A Division of Systems, Inc.

POWERAMP®

Premium Loading Dock Systems

VS SERIES

Dock Leveler

Owner's/User's Manual

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Table of Contents

Recognize Precautionary Information

Safety - Alert Symbol

The Safety-Alert Symbol This is the safety alert symbol. It is used to alert you to the potential physical injury hazard. Obey all safety messages that follow this symbol to avoid possible death or injury.

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.

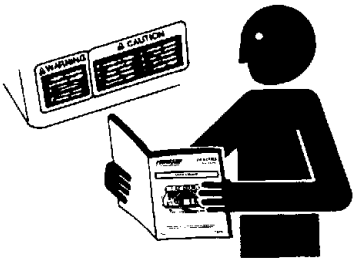
NOTICE

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 as described.

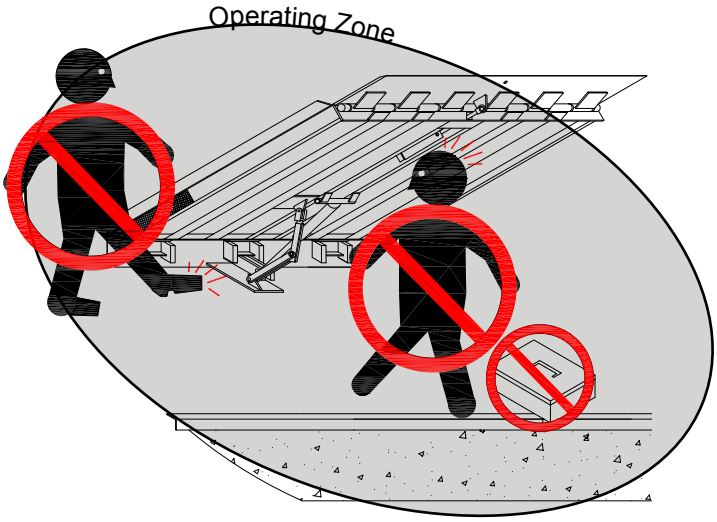
General Operational Precautions



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

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

Never remove DANGER, WARNING, or CAUTION signs or decal's on the equipment unless replacing them.



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

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.

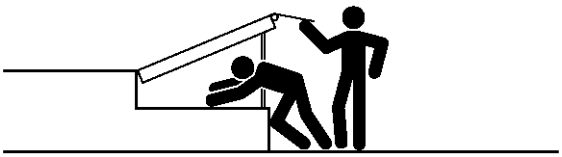
PRECAUTIONS

Operational Precautions

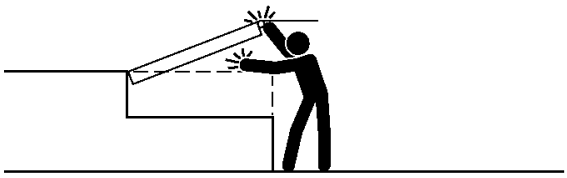
Learn the safe way to operate this equipment. Read and understand the manufacturer's instructions. If you have any questions, ask your supervisor.

DANGER

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

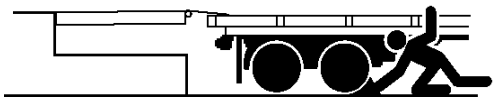


Do not move or use the dock leveling device if anyone is under or in front of it.

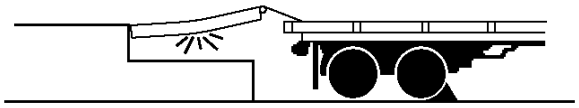


Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

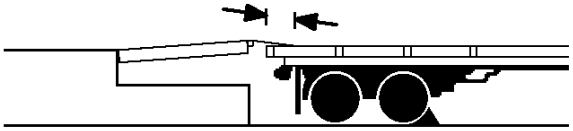
WARNING



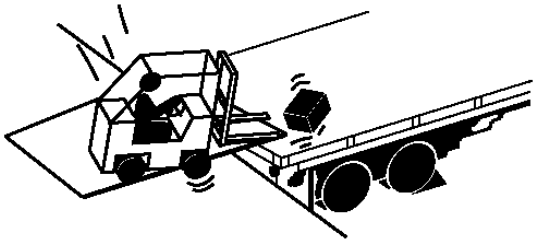
Chock/restrain all transport vehicles, Never remove the wheel chocks until loading or unloading is finished and transport driver has been given permission to drive away.



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



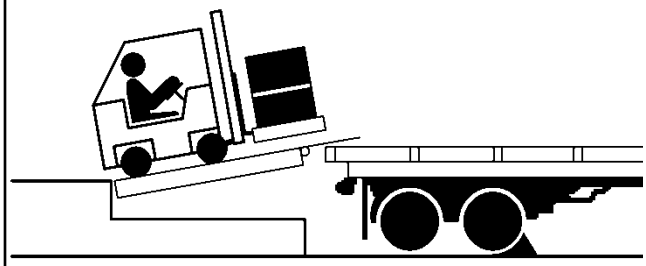
Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



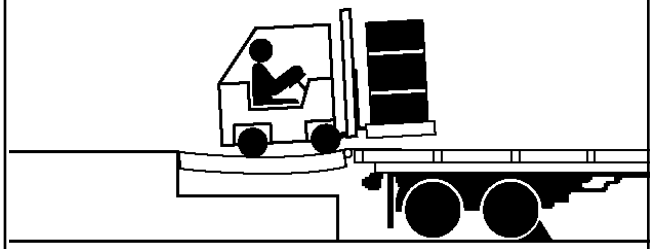
Keep a safe distance from both side edges.

Operational Precautions

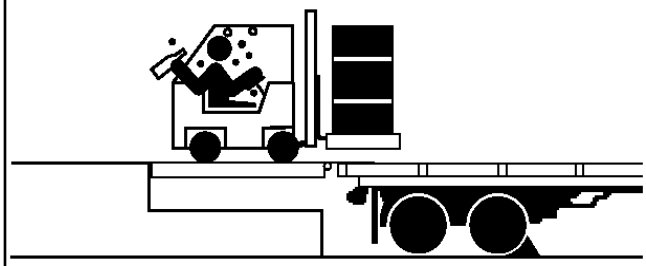
⚠WARNING



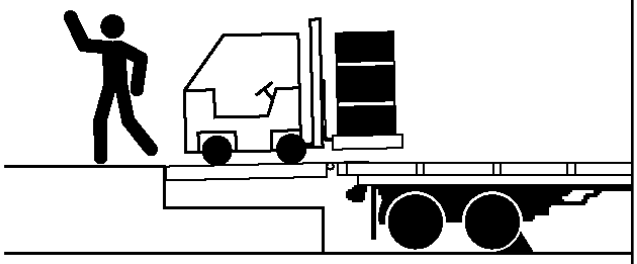
Do not use dock leveling device if transport vehicle is too high or too low.



Do not overload the dock leveling device.



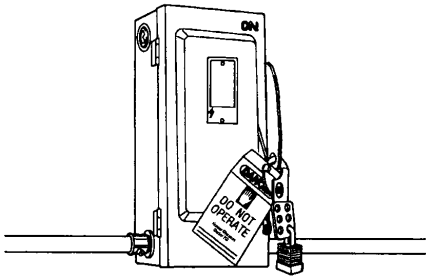
Do not operate any equipment while under the influence of alcohol or drugs.



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

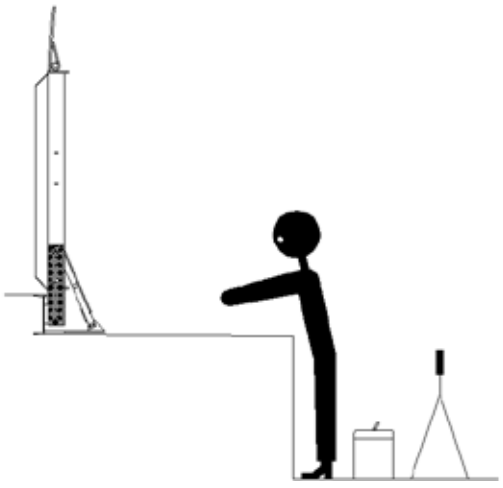
Maintenance Precautions

⚠DANGER



Hydraulic and electrical power must be OFF when servicing the equipment. For maximum protection, use an OSHA approved locking device to lock out all power sources. Only the person servicing the equipment should have the key to unlock the device.

⚠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.

⚠WARNING

ALWAYS disconnect electrical power source and ground wire before welding on dock leveler.

DO NOT ground welding equipment to any hydraulic or electrical components of the dock leveler. Always ground to the dock leveler frame.

⚠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.

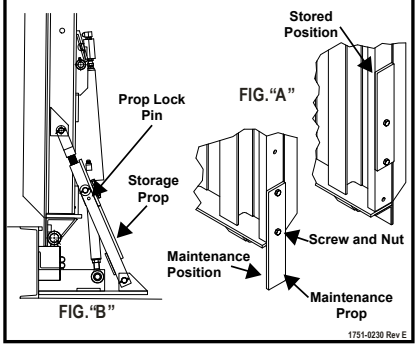
Always keep a fire extinguisher of the proper type nearby when grinding or welding.

⚠WARNING

ALWAYS stand clear of dock leveler 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 position side maintenance prop(s) and secure with screw and nut 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

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
1751-0758 Rev A

Precautionary Decal's

1

DANGER

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 props 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 props are in maintenance positions and properly secured. After prop lock pin is removed from the storage prop all maintenance props 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 instruction will result in death or serious injury.

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

1751-9158 Rev D

1

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1751-9158 Rev D

2

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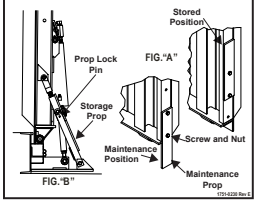

1751-9228 Rev E

2

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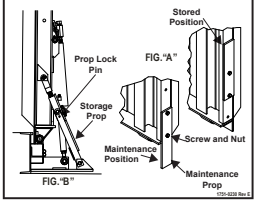

1751-9228 Rev E

3

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Premium Loading Dock Systems
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www.docksystemsinc.com

4

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. 1751-9229 Rev E

5

ATTENTION INSTALLER:
Replace rear plug with breather cap

CAUTION
Do not overfill
Oil should fill ½ site glass

Use ULTRA VIS HVI 15 or
MIL SPEC 5606
Questions Call: 800.643.5424
1751-9480 Rev B

6

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.
1751-9158 Rev B

7

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VS Series
A Division of Systems, Inc.
www.DockSystemsInc.com 1.800.643.5424

8

DANGER

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 vehicle 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 in against bumpers.
   - Remove any end 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 prop.
   a. First, ensure all maintenance props are in maintenance positions and properly secured.
   b. Then engage prop lock pin in storage prop.
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 manuals
1751-9887 Rev C

8

DANGER

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1751-9887 Rev C

9

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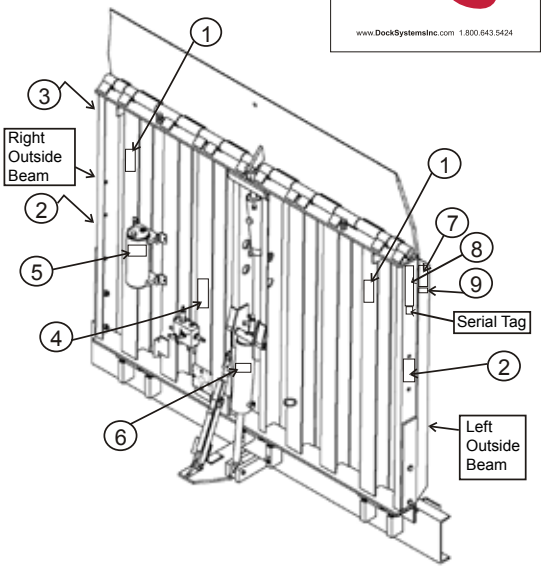
SYSTEMS, INC.
GERMANTOWN, WI
MALVERN, AR



Decal 2 with 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 3 will be positioned on the upper most corner of the right outside beam (mirror position of decal 7)

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, ect.
   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.

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 when the transportation vehicle is positioned as close as practical to the dock leveling device and in contact with both bumpers, there shall be a minimum of 4.00 inches (100mm) overlap between the front edge of the lip and the edge of the floor or sill of the transport vehicle at all times during the loading and unloading process.

9) When goods are transferred between the loading dock and the transport vehicle, this vehicle shall have the brakes and wheel chocks or positive restraints that provide the equivalent protection of wheel chocks shall be engaged. It is recommended that transport vehicles with air-ride suspension systems shall have its air exhausted prior to performing loading and unloading operation to minimize transport vehicle bed drop.

10) 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.

11) Loading dock devices that are structurally damaged or has 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.

General Information

Congratulations on your choice of a Poweramp Vertical Storing dock leveler. This manual covers the VS (Vertical Storing) series hydraulic dock leveler.

Designed by Poweramp to be a marvel of simplicity and efficiency, your dock leveler, when properly installed, will provide many years of trouble-free performance with an absolute minimum of maintenance. Its revolutionary hydraulic system efficiently controls and operates every function. To obtain maximum performance and longest possible use, a simple program of preventive maintenance is recommended.

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 Technical Services.

Once again, thank you and congratulations on your purchase of a Poweramp hydraulic dock leveler.

Dock Leveler Stock Specifications

Models	Nominal Size W x L
VS-65	6' x 5'
VS-66	6' x 6'
VS-68	6' x 8'
VS-655	6'6" x 5'
VS-656	6'6" x 6'
VS-658	6'6" x 8'
VS-75	7' x 5'
VS-76	7' x 6'
VS-78	7' x 8'

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

Width: VS
- 6 ft (1828.8 mm)
- 6-1/2 ft (1981.2 mm)
- 7 ft (2133.6 mm)

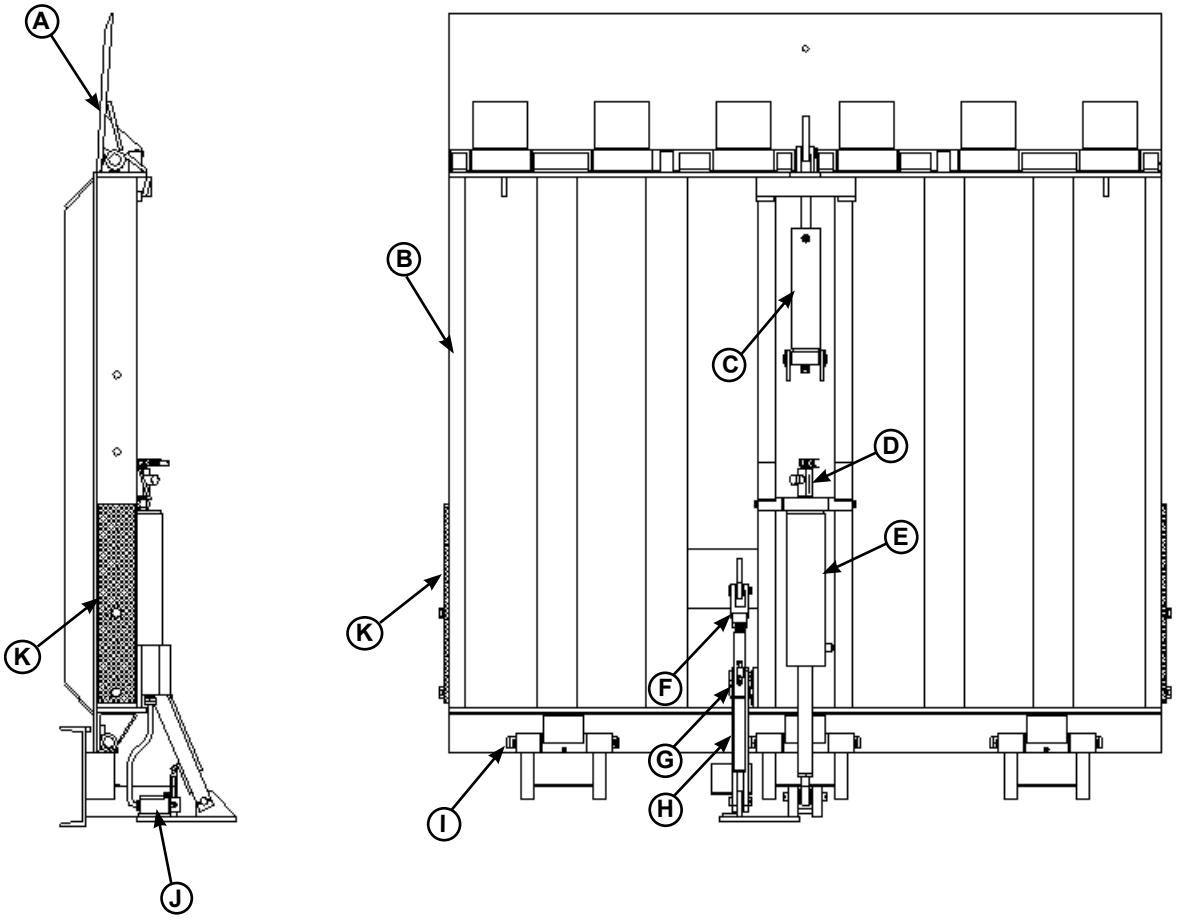
Length
- 5 ft (1524 mm)
- 6 ft (1828.8 mm)
- 8 ft (2438 mm)

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.

