# Table of Contents

**Precautions**
- Recognize Precautionary Information ........................................... 1
- General Operational Precautions .................................................. 1
- Operational Precautions ............................................................... 2
- Safety Decals ........................................................................... 4
- Placard ...................................................................................... 5
- Owner's/User's Responsibilities .................................................... 6

**Introduction**
- General Information .................................................................... 8
- Component Identification ............................................................ 9

**Installation**
- Installation Precautions .............................................................. 12
- Concrete Dock Face ..................................................................... 13
- Driveway Mount .......................................................................... 14
- Cantilevered Dock ....................................................................... 15
- Remote Powerpack Location Options ........................................ 16
- Install Control Panel and Wiring .................................................. 18
- Install Outside Light Assembly and Signs .................................... 19
- Placard Installation Instructions .................................................... 20

**Operation**
- Operational Precautions .............................................................. 22
- Operation - Normal ...................................................................... 22
- Operation - Bypass ...................................................................... 23
- Multi-Colored & Outside Light Sequence Charts ................................ 24

**Maintenance**
- Maintenance Precautions .......................................................... 25
- Periodic Maintenance .................................................................. 26

**Adjustments**
- PowerHold Dry Cycle .................................................................. 28
- Prox Switch Adjustments ............................................................. 29
- Adjust Dock Leveler and Vehicle Restraint Interlock ................... 30

**Troubleshooting**
- Manual Release .......................................................................... 32
- Troubleshooting ......................................................................... 33

**Parts**
- PowerHold Assembly ................................................................. 38
- PowerHold SC Valve Block ......................................................... 40
- PowerHold and Leveler Combination Valve Block ....................... 41
- PowerHold Latch Assembly .......................................................... 42
- PowerHold SC Powerpack .............................................................. 43
- Remote Mount Powerpack Assembly .......................................... 44
- Filler Kits ................................................................................... 46
- OSLA (Outside Light Assembly) .................................................. 47
- Signs .......................................................................................... 48

**Miscellaneous**
- Customer Information ................................................................. 49
- Warranty .................................................................................... Back Cover
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.

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
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

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

**PRECAUTIONS**

1. Read and follow all instructions, warnings, and maintenance schedules in the manual and on placards.
2. Vehicle restraint operation and servicing is restricted to authorized personnel.

**VEHICLE RESTRAINTS**

**ENGAGE RESTRAINT**
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

**RELEASE RESTRAINT**
1. To release restraint press the RELEASE button. When safely stored, inside light is RED and outside light is GREEN.

**BY-PASS**
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.

**BY-PASS RESET (RETURN TO NORMAL OPERATION)**
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.

**DANGER**

- 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.

1. Before using the vehicle restraint:
   - 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:
   - 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:
   - 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.

**FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN DEATH OR OTHER SERIOUS INJURY.**
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.
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.
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.
Component Identification
Inspect package and all components. Report any missing or damaged items immediately and note on the shipping Bill Of Lading (BOL).

A — PowerHold Assembly*
B — Control Box*
C — Outside Light Assembly
D — Outside Signs

*Appearance may vary depending on options.
Component Identification

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.
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.

**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.

**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.
PowerHold Installation Overview

Concrete Dock Face (standard installation)

Note: Walls must be poured concrete, 8" thick minimum to install with wedge anchors. Concrete block or brick is not acceptable.

- **Wedge Anchors Method (Kit #2103-0003)**

  Using back plate as a guide, drill six (6) holes for wedge anchors (3/4" x 5-14" min, see Figure 8). Install anchors.

- **Wall Embed Method (Part #7953-0119, Figure 9)**

  If optional embed plate is present, weld three sides of PowerHold back plate to the embed mounting plate with ten (10) 4" long, 1/4" fillet welds. See Figure 7.
### INSTALLATION

**Driveway Mount (recommended when dock face is unsuitable for mounting)**

![Diagram of Driveway Mount](image)

**Note:** Driveway mount requires attachment to a concrete drive greater than 8” thick. For asphalt drives, pour a 48” x 48” x 8” min. concrete pad and include six (6) 3/4” dowels into foundation wall as shown in Figure 13. Then proceed with adhesive anchors or weld plate embed.

- **Wedge Anchors Method (Kit #2103-0003)**

  Using base weldment as a guide, drill six (6) holes for wedge anchors (3/4” x 5-1/4” min, see Figure 8). Install anchors. See Figure 14.

