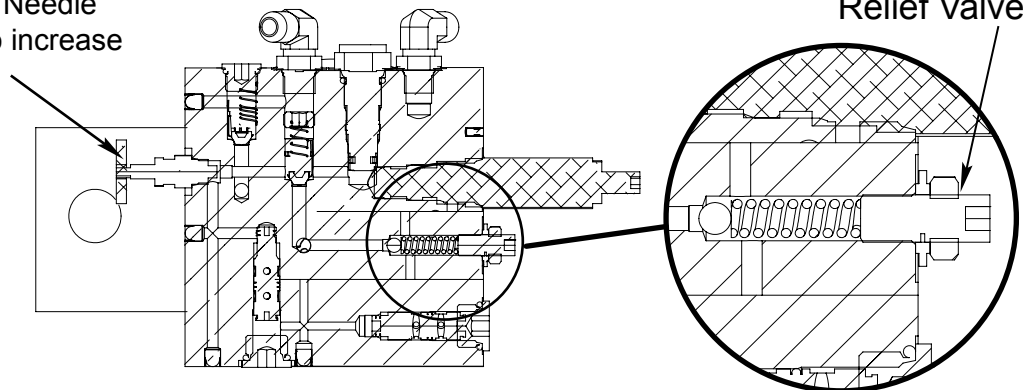
⚠ WARNING

Do Not attempt to install, make repairs or adjustments. Only a trained and authorized service technician should perform the installation process. Contact your local dealer or distributor for assistance.

PROBLEM	PROBLEM CAUSE
<p>Lip does not extend fully.</p> <ul style="list-style-type: none"> - Oil level in reservoir is not low. 	<ol style="list-style-type: none"> 1. Lip plate bent causing hinge to bind. <ul style="list-style-type: none"> - Repair and lubricate as required. 2. Foreign material lodged in the lip hinge area. <ul style="list-style-type: none"> - Clean thoroughly as required. 3. Relief valve is by-passing. <ul style="list-style-type: none"> - In some instances slight mechanical imperfections can be overcome by increasing the hydraulic pressure. - Turn Relief Valve adjusting screw clockwise until it bottoms out and then back off 1/8 turn. Note: Repair is not completed until mechanical damage is corrected.
<p>Lip lowers slowly in normal temperatures and very slowly in extremely cold weather.</p> <ul style="list-style-type: none"> - Deck lowering speed is correct. 	<ol style="list-style-type: none"> 1. A valve adjustment will not correct this problem. Opening the Needle Valve will cause the deck to lower too fast which will in turn cause the fall-safe velocity fuse to lock. 2. The lip lowers by gravity and must pivot freely on its full length hinge. <ul style="list-style-type: none"> - Thoroughly clean and lubricate the lip hinge. - Inspect cylinder hose to assure it is not pinched, causing a restriction. - Hose should not be over 18 feet long. Shorten hose and increase hose diameter to reduce restrictions if possible. - Change to special low temperature hydraulic fluid and change seasonally. See the maintenance section 7.6 for recommended low temperature oil. - If problem is extreme, modify to the power-down hydraulic lip system - A double acting cylinder forces the lip to lower as the deck raises.
<p>Deck lowering speed is too slow or too fast. Refer to manifold cross section drawing on previous page. See NEEDLE VALVE</p>	<p>Lowering speed adjustment required.</p> <ol style="list-style-type: none"> 1. To Increase Lowering Speed. <ul style="list-style-type: none"> - Turn lowering speed adjusting Needle Valve counterclockwise in 1/4 turn increments to a setting that causes the deck to lower from fully raised with lip extended to fully lowered below level with lip extended in 7 seconds maximum. Note: Fall-safe velocity fuse will lock closed if lowering speed is too fast, and deck will not lower. 2. To Decrease Lowering Speed. <ul style="list-style-type: none"> - Turn lowering speed adjusting Needle Valve clockwise in 1/4 turn increments until desired lowering speed is reached. Note: Slower than normal lowering speed will not adversely affect the dock leveler systems.