Component Identification

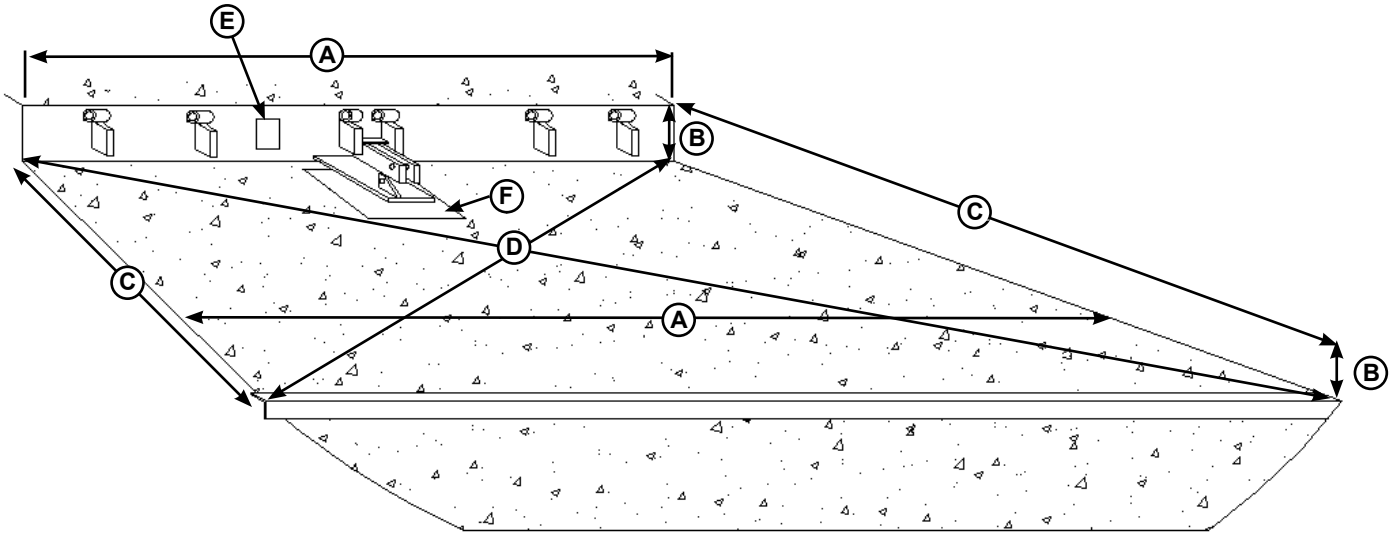


A	Lip
B	Deck
C	Lip Cylinder
D	Flow Control Valve
E	Hoist Cylinder*
F	Storage Prop Yoke

G	Prop Kicker (Behind Prop Assy)
H	Storage Prop Assembly with Prop Lock Pin included
I	Hinge Pins
J	Stored Limit Switch
K	Maintenance Props(2)

* Some models are equipped with multiple hoist cylinders.
*Powerpack may be mounted on underside of leveler or remotely.

Prepare Pit



A—Distance (Pit Width) (Front and Rear) **B— Distance (Dock Floor-to-Pit Floor) (All Four Corners) 1/2" Taper Rear to Front** **C— Distance (Pit Length) (Both Sides of Pit)** **D— Distance (Pit Corner-to-Corner) (Top, Bottom, and Both Sides)**

⚠WARNING

Post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the equipment before installation has been completed.

⚠WARNING

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

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

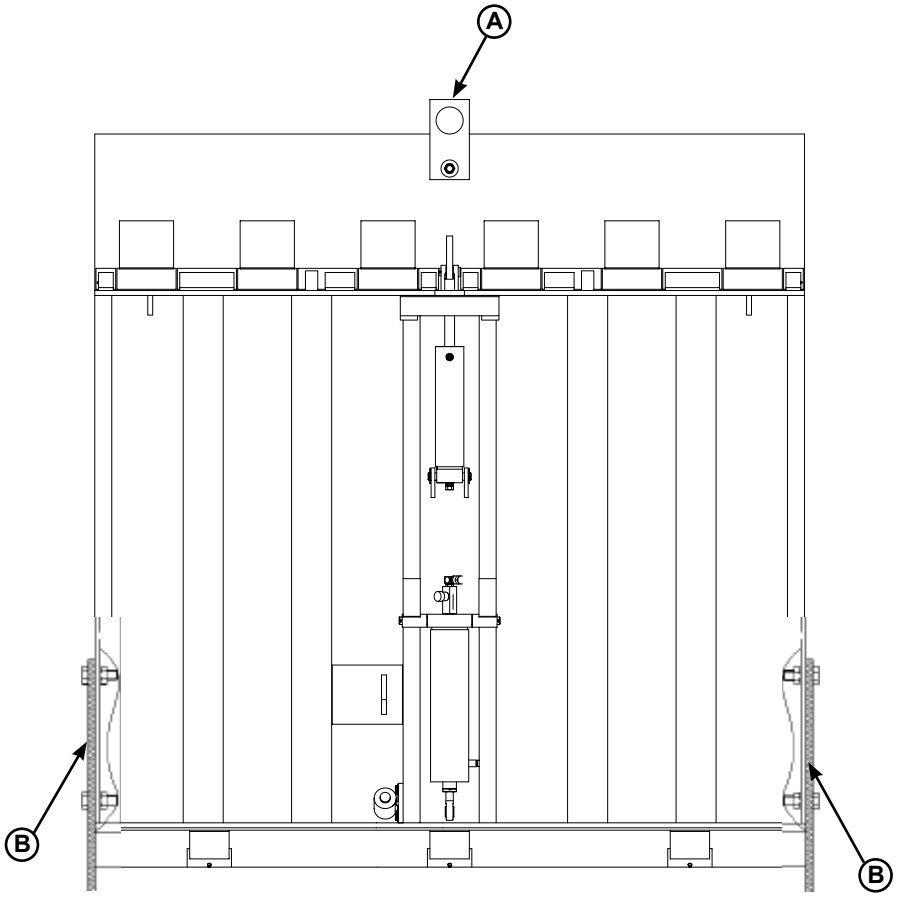
1. Remove all debris from the pit and sweep the pit clean.

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:
   - 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 (criss-cross) distance (D) at both sides. Take measurements at dock floor level and at pit floor level.

   NOTE" If any measurement are off by more than 1/8 in. (3.18 mm) in depth, width and squareness 1/4 in + 0 in (6.32mm) 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.

Prepare Dock Leveler



A— Lifting Bracket

B — Maintenance Props

⚠WARNING

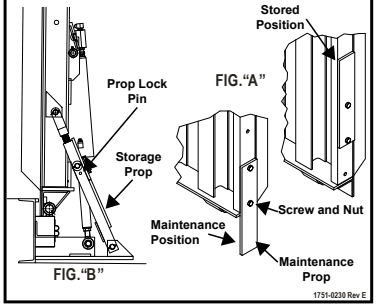
The dock leveler is heavy. Use a lifting device and chains with the appropriate lifting capacity and reach.

Always use the lifting brackets provided with the unit whenever lowering or lifting a dock leveler into or out of a pit.

Poweramp dock levelers are designed with installation in mind. Each unit is shipped with lifting bracket(s) (A) fastened to the platform.

⚠DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First position side maintenance prop(s) and secure with screw and nut 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.



* Refer to OSHA regulation 1910.146. Confine Space
* Refer to OSHA regulation 1910.147. Lockout/Tagout

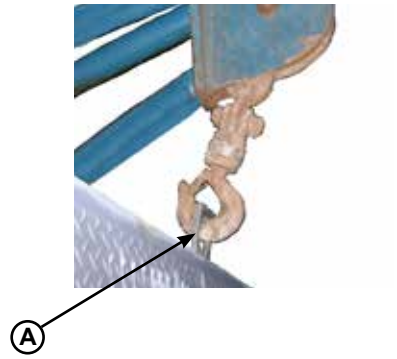
NOTICE

Installation of VS levelers from inside is recommended due to combined height of leveler and proper lifting equipment may be greater than outside door height.

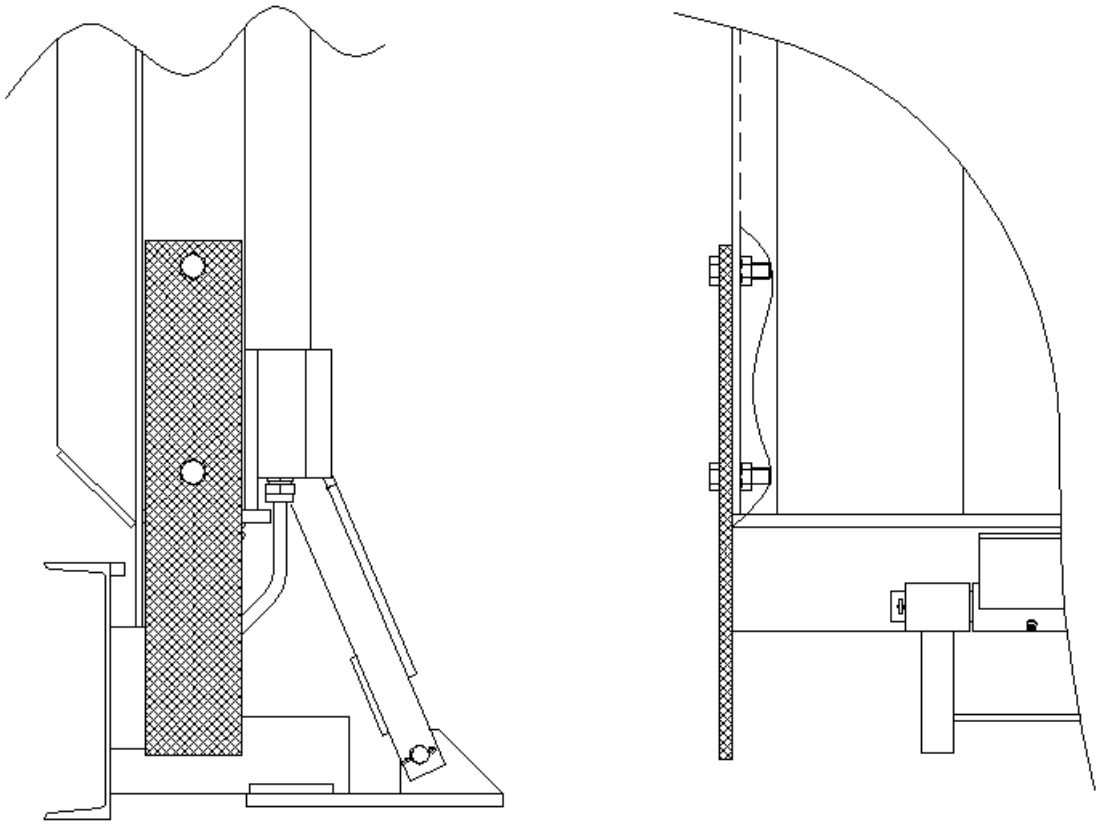
1. Remove any control panel, bumpers or pelletizing that may be banded to the dock leveler. Do not remove banding on hoist cylinder or storage prop at this time.

2. Make sure the mounting hardware of lifting bracket(s) (A) is tight but allows the bracket(s) to pivot relatively freely on the mounting cap screw. DO NOT over tighten.

3. Attach lifting chain to lifting bracket(s) (A) and to a lifting device (i.e., hoist or fork truck) having the appropriate lifting capacity and reach.



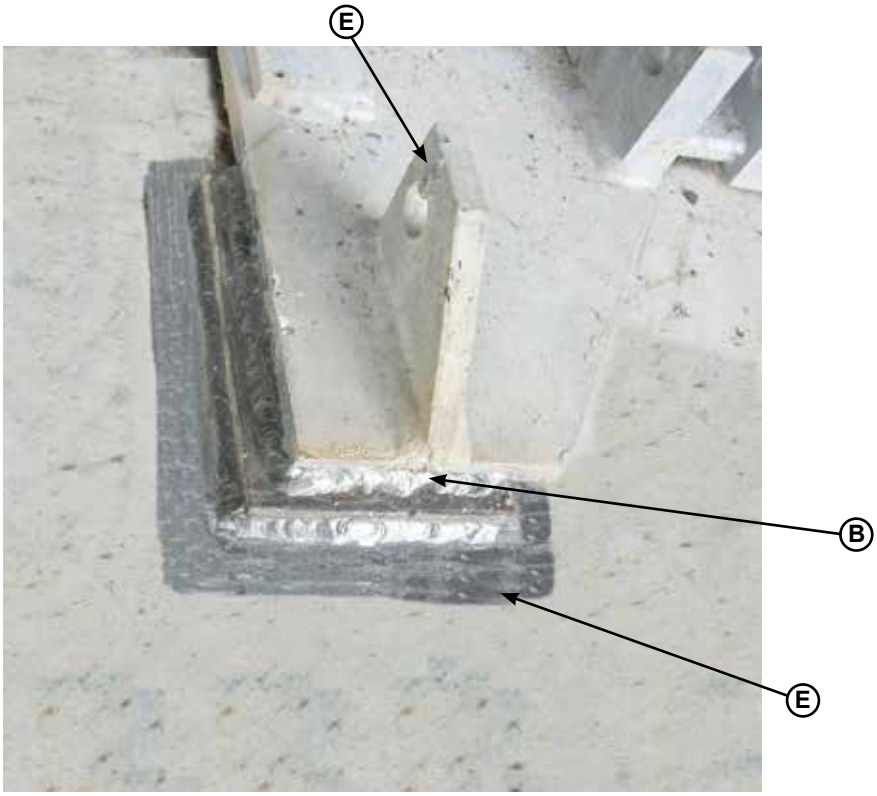
NOTE: Overall length of lifting chain and bracket (A) must be kept to a minimum to prevent interference between the lifting equipment and the building ceiling or door as the dock leveler is lowered into the pit.

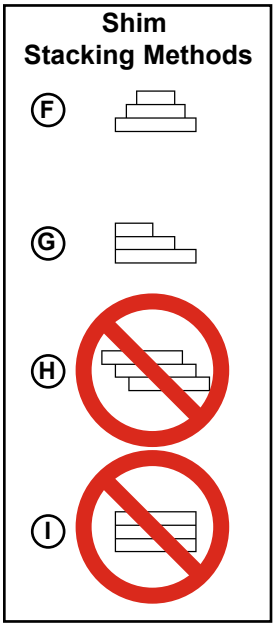


Maintenance props in lowered location during installation and service.

INSTALLATION

Install Dock Leveler



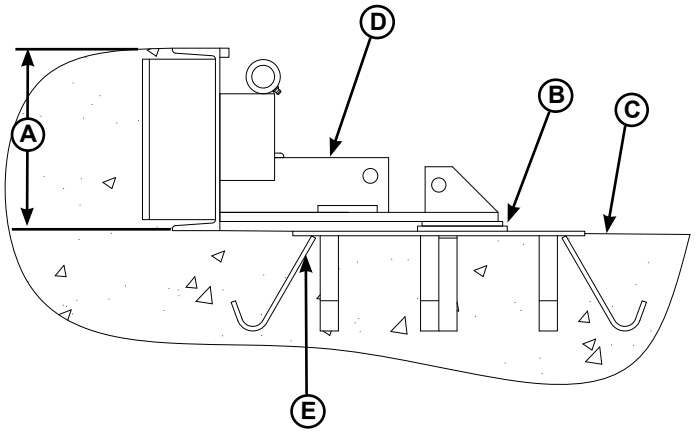


NOTICE

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 in. (114.3 x 114.3 mm) to support the full width of the hoist cylinder / storage prop weldment.

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.

4. Before installing the leveler the embed channel must be shimmed and welded to the embed on the pit floor.(10 inch deep pit only.)



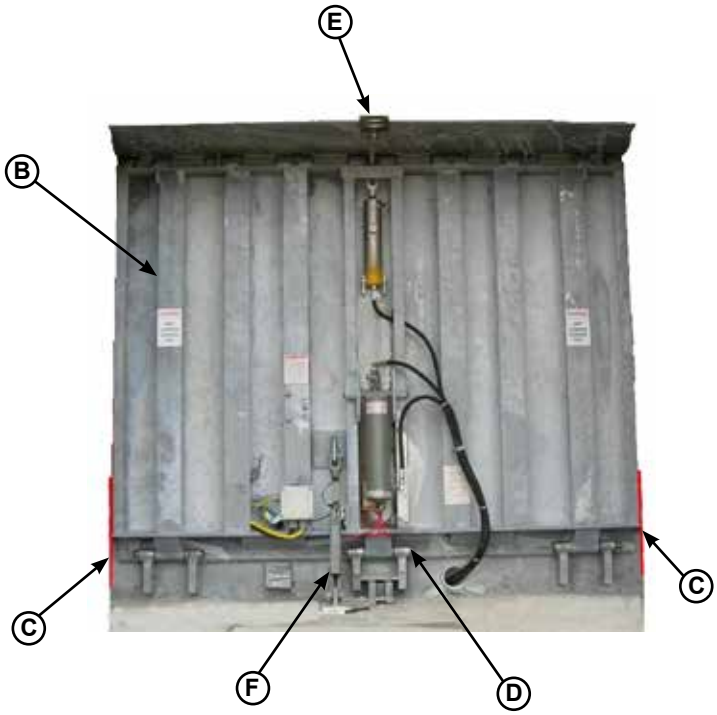
A	Distance (Leveler Frame Height)
B	Shim Location (Under Storage Prop) (Standard Dock Leveler Only)
C	Dock Floor
D	Rear Embed Frame
E	Embed Frame (Storage Prop)

F	Pyramid (Preferred)
G	Stepped (Acceptable)
H	Offset (Not Acceptable)
I	Straight (Not Acceptable)

⚠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 into or out of a pit.



A	Rear Embed	C	Maintenance Props	E	Lifting Lug
B	Dock Leveler	D	Hinge Pins	F	Storage Prop

5. Lube the three rear hinge pins using grease, install the three pins in the rear embed only half way through the first hinge tube.

6. Lower the Vertical leveler down centering the leveler's three hinges with the embeds hinges.

   - Insert the pins. Start with the outside first second install the center pin and than the last hinge pin.

   - Optional: Use a bottle jack to align the rear of the dock leveler to the embed channel.

7. Once the three hinge pins are installed, install the Storage prop. Install the prop pin and clip.

Note: Do not connect hoist cylinder at this time. System must be bleed before connected see page 17.

Install Control Panel and Wiring

⚠WARNING

The electrical power must be OFF prior to electrical installation. For maximum protection, use an OSHA approved locking device to lock out all power sources. Only the person installing the equipment should have the key to unlock the power source.

⚠WARNING

DO NOT make any final electrical connections until all welding has been completed.

⚠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.