- **Drive Embed Method (Part #7953-0195, Figure 15)**

  Properly locate and level the drive embed weld plate in the drive approach. Observe cantilever conditions (page 14) for proper positioning. Weld restraint to embed plate with a continuous 1/4” fillet weld.

![Diagram of Drive Embed Method](image)
**Cantilevered Dock (for bumper projection >4”, cantilevered dock or Edge-Of-Dock leveler)**

- **Driveway Mount**
  
  Determine offset, then proceed with “Driveway Mount” instructions on page 14.

- **Wall Mount**
  
  For filler requirements, determine offset and order a cantilever bracket as shown on page 46, then anchor cantilever bracket to dock face with six (6) wedge anchors (3/4” x 5-14” min) or weld to the embed mounting plate with ten (10) 4” long, 1/4” fillet welds.

  **Note:** To determine size offset required, take total effective bumper projection (bumper size plus any cantilever) and subtract 4”. See table and Figure 16 below.

<table>
<thead>
<tr>
<th>Bumper Projection</th>
<th>Dim. B</th>
<th>Offset Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>4”</td>
<td>+ Dim. B</td>
<td>-4”</td>
</tr>
<tr>
<td>6”</td>
<td>+ Dim. B</td>
<td></td>
</tr>
<tr>
<td>10”</td>
<td>+ Dim. B</td>
<td></td>
</tr>
<tr>
<td>15”</td>
<td>+ Dim. B</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Walls must be poured concrete, 8” thick minimum to install with wedge anchors. Concrete block or brick is not acceptable.

Figure 16
INSTALLATION

Remote Powerpack Location Options

• Under Dock Leveler (A)

When under dock location is used, ensure Powerpack is located where it will not interfere with the leveler 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.

Note: Figure 19 is provided as an example only; specific routing may differ depending on leveler configuration.

Figure 19
Remote Powerpack Location Options (continued)

• **Inside Building (B)**

Locate Powerpack inside where there is minimal obstruction potential. 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.

**Note:** Figure 20 is provided as an example only; specific routing may differ depending on leveler configuration.

*Figure 20*
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**

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.

**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

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 21.

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 Outside Light Assembly and signs (see Figure 22).
Install Outside Light Assembly and Signs

Note: Installation measurements shown in Figure 22 are recommended based on typical dock conditions. Some installations may require alternate placement.

1. Mount the Outside Light Assembly (B) so bottom of outside light-to-drive distance (C) is 96 in. (2438 mm). See Figure 22.

2. Connect the wiring for the Outside Light Assembly.

3. Install “CAUTION: PULL IN OR OUT ON GREEN ONLY” signs on outside of building above and below Outside Light Assembly.

4. Install “CAUTION: ENTER ON GREEN ONLY” sign inside building near control box.

5. Install placard (see page 20).

**NOTICE**

The iDock Control System is designed to function with 12v DC outside lights only.

Using 115v AC or other non-12v DC outside lights and wiring will cause the iDock Control System to enter a fault state and equipment will not function.

If 12v DC outside lights are already present and functioning, they can be re-used, but new wiring should always be run to ensure correct operation.
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.

Figure 23

A - Control Box  B - Placard  C - Nylon Cable Tie  D - Conduit
**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

<table>
<thead>
<tr>
<th>Condition</th>
<th>Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inside</td>
</tr>
<tr>
<td>Ready For Use</td>
<td>Red</td>
</tr>
<tr>
<td>Leveler Operating or Restraint Engaging/Releasing In Progress</td>
<td>Amber</td>
</tr>
<tr>
<td>Restraint Engaged</td>
<td>Green</td>
</tr>
<tr>
<td>Restraint Engage Failure</td>
<td>Red/Amber, Display Backlight*</td>
</tr>
<tr>
<td>Emergency Stop Active</td>
<td>Red (solid)*</td>
</tr>
</tbody>
</table>

*If equipped, Audible Alarm will also be active.

