

A Division of Systems, LLC

POWERAMP[®]

Premium Loading Dock Systems

VS Series

Dock Leveler

Owner's/User's Manual



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PRECAUTIONS

Recognize Precautionary Information

Safety-Alert Symbol



The Safety-Alert Symbol is a graphic representation intended to convey a safety message without the use of words. When you see this symbol, be alert to the possibility of death or serious injury. Follow the instructions in the safety message panel.

DANGER

The use of the word DANGER signifies the presence of an extreme hazard or unsafe practice which will most likely result in death or severe injury.

WARNING

The use of the word WARNING signifies the presence of a serious hazard or unsafe practice which could result in death or serious injury.

CAUTION

The use of the word CAUTION signifies possible hazard or unsafe practice which could result in minor or moderate injury.

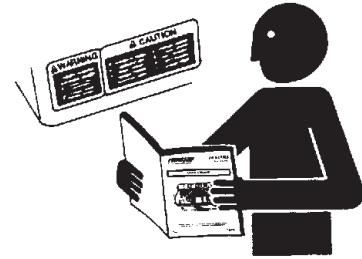
NOTICE

The use of the word NOTICE indicates information considered important, but not hazard-related, to prevent machine or property damage.

SAFETY INSTRUCTIONS

Indicates a type of safety sign, or separate panel on a safety sign, where safety-related instructions or procedures are described.

General Operational Precautions



Read and understand the Owner's/User's Manual and become thoroughly familiar with the equipment and its controls before operating the equipment.

Never operate equipment while a safety device or guard is removed or disconnected.

Never remove DANGER, WARNING, or CAUTION signs, Placards or Decals on the equipment unless replacing them.

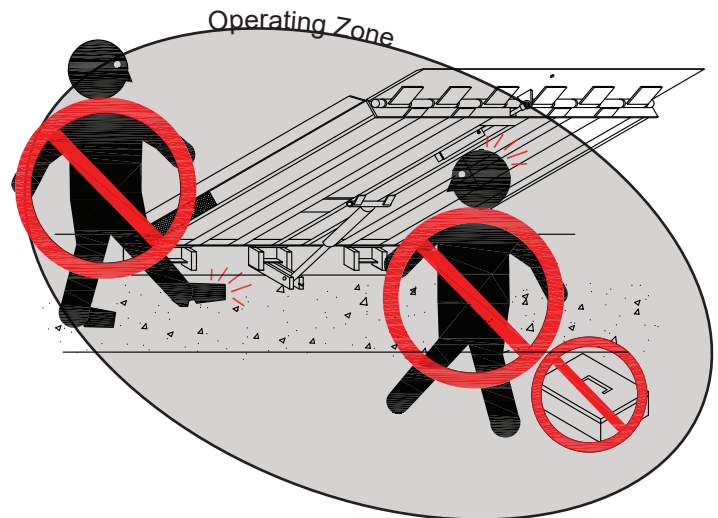


Figure 1

Do not start the equipment until all unauthorized personnel in the area have been warned and have moved outside the operating zone (Figure 1).

Remove any tools or foreign objects from the operating zone before starting.

Keep the operating zone free of obstacles that could cause a person to trip or fall.



WARNING: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

PRECAUTIONS

Operational Precautions



Learn the safe way to operate this equipment. Read and understand the manufacturer's instructions. If you have any questions, ask your supervisor.

DANGER



Stay clear of dock leveling device when transport vehicle is entering or leaving area.



Do not move or use the dock leveling device if anyone is under or in front of it.



Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

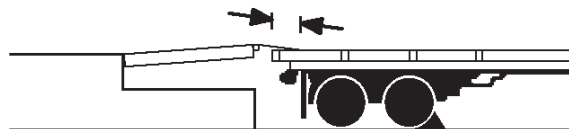
WARNING



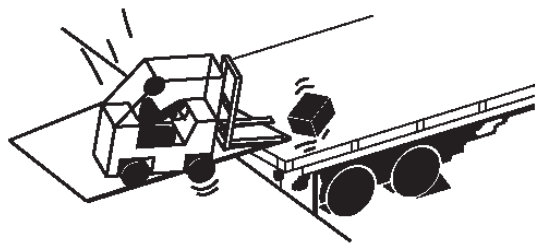
Chock/restrain all transport vehicles. Never remove the wheel chocks or release the restraining device until loading or unloading is finished, and transport driver has been given permission to drive away.



Do not use a broken or damaged dock leveling device or restraining device. Make sure proper service and maintenance procedures have been performed before using.



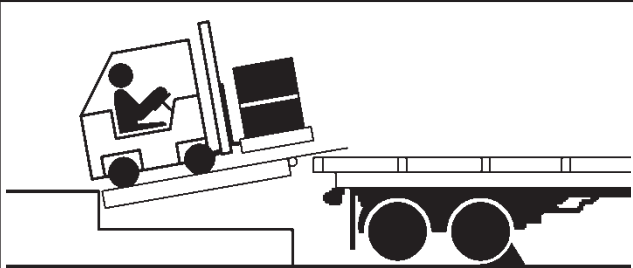
Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



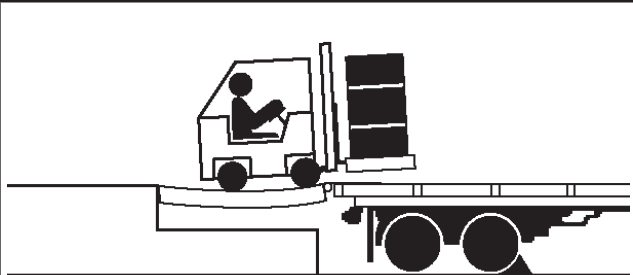
Keep a safe distance from both side edges.

Operational Precautions

! WARNING



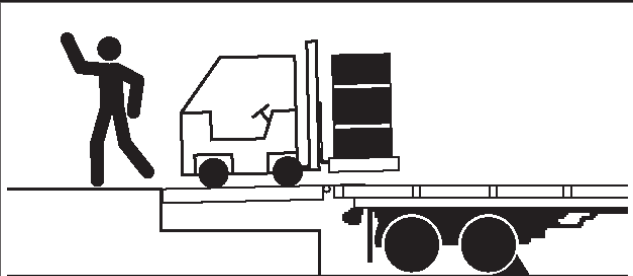
Do not use dock leveling device if transport vehicle is too high or too low.



Do not overload the dock leveling device.



Do not operate any equipment while under the influence of alcohol or drugs.




Do not leave equipment or material unattended on dock leveling device.

PRECAUTIONS

Safety Decals

⚠ DANGER

①



CRUSH HAZARD
Before doing any maintenance, repair or adjustments on the dock leveler, first store the leveler in a vertical position with lip extended, then ensure all maintenance propp(s) are in maintenance positions and properly secured, and then properly secure the storage prop with the prop lock pin.

DO NOT remove the prop lock pin from the storage prop until you are sure the hydraulic system is in proper working condition and all maintenance propp(s) are in maintenance positions and properly secured. After prop lock pin is removed from the storage prop all maintenance propp(s) may be returned to storage positions. DO NOT stand in front of the dock leveler. Reach from side of the leveler.

DO NOT force the prop lock pin out of the storage prop. If the pin does not slide freely, support the leveler securely using other means and determine the cause of the interference.


Failure to follow these instructions will result in death or serious injury.

Refer to owner's/user's manual for proper procedure.

079-0208 Rev. 1

⚠ DANGER

①



CRUSH HAZARD
Before doing any maintenance, repair or adjustments on the dock leveler, first store the leveler in a vertical position with lip extended, then ensure all maintenance propp(s) are in maintenance positions and properly secured, and then properly secure the storage prop with the prop lock pin.

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DO NOT force the prop lock pin out of the storage prop. If the pin does not slide freely, support the leveler securely using other means and determine the cause of the interference.

Failure to follow these instructions will result in death or serious injury.

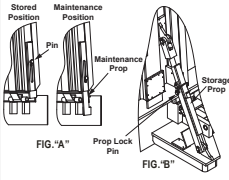
Refer to owner's/user's manual for proper procedure.

079-0208 Rev. 1

⚠ DANGER

②

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL propp(s) have been properly positioned and secured. First, pull pin to position side maintenance propp(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.

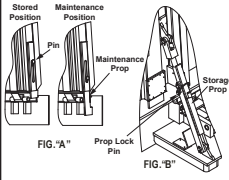


079-0208 Rev. 1

⚠ DANGER

②

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL propp(s) have been properly positioned and secured. First, pull pin to position side maintenance propp(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



079-0208 Rev. 1

⚠ DANGER

③

CRUSH HAZARD
DO NOT WALK IN FRONT OF DOCK LEVELER until you:

- Restore the dock leveler to its safe stored vertical position with lip extended.

Unsupported dock levelers can lower unexpectedly.

Before allowing vehicles to leave the dock always:

- Ensure that no equipment material or people are on dock leveler.
- Restore dock leveler to its safe stored vertical position with lip extended.

SAFETY INFORMATION

OPERATION

1. Read and follow all instructions and warnings in the owner's/user's manual.
2. Use of dock leveler restricted to authorized personnel.
3. Always chock transport vehicle wheels or engage vehicle restraint before operating dock leveler or beginning to load or unload.
4. Never use hands or equipment to move the ramp or lip.
5. Before activating dock leveler:
 - Ensure transport vehicle is backed against bumpers. Remove any and loads if required.
 - Check transport vehicle alignment to avoid lip interference. If lip does not lower to transport vehicle bed, reposition transport vehicle.
6. Ensure that transport vehicle bed supports extended lip or the leveler frame supports the ramp before driving on ramp.
7. Stay clear of hinges and front and sides of moving dock leveler.
8. Never use damaged or malfunctioning dock leveler. Report problems immediately to supervisor.

MAINTENANCE/SERVICE

1. Read and follow all instructions, warnings and maintenance schedules in the owner's/user's manual.
2. Maintenance/service of dock leveler restricted to authorized personnel.
3. Place barriers on the driveway and on dock floor to indicate service work is being performed.
4. DO NOT SERVICE LEVELER unless dock leveler is securely supported by all propp.
 - a. First, ensure all maintenance propp(s) are in maintenance positions and properly secured.
 - b. Then engage prop lock pin in storage propp.
5. Turn off power and use OSHA lockout/tagout procedures. Failure to follow posted instructions will result in death or serious injury.

Call 1-800-643-5424 for replacement placards, warning labels, or owner's/user's manual. 079-0208 Rev. 1

⚠ DANGER

③

CRUSH HAZARD
DO NOT WALK IN FRONT OF DOCK LEVELER until you:

- Restore the dock leveler to its safe stored vertical position with lip extended.

Unsupported dock levelers can lower unexpectedly.

Before allowing vehicles to leave the dock always:

- Ensure that no equipment material or people are on dock leveler.
- Restore dock leveler to its safe stored vertical position with lip extended.

SAFETY INFORMATION

OPERATION

1. Read and follow all instructions and warnings in the owner's/user's manual.
2. Use of dock leveler restricted to authorized personnel.
3. Always chock transport vehicle wheels or engage vehicle restraint before operating dock leveler or beginning to load or unload.
4. Never use hands or equipment to move the ramp or lip.
5. Before activating dock leveler:
 - Ensure transport vehicle is backed against bumpers. Remove any and loads if required.
 - Check transport vehicle alignment to avoid lip interference. If lip does not lower to transport vehicle bed, reposition transport vehicle.
6. Ensure that transport vehicle bed supports extended lip or the leveler frame supports the ramp before driving on ramp.
7. Stay clear of hinges and front and sides of moving dock leveler.
8. Never use damaged or malfunctioning dock leveler. Report problems immediately to supervisor.

MAINTENANCE/SERVICE

1. Read and follow all instructions, warnings and maintenance schedules in the owner's/user's manual.
2. Maintenance/service of dock leveler restricted to authorized personnel.
3. Place barriers on the driveway and on dock floor to indicate service work is being performed.
4. DO NOT SERVICE LEVELER unless dock leveler is securely supported by all propp.
 - a. First, ensure all maintenance propp(s) are in maintenance positions and properly secured.
 - b. Then engage prop lock pin in storage propp.
5. Turn off power and use OSHA lockout/tagout procedures. Failure to follow posted instructions will result in death or serious injury.

Call 1-800-643-5424 for replacement placards, warning labels, or owner's/user's manual. 079-0208 Rev. 1

⚠ DANGER

④

CRUSH HAZARD
Do not remove the prop lock pin from the storage prop unless authorized personnel have confirmed that the hydraulic cylinders, valve and hoses have been properly installed and bleed with fluid. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.

079-0208 Rev. 1

⚠ DANGER

⑥

CRUSH HAZARD
DO NOT REMOVE hydraulic cylinder until leveler is safely supported by maintenance propp. Refer to owner's/user's manual for proper maintenance procedure. Failure to comply will result in death or serious injury.

079-0208 Rev. 1

ATTENTION INSTALLER:
Replace rear plug with breather cap

CAUTION

Do not overfill
Oil should fill 1/2 site glass

Use ULTRA VIS HV1 15 or
MIL. SPEC S606
Questions Call: 800.643.5424

079-0208 Rev. 1

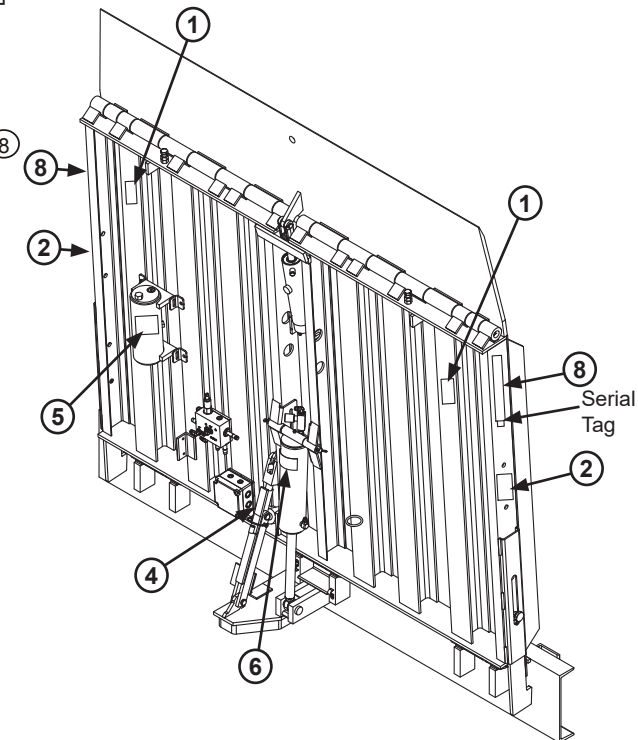



Figure 2

Decal 2 will have two positions, one on the left outside beam as shown and one on the right outside beam in the same position
Decal 3 will have two positions, one on the left outside beam as shown and one on the right outside beam in the same position
Decal 8 will have two positions, one on the left outside beam as shown and one on the right outside beam in the same position
Decal 7 will be positioned on the upper most corner of the right outside beam (mirror position of decal 7)

4

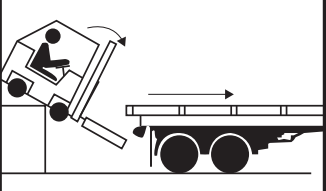
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Placard



DANGER


OPERATING INSTRUCTIONS




- Read and follow all instructions, warnings, and maintenance schedules in the manual and on placards.
- Operation and servicing of dock leveler is restricted to authorized personnel.

- Always chock transport vehicle wheels or engage vehicle restraint and set parking brakes before operating dock leveler or beginning to load or unload.
- Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
- Ensure the transport vehicle floor supports extended lip or the leveler frame (lip keepers or below dock endload supports) supports the ramp before driving on ramp.
- Stay clear of hinges and front and sides of moving dock leveler.
- Never use hands or equipment to move the ramp or lip.
- Never use damaged or malfunctioning dock leveler. Report problems immediately to supervisor.
- Always store dock leveler and remove people, material, and equipment from ramp before vehicle leaves the dock.
- DO NOT ENTER PIT unless dock leveler is securely supported and proper lockout/tagout procedures have been completed. See "Maintenance Precautions" in Owner's/User's Manual.


FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN DEATH OR OTHER SERIOUS INJURY.



Scan to view our owner's/user's manuals online.
www.LoadingDockSystems.com
1.800.643.5424
 Call for additional placards, or manuals, or with questions regarding proper use, maintenance, and repair of dock leveler.

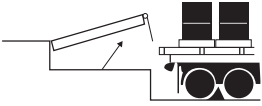


WARNING: CANCER AND REPRODUCTIVE HARM
www.P65Warnings.ca.gov



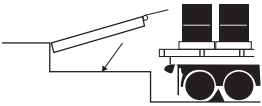
1751-0874 Rev D

POWERED DOCK LEVELERS



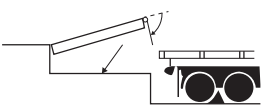
NORMAL OPERATION

1. Raise the platform by Pressing and holding the RAISE button.
2. Hold the RAISE button until the lip is fully extended, then release the RAISE button. The platform will lower until lip is resting on the transport vehicle.




STORING LEVELER

1. Press the RAISE button until the lip is completely folded. When the lip is folded, release the RAISE button. The platform will lower returning to the cross-traffic position.



BELOW DOCK ENDLOADING

- **(AIR POWERED ONLY)** Press and hold the RAISE button until the leveler is 12" above dock level. Pull the below dock level chain until the leveler lowers the full below dock position.
- **(HYDRAULIC ONLY)** Press and hold the RAISE button until the leveler is fully raised. As the lip starts to extend, release the RAISE button. The leveler will lower to the below dock position provided the lip extension allows the lip to clear the lip keepers.
- **(HYDRAULIC WITH INFINITE LIP CONTROL)** If equipped, raise the platform by Pressing and holding the RAISE button. When the lip is just above the lip keepers, simultaneously Press and hold the RAISE button and the LIP OUT button until lip has extended beyond the lip keepers. Release both buttons.



NOTE: If equipped, Pressing E-STOP button will stop platform from lowering.

1751-0878

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OWNER'S/USER'S RESPONSIBILITIES

- 1) The manufacturer shall provide to the initial purchaser and make the following information readily available to the owners/users and their agents, all necessary information regarding Safety Information, Operation, Installation and Safety Precautions, Recommended Initial and Periodic Inspections Procedures, Planned Maintenance Schedule, Product Specifications, Troubleshooting Guide, Parts Break Down, Warranty Information, and Manufacturers Contact Information, as well as tables to identify the grade(slope) for all variations of length or configuration of the dock leveling device and information identifying the maximum uncontrolled drop encountered when sudden removal of support while in the working range of the equipment.
- 2) When selecting loading dock safety equipment, it is important to consider not only present requirements but also future plans and any possible adverse conditions, environmental factors or usage. The owners/users shall provide application information to the manufacturer to receive recommendations on appropriate equipment specifications and capacity.
- 3) The owner/user must see all nameplates, placards, decals, instructions and posted warnings are in place and legible and shall not be obscured from the view of the operator or maintenance personnel for whom such warnings are intended for. Contact manufacturer for any replacements.
- 4) Dock leveling devices may become hazardous if the manufacturer's instructions regarding modifications or adjustments are not followed. Modifications or alterations of dock leveling devices shall only be made with prior written approval from the original manufacturer. These changes shall be in conformance with all applicable provisions of the MH30.1 standard and shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application.
- 5) The owner/user should recognize the inherent dangers of the interface between the loading dock and the transport vehicle. The owner/ user should, therefore, train and instruct all operators in the safe operation and use of the loading dock equipment in accordance with manufacturer's recommendations and industry standards. Effective operator training should also focus on the owner's/user's company policies, operating conditions and the manufacturer's specific instructions provided with the dock leveling device. Maintaining, updating and retraining all operators on safe working habits and operation of the equipment, regardless of previous experience, should be done on a regular basis and should include an understanding and familiarity with all functions of the equipment. Owners/users shall actively maintain, update and retrain all operators on safe working habits and operations of the equipment.
- 6) An operator training program should consist of, but not necessarily be limited to, the following:
 - a) Select the operator carefully. Consider the physical qualifications, job attitude and aptitude.
 - b) Assure that the operator reads and fully understands the complete manufacturer's owners/users manual.
 - c) Emphasize the impact of proper operation upon the operator, other personnel, material being handled, and equipment. Cite all rules and why they are formulated.
 - d) Describe the basic fundamentals of the dock leveling device and components design as related to safety, e.g., mechanical limitation, stability, functionality, etc.
 - e) Introduce the equipment. Show the control locations and demonstrate its functions. Explain how they work when used properly and maintained as well as problems when they are used improperly.
 - f) Assure that the operator understands the capacity rating, nameplate data, placards and all precautionary information appearing on the dock leveling device.
 - g) Supervise operator practice of equipment.
 - h) Develop and administer written and practical performance tests. Evaluate progress during and at completion of the course.
 - i) Administer periodic refresher courses. These may be condensed versions of the primary course and include on-the-job operator evaluation.