Needle Valve

Deck lowering speed Needle Valve. Turn C.C.W. to increase deck lowering speed.



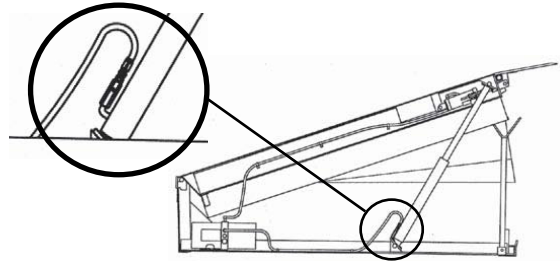
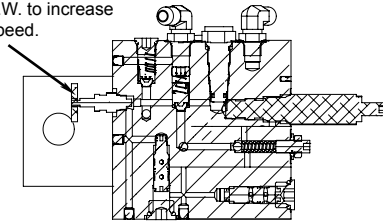
TROUBLE SHOOTING

⚠ WARNING

Do Not attempt to install, make repairs or adjustments. Only a trained and authorized service technician should perform the installation process. Contact your local dealer or distributor for assistance.

PROBLEM	PROBLEM CAUSE
<p>Deck will not lower from fully raised, lip extended position.- Lip does lower.</p>	<ol style="list-style-type: none"> The fall-safe velocity fuse located at the bottom of the deck cylinder is in the locked-closed position. <ul style="list-style-type: none"> - Deck lowering speed is set too fast. Turn lowering speed adjustment NEEDLE VALVE clockwise in 1/4 turn increments until travel time is 7 seconds maximum from fully raised to fully lowered positions. - Air is entrapped in the deck cylinder and hose. Bleed system as instructed by operating deck to fully below level and allow to sit for 60 – 90 second intervals. Repeat as required. <p><i>Note: To open a locked velocity fuse, remove deck weight from cylinder by lifting with a fork truck or other means if cylinder is fully extended. Jog the up button if cylinder is not extended. Repairs are needed before up jog is performed. Example: leaking hydraulic hose</i></p>

Needle Valve (1)
Deck lowering speed Needle Valve. Turn C.C.W. to increase deck lowering speed.



<p>Dock does not return to parked position automatically.</p> <ul style="list-style-type: none"> - Motor does not attempt to run after lip lowers. - Operation is normal when push button is used. 	<ol style="list-style-type: none"> Selector switch not positioned to 'Auto' setting. <ul style="list-style-type: none"> - Select desired operating mode. Operating cam adjustment required. <ul style="list-style-type: none"> - Lip controlled operating cam does not travel far enough to operate sensor switch. - Adjust cam away from lip in 1/16" increments and retest. Faulty lip cylinder mounted sensor switch. <ul style="list-style-type: none"> - Replace as required. Faulty wiring between sensor switch and control station. <ul style="list-style-type: none"> - Replace or repair as required. Faulty selector switch. 	
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<p>Motor Starts and deck begins to raise but stops before lip clears lip keepers and swings in.</p> <ul style="list-style-type: none"> -Deck lowers and motor starts again, repeating the up-down cycle. <p>Motor Starts, deck raises, lip swings in fully but motor does not shut off.</p> <ul style="list-style-type: none"> - Deck raises to full height and lip extends partially, motor stops, deck lowers and cycle repeats. 	<ol style="list-style-type: none"> Operating cam adjustment required. <ul style="list-style-type: none"> - Lip controlled operating cam travels too far rearward over the sensor switch as the lip and deck raise. - Adjust cam toward lip in 1/16" increments and retest. 	
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WARNING

Be aware that the sensor switch mounted on the hydraulic cylinder performs the same function as the control station push button switch. When the sensor switch is operated, the motor will start and the deck will raise if the power supply is "ON".

NOTES

Warranty Policy
HYDRAULIC CONVERSION LIT

PLEASE REFER TO BLUEGIANT.COM OR CONTACT BLUE GIANT FOR INFORMATION
REGARDING WARRANTY POLICY INFORMATION.



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