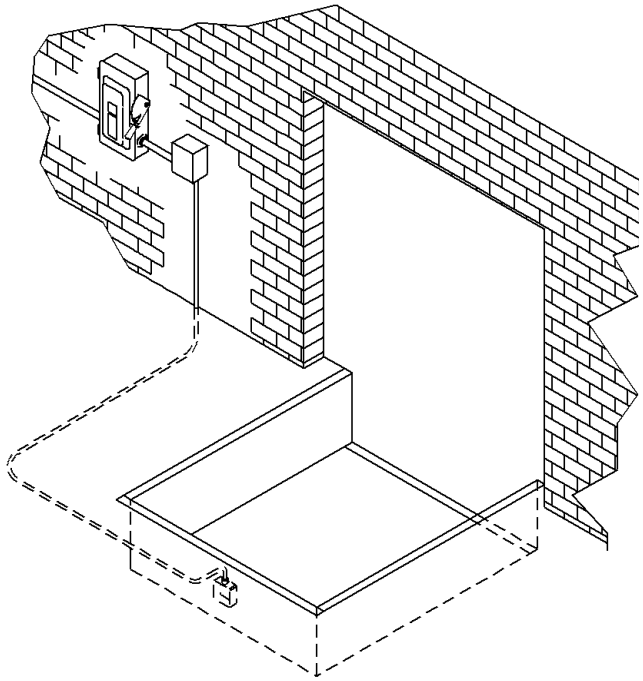
⚠CAUTION

When drilling access hole in the control box, DO NOT penetrate too deep, components may be damaged.

DO NOT turn control upside down to drill any access holes. To prevent damaged to electrical components from debris cover components prior to drilling

Seal all conduit entrances to prevent moisture from entering the control box.

DO NOT use compressed air to clean control box. Recommended to vacuum debris from inside.



A— Disconnect Panel (provided by others)
B— Control Panel
C— Distance, 48 in. (1219.2 mm)
D— Placard

1. Mount the push button control panel (B) so bottom of control panel-to-dock floor distance (C) is 48 in. (1219.2 mm).
2. Install electrical disconnect panel (A) if not already installed.
3. Install and connect the control wiring.
4. Connect the dock leveler power cable to the field wires in the pit junction box. Refer to the electrical drawings supplied with the dock leveler.

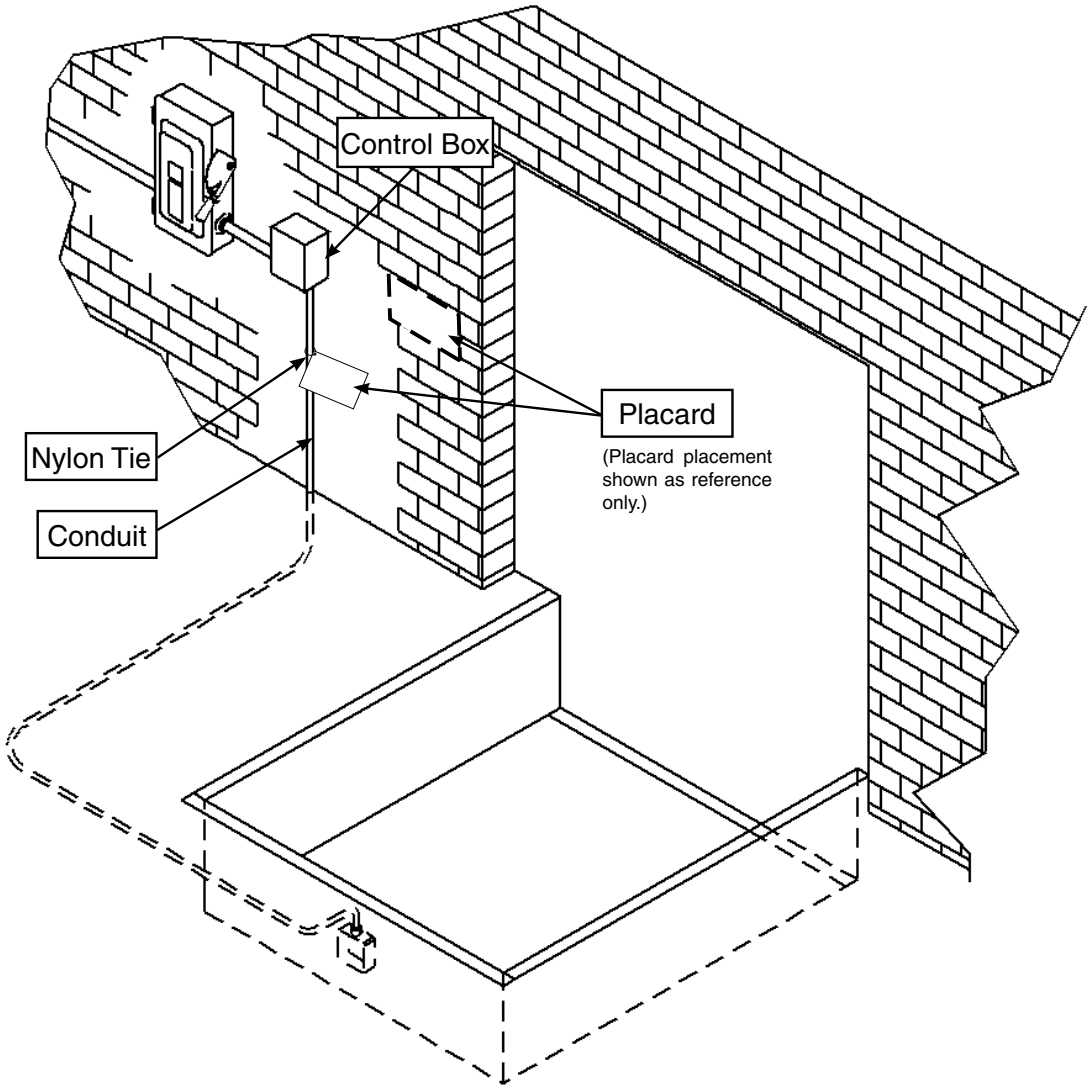
* Refer to OSHA regulation 1910.146. Confine Space
* Refer to OSHA regulation 1910.147. Lockout/Tagout

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 tie. If there is no control box present, mount placard on wall to the immediate left of leveler at eye level.



⚠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.

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.

⚠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, purge air from hydraulic system fully.

⚠WARNING

Post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before installation has been completed.

⚠CAUTION

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

Put New Dock Leveler Into Service

1. Disconnect the external lifting device and chains from the lifting brackets.
2. Complete all welding. Clean and paint all welds.
3. Install hydraulic hoses and fill system.
4. Connect all electrical connections.
5. Purge system (see p.17).
6. Connect hoist cylinder (see p.17)
7. Lower dock leveler check to make sure the leveler goes into float mode (about 15” above dock floor) allow to dock to float to full below position. Make sure the dock makes contact with pit floor. Push and hold the RAISE button until the leveler turns off and the BLUE stored light comes on.
8. Check the lip operation: Lower dock leveler check to make sure the leveler goes into float mode (about 15” above dock floor) allow to dock to float to below dock. Push and hold the RAISE button until the leveler turns off and the Blue stored light comes on.
9. Install the Placard(s) (D), in close proximity to the control box and in plain sight.
10. Test leveler for operation.

ATTENTION INSTALLER:
Replace rear plug with breather cap

⚠CAUTION

Do not overfill
Oil should fill ½ site glass

Use ULTRA VIS HVI 15 or
MIL SPEC 5606
Questions Call: 800.643.5424

1751-0490 Rev B

⚠WARNING

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

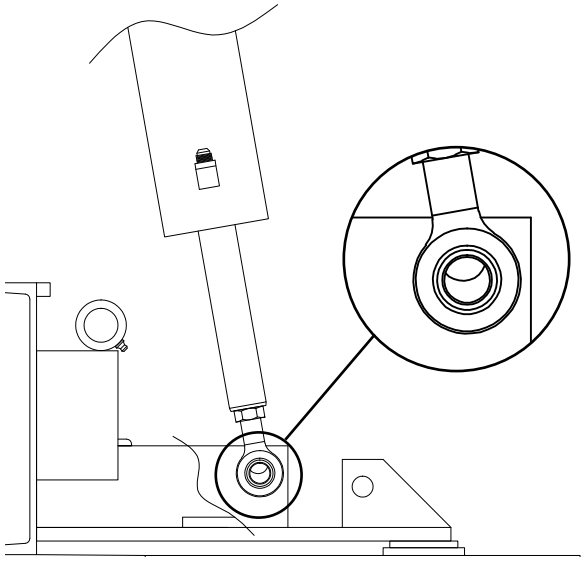
Purging Air From The VS Hydraulic System.

1. The unit must be supported in the stored position with the storage prop and maintenance props in their in service positions. Lock out the storage prop with the prop pin and clip.
2. Lock-out and tag-out the leveler.
3. Disconnect the lower hoist cylinder mounting pin.
4. Remove one of two screws holding the stored limit switch. Swivel stored limit switch away from storage prop (SEE PAGE 28).
5. Open down speed flow control valve (counter clockwise). Write down the adjustment. Down speed control valve is located on hoist cylinder (SEE PAGE 28).
6. Restore power to the leveler. Confirm the BLUE Leveler Stored indicator light is no longer illuminated.
7. Cycle the hoist cylinder up and down at least 6 full times using the LOWER and RAISE buttons.
8. Connect the hoist cylinder to the base of the embed is channel.
9. Remove the prop pin and clip, return the maintenance props to the stored position.
10. Adjust down speed flow control to factory settings. The settings is a leveler down speed of 15-20 seconds from stored to full below dock position.
11. The lip cylinder is self purging. Lower the leveler to a 45 degree angle. Cycle lip by depressing the LOWER and LIP button together to lower the lip. Press the raise and lip button together to raise the lip. WARNING: Stay clear of lip at all times as it may fall if air is present in the system.
12. Make sure all air is purged from the hydraulic cylinders after set-up and any time air is introduced to the system.

⚠ 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



Rod Eye adjustment & New installation

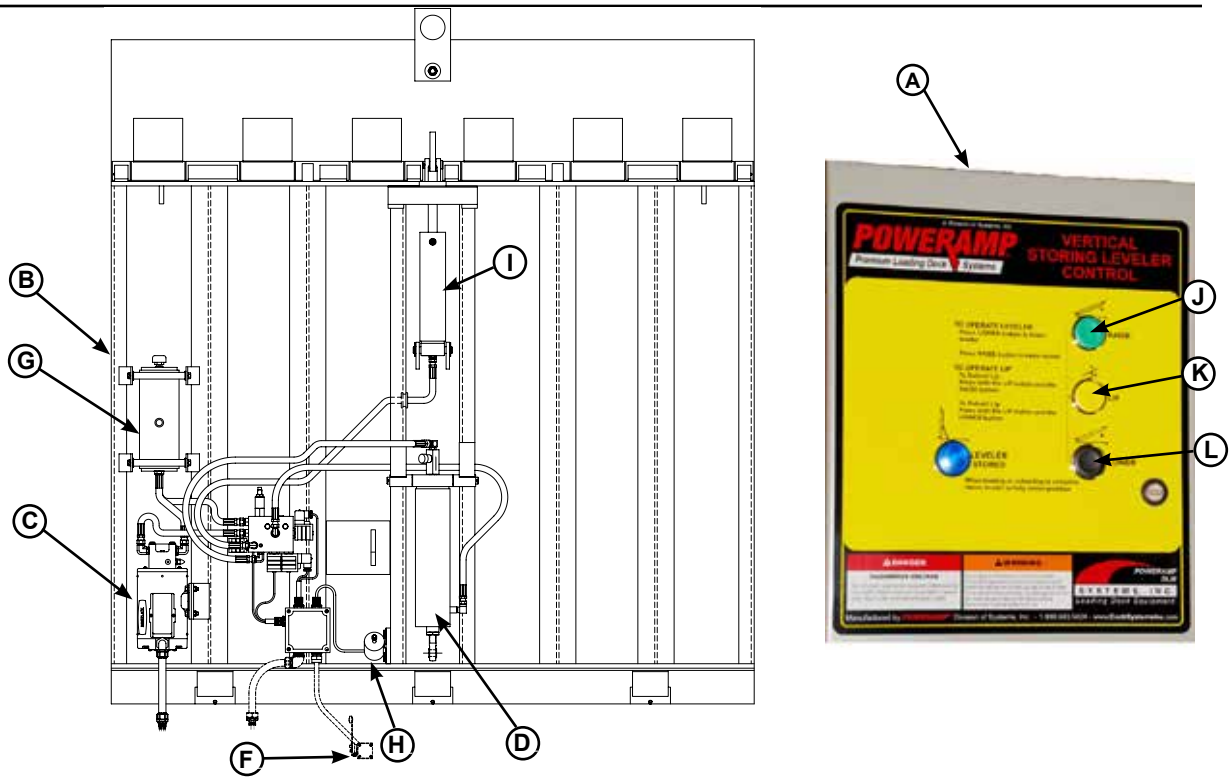
1. Support the leveler with the maintenance props. Lock out the storage prop with the prop pin and clip.
2. Lock-out and tag-out the leveler.
3. Remove lower hoist cylinder mounting pin.
4. Remove one of two screws holding the stored limit switch. Swivel stored limit switch away from storage prop.
5. Restore power to the leveler. Confirm the BLUE stored indicator light is no longer illuminated.
6. Cycle the hoist cylinder up and down at least once to make cylinder is fully extended.
7. Rod eye should be adjusted so the center of the rod eye is half way below the center of the hole of the embed. After adjusted tighten jam nut.
8. To center the rod eye with the embed tap the lower button until the pin (lube pin) can be installed. Use washers to keep the rod eye centered in the opening.
9. After pin has been installed, store maintenance props and prop pin and clip, test the leveler for operation.

⚠ 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

OPERATION

Theory



A	Control Box	D	Hoist Cylinder	H	Solenoid	K	Lip Button
B	Platform	F	Limit Switch	I	Lip Cylinder	L	Lower Button
C	Power Pack	G	Reservoir	J	Raise Button		

When the leveler is operated an electric motor is activated (C) which, drives a hydraulic pump. The hydraulic pump forces oil into the platform cylinder(s) (D), causing the platform to rise or lower. Releasing the button will stop the platform from moving (except in the float mode).

To lower the vertical leveler the LOWER (L) button will be depressed. The leveler Hoist Cylinder (D) will extend, an electrical solenoid (H) will activate and disengage the Storage Prop(not shown). The solenoid will hold the Storage Prop disengaged for a short period of time to allow the leveler to lower. The leveler will start to lower down to the transport vehicle. When the leveler is about 12” to 15” above dock height the leveler goes into float mode. You will also hear the motor make a different sound and you no longer need to hold the LOWER button. This feature is designed into the operation of the leveler to allow for the floating/vertical motion of the transport vehicle during loading and unloading.

To lower the lip the vertical leveler must not be in the stored position. Depress the LOWER (L) button and LIP (K) button at the same time and the motor will shut off and the lip will lower. To raise the lip, depress the RAISE (J) button and the LIP(K) button the motor will run and the lip will raise. The LIP push button is inactive while the leveler is in the float mode. Also when leveler is stored.

* Some models are equipped with multiple cylinders.

Operating Instructions

DANGER

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

DO NOT move or use the dock leveler 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.

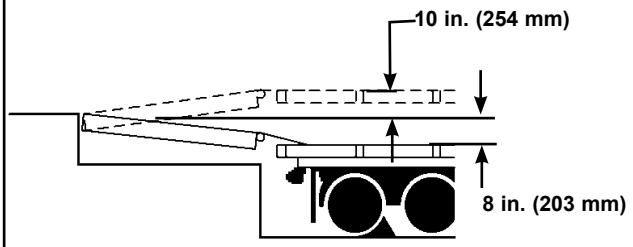
DO NOT use a broken or damaged dock leveler. Make sure proper service and maintenance procedures have been performed on leveler before using.

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

Make sure platform lip rests on the transport vehicle 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) 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 or 8 in. below the dock floor.

Based on a 5 ft or 6 ft long leveler.

*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.

The dock leveler operating instructions are divided into the two methods of loading and unloading:

- **For ramp loading and unloading, see Ramp Loading/Unloading Instructions on page 20.**
- **For end loading and unloading, see End Loading/Unloading Instructions on page 21.**

Operating Instructions—Continued

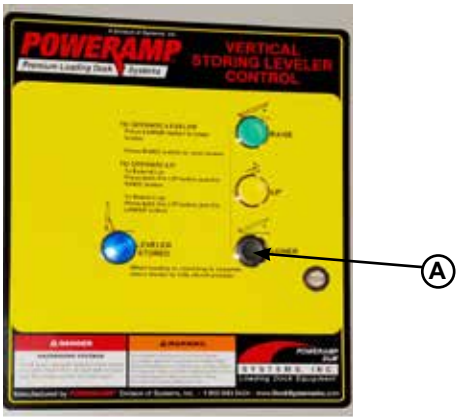
Ramp Loading/Unloading Instructions

NOTE: If end unloading is required, see End Loading/Unloading Instructions on page 21.

1. Check to make sure transport vehicle is positioned squarely against both 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 the vehicle restraint if available.

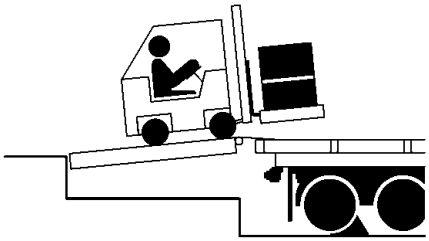


A—LOWER Button

4. Lower the platform lip onto transport vehicle as follows:

   a. Lower platform by depressing and holding LOWER (A)button.

   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.



5. Proceed with loading or unloading the transport vehicle.

6. If end loading is necessary, see End Loading/ Unloading Instructions on page 21.

B—RAISE Button **C—STORED Button**

7. When loading or unloading is finished, raise the platform by depressing and holding RAISE(B) button. When fully raised the leveler will shut off and the Blue LEVELER STORED light will come on.

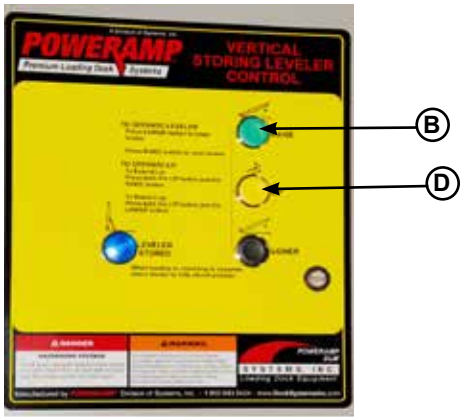
8. Remove chocks from transport vehicle wheels or release the vehicle restraint if used.

