

A Division of Systems, LLC

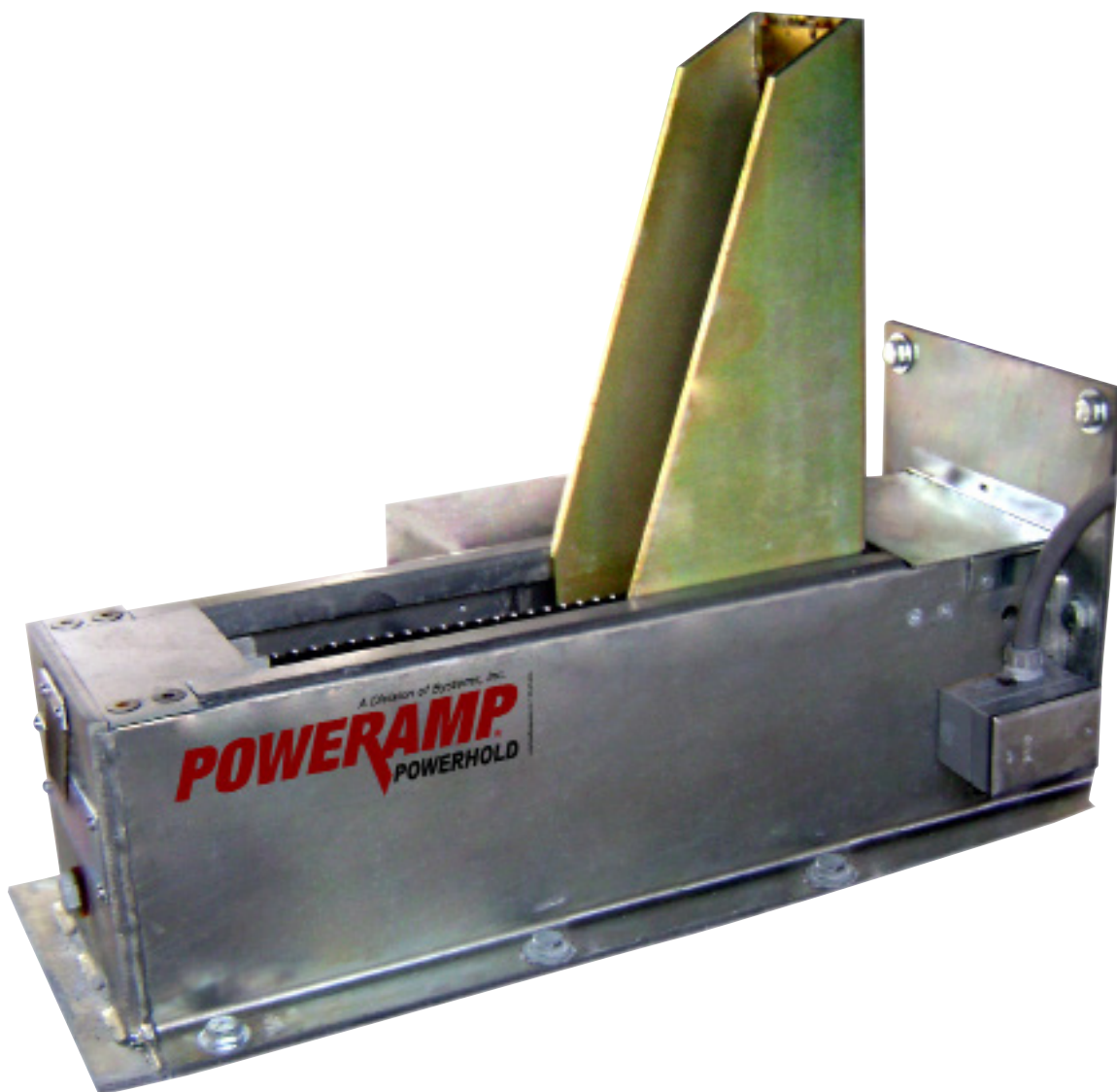
POWERAMP

Premium Loading Dock Systems

PowerHold

Vehicle Restraint

Owner's/User's Manual



Poweramp • Division of Systems, LLC • W194 N11481 McCormick Drive • Germantown, WI 53022

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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.

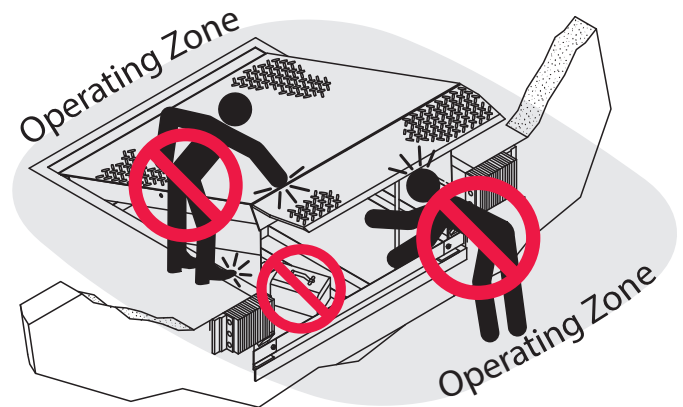


Figure 1

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.



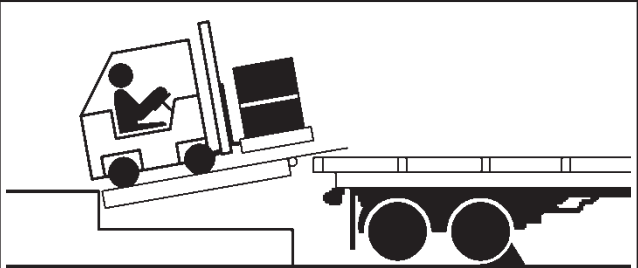
Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



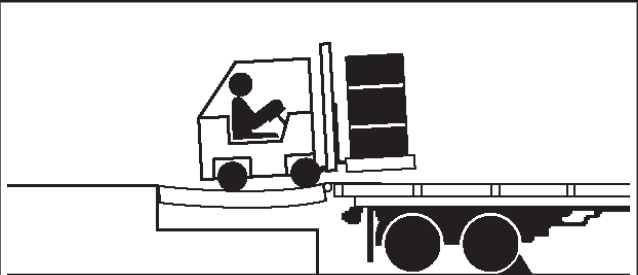
Keep a safe distance from both side edges.

Operational Precautions

! WARNING



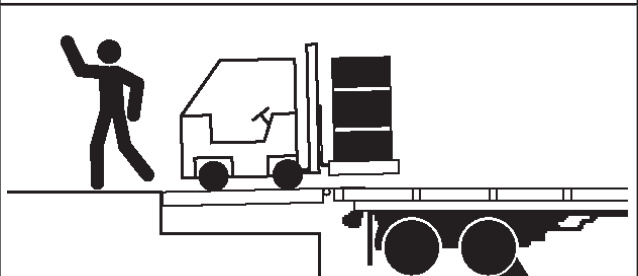
Do not use dock leveling device if transport vehicle is too high or too low.



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



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

1  **DO NOT FORK THIS SIDE** 

1  **DO NOT FORK THIS SIDE** 

1751-0329


3  **FORK HERE**

3  **FORK HERE**

1751-0330 Two positions one on top of each fork pocket.

⚠ DANGER

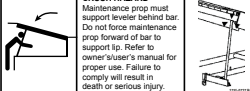
CRUSH HAZARD
DO NOT ENTER PIT unless dock leveler is securely supported by maintenance prop. Place barriers on driveway and dock floor to indicate service work being performed. Failure to comply will result in death or serious injury. Refer to owner's user's manual for proper maintenance procedures.



1751-0726

⚠ DANGER

CRUSH HAZARD
Maintenance prop must support leveler behind bar. Do not force maintenance prop forward of bar to support lip. Refer to owner's user's manual for proper use. Failure to comply will result in death or serious injury.



1751-0727

⚠ DANGER

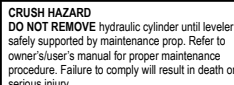
CRUSH HAZARD
Do not work under dock leveler unless this maintenance prop has been secured in the upright position. Failure to comply will result in death or serious injury. See owner's user's manual for proper procedures.



1751-0729

⚠ 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

⚠ DANGER

CRUSH HAZARD
Open the pin latch and insert through the maintenance prop housing and snug completely. Close the pin latch to secure prop. Use every time dock leveler is serviced. Failure to comply will result in death or serious injury.



1751-0731

⚠ DANGER

Unsupported dock leveler straps can lower unexpectedly. Before allowing vehicle to leave the dock always:

- Ensure no equipment, material or people are on dock leveler.
- Return dock leveler to its stored position at dock level.

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

SAFETY INFORMATION

OPERATION:

- Read and follow all instructions and warnings on the manual.
- Use of dock leveler restricted to authorized personnel.
- Always check leveler status, no straps, track, restraint before operating dock leveler or engaging to vehicle.
- Never use straps or equipment to move any load.
- Never use straps or equipment to secure loads in locked or agitated position.
- Remove any and loads from platform. Check leveler alignment to avoid interference. If you have a trailer back, separate vehicle.
- Always track and engage restraint to or trailer frame supports the leveler when driving on ramps.

MAINTENANCE/SERVICE:

- Read and follow all instructions, warnings and maintenance cautions in the owner's user's manual.
- Maintainance/SERVICE of dock leveler requires specialized personnel.
- Place barriers on the driveway and dock floor to indicate service work to be performed.
- DO NOT ENTER PIT unless dock leveler is securely supported by maintenance prop.
- Physically prevent turn of end use and OSHA 1910.147 procedures.

1751-0730

⚠ DANGER

Unsupported dock leveler straps can lower unexpectedly. Before allowing vehicle to leave the dock always:

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- Place barriers on the driveway and dock floor to indicate service work to be performed.
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- Physically prevent turn of end use and OSHA 1910.147 procedures.

1751-0730

⚠ DANGER



Lockout/Tagout power before servicing. Comply with OSHA 1910.147

1751-0857 Rev A

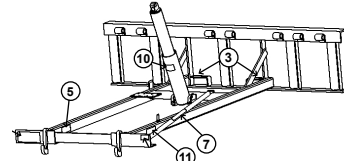
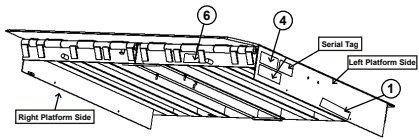
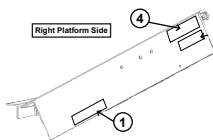

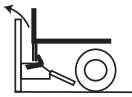
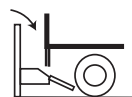






Figure 2

Note: This is an example of dock leveler safety decals. See specific model manual for correct safety decal sheet, or consult Systems, LLC Tech Services.

Placard

 DANGER	OPERATING INSTRUCTIONS
<ul style="list-style-type: none">• Read and follow all instructions, warnings, and maintenance schedules in the manual and on placards.• Vehicle restraint operation and servicing is restricted to authorized personnel. <ol style="list-style-type: none">1. Before using the vehicle restraint:<ul style="list-style-type: none">• Remove any debris, snow, or ice that may obstruct vehicle restraint operation.• Alert personnel in the area of potential vehicle restraint operation and ensure area is clear.• Operate the vehicle restraint through one complete cycle inspecting it for proper operation and light sequence. Advise maintenance personnel of any damage or improper operation immediately. Remove all malfunctioning or damaged vehicle restraints from service using approved lockout/tagout procedures.2. Before attempting to restrain a transport vehicle:<ul style="list-style-type: none">• Verify that transport vehicle is positioned squarely against dock bumpers.• Inspect the transport vehicle's rear impact guard (RIG). Damaged or missing RIGs, lift gates, plates or other obstructions may not allow the vehicle restraint to securely capture the RIG. Wheel chocks must be used whenever the ability for the vehicle restraint to capture the RIG is in question. (NOTE: The transport vehicle's suspension and load condition will affect trailer height.)3. After activating vehicle restraint:<ul style="list-style-type: none">• Verify that the transport vehicle's RIG has been restrained successfully. In the event this cannot be determined, use wheel chocks in addition to restraint.• If equipped with a light communication system, load and unload on GREEN light only.4. Maintenance or service must be performed by authorized personnel only. Follow approved lockout/tagout procedures. <p>FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN DEATH OR OTHER SERIOUS INJURY.</p>	<h3>VEHICLE RESTRAINTS</h3> <h4>ENGAGE RESTRAINT</h4>  <ol style="list-style-type: none">1. Open overhead door and visually check that transport vehicle is positioned squarely against dock bumpers and has a RIG bar. Inside light is RED and outside light is GREEN.2. Press the ENGAGE button to activate restraint.3. Once RIG has been secured, inside light is GREEN and outside light is RED <hr/> <h4>RELEASE RESTRAINT</h4>  <ol style="list-style-type: none">1. To release restraint press the RELEASE button. When safely stored, inside light is RED and outside light is GREEN. <hr/> <h4>BY-PASS</h4>  <ol style="list-style-type: none">1. If restraint is unable to secure transport vehicle's RIG, use wheel chocks to secure transport vehicle at the dock.2. Turn switch to BY-PASS. Inside light is GREEN and outside light is RED.3. Loading/unloading may proceed with caution. <h4>BY-PASS RESET (RETURN TO NORMAL OPERATION)</h4> <ol style="list-style-type: none">1. When loading or unloading is completed and wheel chocks are removed. Manual reset of BY-PASS is accomplished by pressing the RELEASE button or turning switch to NORMAL. Lights change to RED inside and GREEN outside.
 <p>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.</p>  <p>WARNING: CANCER AND REPRODUCTIVE HARM www.P65Warnings.ca.gov</p>  <p>1751-0880 Rev F</p>	<p>Use for PowerHook, PowerHold, HoldTite and TPR series</p>

1751-0880

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.
- 2) 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 restraining device 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 restraining 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.
- 3) When selecting a restraining device, 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.
- 4) 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.
- 5) Modifications or alterations of restraining devices shall be made only with prior written approval from the original manufacturer. These changes shall be in conformance with all applicable provisions of the MH30.3 standard and shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application.
- 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 restraining 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 functions. Explain how they work when used properly and maintained as well problems when they are used improperly.
 - f) Assure that the operator understands nameplate data, placards and all precautionary information appearing on the restraining 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) 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.

