

A Division of Systems, LLC

**DLM**  
**DOCK LEVELER**  
**MANUFACTURING**

# HSM Series

## Dock Leveler

### Owner's/User's Manual



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# PRECAUTIONS

## Recognize Precautionary Information

### Safety-Alert Symbol



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

### **DANGER**

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

### **WARNING**

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

### **CAUTION**

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

### **NOTICE**

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

## SAFETY INSTRUCTIONS

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

## General Operational Precautions



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

Never operate a dock leveler or transport vehicle restraint 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.

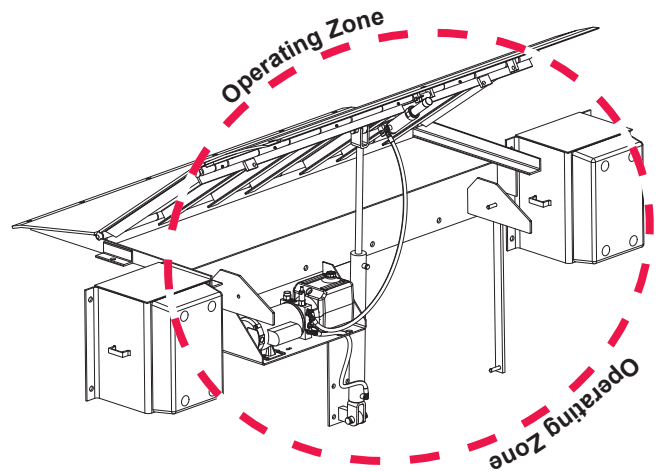


Figure 1

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](http://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**



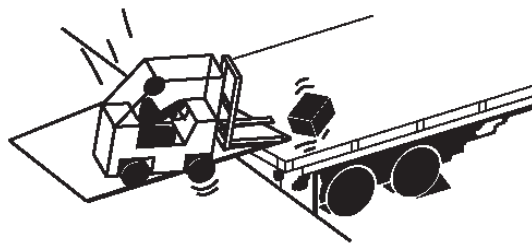
Chock/restrain all transport vehicles. Never remove the wheel chocks or release the restraining device until loading or unloading is finished, and transport driver has been given permission to drive away.



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.



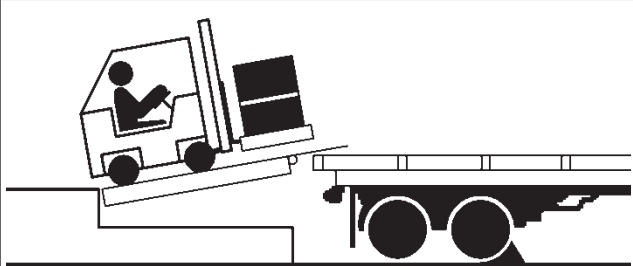
Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



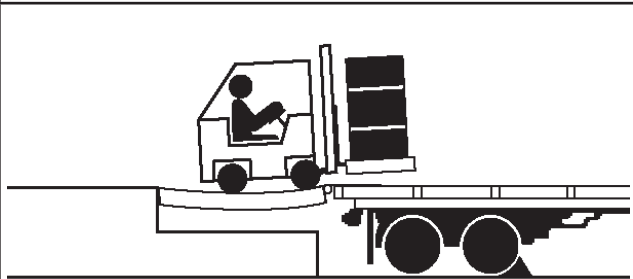
Keep a safe distance from both side edges.

**Operational Precautions**

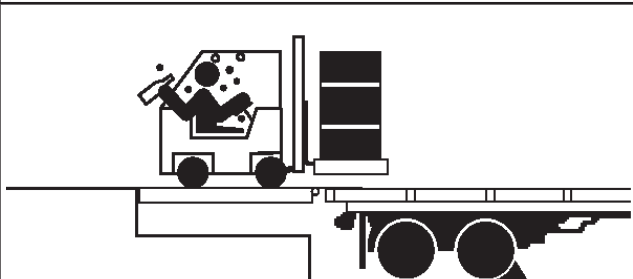
**! WARNING**



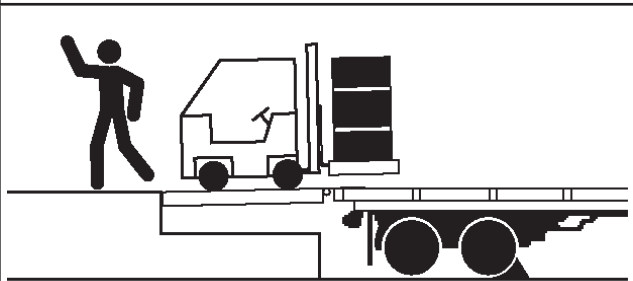
Do not use dock leveling device if transport vehicle is too high or too low.



Do not overload the dock leveling device.



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

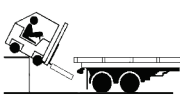


Do not leave equipment or material unattended on dock leveling device.

# PRECAUTIONS

## Safety Decals

**⚠ DANGER**



Unsupported dock leveler ramps 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.

**SAFETY INFORMATION**

**OPERATION**

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

**MAINTENANCE/SERVICE**

1. Read and follow all instructions, warnings and maintenance schedules in the owner's/user's manual.
2. Maintenance/Service of dock leveler restricted to trained personnel.
3. Place barriers on the driveway and dock floor to indicate service work is being performed.
4. DO NOT ENTER PIT unless dock leveler is securely supported by maintenance prop.
5. If electrically powered turn off and use OSHA Lockout/tagout procedures.

Failure to follow posted instructions will result in death or serious injury. Call 262.255.1510 for replacement placards, warning labels, or owner's/user's manuals. 1751-0730 Rev. 0

**1751-0730**

**⚠ DANGER**



**Ramp swings toward you. Stand Clear.**

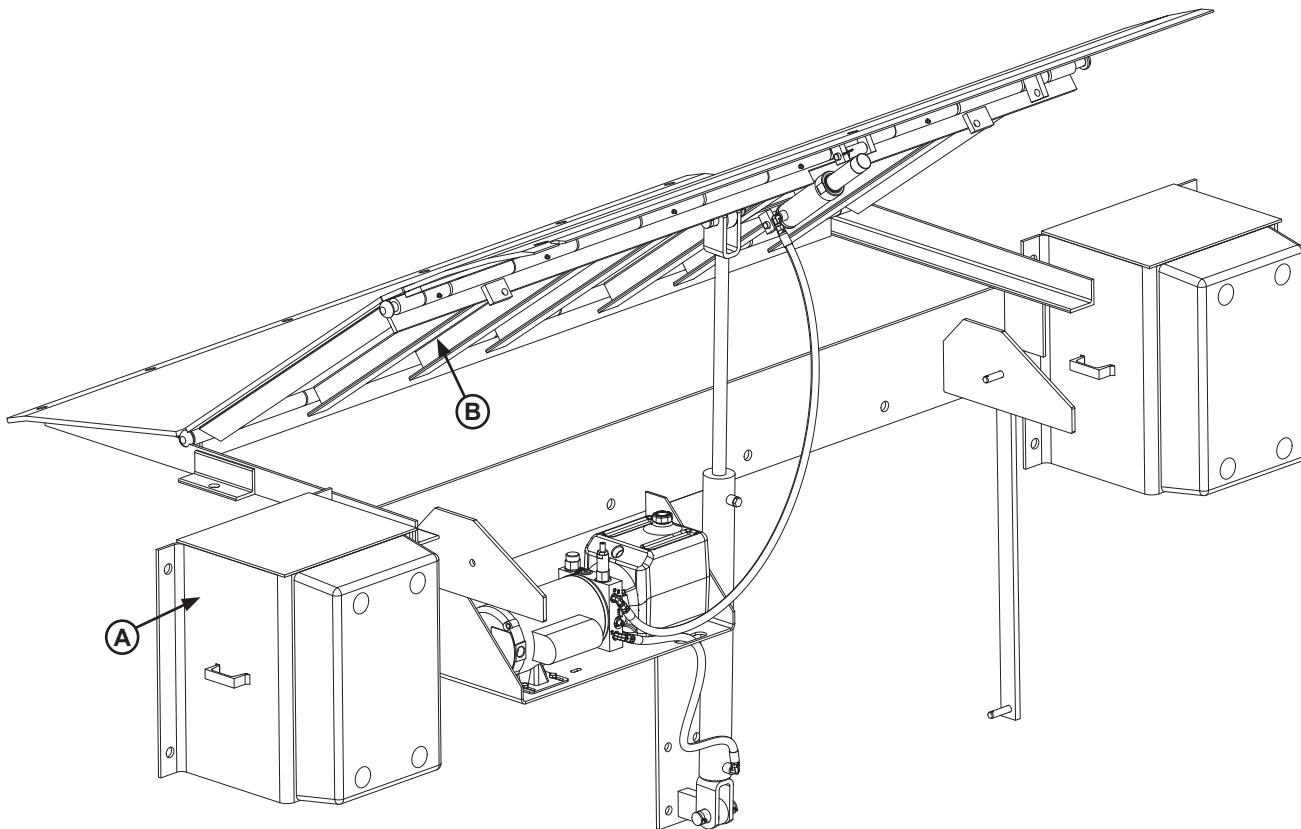
Use maintenance strut while servicing.

