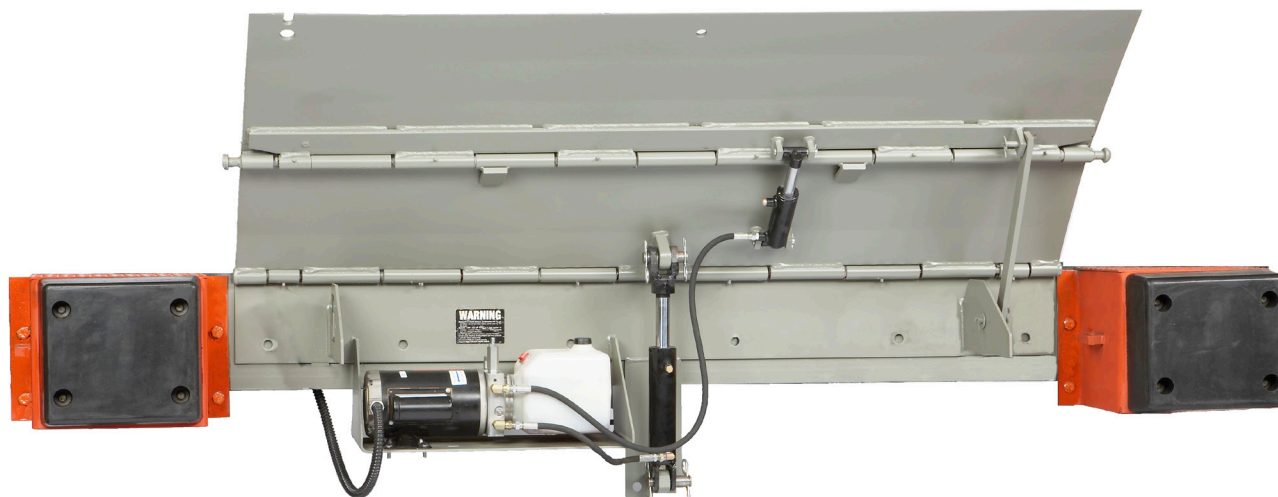




Hydraulic EOD Dock Leveler

Owner's/User's Manual



NOVA Technology International • N90 W14507 Commerce Dr. • Menomonee Falls, WI 53031
800.236.7325 • fax: 262.502.1511 • www.novalocks.com • sales@novalocks.com

Printed in U.S.A.
© 2018 - All Rights Reserved

Manual No. 4111-0027-N
Sept. 2018

Table of Contents

	Page
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	10
Installation Overview	11
Flush Mount - Weld On.....	12
Ramp Mount - Weld/Bolt On	14
Flush Mount - Bolt On	16
Ramp Mount - Weld On w/Formed Angle	18
Formed Angle.....	20
Ramp and Face Plate.....	22
Install Control Panel and Wiring	24
Placard Installation Instructions	26
Put New Dock Leveler Into Service.....	27
Operation	
Operational Precautions	28
Operating Instructions	29
Maintenance	
Maintenance Precautions.....	30
Periodic Maintenance	32
Adjustments	
Adjust Main Pressure Relief	34
Adjust Lip Function	35
Troubleshooting	
Troubleshooting.....	36
Parts	
Danfoss Control Box	40
Optional Electrical Parts	41
Leveler Components	42
Powerpack Assembly	44
Bumper Components	46
Miscellaneous	
Customer Information	49
Warranty.....	Back Cover

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.

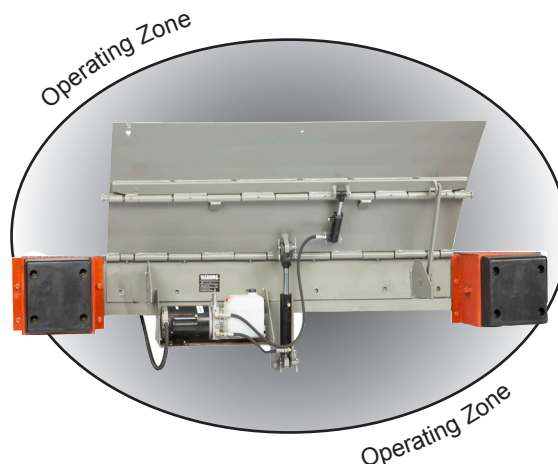


Figure 1

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

PRECAUTIONS

Operational Precautions

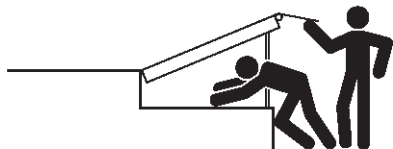


Learn the safe way to operate this equipment. Read and understand the manufacturer's instructions. If you have any questions, ask your supervisor.

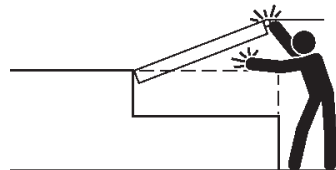
DANGER



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.

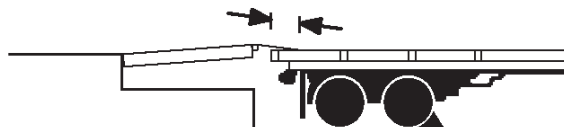
WARNING



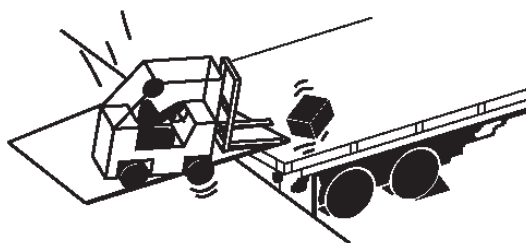
Chock/restrain all transport vehicles. Never remove the wheel chocks or release the restraining device until loading or unloading is finished, and transport driver has been given permission to drive away.



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.



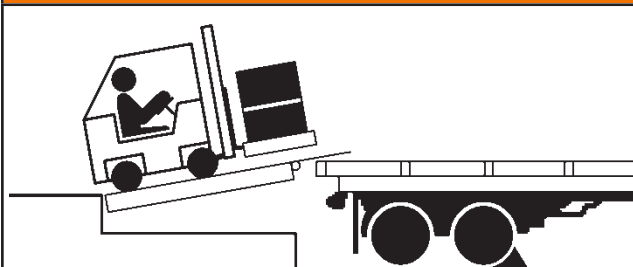
Make sure lip overlaps onto transport vehicle bed at least 4 in. (102 mm).



Keep a safe distance from both side edges.

Operational Precautions

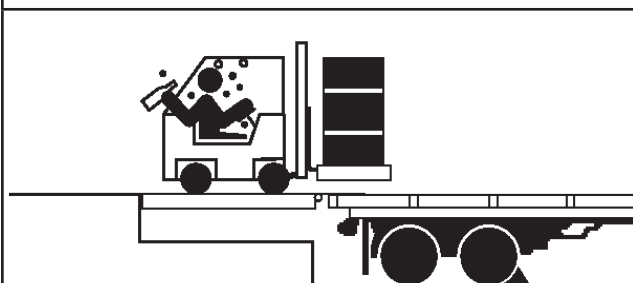
WARNING



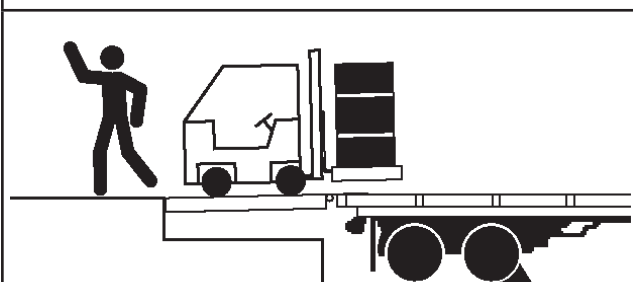
Do not use dock leveling device if transport vehicle is too high or too low.



Do not overload the dock leveling device.



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

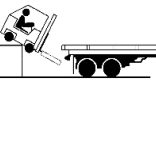


Do not leave equipment or material unattended on dock leveling device.