OWNER'S/USER'S RESPONSIBILITIES

- 8) 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.

- 9) 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.

- 10) Manufacturer's recommended maintenance and inspection of all restraining 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 restraining 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) Restraining devices that are structurally damaged 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

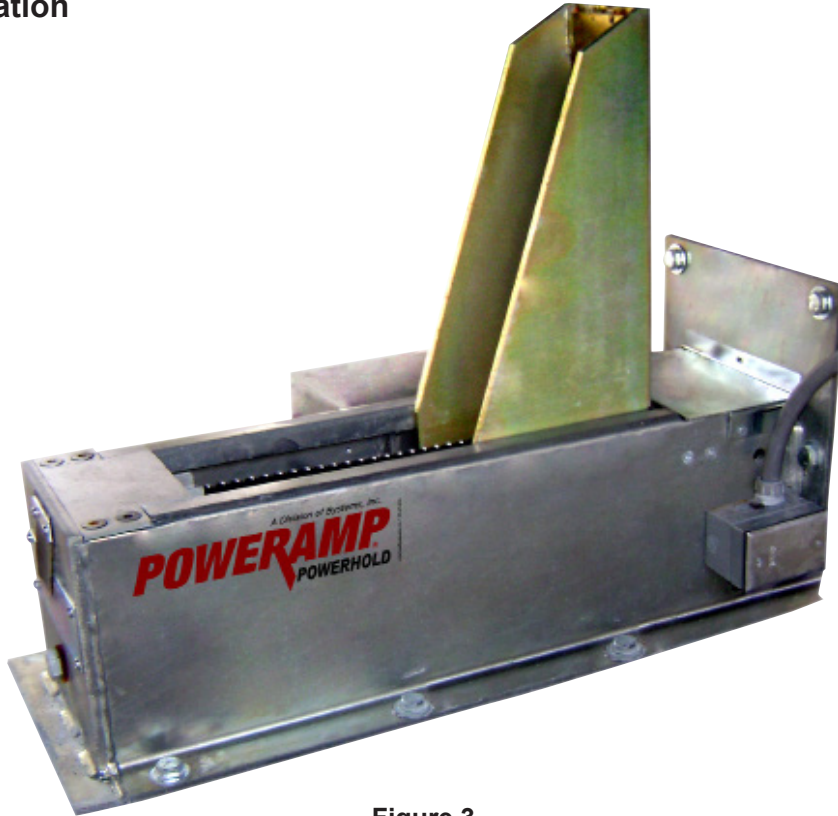


Figure 3

This manual provides current information on the PowerHold vehicle restraint. Due to ongoing product improvement, some parts may have changed, along with operation and troubleshooting methods. This manual describes these changes where applicable.

The PowerHold vehicle restraint is designed to seek, find and maintain a tight, continuous hold on the RIG (Rear Impact Guard) bar, effectively eliminating “trailer creep”. As an optional safety feature, the dock leveler and vehicle restraint can be interlocked, preventing operation of the dock leveler until the hold engages the RIG (RIG bar).

The vehicle restraint is firmly anchored to the drive way approach or the building wall for maximum holding power. The PowerHold restraint is designed to withstand a pulling force of 30,000 lbs.

The PowerHold vehicle restraint comes equipped with an electrical control panel, which allows push button operation of the vehicle restraint functions. When combining a Poweramp Dock Leveler with a PowerHold vehicle restraint, the control panel will allow for operation of both units in the same control panel.

Each PowerHold vehicle restraint unit and control panel has been factory pre-wired 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.

Call Systems, LLC to discuss available 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).

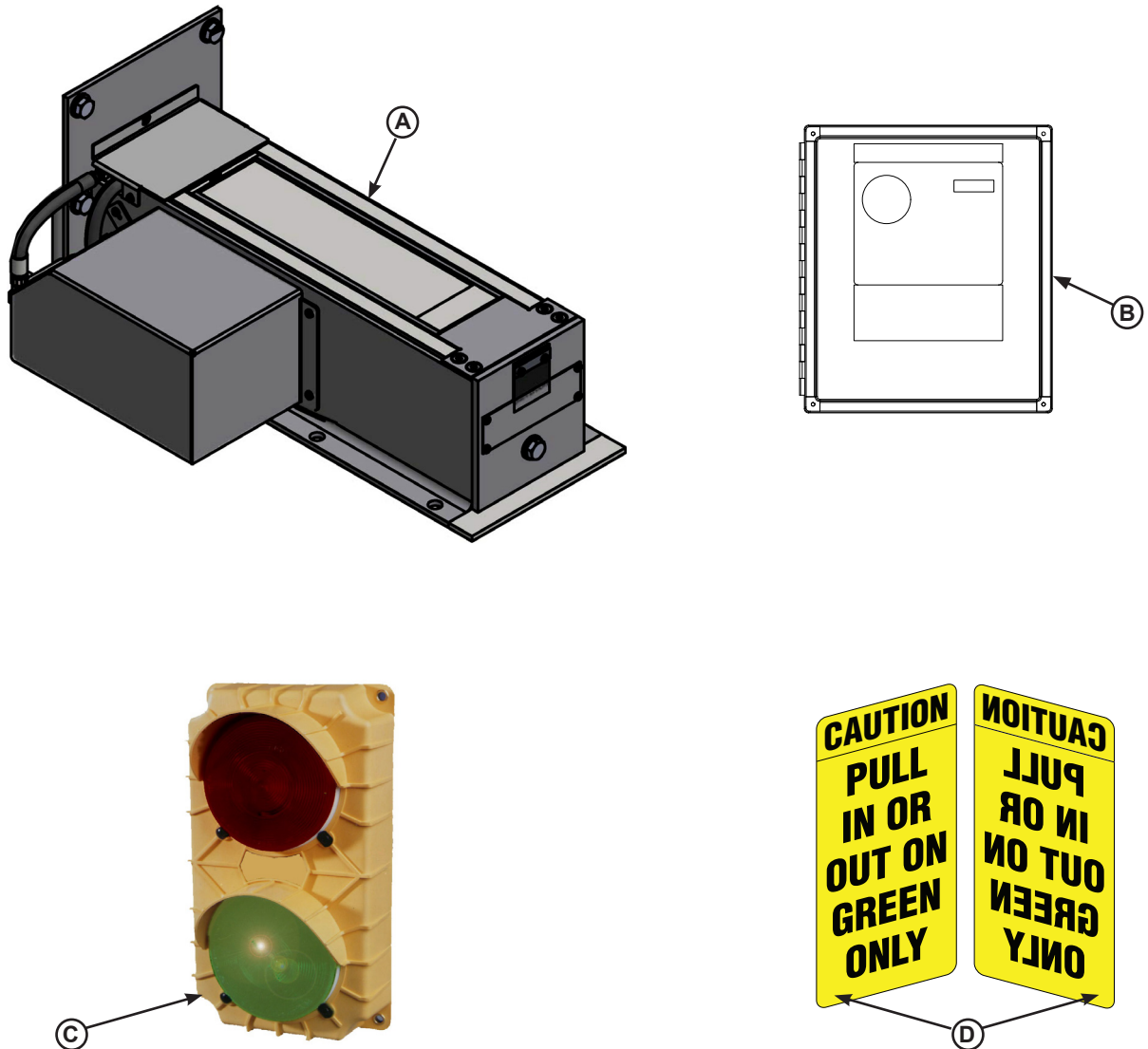


Figure 4

A — PowerHold Assembly*
B — Control Box*

C — Outside Light Assembly
D — Outside Signs

**Appearance may vary depending on options.*

INTRODUCTION

Component Identification

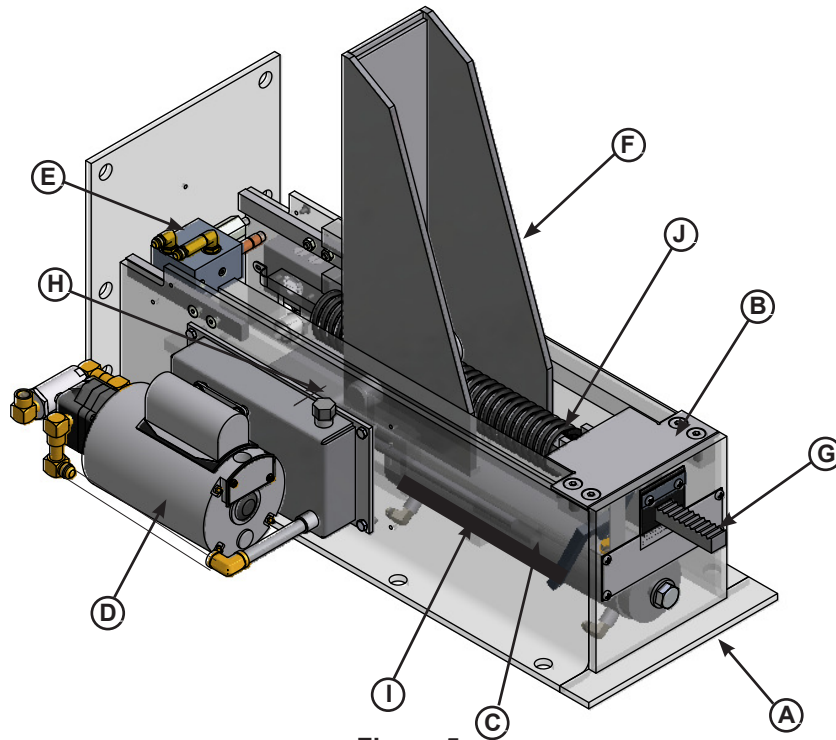


Figure 5

A — Weldment
 B — Latch Assembly
 C — Hydraulic Cylinder
 D — Powerpack (SC Only)

E — Valve Block (SC Only)
 F — Shoe
 G — Rack Weldment

H — Slide Block
 I — Push Rod
 J — Spring

PowerHold Manifold (combined with leveler)

On combination units (single Powerpack operating both leveler and restraint), fluid directs to leveler until coil (B) is energized, then diverter valve (C) directs fluid to restraint. See Figure 6.

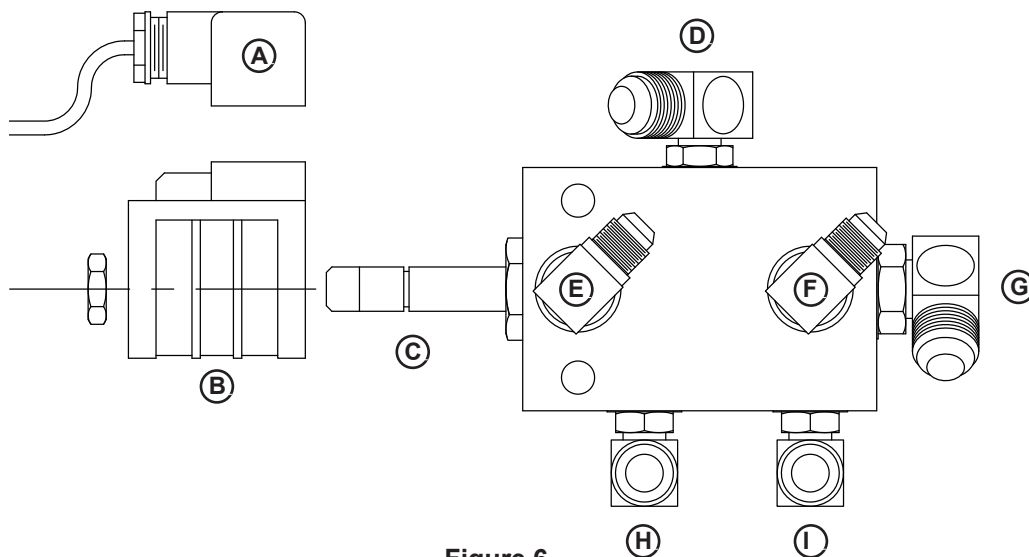


Figure 6

A — Solenoid Coil Harness
 B — Solenoid Coil
 C — Diverter Valve

D — Pressure to Logic Block
 E — Pressure to Restraint
 F — Return from Restraint

G — Return to Logic Block
 H — Pressure from Pump
 I — Return to Pump

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.

CAUTION

In applications where adhesive anchors will be used, holes must be properly prepped and cleaned before applying adhesive into holes. Refer to adhesive instructions for further detail.

NOTICE

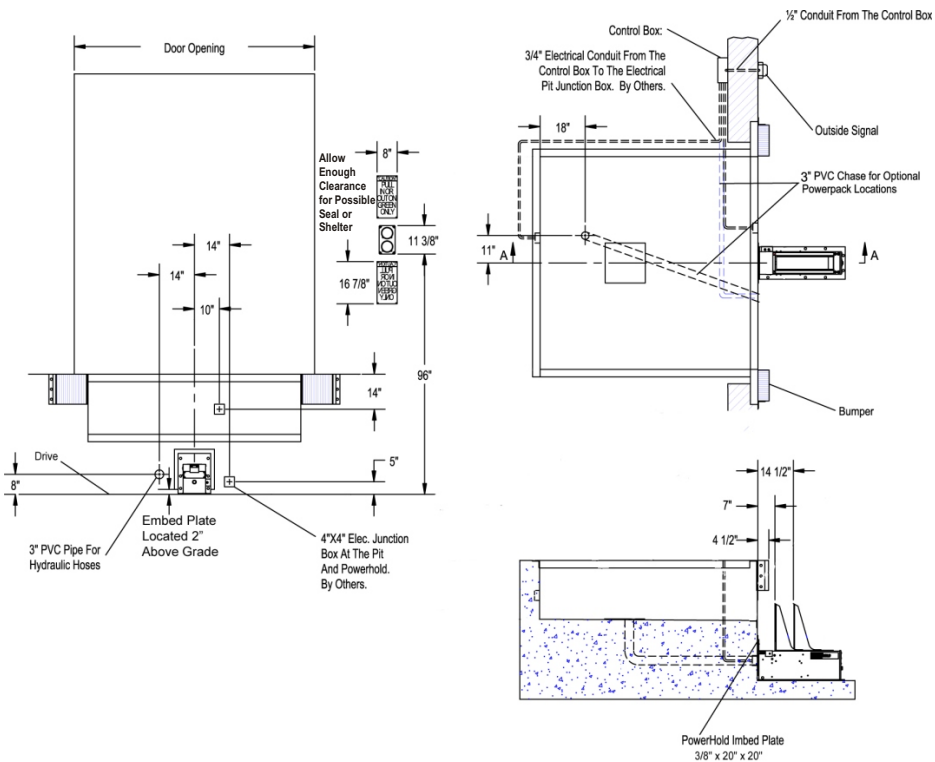
DO NOT connect the vehicle restraint electrical wiring and ground connections until all welding has been completed.