OWNER'S/USER'S RESPONSIBILITIES

- 7) Loading dock safety equipment should never be used outside of its vertical working range, or outside the manufacturer's rated capacity. It shall also be compatible with the loading equipment and other conditions related to dock activity. Please consult the manufacturer if you have any questions as to the use, vertical working range or capacity of the equipment. Only properly trained and authorized personnel should operate the equipment.
- 8) It is recommended that the transport vehicle is positioned as close as practical to the dock leveling device and in contact with both bumpers. When an industrial vehicle is driven on or off a transport vehicle during loading and unloading operations, the transport vehicle parking brakes shall be applied and wheel chocks or a restraining device that provides equal or better protection of wheel chocks shall be engaged. Also, whenever possible, air-ride suspension systems should have the air exhausted prior to performing said loading and unloading operations.
- 9) When goods are transferred between the loading dock and a trailer resting on its support legs/ landing gear instead of a tractor fifth wheel or converter dolly, it is recommended that an adequate stabilizing device or devices shall be utilized at the front of the trailer.
- 10) In order to be entitled to the benefits of the standard product warranty, the dock safety equipment must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/ or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic lubrication, adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the owner/user.
- 11) Manufacturer's recommended maintenance and inspection of all dock leveling devices shall be performed in conformance with the following practices: A planned maintenance schedule program must be followed, only trained and authorized personnel shall be permitted to maintain, repair, adjust and inspect dock leveling devices, and only the use of original equipment manufacturer parts, manuals, maintenance instructions, labels, decals and placards or their equivalent. Written documentation of maintenance, replacement parts or damage should be kept. In the event of damage, notification to the manufacturer is required.
- 12) Loading dock devices that are structurally damaged or have experienced a sudden loss of support while under load, such as might occur when a transport vehicle is pulled out from under the dock leveling device, shall be removed from service, inspected by a manufacturer's authorized representative, and repaired or replaced as needed or recommended by the manufacturer before being placed back in service.

INTRODUCTION

General Information



Figure 3

This manual provides current information on the VS-series dock leveler (Figure 3). Due to ongoing product improvement, some parts may have changed, along with operation and troubleshooting methods. This manual describes these changes where applicable.

The VS series dock leveler comes equipped with an electrical control panel, which allows push button operation of the dock leveler functions. Each VS dock leveler unit and control panel has been factory prewired and tested to ensure satisfactory operation.

To illustrate which connections are to be made in the field at installation, electrical drawings are included with each order or by contacting Systems, LLC Technical Services.

VS dock levelers are available in the following sizes, weight capacities, and options:

Width

6 ft (1829 mm)
6.5 ft (1981 mm)
7 ft (2134 mm)

Length

5 ft (1524 mm)
6 ft (1829 mm)
8 ft (2438 mm)

Capacity (CIR*)

40,000 lb (18 144 kg)
45,000 lb (20 412 kg)
50,000 lb (22 680 kg)

* CIR (Comparative Industry Rating)

Call Poweramp to discuss available Powerpack mounting configurations, voltages, phases and options to meet your specific needs.

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

Component Identification

Inspect package and all components. Report any missing or damaged items immediately and note on the shipping Bill Of Lading (BOL).

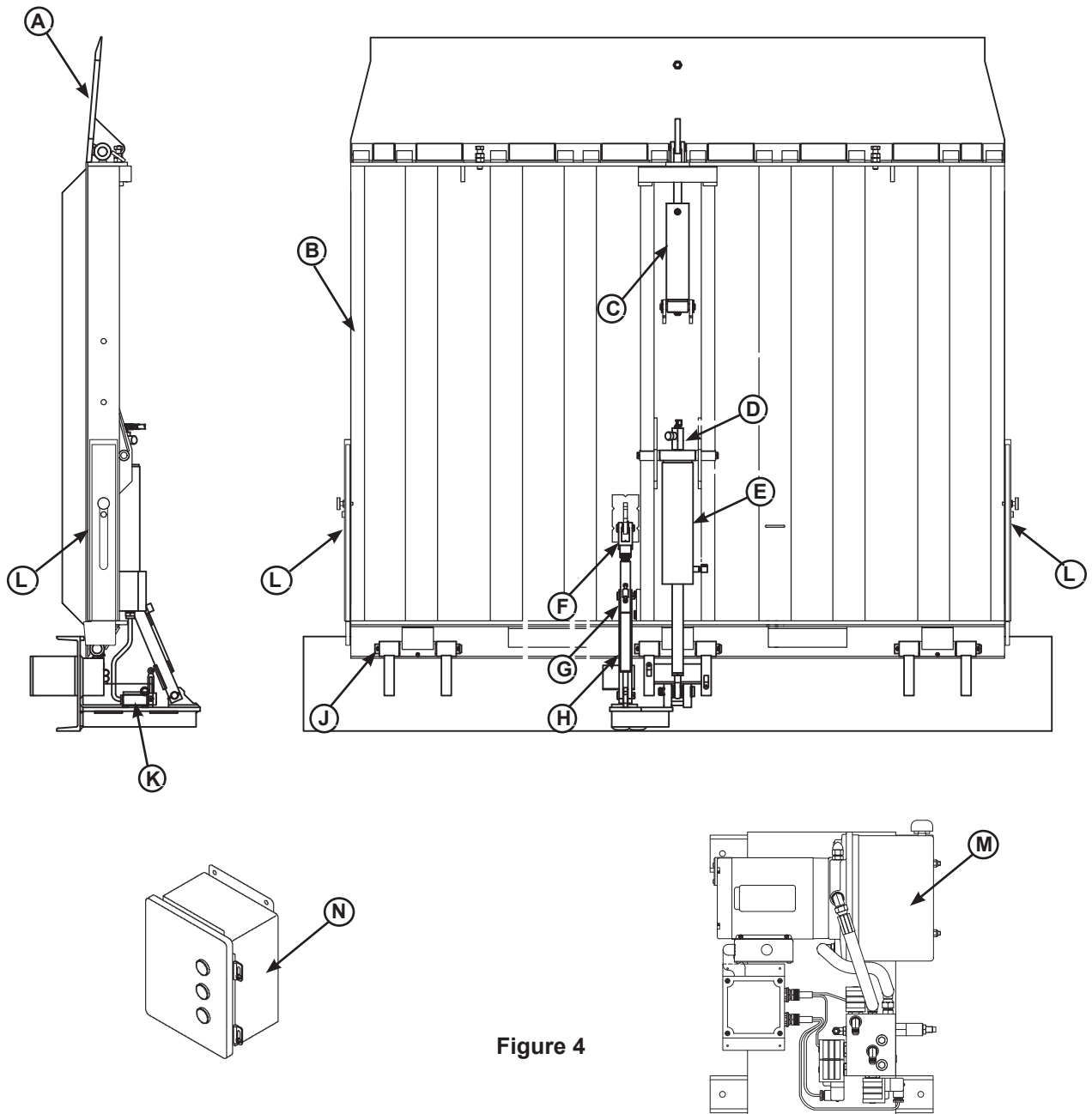


Figure 4

- | | | | |
|------------------------|--------------------------|---------------------------|-----------------|
| A — Lip | E — Hoist Cylinder(s)* | H — Storage Prop Assembly | M — Powerpack** |
| B — Platform | F — Storage Prop Yoke | J — Hinge Pins | N — Control Box |
| C — Lip Cylinder(s)* | G — Prop Kicker Solenoid | K — Stored Limit Switch | |
| D — Flow Control Valve | | L — Maintenance Props | |

* Models may be equipped with 1 or 2 cylinders.

**Powerpack may be mounted on underside of leveler or remotely. Remote unit shown, see pages 50-52 for Powerpack options.

INSTALLATION

Installation Precautions

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

! WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before installation is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! WARNING

DO NOT grind or weld if hydraulic fluid or other flammable liquid is present on the surface to be ground or welded.

DO NOT grind or weld if uncontained hydraulic fluid or other flammable liquid is present. Stray sparks can ignite spills or leaks near the work area. Always clean up the oil leaks and spills before proceeding with grinding or welding.

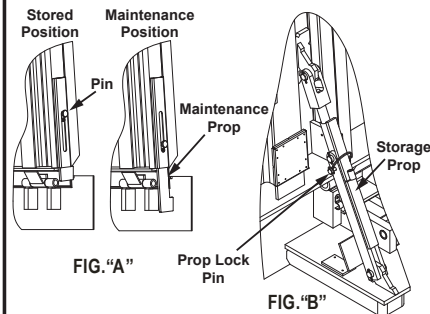
Always keep a fire extinguisher of the proper type nearby when grinding or welding.

! CAUTION

Only trained installation professionals with the proper equipment should install this product.

! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, pull pin to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



! DANGER

CRUSH HAZARD
DO NOT REMOVE hydraulic cylinder until leveler is safely supported by maintenance prop. Refer to owner's/user's manual for proper maintenance procedure. Failure to comply will result in death or serious injury.

1751-0138 Rev B

NOTICE

DO NOT connect the dock leveler electrical wiring and ground connections until all welding has been completed.

DO NOT ground welding equipment to any hydraulic or electrical components of the dock leveler. Always ground welding equipment to the vehicle restraint base, NEVER to the moving components.

Failure to follow these instructions may damage the motor, hydraulics, wiring, and/or control panel.

NOTICE

Installation of vertical dock levelers from inside is recommended, as combined height of leveler and proper lifting equipment may be greater than outside door height.

Prepare Pit

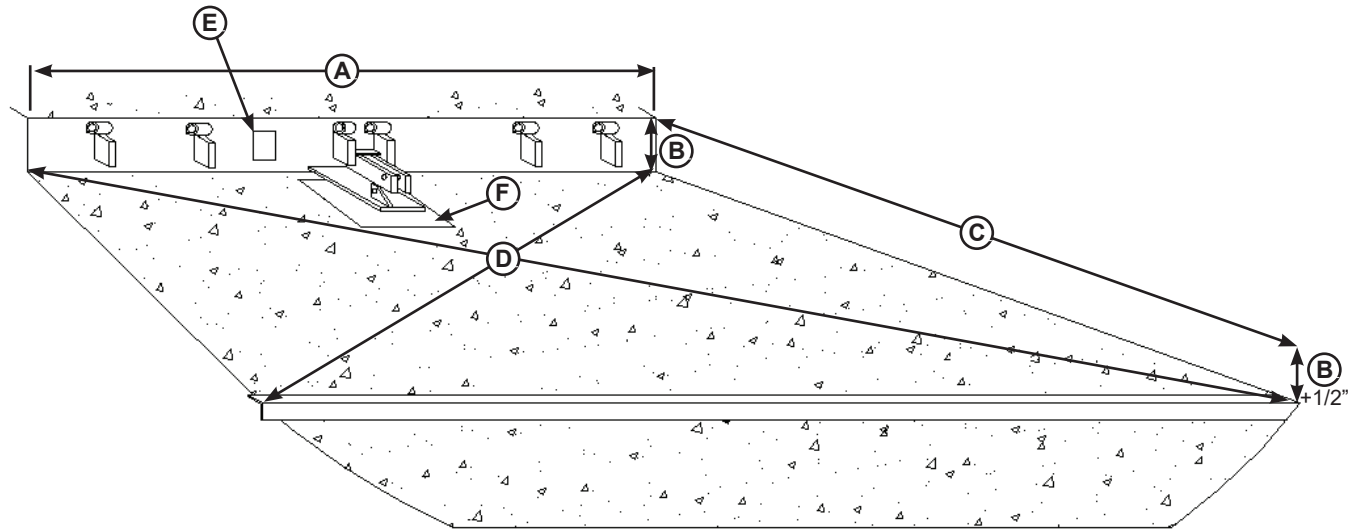


Figure 5

A—Pit Width

B—Pit Depth (Dock Floor-to-Pit Floor)

C—Pit Length

D—Distance (Pit Corner-to-Corner)
(Top, Bottom, and Both Sides)

E—Electrical Junction Box

F—Floor Embed Plate

Before lowering the dock leveler into the pit, the following must be performed:

1. Remove all debris from the pit and sweep the pit clean.
2. Check the entire dock leveler pit for proper construction according to approved/certified pit drawings. Make sure pit is square, has the proper depth and taper by making the following measurements (see Figure 5):

- Measure pit width distance (**A**) at both front and rear of pit.
- Measure dock floor-to-pit floor distance (**B**) on both sides of the rear embed channel and at front if applicable.
- Measure pit floor taper; rear to front cannot exceed 1/2" total taper.
- Measure pit length distance (**C**) at both sides.
- Measure corner-to-corner (cris-cross) distance (**D**) at both sides. Take measurements at dock floor level and at pit floor level.

Note: If any measurements are off by more than 1/8 in. (3.2 mm) in depth and/or width, or 1/4 in (6.3 mm) in squareness contact Technical Services before proceeding.

3. Make sure the field junction box for the dock leveler (**E**) and floor embed plate (**F**) is at the correct location per pit diagrams.

Retrofit installations: Refer to the job-specific layout drawings provided by Systems, LLC for retrofit installations. Hinge plate weldment must be welded to embedded channel along top, bottom, and both sides, and all holes must be plug welded.

Contact Systems, LLC Technical Services for digital copies of layout drawings if required.

INSTALLATION

Prepare Dock Leveler

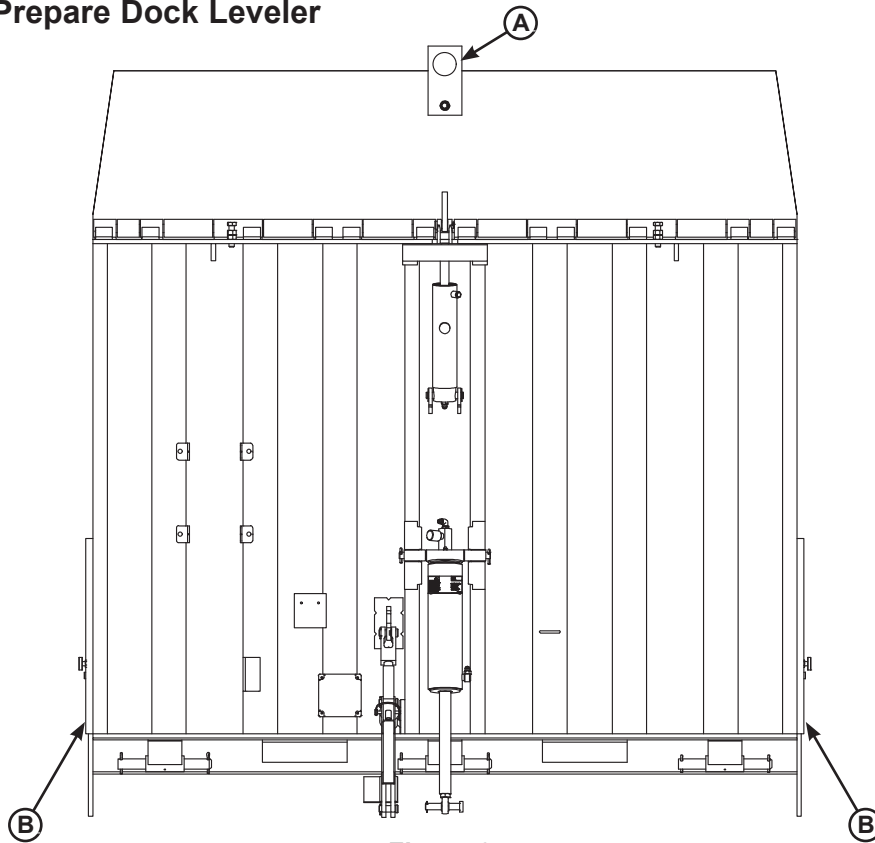


Figure 6

A— Lifting Bracket

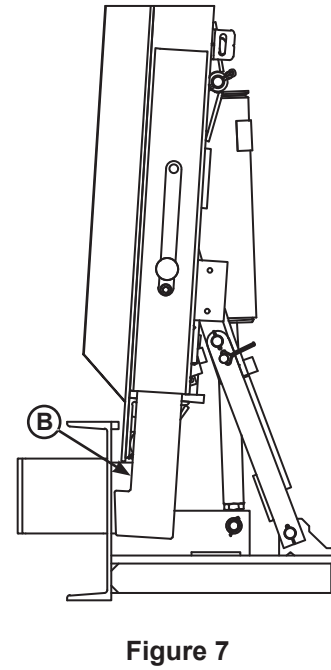


Figure 7

B — Maintenance Props

! DANGER

CRUSH HAZARD
DO NOT REMOVE hydraulic cylinder until leveler is safely supported by maintenance prop. Refer to owner's/user's manual for proper maintenance procedure. Failure to comply will result in death or serious injury.

1751-0138 Rev B

! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, pull pin to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.

Stored Position Maintenance Position

Pin Maintenance Prop Storage Prop

FIG. "A" Prop Lock Pin FIG. "B"

1751-0230 Rev F

! WARNING

The dock leveler is heavy. Use a lifting device and chains with the appropriate lifting capacity and reach.

Always use the lifting brackets provided with the unit whenever lowering or lifting a dock leveler.

Prepare Dock Leveler (continued)

NOTICE

Installation of vertical dock levelers from inside is recommended, as combined height of leveler and proper lifting equipment may be greater than outside door height.

1. Remove any control panel, bumpers or palletizing that may be banded to the dock leveler. Do not remove banding on hoist cylinder.
2. Make sure the mounting hardware of lifting brackets (**A**) is snug. The brackets should pivot without binding on the mounting cap screw.
3. Attach lifting chains to lifting brackets (**A**) and to a lifting device (i.e., hoist or fork truck) having the appropriate lifting capacity and reach (see Figure 8).

NOTICE

Overall length of lifting chain and bracket must be kept to a minimum to prevent interference between the lifting equipment and the building ceiling or door as the dock leveler is lowered into the pit.

4. Ensure maintenance props (**B**) are in the lowered position and tightly secured (see Figures 6 and 7).

Note: Maintenance props must be in the lowered position and tightly secured during installation and service.

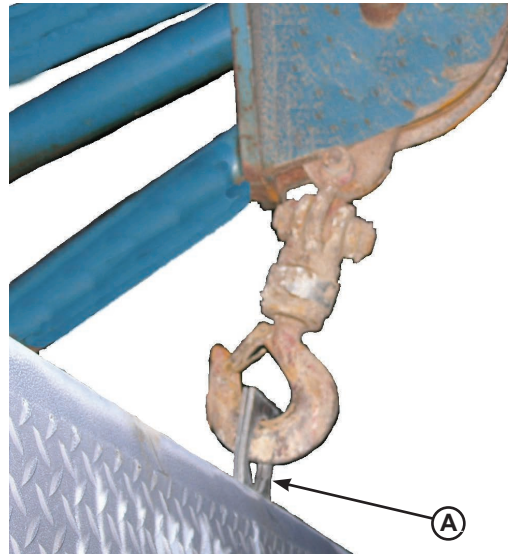


Figure 8

INSTALLATION

Install Dock Leveler

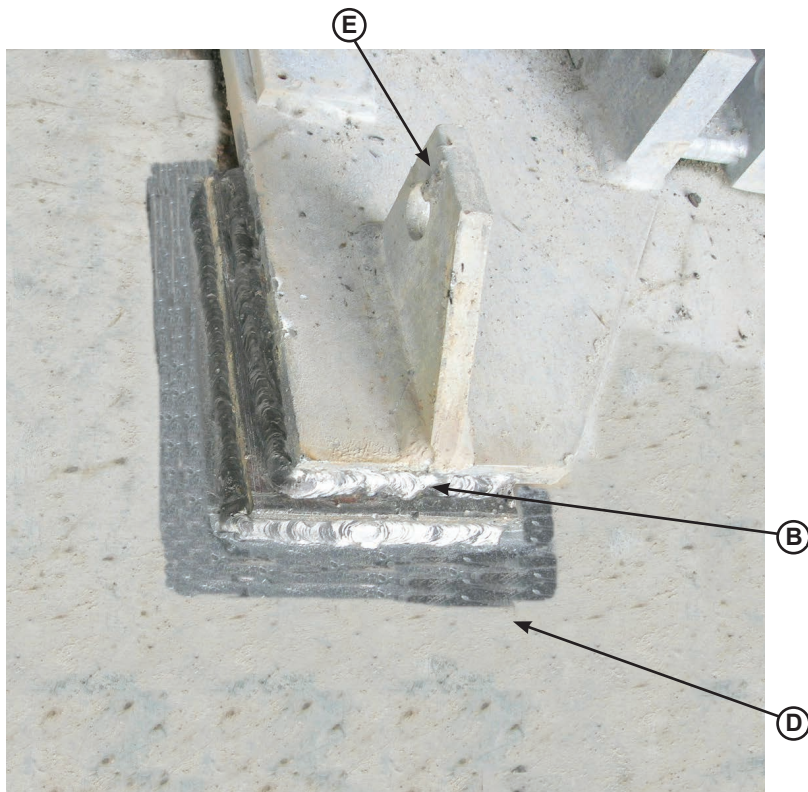


Figure 9

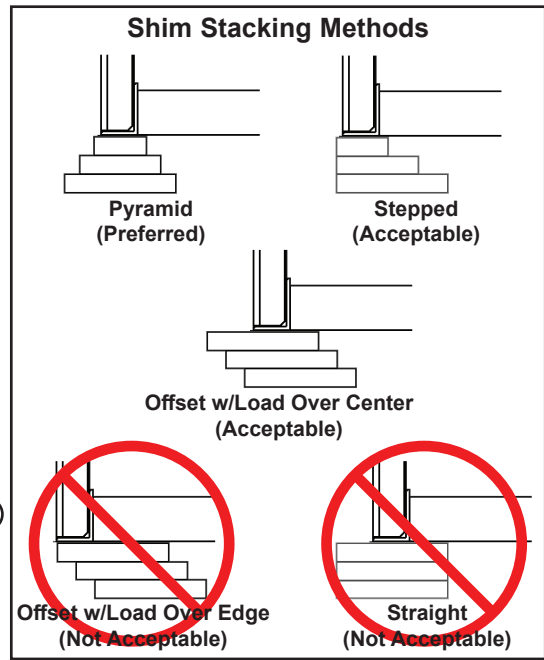


Figure 10

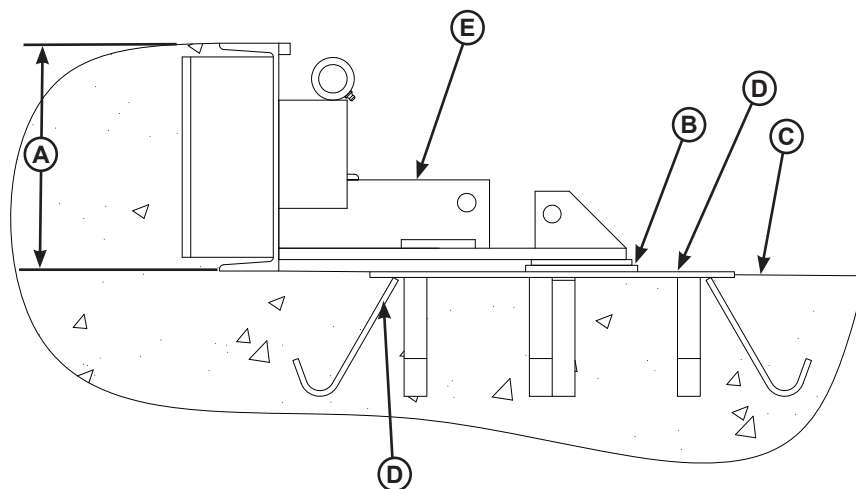


Figure 11

A — Pit Height/Embed Height
 B — Shim Location (Under Storage Prop)
 C — Pit Floor