Failure to do so will result in death or serious injury.

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

1751-0763 Rev. 1

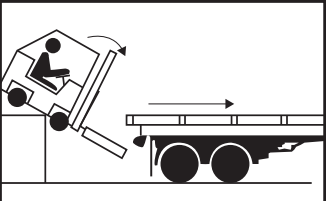
**1751-0763**



**Figure 2**

## Placard


### **DANGER**




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

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

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




Scan to view our owner's/user's manuals online.  
[www.LoadingDockSystems.com](http://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.



**POWERAMP  
MCGUIRE  
DLM  
SYSTEMS**  
Loading Dock Equipment

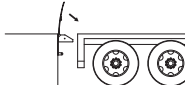

1751-0877 Rev D

 **WARNING: CANCER AND REPRODUCTIVE HARM**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## OPERATING INSTRUCTIONS

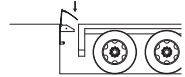
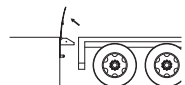
### HED EDGE-OF-DOCK LEVELERS

#### NORMAL OPERATION



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


#### STORING LEVELER



1. Press the RAISE button until the lip folds enough to clear the transport vehicle, then release the RAISE button. The lip will fold and the platform will lower returning to the stored position.

**NOTE: If transport vehicle departs before leveler is stored, leveler will automatically return to stored position.**

#### BELOW DOCK ENDLOADING



- Remove any endloads while leveler is in the stored position.

# OWNER'S/USER'S RESPONSIBILITIES

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



# OWNER'S/USER'S RESPONSIBILITIES

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

# INTRODUCTION

## General Information



Figure 3

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

The HSM-series dock leveler is a rugged and economical choice for older docks that are below the 50" industry standard height. The HSM-series allows a 10" upward reach from the dock to the trailer, so that low docks can remain useful.

HSM-series dock levelers mount directly to the floor and edge of a loading dock. No pit is needed. Space requirement is minimal - only 35" back from the dock edge.

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

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

HSM dock levelers are available in the following sizes and weight capacities:

Dimensions and Capacities			
Model #	Deck Width	Lip Length	Comparative Industry Rating
HSM500	72"	15"	20,000
HSM525	72"	15"	25,000
HSM530	72"	15"	30,000

Call DLM to discuss available options to meet your specific needs.

Technical Service at 800-643-5424 or [techservices@loadingdocksystems.com](mailto: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).

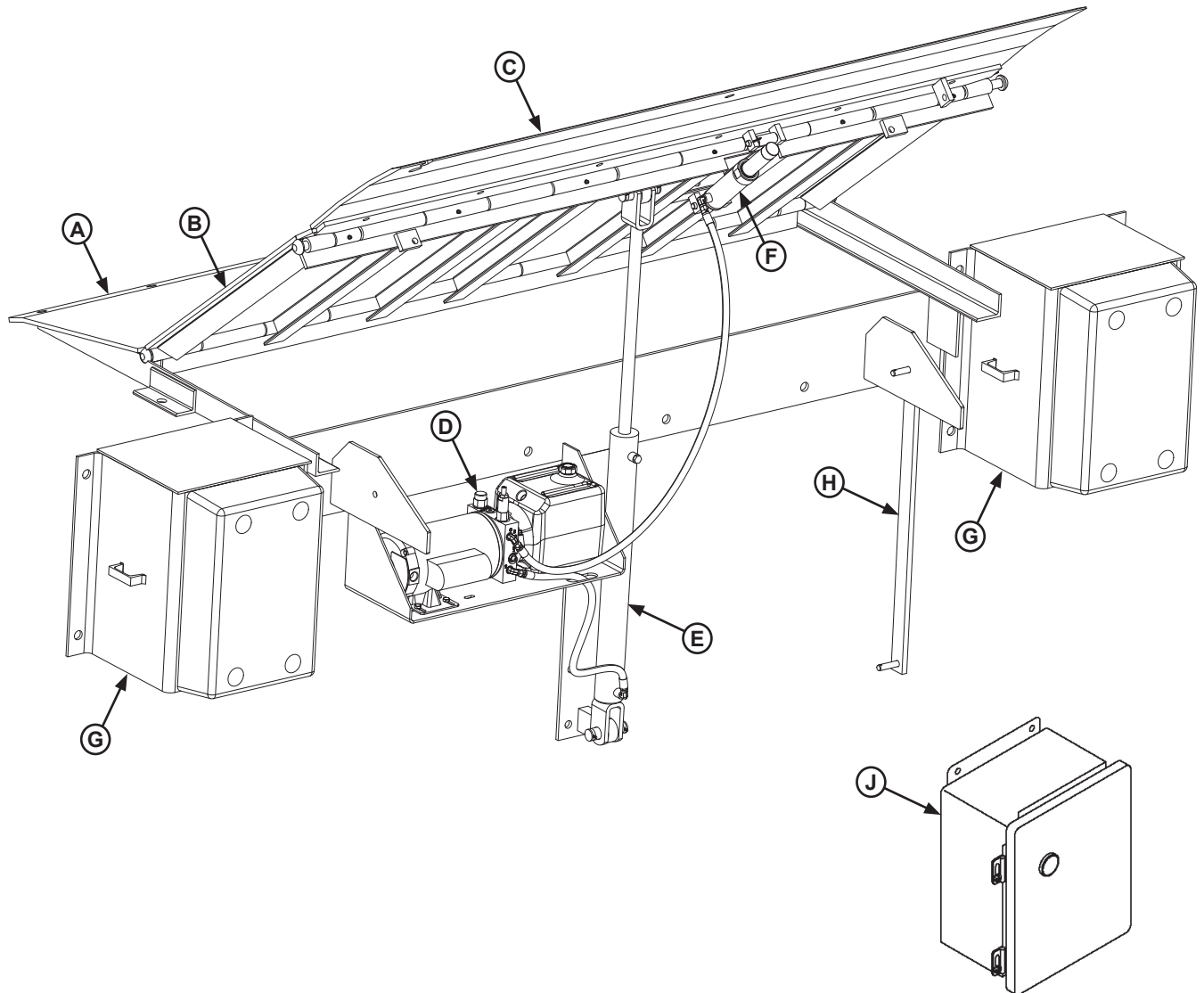


Figure 4

A — Ramp Plate  
B — Center Plate  
C — Lip Plate

D — Powerpack  
E — Hoist Cylinder  
F — Lip Cylinder

G — Bumper Blocks (2 used)  
H — Maintenance Prop  
J — Control Box\*

\*Control box appearance may vary depending on options.

# INSTALLATION

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## 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**

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

### **WARNING**

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

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

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

### **WARNING**

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**

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

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# INSTALLATION

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## Weld/Bolt On

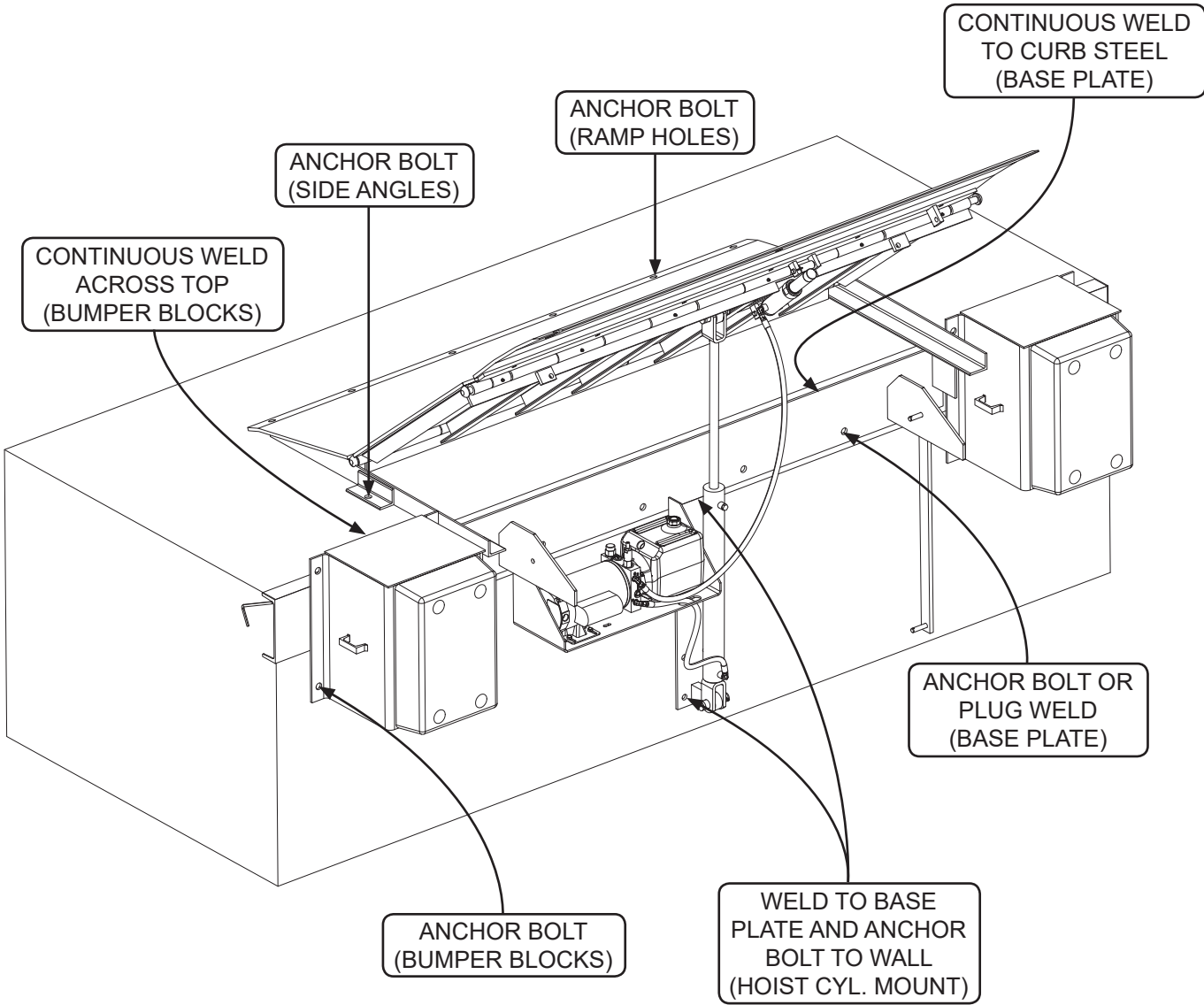
Weld/bolt on installation requires adequate dock steel securely anchored in the concrete at the dock edge.