DO NOT ground welding equipment to any hydraulic or electrical components of the vehicle restraint. 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.

INSTALLATION

Installation Overview

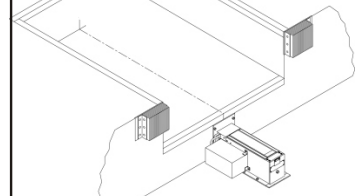


POWERPACK LOCATION OPTIONS

Coordinate powerpack location and hose length for proper placement.

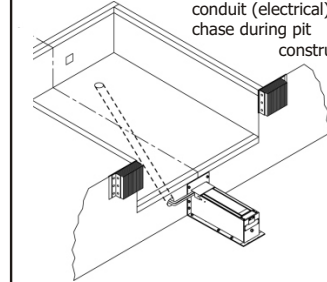
Dock Face (Self Contained)

Appropriate location when the likelihood of flooding, snow removal and damage from trailer/trucks is minimal. Also recommended for use with non-hydraulically powered dock levelers.

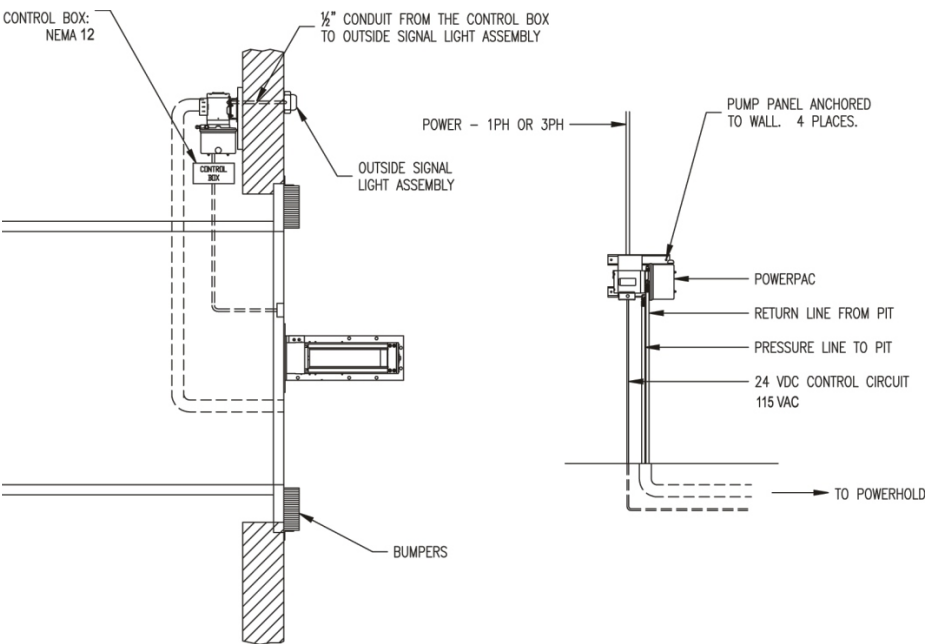


Under The Dock Leveler

When combined with hydraulic leveler pump or remotely mounting under leveler, make certain to locate the powerpack where leveler will not interfere in below dock conditions. The routing of hydraulic and electrical lines from the powerpack to the restraint are best placed through min. 3" PVC (hydraulic) and 3/4" conduit (electrical) chase during pit construction.



POWERHOLD REMOTE MOUNT POWERPACK



Inside Building (Remote Mount)

Locate powerpack to minimize obstruction potential. Hydraulic and electrical lines from the powerpack to the restraint are best placed through min. 3" PVC (hydraulic) and 3/4" (electrical) chase during pit construction.

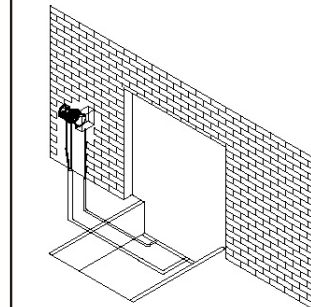


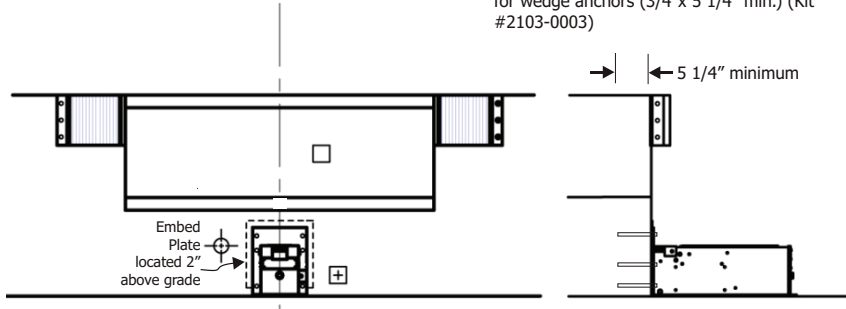
Figure 7

Installation Overview (continued)

Concrete Dock Face (Standard installation)

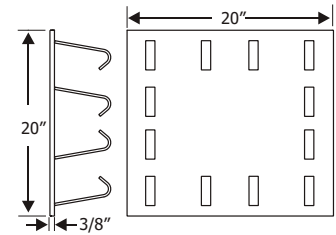
Wedge Anchors Method

Using back plate as a guide, drill six (6) holes for wedge anchors (3/4" x 5 1/4" min.) (Kit #2103-0003)



Weld Plate Embed Method

Weld three sides of PowerHold back plate to the optional embed mounting plate (Part #7953-0119) with continuous 1/4" fillet weld.



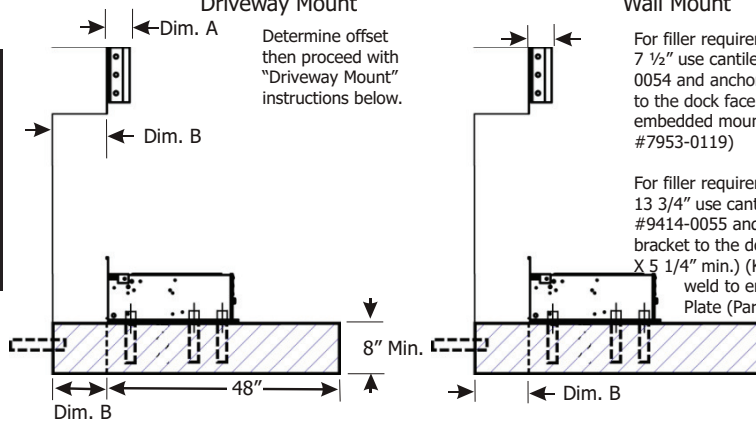
Cantilevered Dock (For bumper projection >4" or cantilevered dock or Edge-of-Dock leveler)

To determine size offset required, take total effective bumper projection (bumper size plus any cantilever) and subtract 4".

Offset Formula		
Dim. A	Dim. B	Offset
Bumper Projection	Cantilever	
4"	+ Dim B	-4" = Offset
6"	+ Dim B	
10"	+ Dim B	
15"	+ Dim B	

Driveway Mount

Determine offset then proceed with "Driveway Mount" instructions below.

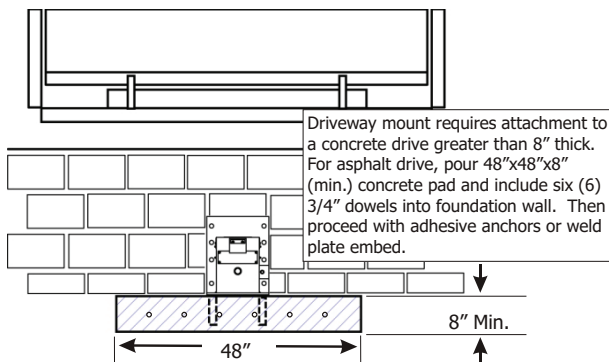


Wall Mount

For filler requirements from 1 1/2" to 7 1/2" use cantilever bracket #9414-0054 and anchor cantilever bracket to the dock face or weld to embedded mounting plate (Part #7953-0119)

For filler requirements for 8 3/4" to 13 3/4" use cantilever bracket #9414-0055 and anchor cantilever bracket to the dock face (3/4" Dia. X 5 1/4" min.) (Kit #2103-0003) or weld to embedded mounting Plate (Part #7953-0119).

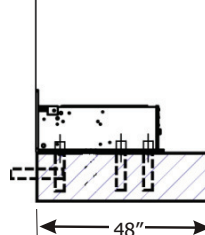
Driveway Mount (Recommended when dock face is unsuitable for PowerHold Mounting)



Wedge Anchors Method

(Kit #2103-0003)

Install six (6) 3/4" Dia. x 5 1/4" min. wedge anchors at the base of the PowerHold.



Drive Embed Method

Weld method

Properly locate and level the drive embed weld plate (Part #7953-0132) in the drive approach. Observe Cantilever conditions for proper positioning. Weld restraint to embed plate with a continuous 1/4" fillet weld.

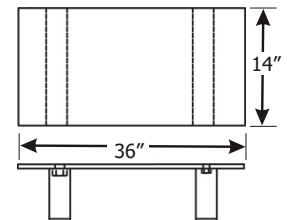


Figure 8

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.

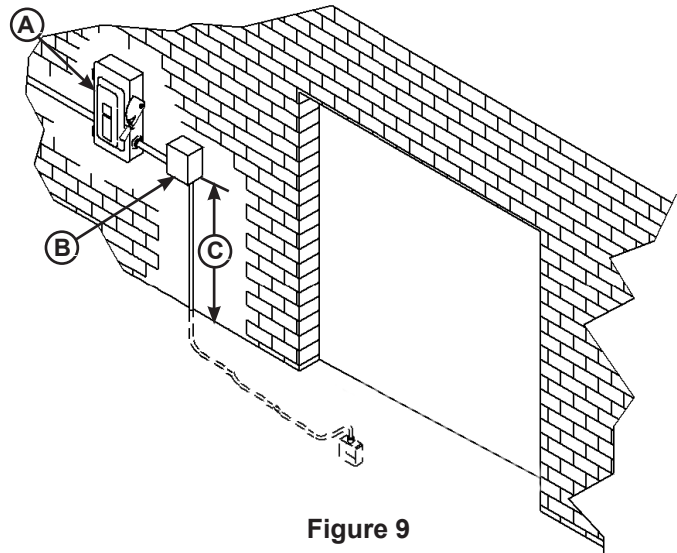


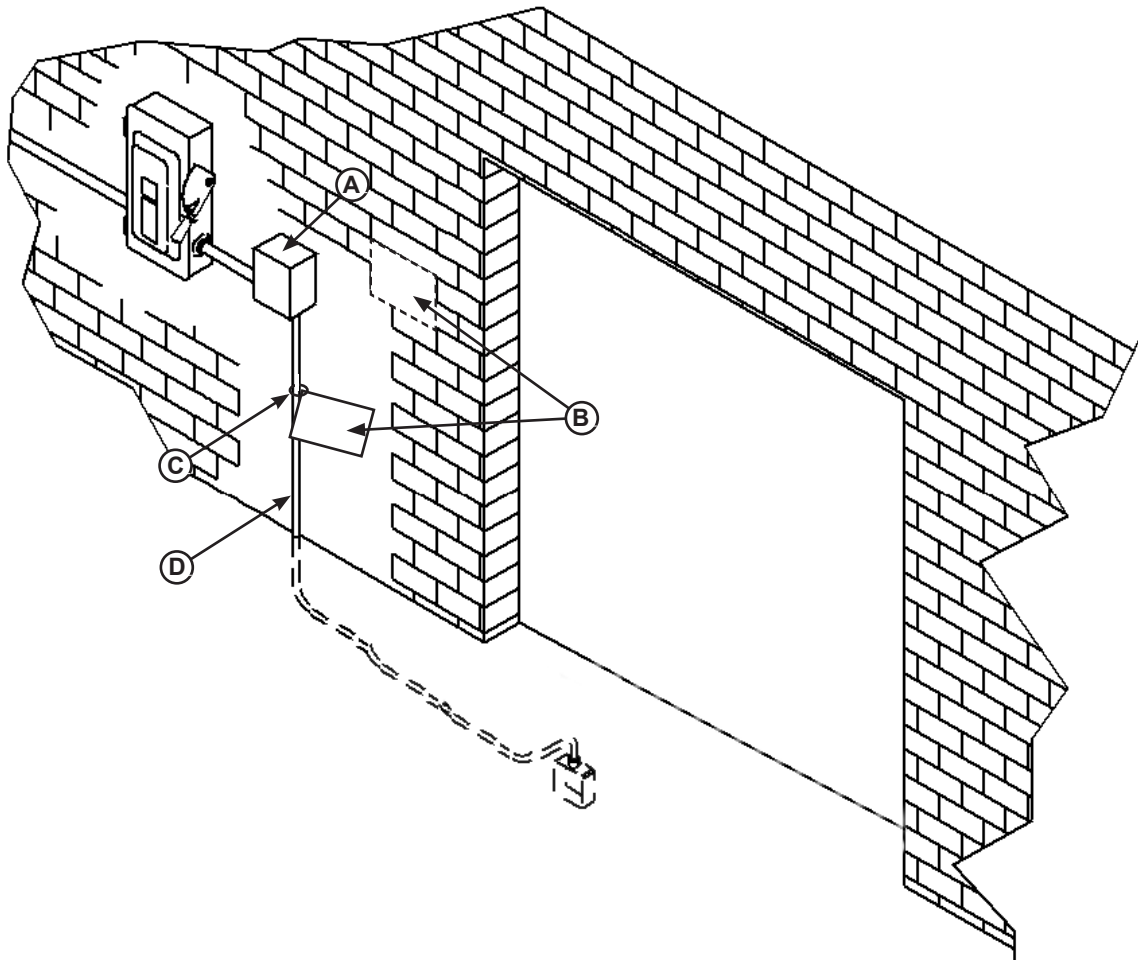
Figure 9

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

1. Mount the push-button control panel (B) so bottom of control panel-to-dock floor distance (C) is 48 in. (1219 mm). See Figure 8.
 2. Install electrical disconnect panel (A) if not already installed. Disconnect panel supplied by others.
 3. Install and connect the control wiring.
 4. Connect the control wiring to the field wires in the restraint junction box. Refer to the electrical diagrams supplied with the vehicle restraint.
 5. 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.
6. Install placard (see Figure 10).