PRECAUTIONS

Safety Decals

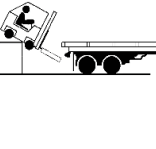
①



<p>⚠ DANGER</p>	<p>SAFETY INFORMATION</p>
<p>Unsupported dock leveler ramps can lower unexpectedly.</p> <p>Before allowing vehicle to leave the dock always:</p> <ul style="list-style-type: none"> Ensure no equipment, material or people are on dock leveler. Return dock leveler to its stored position at dock level. 	<div style="background-color: #008000; color: white; padding: 2px;">OPERATION</div> <ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. <div style="background-color: #008000; color: white; padding: 2px;">MAINTENANCE/SERVICE</div> <ol style="list-style-type: none"> 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 A

①



<p>⚠ DANGER</p>	<p>SAFETY INFORMATION</p>
<p>Unsupported dock leveler ramps can lower unexpectedly.</p> <p>Before allowing vehicle to leave the dock always:</p> <ul style="list-style-type: none"> Ensure no equipment, material or people are on dock leveler. Return dock leveler to its stored position at dock level. 	<div style="background-color: #008000; color: white; padding: 2px;">OPERATION</div> <ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. <div style="background-color: #008000; color: white; padding: 2px;">MAINTENANCE/SERVICE</div> <ol style="list-style-type: none"> 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 A

⑤


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

1751-0138 Rev B

1751-0138

1751-0730

③

<p>⚠ DANGER</p>

<p>Ramp swings toward you. Stand Clear. Use maintenance strut while servicing. Failure to do so will result in death or serious injury.</p>

Refer to owner's/user's manual for proper procedure 1751-0763 Rev A

1751-0763

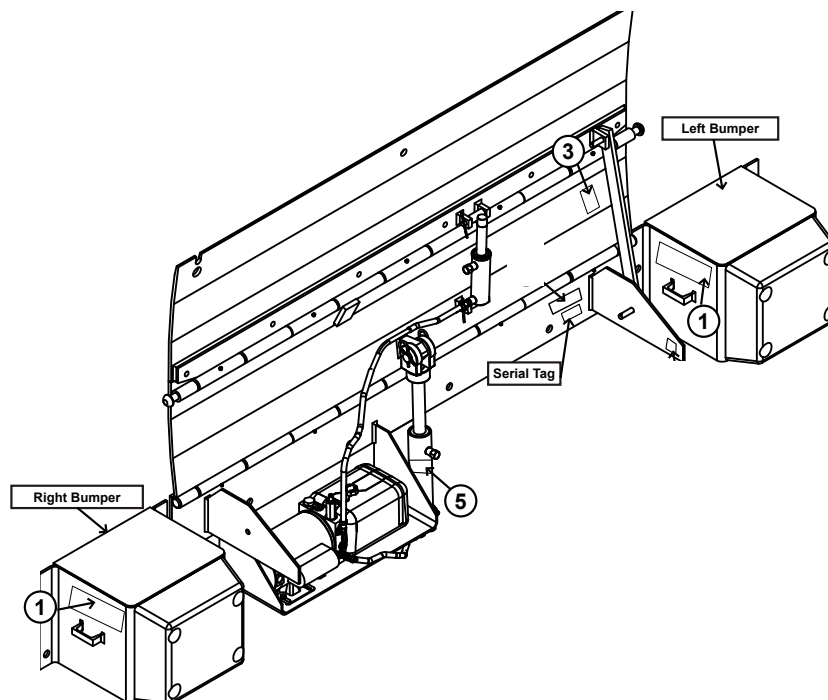

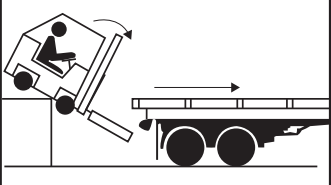




Figure 2

Placard

 <h1>DANGER</h1>	<h1>OPERATING INSTRUCTIONS</h1>
 <ul style="list-style-type: none"> • 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. 	<h2>POWERED DOCK LEVELERS</h2> <h3>NORMAL OPERATION</h3> <ol style="list-style-type: none"> 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.
<ul style="list-style-type: none"> • 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. <p>FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN DEATH OR OTHER SERIOUS INJURY.</p>	<h3>STORING LEVELER</h3> <ol style="list-style-type: none"> 1. Press the RAISE button until the lip is completely folded. When the lip is folded, release the RAISE button. The platform will lower returning to the cross-traffic position. <h3>BELOW DOCK ENDLOADING</h3> <ul style="list-style-type: none"> • (AIR POWERED ONLY) Press and hold the RAISE button until the leveler is 12" above dock level. Pull the below dock level chain until the leveler lowers the full below dock position. • (HYDRAULIC ONLY) Press and hold the RAISE button until the leveler is fully raised. As the lip starts to extend, release the RAISE button. The leveler will lower to the below dock position provided the lip extension allows the lip to clear the lip keepers. • (HYDRAULIC WITH INFINITE LIP CONTROL) If equipped, raise the platform by pressing and holding the RAISE button. When the lip is just above the lip keepers, simultaneously press and hold the RAISE button and the LIP OUT button until lip has extended beyond the lip keepers. Release both buttons. <p>NOTE: If equipped, pressing E-STOP button will stop platform from lowering.</p>
 <p>262.502.1591 or 1.800.236.7325 Call for additional placards, or manuals, or with questions regarding proper use, maintenance, and repair of dock leveler. www.novalocks.com</p> <p> WARNING: CANCER AND REPRODUCTIVE HARM www.P65Warnings.ca.gov</p> <p>1751-1012</p>	<p>1751-1012 Rev D</p>

OWNER'S/USER'S RESPONSIBILITIES

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

OWNER'S/USER'S RESPONSIBILITIES

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

INTRODUCTION

General Information

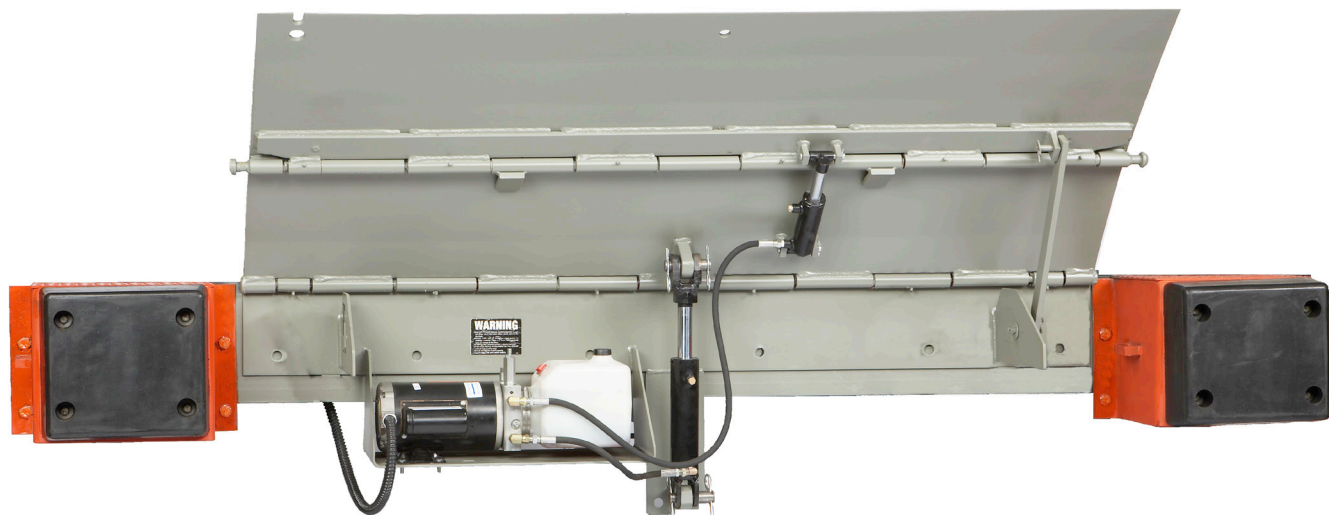


Figure 3

This manual provides current information on the HED-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 HED series dock leveler comes equipped with an electrical control panel, which allows push button operation of the dock leveler functions. Each HED dock leveler unit and control panel has been factory prewired and tested to ensure satisfactory operation.

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

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

Dimensions and Capacities			
Model # -	Deck - Width	Total Unit Width	Comparative Industry Rating
HED-66	66"	104"	20,000 lb
HED-72	72"	110"	25,000 lb
HED-78	78"	116"	30,000 lb
HED-84	84"	122"	35,000 lb

Call NOVA Technology International 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).