D — Pit Floor Embed
 E — Leveler Rear Embed

Install Dock Leveler (continued)



Figure 12

(E)

Bottle Jack

E— Leveler Rear Embed
F— Dock Leveler

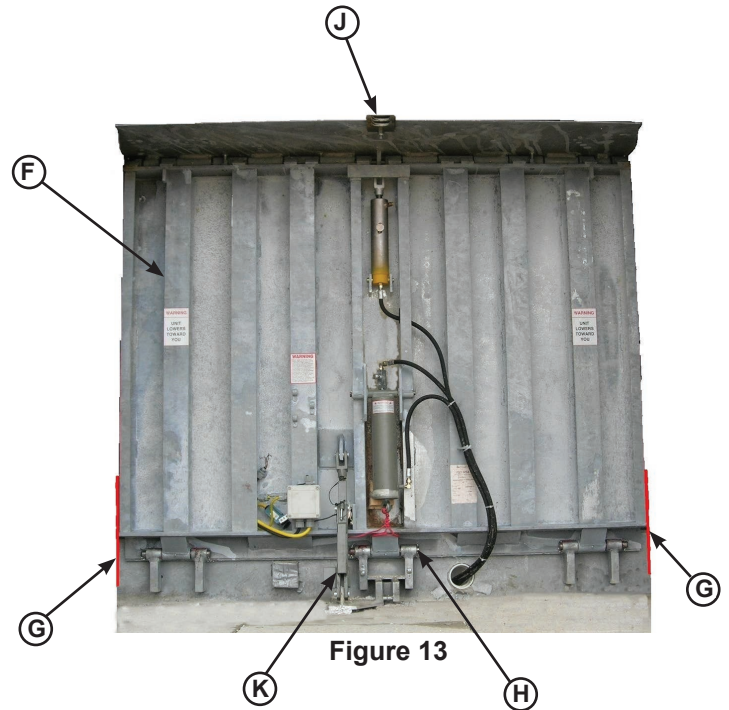


Figure 13

(K)

(H)

G— Maintenance Props
H— Hinge Pins

J— Lifting Lug
K— Storage Prop

10" pit models only: Before installing the leveler, the storage prop trunnion (K) in the rear embed channel (E) must be shimmed (B) and welded to the embed on the pit floor (D). See Figures 9, 10 and 11.

NOTICE

The minimum size of the shim that contacts the leveler frame (i.e. the top shim of each shim stack) must be at least 4-1/2" x 4-1/2" (114.3 mm x 114.3 mm) to support the full width of the hoist cylinder/ storage prop weldment and to provide a shelf for a fillet weld.

Use the thickest shim stock possible for stability and weld penetration purposes. DO NOT use multiple layers of 1/8 in. (3.18 mm) or thinner shim stock.

5. Lube the three rear hinge pins (H) using grease, then install the three pins in the rear embed only halfway through the first hinge tube.

6. Lower the dock leveler down, centering the leveler's three hinges with the embed's hinges.

- Insert the hinge pins. Work across the dock leveler, installing one side, then the center, and finally the other side. See Figure 13.
- **Optional:** Use a bottle jack to help align the rear of the dock leveler to the embed channel as shown in Figure 12.

7. Once the three hinge pins are installed, install the storage prop (K). Install the prop pin and clip.

8. Remove banding from hoist cylinder.

Note: Do not connect hoist cylinder at this time. Air must be purged from system; see pages 18-19.

INSTALLATION

Install Control Panel and Wiring

DANGER

Make sure that the power source has been locked out and tagged according to OSHA regulations and approved local electrical codes.

NOTICE

DO NOT connect the dock leveler electrical wiring and ground connections until all welding has been completed.

DO NOT ground welding equipment to any hydraulic or electrical components of the dock leveler. Always ground welding equipment to the dock leveler frame, NEVER to the platform.

Failure to follow these instructions may damage the motor, hydraulics, wiring, and/or control panel.

CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

DANGER



Arc Flash and Shock Hazard PPE [Personal Protection Equipment] Required

De-energize equipment before working on or inside. Do not open cover without appropriate PPE. Refer to NFPA 70E for PPE requirements. This panel may contain more than one power source.

**Hazardous Voltage
Will Result in Death
or Serious Injury**

1751-0736 Rev A

NOTICE

Where indicated, all components must be connected to a SAFETY EARTH GROUND that conforms to the 1999 National Electrical Code Section 250-50 section (a) or section (c) for a grounding electrode system.

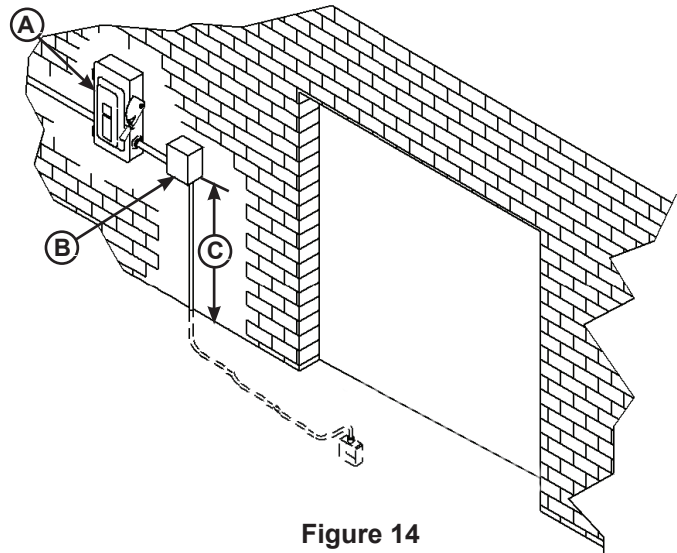


Figure 14

A— Disconnect Panel (provided by others)
B— Control Panel **C**— Distance, 48 in. (1219 mm)

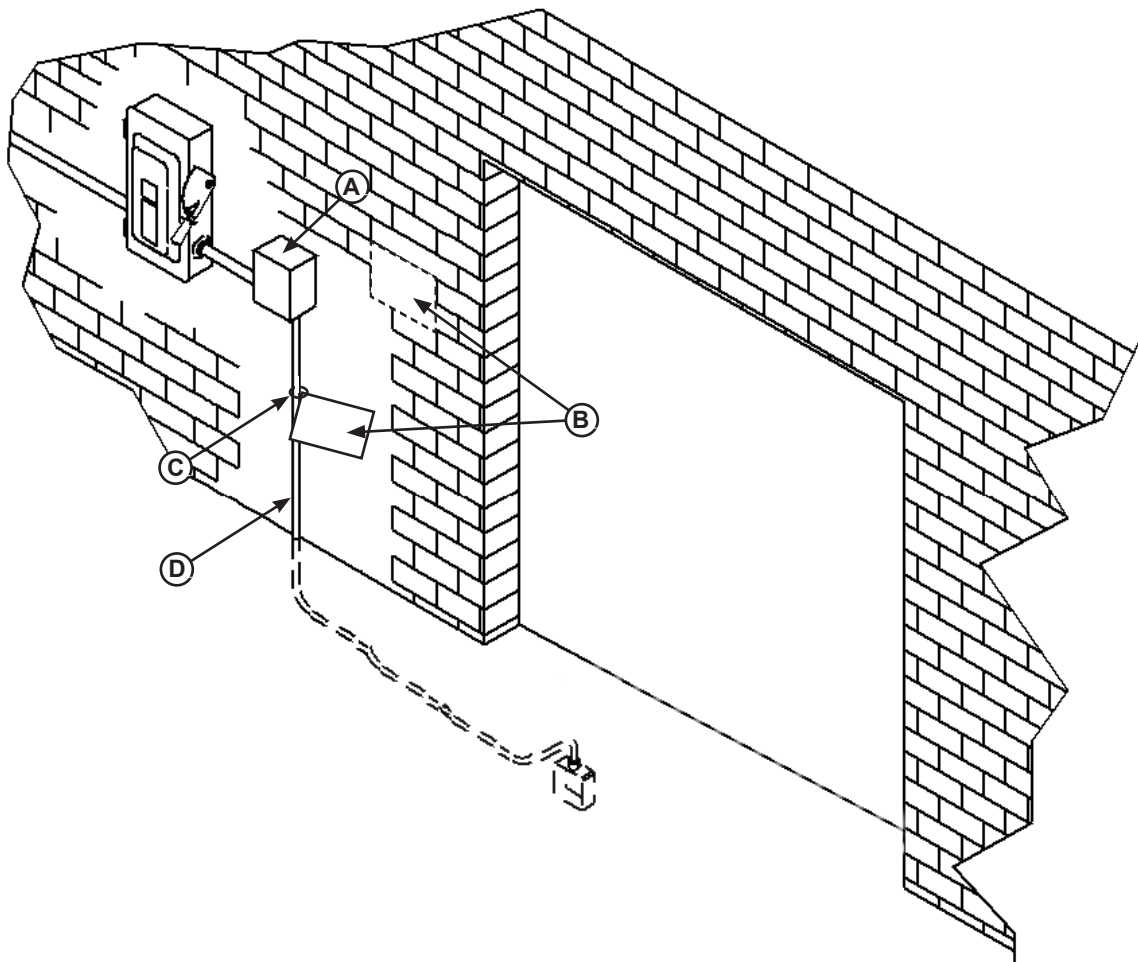
Note: VS-series control boxes may be wall-mounted or stanchion mounted.

1. If wall-mounting, mount the push-button control panel (**B**) so bottom of control panel-to-dock floor distance (**C**) is approximately 48 in. (1219 mm). See Figure 14. If stanchion-mounting, mount control box to stanchion in desired location.
2. Install electrical disconnect panel (**A**) if not already installed. Disconnect panel supplied by others.
3. Install and connect the control wiring (see drawings supplied with equipment).
4. Seal the conduit in any location where the conduit crosses over temperature zones that could produce condensation.

Optional: Install spacers between the wall and enclosure to provide temperature insulation and air flow. If the conduit could fill with water, a drip leg may be needed.
5. Install placard (see page 17).

Placard Installation Instructions

- Owner/Users are responsible for the installation and placement of product placards.
- Make sure placard is in plain view of dock leveler and/or vehicle restraint operations.
- Suggested placement of placard is near control box attached to electrical conduit by using nylon cable tie. If there is no control box present, mount placard on wall to the immediate left of leveler at eye level.



A - Control Box

B - Placard

C - Nylon Cable Tie

D - Conduit

Figure 15

INSTALLATION

Purging Air From VS Hydraulic System & Adjusting Rod Eye

DANGER

Following start-up, or if the platform is raised using an external lifting device or the hydraulic system is opened to atmosphere, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system.

1. Using an external lifting device, support the VS leveler in the stored position, with the maintenance props lowered in the maintenance position and all hardware tight.
2. Lock out the storage prop (**A**) with the prop pin and clip, then lock-out and tag-out the leveler.
3. Remove the screws holding the stored limit switch (**B**) in place. Move the stored limit switch away from the storage prop. See Figure 16.
4. If connected, remove the rue clip (**C**) and disconnect the lower hoist cylinder mounting pin (**D**). See Figure 17.
5. For platform-mounted reservoirs, replace the rear plug on the fluid reservoir with the included breather cap if not already present.
6. Fully open the down speed flow control valve (**E**) by loosening the set screw (**K**) and turning knob (**F**) counter-clockwise (see Figure 18). Record the number of turns/original setting.
7. Turn ON power to the leveler. Confirm the BLUE “Leveler Stored” indicator light on control panel is no longer illuminated.
8. With the cylinder disconnected from the embed, cycle the hoist cylinder up and down at least 6 times using the leveler’s own hydraulic power.
9. Reconnect the hoist cylinder rod eye (**G**) to the base of the embed or carriage by completing the following steps:

a. Fully extend the hoist cylinder by pressing and holding the RAISE button until the rod stops extending and the powerpack goes into pressure relief.

b. Loosen the jam nut (**H**) and adjust the rod eye (**G**) so that the center of the rod eye is half way below the center of the hole of the embed (see

Figure 19). After adjusted, tighten the jam nut.
c. To center the rod eye with the embed, tap the lower button on the control panel until the cylinder pin (**D**) easily slides through both the trunnion and rod eye.

d. Install washers (**J**) between rod eye sides and trunnion to limit rod eye movement, and lock rue clip (**C**) into place as shown in Figure 17.

10. Reinstall the stored limit switch (**B**). Confirm the BLUE “Leveler Stored” indicator light on control panel is illuminated after.

11. Reset the down speed flow control valve to the original setting recorded in step 6.

Note: If original setting was lost or not recorded, flow control can be set manually by using instructions on page 30.

12. Once ideal down speed flow control setting is achieved, lock the adjustment in place by tightening the set screw (**K**) on the adjustment knob.

13. Raise the maintenance props to the stored position and tighten all hardware, then remove storage prop pin and clip.

14. Disconnect the external lifting device and chains from the lifting bracket(s).

15. Press the LOWER button and bring the leveler to a 45 degree angle.

16. Cycle lip by pressing the LOWER and LIP buttons together to lower the lip, then press the RAISE and LIP buttons together to raise the lip. Lip cylinder is now purged.

17. Raise leveler to stored position and top off hydraulic fluid as required. See pages 26-27 for correct fluid level and type.

DANGER

Do not remove the prop lock pin from the storage prop unless authorized personnel have confirmed that the hydraulic cylinders, valve and hoses have been properly installed and filled with fluid. Failure to do so will result in death or serious injury. Refer to owner’s/user’s manual for proper procedure. 1751-0229 Rev E

Purging Air From VS Hydraulic System & Adjusting Rod Eye (continued)

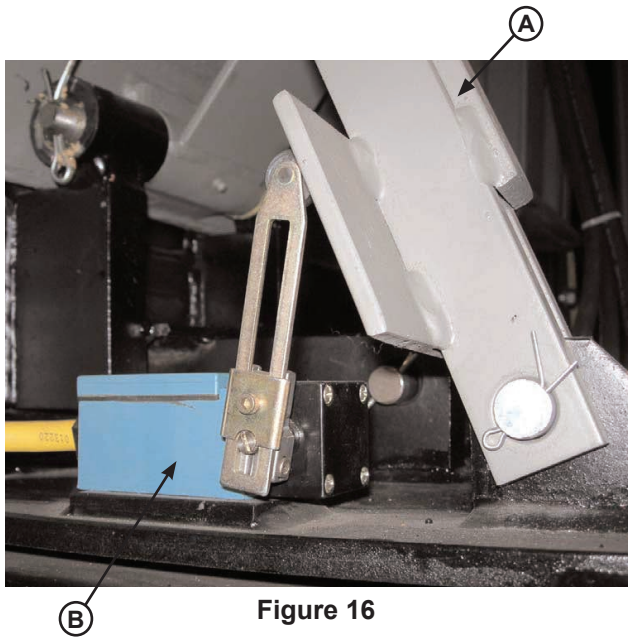


Figure 16

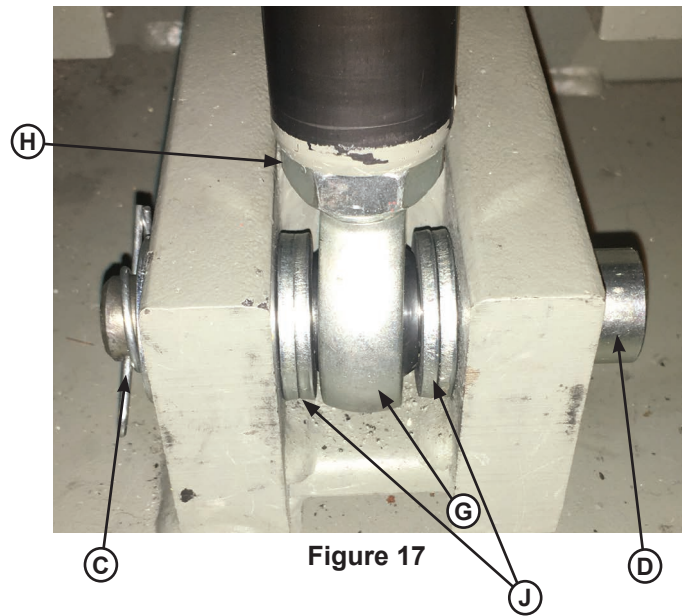


Figure 17

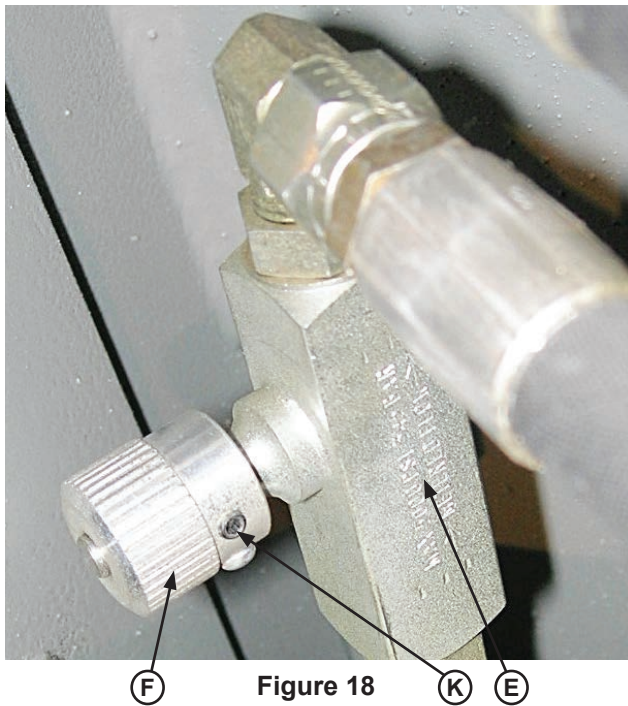


Figure 18

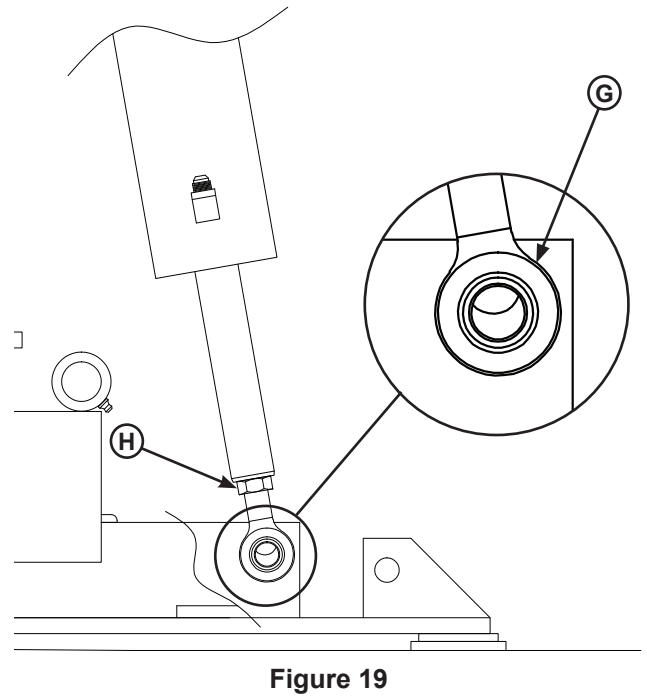


Figure 19

A — Storage Prop
B — Stored Limit Switch

C — Rue Clip
D — Hoist Cylinder Pin

E — Flow Control Valve
F — Adjusting Knob
G — Rod Eye

H — Jam Nut
J — Flat Washers
K — Set Screw

INSTALLATION

Put New Dock Leveler Into Service

WARNING

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

1. Purge air from hydraulic system, adjust rod eye and install cylinder pin as instructed on page 18.
2. Check and top off hydraulic fluid as required. See pages 26-27 for acceptable fluid specifications and correct fluid level.
3. Test leveler for operation:
 - a. Lower dock leveler and check to make sure the leveler goes into float mode approximately 15" above the dock floor. Allow the leveler to float to full below dock position. Make sure the dock makes contact with pit floor. Then, press and hold the RAISE button until the leveler is fully stored and the BLUE "Leveler Stored" light comes on.
 - b. Lower dock leveler to approximately 45 degrees, then press the LOWER and LIP buttons simultaneously; the lip will fold. Press and hold the RAISE and the LIP buttons and the lip will extend. Then, press and hold the RAISE button until the leveler is fully stored and the BLUE "Leveler Stored" light comes on.