1. Remove all existing bumper material and protruding objects from dock edge. Clean and sweep dock edge free of debris and flammable chemicals before installing unit.
2. Using a proper lifting device, place unit at desired location on surface of dock. Mark along full length of back edge of ramp plate. Slide unit forward the width of bushing tool, approximately 2".
3. Place bushing tool on marked line at each end of ramp to ensure proper alignment at both ends. A Skil Roto Hammer #736 or similar tool is recommended.
4. Using the back edge of the ramp plate as a guide, groove concrete approximately 3/4" deep by 2" wide, and should be the entire length of ramp plate.
5. Slide unit back into position so that rear edge of unit fits against back edge of groove.
6. Tack weld base plate of unit to dock edge steel. Using holes in unit as a guide, drill (9) 5/8" dia. by 5" deep holes. Install anchor bolts per manufacturers specifications, and tighten securely.
7. Weld anchor bolt nuts to ramp plate using a 1/4" fillet weld all the way around the nut. Cut off any portion of the anchor bolt exposed through the nut, and plug weld around the top of the nut to the anchor bolt. Ensure the top of the nuts are well rounded for smooth rollover.
8. Where possible, continuously weld base plate to existing dock steel.
9. If dock edge steel is narrower than 6", repeat step 6 for holes in base plate, ensuring anchor bolts are securely tightened.
10. Position bump blocks approximately 3" above dock surface so back plate rests on dock surface, and out approximately 5/8" out from the edge of the inside flange of the bump block to the end of the base plate. Tack weld bump blocks to dock steel. If dock steel is narrower than 6", repeat step 5 for holes in bump blocks.
11. Complete bumper install:
  - a. Weld back of bumper flanges to dock steel.
  - b. Plug weld mounting holes to imbed or drill holes 5/8" dia. by 5" deep in concrete. Install 5/8" x 4-3/4" anchor bolts with washers.
12. Using holes in side angles as a guide, drill (2) 5/8" dia. by 5" deep holes. Install anchor bolts per manufacturers specifications, and tighten securely.
13. Center the hoist cylinder mount on the base plate, and weld the top of the hoist cylinder mount to the bottom of the base plate.
14. Drill 5/8" dia. by 5" deep holes in concrete through holes in lower cylinder mount, and install anchor bolts with washers and tighten per manufacturers specifications.
15. Installer must remove all welding slag, and repaint welded areas.
16. Proceed to page 14 for control panel and wiring installation instructions.

### **WARNING**

Securely block or support ramp and lip when in vertical positions. Lack of proper bracing can result in ramp dropping during adjustment or installation.

**Weld/Bolt On**



**Figure 5**

# 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**



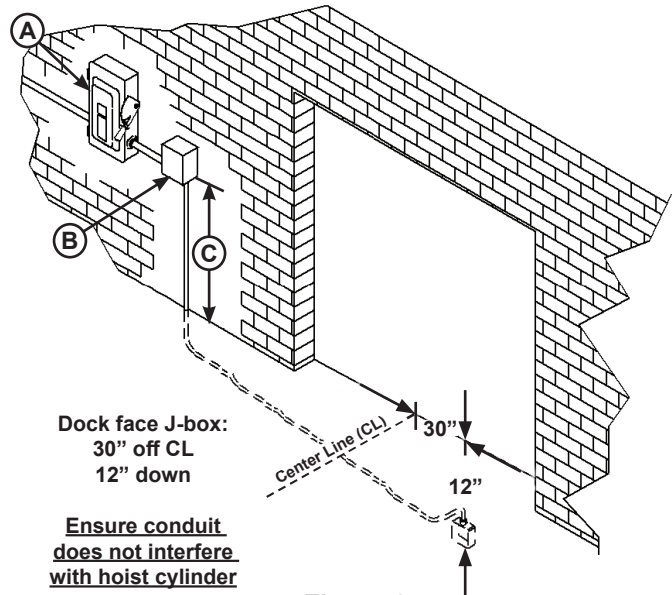
**Arc Flash and Shock Hazard**  
**PPE [Personal Protection Equipment] Required**  
De-energize equipment before working on or inside. Do not open cover without appropriate PPE. Refer to NFPA 70E for PPE requirements. This panel may contain more than one power source.