9. Indicate to driver that transport vehicle may leave the dock.

Operating Instructions—Continued

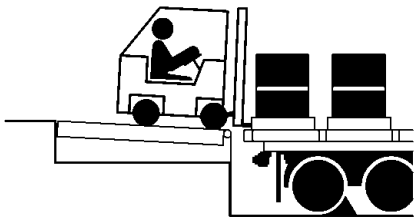
Below Dock End Loading/Unloading Instructions

1. Check to make sure the transport vehicle is positioned squarely against both 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 the vehicle restraint if available.
4. Lower platform and lower the lip.



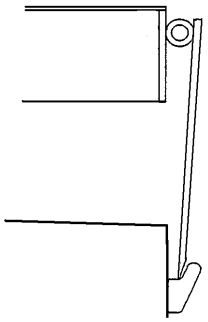
B—RAISE Button **D—LIP Button**

5. Depress the LOWER(B) platform will lower, once the unit is out of the stored position, depress the LIP(D) button, the lip will lower.
6. Continue to depress the LOWER(B) button until the unit goes into float mode to the full below dock position.
7. Proceed with loading or unloading.



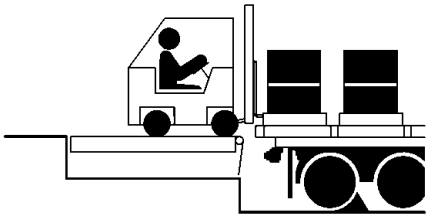
End Loading/Unloading — Platform at Below-Dock Position.

Dock Leveler Loading/Unloading Instructions



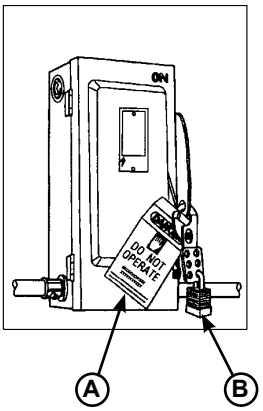
NOTE: Optional Lip Keepers

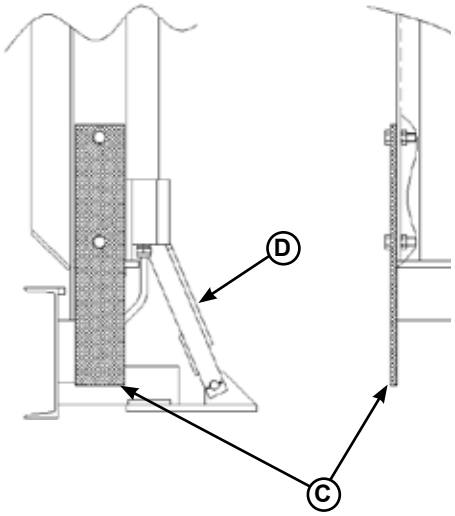
1. Check to make sure transport vehicle is positioned squarely against both dock bumpers.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels or use the vehicle restraint if available.
4. Depress the LOWER(B) platform will lower, once the unit is out of the stored position, depress the LIP(D) button, the lip will lower.
5. Continue to depress the LOWER(B) button until the unit goes into float mode to the lip keepers.
6. Proceed with loading or unloading.

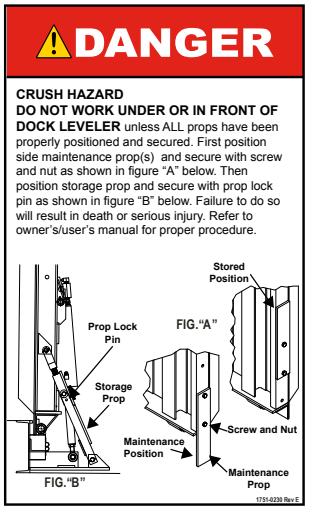


End Loading/Unloading — Platform at Cross-Traffic Position.

Service Dock Leveler







A— Tagout Device **B — Lockout Device** **C —Maintenance Props** **D — Storage Prop**

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.

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 maintenance is complete.

WARNING

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

The maintenance prop MUST be in the service position when working under the dock leveler. For maximum protection, use an OSHA approved locking device to lock the maintenance prop in the service position. Only the person servicing the equipment should have the key to unlock the maintenance prop.

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

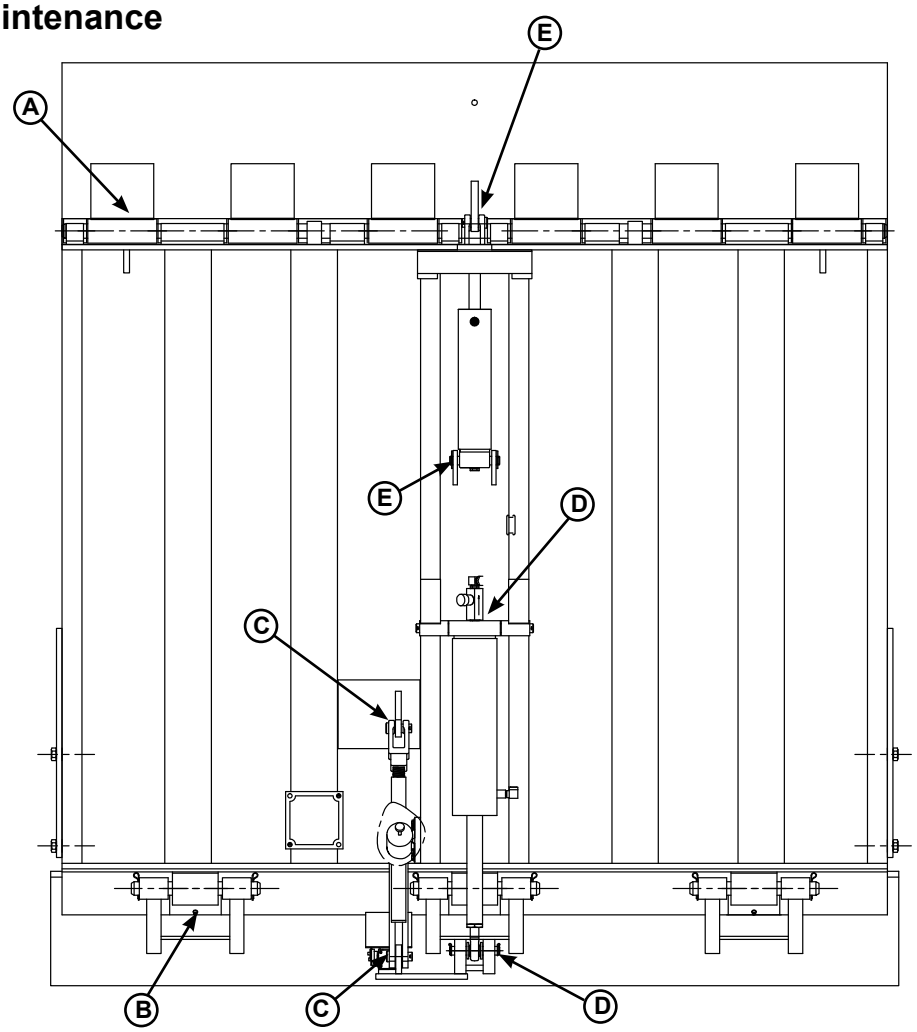
When maintenance is to be performed on the dock leveler, first install the prop pin and clip in the storage prop (D). Second place the maintenance props (C) in their service/down position. ***Caution***: The lip may fold down if the platform has rested on the maintenance props.

Whenever servicing the dock leveler, lock the electrical power disconnect in the OFF position. Use only an OSHA approved lockout device* (B) and tagout device (A).

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

* Refer to OSHA regulation 1910.146. Confine Space
* Refer to OSHA regulation 1910.147. Lockout/Tagout

Periodic Maintenance



A	Lip Hinge Area	C	Storage Prop	E	Lip Cylinder
B	Platform Pins	D	Hoist Cylinder		

⚠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.

NOTICE

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

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
- Mobile Aero HFA Mil-H5606 G or Aero HF
- Texaco Aircraft Hydraulic Oil 15 or 5606
- Exxon Univis J13

These fluid brands can be mixed together. Mixing with fluids that do not meet or exceed MIL-H-5606-G may damage the equipment and WILL void warranty. Use of hydraulic fluids with equivalent specifications to those listed here are acceptable.

MAINTENANCE

Regular maintenance must be performed on a weekly and quarterly schedule. Follow all safety precautions.

Weekly Maintenance

- Operate the dock leveler through the complete operating cycle, making sure the dock leveler floats in the working zone approximately 15 inches before horizontal.
- Verify lip operates up and down.
- Lock the storage prop with the prop lock pin and clip. Put the Maintenance Props in service position.
- Lock out and tag out the dock leveler before cleaning the dock.
- Remove any debris or foreign objects from the lip, rear hinges and limit switch area.
- Inspect signs,warning decals and placards. Replace if damaged or missing.
- Inspect bumper for wear, tears or missing, replace as required.

Quarterly Maintenance

- Weekly Maintenance
- Lubricate the following areas with light weight machine oil:

  (A)— Lip hinge area unless equipped with grease fittings (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.)

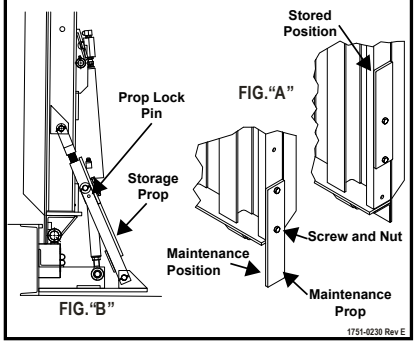
  (C)— Apply a light oil to the Storage prop pins.

  (D)— Grease the hoist cylinder grease fitting and pin.

  (E)— Apply a light oil to the Lip Cylinder pins.

DANGER

CRUSH HAZARD
DO NOT WORK UNDER OR IN FRONT OF DOCK LEVELER unless ALL props have been properly positioned and secured. First position side maintenance prop(s) and secure with screw and nut 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.



NOTICE

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

NOTE: Apply grease to lip hinge grease fittings if equipped.

Inspect the following for damage or 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.
- J box for water damage.
- Inspect hoses,cylinders, fittings and power pack.
- Control box and conduit for damage
- Check fluid level when the unit is in the stored position.

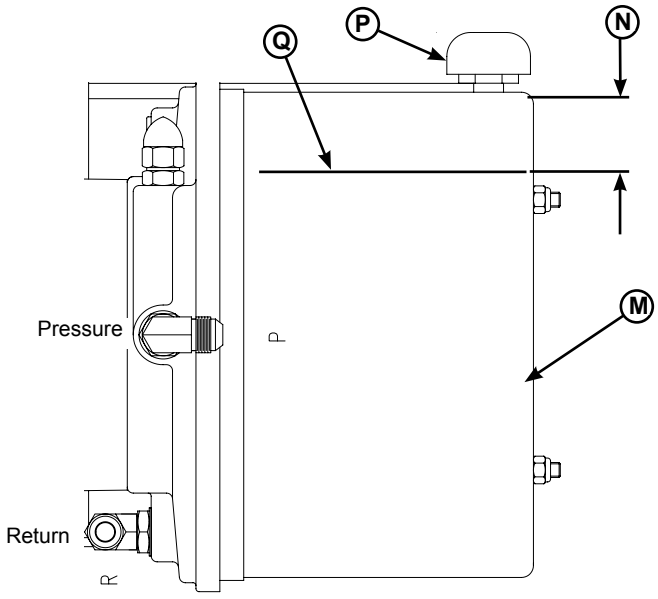
Yearly Maintenance

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

Checking Fluid Levels on Reservoir for Remote Pumps

- Check reservoir fluid level (Q):

1. The leveler must be in the stored position with the lip lowered.
2. Turn OFF all electrical power to the leveler, Lock out/Tag out.
3. Remove breather cap (P).
4. Measure fluid level. The fluid level should be approximately 2 in. (51 mm) (N) from top of reservoir (M) .
5. Add hydraulic fluid if necessary. Use only recommended fluid. (Pg. 23)
6. Install breather cap.
7. Turn ON electrical power to the leveler.
8. Lower the unit then extend the lip to the raised position.



M — Reservoir
N — 2 in. (51 mm) (From Top of Reservoir)
P — Breather Cap
Q — Fluid Level

NOTICE

A low fluid level or the use of hydraulic fluids not equivalent to the fluid types recommended, will cause abnormal operation of the leveler and WILL void warranty.

PPAC Pressure Relief

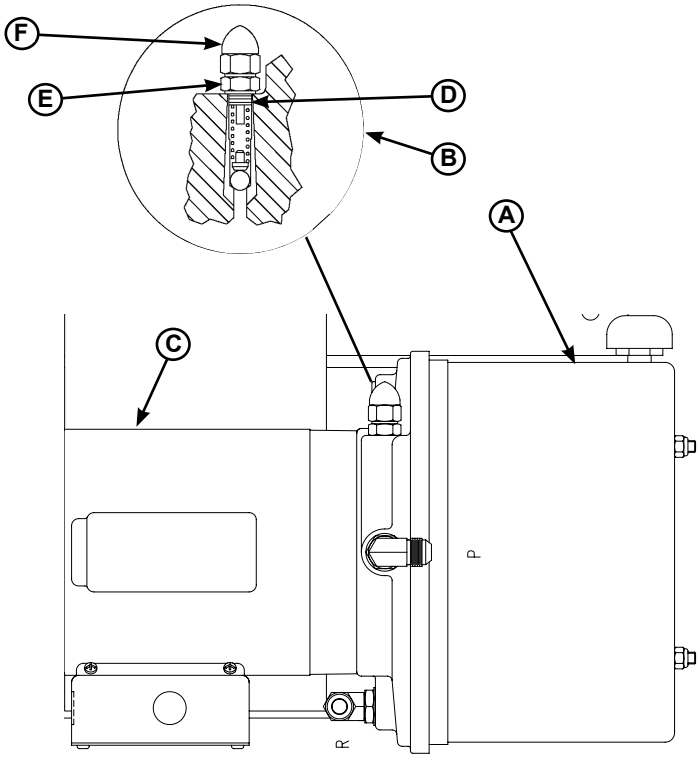
WARNING

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.

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 maintenance is complete.

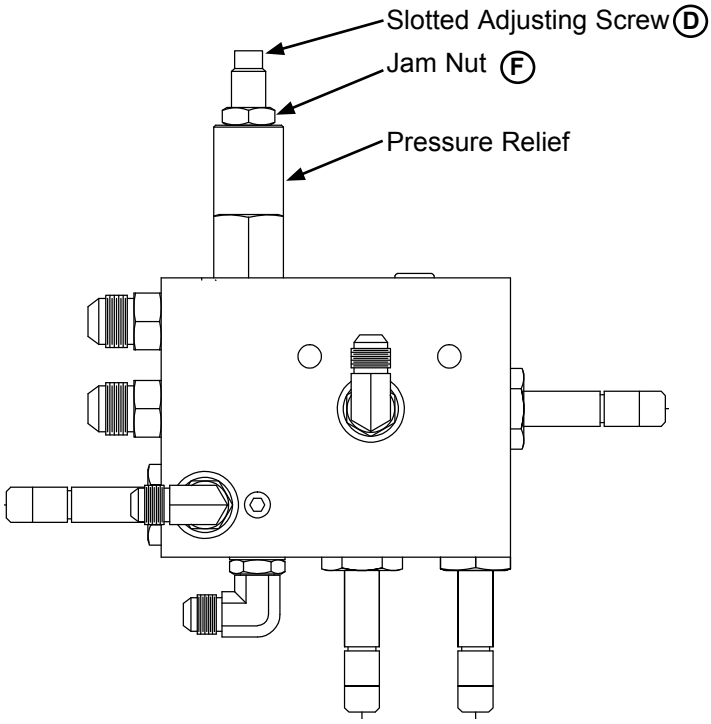
The pressure relief on the remote PPACs are factory adjusted. Consult Factory.

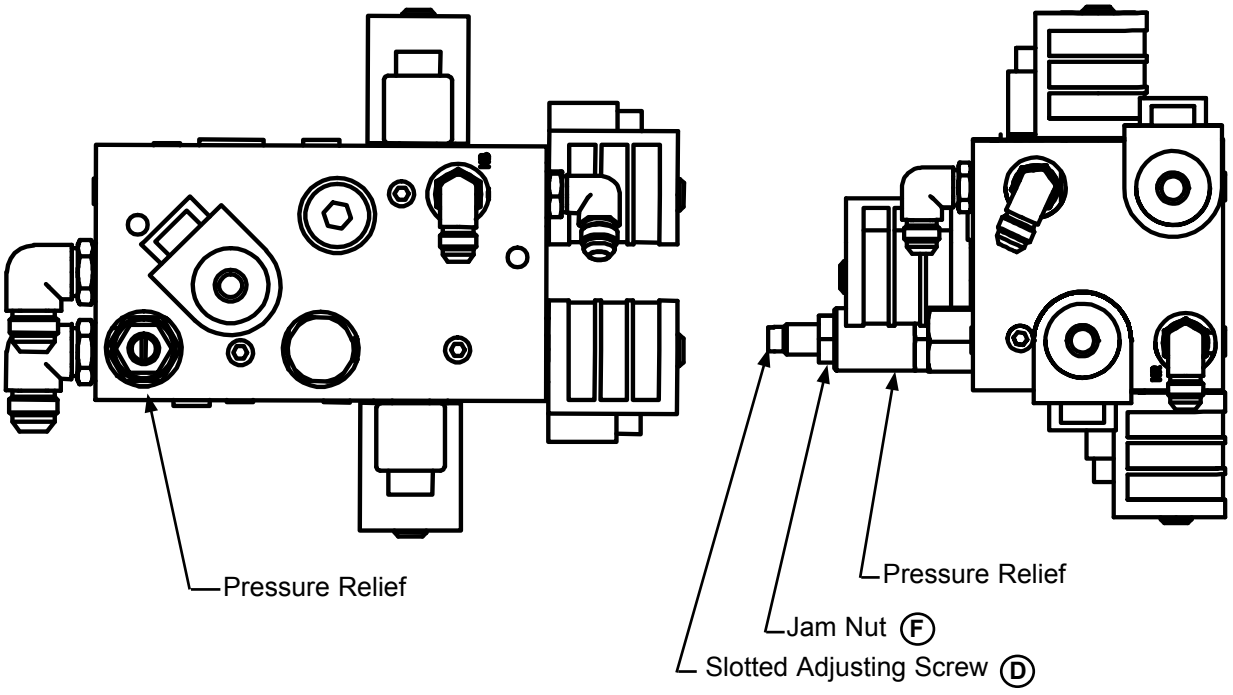


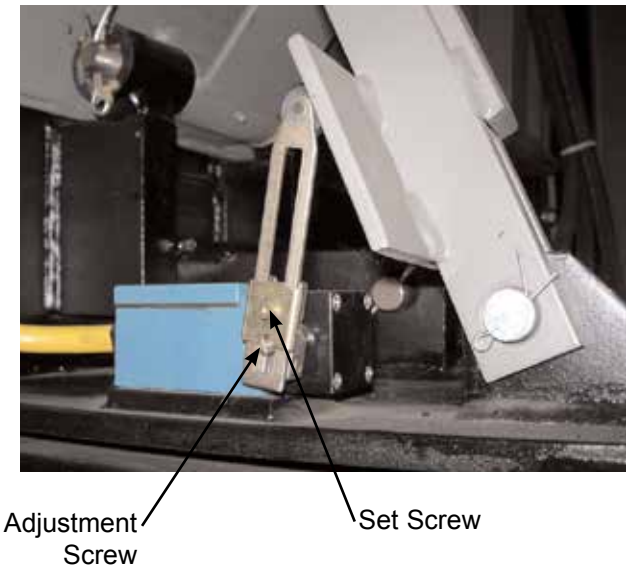
A— Reservoir
B— Main Pressure Relief
C— Pump/Motor
D—Hex Adjusting Screw
E— Jam Nut
F— Acorn Nut

Adjust Unit Pressure

1. The leveler must be in the stored position and the maintenance prop in the service position.
2. Turn OFF all electrical power to the dock leveler. Attach safety lockout and tagout devices.
3. Loosen jam nut (F).
4. Adjust slotted head adjusting screw (D) as follows:
   - Turn clockwise to increase pressure relief.
   - Turn counterclockwise to decrease pressure relief.
6. While holding the adjusting screw tighten jam nut.
7. Turn ON electrical power to the dock leveler.
8. Check leveler operation.
9. Repeat steps 1– 8 as necessary.