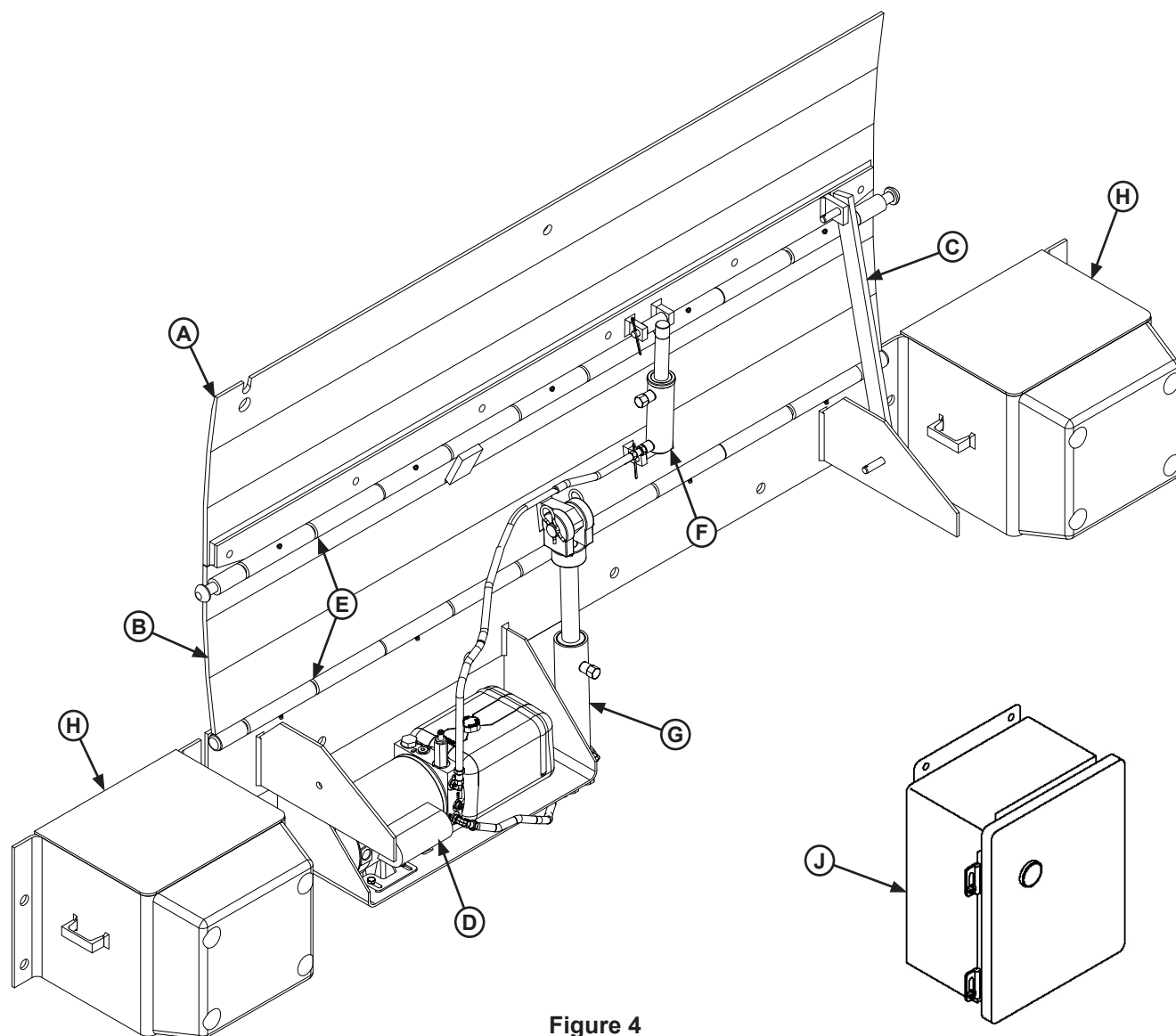


Figure 4

A — Lip Plate
B — Center Plate
C — Maintenance Prop

D — Powerpack (Motor/Pump/Reservoir)
E — Hinge Area
F — Lip Cylinder*

G — Hoist Cylinder*
H — Bumper Blocks (2 used)
J — Control Box**

* Some high-capacity models are equipped with multiple cylinders.

**Control box appearance may vary depending on options.

INSTALLATION

Installation Precautions

DANGER

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

WARNING

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

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

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

WARNING

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

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

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

CAUTION

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

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.

Installation Overview



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.

NOTICE

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

Note: This is a generic overview of the installation steps required. See full installation instructions on pages 12-27 for different installation types and all steps.

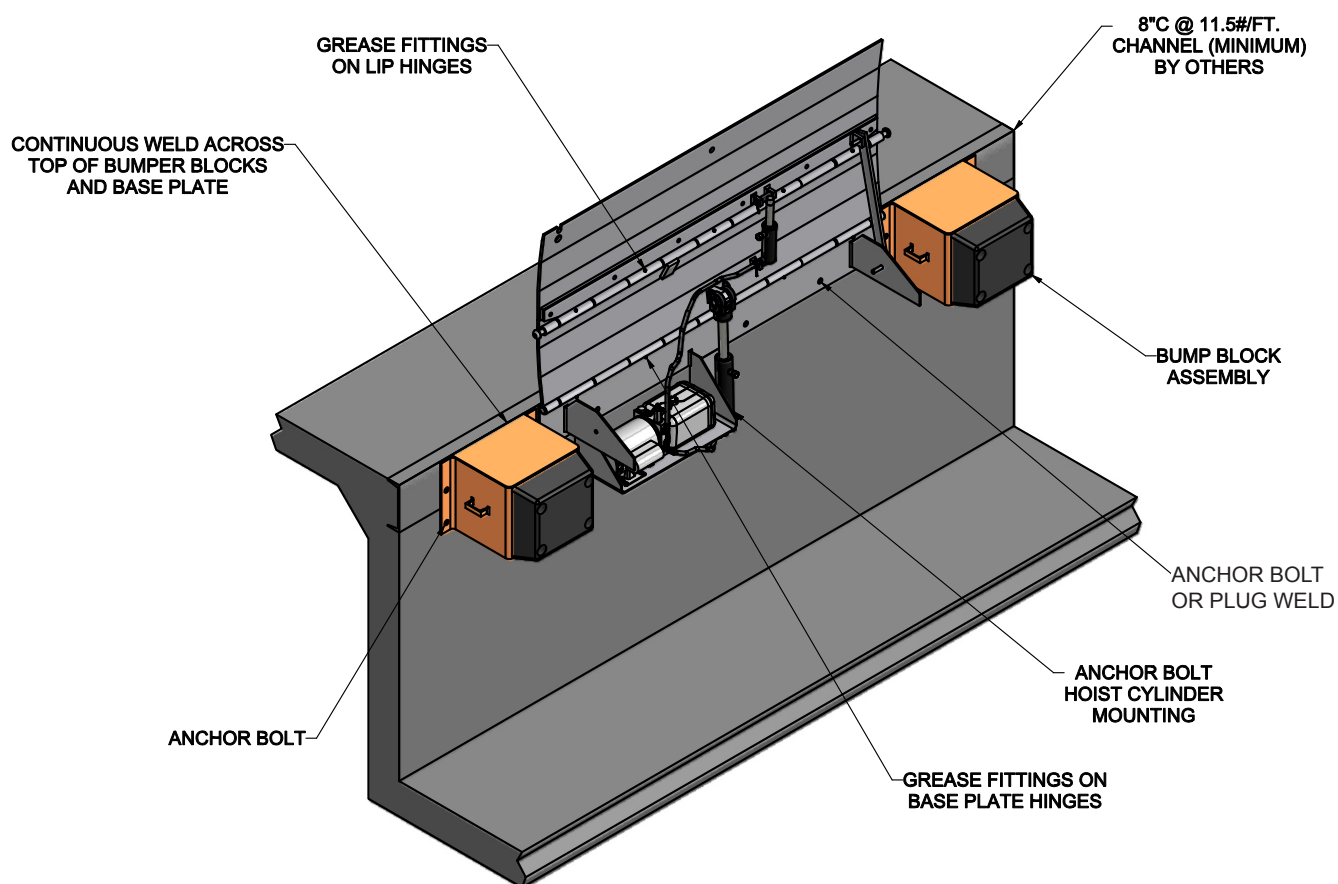


Figure 5

INSTALLATION

Flush Mount - Weld On

A flush mount weld on application is used when an 8" wide (minimum) embed channel is securely anchored into the concrete at the dock edge, and the dock height is adequate.

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. At chosen location for Edge-of-Dock leveler, locate the center of space and mark a point half of the base plate width to the left and right.
3. Using a proper lifting device, raise and position leveler on dock face with the top of the base plate being flush with the top of the embedded channel. Position ends of base plate to match up with marks made previously.
4. Tack weld base plate to dock steel on left hand end of the leveler. Check right hand end of base plate, ensure that end is against dock steel and that the top of the base plate is still flush with the top of the embedded channel. Tack right hand end to dock steel.
5. Position bump blocks out approximately 5/8" from the edge of the inside flange of the bump block to the end of the base plate. This will allow for vertical welding of both the base plate and the bump block flange back to the dock steel. Top of the bump block cover plate should be flush with the top of the embed channel. Tack weld bump blocks to dock steel.
6. Check the positioning of the base plate and the bump blocks.
7. Complete welding of tacked parts as follows:
 - a. Apply a continuous weld across top of each bumper and base plate to dock steel. Skip welding is acceptable to prevent warping.
 - b. Weld vertically along each end of base plate and on both inboard and outboard flanges of bump blocks.
 - c. Fully plug weld all holes in base plate.
8. Installer must remove all welding slag, and repaint welded areas.
9. 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.
10. Proceed to page 24 for control panel and wiring installation instructions.

Flush Mount - Weld On (continued)



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.