**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.



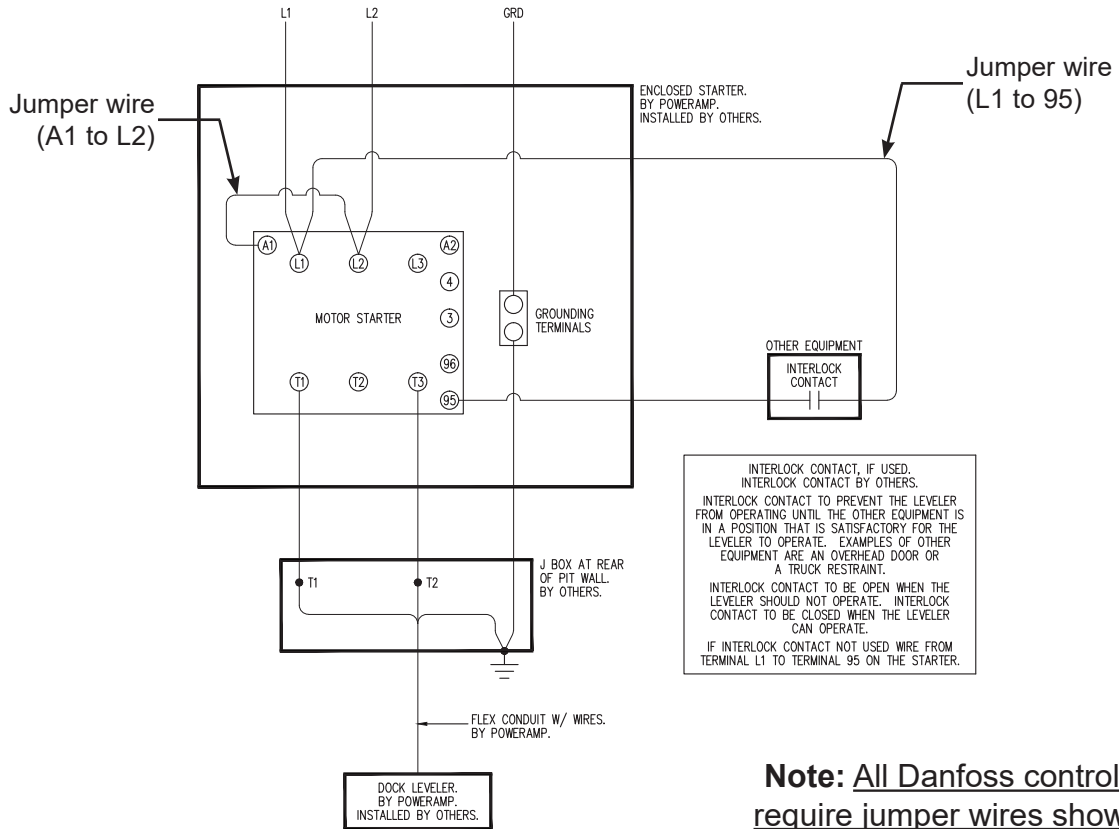
**Figure 6**

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

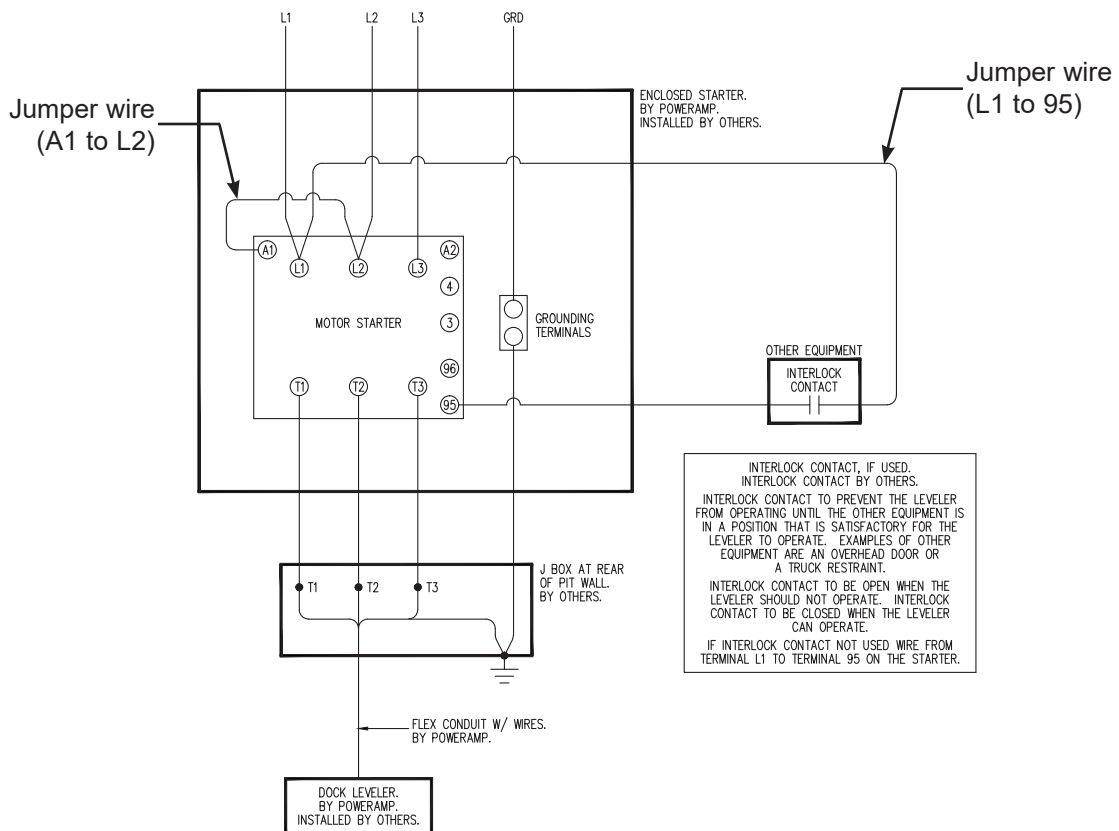
1. Mount the push-button control panel (B) so bottom of control panel-to-dock floor distance (C) is 48 in. (1219 mm). See Figure 6.
2. Install electrical disconnect panel (A) if not already installed. Disconnect panel supplied by others.
3. Install and connect the control wiring (see page 15 for Danfoss control boxes, or drawings supplied with equipment for control boxes with options).
4. Connect the dock leveler power cable to the field wires on the dock face junction box.
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 page 16).



## Danfoss Control Panel Wiring (1-Phase)



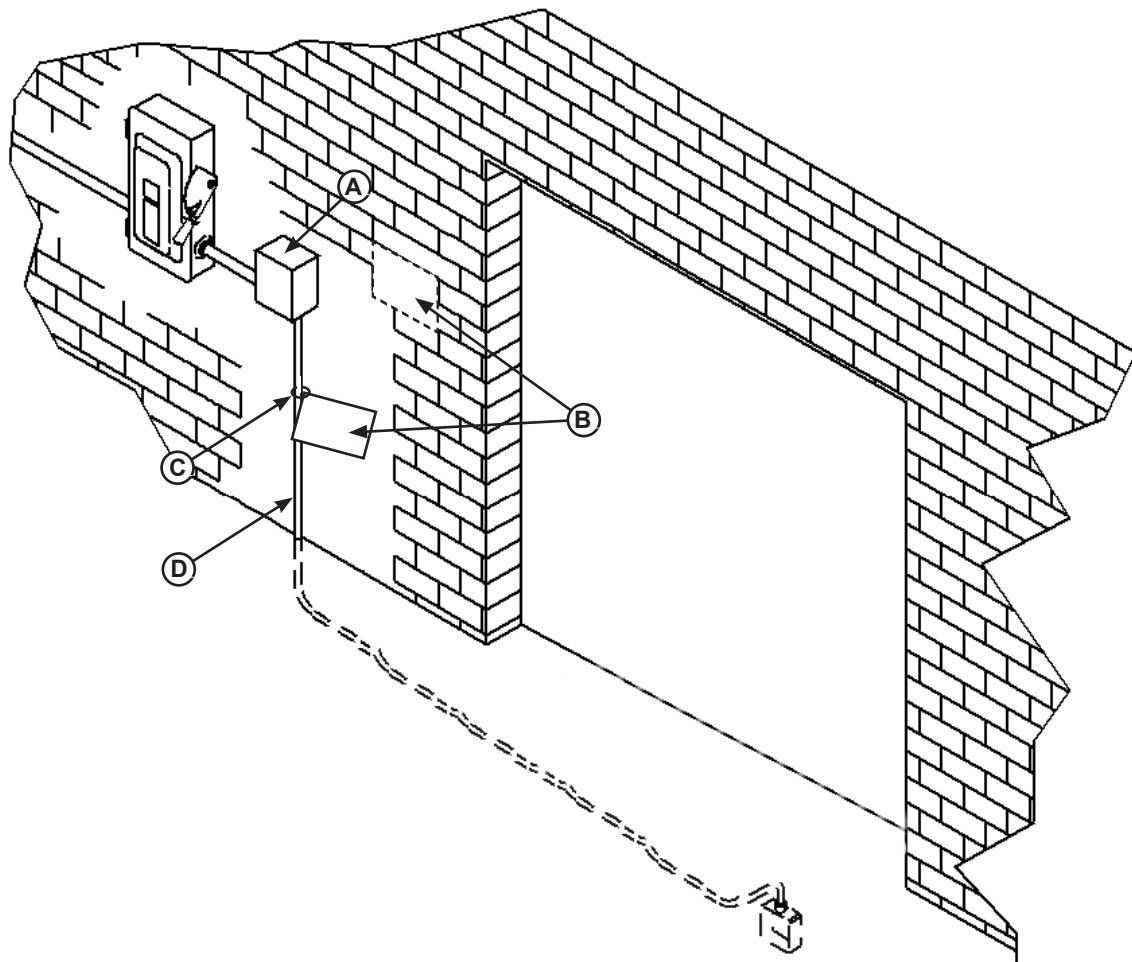
## Danfoss Control Panel Wiring (3-Phase)



# INSTALLATION

## 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 7

## Put New Dock Leveler Into Service

### **WARNING**

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

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

1. Disconnect the external lifting device and chains from the lifting brackets.
2. Turn the main electrical power ON.
3. Raise the leveler platform fully by Pressing and holding the RAISE button.

**Note:** The platform of a properly operating dock leveler will automatically stop rising when it reaches its maximum full raised height, at which point, the lip extends. When the lip is fully extended, the powerpack will go into pressure relief. (If the lip does not extend correctly, see Troubleshooting section.)

4. Release the RAISE button to lower the platform. As long as there is no vehicle present at the dock, the platform will lower to the full below-dock position as the lip folds.

**Note:** If a transport vehicle is present, the platform will lower until the lip rests on the transport vehicle's bed.

5. Perform steps 4-5 at least four times to purge any air that may be in the hydraulic system and to ensure proper operation.

### **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.

# 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.

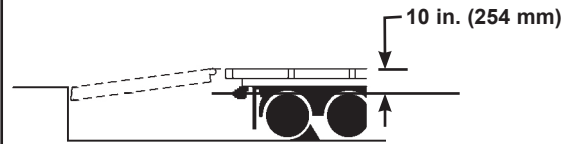
DO NOT use a broken or damaged dock leveler. Make sure proper service and maintenance procedures have been performed on leveler before using.

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

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

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

### **WARNING**



The HSM hydraulic dock leveler is designed to compensate for a maximum + 10 in.\* (254 mm) of height difference between the loading dock and the transport vehicles bed. DO NOT use the dock leveler if the transport vehicles bed is more than 10 in. (254 mm) higher than the dock floor.