Note: If the dock leveler encounters issues during testing and must be raised with an external lifting device, the hydraulic system must be purged again.

Operational Precautions

DANGER

Stay clear of dock leveler and vehicle restraint when transport vehicle is entering or leaving dock area.

DO NOT move or use the dock leveler or restraint if anyone is under or in front of leveler.

Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

WARNING

Only trained personnel should operate the dock leveler.

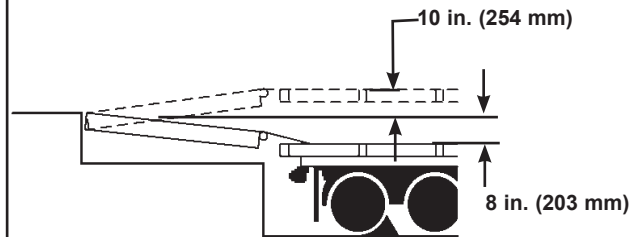
DO NOT use a broken or damaged dock leveler. Make sure proper service and maintenance procedures have been performed on leveler before using.

Transport vehicle wheels must be chocked unless a vehicle restraint is used. Never remove the wheel chocks until loading/unloading is finished and transport driver has been given permission to leave.

Make sure platform lip rests on the transport vehicles bed with at least 4 in. (102 mm) of overlap.

Maintain a safe distance from side edges of leveler during the loading/unloading process.

WARNING



The VS hydraulic dock leveler is designed to compensate for a maximum +10 in. (254 mm) above and - 8 in. (203 mm) below dock difference between the loading dock and the transport vehicle bed*. DO NOT use the dock leveler if the transport vehicle bed is more than 10 in. above (higher than) or 8 in. below (lower than) the dock floor.

*Service height may vary with design specifications.

DO NOT overload the dock leveler.

DO NOT operate any equipment while under the influence of alcohol or drugs.

DO NOT leave equipment or material unattended on the dock leveler.

OPERATION

Operating Instructions

Ramp Loading/Unloading

1. Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.
4. Extend the dock leveler onto the transport vehicle as follows:
 - a. Press and hold the LOWER button until leveler reaches float zone, then allow leveler to descend into transport vehicle.
 - b. Make sure that the lip is fully extended and supported on the transport vehicle along the entire width of the platform, with at least 4 in. (102 mm) of lip contacting the transport vehicle bed.

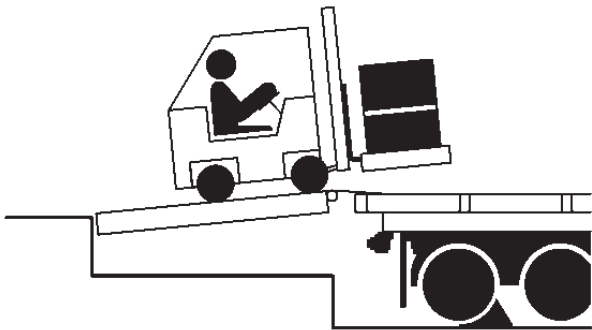


Figure 20

5. Proceed with loading or unloading the transport vehicle (see Figure 20).
6. When loading or unloading is finished, raise the platform by pressing and holding the RAISE button until the BLUE “Leveler Stored” light turns on.
7. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
8. Indicate to driver that the transport vehicle may leave the dock.

Below Dock End Loading/Unloading

1. Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.



Figure 21

4. Press and hold the LOWER button until unit is about 45 degrees forward, then press the LIP and LOWER buttons simultaneously and the lip will fold pendant.
 5. Once the lip is pendant, continue to press the LOWER button until the unit goes into float mode to the full below dock position.
 6. Proceed with loading or unloading (Figure 21).
- Note:** When end unloading is finished and access to the rest of the transport vehicle is still required, the platform lip will need to be extended. Press and hold RAISE button to clear the transport vehicle bed, then press the LIP and RAISE buttons simultaneously to extend the lip. Once lip is extended, follow instructions for Ramp Loading/Unloading.
7. When loading or unloading is finished, raise the platform by pressing and holding the RAISE button until the BLUE “Leveler Stored” light turns on.
 8. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
 9. Indicate to driver that the transport vehicle may leave the dock.

Operating Instructions (continued)

End Loading/Unloading (w/Optional Lip Keepers)

Note: Units with optional lip keepers can complete regular end loading/unloading without going below dock.

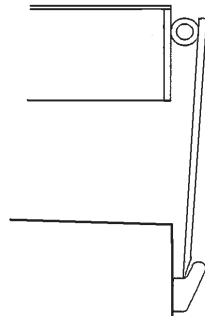


Figure 22

1. Check to make sure the transport vehicle is positioned squarely against dock bumpers.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.
4. Press and hold the LOWER button until unit is about 45 degrees forward, then press the LIP and LOWER buttons simultaneously and the lip will fold pendant.
5. Once the lip is pendant, continue to press the LOWER button until the unit goes into float mode and descends into the lip keepers (see Figure 22).

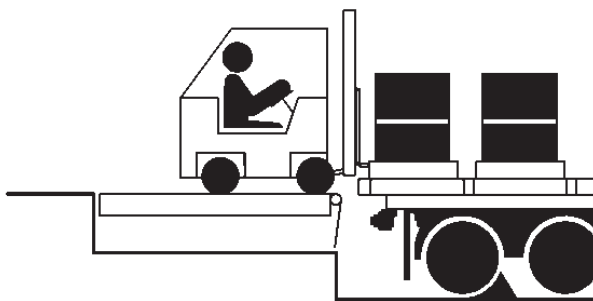


Figure 23

6. Proceed with loading or unloading (see Figure 23).

Note: When end unloading is finished and access to the rest of the transport vehicle is still required, the platform lip will need to be extended. Press and hold RAISE button to clear the transport vehicle bed, then press the LIP and RAISE buttons simultaneously to extend the lip. Once lip is extended, follow instructions for Ramp Loading/Unloading on page 22.

7. When loading or unloading is finished, raise the platform by pressing and holding the RAISE button until the BLUE "Leveler Stored" light turns on.
8. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
9. Indicate to driver that the transport vehicle may leave the dock.

MAINTENANCE

Maintenance Precautions

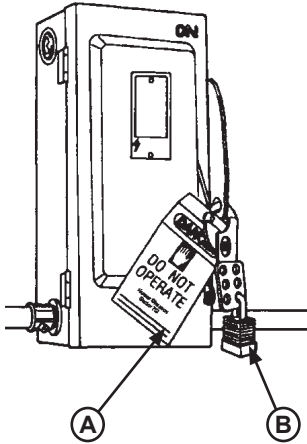


Figure 24

- A — Tag Out Device
- B — Lock Out Device

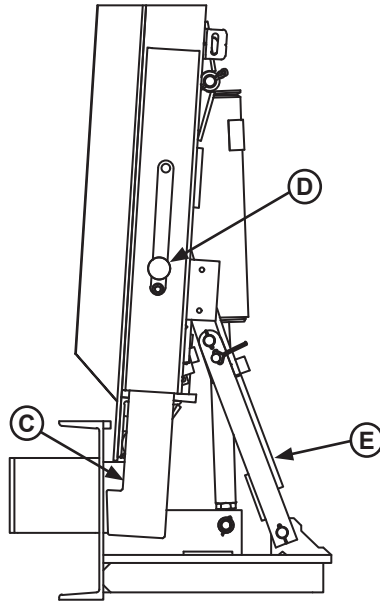


Figure 25

- C — Maintenance Props
- D — Maintenance Prop Hardware

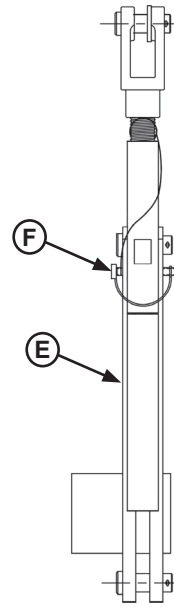


Figure 26

- E — Storage Prop
- F — Storage Prop Pin and Clip

DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

When working with electrical or electronic controls, make sure that the power source has been tagged (A) and locked out (B) according to OSHA regulations and approved local electrical codes (see Figure 24).

WARNING



Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the unit before maintenance is complete.

When maintenance is to be performed on the dock leveler, place the maintenance props (C) in their service/down position with hardware (D) fully secured and ensure the storage prop (E) is locked out with the prop pin and clip (F). See Figures 25 and 26. The lip may fold down if the platform has rested on the maintenance props.

Only the person servicing the equipment should have the capability to remove the lockout devices. The tag out devices* must inform that repairs are in process and clearly state who is responsible for the lockout condition.

WARNING

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

* Refer to OSHA regulations 1910.146. Confined Space and 1910.147. Lockout/Tagout

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MAINTENANCE

Periodic Maintenance

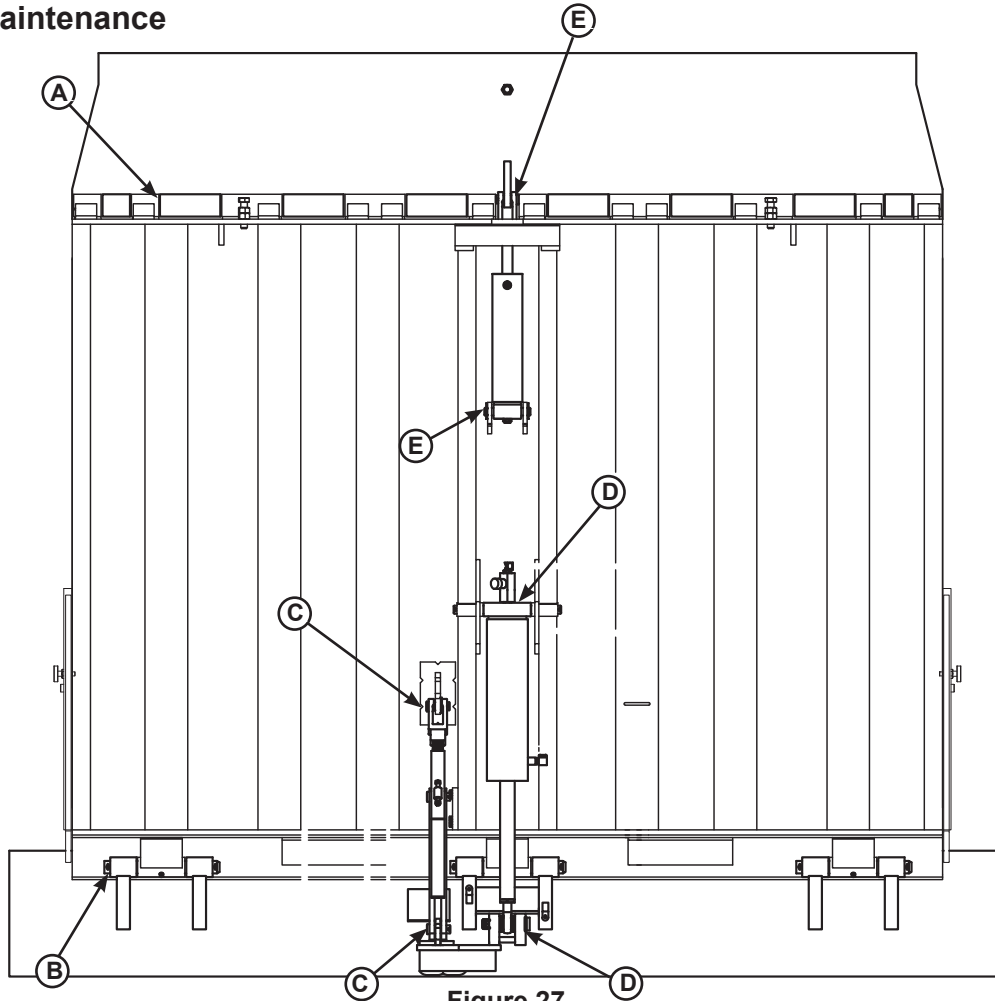


Figure 27

A— Lip Hinge Area
B— Platform Pins

C— Storage Prop
D— Hoist Cylinder

E— Lip Cylinder

To ensure normal operation of the dock leveler, use only aircraft hydraulic fluid designed to meet or exceed military specification MIL-H-5606-G. It is recommended that the following hydraulic fluids be used:

- ULTRA-VIS-HVI-15
- Aero Shell Fluid 4 or Fluid 41
- Mobil Aero HFA Mil-H5606A or Aero HF
- Texaco Aircraft Hydraulic Oil 15 or 5606
- Exxon Univis J13
- Castrol Brayco Micronic 756

These fluid brands can be mixed together. Use of hydraulic fluids with equivalent specifications to those listed here are acceptable.

NOTICE

Use of fluids that do not have equivalent specifications to those in the preceding list will result in abnormal operation of the dock leveler and voiding of warranty.

Weekly Maintenance

- Operate the dock leveler through the complete operating cycle to maintain lubrication. Make sure the dock leveler floats in the working zone (approximately 15 inches above horizontal).
- Verify lip operates up and down.
- Lock out and tag out the dock leveler, then ensure the storage prop is locked out with the prop pin and clip, and place the maintenance props in their service/down position with hardware fully secured.
- Remove any debris or foreign objects from the lip hinge, rear hinge and limit switch areas.
- Inspect warning decals and placards. Replace if damaged or missing.

Quarterly Maintenance

- Complete Weekly Maintenance.
- Inspect the following for damage/abnormal wear:
 - Check welds for cracks.
 - Coils for cracks and bent valves.
 - Lower pin and mounting holes.
 - Rear hinge pins and cotter pins.
 - Stored limit switch is securely mounted.
 - Rue clip is in manual lock position.
 - Check J-box for water damage.
 - Hoses, cylinders, fittings and powerpack.
 - Control box and conduit for damage
 - Check fluid level with the unit in stored position.
 - Bumpers for more than 1" of wear. Replace worn, loose, damaged or missing bumpers.

- Lubricate the following areas with light weight machine oil (see Figure 27):

- (A)— Lip hinge area (apply oil to the top of the entire length of lip hinge when platform is in the stored position and lip is folded)
- (B)— Platform hinge area (apply oil to top of all platform hinges when platform is in the stored position)
- (C)— Storage prop pins
- (E)— Lip cylinder pins

- Lubricate the following areas with white lithium grease:

- (D)— Hoist cylinder grease fitting and pin

Note: Apply grease to all hinge grease fittings if equipped.

NOTICE

Failure to properly lubricate the dock leveler will cause abnormal operation of the leveler.

- Check reservoir fluid level (see Figure 28 for SC models, or page 28 for remote-mount powerpacks):
 1. Put the dock leveler in the stored position with the lip folded.
 2. Turn OFF all electrical power to the leveler.

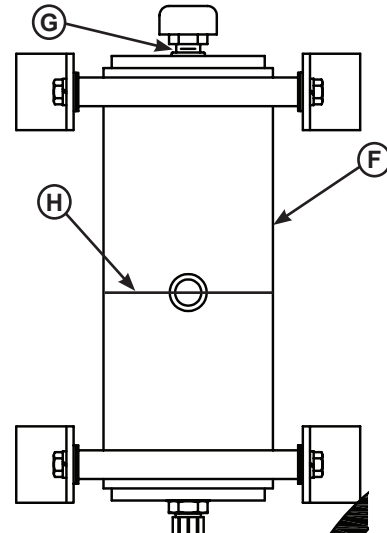


Figure 28

F — Reservoir
G — Hex Plug

H — Fluid Level

3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware fully secured, and ensure the storage prop is locked out with the prop pin and clip.
4. Remove hex plug (G). Do not check or fill fluid through the breather cap.
5. Measure fluid level (H). The fluid level should cover approx. 1/2 of the reservoir sight glass.
6. Add hydraulic fluid if necessary. Use only recommended fluid (see page 26).
7. Install hex plug (G).
8. Raise the maintenance props to the stored position and tighten all hardware, then remove prop pin and clip.
9. Turn ON electrical power to the leveler.
10. Return the lip to the raised position.

Yearly Maintenance

- Complete Quarterly Maintenance.
- Change hydraulic oil (may be required more often depending upon conditions).

MAINTENANCE

Checking Reservoir Fluid Level (Remote-Mount Powerpacks)

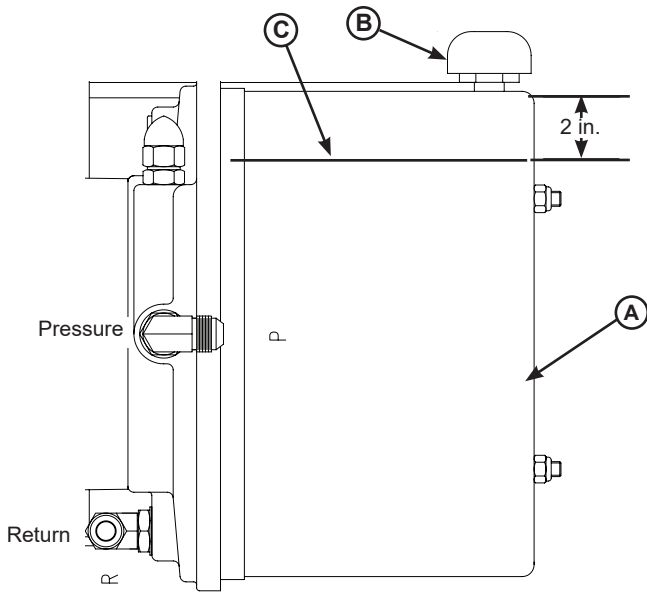


Figure 29

A — Reservoir
B — Breather Cap
C — Fluid Level

1. The dock leveler must be in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware fully secured, and ensure the storage prop is locked out with the prop pin and clip.
4. Remove breather cap (B).
5. Measure fluid level. The fluid level should be approximately 2 in. (51 mm) from top of reservoir (C) with platform stored and the lip in the folded position.
6. Add hydraulic fluid if necessary. Use only recommended fluid (see page 26).
7. Install breather cap (B).
8. Raise the maintenance props to the stored position and tighten all hardware, then remove prop pin and clip.
9. Remove lock out/tag out devices and turn ON electrical power to the leveler.
10. Return the lip to the raised position.

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

! WARNING

When service under the dock leveler is required, always lock all electrical disconnects in the OFF position after raising the platform and engaging the maintenance prop.

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before maintenance is complete.

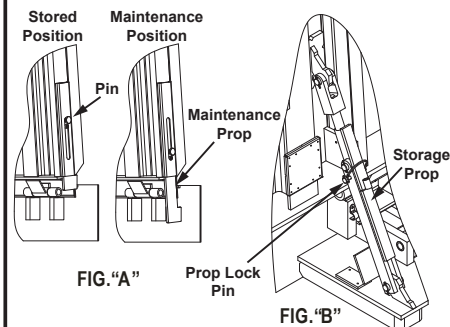
A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! DANGER

CRUSH HAZARD

DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, pull pin to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



1751-4236 Rev F

Adjust Main Pressure Relief

Main Pressure Relief Adjustment

Note: The main pressure relief may need to be *increased* if the platform does not rise or rises slowly and the system operates in pressure relief mode.

The main pressure relief (**D**) may need to be *decreased* if the pump motor loads down when platform reaches the full raised position.

See Troubleshooting section on pages 32-35 for more information.

Self-Contained (Figure 30) and CentraPower (Figure 31) manifolds shown for reference.

1. Put the dock leveler in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware fully secured, and ensure the storage prop is locked out with the prop pin and clip.
4. Loosen jam nut (**E**).
5. Adjust adjusting screw (**F**) as follows:
 - To increase pressure relief, turn adjusting screw clockwise one full turn.
 - To decrease pressure relief, turn adjusting screw counterclockwise one full turn.
6. While holding the adjusting screw, tighten jam nut.
7. Raise the maintenance props to the stored position and tighten all hardware, then remove prop pin and clip.
8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
9. Test leveler and repeat steps 1– 8 as necessary.

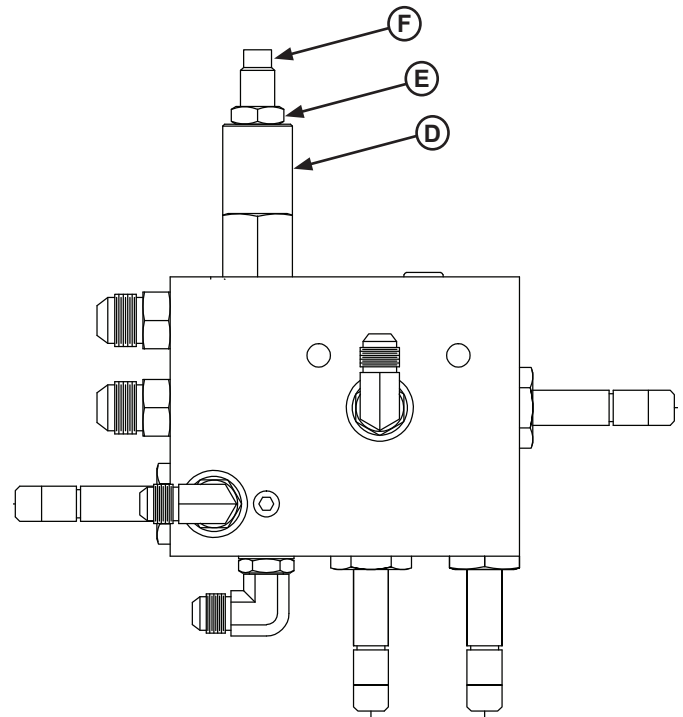


Figure 30

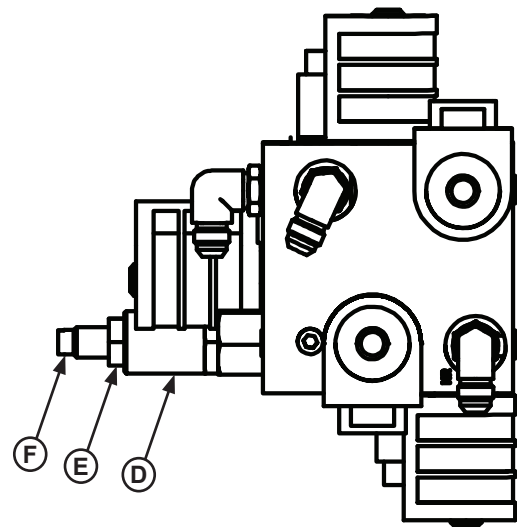


Figure 31

D — Pressure Relief Valve F — Adjusting Screw
E — Jam Nut

NOTICE

Pressure relief adjustment on remote-mount units is locked by the factory. Contact Systems, LLC Technical Services for instructions.