#### Bypass Mode

<table>
<thead>
<tr>
<th>Condition</th>
<th>Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inside</td>
</tr>
<tr>
<td>Restraint Engage Failure (Bypass Mode prompt)</td>
<td>Red/Amber, Display Backlight</td>
</tr>
<tr>
<td>Bypass Mode</td>
<td>Green/Amber</td>
</tr>
<tr>
<td>(Green/Red on Dock Alert)</td>
<td></td>
</tr>
<tr>
<td>Reset Attempted (Leveler in Use)</td>
<td>Red/Amber, Display Backlight</td>
</tr>
<tr>
<td>Reset Attempted (Door Open)</td>
<td>Green/Amber, Display Backlight</td>
</tr>
<tr>
<td>Reset Lights to Normal Mode</td>
<td>Red, Display Backlight (5 seconds)</td>
</tr>
</tbody>
</table>

#### Menu & Diagnostics

<table>
<thead>
<tr>
<th>Condition</th>
<th>Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inside</td>
</tr>
<tr>
<td>Main Menu Active</td>
<td>Red (solid)</td>
</tr>
<tr>
<td>System Fault Present</td>
<td>Red/Amber</td>
</tr>
<tr>
<td>Restraint Use Disabled</td>
<td>Amber</td>
</tr>
</tbody>
</table>
Maintenance Precautions

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

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 25 and 26.

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.

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

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

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

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

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

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

**NOTICE**

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

**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 (A). The areas must be kept free of dirt and debris. Build-up of foreign material in the track areas will cause abnormal operation. See Figure 27.
Quarterly Maintenance

- Clean and lubricate all contact points in slide block track and push rod areas (A) with Alumaplex Moly EP grease or similar. See Figure 27.
- Lubricate pivot pins for the “Z” bar (B) with silicone-based spray lubricant (detail on Figure 27). 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 (C, varying environmental conditions may require this more frequently). See page 20 for list of approved fluids.
- Check reservoir fluid level (E). See Figure 28 for Self-Containied (SC) units, or Figure 29 for Remote-Mount units:
  1. Turn OFF all electrical power to the restraint.
  2. Remove cover plate (SC models).
  3. Remove breather cap (F).
  4. Measure fluid level (E). The fluid level should be approximately 1-2 in. (25-51 mm) from top of reservoir depending on reservoir style.
  5. Add hydraulic fluid if necessary. Use only recommended fluid (see page 20).
  6. Install breather cap and cover plate (SC models).
  7. Turn ON electrical power to the restraint.
  8. Operate the PowerHold vehicle restraint through the complete operating cycle to verify operation.
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.
Prox Switch Adjustments

Proximity Switch Adjustments

Note: Vehicle restraint shoe must be removed before latch block can be accessed or removed.

See Figure 30 for reference.

1. Adjust “Raised” Prox Switch. With the “Z” bar rotated directly over the prox switch. The prox switch distance should between 1/16” and 1/8”.

2. Adjust “Engaged” Prox Switch. The prox switch must be backed off 1/2 turn from flush with the latch block; thread in until flush with the latch block and then turn prox switch out (CCW) 1/2 turn until switch is no longer flush with the latch block.

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

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), so that the target is in the sensing range of the switch. Typical factory setting for (A) is approximately 1/8". Make adjustments at switch until leveler does not raise when the vehicle restraint is not engaged on transport vehicle RIG bar. See Figure 31.

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 disengage, proceed with Step 7. If the vehicle restraint DID disengage, move the switch farther from the target or bend the target to increase dimension (B) 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 31.

**Note**: 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.
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 steel 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 32 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.
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).

### Inside and outside signal lights do not operate. Unit operates as normal.

**Possible Cause:** Faulty flasher relay.

**Note:** Flasher can fail closed (lights on steady, not flashing) or fail open (lights will not be on).

**Solution:** Check flasher relay operation.

### Restraint does not operate. Motor does not energize.

**Possible Cause:**
- Motor overload device tripped.
- Combination Units Only
  - Motor starter (3 phase) or motor relay (1 phase) not energizing.