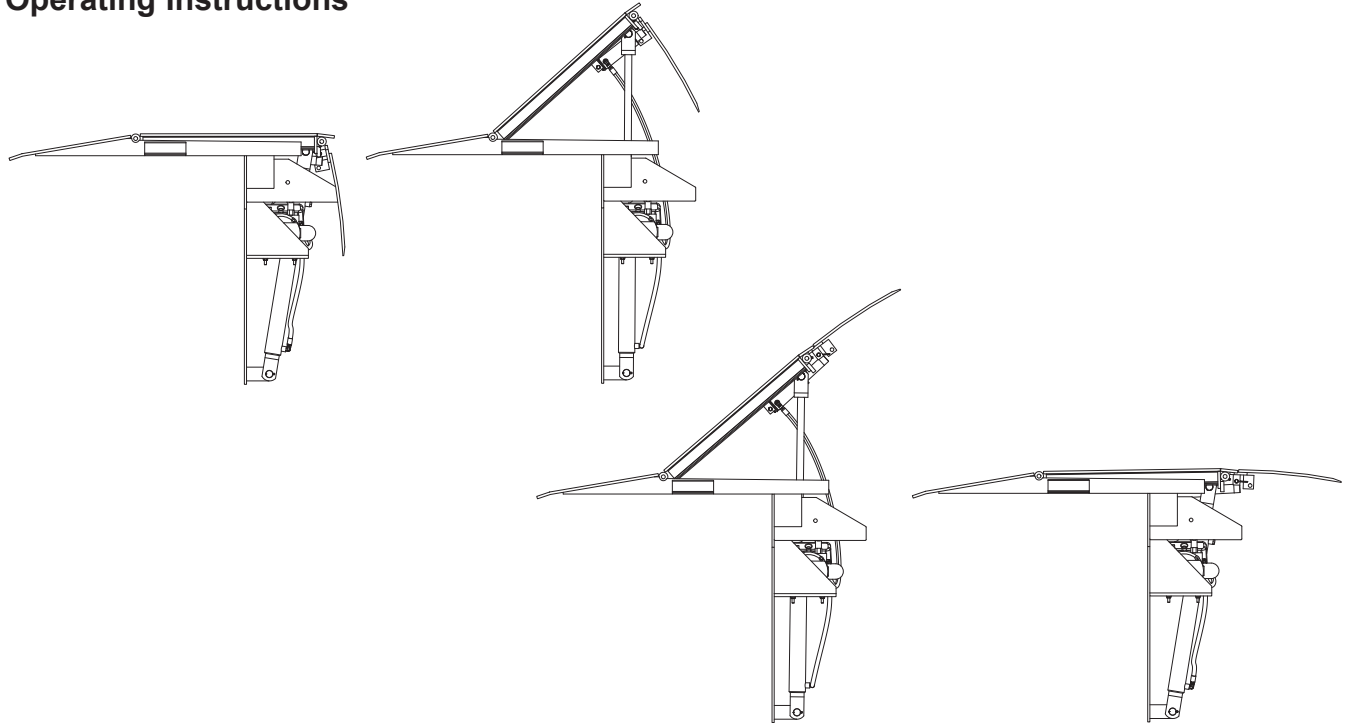
\*Service height may vary with design specifications

DO NOT overload the dock leveler.

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

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

## Operating Instructions



**Figure 8**

1. Before activating dock leveler, ensure lip avoids contact with transport vehicle sides and cargo. If lip does not lower to transport vehicle bed, reposition transport vehicle.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.
4. If necessary, remove any end loads with the leveler in the stored position.
5. Extend the dock leveler onto the transport vehicle as follows (see Figure 8):
  - a. Raise the platform by pressing and holding the RAISE button.
  - b. Hold the RAISE button until the lip is fully extended, then release the RAISE button. The platform will lower until the lip is resting on the transport vehicle bed.
  - c. Make sure that the lip is fully extended and supported on the transport vehicle along the entire width of the platform, with at least 4 in. (102 mm) of lip contacting the transport vehicle bed.
6. Proceed with loading or unloading.
7. When loading or unloading is finished, press and hold the RAISE button until the lip clears the transport vehicle bed and folds up, then release the button. Leveler will then return to stored position.
8. Remove chocks from transport vehicle wheels, or release the vehicle restraint if used.
9. Indicate to driver that the transport vehicle may leave the dock.

# MAINTENANCE

## Maintenance Precautions

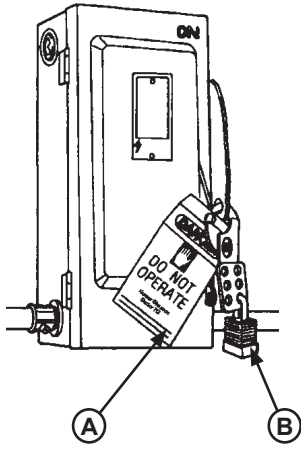


Figure 9

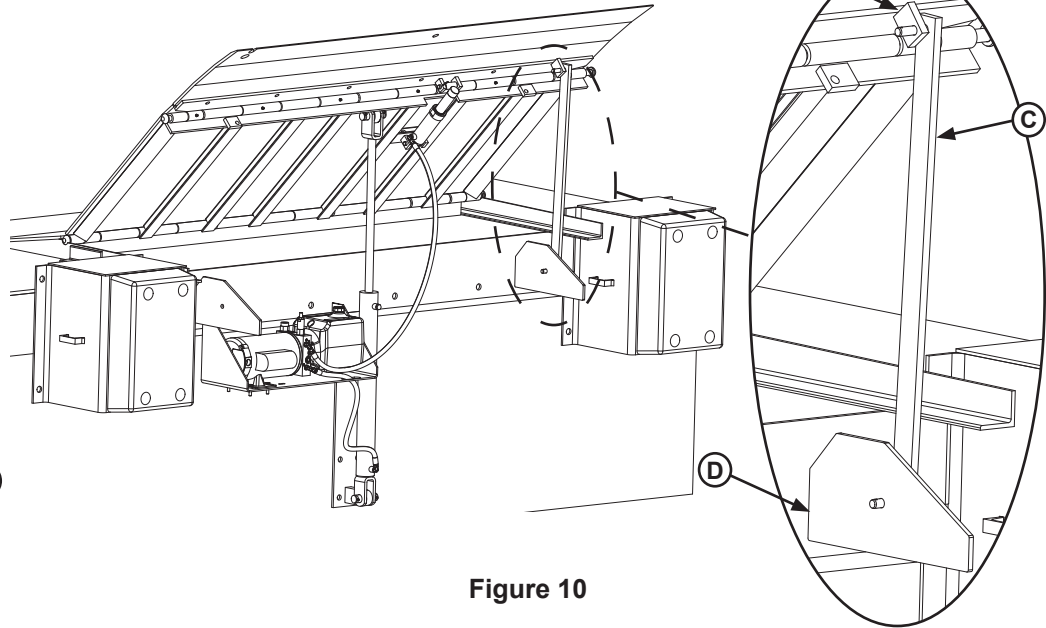


Figure 10

A— Tag Out Device

B—Lock Out Device

C — Maintenance Prop

D— Support Gussets

### **! 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 9).

Whenever maintenance is to be performed under the dock leveler, support the dock leveler with the maintenance prop (C). Position the maintenance prop in its support gussets (D). See Figure 10.

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**



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.

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

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# MAINTENANCE

## Periodic Maintenance

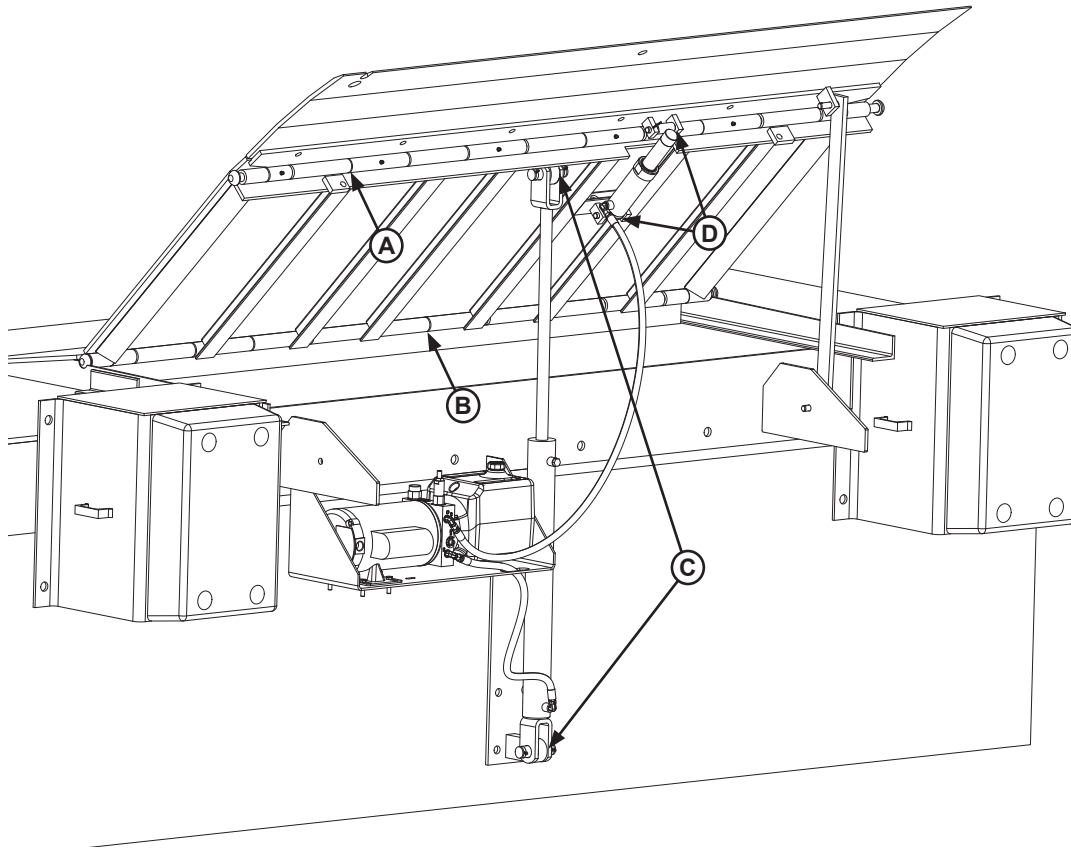


Figure 11

A— Lip Hinge Area

B —Platform Hinge Area

C — Hoist Cylinder Pins

D— Lip Cylinder Pins

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.