ADJUSTMENTS

Adjust Stored Limit Switch & Down Speed Flow Control

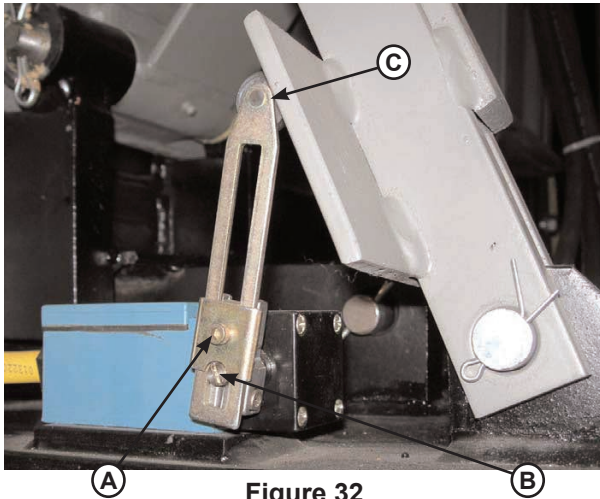


Figure 32

A — Set Screw C — Roller Arm
B — Adjustment Screw

Stored Limit Switch Adjustment

Note: The dock leveler should lean towards the door by the following amount when in the stored position:

- 5' and 6' levelers: **5 degrees from vertical**
- 8' levelers: **10 degrees from vertical**

To change the angle, adjust the Stored Limit Switch:

1. Put the dock leveler in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then ensure the storage prop is locked with the prop pin and clip.
4. Loosen set screw (A) on switch arm.
5. With roller arm (C) contacting storage prop, rotate adjustment screw (B) counter clockwise until a “click” noise is heard.
6. Tighten set screw (A) on switch arm.
7. Remove prop pin and clip.
8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
9. Test leveler and repeat steps 1– 8 as necessary.
10. Once correct angle has been set, check storage prop for play and adjust if needed (see page 31).

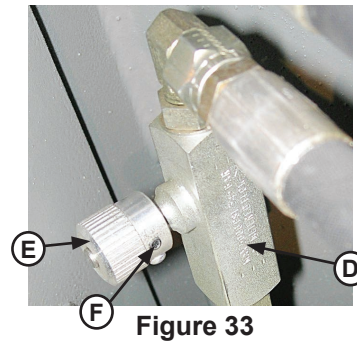


Figure 33

D — Flow Control Valve F — Set Screw
E — Adjusting Knob

Down Speed Flow Control Adjustment

Note: The down speed flow control is factory set. If original setting is lost, or if the dock leveler lowers too rapidly or too slowly, the flow control valve (D) requires adjustment.

When properly adjusted, the dock leveler will take 15-20 seconds to descend from stored to full below dock position. To adjust the flow control:

1. Put the dock leveler in the stored position with the lip folded.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then ensure the storage prop is locked with the prop pin and clip.
4. Loosen the allen head set screw (F).
5. Set adjusting knob (E) as follows:
 - To decrease the lowering speed, adjust knob (E) clockwise.
 - To increase the lowering speed, adjust knob (E) counterclockwise.
6. Once ideal down speed flow control setting is achieved, lock the adjustment in place by tightening the hex screw (F) on the adjustment knob.
- Note:** Do not overtighten the set screw.
7. Remove prop pin and clip.
8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
9. Test leveler and repeat steps 1– 8 as necessary.

Adjust Storage Prop

Storage Prop Adjustment

Note: When set properly, the storage prop will have approximately 1/2" to 1" of play (**G**) with the leveler in the stored position. See Figure 34.

Too little or too much play can cause damage to the storage prop and create a safety hazard.

To adjust the storage prop:

1. Put the dock leveler in the stored position.
2. Turn OFF all electrical power to the leveler.
3. Lock out and tag out the dock leveler, then place the maintenance props in their service/down position with hardware fully secured.
4. Remove the cotter pin holding the upper storage prop clevis pin (**H**) in place, then remove the clevis pin from the storage prop yoke (**J**).
5. Adjust the yoke on the storage prop until the prop has between 1/2" (minimum) and 1" (maximum) of play with the yoke connected to the platform.

Note: When the storage prop is correctly adjusted, approximately 1-1/2 threads should be exposed through the yoke.

6. Replace the upper storage prop clevis pin and reinstall the cotter pin.
7. Raise the maintenance props to the stored position and tighten all hardware.
8. Remove lock out/tag out devices and turn ON electrical power to the leveler.
9. Test leveler and repeat steps 1– 7 as necessary.

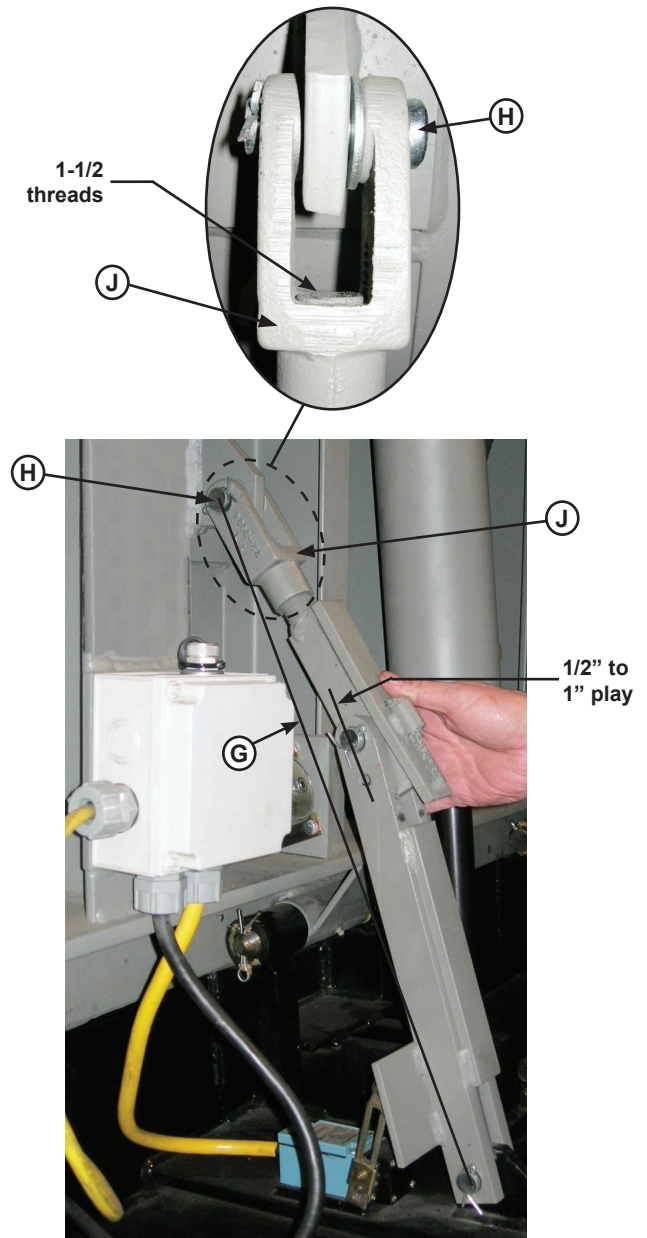


Figure 34

G — Approx. 1/2"-1" play **J** — Prop Yoke
H — Prop Clevis Pin

TROUBLESHOOTING

! DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

! WARNING

When service under the dock leveler is required, always lock all electrical disconnects in the OFF position after raising the platform and engaging the maintenance prop.

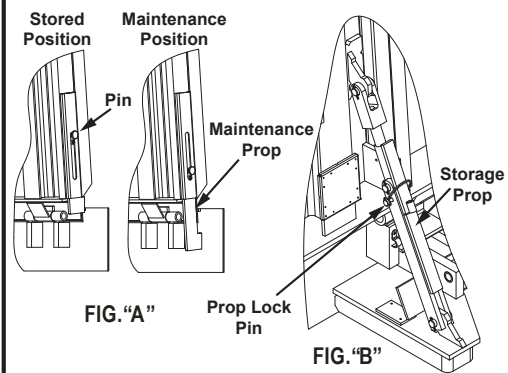
Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before maintenance is complete.

A hard hat or other applicable head protection should always be worn when working under or around a dock leveler.

Always stand clear of platform lip when working in front of the dock leveler.

! DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First, pull pin to position side maintenance prop(s) as shown in figure "A" below. Then position storage prop and secure with prop lock pin as shown in figure "B" below. Failure to do so will result in death or serious injury. Refer to owner's/user's manual for proper procedure.



1751-0230 Rev F

Before performing the detailed troubleshooting procedures, check the following items first:

- Check all fuses inside the control panel(s). Replace any blown fuse(s) with a fuse of equal specification.
- Make sure the correct voltages are present at the proper locations inside the control panel(s).

| Symptom | Possible Cause | Solution |
|--|---|---|
| Platform does not rise or lower. Motor does not energize. | Motor overload device tripped. | Reset overload relay or breaker. Determine cause of device tripping. |
| | Motor starter (three-phase) or motor relay (single-phase) not energizing. | <p>Check voltage at starter or relay coil.</p> <ul style="list-style-type: none"> • If voltage is present and starter or relay does not energize, replace starter or relay. • If voltage is not present, check all components in series with the starter or relay coil. |

TROUBLESHOOTING

| Symptom | Possible Cause | Solution |
|---|--|---|
| <p><u>Three-phase units only:</u> Platform does not rise or lower. Motor hums, but does not run.</p> | <p>No voltage is present on one line.</p> <p>Note: A motor that is missing voltage on one line is said to be single-phased.</p> | <p>Check for blown fuses at branch circuit disconnect. Replace fuse. Determine cause of blown fuse.</p> |
| | | <p>Check motor starter as follows:</p> <ol style="list-style-type: none"> 1. Disconnect wires at load side of starter. 2. Energize the starter. 3. Measure line-to-line voltage at line side of starter. 4. Measure line-to-line voltage at load side of starter. 5. Line-side and load-side voltages should be approximately the same. Replace starter if voltage values are considerably different from one another. |
| | | <p>Check all wiring to motor for high resistance or no connection.</p> |
| <p><u>Three-phase units only:</u> Platform does not rise or lower. Motor runs in reverse.</p> | <p>Phase reversed.</p> | <p>Reverse any two legs at the branch circuit disconnect.</p> |
| <p><u>Single-phase units only:</u> Platform does not rise or lower. Motor energizes, but does not run.</p> | <p>Line voltage too low.</p> | <p>Check wiring to motor for high resistance. Check for loose or corroded connections. Check if gauge of wires to motor are of correct size and specification for load requirement. Replace if necessary.</p> |
| | <p>Faulty motor centrifugal switch.</p> | <p>Replace motor.</p> |
| | <p>Faulty motor capacitor.</p> | <p>Replace motor.</p> |

TROUBLESHOOTING

| Symptom | Possible Cause | Solution |
|--|--|---|
| Platform does not rise. Pump operates in pressure relief mode. | Heavy object(s) on platform. | Remove object(s) from platform. Note: For safety reasons, the dock leveler is designed to lift only the platform's own weight. |
| | Dock leveler binds. | Check for visible obstructions that could cause binding. Remove obstructions. If no obstructions found, contact Systems, LLC Technical Services. |
| | Pressure relief set too low. | Increase pressure relief. See page 29 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i> |
| Platform rises slowly. | Low hydraulic fluid. | Add hydraulic fluid, see pages 26-27 for proper fluid level and type. |
| | Contaminated hydraulic system. | Clean and inspect valves. Flush contaminated oil from hydraulic system. Fill system with new oil; see pages 26-27 for proper fluid level and type. |
| | Damage or blocked hydraulic hose(s) and/or valve(s). | Replace damaged hose(s). Check and remove blockage from hose(s) and/or valve(s). |
| | Pressure relief set too low. | Increase pressure relief. See page 29 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i> |
| Pump motor loads down when platform starts to raise from the lowered position. | Pressure relief set too high. | Decrease pressure relief. See page 29 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i> |

TROUBLESHOOTING

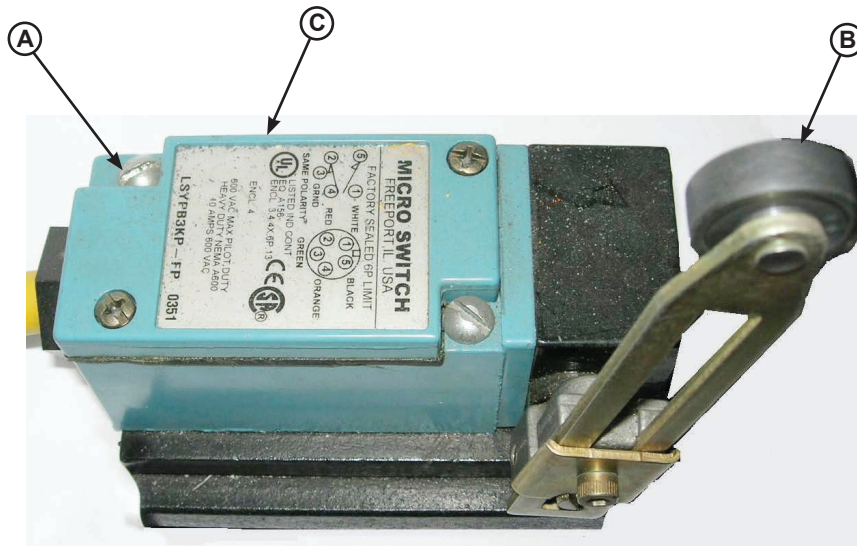
| Symptom | Possible Cause | Solution |
|---|---|--|
| Platform does not rise to full height. | Low hydraulic fluid. | Add hydraulic fluid, see pages 26-27 for proper fluid level and type. |
| | Incorrect limit switch adjustment. | Limit switch faulty or set incorrectly. See page 30 for adjustment instructions. |
| Platform does not rise. | Float coil energized. | Remove the wire to the float coil, if leveler raises relay may be faulty. |
| | Faulty spool valve. | Remove and clean spool valve, or replace with new valve. |
| Lip does not extend. | “Lip” coil not energized. | Check power to the solenoid coil; coil should have a magnetic pull when energized. |
| | Faulty spool valve. | Remove and clean spool valve, or replace with new valve. |
| Lip does not lower. | “Lip” and “Lower” coils not energized. | Check power to the solenoid coils; coil should have a magnetic pull when energized. |
| | Faulty spool valve. | Remove and clean spool valve, or replace with new valve. |
| Platform does not lower. Pump does not run. | Blue “Leveler Stored” light not on. | Limit switch faulty or set incorrectly. See page 30 for adjustment instructions. |
| Platform does not lower. Pump runs. | Faulty prop kicker solenoid and/or mercury switch. | Check field wiring to prop kicker solenoid and/or mercury switch. If wiring is intact, replace prop kicker solenoid and/or mercury switch. |
| Platform does not lower. Pump runs and prop kicker solenoid activates. | “Lower” coils not energized. | Check power to the solenoid coil; coil should have a magnetic pull when energized. |
| | Faulty spool valve. | Remove and clean spool valve, or replace with new valve. |
| Platform does not lower. Pump runs and prop kicker activates. | Incorrect storage prop adjustment. | Adjust storage prop. See page 31 for adjustment instructions. |
| | Faulty or incorrectly set bump-back timer in control box. | Contact Systems, LLC Technical Services for adjustment instructions. |

If additional troubleshooting assistance is required, contact Systems, LLC
Technical Services with equipment serial number or customer order number (CO#).

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

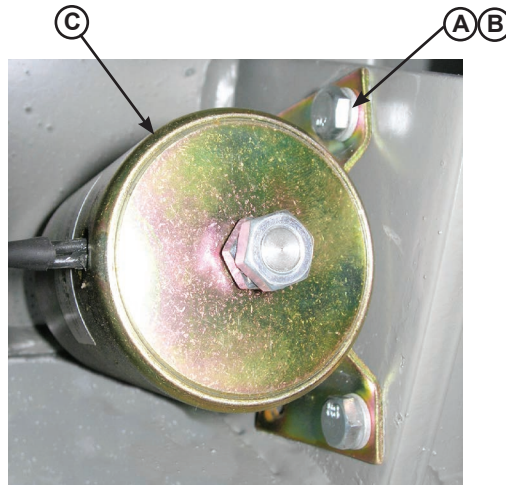
PARTS

Stored Limit Switch



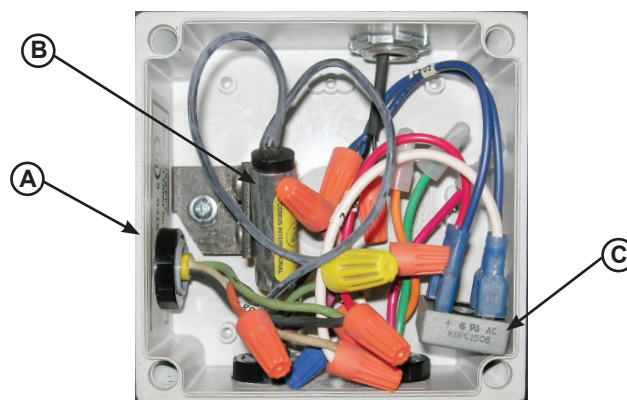
| Item | Quantity | Part Number | Description |
|------|----------|-------------|----------------------------|
| A | 2 | 2101-0027 | Screw #10-32 UNF x 1.75 Lg |
| B | 1 | 0961-0130 | Arm, Limit Switch |
| C | 1 | 0961-0186 | Limit Switch |

Prop Kicker Solenoid



| Item | Quantity | Part Number | Description |
|------|----------|-------------|-----------------------|
| A | 3 | 2101-0153 | Bolt 1/4 UNC 1/2 Lg. |
| B | 3 | 2101-0005 | Washer, Lock 1/4 |
| C | 1 | 8581-0023 | Solenoid, Prop Kicker |

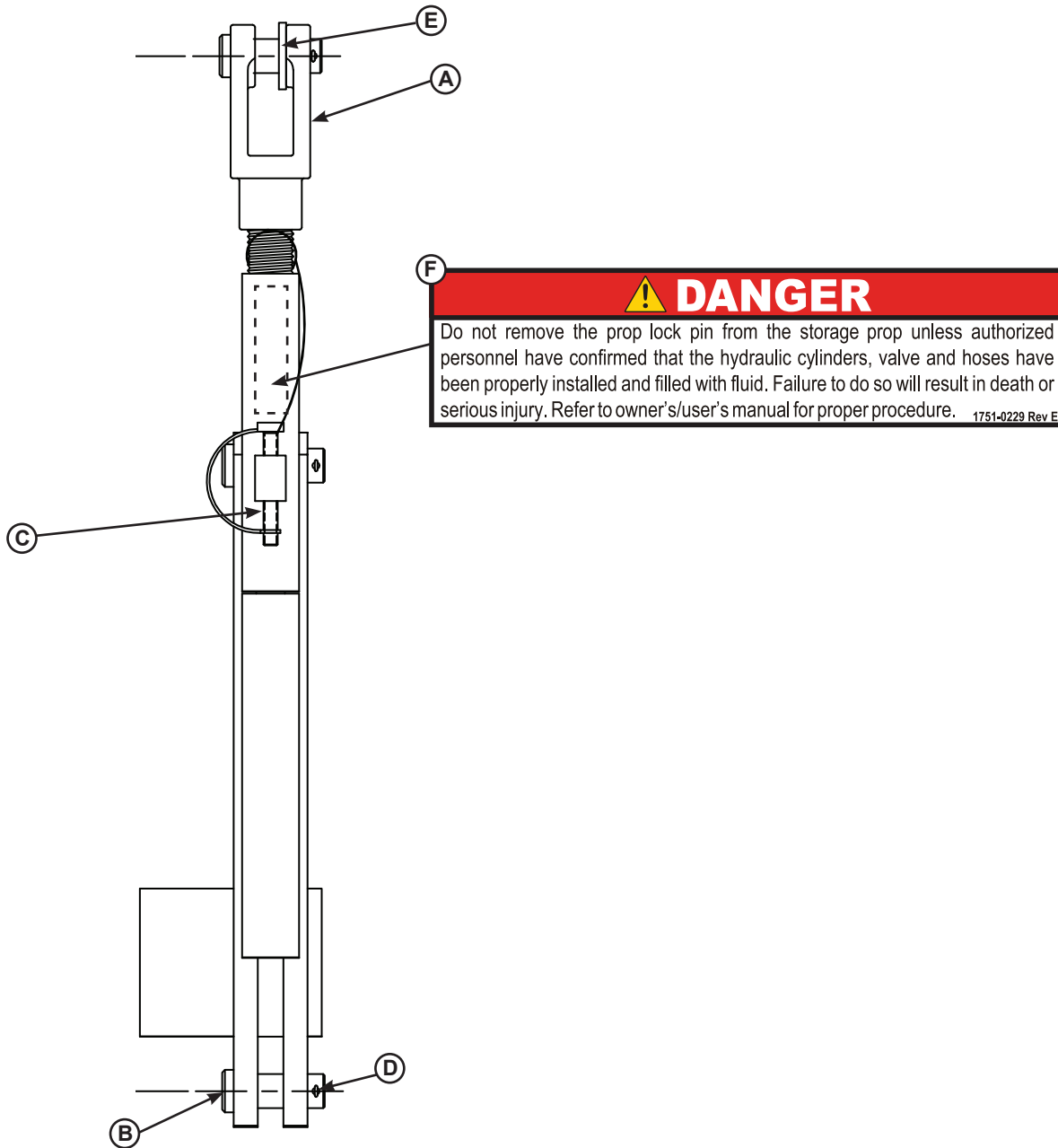
J-Box



| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| A | 1 | 2751-0042 | J Box Fiber Glass 5" x 5" (Includes Cover) |
| B | 1 | 0961-0054 | Mercury Switch |
| C | 1 | 3054-0007 | Rectifier, Bridge Assembly, 15A, 560V |