**Solution:**
- Reset overload relay or breaker. Determine cause of device tripping.
- 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.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Three-Phase Remote Powerpack Units Only</strong></td>
<td><strong>Restraint does not operate. Motor energizes but does not run.</strong></td>
<td>If motor hums, but does not run, overload device should trip.</td>
</tr>
<tr>
<td><strong>If motor hums, but does not run, overload device should trip.</strong></td>
<td>No voltage is present on one line.</td>
<td>Check for blown fuses at branch circuit disconnect. Replace fuse. Determine cause of blown fuse.</td>
</tr>
<tr>
<td><strong>NOTE:</strong> A motor that is missing voltage on one line is said to be single-phased.</td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Three-Phase Remote Powerpack Units Only</strong></td>
<td><strong>Restraint does not operate. Motor runs in reverse</strong></td>
<td>Reverse any two legs at the branch circuit disconnect.</td>
</tr>
<tr>
<td><strong>Single-Phase Units Only</strong></td>
<td><strong>Restraint does not operate.</strong></td>
<td>Line voltage too low.</td>
</tr>
<tr>
<td><strong>Motor energizes, but does not run.</strong></td>
<td>Faulty motor centrifugal switch.</td>
<td>Replace motor.</td>
</tr>
<tr>
<td><strong>Faulty motor capacitor.</strong></td>
<td></td>
<td>Replace motor.</td>
</tr>
<tr>
<td><strong>Low hydraulic fluid.</strong></td>
<td></td>
<td>Add fluid, see page 26 for proper fluid level and type.</td>
</tr>
<tr>
<td><strong>Low hydraulic fluid.</strong></td>
<td></td>
<td>Add fluid, see page 26 for proper fluid level and type.</td>
</tr>
<tr>
<td><strong>Combination Units Only</strong></td>
<td><strong>Pressure relief valve set too low.</strong></td>
<td>Adjust pressure relief.</td>
</tr>
<tr>
<td><strong>Restraint operates slowly.</strong></td>
<td></td>
<td><strong>NOTE:</strong> 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.</td>
</tr>
<tr>
<td><strong>PowerHold SC Only</strong></td>
<td><strong>PowerHold raises slowly, or is slow to release.</strong></td>
<td>Ensure pressure relief cartridge is adjusted per max amp draw.</td>
</tr>
<tr>
<td><strong>Damage or blocked hydraulic hose(s) and/or valve(s).</strong></td>
<td></td>
<td>Replace damaged hose(s). Check and remove blockage from hose(s) and/or valve(s).</td>
</tr>
<tr>
<td>Symptom</td>
<td>Possible Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Restraint does not fully raise or motor over current device and/or overload device continuously tripping.</td>
<td>Low hydraulic fluid.</td>
<td>Add fluid, see page 26 for proper fluid level and type.</td>
</tr>
<tr>
<td></td>
<td>Debris in tank.</td>
<td>Drain and clean tank. If debris cannot be cleaned out replace tank.</td>
</tr>
<tr>
<td>Restraint does not raise.</td>
<td>Faulty spool valve.</td>
<td>Remove coil from cartridge valve and cartridge valve from valve block.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Check valve for contaminants and/or damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Replace valve if damaged.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Carefully wipe valve with clean rag (do not damage “O” rings on valve).</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>Operate unit. Replace valve if problem persists after all other troubleshooting procedures performed.</td>
</tr>
<tr>
<td></td>
<td>Solenoid energized.</td>
<td>Locate solenoid (see page 40).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coil should not be energized when Powerhold is in engage mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relay or controller contact has stuck contacts. Test coil for magnetism. Coil must be de-energized to release the transport vehicle.</td>
</tr>
<tr>
<td></td>
<td>Solenoid not energized.</td>
<td>Locate solenoid (see page 40).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coil must be energized when Powerhold is in disengage mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check valve for magnetism at the coil.</td>
</tr>
</tbody>
</table>
| Combination Units Only
Restraint does not raise but leveler raises.                  | Faulty spool valve.                                 | Remove coil from cartridge valve and cartridge valve from valve block.   |
|                                                                        |                                                     | - Check valve for contaminants and/or damage.                            |
|                                                                        |                                                     | - Replace valve if damaged.                                              |
|                                                                        |                                                     | - Carefully wipe valve with clean rag (do not damage “O” rings on valve).|
|                                                                        | 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. | Operate unit. Replace valve if problem persists after all other troubleshooting procedures performed. |