NOTICE

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

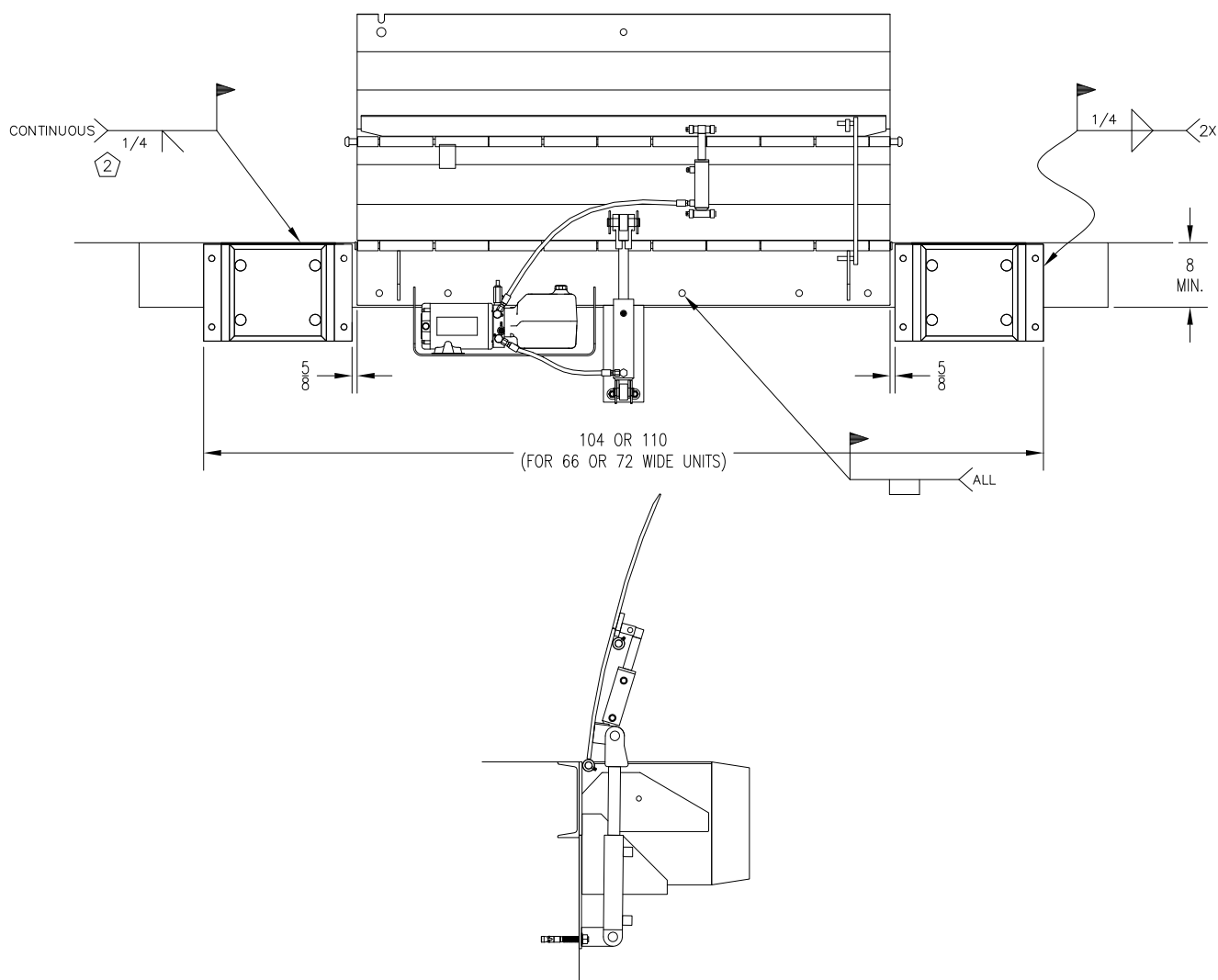


Figure 6

Note:

1. Top of base plate and bumper cover plate to be flush with top of dock floor and embedded channel.
2. Apply continuous bevel weld across both bumpers and length of base plate.

INSTALLATION

Ramp Mount - Weld/Bolt On

A ramp mount-weld on application is used when adequate dock steel is securely anchored in the concrete at the dock edge, but the existing dock height is too low and the dock leveler must be installed above this height to correct this situation.

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. At chosen location for Edge of Dock leveler, locate the center of space and mark a point half of the base plate width to the left and right.
3. At the points marked to each side of center, measure and mark points 7-3/4" below dock level less height the unit is to be raised to locate bottom of base plate. This will locate the top of the base plate X" above dock level.
4. Using a proper lifting device, raise and position the leveler base plate to marked position. While holding base plate tight against dock face, tack weld securely to dock steel on left hand end of leveler. Check right hand end of base plate, ensure that end is against dock steel and that the bottom of the base plate is even with the marks made previously. Tack right hand end to dock steel. Support unit until final welding is ready to complete.
5. Position bump blocks out approximately 5/8" out from the edge of the inside flange of the bump block to the end of the base plate. Position the top of the tread cover plate on the bump blocks to be flush with the top of the base plate. Tack weld bump blocks to dock steel.
6. Place steel ramp plate in position, flush with top backside of base plate. Mark along full length of back edge of ramp plate. Slide ramp plate forward over dock leveler the width of bushing tool, approximately 2".
7. Place bushing tool on marked line at each end of ramp to ensure proper alignment at both ends, and tack weld ramp plate to dock leveler to hold ramp plate in place while bushing. A Skil Roto Hammer #736 or similar tool is recommended.
8. 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.
9. Break tack welds holding ramp in place, slide ramp plate back into position with the top of the ramp plate flush with the top of the base plate. Tack weld each end and center of ramp plate to base plate.
10. Drill 5/8" dia. by 5" deep holes through ramp plate at back edge. Install anchor bolts per manufacturers specifications, and tighten securely. 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.
11. Complete welding of tacked parts as follows:
 - a. Apply continuous weld across top of each bumper and base plate to ramp plate. Skip welding is acceptable to prevent warping.
 - b. Weld vertically along each end of base plate and on both inboard and outboard flanges of bump blocks.
 - c. Fully plug weld all holes in base plate.
12. Installer must remove all welding slag and repaint welded areas.
13. 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.
14. Proceed to page 24 for control panel and wiring installation instructions.

Ramp Mount - Weld/Bolt On (continued)



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.

NOTICE

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

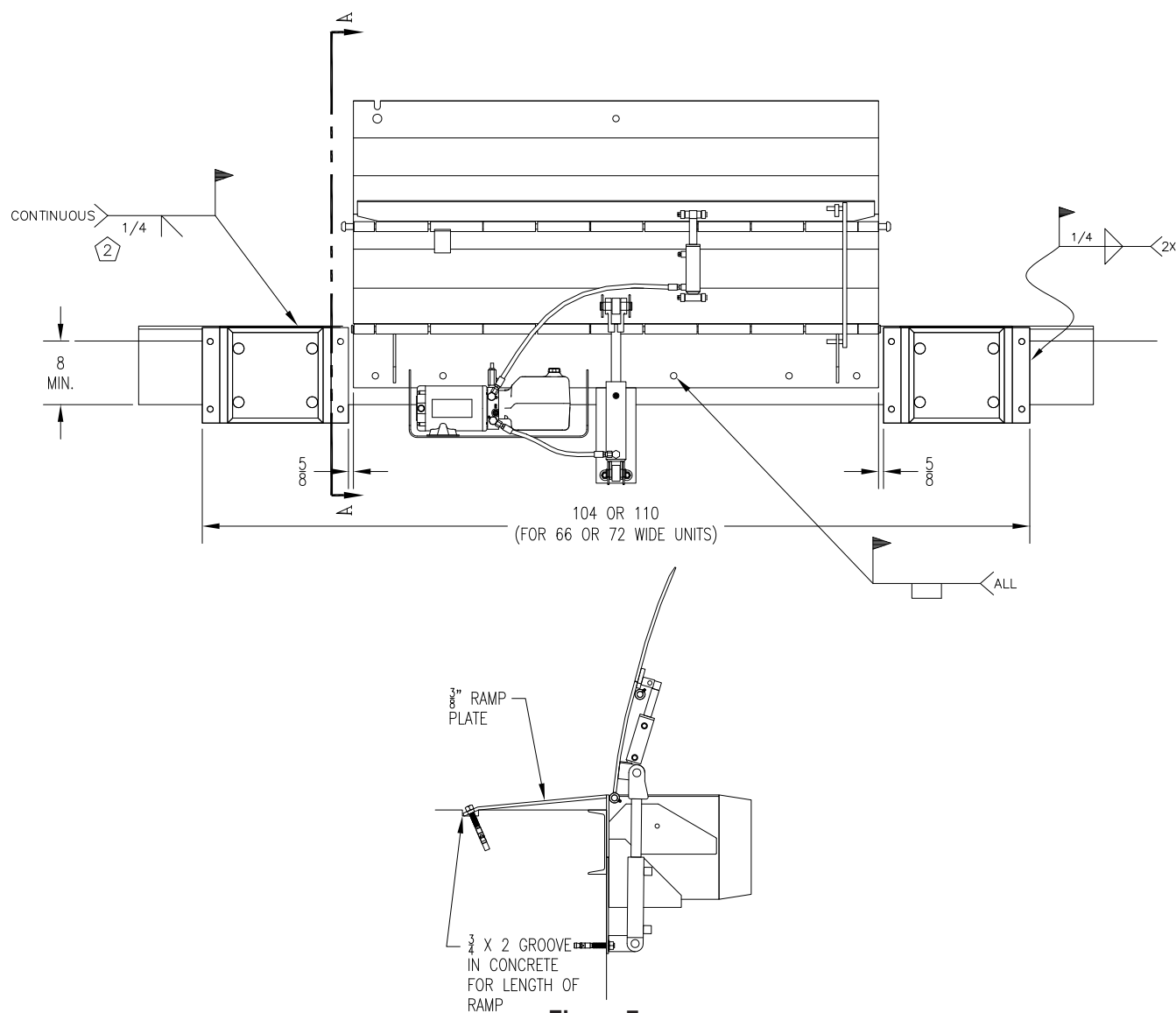


Figure 7

Note:

1. Top of base plate and bumper cover plate to be flush with top of ramp plate.
2. Apply continuous bevel weld across both bumpers and length of base plate.
3. To figure ramp plate length, need 12" ramp for every 1-1/2" of rise to ramp.