PARTS

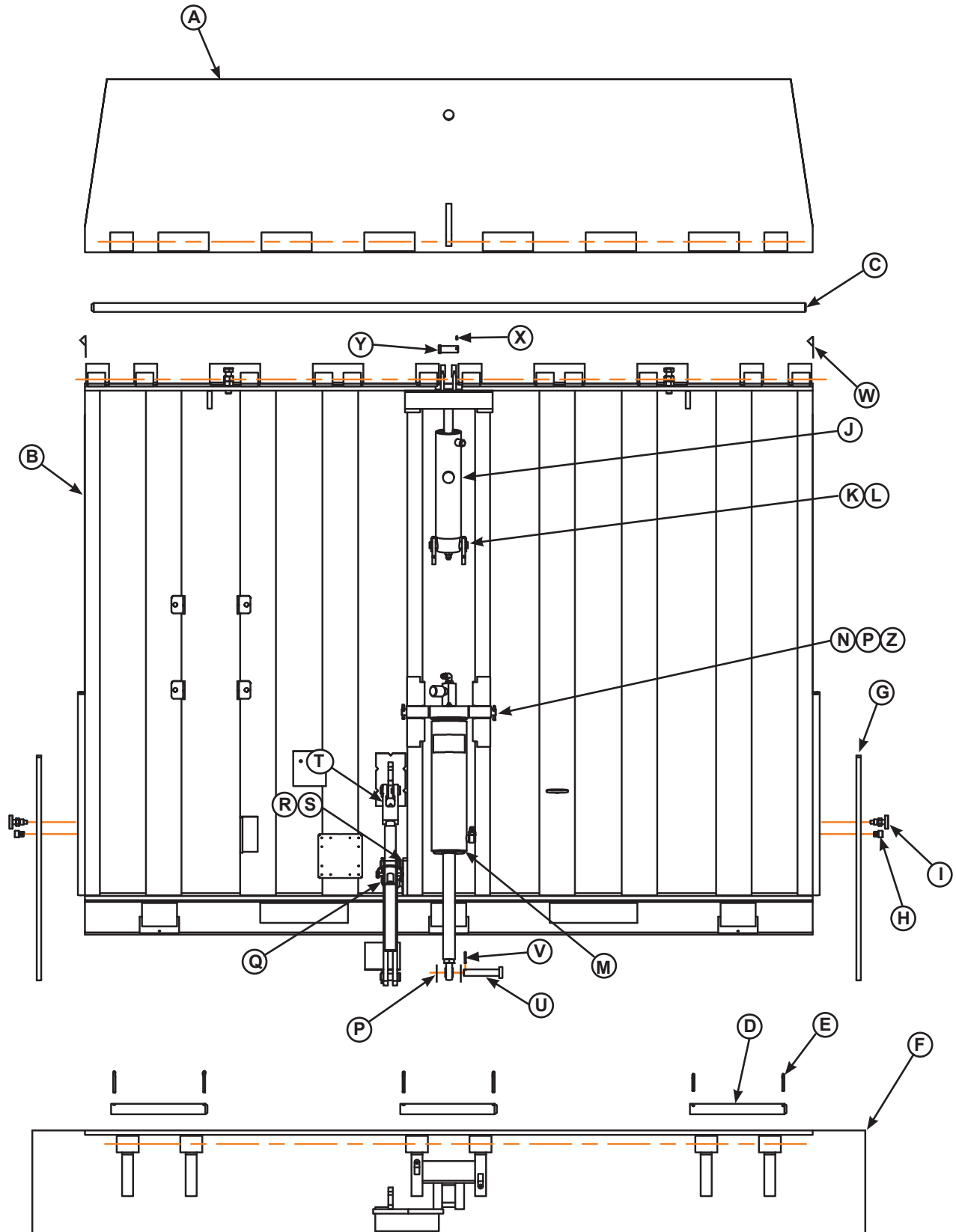
Storage Prop Assembly



| Item | Quantity | Part Number | Description |
|------|----------|------------------|--|
| * | * | 9225-0016 | Storage Prop Assembly, Complete |
| A | 1 | 9222-0097 | Yoke, Upper Arm Prop |
| B | 3 | 0522-0005 | Clevis Pin 3/4 Dia x 2 Lg. |
| C | 1 | 9201-0006 | Prop Lock Pin and Clip |
| D | 3 | 2101-0045 | Cotter Pin |
| E | 1 | 2101-0093 | Washer, Flat |
| F | 1 | 1751-0229 | Precautionary Decal |

PARTS

Lip and Platform Components



Lip and Platform Components

NOTICE

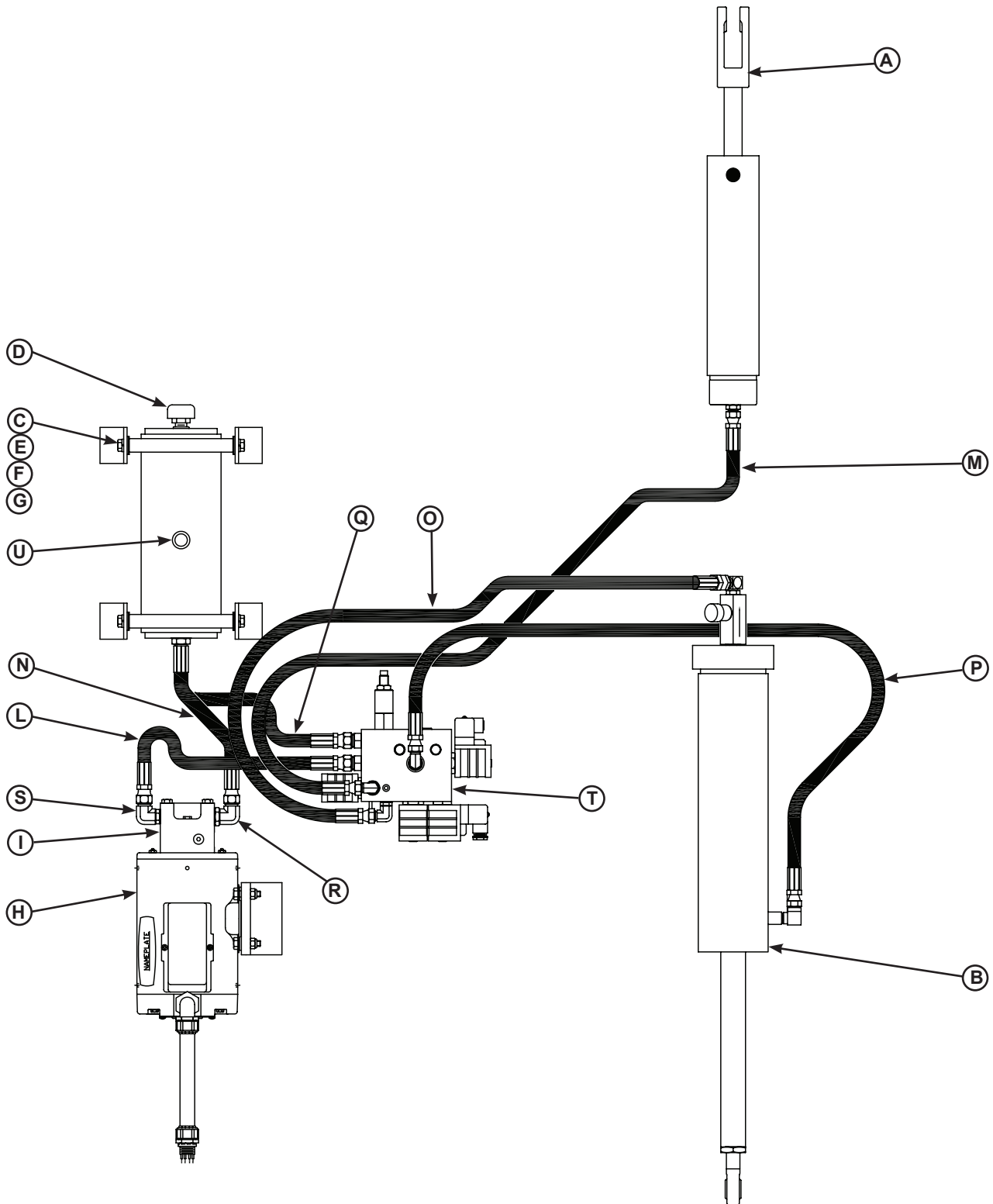
Sliding maintenance props introduced in May 2019 are not backwards-compatible. Refer to Mar. 2019 manual or contact Technical Services for earlier folding maintenance prop parts.

| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| A | 1 | 0595-____* | Lip Weldment* |
| B | 1 | 9515-____* | Platform, Welded Assembly* |
| C | 1 | 9202-0050 | Pin, Lip Hinge 6'W |
| | | 9202-0051 | Pin, Lip Hinge 6.5'W |
| | | 9202-0052 | Pin, Lip Hinge 7'W |
| | | 9202-0053 | Pin, Lip Hinge 6'W, Stainless (optional) |
| | | 9202-0054 | Pin, Lip Hinge 6.5'W, Stainless (optional) |
| | | 9202-0055 | Pin, Lip Hinge 7'W, Stainless (optional) |
| D | 3 | 9202-0002 | Rear Hinge Pin |
| | | 9202-0041 | Rear Hinge Pin, Stainless(optional) |
| E | 4 | 2101-0245 | Cotter Pin, 1/8 x 1.25 |
| F | 1 | 9515-____* | Embed* |
| G | 2 | 9511-0042* | Maintenance Bar, VS, Sliding |
| H | 2 | 2101-0139* | Screw, SHCS, 1/2-13 UNC x 1/2 |
| I | 2 | 9204-0001* | Pull Pin Assy, Maintenance Bar |
| J | 1 | 0526-0016 | Lip Cylinder, VS, Cushion Lip (w/fittings) |
| K | 1 | 9202-0004 | Pin - Lip Cyl. 3/4 Dia. x 4-3/8 Lg. |
| L | 2 | 2101-0049 | Hairpin Clip |
| M | 1 | 0525-0125* | Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)* |
| | | 0525-0126* | Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)* |
| | | 0525-0127* | Hoist Cylinder, Complete Assy (5' & 6' Platforms)* |
| N | 1 | 9202-0072 | Pin, Platform, Hoist, VS3/RR/CA, 49/64 Dia. x 10.75, SW85 |
| P | 6 | 2101-0093 | Washer, Flat, 3/4 |
| Q | 1 | 8581-0023 | Prop Kicker Solenoid |
| R | 4 | 2101-0153 | Hex Head Cap Screw, 1/4-20 UNC x 1/2 Lg. |
| S | 4 | 2101-0005 | Washer, 1/4 in., Lock |
| T | 1 | 9225-0016 | Storage Prop |
| U | 1 | 9202-0071 | Hoist Cyl Pin Rod End |
| V | 1 | 2101-0259 | Ring Clip, Rue |
| W | 2 | 2101-0046 | Cotter Pin, 1/4 x 1.25 |
| X | 1 | 0522-0005 | Clevis Pin |
| Y | 1 | 2101-0045 | Cotter Pin, 1/8 x 1 |
| Z | 2 | 2101-0357 | Cotter Pin, 3/16 x 1.25 |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

Self-Contained VS Hydraulic Components



Self-Contained VS Hydraulic Components

! DANGER

If the hydraulic system is opened to atmosphere anywhere other than the fluid reservoir, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system. See pages 18-19 for instructions.

| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| A | 1 | 0526-0016 | Lip Cylinder, VS (w/fittings) |
| B | 1 | 0525-0125* | Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)* |
| | | 0525-0126* | Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)* |
| | | 0525-0127* | Hoist Cylinder, Complete Assy (5' & 6' Platforms)* |
| C | 1 | 9394-0024 | Reservoir Short (5'-6' Lg) |
| | | 9394-0053 | Reservoir Long (8' Lg) |
| D | 1 | 9301-0199 | Breather, Reservoir |
| E | 4 | 2101-0011 | Hex Head Capscrew |
| F | 4 | 2101-0058 | Lock Washer |
| G | 4 | 2101-0060 | Flat Washer |
| H | 1 | 9394-0014 | Motor Assembly, 115V 1-Phase |
| | | 9394-0015 | Motor Assembly, 460V 3-Phase |
| | | 9394-0033 | Motor Assembly, 208V 1-Phase |
| | | 9394-0034 | Motor Assembly, 230V 1-Phase |
| | | 9394-0035 | Motor Assembly, 575V 3-Phase |
| | | 9394-0043 | Motor Assembly, 208V 3-Phase |
| | | 9394-0044 | Motor Assembly, 230V 3-Phase |
| I | 1 | 9301-0268 | Pump 1.75GPM |
| L | 1 | 9904-0090 | Hose, 17.50" Lg, #8 JIC Swivel Both Ends 5'-6', 8' LG |
| M | 3 | 9904-0137 | Hose, 60.00" Lg, #6 JIC Swivel Both Ends 8'Lg |
| N | 1 | 9904-0103 | Hose, 10.50" Lg, #8 ORB to #8 JIC Swivel |
| O-P | 2 | 9904-0083 | Hose, 44.00 Lg, #6 JIC Swivel Both Ends 5'/6' |
| Q | 1 | 9904-0102 | Hose, 21.00" Lg, #8 ORB to #8 JIC Swivel |
| R | 1 | 9301-0115 | Fitting 90 Deg #6 ORB To #8 JIC |
| S | 1 | 9301-0116 | Fitting 90 Deg #8 ORB To #8 JIC |
| T | 1 | 8585-0089 | Vertical Valve Assembly |
| U | 1 | 9301-0174 | Sight Glass |

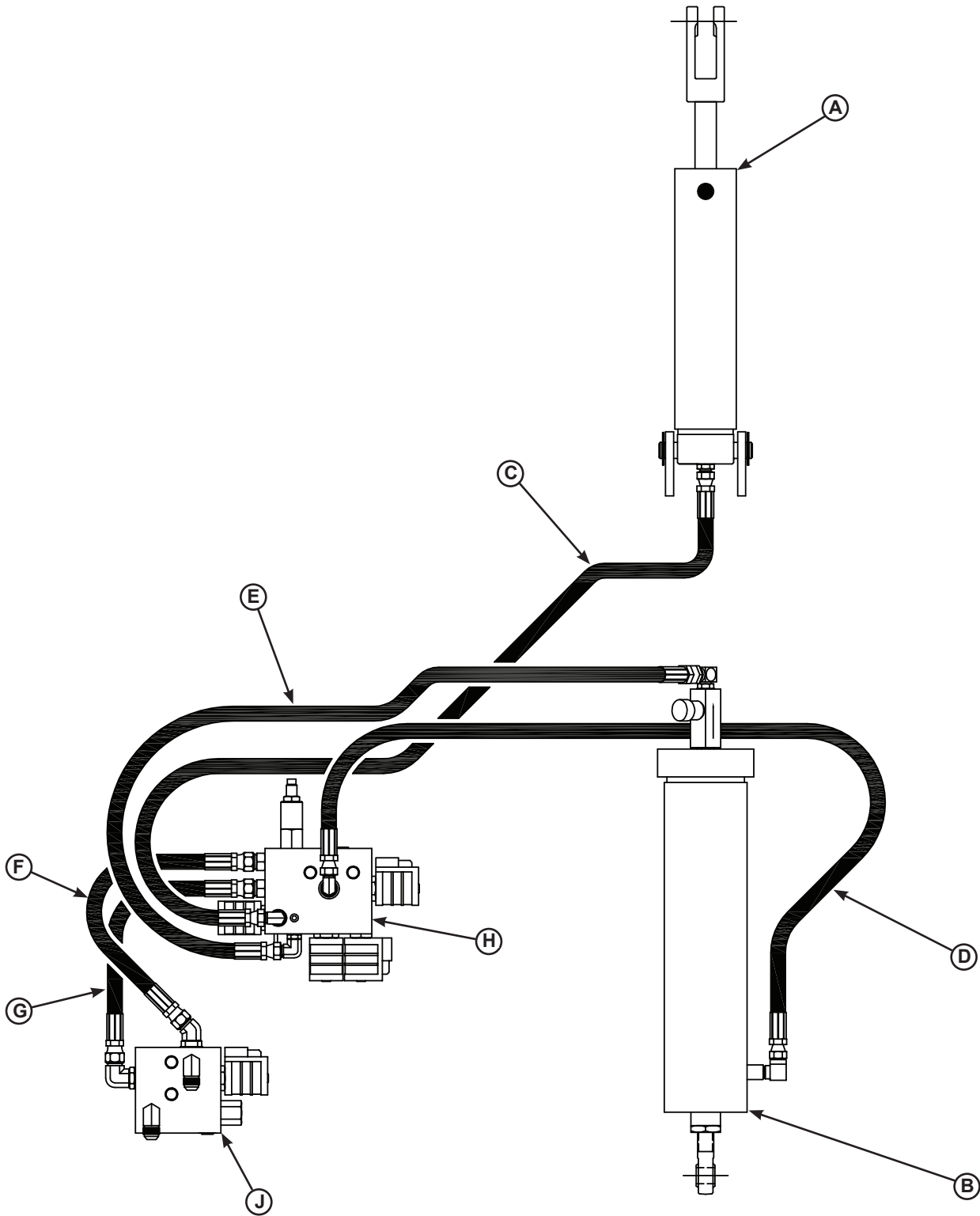
NOTICE

See page 27 for hydraulic fluid checking/filling instructions.