TROUBLESHOOTING
## TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restraint will not lower to release truck.</td>
<td>Solenoid not energized.</td>
<td>Locate solenoid (see page 40). Coil must be energized when Powerhold is in disengage mode. Check valve for magnetism at the coil.</td>
</tr>
<tr>
<td>Combination Units Only Restraint will not lower but leveler raises.</td>
<td>Solenoid not energized.</td>
<td>Locate solenoid (see page 40). Coil must be energized when Powerhold is in disengage mode. Check valve for magnetism at the coil.</td>
</tr>
<tr>
<td>Combination Units Only Restraint will not lower but leveler raises.</td>
<td>Faulty spool valve.</td>
<td>Remove coil from cartridge valve and cartridge valve from valve block. -Check valve for contaminants and/or damage. -Replace valve if damaged. -Carefully wipe valve with clean rag (do not damage &quot;O&quot; rings on valve). <strong>NOTE:</strong> 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. Operate unit. Replace valve if problem persists after all other troubleshooting procedures.</td>
</tr>
<tr>
<td>Combination Units Only Restraint will not lower but leveler raises.</td>
<td>Faulty spool valve.</td>
<td>Remove coil from cartridge valve and cartridge valve from valve block. -Check valve for contaminants and/or damage. -Replace valve if damaged. -Carefully wipe valve with clean rag (do not damage &quot;O&quot; rings on valve). <strong>NOTE:</strong> 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. Operate unit. Replace valve if problem persists after all other troubleshooting procedures.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Possible Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Restraint raises and makes contact with RIG but does not lock, then returns to stored position.</td>
<td>Improper location of Powerhold.</td>
<td>Powerhold must have a 4” set back from bumpers. See Installation section.</td>
</tr>
<tr>
<td></td>
<td>Faulty prox switch.</td>
<td>Check prox switches (page 29). 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.</td>
</tr>
<tr>
<td></td>
<td>Faulty activation of “raised” prox switch.</td>
<td>Check for shorted or open prox switches and/or wires. Replace prox switch if faulty.</td>
</tr>
<tr>
<td></td>
<td>Faulty activation of “engaged” prox switch.</td>
<td>The shoe will rotate as the hydraulic cylinder extends and the slide block on the cylinder pushes a rod to make contact with the Z-bar. The Z-bar will pass over the “raised” prox switch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check for frozen or rusted push rod, bent or damaged Z-bar, or faulty prox switch adjustments. Replace any parts if faulty.</td>
</tr>
<tr>
<td>Shoe does not rise to full height.</td>
<td>Low hydraulic fluid.</td>
<td>Add fluid, see page 26 for proper fluid level and type.</td>
</tr>
<tr>
<td>Lights flash but don’t change state.</td>
<td>Faulty stored prox switch.</td>
<td>Check for damaged switch or wire connections.</td>
</tr>
<tr>
<td>Red lights flashing Inside and out.</td>
<td>Faulty stored prox switch.</td>
<td>Restraint is not fully lowered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restraint timed out because of faulty stored prox switch. Check for damaged switch or wire connections.</td>
</tr>
</tbody>
</table>

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

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

PowerHold Assembly
**PowerHold Assembly**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>9414-0064</td>
<td>Restraint Shoe</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>9412-0030</td>
<td>Pin 1-1/2 X 8 LG</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>9414-0021</td>
<td>Rack Weldment</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>9411-0005</td>
<td>Spring, Rack Weldment</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>8583-0018</td>
<td>Valve Block</td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td>9414-0081</td>
<td>Latch Block Assembly (Includes Prox Switches)</td>
</tr>
<tr>
<td>G</td>
<td>1</td>
<td>2101-0118</td>
<td>Bolt 3/4-10 UNC X 1-1/2 LG</td>
</tr>
<tr>
<td>H</td>
<td>1</td>
<td>2101-0119</td>
<td>Bushing</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>9414-0073</td>
<td>Cylinder Complete (Includes Slide Block and Hoses)</td>
</tr>
<tr>
<td>J</td>
<td>1</td>
<td>9904-0059</td>
<td>Hose, 35” Lg.#6 Jic Swivel Both Ends</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>9904-0155</td>
<td>Hose, 21” Lg. #6 Jic Swivel Both Ends</td>
</tr>
<tr>
<td>L</td>
<td>1</td>
<td>9412-0095</td>
<td>Push Rod</td>
</tr>
<tr>
<td>M</td>
<td>1</td>
<td>2101-0045</td>
<td>Cotter Pin, 1/8 x 1.00</td>
</tr>
<tr>
<td>N</td>
<td>2</td>
<td>9412-0063</td>
<td>Removable Track Stop</td>
</tr>
<tr>
<td>O</td>
<td>4</td>
<td>2101-0009</td>
<td>Bolt 5/16-18</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>9411-0056</td>
<td>Access Cover, Top</td>
</tr>
<tr>
<td>Q</td>
<td>6</td>
<td>2101-0099</td>
<td>Screw 1/4-20 UNC x 3/8</td>
</tr>
<tr>
<td>R</td>
<td>1</td>
<td>9411-0060</td>
<td>Cover, Front</td>
</tr>
<tr>
<td>S</td>
<td>1</td>
<td>9411-0058</td>
<td>Weather Seal, Hold Down</td>
</tr>
<tr>
<td>T</td>
<td>1</td>
<td>0192-0016</td>
<td>Weather Seal, Ratchet</td>
</tr>
<tr>
<td>U</td>
<td>1</td>
<td>2753-0001</td>
<td>J-Box, Cover and Gasket, SC (standard, includes screws)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2753-0002</td>
<td>J-Box, Cover and Gasket, Remote (optional, includes screws)</td>
</tr>
<tr>
<td>V</td>
<td>4</td>
<td>2101-0074</td>
<td>Screw, Allen Head 1/2-20 UNC x 1-1/2 Lg.</td>
</tr>
<tr>
<td>W</td>
<td>1</td>
<td>9414-0074</td>
<td>Base Weldment</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>8581-0137</td>
<td>One-Way Check Valve</td>
</tr>
<tr>
<td>Y</td>
<td>3</td>
<td>2101-0153</td>
<td>Hex Head Cap Screw, Zinc Plated, 1/4”-20 UNC x 1/2”</td>
</tr>
</tbody>
</table>