INSTALLATION

Flush Mount - Bolt On

A flush mount bolt on application is used when there is no steel on dock edge, and the dock height is adequate. Additional steel ramp plate and bolting is required with this type of installation.

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. At chosen location for Edge of Dock leveler, locate the center of space and mark a point half of the base plate width to the left and right.
3. At the points marked to each side of center, measure and mark points 7-1/2" below dock level (for 1/4" ramp plate) to locate position for bottom of base plate. This position will place the top of the base plate 1/4" above the dock floor. This position will vary with ramp plate thickness.
4. Mark line connecting these points and position support angles. Position angles as shown in installation drawing provided. Mark center of holes in each of the support angles.
5. At center marks, drill holes 5/8" dia. by 5" deep in concrete. Install anchor bolts with washers through support angles into holes in concrete. Tighten bolts until support angles are secure. Follow anchor manufacturers installation instructions for proper installation.
6. Using a proper lifting device, raise and position the leveler base plate to marked position, while resting on the support angles. While holding base plate tight against dock face, tack weld securely to support angles.
7. Drill 5/8" dia. by 5" deep holes in concrete through holes in base plate, and install anchor bolts with washers and tighten securely.
8. Position bump blocks out approximately 5/8" out from the edge of the inside flange of the bump block to the end of the base plate. Position the top of the tread cover plate on the bump blocks to be 1/4" above dock level. Note that this placement will vary with ramp plate thickness. Mark centers of holes in bump block flanges.
9. Drill 5/8" dia. by 5" deep holes at center marks. Reposition bump blocks, insert anchor bolts with washers and tighten securely to dock face.
10. Place steel ramp plate in position, flush with top backside of base plate. Mark along full length of back edge of ramp plate. Slide ramp plate forward over dock leveler the width of bushing tool, approximately 2".
11. Place bushing tool on marked line at each end of ramp to ensure proper alignment at both ends, and tack weld ramp plate to dock leveler to hold ramp plate in place while bushing. A Skil Roto Hammer #736 or similar tool is recommended.
12. Using the back edge of the ramp plate as a guide, groove concrete approximately 5/8" deep by 2" wide, and should be the entire length of ramp plate.
13. Break tack welds holding ramp in place, slide ramp plate back into position with the top of the ramp plate flush with the top of the base plate. Tack weld each end and center of ramp plate to base plate.
14. Drill 5/8" dia. by 5" deep holes through ramp plate at back edge. Install anchor bolts per manufacturers specifications, and tighten securely. 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.
15. Complete welding of tacked parts as follows:
 - a. Apply continuous weld across top of each bumper and base plate to ramp plate. Skip welding is acceptable to prevent warping.
 - b. Weld bottom of base plate to support angles using a 1/4" fillet weld.
16. Installer must remove all welding slag and repaint welded areas.
17. 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.
18. Proceed to page 24 for control panel and wiring installation instructions.

Flush Mount - Bolt On (continued)



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.

NOTICE

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

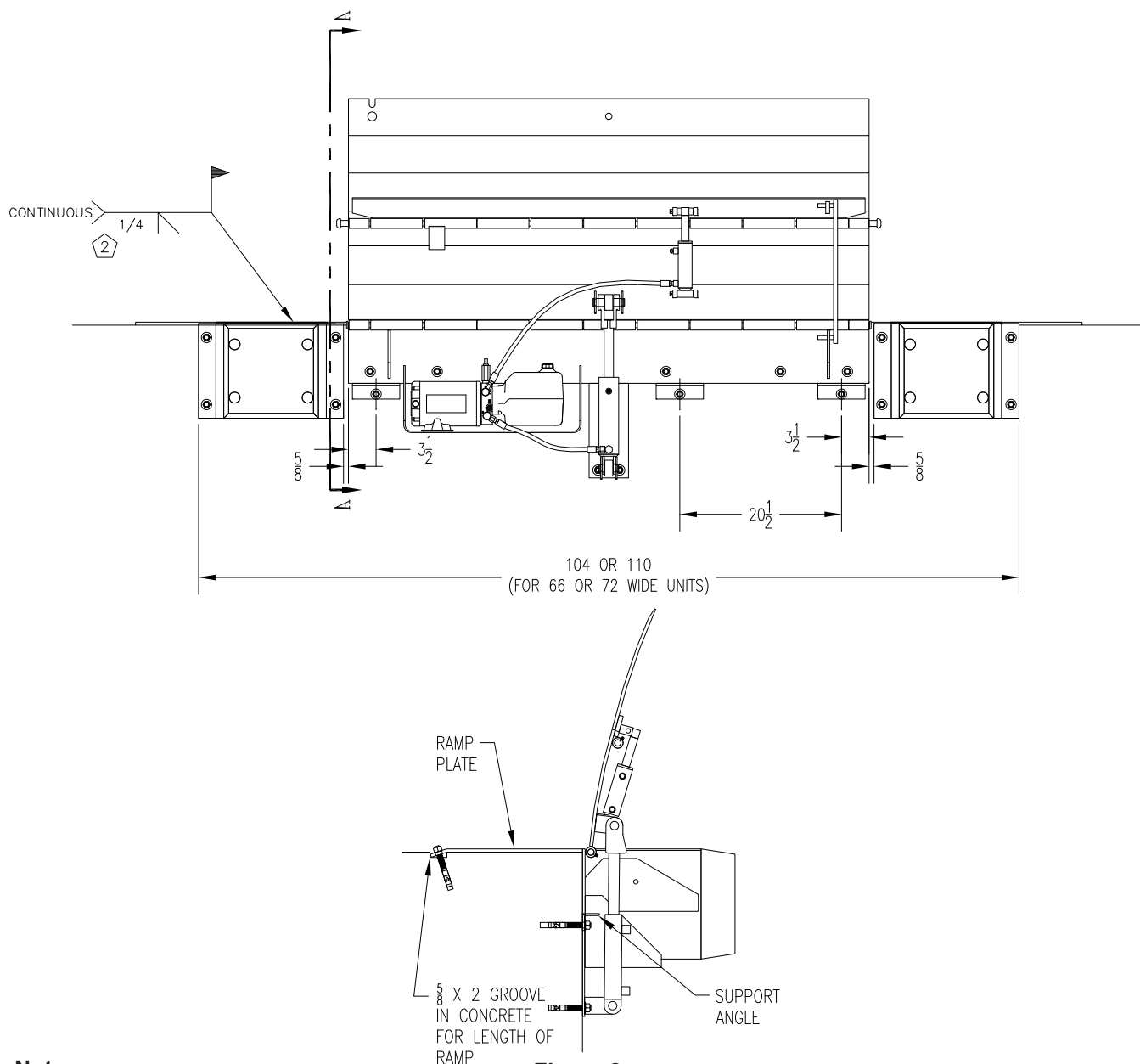


Figure 8

Note:

1. Top of base plate and bumper cover plate to be flush with top of ramp plate.
2. Apply continuous bevel weld across both bumpers and length of base plate.

INSTALLATION

Ramp Mount - Weld On w/Formed Angle

A ramp mount-weld on used with a formed angle application is used when dock edge is damaged, there is no dock steel securely anchored into the concrete, and the dock height is too low and the leveler must be installed above this height to correct this situation.

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. Review and follow formed angle installation instructions prior to leveler installation.
3. At chosen location for Edge of Dock leveler, locate the center of space and mark a point half of the base plate width to the left and right.
4. At the points marked to each side of center, measure and mark points 7-3/4" below dock level less height the unit is to be raised to locate bottom of base plate. This will locate the top of the base plate X" above dock level.
5. Using a proper lifting device, raise and position the leveler base plate to marked position. While holding base plate tight against dock face, tack weld securely to dock steel on left hand end of leveler. Check right hand end of base plate, ensure that end is against dock steel and that the bottom of the base plate is even with the marks made previously. Tack right hand end to dock steel. Support unit until final welding is ready to complete.
6. Position bump blocks out approximately 5/8" out from the edge of the inside flange of the bump block to the end of the base plate. Position the top of the tread cover plate on the bump blocks to be flush with the top of the base plate. Tack weld bump blocks to dock steel.
7. Place steel ramp plate in position, flush with top backside of base plate. Mark along full length of back edge of ramp plate. Slide ramp plate forward over dock leveler the width of bushing tool, approximately 2".
8. Place bushing tool on marked line at each end of ramp to ensure proper alignment at both ends, and tack weld ramp plate to dock leveler to hold ramp plate in place while bushing. A Skil Roto Hammer #736 or similar tool is recommended.
9. 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.
10. Break tack welds holding ramp in place, slide ramp plate back into position with the top of the ramp plate flush with the top of the base plate. Tack weld each end and center of ramp plate to base plate.
11. Drill 5/8" dia. by 5" deep holes through ramp plate at back edge. Install anchor bolts per manufacturers specifications, and tighten securely. 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.
12. Complete welding of tacked parts as follows:
 - a. Apply continuous weld across top of each bumper and base plate to ramp plate. Skip welding is acceptable to prevent warping.
 - b. Weld vertically along each end of base plate and on both inboard and outboard flanges of bump blocks.
 - c. Fully plug weld all holes in base plate.
13. Installer must remove all welding slag and repaint welded areas.
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. Proceed to page 24 for control panel and wiring installation instructions.