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 10

OPERATION

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 and vehicle restraint.

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

Once the vehicle restraint has been activated, the dock attendant must visually inspect to assure that the restraint shoe has properly engaged the Rear Impact Guard (RIG) bar.

Proper engagement occurs when the shoe is standing vertically, contacting the front edge of the horizontal member of the RIG, without obstruction.

Operation - Normal

1. Check that the transport vehicle is positioned squarely against both dock bumpers.
 - Inside light - RED
 - Outside light - GREEN
2. Push ENGAGE button to activate restraint.
 - Inside lights - AMBER
 - Outside light - RED
3. Restraint will ENGAGE on transport vehicle RIG. Visually inspect restraint for proper engagement.
 - Inside light - GREEN
 - Outside light - RED
4. Position dock leveler onto transport vehicle.
5. When loading or unloading is complete, return dock leveler to the stored position.
6. Push RELEASE button to store restraint.
 - Inside lights - AMBER
 - Outside light - RED
7. Transport vehicle can now depart.
 - Inside light - RED
 - Outside light - GREEN

Operation - Bypass

If the trailer RIG (Rear Impact Guard) is damaged or missing, dock leveler can be used in BYPASS.

1. Secure transport vehicle wheels by other means.
2. Activate BYPASS mode through menu screens under OPERATION MODE.
 - Inside light - GREEN & AMBER
 - Outside light - RED
3. Position dock leveler onto transport vehicle trailer.
4. When loading or unloading is complete, return dock leveler to the stored position.
5. Reset BYPASS mode to NORMAL mode by pressing the RELEASE button once, or through menu screens under OPERATION MODE.
 - Inside light - RED
 - Outside light - GREEN
6. Release the transport vehicle wheels when transport vehicle is ready to depart.

Operation - Bypass From Unsuccessful Engage

If the restraint fails to successfully ENGAGE a trailer RIG, it will automatically return to the stored position.

- Inside light - AMBER & RED
- Outside light - RED

Bypass mode can then be activated by pressing ENTER button (user code may be required).

- Inside light - GREEN & AMBER
- Outside light - RED

Or, to reset back to NORMAL mode, press RELEASE button.

- Inside light - GREEN
- Outside light - RED

See the iDock Owner's/User's Manual for more information on iDock menus and navigation.

OPERATION

Multi-Colored & Outside Light Sequence Charts

Normal Operation

Condition	Lights	
	Inside	Outside
Ready For Use	Red	Green
Leveler Operating or Restraint Engaging/Releasing In Progress	Amber	Red
Restraint Engaged	Green	Red
Restraint Engage Failure	Red/Amber, Display Backlight*	Red
Emergency Stop Active	Red (solid)*	Red (solid)

**If equipped, Audible Alarm will also be active.*

Bypass Mode

Condition	Lights	
	Inside	Outside
Restraint Engage Failure (Bypass Mode prompt)	Red/Amber, Display Backlight	Red
Bypass Mode	Green/Amber (Green/Red on Dock Alert)	Red
Reset Attempted (Leveler in Use)	Red/Amber, Display Backlight	Red
Reset Attempted (Door Open)	Green/Amber, Display Backlight	Red
Reset Lights to Normal Mode	Red, Display Backlight (5 seconds)	Green

Menu & Diagnostics

Condition	Lights	
	Inside	Outside
Main Menu Active	Red (solid)	Red (solid)
System Fault Present	Red/Amber	Red
Restraint Use Disabled	Amber	None

Maintenance Precautions

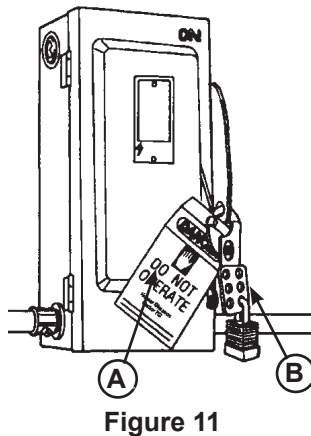


Figure 11

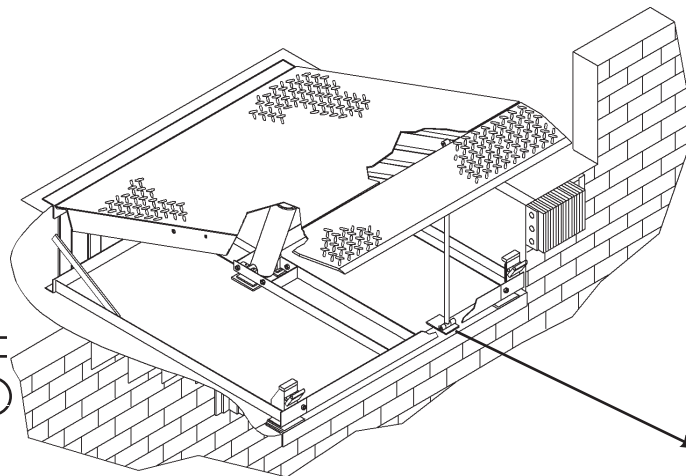


Figure 12

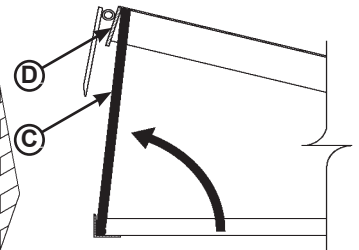
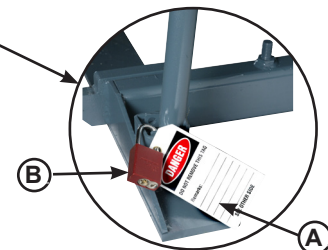


Figure 13



A— Tag Out Device B—Lock Out Device C — Maintenance Prop D— Header

! DANGER

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.

In addition, 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 11).

Whenever maintenance is to be performed under the dock leveler platform, support the platform with maintenance prop (C). Position the maintenance prop behind front header plate (D) while staying clear of the lip. The lip will fold down after the platform has rested on the maintenance prop. Lock the maintenance prop in the service (upright) position using an OSHA approved lockout device* (B) and tag out device* (A). See Figures 12 and 13.

! 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.

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

MAINTENANCE

Periodic Maintenance

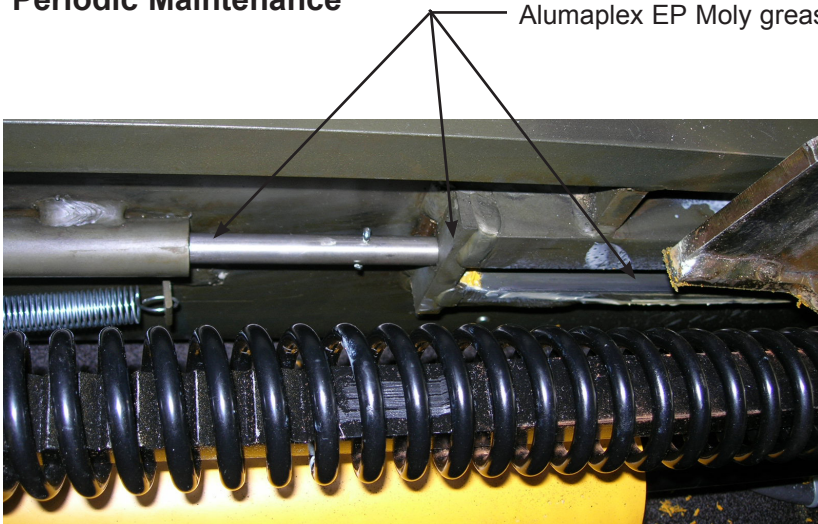


Figure 14

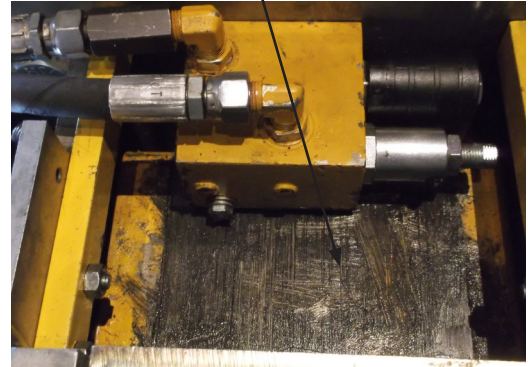


Figure 15



Figure 16

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 Unavis 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.

Daily Maintenance

- Verify that all inside and outside signal lights work correctly.

Weekly Maintenance

- Operate the PowerHold vehicle restraint through the complete operating cycle to maintain lubrication.
- Inspect the slide block track and push rod areas. The areas must be kept free of dirt and debris. Build-up of foreign material in the track areas will cause abnormal operation.

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.

Quarterly Maintenance

- Clean and lubricate slide block track and push rod areas (see Figures 13 and 14). Lubricate pins for the “Z” bar (Figure 11). Inspect and clean proximity switches.
- Check bumpers for more than 1” of wear. Replace worn, loose, damaged or missing bumpers.

Yearly Maintenance

- Complete quarterly maintenance.
- Change hydraulic fluid and clean inline filter (varying environmental conditions may require this more frequently). See page 20 for list of approved fluids.
- Check reservoir fluid level (O). See Figure 18 for Self-Contained (SC) units, or Figure 19 for Remote-Mount units:

1. Put the dock leveler platform at the full below-dock position.
2. Turn OFF all electrical power to the leveler.
3. Remove inspection plate (C).
4. Remove breather cap (N).
5. Measure fluid level. The fluid level should be approximately 2 in. (51 mm) from top of reservoir (M) with platform at the below-dock position.
6. Add hydraulic fluid if necessary. Use only recommended fluid (see page 20).
7. Install breather cap and inspection plate.
8. Turn ON electrical power to the leveler.
9. Return the platform to the cross-traffic position.

Yearly Maintenance

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

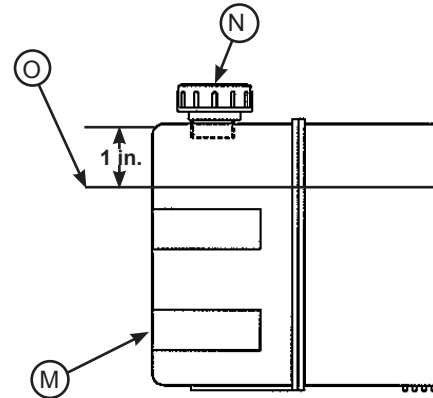


Figure 18

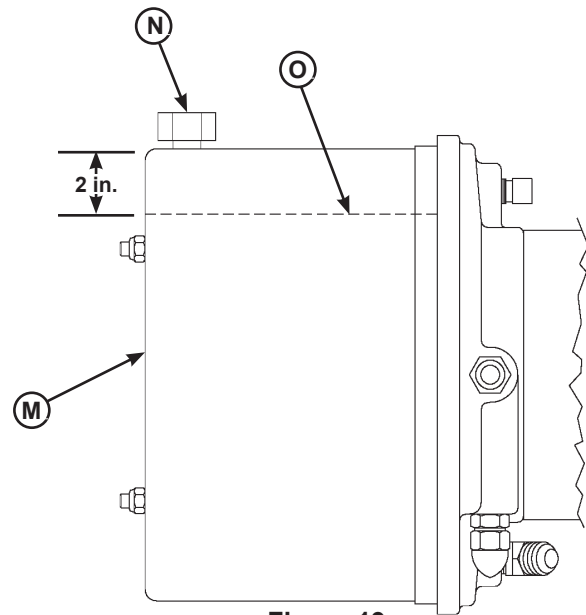


Figure 19

M — Reservoir
N — Breather Cap

O — Fluid Level

ADJUSTMENTS

PowerHold Dry Cycle

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 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.

NOTE: Unit can only be dry-cycled without trailer present at dock.

1. Make sure BYPASS mode has not been activated.
 - Inside light - RED
 - Outside light - GREEN
2. Momentarily press the ENGAGE button.
3. The restraint will raise to 90 degrees, time out when it fails to detect a RIG bar, and automatically return to the stored position.
 - Inside light - AMBER & RED
 - Outside light - RED

Bypass mode can then be activated by pressing ENTER button (user code may be required). Or, to reset back to NORMAL mode, press RELEASE button.

See the iDock Owner's/User's Manual for more information on iDock menus and navigation.

NOTICE

Operating range is NOT adjustable.