Stored Limit Switch Adjustment
Follow all safety precautions.

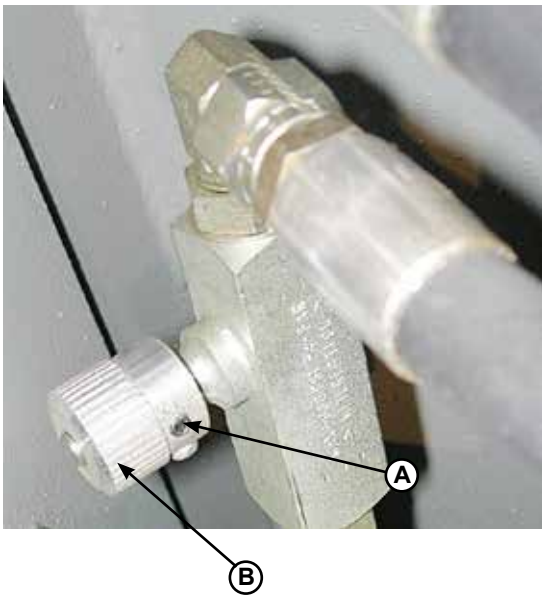
1. Loosen Set Screw

2. With roller arm contacting storage prop, rotate adjustment screw counter clockwise until a “Click” noise is heard.

3. Tighten set screw head cap screw.

4. Readjust as needed to leveler allow to store 5 Degrees from vertical leaning toward the overhead door.

5. After adjusting the stored limit switch check for correct play in the prop.



Down Speed Control Adjustment
Follow all safety precautions.

If the dock leveler lowers to slow, the down speed control, requires adjustment. The speed control adjusting screw (A) The set screw is located on the hoist cylinder (B), directly above hoist cylinder and below the upper hose.

The down speed flow control is pre set. The settings is to have a leveler down speed of 15-20 seconds from stored to full below dock position.

To adjust the speed control:
Follow all safety precautions.

1. Loosen the allen head set screw.

2. To decrease the lowering speed, turn knurled knob screw (A) clockwise.

3. To increase the lowering speed, turn knurled adjusting screw (A) counterclockwise.

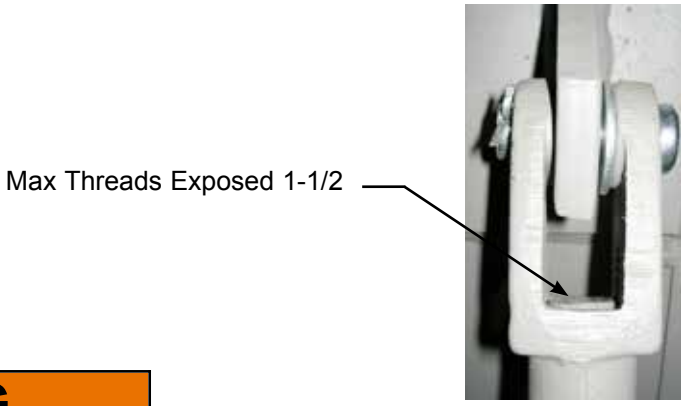
4. Tighten the set screw when once desired down speed has been set.

Storage Prop Adjustment

Storage Prop Adjustments

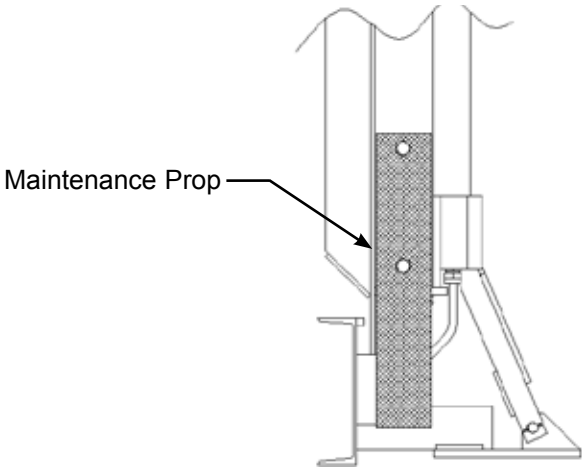
Follow all safety precautions.

1. Raise platform fully and engage the storage prop in the service position (If dock leveler has not been used recently cycle leveler once).
2. Turn OFF all electrical power to the dock leveler. Attach safety lockout and tagout devices.
3. Lower side maintenance props tighten all nut 1/4 turn past finger tight.
4. Adjust yoke on storage prop till you have minimum of 1/2” to 1“ approximately, of movement in the storage prop.
5. When the play in the prop is correct only 1-1/2 threads max will be exposed through the yoke. If more threads exposed the storage prop must be shorted.
6. Raise side maintenance props.
7. Turn on electrical power remove lockout tagout devices.



⚠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.



⚠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 maintenance is complete.

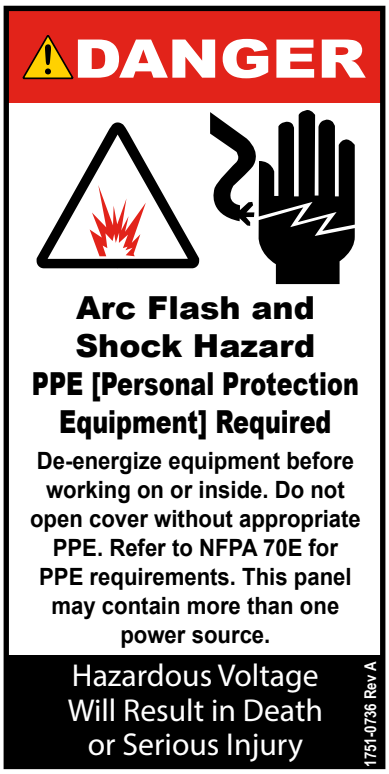
Troubleshooting

⚠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 props.

⚠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 maintenance is complete.



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).

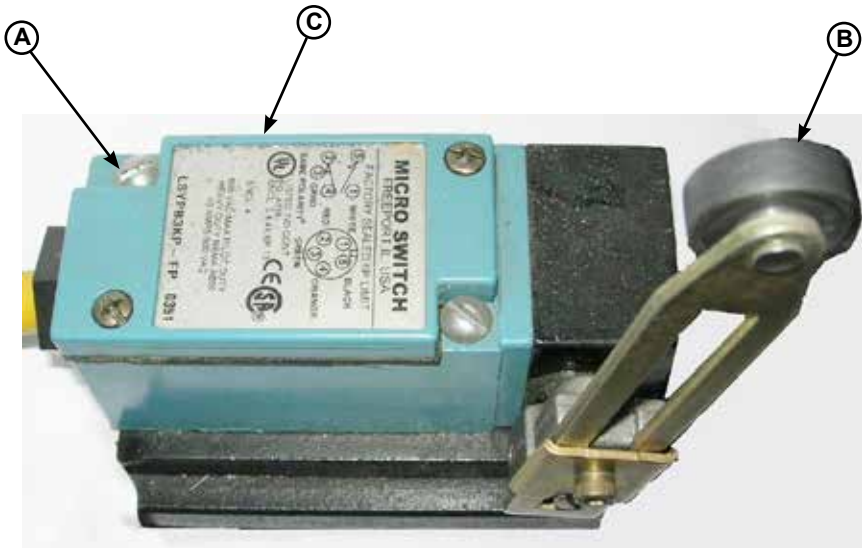
Symptom	Possible Cause	Solution
Platform does not rise or lower. Motor does not energize.	Motor overload device tripped or fuse blown.	Reset overload relay (three-phase) or replace fuse(s) (single-phase). Determine cause of overload. NOTE: When replacing fuse(s), the new fuse must have the same specification as the old fuse.
	Motor starter (three-phase) or motor relay (single-phase) not energizing.	Check voltage at starter or relay coil. • 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.
Three-phase units only: Platform does not rise or lower. Motor hums, but does not run.	No voltage is present on one line. NOTE: A motor that is missing voltage on one line is said to be single-phased.	Check for blown fuses at branch circuit disconnect. Replace fuse. Determine cause of blown fuse.
		Check motor starter as follows: 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.
		Check all wiring to motor for high resistance or no connection.
Three-phase units only: Platform does not rise. Motor runs in reverse	Phase reversed.	Reverse any two legs at the branch circuit disconnect.
Single-phase units only: Platform does not rise or lower. Motor energizes, but does not run.	Line voltage too low.	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.
	Defective motor centrifugal switch.	Replace motor.
	Defective motor capacitor.	Replace motor.

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, call Technical Services. See inside back cover for phone number and address.
	Pressure relief set too low.	Increase pressure relief. See Adjust Main Pressure Relief in the Adjustment section. 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. * The full load amp value can be found on the inside cover of the control panel.
Platform rises slowly.	Low hydraulic fluid.	Add fluid as needed. See Periodic Maintenance in the Maintenance section.
	Contaminated hydraulic system.	Clean and inspect valves. Flush contaminated oil from hydraulic system. Fill system with new oil. See Periodic Maintenance in the Maintenance section.
	Damaged or restricted hydraulic hose(s).	Replace damaged hose(s). Remove restriction.
	Pressure relief set too low.	Increase pressure relief. See Adjust Main Pressure Relief in the Adjustment section. 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. * The full load amp value can be found on the inside cover of the control panel.
Pump motor loads down when platform starts to raise from the lowered position.	Pressure relief set too high.	Decrease pressure relief. See Adjust Main Pressure Relief in the Adjustment section. 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. * The full load amp value can be found on the inside cover of the control panel.

Symptom	Possible Cause	Solution
Platform does not rise to full height.	Low hydraulic fluid.	Add fluid as needed. See Periodic Maintenance in the Maintenance section.
Platform does not rise.	Coil energized on the float coil.	Remove wire of terminal strip to the float coil, If leveler raises possible bad PLC or relay
	Bad spool valve.	Remove and clean spool valve or replace with new or good working valve.
Platform Does not rise to full height.	Low hydraulic fluid.	Add fluid as needed. See Periodic Maintenance in the Maintenance section.
	In correct adjustment on the Limit switch.	Adjust the limit switch so the platform leans 3 deg toward the door (see adjustments) .
Lip does not extend.	“C” Coil not energized	Check power to the spool valve should have a magnetic pull when energized (Pump Motor must be running)
	Bad spool valve.	Remove and clean spool valve or replace with new or good working valve(Pump Motor must be running).
Lip does not lower.	“C”, “D” and “E” Coils not energized	All three valves must be energized. Check power to the all spool valves they should have a magnetic pull (Pump Motor must be running).
	Bad spool valve.	Remove and clean spool valves or replace with new or good working valves.(Pump Motor must be running)
Platform does not lower.	Blue stored light not on.	Limit switch not adjusted correctly (see adjustments). Possible bad switch stored limit switch
Leveler pump runs but Platform does not lower.	Prop kicker does not kick.	Possible prop kicker Solenoid not working. Possible Mercury switch not working.
Leveler pump runs prop kicker works but Platform does not lower.	Storage Prop	Not enough play in the storage prop (see page 29).
Leveler pump runs prop kicker works but Platform does not lower.	“D” and “E” Coils not energized	Both valves must be energized. Check power to the all spool valves they should have a magnetic pull (Pump Motor must be running).
	Bad spool valve.	Remove and clean spool valves or replace with new or good working valves.(Pump Motor must be running)

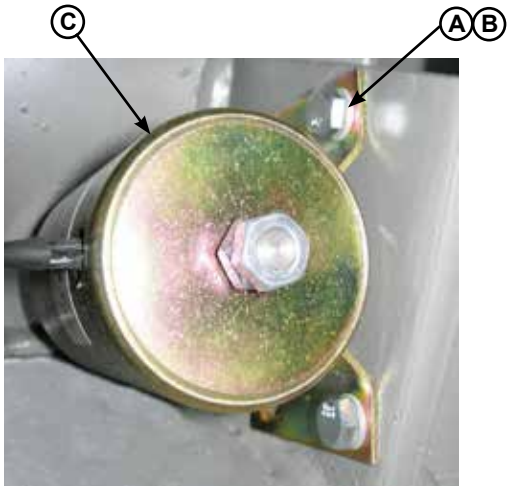
Storage Limit Switch



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

Click for manuals and videos http://www.docksystemsinc.com/Parts-Service

Solenoid Prop Kicker



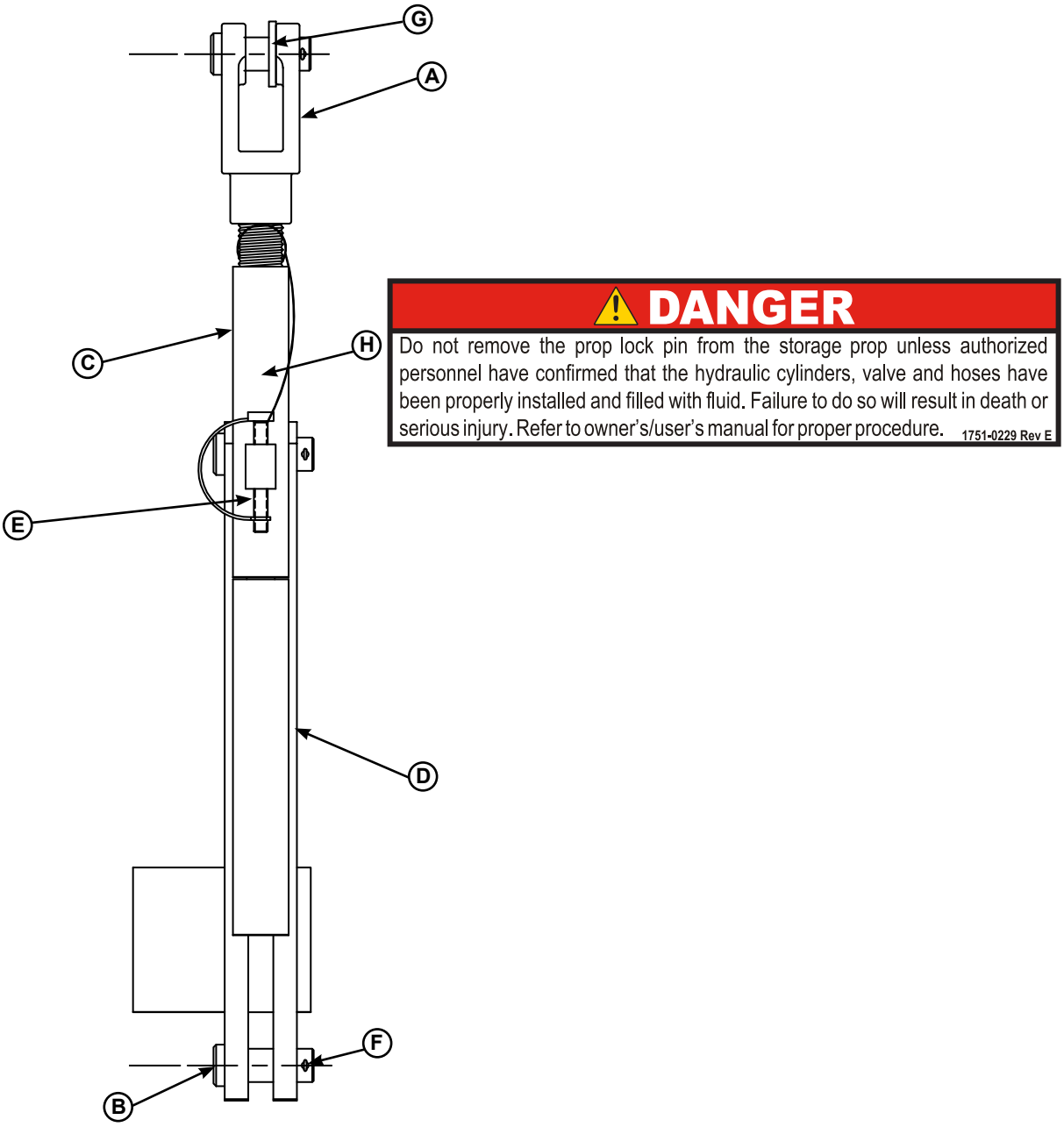
Item	Quantity	Part Number	Description
A	3	2101-0153	Bolt 1/4 UNC 1/2 Lg.
B	3	2101-0005	Washer, Lock 1/4
C	1	8581-0023	Solenoid Prop Kicker