### Weekly Maintenance

Operate the dock leveler through the complete operating cycle to maintain lubrication.

- Inspect the platform hinge and the lip hinge areas. The hinge areas must be kept free of dirt and debris. Build-up of foreign material in the hinge areas will cause abnormal operation.
- Inspect warning decals and placards. Replace if damaged or missing.

## **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.



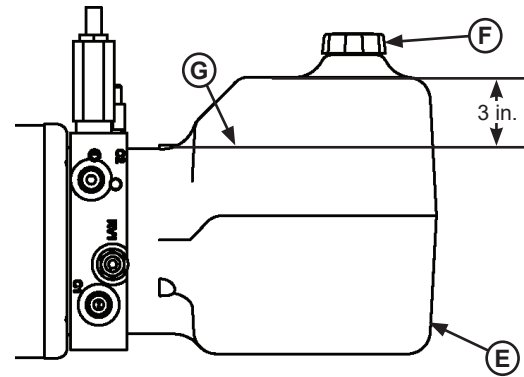
## Quarterly Maintenance

- Complete Weekly Maintenance.
- Inspect the following for damage/abnormal wear:
  - Check welds for cracks.
  - Cylinder pins and mounting holes.
  - Lip hinge pins and rear hinge pins.
  - Check J-box for water damage.
  - Inspect hoses, cylinders, fittings and powerpack.
  - Control box and conduit for damage.
  - Bumpers for more than 1" of wear. Replace worn, loose, damaged or missing bumpers.
- Lubricate the following areas with light weight machine oil (see Figure 11):
  - (A) — Lip hinge area unless equipped with grease fittings (apply oil to the top of the entire length of lip hinge when platform is at the full below-dock position and lip is folded)
  - (B) — Platform rear hinge area (apply oil to top of all platform hinges when platform is at the full below-dock position)
- Lubricate the following areas with white lithium grease:
  - (C) — Hoist cylinder pins
  - (D) — Lip cylinder pins

**Note:** Apply grease to lip hinge grease fittings if equipped.

## **NOTICE**

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



**Figure 12**

E - Reservoir

G - Fluid Level

F - Breather Cap

- Check reservoir fluid level (G, see Figure 12):
  1. Raise the platform fully and engage the maintenance prop in the service position.
  2. Turn OFF all electrical power to the leveler.
  3. Remove breather cap (F).
  4. Measure fluid level. The fluid level should be approximately 3 in. (76.5 mm) from top of reservoir (E) with platform at the below-dock position.
  5. Add hydraulic fluid if necessary. Use only recommended fluid (see page 22).
  6. Install breather cap.
  7. Turn ON electrical power to the leveler.
  8. Return the platform to the stored position.

## Yearly Maintenance

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

# ADJUSTMENTS

## Adjust Main Pressure Relief

### **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.

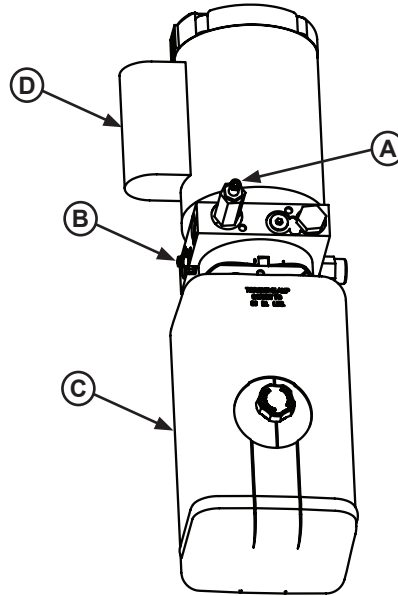
### Main Pressure Relief Adjustment

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

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

See Troubleshooting section on pages 26-29 for more information.

1. Raise the platform fully and engage the maintenance prop in the service position.
2. Turn OFF all electrical power to the dock leveler.



**Figure 13**

A — Sequence Valve                      C — Fluid Reservoir  
B — Pressure Relief Valve            D — Motor

3. Attach lock out/tag out devices.
4. Loosen jam nut on pressure relief valve (**B**).
5. Adjust hex adjusting screw as follows:
  - To increase pressure relief, turn hex screw clockwise in 1/4 turn increments.
  - To decrease pressure relief, turn hex screw counterclockwise in 1/4 turn increments.
6. Tighten the jam nut on pressure relief valve (**B**).
7. Turn ON electrical power to the dock leveler.
8. Remove lock out/tag out devices.
9. Disengage the maintenance prop.
10. Cycle leveler and verify pressure relief setting.
11. Repeat steps 1– 10 as necessary.

## Adjust Lip Function

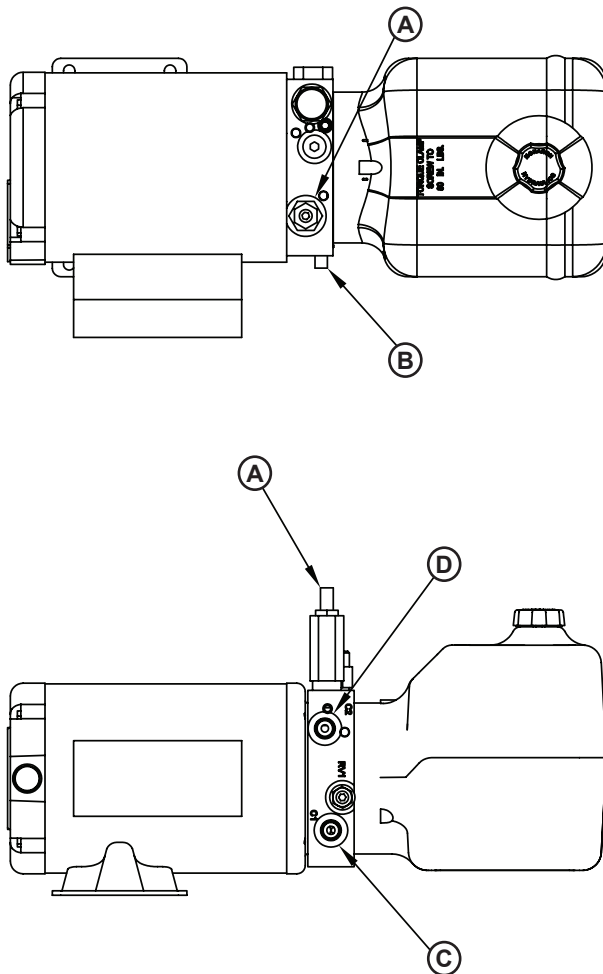


Figure 14

A — Sequence Valve      C — C1 Port (Hoist Cyl.)  
B — Pressure Relief Valve      D — C2 Port (Lip Cyl.)

## NOTICE

All HSM-series dock levelers are factory tested, and should not require additional adjustments in the field. Consult Systems, LLC Technical Services if minor adjustments do not result in proper operation.

Whenever valve adjustments are completed, record the number of turns made to allow an undesirable adjustment result to be reversed.

### Sequence Valve Adjustment

**Note:** Sequence valve is factory set at 750 PSI. This valve normally should not need adjustment.

See Troubleshooting section on pages 26-29 for more information.

1. Raise the platform fully and engage the maintenance prop in the service position.
2. Turn OFF all electrical power to the dock leveler.
3. Attach lock out/tag out devices.
4. Loosen jam nut.
5. Adjust hex adjusting screw (B) as follows:
  - If the lip opens as the platform begins to rise, turn sequence valve clockwise in 1/4 turn adjustments until operation is satisfactory.
  - If the lip will not fully retract when the platform returns to the stored position, turn sequence valve counterclockwise in 1/4 turn increments.
6. Tighten the jam nut.
7. Turn ON electrical power to the dock leveler.
8. Remove lock out/tag out devices.
9. Disengage the maintenance prop.
10. Cycle leveler and verify lip operation.
11. Repeat steps 1– 10 as necessary.