PowerHold Adjustments

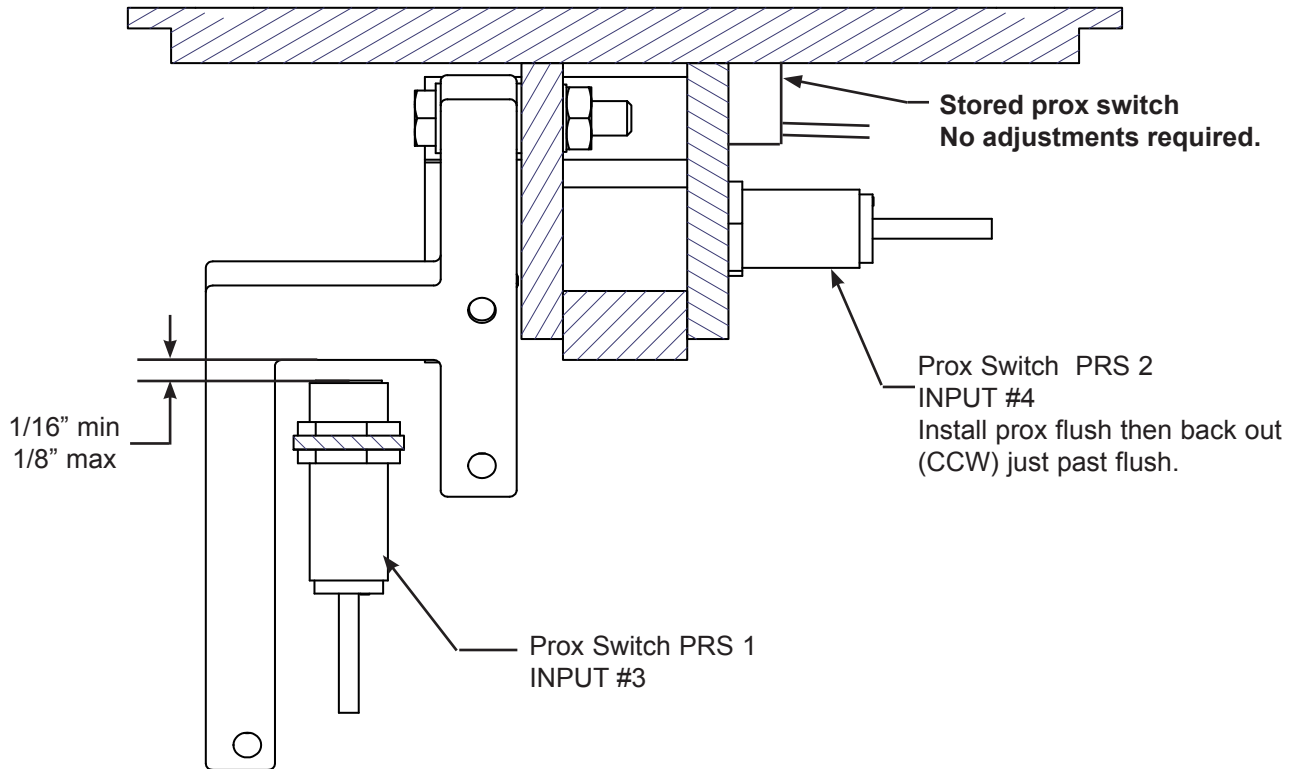


Figure 20

Proximity switch adjustment (Figure 20)

NOTE: Vehicle restraint shoe must be removed before latch block can be removed.

1. Adjust PRS 1. With the “Z” bar rotated directly over the prox switch. The prox switch distance should be between 1/16” and 1/8”.
2. Adjust PRS 2. The #2 prox switch must be threaded in until flush with the latch block. Turn prox switch out (CCW) until switch is no longer flush with the latch block.

IMPORTANT: Make sure that the wiring from the prox switches are clear of all moving parts.

ADJUSTMENTS

Adjust Dock Leveler and Vehicle Restraint Interlock

Dock Leveler & Vehicle Restraint Interlock

Options

There are two options to interlock the dock leveler and vehicle restraint*:

- **Restraint Engage before Leveler Operate (RELO)**
Interlock: Dock leveler can be interlocked with a vehicle restraint to prevent the leveler from operating until the restraint has engaged the transport RIG (Rear Impact Guard) when the OPERATION MODE is NORMAL and has NOT been switched to BYPASS MODE.
- **Leveler Stored before Restraint Release (LSRR)**
Interlock: Vehicle restraint is interlocked with the dock leveler so that the restraint cannot be operated until the leveler is stored in the cross traffic position (lip fully folded, inside the keepers, and the platform level with the dock floor).

Interlocking is overridden when the OPERATION MODE is in BYPASS. This allows the independent operation of the leveler (the restraint cannot be operated in BYPASS MODE).

Pressing the restraint RELEASE button when in BYPASS mode will return the leveler to NORMAL operating mode.

Special interlocking options are available upon request. Call Systems, LLC to discuss interlock options to meet your specific needs.

*Dock levelers equipped with Auto-Return-To-Dock have limited interlocking options. Auto-Return-To-Dock feature is not available for dock levelers equipped with combination dock leveler/vehicle restraint control panels.

Adjust Dock Leveler and Vehicle Restraint Interlock

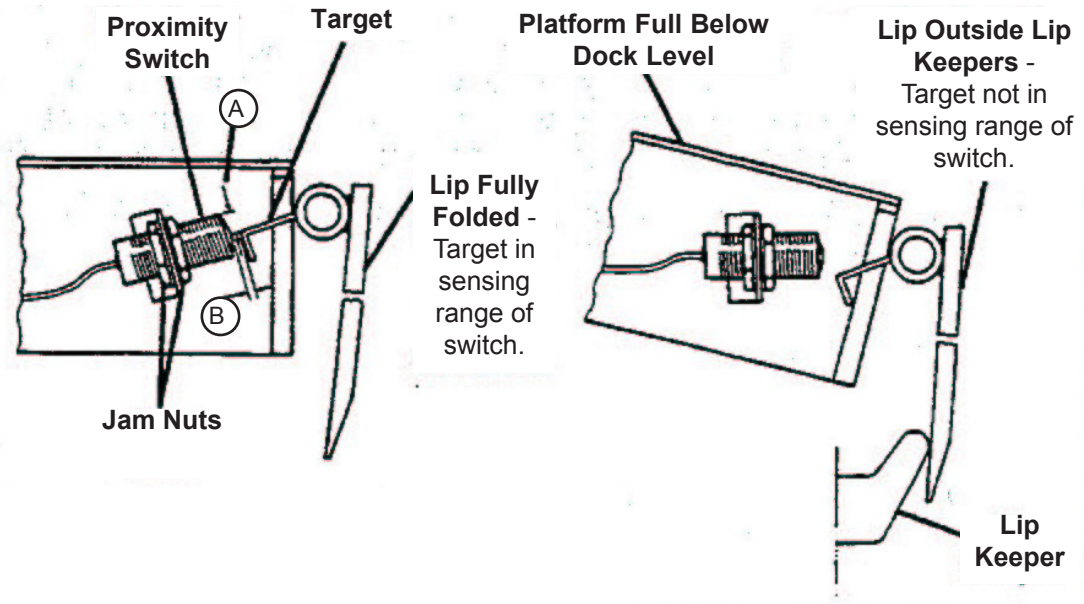


Figure 21

1. The dock leveler should be in the cross traffic position before beginning tests.
 2. Back a transport vehicle with RIG bar into dock. A test fixture may be used to simulate the RIG bar. Use care to avoid damage to the equipment or harm to the operator.
 3. Press the RAISE button. The dock leveler should NOT raise. If the leveler did not raise, proceed with step 4. If the leveler did raise, decrease dimension (A) or (B), so that the target is in the sensing range of the switch. Typical factory settings for (A) and (B) are approximately 3/4" and 1/8" respectively. Make adjustments at switch (dimension B) and/or target (dimension A) until leveler does not raise when the vehicle restraint is not engaged on transport vehicle RIG bar. See Figure 21.
 4. Momentarily press the ENGAGE button. The vehicle restraint automatic engage cycle will be activated and the restraint will engage the transport vehicle RIG bar.
 5. Raise the dock by pressing the RAISE button until the lip is fully extended. Release the RAISE button. The leveler will drop to the floor of the transport vehicle. If a RIG test fixture is used it should allow the leveler to drop to the full below dock position without the contact between the lip and test fixture.
 6. Press the RELEASE button. The vehicle restraint should NOT disengage from the transport vehicle RIG bar or test fixture. If the vehicle restraint did NOT engage, proceed with step 7. If the vehicle restraint DID disengage, move the switch farther from the target or bend the target so that the target is not in the sensing range of the switch. Make adjustments at switch and/or target until vehicle restraint does not disengage transport vehicle. See Figure 21.
- IMPORTANT:** If adjustments are required in this step, make sure that the interlocking described in step 3 is still in effect after step 6 adjustments are complete.
7. Press the RAISE button. The dock leveler will raise. The leveler lip will fold as the platform raises. When the lip is fully folded, release the RAISE push button. The leveler will descend to the cross traffic position.
 8. Momentarily press the RELEASE button. The vehicle restraint will return to the stored position.

NOTICE

Work lip by hand when making adjustments to make sure that target does NOT contact switch as lip extends.

TROUBLESHOOTING

Manual Release

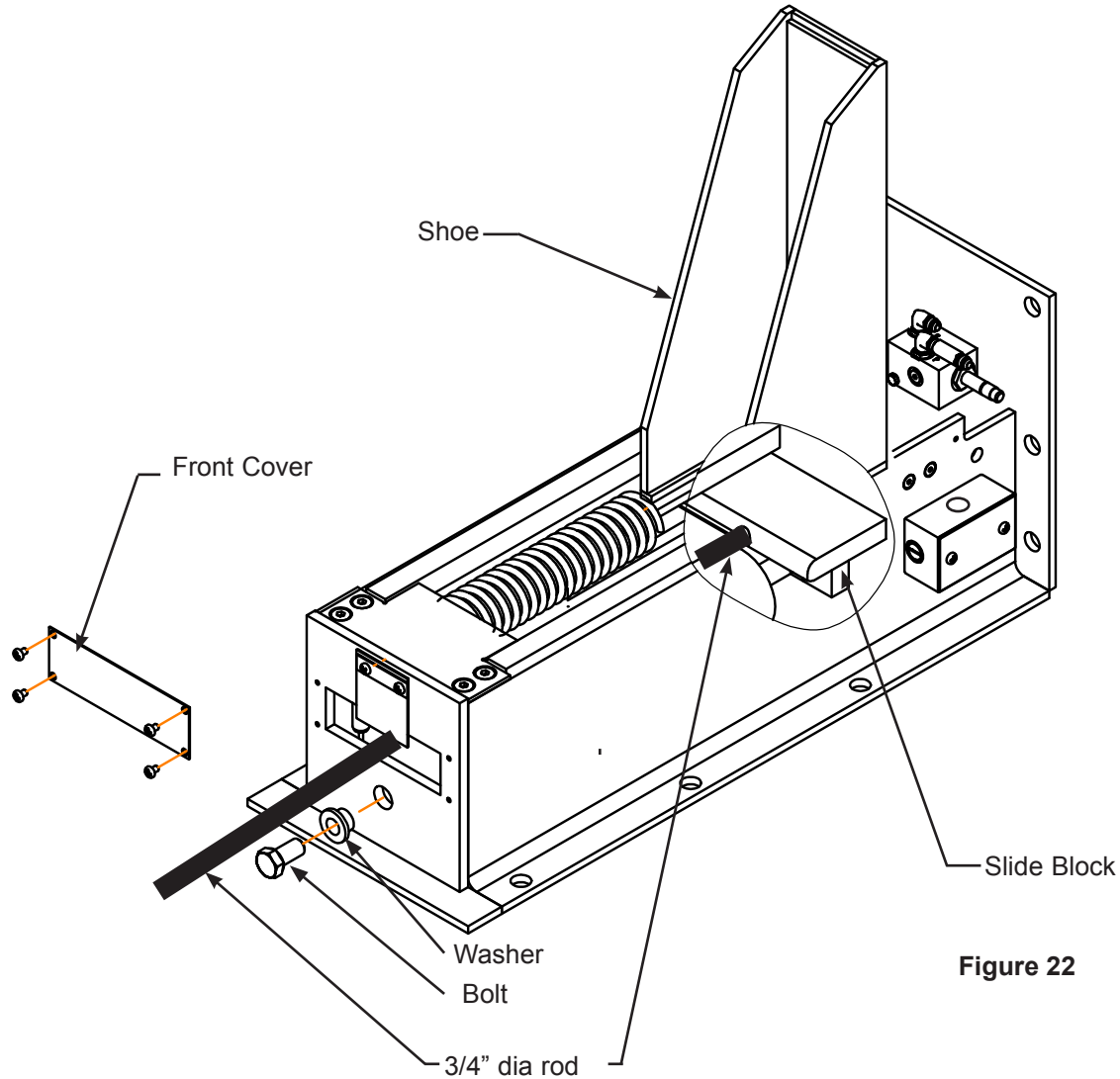


Figure 22

Manual Release

In the event of a power outage, hydraulic system failure or other emergency scenario, it may be necessary to perform a manual release.

Tools required:

- Large hammer
- 1/2" to 3/4" diameter rod, approx. 2 1/2' long

WARNING

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

Note: See Figure 22 for visual identification.

1. Lock out / tag out leveler and barricade work area.
2. Remove front cover plate (4 screws).
3. Remove bolt and washer holding cylinder in place.
4. Install rod through front opening. Rod will fit into indentation in the slide block.
5. Hammer rod (4 to 5 hits) until the slide block travels past the shoe.
6. The shoe will then rotate down to the stored position.

TROUBLESHOOTING

⚠ DANGER

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.

In addition, 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.

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
Inside and outside signal lights do not operate. Unit operates as normal.	Faulty flasher relay.	Check flasher relay operation. Note: <i>Flasher can fail closed (lights on steady, not flashing) or fail open (lights will not be on).</i>
Restraint does not operate. Motor does not energize.	Motor overload device tripped.	Reset overload relay or breaker. Determine cause of device tripping.
	Combination Units Only Motor starter (3 phase) or motor relay (1 phase) not energizing.	Check controller output that sends a signal to starter or relay. Output may have failed OPEN. Use meter to check for contact closure when output ON.

TROUBLESHOOTING

Symptom	Possible Cause	Solution
<p>Three-Phase Remote Powerpack Units Only Restraint does not operate. Motor energizes but does not run.</p> <p>If motor hums, but does not run, overload device should trip.</p>	<p>No voltage is present on one line.</p> <p><i>NOTE: A motor that is missing voltage on one line is said to be single-phased.</i></p>	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.
		Replace motor.
<p>Three-Phase Remote Powerpack Units Only Restraint does not operate. Motor runs in reverse</p>	Phase reversed.	Reverse any two legs at the branch circuit disconnect.
<p>Single-Phase Units Only Restraint does not operate.</p> <p>Motor energizes, but does not run.</p>	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.
	Faulty motor centrifugal switch.	Replace motor.
	Faulty motor capacitor.	Replace motor.
	Low hydraulic fluid.	Add fluid, see page 20 for proper fluid level and type.
<p>Restraint operates slowly.</p>	Low hydraulic fluid.	Add fluid, see page 20 for proper fluid level and type.
	<p>Combination Units Only Pressure relief valve set too low.</p>	<p>Adjust pressure relief.</p> <p>NOTE: <i>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></p> <p><i>* The full load amp value can be found on the inside cover of the control panel.</i></p>
	<p>PowerHold SC Only PowerHold raises slowly, or is slow to release.</p>	Ensure pressure relief cartridge is adjusted per max amp draw.
	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).