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

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

*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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>8583-0015</td>
<td>Complete Valve Assembly (Includes A-E)*</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>8581-0011</td>
<td>4 Way Cartridge Valve</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>9301-0113</td>
<td>Fitting Elbow 90 Deg STR Thread #6 ORB x #6 JIC</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>9301-0115</td>
<td>Fitting Elbow 90 Deg STR Thread #6 ORB x #8 JIC</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>9301-0116</td>
<td>Fitting Elbow 90 Deg STR Thread #8 ORB x #8 JIC</td>
</tr>
<tr>
<td>G</td>
<td>1</td>
<td>8581-0004</td>
<td>Coil, Delta</td>
</tr>
<tr>
<td>H</td>
<td>1</td>
<td>4301-0001</td>
<td>Cable Assembly 48&quot; Lg</td>
</tr>
</tbody>
</table>

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

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

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

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

*Provide vehicle restraint serial number when e-mailing, calling or faxing orders. Contact Tech Services for pre-8/2012 units.*
Restraint pressure is set by relief valve on restraint. Remote mount powerpack pressure is factory set.
Remote Mount Powerpack Assembly (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>9395-____</td>
<td>Powerpack, Complete (Includes All Items Except L, N, and W)</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>2101-0039</td>
<td>Nylon Lock Nut, 5/16-18 UNC</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>9301-0029</td>
<td>Seal, Thread</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>9302-0014</td>
<td>Reservoir</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>9301-0199</td>
<td>Breather Cap, 3/8 NPT Male</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>9301-0027</td>
<td>O-Ring (Reservoir)</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>9302-0012</td>
<td>Tie Rod (Reservoir)</td>
</tr>
<tr>
<td>G</td>
<td>1</td>
<td>9301-____</td>
<td>Pump Only</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2101-0016</td>
<td>Cap Screw, 5/16-18 UNC x 3-1/2 in., Grade 5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9301-0028</td>
<td>Gasket, Pump</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9303-0002</td>
<td>Coupling Assembly</td>
</tr>
<tr>
<td>H</td>
<td>1</td>
<td>9302-____</td>
<td>Plate, Drive</td>
</tr>
<tr>
<td>J</td>
<td>1</td>
<td>9904-0071</td>
<td>Hose, 1/2&quot;100R1 x 17&quot;, #8 ORB x #8 JICF Swivel</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>0521-0017</td>
<td>90° Elbow, 3/8 NPT Male x #8-JIC Male</td>
</tr>
<tr>
<td>L</td>
<td>1</td>
<td>0521-0007</td>
<td>90° Elbow, 1/4 NPT Male x 1/4 Tube</td>
</tr>
<tr>
<td>M</td>
<td>1</td>
<td>3411-____</td>
<td>Motor Only</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
<td>9301-0012</td>
<td>Straight Fitting, #8-ORB Male x #8-JIC Male</td>
</tr>
<tr>
<td>P</td>
<td>1</td>
<td>0521-0014</td>
<td>Ball, Check</td>