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	3051-0025	Rectifier Bridge

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	**	Upper Weldment
D	1	**	Lower Weldment
E	1	2101-0254	Prop Lock Pin and Clip
F	3	2101-0045	Cotter Pin
G	1	2101-0093	Washer, Flat
H	1	1751-0229	Decal

** Not Sold Separate

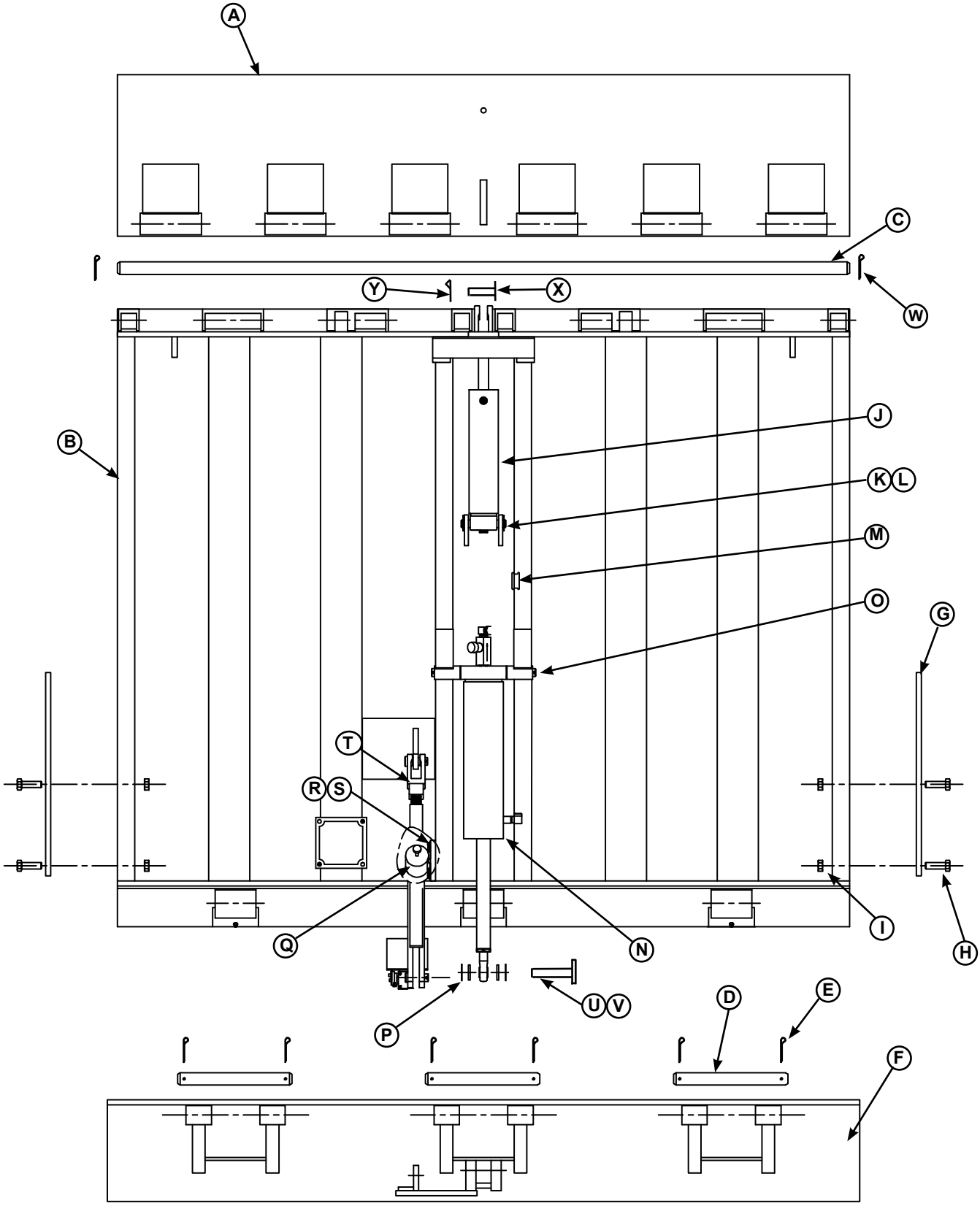
Lip and Platform

See drawing on page 38

VERTICAL LIPS 2003 to Present				
	6’ WIDE	40K W/O Gussets	45K Gussets	50K W/Gussets
A	16”	0595-0387	0595-1107	0595-1107
	18”	0595-0388	0595-1108	0595-1108
	20”	0595-0389	0595-1109	0595-1109
	6.5’ WIDE			
	16”	0595-0390	0595-1110	0595-1110
	18”	0595-0391	0595-1111	0595-1111
	20”	9222-0382	0595-1112	0595-1112
	7’ WIDE			
	16”	0595-0393	0595-1113	0595-1113
	18”	0595-0394	0595-1114	0595-1114
	20”	0595-0395	0595-1115	0595-1115

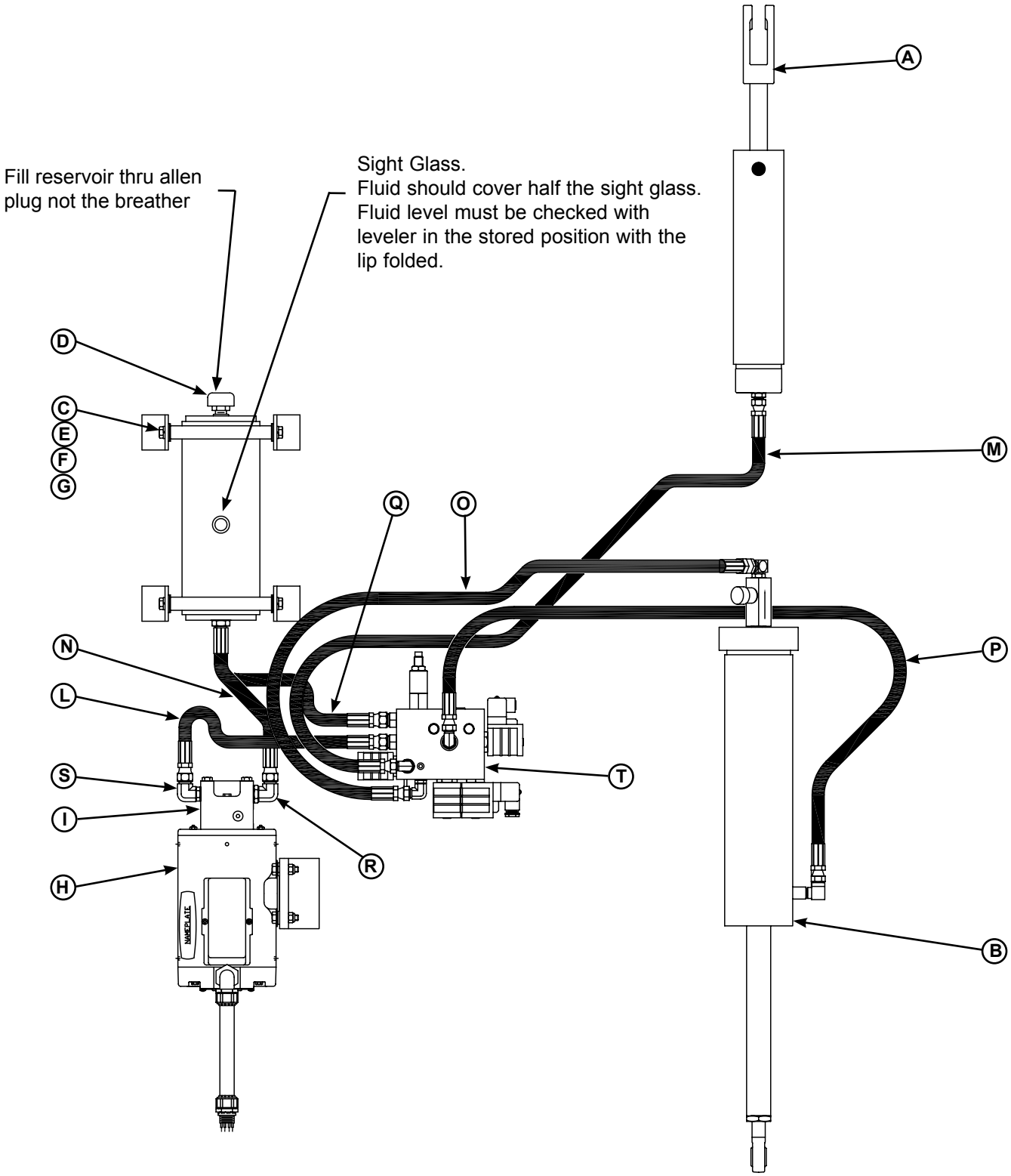
VERTICAL PLATFORMS 2003 to Present				
	6’ WIDE	40K	45K	50K
B	5	9515-0843	9515-1077	9515-1121
	6	9515-0844	9515-1074	9515-1124
	8	9515-1065	9515-1071	CALL
	6.5’ WIDE			
	5	9515-0845	9515-1078	9515-1122
	6	9515-0846	9515-1075	9515-1125
	8	9515-1066	9515-1072	CALL
	7’ WIDE			
	5	9515-0849	9515-1079	9515-1123
	6	9515-0848	9515-1076	9515-1126
	8	9515-1067	9515-1073	CALL

Lip and Platform



Item	Quantity	Part Number	Description
A	1	See Table page 37	Lip, Weldment - Call on 2002 and older levelers
B	1	See Table page 37	Platform, Welded Assembly - Call on 2002 and older levelers
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, SS
		9202-0054	Pin, Lip Hinge 6.5'W, SS
		9202-0055	Pin, Lip Hinge 7'W, SS
D	3	9202-0002	Rear Hinge Pin
		9202-0041	Rear Hinge Pin Stainless Steel
E	6	2101-0245	Cotter Pin
F	1	9515-____[1]	Embed - Call
G	2	9222-0221	Maintenance Prop
H	4	2101-0262	Bolt 5/8-11 UNC X 1.75 Grade 8
I	4	2101-0042	Nut 5/8-11 UNC Grade 5
J	1	0525-0085	Lip Cylinder Without Fittings
		0526-0016	Lip Cylinder With Fittings
K	1	9202-0004	Pin - Lip Cyl. 3/4 Dia. x 4-3/8 Lg.
L	2	2101-0049	Hairpin Clip
M	1	2401-0004	Grommet
N	1	0525-0125	Hoist Cylinder 8'Lg, 10" or 12" Pits
		0525-0126	Hoist Cylinder 8'Lg, 15" Pits
		0525-0127	Hoist Cylinder 5' or 6' Lg Platforms
O	1	9202-0038	Pin - Hoist Cyl. 49/64 Dia.10-1/4 Lg.
P	4	2101-0093	Washer, flat, 3/4
Q	1	8581-0023	Prop Kicker
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
X	1	0522-0005	Clevis Pin
Y	1	2101-0045	Cotter Pin

SC Vertical Leveler Hydraulic Components

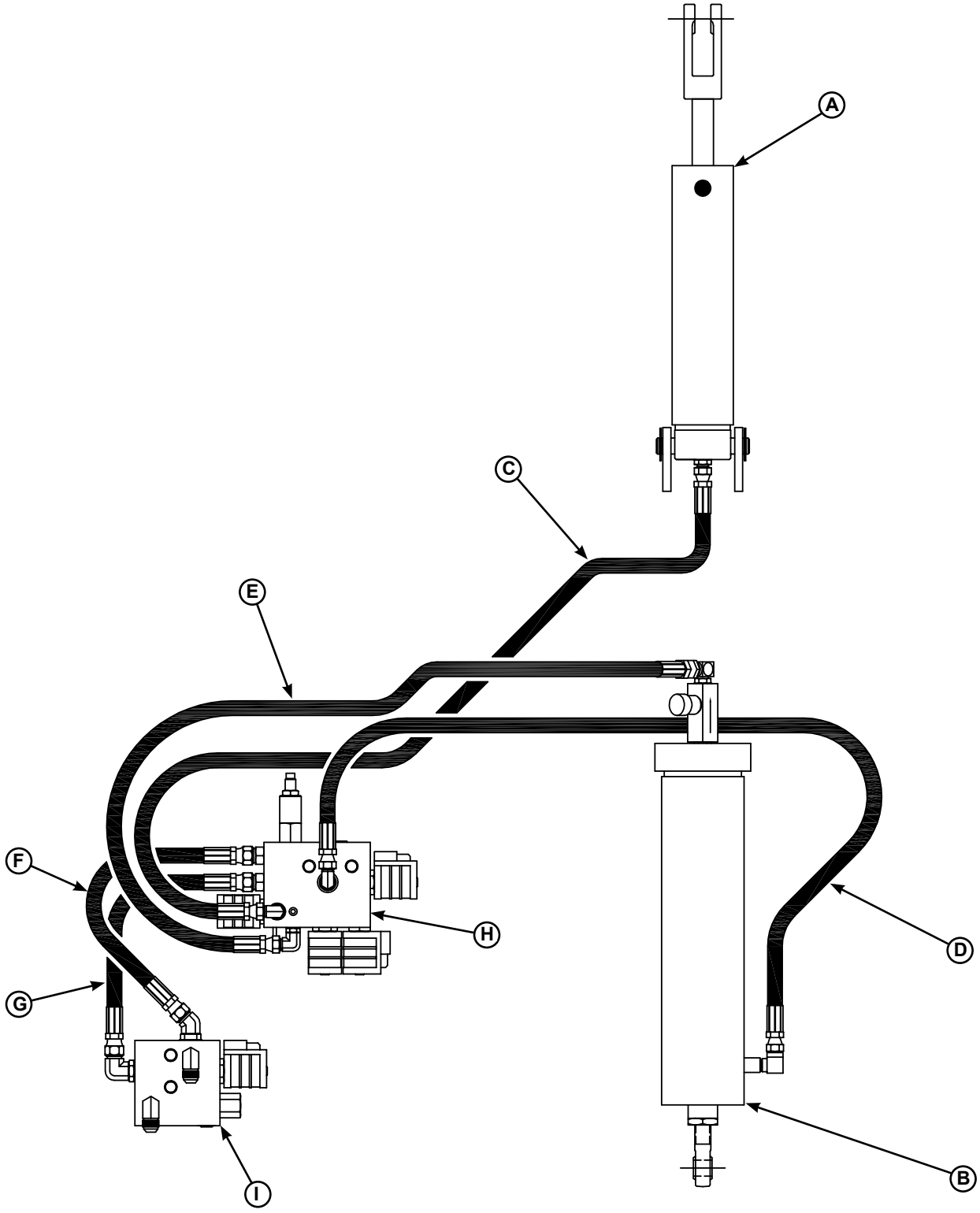


SC Vertical Leveler Hydraulic Components

Item	Quantity	Part Number	Description
A	1	0525-0085	Lip Cylinder Without Fittings
		0526-0016	Lip Cylinder With Fittings
B	1	0525-0127	Hoist Cylinder 5’ or 6 Lg.
		0525-0126	Hoist Cylinder 8’ Lg. 15” Pits
		0525-0125	Hoist Cylinder 8’ Lg. 10” or 12” Pits
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 Ph
		9394-0015	Motor Assembly 460V 3 Ph
		9394-0033	Motor Assembly 208V 1 Ph
		9394-0034	Motor Assembly 230V 1 Ph
		9394-0035	Motor Assembly 575V 3 Ph
		9394-0043	Motor Assembly 208V 3 Ph
		9394-0044	Motor Assembly 230V 3 Ph
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

[1] Provide dock leveler serial number, platform size, and lip size when calling or faxing orders.
[2] Provide length and width of inspection plate opening when calling or faxing orders.

Centra Power Hydraulic Components

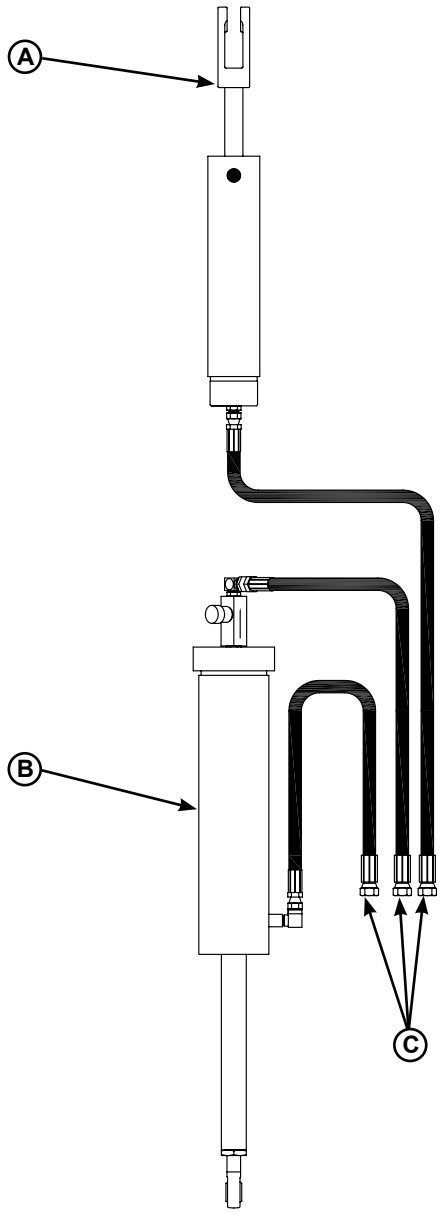


Item	Quantity	Part Number	Description
A	1	0525-0085	Lip Cylinder Without Fittings
		0526-0016	Lip Cylinder With Fittings
B	1	0525-0127	Hoist Cylinder 5’ or 6 Lg.
		0525-0126	Hoist Cylinder 8’ Lg. 15” Pits
		0525-0125	Hoist Cylinder 8’ Lg. 10” or 12” Pits
C	1	9904-0059	Hose, 35.00” Lg, #6 JIC Swivel Both 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
I	1	8583-0045	Centra Power Valve Assembly

Centra Power KS4 Hydraulic Components

Item	Quantity	Part Number	Description
A	1	0525-0085	Lip Cylinder Without Fittings
		0526-0016	Lip Cylinder With Fittings
B	1	0525-0127	Hoist Cylinder 5’ or 6 Lg.
		0525-0126	Hoist Cylinder 8’ Lg. 15” Pits
		0525-0125	Hoist Cylinder 8’ Lg. 10” or 12” Pits
C[1]	1	9904-	Hose,
	1	9904	Hose,
	1	9904-	Hose,

[1] Provide length and diameter of hose when calling or faxing orders.