TROUBLESHOOTING

Symptom	Possible Cause	Solution
Restraint does not fully raise or motor over current device and/or overload device continuously tripping.	Low hydraulic fluid.	Add fluid, see page 20 for proper fluid level and type.
	Debris in tank.	Drain and clean tank. If debris cannot be cleaned out replace tank.
Restraint does not raise.	Faulty spool valve.	<p>Remove coil from cartridge valve and cartridge valve from valve block.</p> <ul style="list-style-type: none"> -Check valve for contaminants and/or damage. -Replace valve if damaged. -Carefully wipe valve with clean rag (do not damage "O" rings on valve). <p>NOTE: Do not over-tighten coil on valve. Max torque is 0.83 ft. lbs. (just over finger tight). Do not over-tighten valve into block. Max torque is 15 ft. lbs. which will compress O-ring and prevent leakage.</p> <p>Operate unit. Replace valve if problem persists after all other troubleshooting procedures performed.</p>
	Solenoid energized.	<p>Locate solenoid (see pages 34 & 35). Coil should not be energized when PowerHold is in engage mode.</p> <p>Relay or controller contact has stuck contacts. Test coil for magnetism. Coil must be de-energized to release the transport vehicle.</p>
Combination Units Only Restraint does not raise but leveler raises.	Solenoid not energized.	<p>Locate solenoid (see pages 34 & 35). Coil must be energized when PowerHold is in disengage mode.</p> <p>Check valve for magnetism at the coil.</p>
	Faulty spool valve.	<p>Remove coil from cartridge valve and cartridge valve from valve block.</p> <ul style="list-style-type: none"> -Check valve for contaminants and/or damage. -Replace valve if damaged. -Carefully wipe valve with clean rag (do not damage "O" rings on valve). <p>NOTE: Do not over-tighten coil on valve. Max torque is 0.83 ft. lbs. (just over finger tight). Do not over-tighten valve into block. Max torque is 15 ft. lbs. which will compress O-ring and prevent leakage.</p> <p>Operate unit. Replace valve if problem persists after all other troubleshooting procedures.</p>

TROUBLESHOOTING

Symptom	Possible Cause	Solution
Restraint will not lower to release truck.	Solenoid not energized.	<p>Locate solenoid (see pages 34 & 35). Coil must be energized when PowerHold is in disengage mode.</p> <p>Check valve for magnetism at the coil.</p>
	Faulty spool valve.	<p>Remove coil from cartridge valve and cartridge valve from valve block.</p> <ul style="list-style-type: none"> -Check valve for contaminants and/or damage. -Replace valve if damaged. -Carefully wipe valve with clean rag (do not damage "O" rings on valve). <p>NOTE: Do not over-tighten coil on valve. Max torque is 0.83 ft. lbs. (just over finger tight). Do not over-tighten valve into block. Max torque is 15 ft. lbs. which will compress O-ring and prevent leakage.</p> <p>Operate unit. Replace valve if problem persists after all other troubleshooting procedures.</p>
Combination Units Only Restraint will not lower but leveler raises.	Solenoid not energized.	<p>Locate solenoid (see pages 34 & 35). Coil must be energized when PowerHold is in disengage mode.</p> <p>Check valve for magnetism at the coil.</p>
	Faulty spool valve.	<p>Remove coil from cartridge valve and cartridge valve from valve block.</p> <ul style="list-style-type: none"> -Check valve for contaminants and/or damage. -Replace valve if damaged. -Carefully wipe valve with clean rag (do not damage "O" rings on valve). <p>NOTE: Do not over-tighten coil on valve. Max torque is 0.83 ft. lbs. (just over finger tight). Do not over-tighten valve into block. Max torque is 15 ft. lbs. which will compress O-ring and prevent leakage.</p> <p>Operate unit. Replace valve if problem persists after all other troubleshooting procedures.</p>

TROUBLESHOOTING

Symptom	Possible Cause	Solution
Restraint raises and makes contact with RIG but does not lock, then returns to stored position.	Improper location of PowerHold.	PowerHold must have a 4" set back from bumpers. See Installation section.
	Faulty prox switch.	Check prox switch #1 and #2 (page 23). When metal is placed in front of prox, the LED light on the prox will light up. When the LED on the prox is lit, the corresponding input on the controller will also be lit. Check for shorted or open prox switches and/or wires. Replace prox switch if faulty.
	Faulty activation of #1 prox switch.	The restraint shoe must make contact with the RIG bar. The shoe will rotate as the hydraulic cylinder extends and the ratchet will pass in front of the #2 prox switch (Controller input #4). The slide block on the cylinder pushes a rod to make contact with the Z-bar. The Z-bar will pass over the #1 prox switch (Controller input #3) and the PowerHold then shuts off. Check for frozen or rusted push rod, bent or damaged Z-bar, or faulty prox switch adjustments. Replace any parts if faulty.
	Faulty activation of #2 prox switch.	The restraint shoe must make contact with the RIG bar. The shoe will rotate and the ratchet will pass in front of the #2 prox switch (Controller input #4).
Shoe does not rise to full height.	Low hydraulic fluid.	Add fluid, see page 20 for proper fluid level and type.
Lights flash but don't change state.	Faulty stored prox switch.	Check for damaged switch or wire connections.
Red lights flashing inside and out.	Faulty stored prox switch.	Restraint is not fully lowered.
		Restraint timed out because of faulty stored prox switch. Check for damaged switch or wire connections.

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

PowerHold Assembly

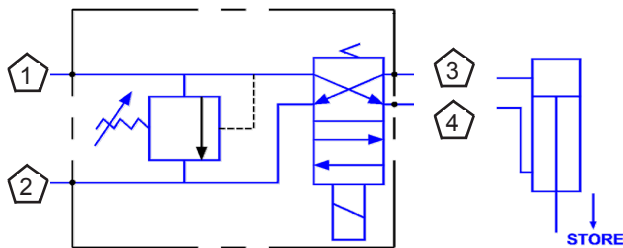
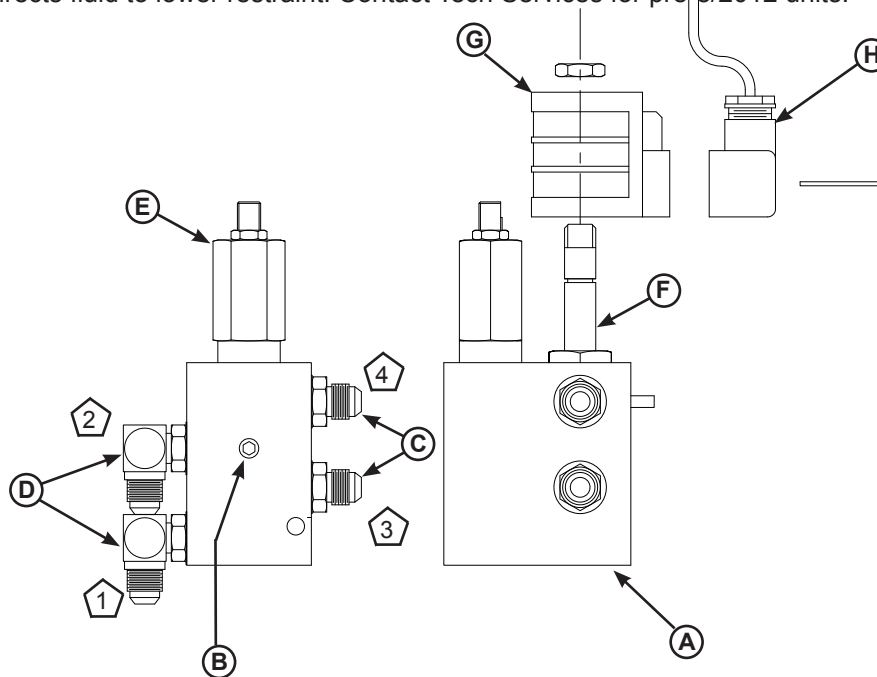
Item	Quantity	Part Number	Description
A	1	9414-0064	Restraint Shoe
B	1	9412-0030	Pin 1-1/2 X 8 LG
C	1	9414-0021	Rack Weldment
D	1	9411-0005	Spring, Rack Weldment
E	1	8583-0018	Valve Block
F	1	9414-0081	Latch Block Assembly (Includes Prox Switches)
G	1	2101-0118	Bolt 3/4-10 UNC X 1-1/2 LG
H	1	2101-0119	Bushing
I	1	9414-0073	Cylinder Complete (Includes Slide Block and Hoses)
J	1	9904-0059	Hose, 35" Lg.#6 Jic Swivel Both Ends
K	1	9904-0155	Hose, 21" Lg. #6 Jic Swivel Both Ends
L	1	9412-0095	Push Rod
M	1	2101-0045	Cotter Pin, 1/8 x 1.00
N	2	9412-0063	Removable Track Stop
O	4	2101-0009	Bolt 5/16-18
P	1	9411-0056	Access Cover, Top
Q	9	2101-0099	Screw 1/4-20 UNC x 3/8
R	1	9411-0060	Cover, Front
S	1	9411-0058	Weather Seal, Hold Down
T	1	0192-0016	Weather Seal, Ratchet
U	1	2753-0001	J-Box, Cover and Gasket, SC (standard, includes screws)
		2753-0002	J-Box, Cover and Gasket, Remote (optional , includes screws)
V	4	2101-0074	Screw, Allen Head 1/2-20 UNC x 1-1/2 Lg.
W	1	9414-0074	Base Weldment
X	1	8581-0137	One-Way Check Valve

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders.

PARTS

PowerHold SC Valve Block

On self-contained units from 8/2012 to present, fluid directs to raise restraint until coil (H) is energized, then diverter valve (F) directs fluid to lower restraint. Contact Tech Services for pre-8/2012 units.



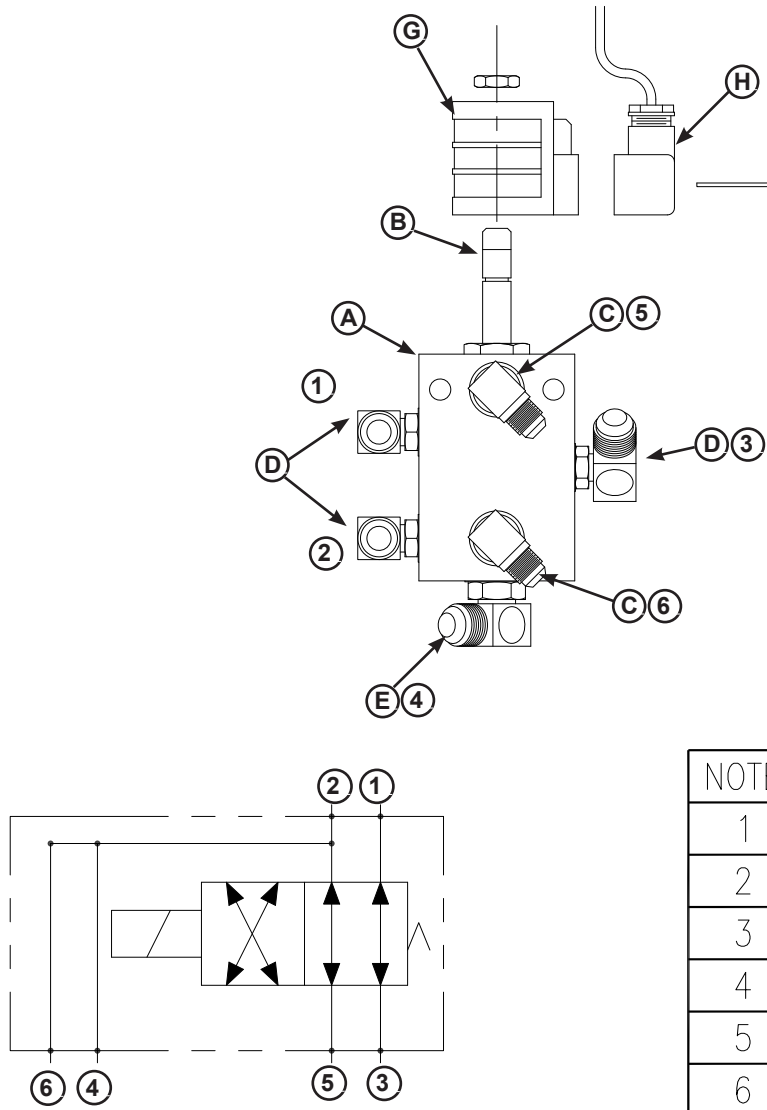
NOTE	DESCRIPTION
1	PRESSURE FROM PUMP
2	RETURN TO TANK
3	TO BLIND END OF POWERHOLD CYLINDER
4	TO ROD END OF POWERHOLD CYLINDER

Item	Quantity	Part Number	Description
A	1	8583-0018	Complete Valve Assembly, 8/2012-present (Includes A-F)*
B	1	9571-0007	Fitting Pipe Plug 1/8 NPT
C	2	9301-0109	Fitting Conn STR Thread
D	2	8581-0113	Fitting Elbow 90 Deg STR Thread #6 ORB x #6 JIC
E	1	8581-0089	Valve Cartridge Relief
F	1	8581-0149	Valve Cartridge 4-Way
G	1	8581-0004	Coil, Delta
H	1	4305-0319	Cable Assembly 22" Lg

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders. Contact Tech Services for pre-8/2012 units.

PowerHold and Leveler Combination Valve Block

On combination units (single Powerpack operating both leveler and restraint), fluid directs to leveler until coil (G) is energized, then diverter valve (A) directs fluid to restraint.