</tr>
<tr>
<td>Q</td>
<td>1</td>
<td>9301-0024</td>
<td>Guide, Check Ball</td>
</tr>
<tr>
<td>R</td>
<td>1</td>
<td>9302-0009</td>
<td>Spring, Relief Valve</td>
</tr>
<tr>
<td>S</td>
<td>1</td>
<td>9303-0003</td>
<td>Screw, Adjusting</td>
</tr>
<tr>
<td>T</td>
<td>2</td>
<td>9301-0014</td>
<td>Washer, Nylon, 11/16 in. OD x 1/2 in. ID</td>
</tr>
<tr>
<td>U</td>
<td>1</td>
<td>9301-0015</td>
<td>Nut, Jam, 1/2-20 UNF</td>
</tr>
<tr>
<td>V</td>
<td>1</td>
<td>9301-0016</td>
<td>Nut, Acorn, 1/2-20 UNF</td>
</tr>
<tr>
<td>W</td>
<td>1</td>
<td>9301-0120</td>
<td>45° Elbow, #8-ORB Male x #8-JIC Male</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>9301-0009</td>
<td>Strainer, Suction</td>
</tr>
<tr>
<td>Y</td>
<td>1</td>
<td>9301-0008</td>
<td>Pipe Nipple, 3/8 NPT x 3 in.</td>
</tr>
<tr>
<td>Z</td>
<td>2</td>
<td>2101-0063</td>
<td>Nut, Jam 5/16-18 UNC</td>
</tr>
<tr>
<td>AA</td>
<td>2</td>
<td>9301-0003</td>
<td>Washer, Aluminum, 9/16 in. OD x 3/8 in. ID x 1/16 in.</td>
</tr>
<tr>
<td>AB</td>
<td>2</td>
<td>9301-0004</td>
<td>Screw, Socket Head, 3/8-16 UNC x 1-3/4 in.</td>
</tr>
<tr>
<td>AC</td>
<td>1</td>
<td>0961-0642</td>
<td>Sensor, Fluid, Cookpot (Optional)</td>
</tr>
<tr>
<td>AD</td>
<td>1</td>
<td>0961-0648</td>
<td>Cable, 5M Lg, M12 Plug (Optional)</td>
</tr>
</tbody>
</table>

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.
## Filler Kits

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9416-0003</td>
<td>Filler Kit, Hold Restraint, Formed, Zinc Plated (2&quot;-14&quot; projection)*</td>
</tr>
</tbody>
</table>

*Must specify required filler projection when e-mailing, calling or faxing orders.*
### OSLA (Outside Light Assembly)

#### TOLERANCES

<table>
<thead>
<tr>
<th>Fractional</th>
<th>Decimal</th>
<th>Angular</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/32&quot;</td>
<td>0.01</td>
<td>1</td>
</tr>
<tr>
<td>0.005&quot;</td>
<td>0.005</td>
<td></td>
</tr>
</tbody>
</table>

#### MATERIAL

**DRAWN BY**

**CHECKED BY**

**DRAWING NO:** 3055-0007

**DATE:** 6/9/2006

**LOADING DOCK CONTROL LIGHTS**

---

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

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

Signs

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1751-0033</td>
<td>Outside Sign, Pull In/Out</td>
</tr>
<tr>
<td>B</td>
<td>1751-0034</td>
<td>Outside Sign, Pull In/Out (Mirror Image)</td>
</tr>
</tbody>
</table>
Customer Information

NOTE: Refer to Figure 33 for orientation of restraint and Figure 34 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

<table>
<thead>
<tr>
<th>Model</th>
<th>____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial No.</td>
<td>____________________________</td>
</tr>
<tr>
<td>Systems, LLC, Job No.</td>
<td>____________________________</td>
</tr>
</tbody>
</table>

Vehicle Restraint Information

<table>
<thead>
<tr>
<th>Model</th>
<th>____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial No.</td>
<td>____________________________</td>
</tr>
<tr>
<td>Systems, LLC Order No.</td>
<td>____________________________</td>
</tr>
</tbody>
</table>

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.