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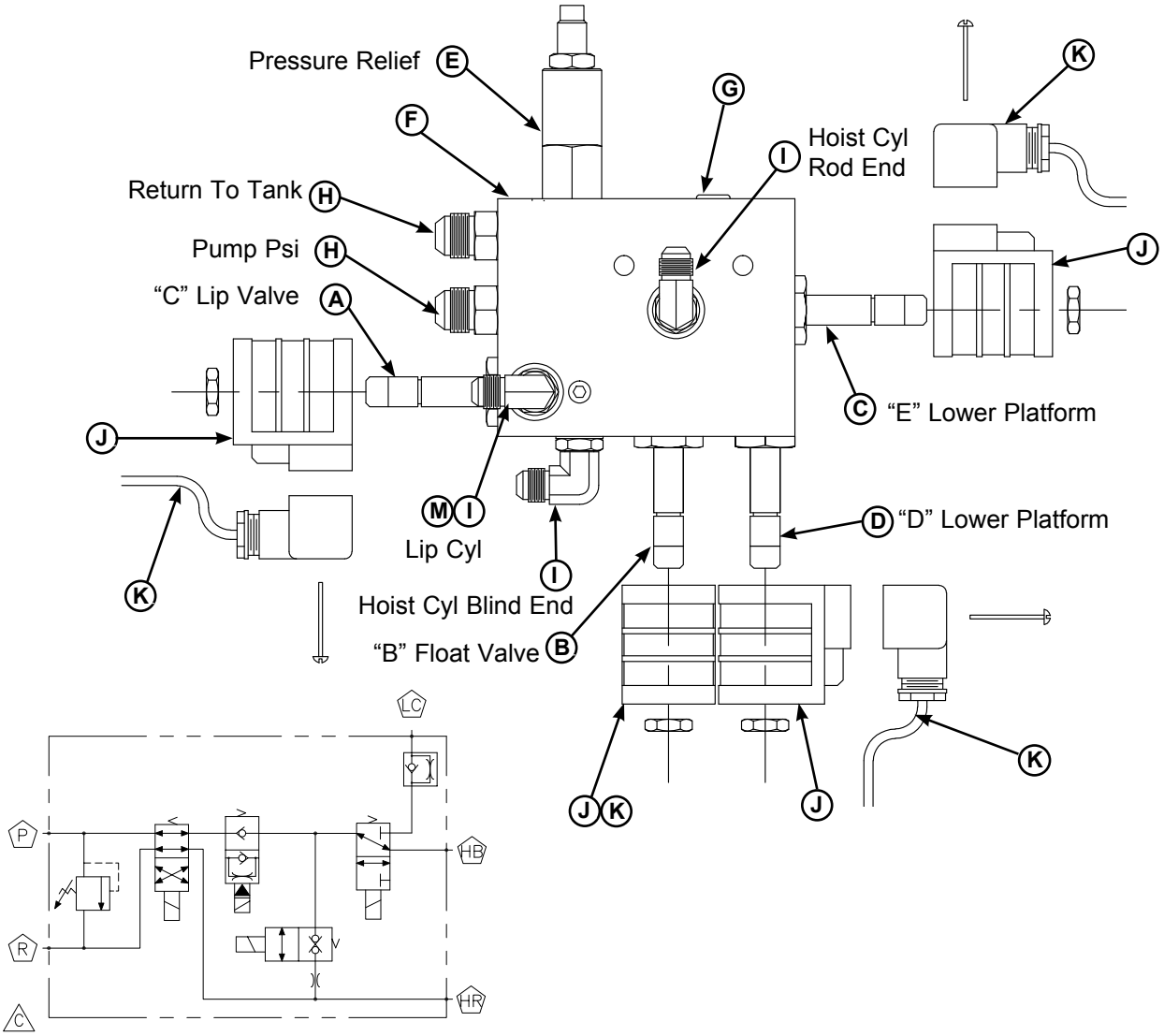
PARTS

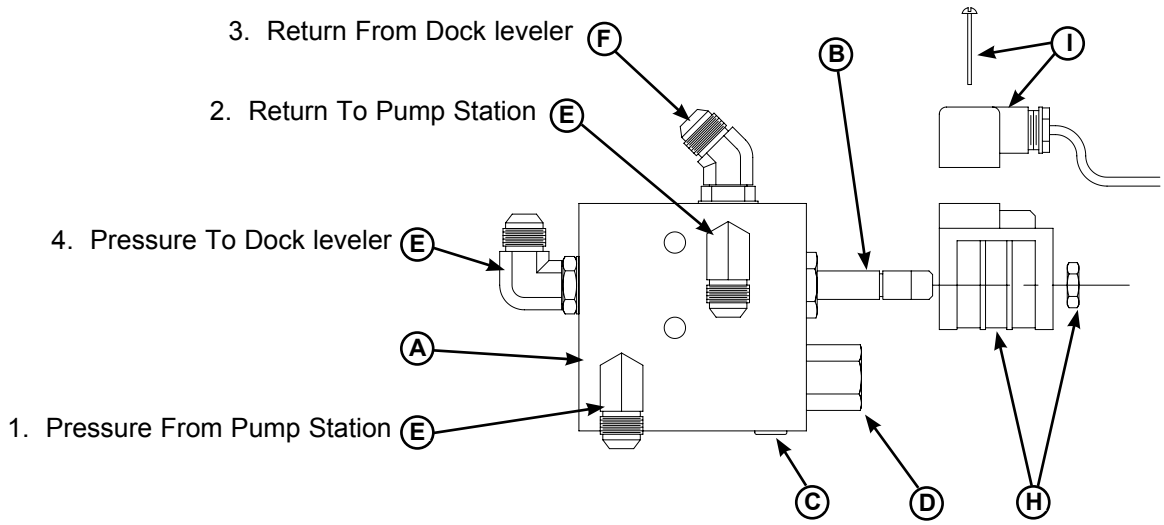
VS Manifold

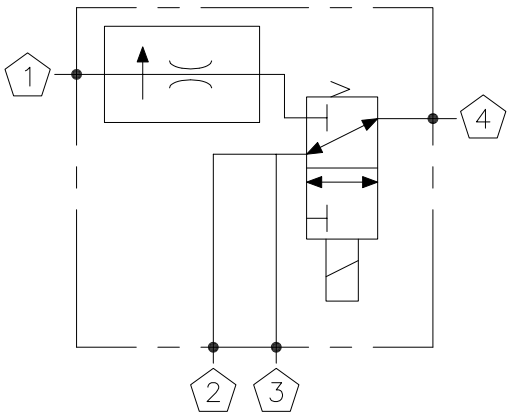


Item	Quantity	Part Number	Description
*	1	8585-0089	Vertical Valve Assembly
A	1	8581-0005	Valve Cartridge 3-Way Delta
B	1	8581-0102	Valve Cartridge 2-Way Bi-Dr Delta
C	1	8581-0011	Valve Cartridge 4-Way 2 Pos Delta
D	1	8581-0010	Valve Cartridge 2-Way N.C. Poppet Delta
E	1	8581-0105	Valve Cartridge Relief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

* A-I & M Included in 8585-0089
** Not Sold Separate

Centra Power Manifold

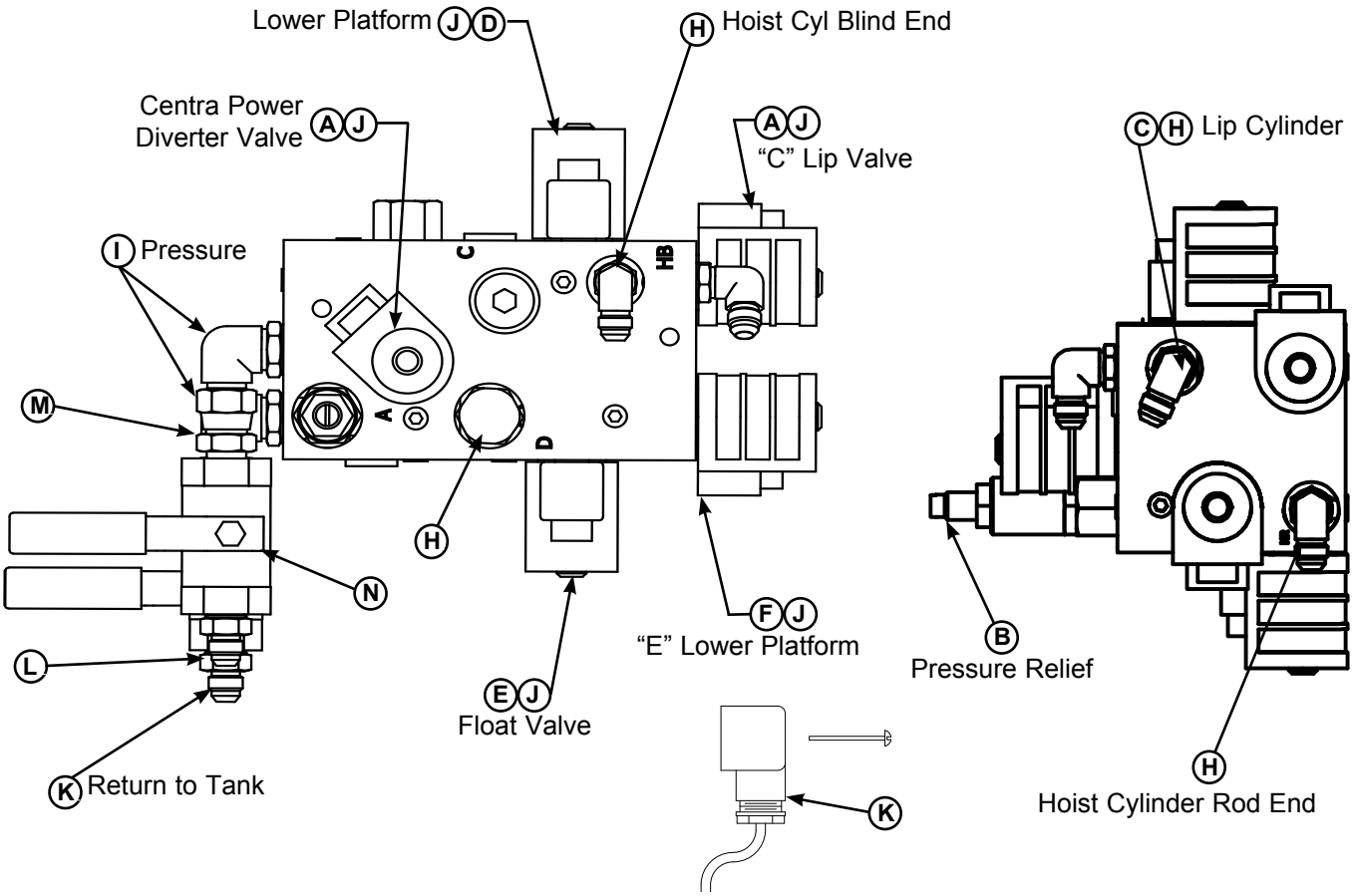




Item	Quantity	Part Number	Description
*	1	8583-0045	Centra Power Valve Assembly
A	1	**	Valve Manifold
B	1	8581-0005	Valve Cartridge 3-Way Delta
C	1	**	Fitting, Plug
D	1	8581-0088	Valve Cartridge - Flow 2GPM
E	3	9301-0116	Fitting Elbow 90 Deg Male
F	1	9301-0120	Fitting Elbow 45 Deg Male, #8 ORB X #8 JIC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

* A-H Included in 8583-0045
** Not Sold Separate

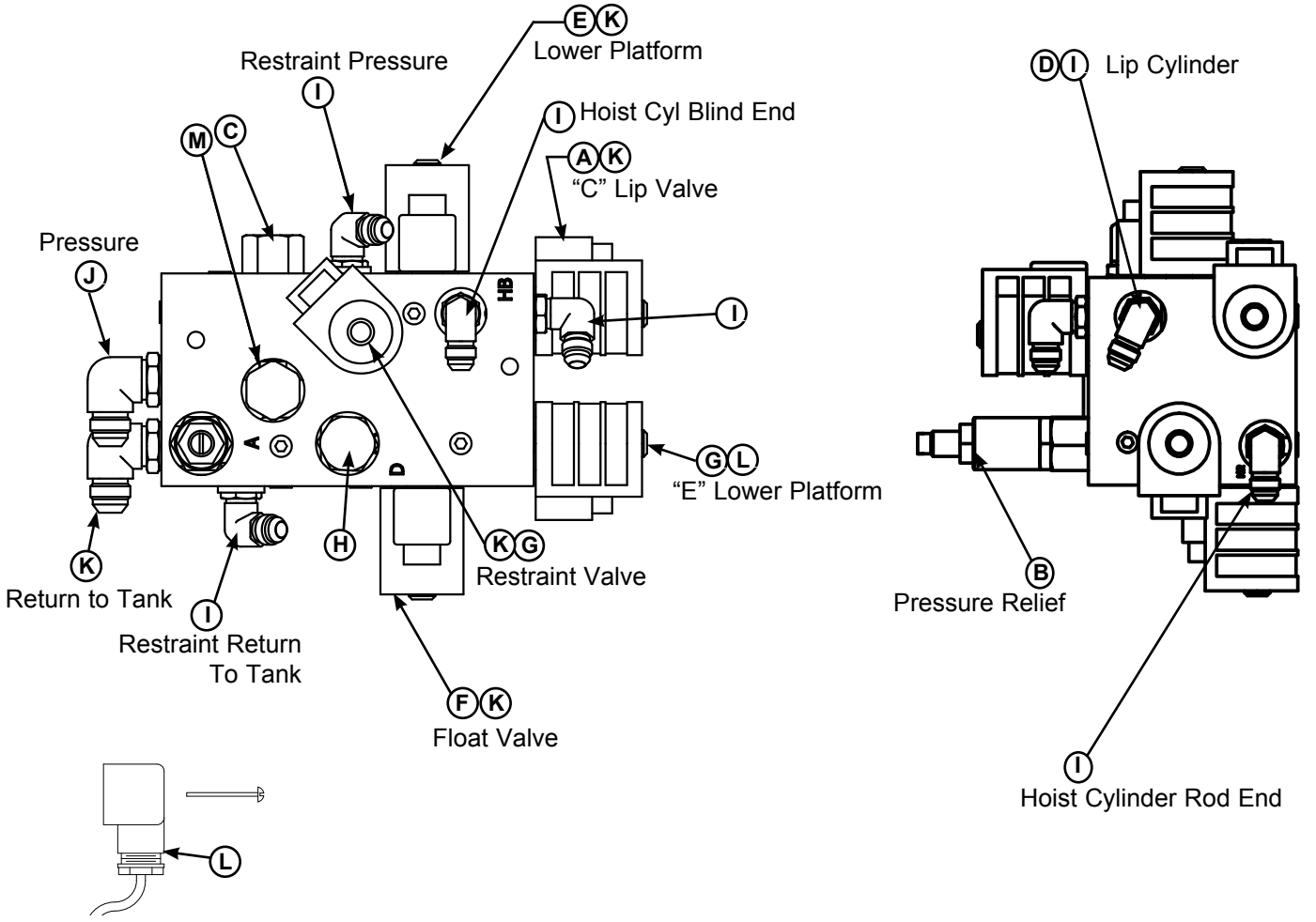
VS Manifold CP W/O Powerhold



Item	Quantity	Part Number	Description
*	1	8585-0098	Valve, Assy. VS W/O PowerHold (Centra Power Only) **Coils Included**
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

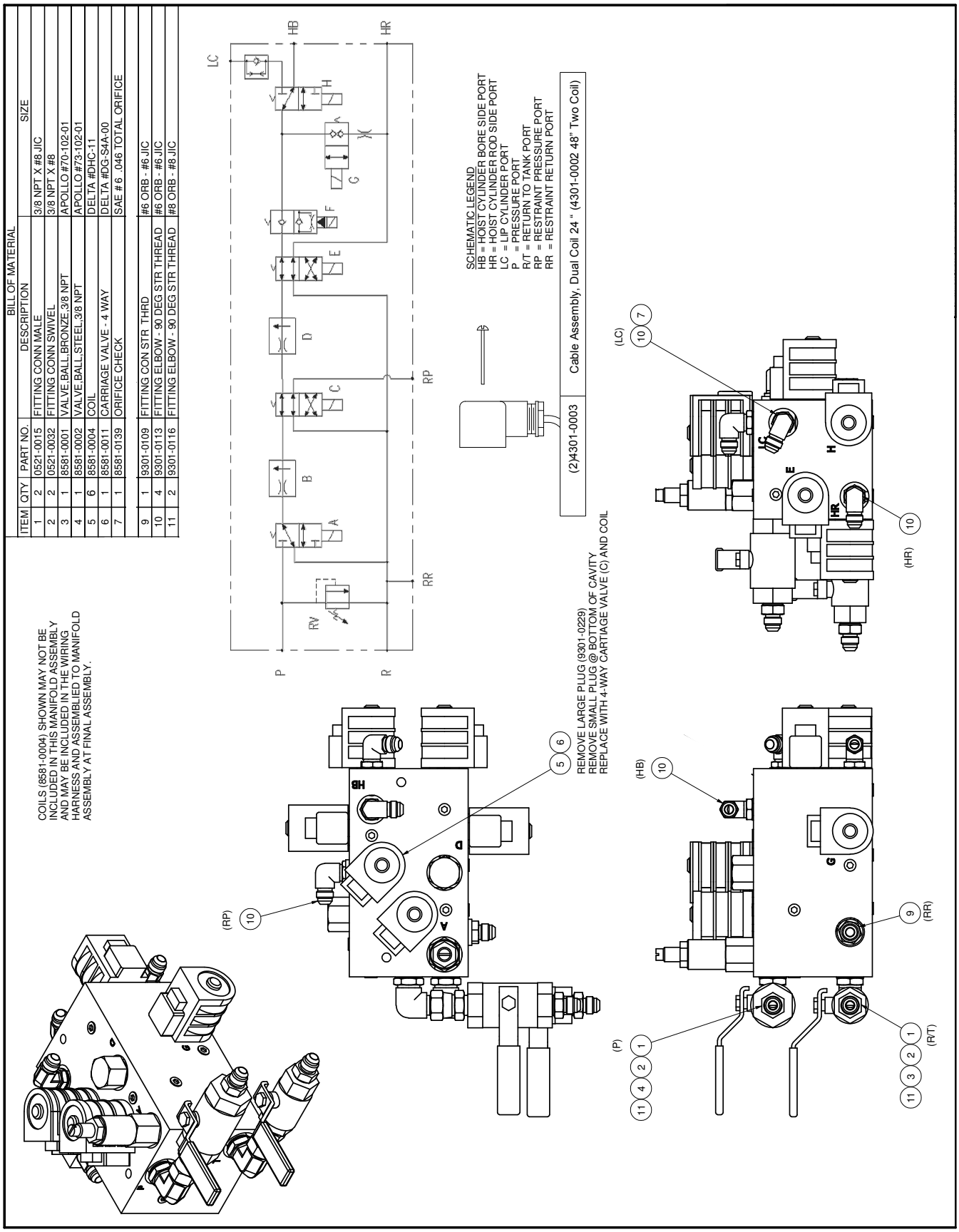
* A-N Included in 8585-0098

VS Manifold Remote W/ Powerhold



Item	Quantity	Part Number	Description
	1	8585-0099	Valve, Assy. VS W/ PowerHold (Centra Power Only) Coils Included
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