Ramp Mount - Weld On w/Formed Angle (continued)



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.

NOTICE

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

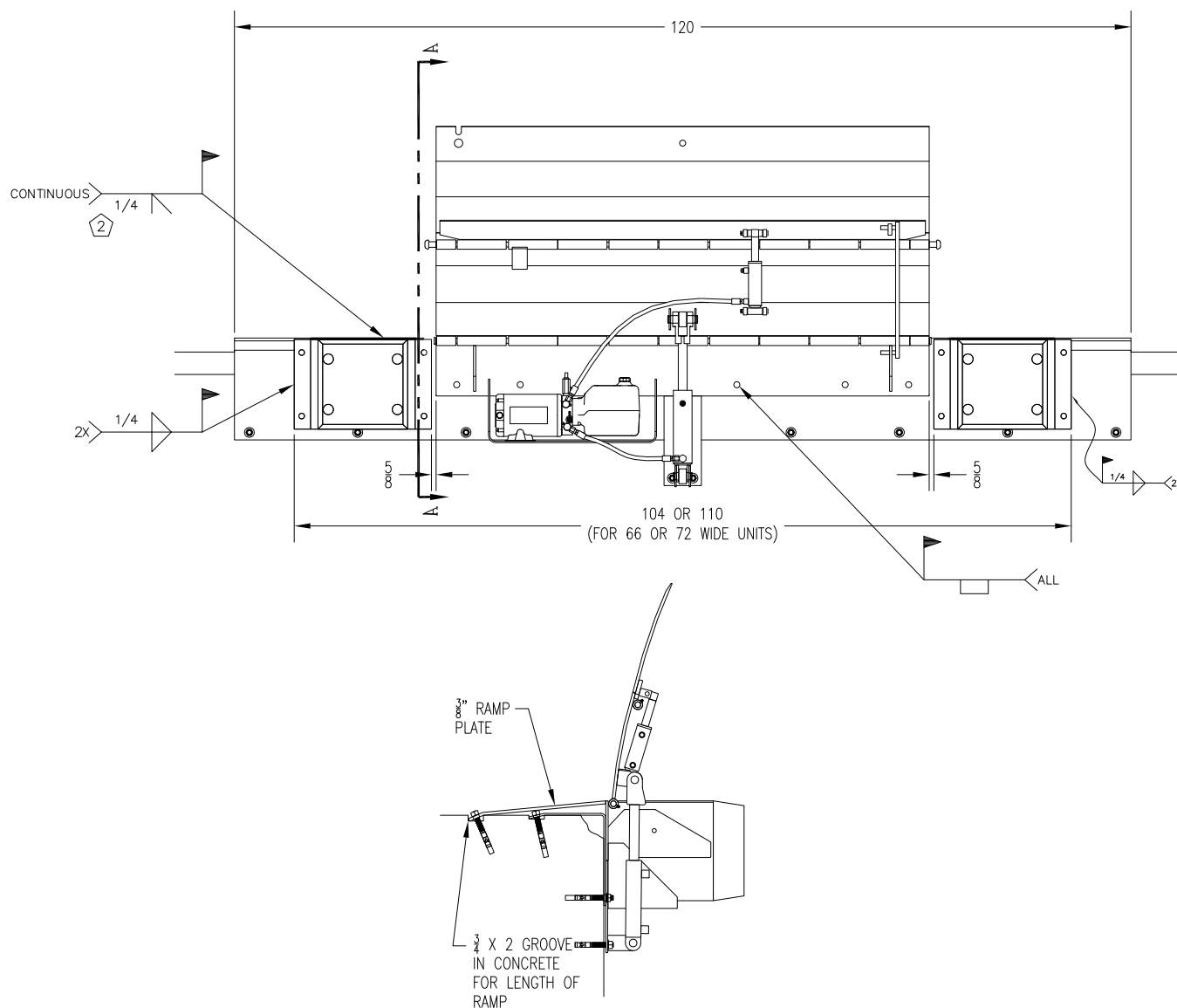


Figure 9

Note:

1. Top of base plate and bumper cover plate to be flush with top of ramp plate.
2. Apply continuous bevel weld across both bumpers and length of base plate.
3. To figure ramp plate length, need 12" ramp for every 1-1/2" of rise to ramp.
4. To install formed angle, see formed angle installation instructions on page 21.

INSTALLATION

Formed Angle

A formed angle is used when there is no existing dock steel and concrete at the dock edge has been damaged. The formed angle is required to rebuild the damaged concrete edge for a proper installation if the dock height is adequate.

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. At chosen location for the formed angle, locate the center of space and mark a point half of the angle width to the left and right.
3. Using a proper lifting device, raise and position the formed angle to marked position, slide formed angle against dock face.
4. Mark along full length of back edge of formed angle. Slide angle forward the width of brushing tool, approximately 2".
5. Place brushing tool on marked line at each end of formed angle to ensure proper alignment at both ends. A Skil Roto Hammer #736 or similar tool is recommended.
6. Using the back edge of the formed angle as a guide, groove concrete approximately 5/8" deep by 2" wide, and should be the entire length of the formed angle.
7. Slide formed angle back until tight against dock face. drill 5/8" dia. by 5" deep holes through formed angle at back edge. Install anchor bolts per manufacturers specifications, and tighten securely. Weld anchor bolt nuts to formed angle 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. Drill 5/8" dia. by 5" deep holes in dock face through holes in formed angle. Install anchor bolts with washers and tighten securely per manufacturers specifications.

Formed Angle (continued)

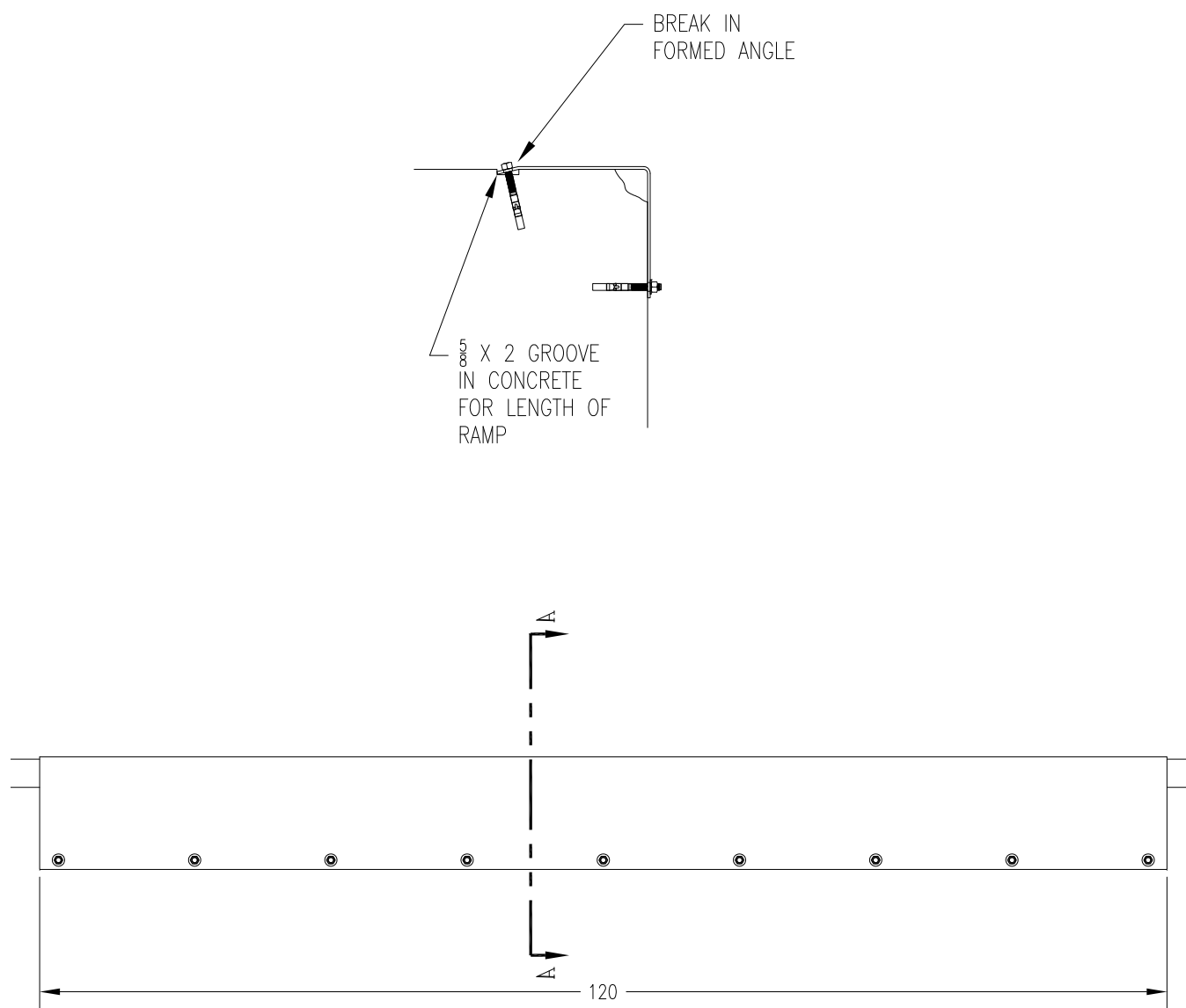


Figure 10

Note:

1. Secure formed angle with (18) anchor bolts, (9) each side.

INSTALLATION

Ramp and Face Plate

A ramp mount requiring a face plate application is used when there is no existing dock steel and the concrete at the dock edge has been damaged. The dock height can be low, high, or adequate for this application, however, the face plate and ramp plate are required to rebuild the damaged concrete 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. At chosen location for the face plate, locate the center of space and mark a point half of the face plate width to the left and right.
3. Using a proper lifting device, raise and position the face plate to marked position, and push face plate against dock face.
4. Top of face plate should be flush with the top of dock floor. Mark center of holes in face plate into dock face. Drill 5/8" dia. by 5" holes into dock face. Install anchor bolts with washers per manufacturers specifications and tighten securely.
5. Place ramp plate to match each end of the face plate. Leading (forward) edge of ramp plate should be flush with dock face.
6. Mark along full length of back edge of ramp plate. Slide ramp forward the width of bushing tool, approximately 2".
7. 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.
8. Tack weld ramp to face plate on each end to secure in place.
9. Using the back edge of the ramp plate as a guide, groove concrete approximately 5/8" deep by 2" wide, and should be the entire length of the ramp plate.
10. Break tack welds and slide ramp back until forward edge is flush with dock face. Tack weld ramp on each end and center to face plate. Drill 5/8" dia. by 5" deep holes through ramp plate at back edge. Install anchor bolts per manufacturers specifications, and tighten securely. 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.
11. Apply a continuous fillet weld at the created joint between the face plate and ramp. Skip welding should be the proper method used to avoid warping.

Ramp and Face Plate (continued)

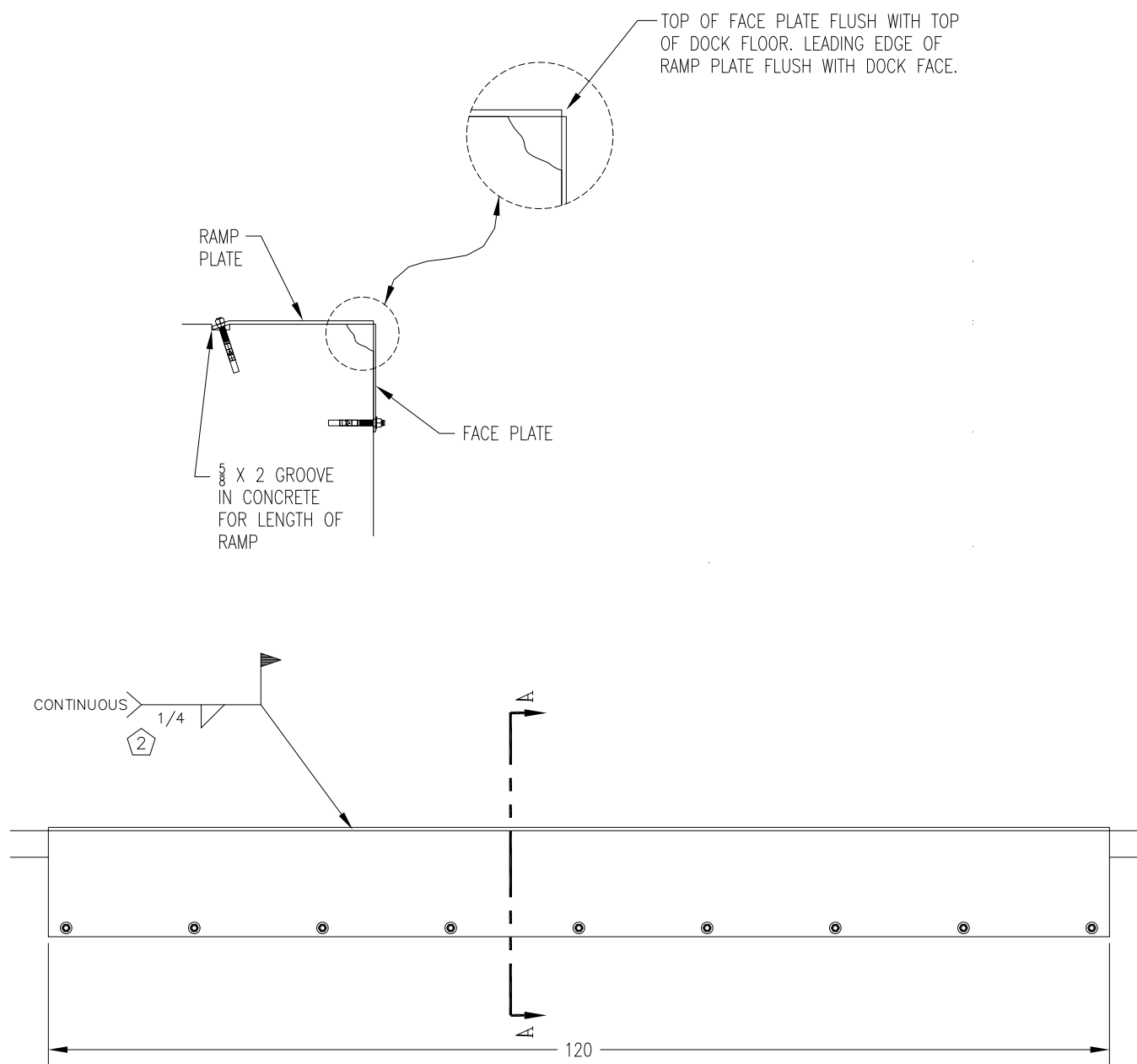


Figure 11

Note:

1. Secure formed angle with (18) anchor bolts, (9) each side.
2. Apply continuous fillet weld across entire length of face plate and ramp.

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.