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

CentraPower VS Hydraulic Components



CentraPower VS Hydraulic Components

DANGER

If the hydraulic system is opened to atmosphere anywhere other than the fluid reservoir, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system. See pages 18-19 for instructions.

| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| A | 1 | 0526-0016 | Lip Cylinder, VS (w/fittings) |
| B | 1 | 0525-0125* | Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)* |
| | | 0525-0126* | Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)* |
| | | 0525-0127* | Hoist Cylinder, Complete Assy (5' & 6' Platforms)* |
| C | 1 | 9904-0059 | Hose, 35.00" Lg, #6 JIC Swivel Both Ends (5'-6' LG) |
| | | 9904-0137 | Hose, 60.00" Lg, #6 JIC Swivel Both Ends (8' LG) |
| D | 1 | 9904-0083 | Hose, 44.00" Lg, #6 JIC Swivel Both Ends |
| E | 1 | 9904-0059 | Hose, 35.00" Lg, #6 JIC Swivel Both Ends |
| F | 1 | 9904-0082 | Hose, 21.00" Lg, #8 JIC Swivel Both Ends |
| G | 1 | 9904-0090 | Hose, 17.50" Lg, #8 JIC Swivel Both Ends |
| H | 1 | 8585-0089 | Vertical Valve Assembly |
| J | 1 | 8583-0045 | CentraPower Valve Assembly |

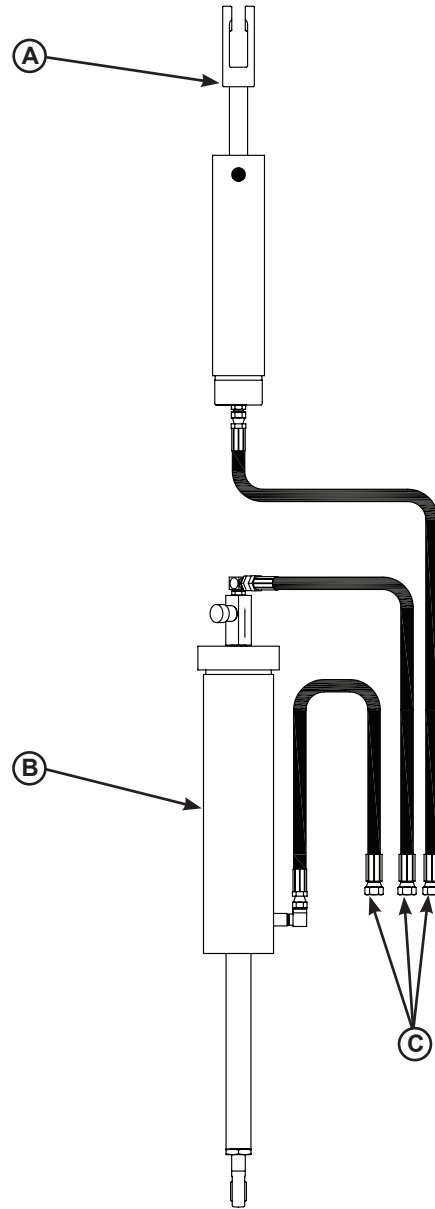
*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

CentraPower VS-KS4 Hydraulic Components

⚠ DANGER

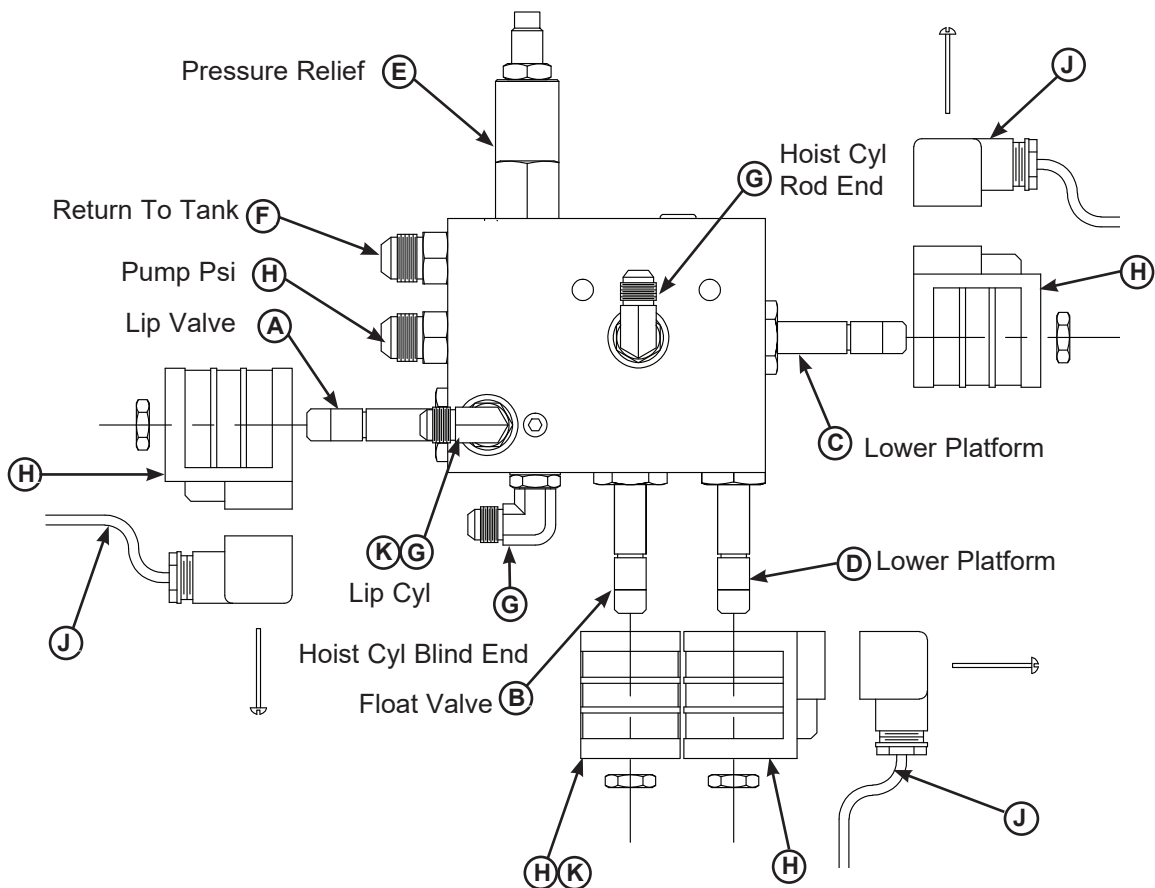
If the hydraulic system is opened to atmosphere anywhere other than the fluid reservoir, air will enter into the hydraulic system. Whenever this happens, air must be fully purged from the hydraulic system. See pages 18-19 for instructions.



| Item | Quantity | Part Number | Description |
|----------------|----------|------------------------|--|
| A | 1 | 0526-0016 | Lip Cylinder, VS (w/fittings) |
| B | 1 | 0525-0125* | Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)* |
| | | 0525-0126* | Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)* |
| | | 0525-0127* | Hoist Cylinder, Complete Assy (5' & 6' Platforms)* |
| C ¹ | 1 | 9904-____ ¹ | Hose |
| | 1 | 9904-____ ¹ | Hose |
| | 1 | 9904-____ ¹ | Hose |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts. ¹ Provide length and diameter of hose when e-mailing, calling or faxing orders.

Self-Contained VS Valve Block Assembly

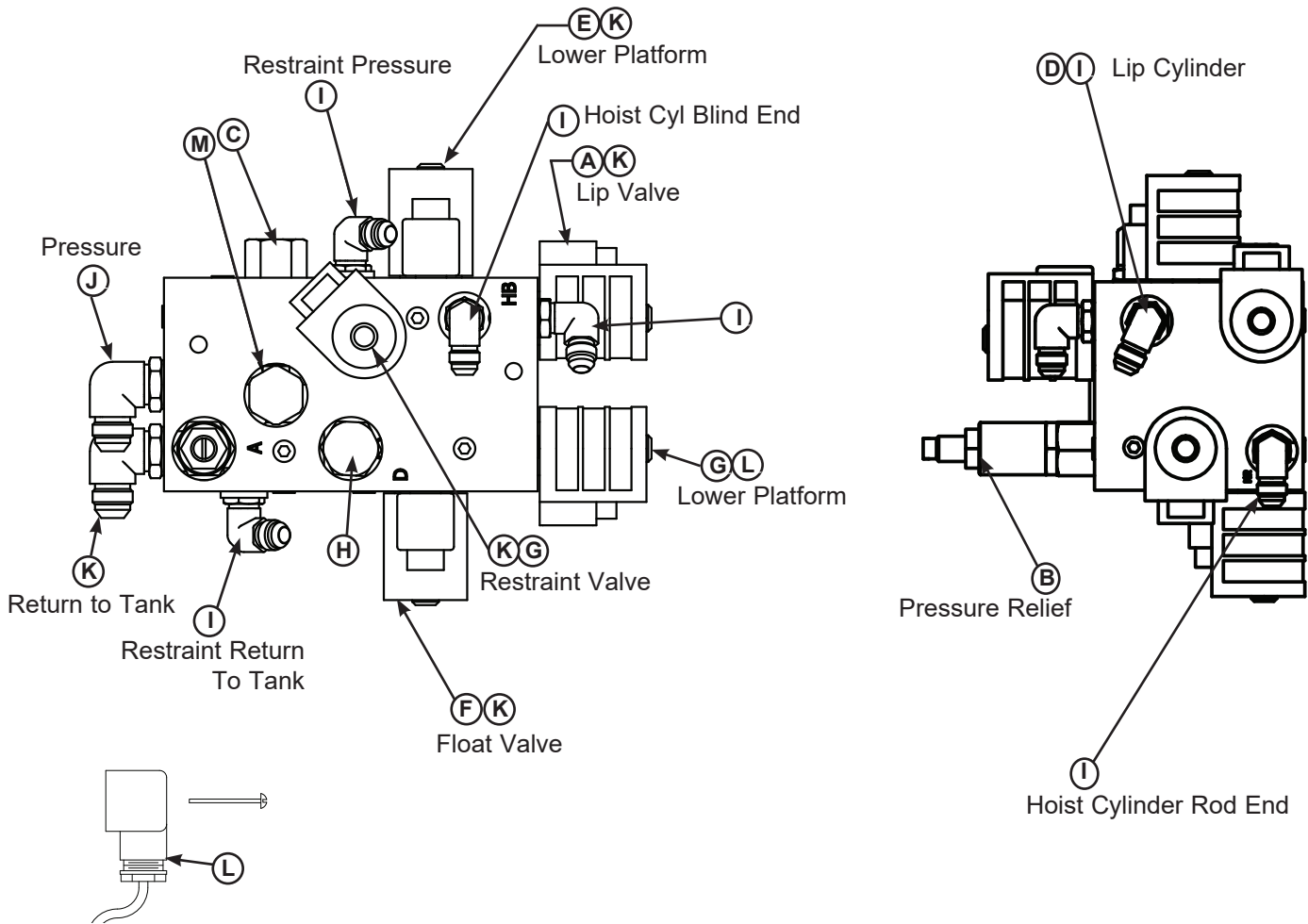


| Item | Quantity | Part Number | Description |
|------|----------|-------------|---|
| * | 1 | 8585-0089 | Vertical Valve Assembly (Includes A-G and K) |
| A | 1 | 8581-0005 | Valve Cartridge 3-Way Delta |
| B | 1 | 8581-0102 | Valve Cartridge 2-Way Bi-Dr Delta |
| C | 1 | 8581-0011 | Valve Cartridge 4-Way 2 Pos Delta |
| D | 1 | 8581-0010 | Valve Cartridge 2-Way N.C. Poppet Delta |
| E | 1 | 8581-0105 | Valve Cartridge Relief |
| F | 2 | 9301-0111 | Fitting #6 ORB X #8 JIC |
| G | 3 | 9301-0113 | Fitting 90 Deg #6 ORB X #6 JIC |
| H | 4 | 8581-0004 | Delta Coil 115V (Includes 1/2 UNF Jam Nut) |
| J | 2 | 4301-0003 | Cable Assy, 24" Lg Two Coil |
| K | 1 | 8581-0139 | Orifice Check (Lip Flow Control) |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

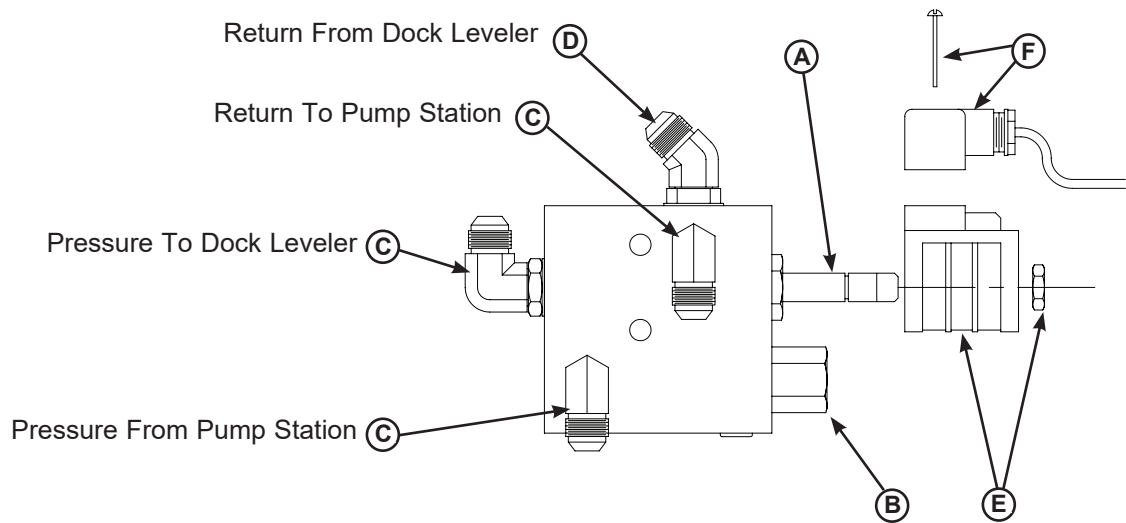
Remote-Mount VS Valve Block Assembly (w/PowerHold)



| Item | Quantity | Part Number | Description |
|------|----------|------------------|--|
| * | 1 | 8585-0099 | Valve, Assy. VS W/ PowerHold (Includes A-J and M) |
| A | 1 | 8581-0005 | Valve Cartridge 3-Way Delta |
| B | 1 | 8581-0105 | Valve Cartridge - Direct Acting Relief |
| C | 1 | 8581-0092 | Valve Cartridge - Fixed 5 GPM Flow Control Valve |
| D | 1 | 8581-0139 | Orifice Check Valve (Lip Flow Control)(Internal) |
| E | 1 | 8581-0010 | Valve Cartridge - 2 Way N.C. Poppet |
| F | 1 | 8581-0102 | Valve Cartridge - 2 Way Bi-Directional |
| G | 2 | 8581-0011 | Valve, Cartridge - 4 Way |
| H | 1 | 8581-0088 | Valve Cartridge - Fixed 2 GPM Flow Control Valve |
| I | 5 | 9301-0113 | Fitting Elbow 90 Deg Male, #6 ORB X #6 JIC |
| J | 2 | 9301-0116 | Fitting Elbow 90 Deg Male, #8 ORB X #8 JIC |
| K | 5 | 8581-0004 | Delta Coil 115V (Includes 1/2 UNF Jam Nut) |
| L | 2 | 4301-0003 | Cable Assembly, Dual Coil 24" |
| M | 1 | 8581-0148 | Plug, Cavity,3-Way Special |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

CentraPower Valve Block Assembly

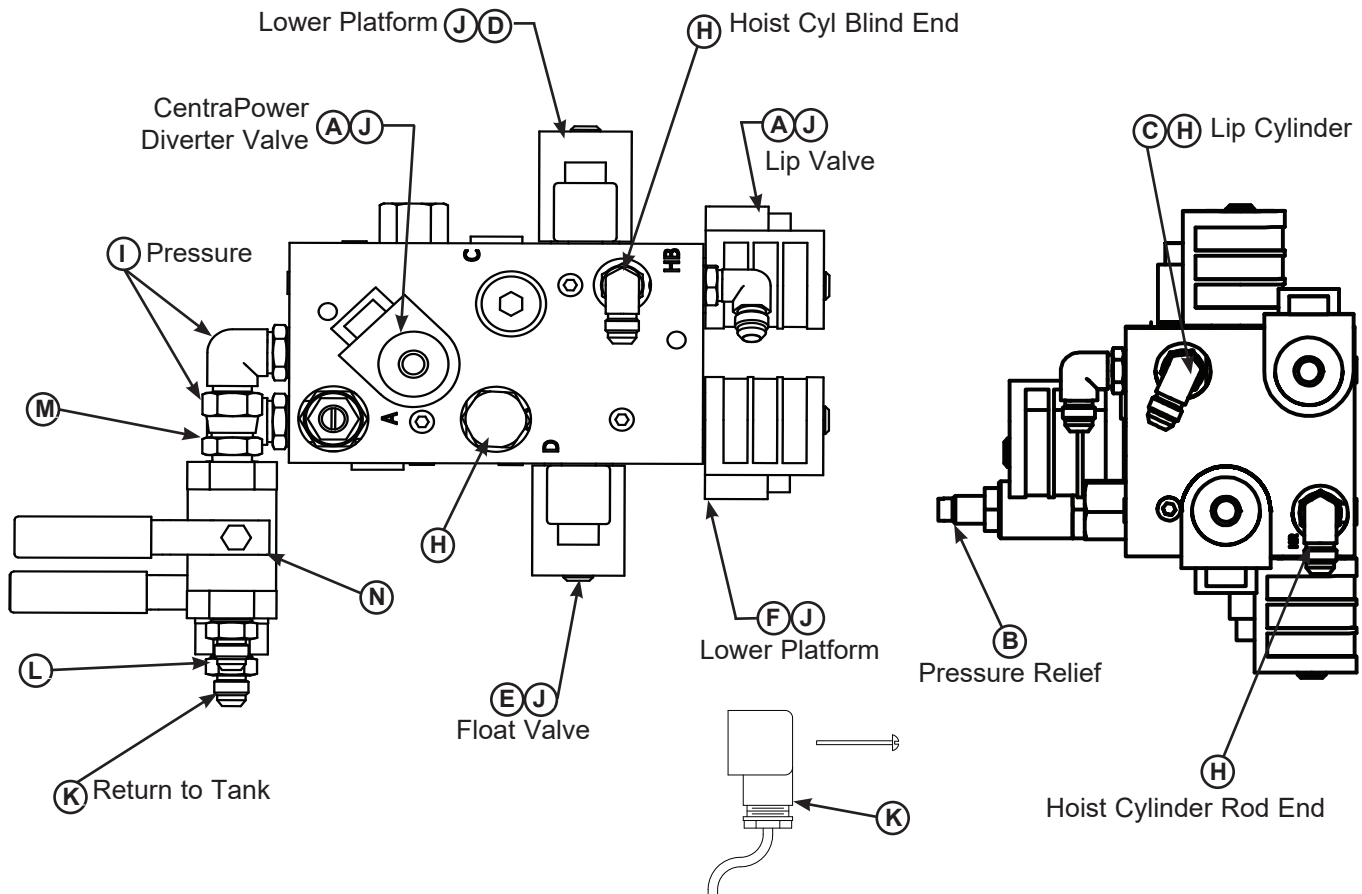


| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| * | 1 | 8583-0045 | CentraPower Valve Assembly (Includes A-D) |
| A | 1 | 8581-0005 | Valve Cartridge 3-Way Delta |
| B | 1 | 8581-0088 | Valve Cartridge - Flow 2GPM |
| C | 3 | 9301-0116 | Fitting Elbow 90 Deg Male |
| D | 1 | 9301-0120 | Fitting Elbow 45 Deg Male, #8 ORB X #8 JIC |
| E | 1 | 8581-0004 | Delta Coil 115V (Includes 1/2 UNF Jam Nut) |
| F | 1 | 4301-0004 | Cable Assembly, 48" Lg (Includes Screw) |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

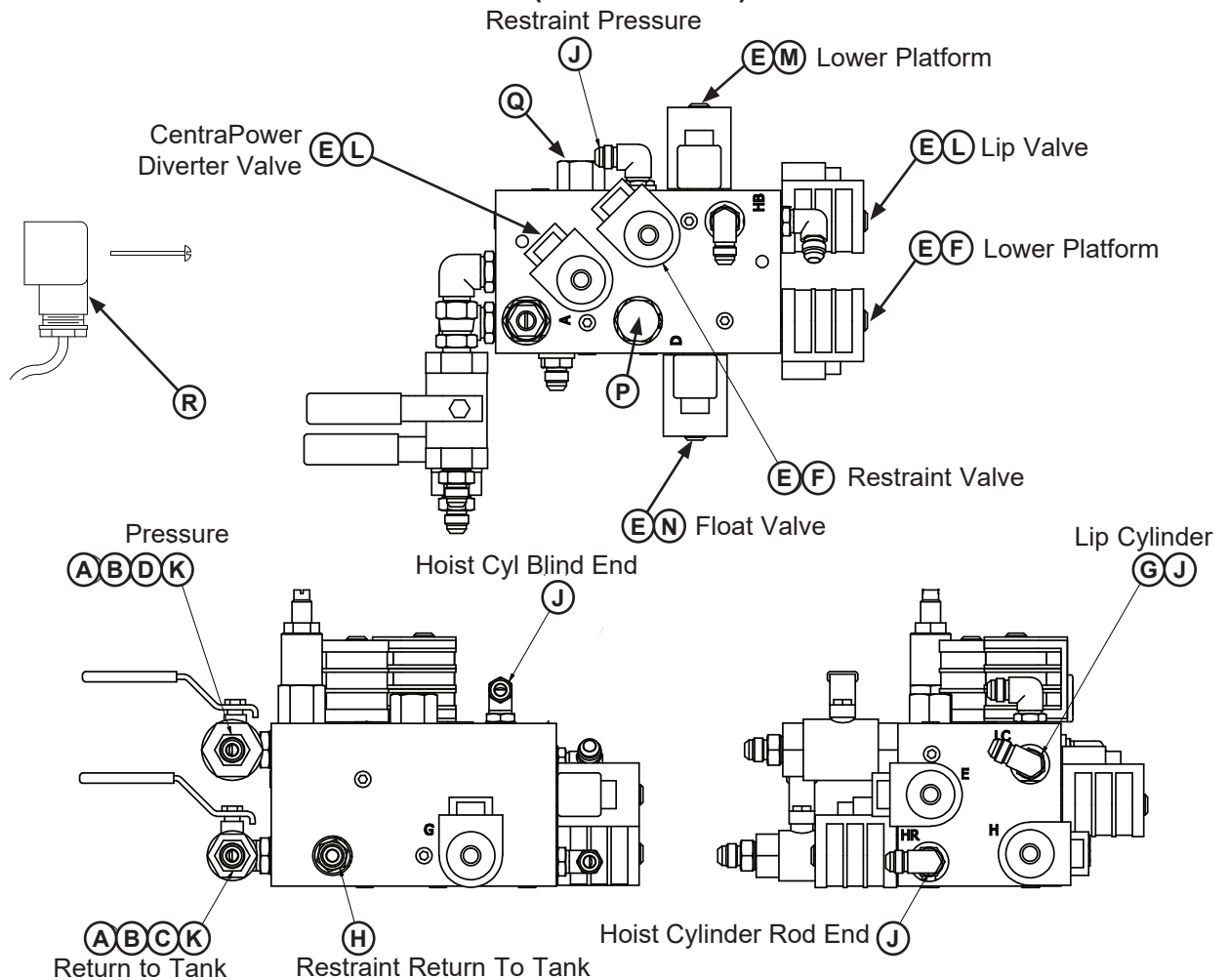
CentraPower VS Valve Block Assembly



| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| * | 1 | 8585-0098 | Valve, Assy. CentraPower VS (Includes A-I and L-N) |
| A | 2 | 8581-0005 | Valve Cartridge 3-Way Delta |
| B | 1 | 8581-0105 | Valve Cartridge - Direct Acting Relief |
| C | 1 | 8581-0139 | Orifice Check Valve(Lip Flow Control)(Internal) |
| D | 1 | 8581-0010 | Valve Cartridge - 2 Way N.C. Poppet |
| E | 1 | 8581-0102 | Valve Cartridge - 2 Way Bi-Directional |
| F | 1 | 8581-0011 | Valve, Cartridge - 4 Way |
| G | 1 | 8581-0088 | Valve Cartridge - Fixed 2 GPM Flow Control Valve |
| H | 3 | 9301-0113 | Fitting Elbow 90 Deg Male, #6 ORB X #6 JIC |
| I | 2 | 9301-0116 | Fitting Elbow 90 Deg Male, #8 ORB X #8 JIC |
| J | 5 | 8581-0004 | Delta Coil 115V (Includes 1/2 UNF Jam Nut) |
| K | 2 | 4301-0003 | Cable Assembly, Dual Coil 24"LG |
| L | 2 | 0521-0015 | Fitting, Conn Male 3/8"NPT x #8 JIC |
| M | 2 | 0521-0032 | Fitting, Conn Swivel 3/8"NPT x #8 JIC Swivel |
| N | 2 | 8581-0001 | Valve, Ball, Bronze, 3/8" NPT |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