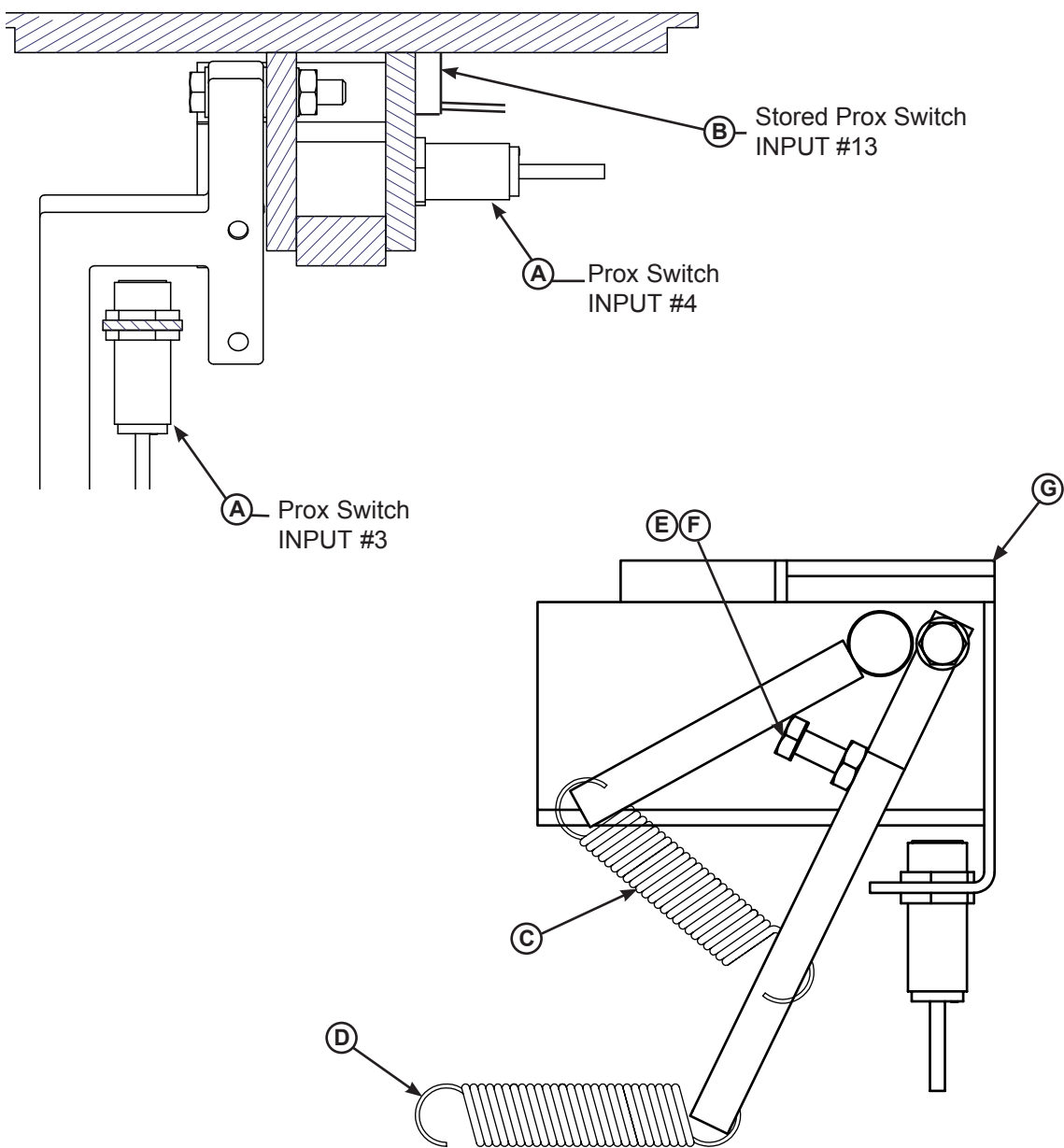
NOTE	DESCRIPTION
1	PRESSURE FROM PUMP
2	RETURN TO PUMP
3	PRESSURE TO LOGIC BLOCK
4	RETURN FROM LOGIC BLOCK
5	PRESSURE TO POWERHOLD
6	RETURN FROM POWERHOLD

Item	Quantity	Part Number	Description
A	1	8583-0015	Complete Valve Assembly (Includes A-E)*
B	1	8581-0011	4 Way Cartridge Valve
C	2	9301-0113	Fitting Elbow 90 Deg STR Thread #6 ORB x #6 JIC
D	1	9301-0115	Fitting Elbow 90 Deg STR Thread #6 ORB x #8 JIC
E	1	8581-0016	Fitting Elbow 90 Deg STR Thread #8 ORB x #8 JIC
G	1	8581-0004	Coil, Delta
H	1	4301-0001	Cable Assembly 48" Lg

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders.

PARTS

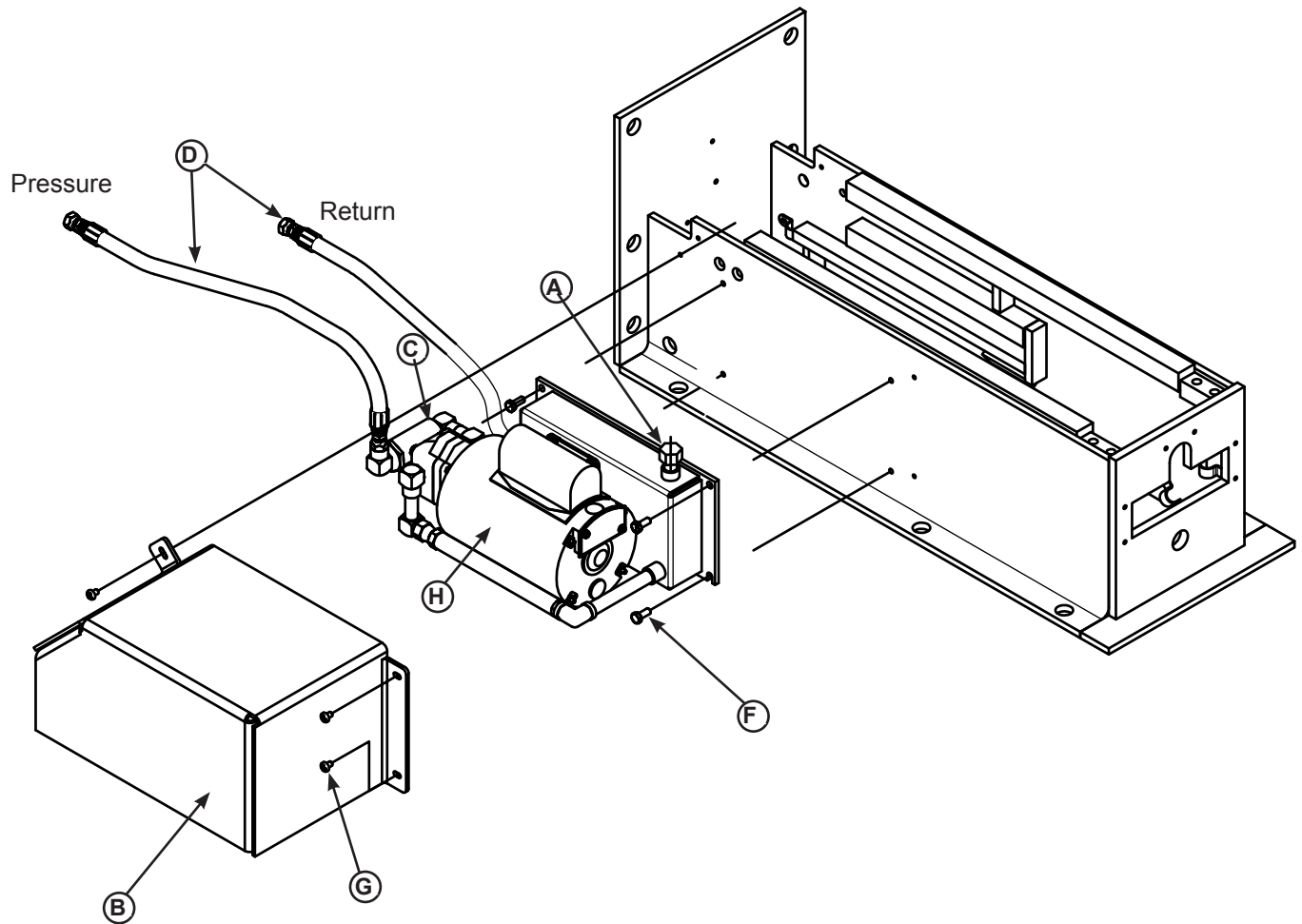
PowerHold Latch Assembly



Item	Quantity	Part Number	Description
A	2	0961-0073	Prox Switch
B	1	0961-0563	Stored Prox Switch
C	1	0941-0008	Spring
D	1	0941-0009	Spring
E	1	2101-0012	Bolt 5/16-18 UNC
F	1	2101-0058	Nut, Hex 5/16-18 UNC
G	1	9414-0081	Latch Assembly (Complete With Prox Switches)

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders.

PowerHold SC Powerpack

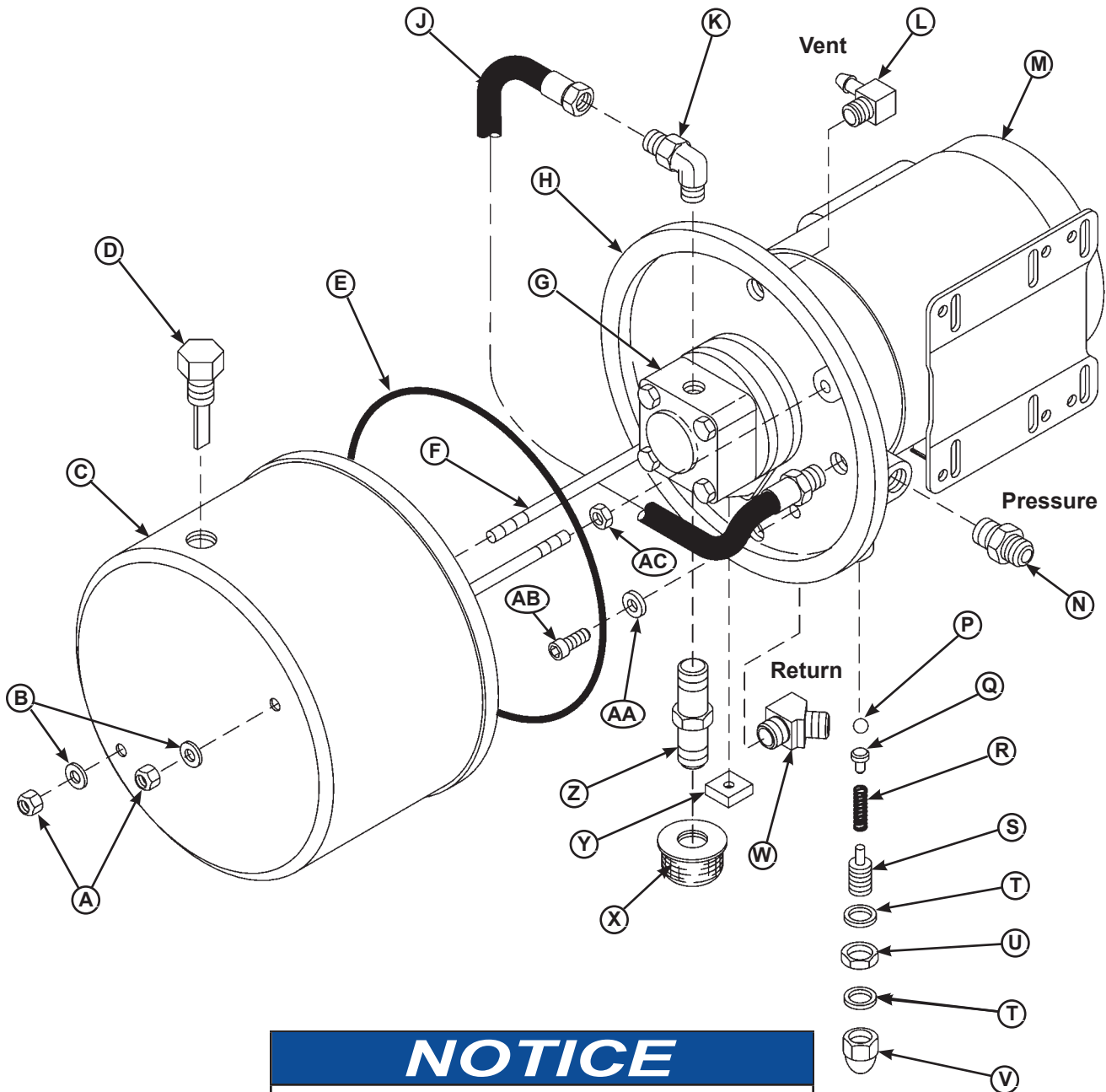


Item	Quantity	Part Number	Description
*	1	9395-0405*	Powerpack Complete, SC, 8/2012-present (Includes Hoses, Filter)
A	1	9301-0199	Breather Cap w/Dip Stick
B	1	9411-0057	Cover, Powerpack
C	1	9301-0121	Inline Filter, SAE #6
D	2	9904-0051	Hose, 16.00" LG 3/8 NPTM / #6 JIC Swivel Female
F	4	2101-0009	Hex Head Cap Screw, Grade 2, 5/16"-18 UNC x 3/4"
G	3	2101-0153	Hex Head Cap Screw, Zinc Plated, 1/4"-20 UNC x 1/2"
H	1	3411-0049*	Motor, SC, 8/2012-present, 6.8FLA

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders. Contact Tech Services for pre-8/2012 units.

PARTS

Remote Mount Powerpack Assembly



NOTICE
Restraint pressure is set by relief valve on restraint.
Remote mount powerpack pressure is factory set.