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

# TROUBLESHOOTING

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

# TROUBLESHOOTING

Symptom	Possible Cause	Solution
Platform does not rise. Pump operates in pressure relief mode.	Heavy object(s) on platform.	Remove object(s) from platform. <b>Note:</b> For safety reasons, the dock leveler is designed to lift only the platform's own weight.
	Dock leveler binds.	Check for visible obstructions that could cause binding. Remove obstructions. If no obstructions found, contact Systems, LLC Technical Services.
	Pressure relief set too low.	Increase pressure relief. See page 24 for instruction. <b>Note:</b> The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>
Platform rises slowly.	Low hydraulic fluid.	Add fluid, see pages 22-23 for proper fluid level and type.
	Contaminated hydraulic system.	Clean and inspect valves. Flush contaminated oil from hydraulic system. Fill system with new oil. See page 23.
	Damage or blocked hydraulic hose(s) and/or valve(s).	Replace damaged hose(s). Check and remove blockage from hose(s) and/or valve(s).
	Pressure relief set too low.	Increase pressure relief. See page 24 for instruction. <b>Note:</b> The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>

# TROUBLESHOOTING

Symptom	Possible Cause	Solution
<b>Pump motor loads down when platform reaches the full raised position.</b>	Pressure relief set too high.	Decrease pressure relief. See page 24 for instruction.  <b>Note:</b> The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief.  <i>* The full load amp value can be found on the inside cover of the control panel.</i>
<b>Platform does not rise to full height.</b>	Low hydraulic fluid.	Add fluid, see pages 22-23 for proper fluid level and type.
<b>Lip does not stay extended when leveler lowers.</b>	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 25 for adjustment instructions.
	Faulty lip cylinder.	Rebuild or replace lip cylinder.
<b>Platform DOES rise to full height, but lip DOES NOT extend or extend fully.</b>	Low hydraulic fluid.	Add fluid, see pages 22-23 for proper fluid level and type.
	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 25 for adjustment instructions.
<b>Lip does not extend.</b>	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 25 for adjustment instructions.
<b>Lip extends almost immediately when the RAISE button is Pressed.</b>	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 25 for adjustment instructions.

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

**Technical Service at 800-643-5424 or [techservices@loadingdocksystems.com](mailto:techservices@loadingdocksystems.com)**

# PARTS

## Danfoss Control Box

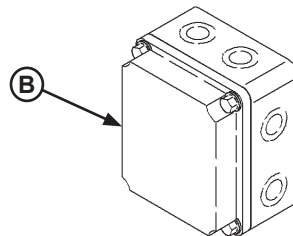
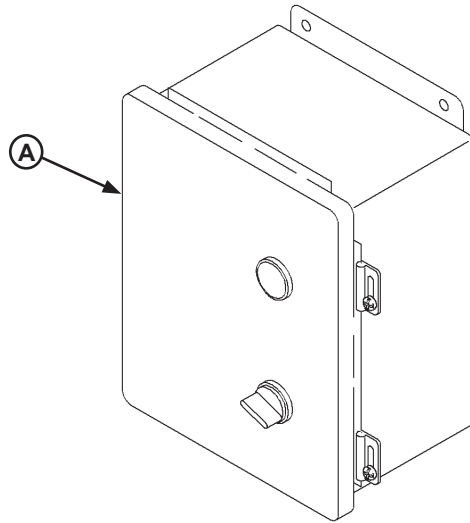


Part Number	Voltage	Phase	Description
7141-0268	110v	1-Phase	Danfoss Control Box (MTR 3627A)
7141-0269	230v	1-Phase	Danfoss Control Box (MTR 3627C)
7141-0270	230v	3-Phase	Danfoss Control Box (MTR 3627E)
7141-0271	460v	3-Phase	Danfoss Control Box (MTR 3627F)

\* Provide dock leveler serial number, voltage, phase, and options when e-mailing, calling or faxing controller orders.



## Optional Electrical Parts

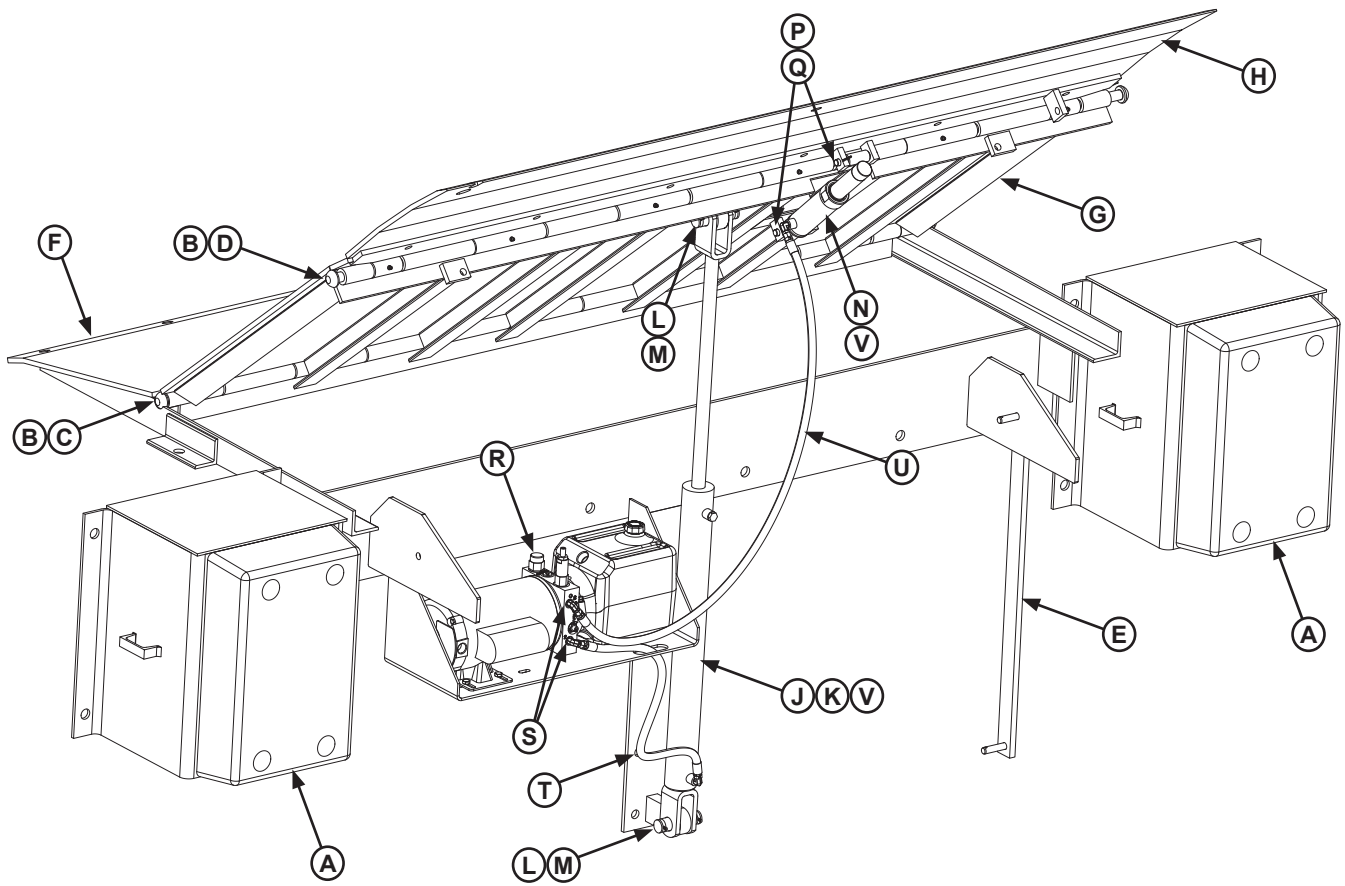


Item	Quantity	Part Number	Description
A	1	*	Control Box w/Optional Equipment
B	1	9511-0004	J-Box, Standard (4 x 4 in. Metal Box)
		2751-0042	J-Box, Cold Weather (5 x 5 in. Plastic Box)

\* Provide dock leveler serial number, voltage, phase, and options when e-mailing, calling or faxing controller orders.