* A-L Included in 8585-0099


BILL OF MATERIAL
ITEM QTY PART NO. DESCRIPTION SIZE
1 2 0521-0015 FITTING CONN MALE 3/8 NPT X #8 JIC
2 2 0521-0032 FITTING CONN SWIVEL 3/8 NPT X #8
3 1 8581-0001 VALVE,BALL,BRONZE,3/8 NPT APOLLO #70-102-01
4 1 8581-0002 VALVE,BALL,STEEL,3/8 NPT APOLLO #73-102-01
5 6 8581-0004 COIL DELTA #DHC-11
6 1 8581-0011 CARRIAGE VALVE - 4 WAY DELTA #DG-S4A-00
7 1 8581-0139 ORIFICE CHECK SAE # 6 .046 TOTAL ORIFICE
9 1 9301-0109 FITTING CON STR THRD #6 ORB - #6 JIC
10 4 9301-0113 FITTING ELBOW - 90 DEG STR THREAD #6 ORB - #6 JIC
11 2 9301-0116 FITTING ELBOW - 90 DEG STR THREAD #8 ORB - #8 JIC
COILS (8581-0004) SHOWN MAY NOT BE INCLUDED IN THIS MANIFOLD ASSEMBLY AND MAY BE INCLUDED IN THE WIRING HARNESS AND ASSEMBLIED TO MANIFOLD ASSEMBLY AT FINAL ASSEMBLY.
SCHEMATIC LEGEND
HB = HOIST CYLINDER BORE SIDE PORT
HR = HOIST CYLINDER ROD SIDE PORT
LC = LIP CYLINDER PORT
P = PRESSURE PORT
R/T = RETURN TO TANK PORT
RP = RESTRAINT PRESSURE PORT
RR = RESTRAINT RETURN PORT
(2)4301-0003 Cable Assembly, Dual Coil 24 " (4301-0002 48" Two Coil)
REMOVE LARGE PLUG (9301-0229)
REMOVE SMALL PLUG @ BOTTOM OF CAVITY
REPLACE WITH 4-WAY CARTIAGE VALVE (C) AND COIL
HB
HR
LC
RP
RR
P
R
RV
A
B
C
D
E
F
G
H
(RP)
(HB)
(LC)
(HR)
(P)
(R/T)
(RR)

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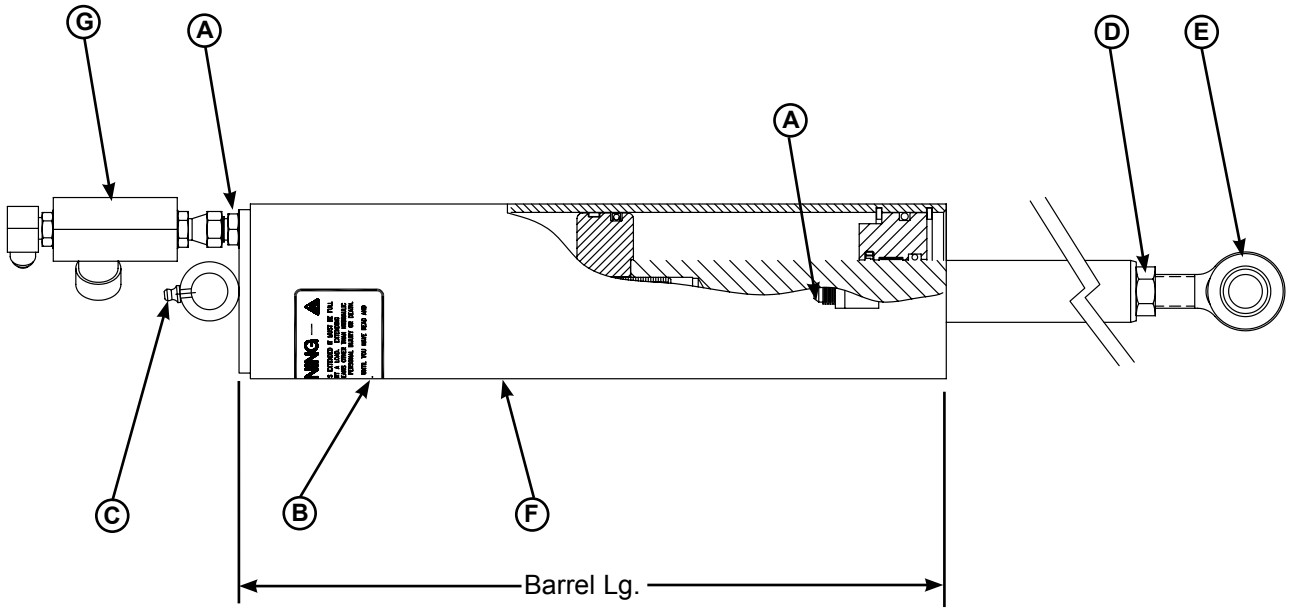
Platform Cylinder Repair Parts

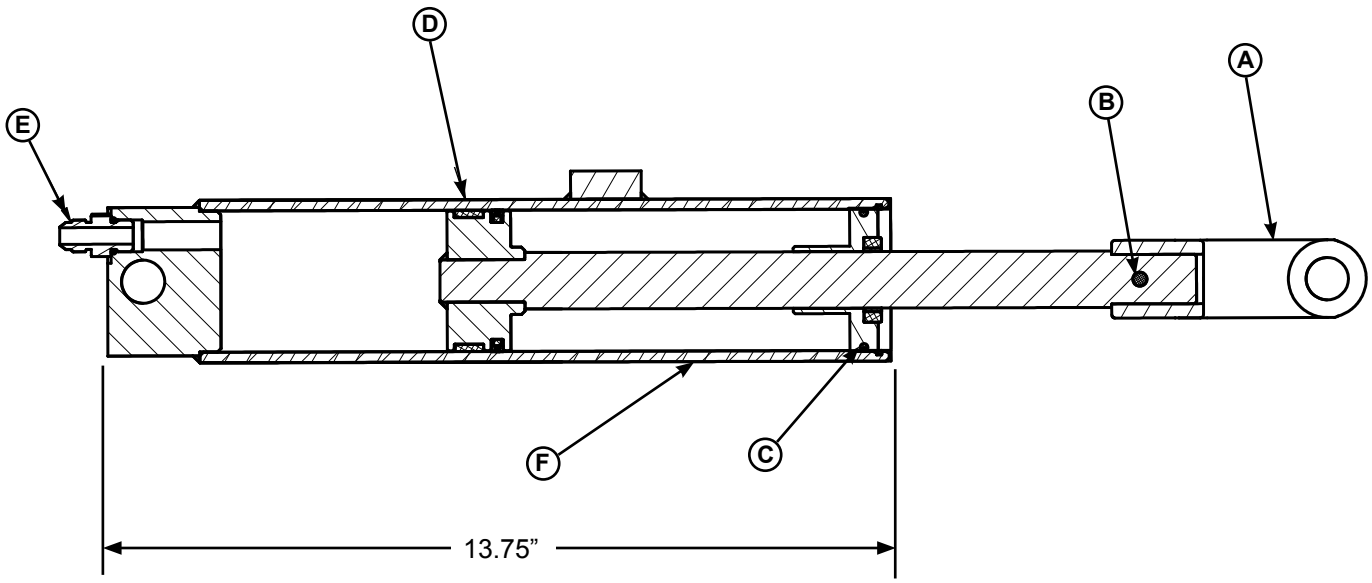


Item	Quantity	Part Number	Description
A	2	9301-0109	Fitting Connection Str Thread 90 DEG Male
B	1	1751-0138	Decal
C	1	0521-0073	Grease Zerk
D	1	2101-0159	Hex Nut
E	1	9461-0002	Rod End
F	1	0525-0125*	Hoist Cylinder 8'Lg, 10" or 12" Pits
		0525-0126*	Hoist Cylinder 8'Lg, 15" Pits
		0525-0127*	Hoist Cylinder 5' or 6' Lg Platforms
G	1	9303-0025	Down Speed Control Valve Assy

Note:
No seal kit is available for this cylinder

*Provide dock leveler serial number when calling or faxing orders.

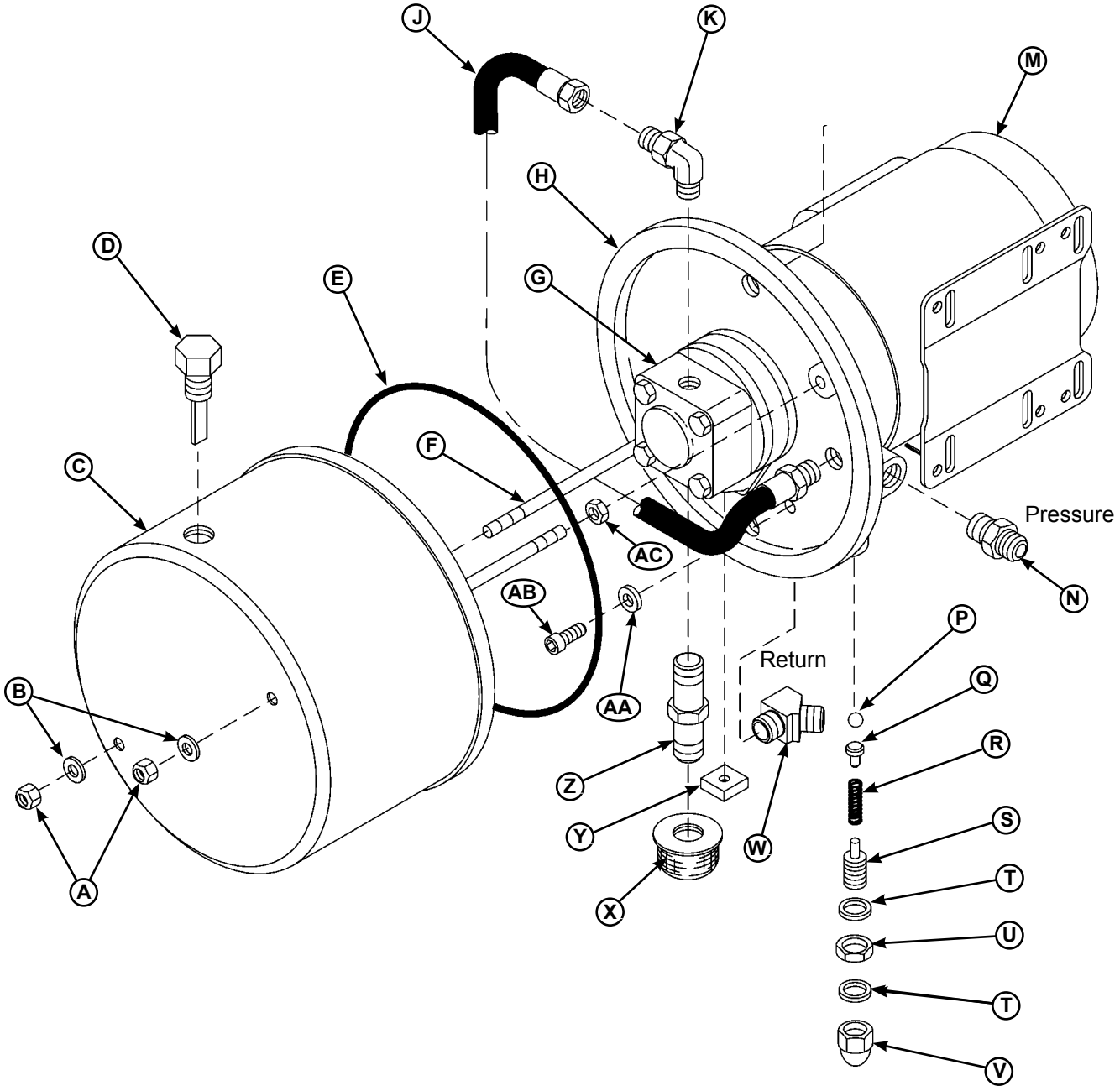
Lip Cylinder Repair Parts



Item	Quantity	Part Number	Description
A	1	0522-0191	Yoke (included in 0525-0085)
B	1	0521-0005	Roll pin (included in 0525-0085)
C	1	0525-0014	Seal Kit 1992 and earlier
		0525-0059	Seal Kit 1992 and newer
D	1	0525-0085	Lip Cylinder Without Fittings E-F
		0526-0016	Lip Cylinder With Fittings E-F
E	1	9301-0109	Fitting, Connector Str.
F	1	0521-0005	Fitting, Breather-Brass (Not Shown)

*Provide dock leveler serial number when calling or faxing orders.
**(Not Sold Separately)

Remote Mount Power Pack Assembly



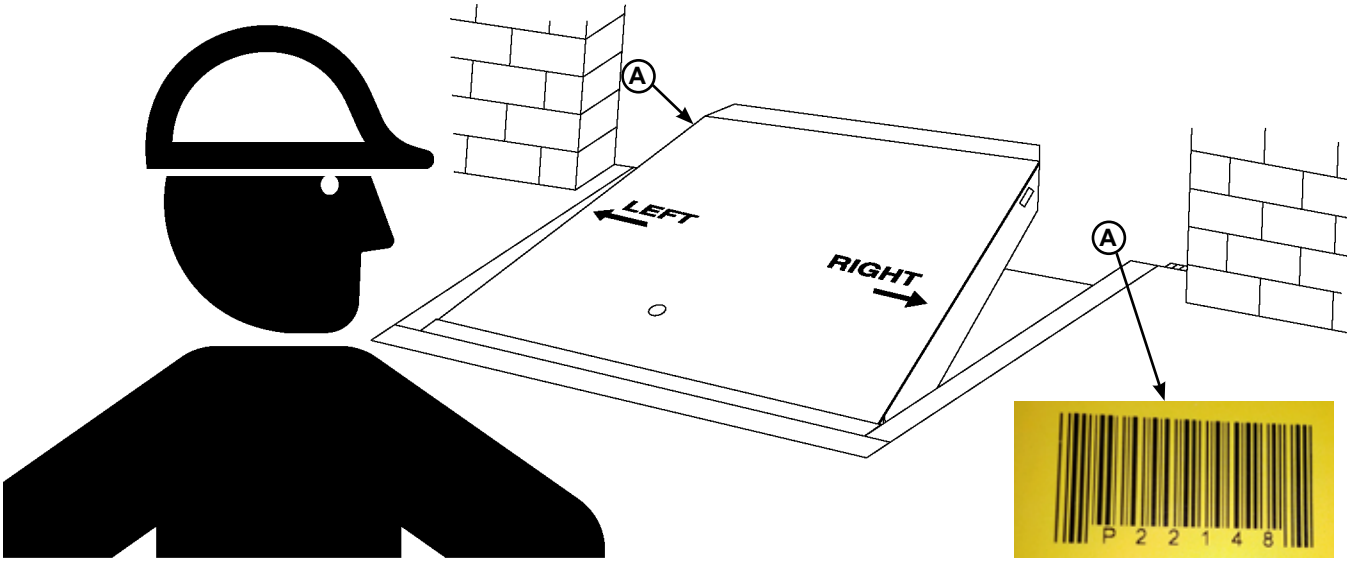
Power Pack Assembly

Item	Quantity	Part Number	Description
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	2101-0039	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	9302-0017	Plate, Drive
J	1	9904-0001	Hose
K	1	0521-0017	90° Elbow, 3/8 NPT Male x #8-JIC Male
M	1	3411-____ [2]	Motor Only
N	1	0521-0015	Straight Fitting, 3/8 NPT 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	0521-0016	45° Elbow, 3/8 NPT Male x #8-JIC Male
X	1	9301-0009	Strainer, Suction
Y	1	9301-0082	Magnet
Z	1	9301-0008	Pipe Nipple, 3/8 NPT x 3 in.
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	2	2101-0063	Nut, Jam 5/16-18 UNC
	1	9395-____ [1]	Power Pack Complete (Includes All Items Except L, N, and W)

[1] Provide dock leveler serial number and type of installation when calling or faxing orders.
[2] Provide dock leveler serial number, voltage, and phase when calling or faxing orders.

NOTES

Customer Information



NOTE: Refer to illustration for left/right orientation of dock leveler.

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

When you receive your VS dock leveler, write down the dock leveler 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) becomes lost or damaged.

Also, write down Systems, Inc.'s job 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, Inc.
P.O. Box 309
Germantown, WI 53022

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

Dock Leveler Information

Model _____

Serial No. _____

Systems, Inc., Job No. _____

Original Owner Information

Name _____

Address _____

_____

Installer Information

Name _____

Address _____

_____

Date of Installation _____

STANDARD PRODUCT WARRANTY

SYSTEMS, INC. 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 INC., covered by this warranty, SYSTEMS INC. 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 INC. 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 Inc., guarantees materials, components and workmanship to be free of defects for the following extended periods:

- Structural Warranty (VS) – For a period of four (4) years from the date of shipment, this warranty specifically applies to; the deck section, lip section, rear hinge assembly and front hinge assembly only.
- Hydraulic Warranty (VS) – For a period of four (4) years from date of shipment, this warranty specifically applies to; the hydraulic pump and motor, all hydraulic cylinders, hydraulic pressure lines and fittings only.