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)

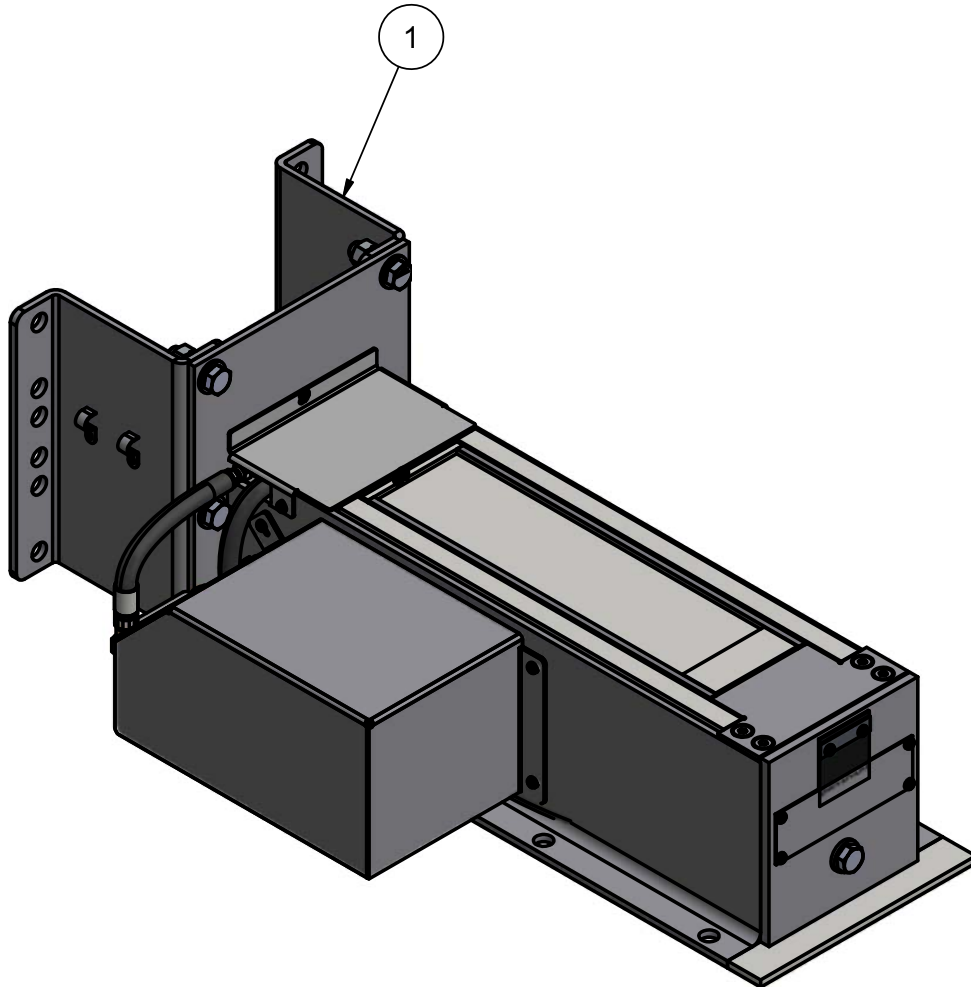
Item	Quantity	Part Number	Description
	1	9395-____ ¹	Power Pack Complete (Includes All Items Except L, N, and W)
A	2	2101-0039	Nylon Lock Nut, 5/16-18 UNC
B	2	9301-0029	Seal, Thread
C	1	9302-0014	Reservoir
D	1	9301-0199	Breather Cap, 3/8 NPT Male
E	1	9301-0027	O-Ring (Reservoir)
F	2	9302-0012	Tie Rod (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	9302-0017	Plate, Drive
J	1	9904-0001	Hose
K	1	0521-0017	90° Elbow, 3/8 NPT Male x #8-JIC Male
L	1	0521-0007	90° Elbow, 1/4 NPT Male x 1/4 Tube
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 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.

PARTS

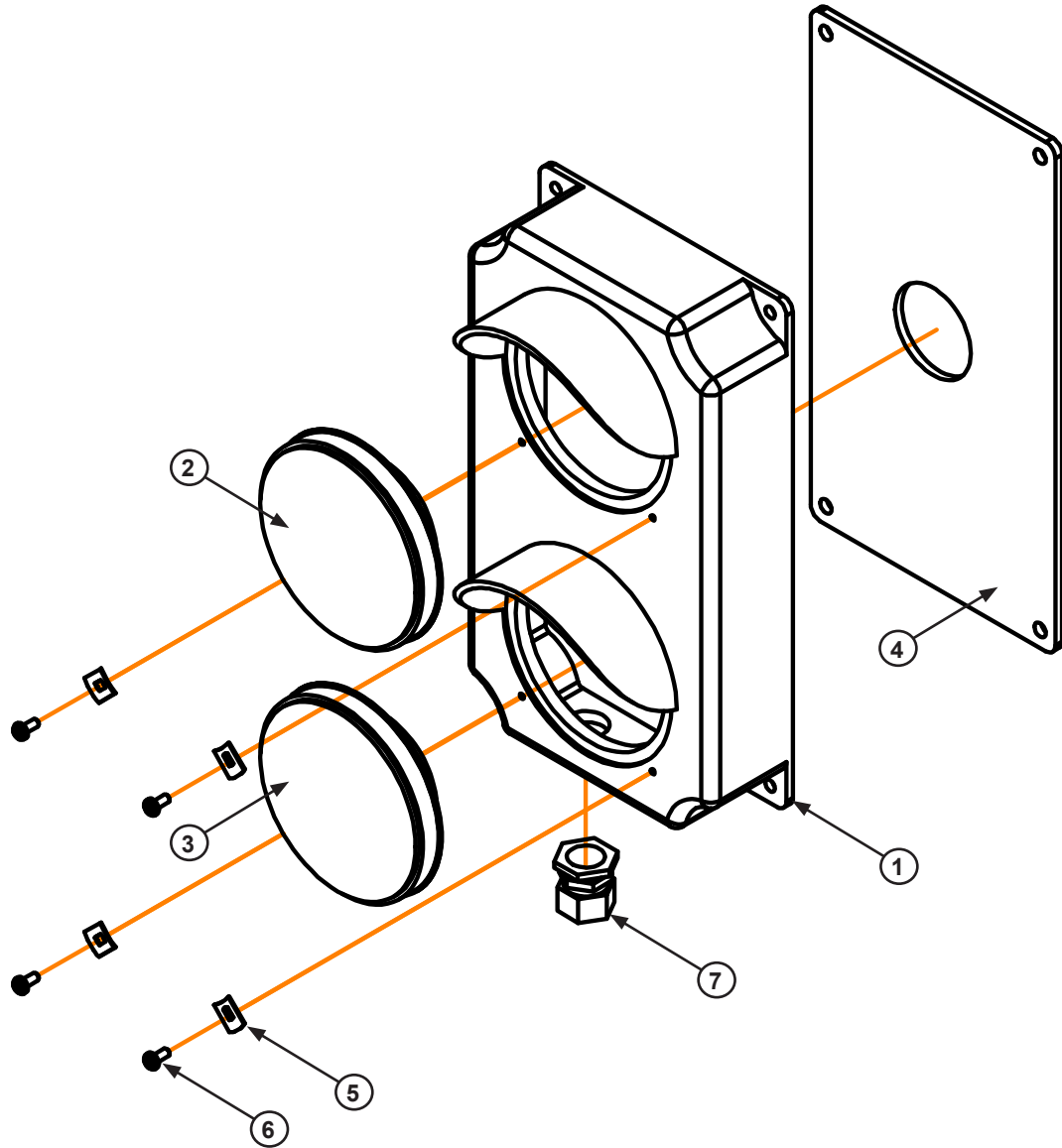
Filler Kits



Item	Part Number	Description
1	9416-0003	Filler Kit, Hold Restraint, Formed, Zinc Plated (2"-14" projection)*

**Must specify required filler projection when e-mailing, calling or faxing orders.*

OSLA (Outside Light Assembly)

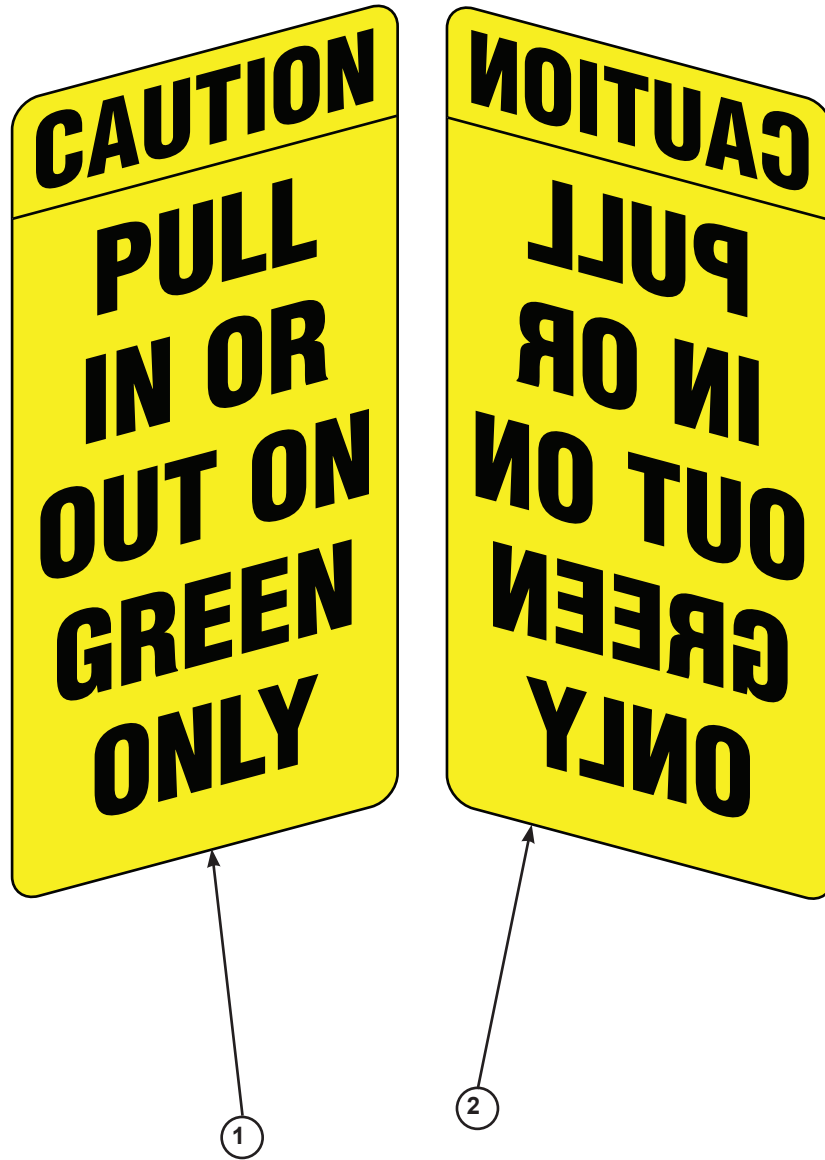


Item	Quantity	Part Number	Description
1-7	1	3055-0011	Complete Light Housing, Yellow Plastic, With 12v LED Lights*
1	1	3051-0002	Light Housing Only, Yellow Plastic
2	1	3051-0147	Red LED Lens/Housing/Circuit Assembly, 12v
3	1	3051-0149	Green LED Lens/Housing/Circuit Assembly, 12v
4	1	3051-0068	Mounting Gasket
5	4	3051-0105	Clip, Lens Holding
6	4	3051-0104	Screw, Lens Holding
7	1	*	Conduit Fastener, 3/4" x 3/8"

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders.

PARTS

Signs



Item	Part Number	Description
1	1751-0033	Outside Sign
2	1751-0034	Outside Sign (Mirror Image)

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MISCELLANEOUS

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Customer Information

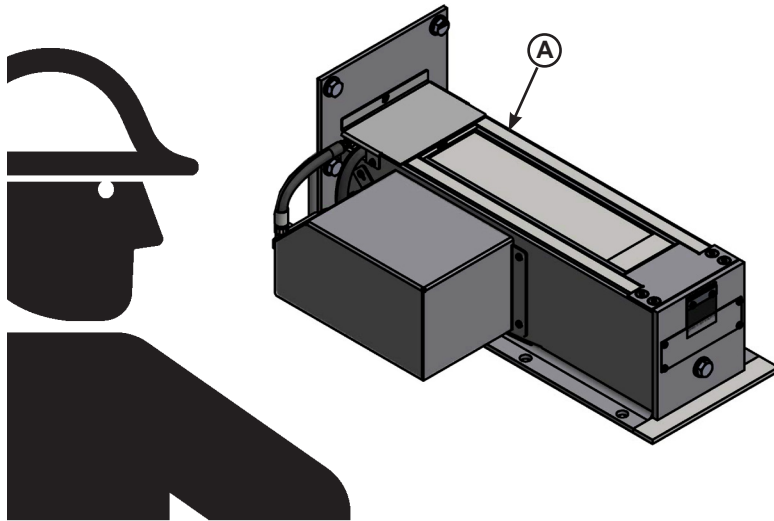


Figure 23

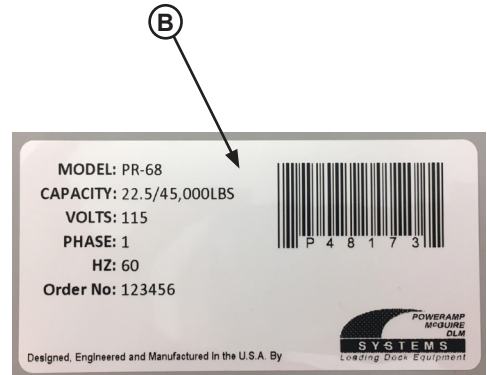


Figure 24

NOTE: Refer to Figure 23 for orientation of restraint and Figure 24 for example of decal.

The RESTRAINT model/serial number decal (A, B) is located on the right side near the J-box.

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 equipment, and the original owner's name. This will all help to identify the specific equipment 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 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 "POWERHOLD®" SERIES RESTRAINT

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 from the base warranty.
- Hydraulic Warranty – For an additional period of one (1) year, this warranty specifically applies to; the hydraulic pump and motor, all hydraulic cylinders, hydraulic pressure lines and fittings and fluid control assemblies only.
- Electrical Warranty – For an additional period of one (1) year, this warranty specifically applies to: the control box components, proximity switches, coils and proximity sensor when interlocked with a Poweramp dock leveler only.