# PARTS

## Leveler Components



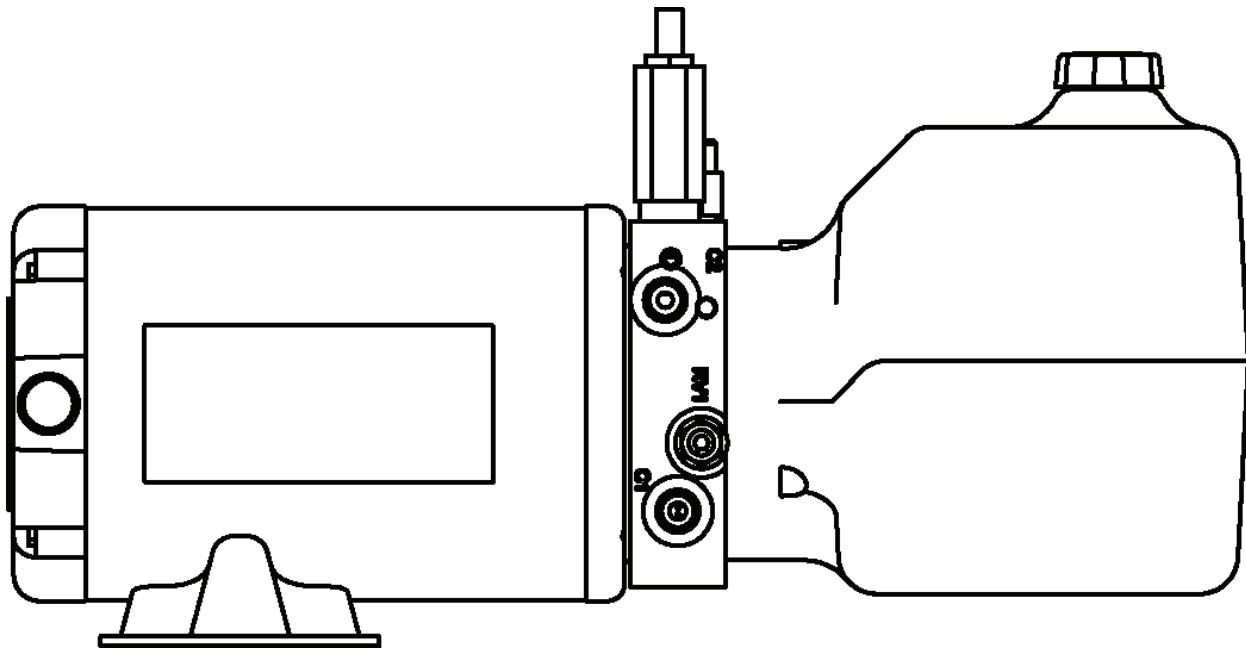
Item	Quantity	Part Number	Description
A	2	See Page 36	Bumper Block Assembly
B	4	DOTH-2400	Rivet - Button Head, 3/4 x 2
C	1	DOTH-5407	Pin - Lip Hinge, 21/32 Dia. x 67-1/2
D	1	DOTH-5406	Pin - Lip Hinge, 21/32 Dia. x 69-1/2
E	1	DOTH-5313	Safety Bar Assembly - HSM
F	1	DOTH-5428*	HSM Ramp & Base Plate Assembly
G	1	DOTH-5218*	HSM500 Deck Assembly
		DOTH-5224*	HSM525 Deck Assembly
		DOTH-5230*	HSM530 Deck Assembly
H	1	DOTH-5118*	HSM500/525 Lip Plate & Hinge Assembly (6-9/16" Hinge)
		DOTH-5136*	HSM530 Lip Plate & Hinge Assembly (6-9/16" Hinge)
J	1	DOTH-2723	Cylinder, Hoist, 2" x 20" Stroke
K	1	DOTH-2717	Fitting, Breather, 1/4" NPT
L	2	DOTH-2358	Pin, Headless, 1" x 3-3/4"
M	4	DOTH-2397	Pin, Hairpin, Clip, 3-1/2"
N	1	0521-0200	Cylinder, Lip, Single Acting, 1.25" x 3.5" Stroke
P	2	DOTH-2364	Pin, Clevis, 1/2" x 3-1/2"
Q	2	DOTH-2374	Pin, Cotter, 1/8" x 1"
R	1	See Page 34	Powerpack, Complete
S	2	DOTH-2739	Fitting, Swivel, 90 Degree, 3/8 Male x 1/4 Female
T	1	DOTH-2790	Hydraulic Hose, 1/4", 25" Length (Hoist)
U	1	DOTH-2813	Hydraulic Hose, 1/4", 44" Length (Lip)
V	2	DOTH-2738	Fitting, 90 Degree, 1/4 Male x 1/4 Female

\*Provide dock leveler serial number when e-mailing, calling or faxing orders. Older units with 4-15/16" hinges may require survey sheets.

# PARTS

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## Powerpack Assembly



Part Number	Description
DOTH-2854	Powerpack, 115/230v, 1ph, 60Hz
DOTH-2855	Powerpack, 230/460v, 3ph, 60Hz
DOTH-2856	Powerpack, 110/220v, 1ph, 50Hz**
DOTH-2857	Powerpack, 208/380v, 3ph, 50Hz**

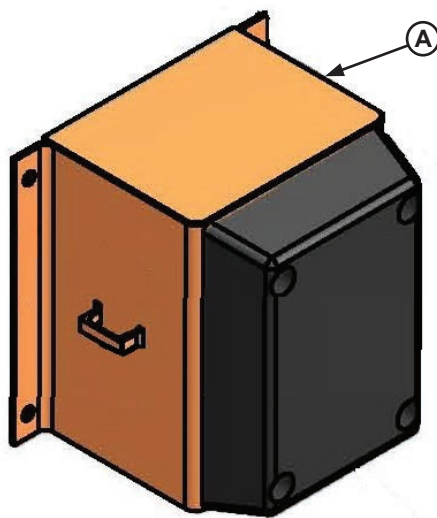
\*Provide dock leveler serial number when e-mailing, calling or faxing orders.

\*\*Special order 50Hz Powerpacks for non-USA markets only.

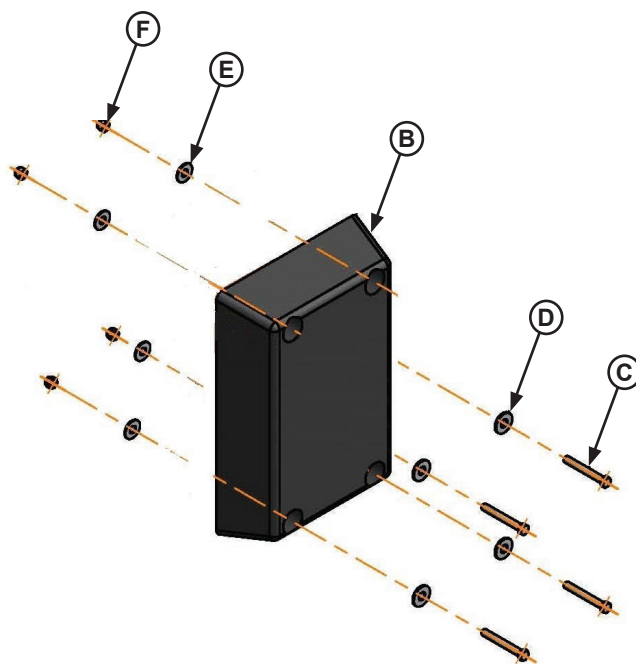
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# PARTS

## Bumpers

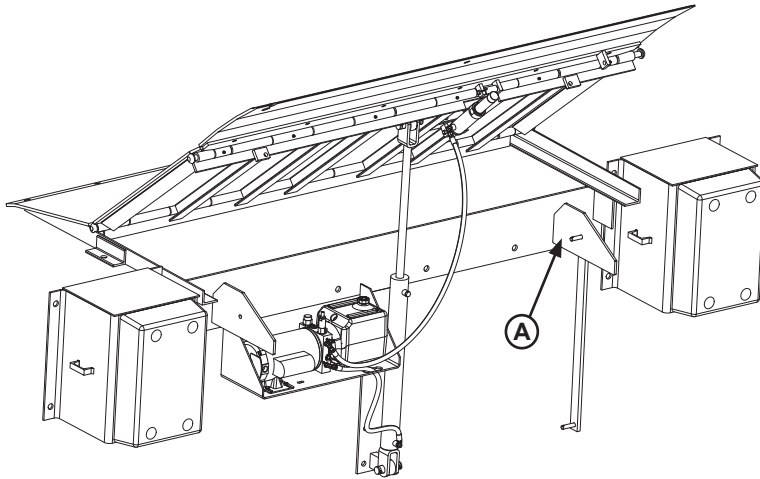


Item	Quantity	Part Number	Description
*	*	<b>DBBS-3520</b>	<b>4" x 10" x 18" Bumper Block Assembly With Kickplate, Complete</b>
A	1	DOTH-3510	18" Bumper Block Weldment With Kickplate

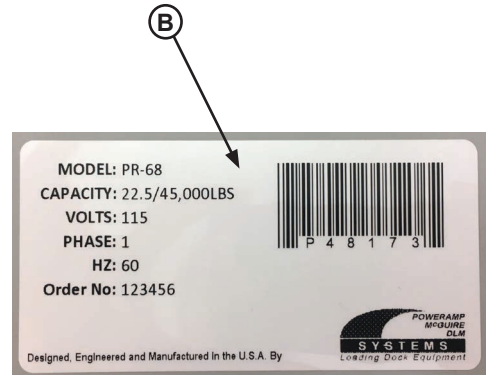


Item	Quantity	Part Number	Description
*	*	<b>DKIT-3541</b>	<b>Rubber Bumper and Hardware Kit</b>
B	1	DOTH-3559	Molded Rubber Bumper 4" x 10" x 18"
C	4	DOTH-2056	Hex Head Cap Screw
D	4	DOTH-2208	Washer - Flat - Zinc Plated
E	4	DOTH-2210	Washer - Flat
F	4	DOTH-2129	Nut - Nylon Lock

## Customer Information



**Figure 15**



**Figure 16**

*NOTE: Refer to Figure 15 for orientation of dock leveler and Figure 16 for example of decal.*

*The LEVELER model/serial number decal is located on the left side gusset (A).*

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

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

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

For service, call or contact:

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

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

[www.loadingdocksystems.com](http://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.