CentraPower VS Valve Block Assembly (w/PowerHold)

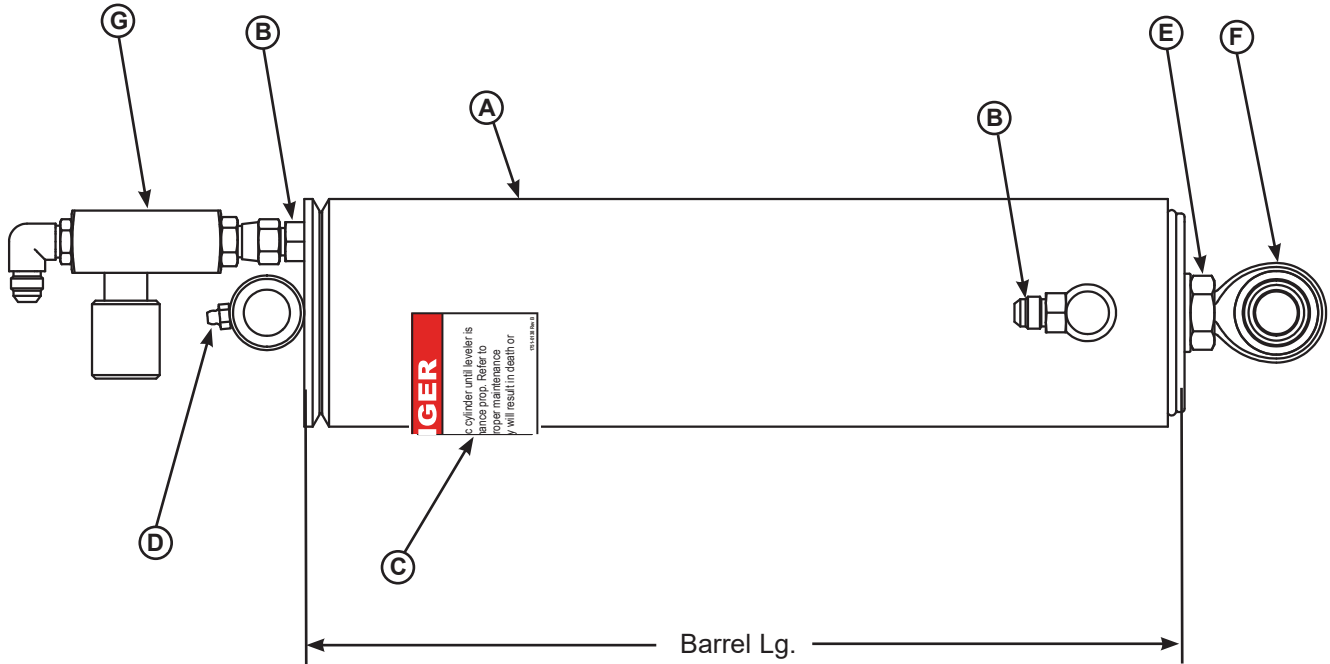


| Item | Quantity | Part Number | Description |
|------|----------|-------------|---|
| * | 1 | 8585-0097 | Valve, Assy. CentraPower VS W/Hold (Includes A-D and F-Q) |
| A | 2 | 0521-0015 | Fitting, Conn Male 3/8"NPT x #8 JIC |
| B | 2 | 0521-0032 | Fitting, Conn Swivel 3/8"NPT x #8 JIC Swivel |
| C | 1 | 8581-0001 | Valve, Ball, Bronze, 3/8" NPT |
| D | 1 | 8581-0002 | Valve, Ball, Steel, 3/8" NPT |
| E | 6 | 8581-0004 | Delta Coil 115V (Includes 1/2 UNF Jam Nut) |
| F | 2 | 8581-0011 | Valve, Cartridge - 4 Way |
| G | 1 | 8581-0139 | Orifice Check Valve(Lip Flow Control)(Internal) |
| H | 1 | 9301-0109 | Fitting Straight, #6 ORB X #6 JIC |
| J | 4 | 9301-0113 | Fitting Elbow 90 Deg Male, #6 ORB X #6 JIC |
| K | 2 | 9301-0116 | Fitting Elbow 90 Deg Male, #8 ORB X #8 JIC |
| L | 2 | 8581-0005 | Valve, Cartridge - 3 Way |
| M | 1 | 8581-0010 | Valve, Cartridge - 2 Way N.C. Poppet |
| N | 1 | 8581-0102 | Valve, Cartridge - 2 Way Bi-Directional |
| P | 1 | 8581-0088 | Valve Cartridge - Fixed 2 GPM Flow Control Valve |
| Q | 1 | 8581-0092 | Valve Cartridge - Fixed 5 GPM Flow Control Valve |
| R | 3 | 4301-0003 | Cable Assembly, Dual Coil 24 " (4301-0002 48" Two Coil) |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

Hoist Cylinder Parts



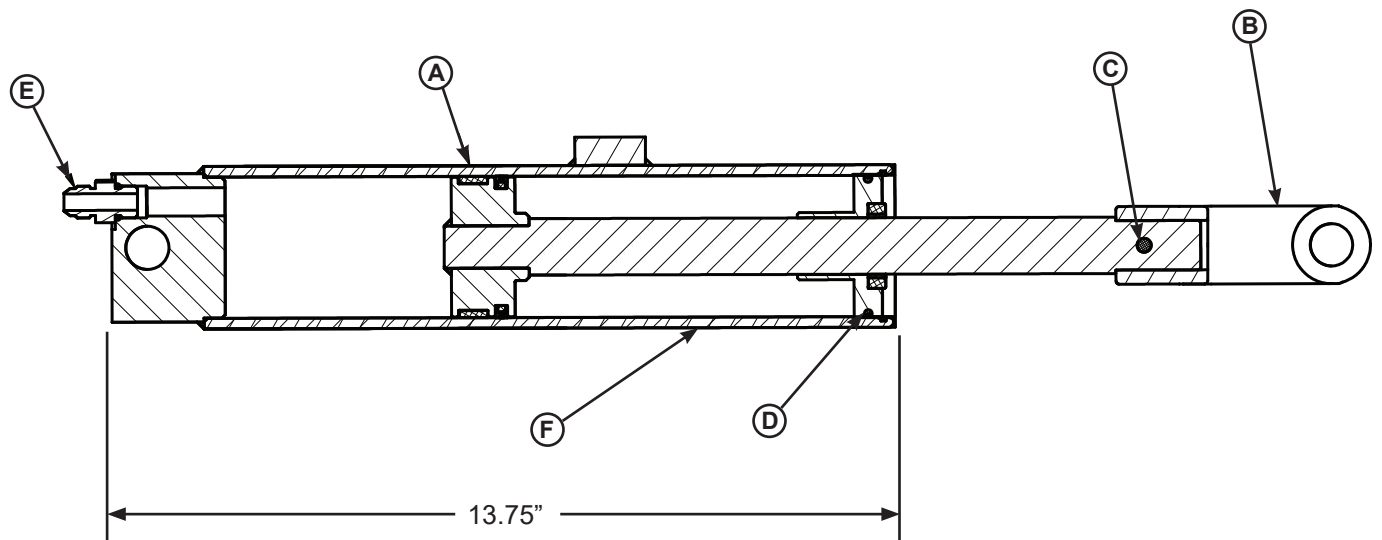
NOTICE

Seal kits are not available for vertical hoist cylinders.

| Item | Quantity | Part Number | Description |
|------|----------|-------------|--|
| A | 1 | 0525-0125* | Hoist Cylinder, Complete Assy (8' Platforms w/10" or 12" Pit)* |
| | | 0525-0126* | Hoist Cylinder, Complete Assy (8' Platforms w/15" Pit)* |
| | | 0525-0127* | Hoist Cylinder, Complete Assy (5' & 6' Platforms)* |
| B | 2 | 9301-0109 | Fitting Connection Str Thread #6 ORBM/#6 JICM |
| C | 1 | 1751-0138 | Decal, Cylinder Fluid |
| D | 1 | 0521-0073 | Grease Zerk, 3/16" Straight |
| E | 1 | 2101-0159 | Hex Nut, 3/4-16 UNF |
| F | 1 | 9461-0002 | Rod Eye |
| G | 1 | 9303-0025 | Down Speed Flow Control Valve Assy |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

Lip Cylinder Parts

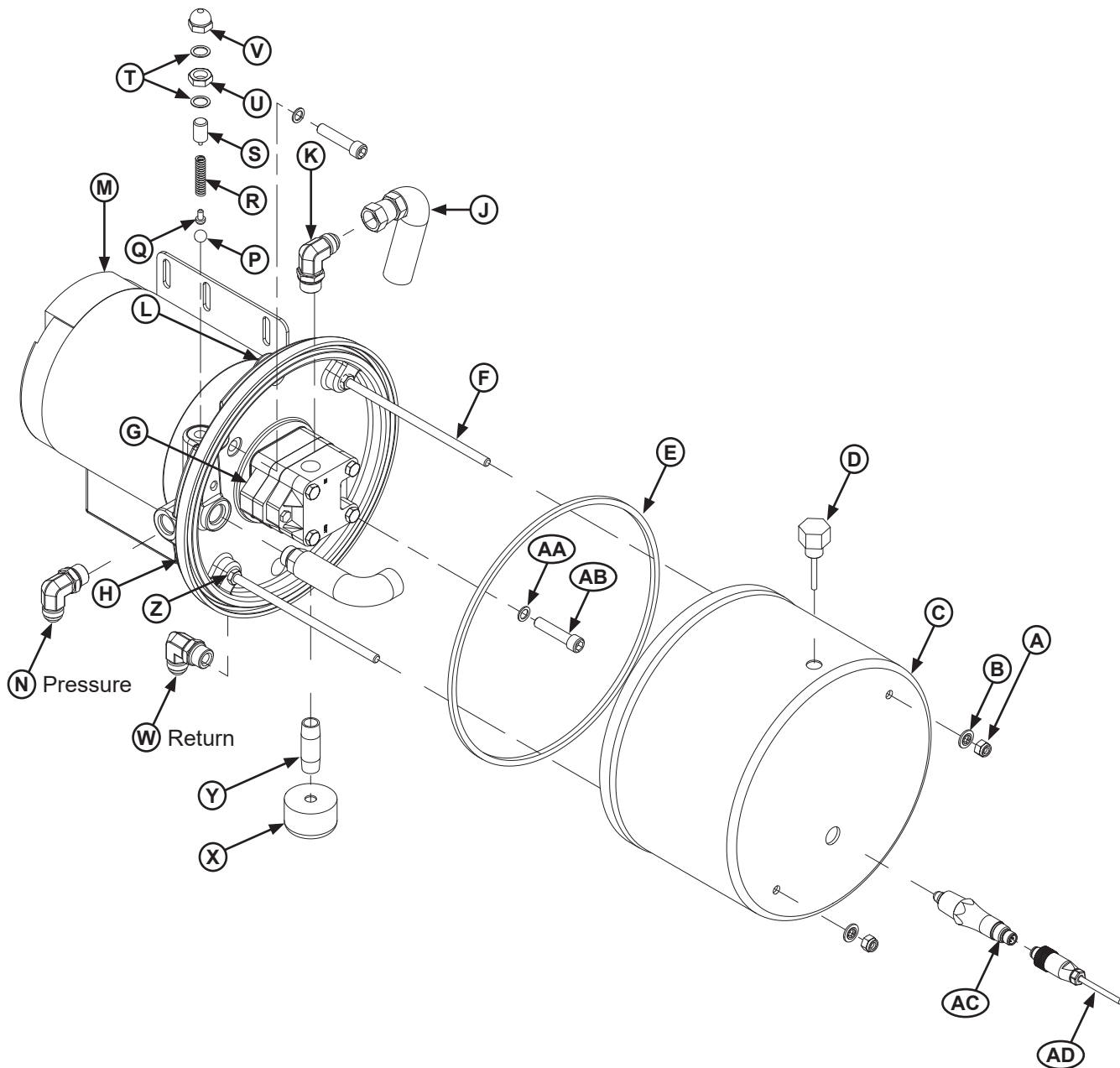


| Item | Quantity | Part Number | Description |
|------|----------|-------------|---------------------------------------|
| A | 1 | 0525-0085 | Lip Cylinder, VS |
| | | 0526-0016 | Lip Cylinder, VS (w/fittings E-F) |
| B | 1 | 0522-0189 | Yoke (included in 0525-0085) |
| C | 1 | 0521-0005 | Roll pin (included in 0525-0085) |
| D | 1 | 0525-0059 | Seal Kit (1992-present) |
| E | 1 | 9301-0109 | Fitting, Connector Str. #6 ORB-#6 JIC |
| F | 1 | 0521-0028 | Fitting, Breather-Brass (Not Shown) |

*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders. Contact Technical Services for 2002 and earlier parts.

PARTS

Remote Mount Powerpack Assembly



NOTICE
Leveler pressure is set by relief valve on valve block.
Remote mount powerpack pressure is factory set.

Typical cookpot-style remote mount Powerpack shown for reference purposes only.
Contact Systems, LLC Technical Services with serial number for exact breakdown.

Technical Service at 800-643-5424 or techservices@loadingdocksystems.com

Remote Mount Powerpack Assembly (continued)

| Item | Quantity | Part Number | Description |
|------|----------|------------------------|--|
| | 1 | 9395-____ ¹ | Powerpack, Complete (Includes All Items Except L, N, and W) |
| A | 2 | 2101-0039 | Nylon Lock Nut, 5/16-18 UNC |
| B | 2 | 9301-0029 | Seal, Thread |
| C | 1 | 9302-0014 | Reservoir |
| D | 1 | 9301-0199 | Breather Cap, 3/8 NPT Male |
| E | 1 | 9301-0027 | O-Ring (Reservoir) |
| F | 2 | 9302-0012 | Tie Rod (Reservoir) |
| G | 1 | 9301-____ ¹ | Pump Only |
| | 4 | 2101-0016 | Cap Screw, 5/16-18 UNC x 3-1/2 in., Grade 5 |
| | 1 | 9301-0028 | Gasket, Pump |
| | 1 | 9303-0002 | Coupling Assembly |
| H | 1 | 9302-____ ¹ | Plate, Drive |
| J | 1 | 9904-0071 | Hose, 1/2"100R1 x 17", #8 ORB x #8 JICF Swivel |
| K | 1 | 9301-0116 | 90° Elbow, #8-ORB Male x #8-JIC Male |
| L | 1 | 9301-0106 | Plug, #8-ORB |
| M | 1 | 3411-____ ² | Motor Only |
| N | 1 | 9301-0116 | 90° Elbow, #8-ORB Male x #8-JIC Male |
| P | 1 | 0521-0014 | Ball, Check |
| Q | 1 | 9301-0024 | Guide, Check Ball |
| R | 1 | 9302-0009 | Spring, Relief Valve |
| S | 1 | 9303-0003 | Screw, Adjusting |
| T | 2 | 9301-0014 | Washer, Nylon, 11/16 in. OD x 1/2 in. ID |
| U | 1 | 9301-0015 | Nut, Jam, 1/2-20 UNF |
| V | 1 | 9301-0016 | Nut, Acorn, 1/2-20 UNF |
| W | 1 | 9301-0175 | 90° Elbow, #8-ORB Male x #10-JIC Male |
| X | 1 | 9301-0009 | Strainer, Suction |
| Y | 1 | 9301-0008 | Pipe Nipple, 3/8 NPT x 3 in. |
| Z | 2 | 2101-0063 | Nut, Jam 5/16-18 UNC |
| AA | 2 | 9301-0003 | Washer, Aluminum, 9/16 in. OD x 3/8 in. ID x 1/16 in. |
| AB | 2 | 9301-0004 | Screw, Socket Head, 3/8-16 UNC x 1-3/4 in. |
| AC | 1 | 0961-0642 | Sensor, Fluid, Cookpot (Optional) |
| AD | 1 | 0961-0648 | Cable, 5M Lg, M12 Plug (Optional) |

¹ Provide dock leveler serial number and type of installation when e-mailing, calling or faxing orders.

² Provide dock leveler serial number, voltage, and phase when e-mailing, calling or faxing orders.

MISCELLANEOUS

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Customer Information

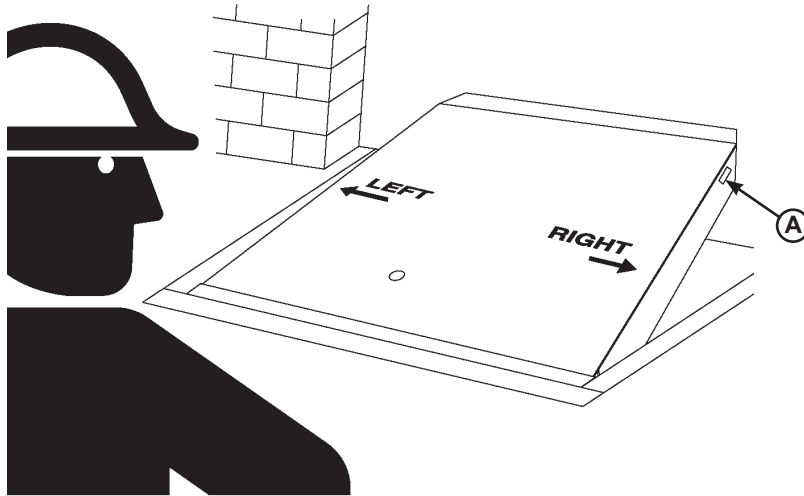


Figure 35

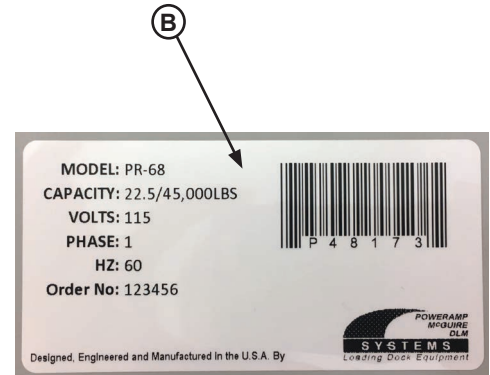


Figure 36

NOTE: Refer to Figure 35 for left/right orientation of dock leveler and Figure 36 for example of decal.

The LEVELER model/serial number decal is located on the left platform joist near the front (lip) of dock leveler (A).

When you receive your new equipment, write down the model and serial number in the form provided. This will help ensure safe keeping of the numbers in the event the model/serial number decal (A, B) becomes lost or damaged.

Also, write down Systems, LLC's order number, the company that installed the dock leveler, and the original owner's name. This will all help to identify the specific dock leveler if more information is required.

When ordering, use part numbers and description to help identify the item ordered. Do not use "item" numbers. These are only for locating the position of the parts. Always give dock leveler MODEL NUMBER and/or SERIAL NUMBER.

For service, call or contact:

Systems, LLC
P.O. Box 309
Germantown, WI 53022

Phone: (800) 643-5424
Fax: (262) 255-5917

www.loadingdocksystems.com

Dock Leveler Information

Model _____

Serial No. _____

Systems, LLC, Job No. _____

Vehicle Restraint Information

Model _____

Serial No. _____

Systems, LLC Order No. _____

Original Owner Information

Name _____

Address _____

Installer Information

Name _____

Address _____

Date of Installation _____

STANDARD PRODUCT WARRANTY

SYSTEMS, LLC warrants that its products will be free from defects in design, materials and workmanship for a period of one (1) year from the date of shipment. All claims for breach of this warranty must be made within 30 days after the defect is or can with reasonable care, be detected. In no event shall any claim be made more than 30 days after this warranty has expired. In order to be entitled to the benefits of this warranty, the product must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic lubrication, adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the Owner/User.

In the event of a defect, as determined by SYSTEMS LLC, covered by this warranty, SYSTEMS LLC shall remedy such defect by repairing or replacing any defective equipment or parts, bearing the cost for the parts, labor and transportation. This shall be exclusive remedy for all claims whether based on contract, negligence or strict liability.

WARRANTY LIMITATIONS

THE ABOVE WARRANTIES ARE IN LIEU OF ANY OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SYSTEMS LLC AND ITS SUBSIDIARIES SHALL NOT IN ANY EVENT BE LIABLE TO ANYONE, INCLUDING THIRD PARTIES, FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND INCLUDING BUT NOT LIMITED TO, BREACH OF WARRANTY, LOSS OF USE, LOSS OF PROFIT, INTERRUPTION OF BUSINESS OR LOSS OF GOODWILL.

PRODUCT SPECIFIC WARRANTY "VS" SERIES LEVELER

In addition to the "Standard Product Warranty" provided with all Poweramp® products, Systems LLC, guarantees materials, components and workmanship to be free of defects for the following extended periods:

- Structural Warranty – For an additional period of four (4) years, for parts, labor and freight, this warranty specifically applies to; the deck section, lip section, frame, rear hinge assembly and front hinge assembly only.
- Hydraulic Warranty – For an additional period of four (4) years, for parts, labor and freight, this warranty specifically applies to; the hydraulic pump and motor, all hydraulic cylinders, hydraulic pressure lines and fittings only.