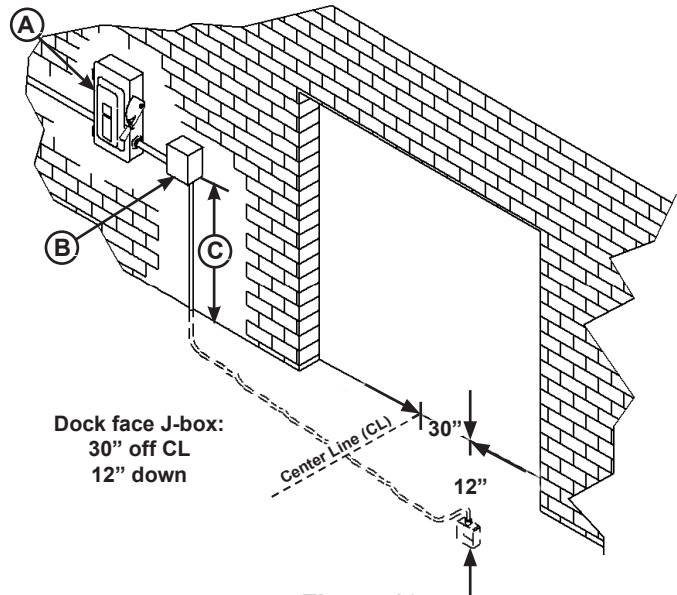


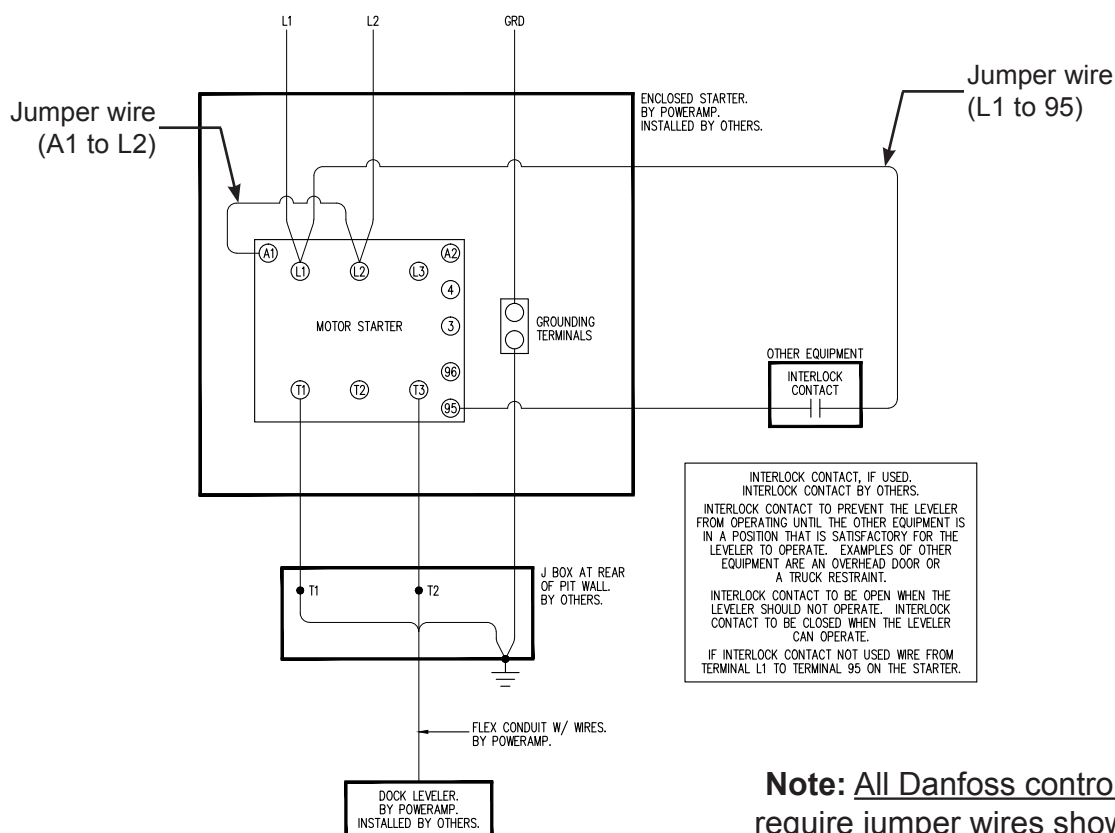
Figure 12

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 12.
2. Install electrical disconnect panel (A) if not already installed. Disconnect panel supplied by others.
3. Install and connect the control wiring (see page 25 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.

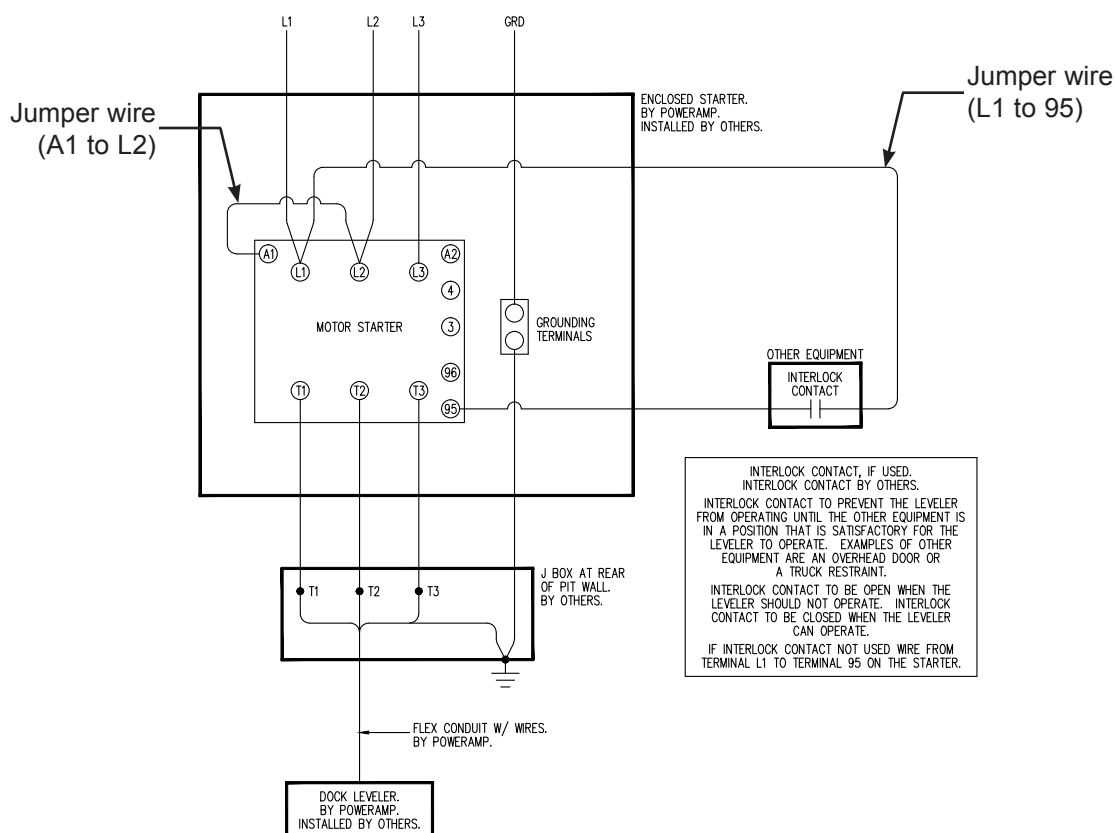
Optional: Install spacers between the wall and enclosure to provide temperature insulation and air flow. If the conduit could fill with water, a drip leg may be needed.
6. Install placard (see page 26).

Danfoss Control Panel Wiring (1-Phase)



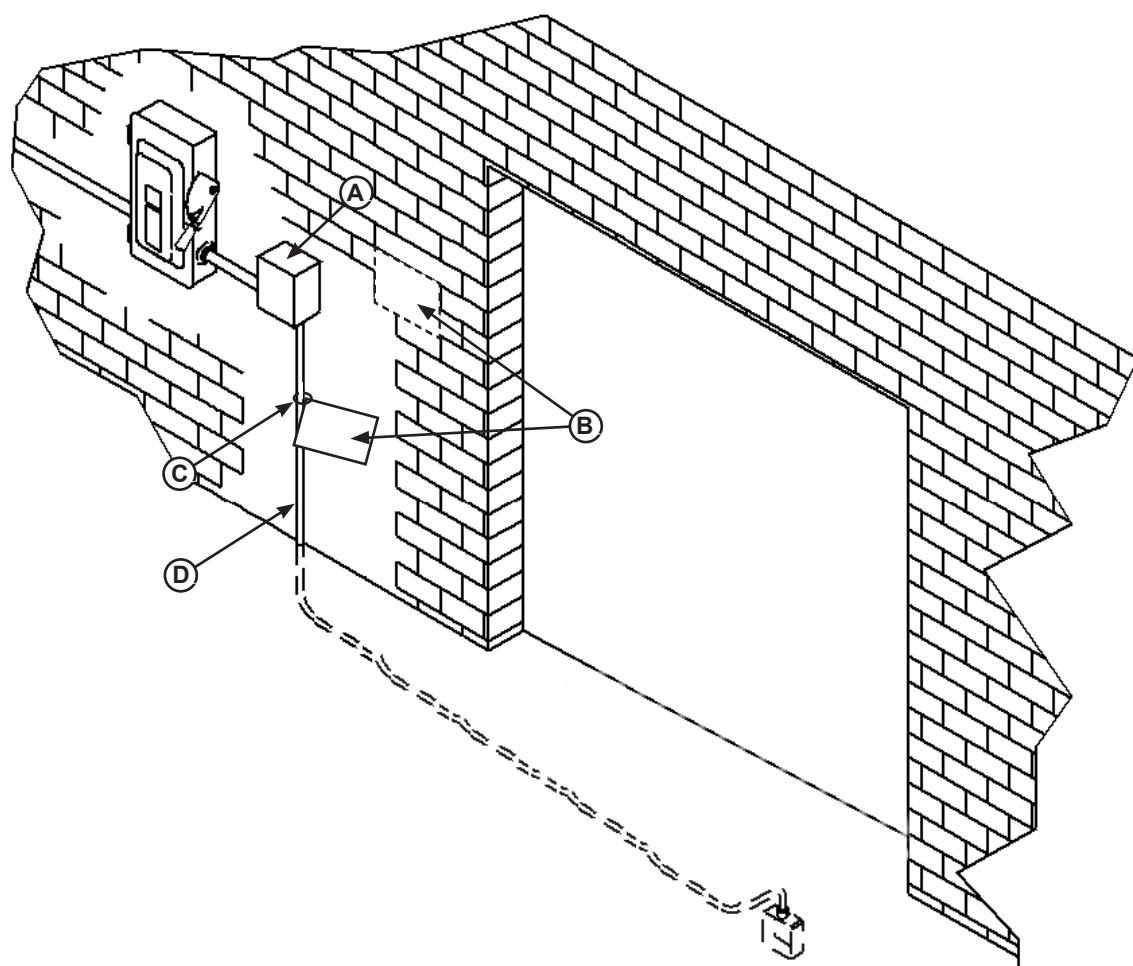
Note: All Danfoss control boxes require jumper wires shown to be added for push button to function.

Danfoss Control Panel Wiring (3-Phase)



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 13

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.

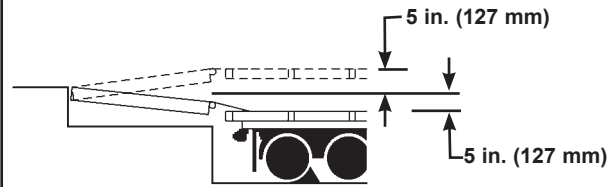
DO NOT use a broken or damaged dock leveler. Make sure proper service and maintenance procedures have been performed on leveler before using.

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 Hydraulic EOD dock leveler is designed to compensate for a maximum ± 5 in.* (127 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 5 in. (127 mm) higher or lower than the dock floor.

*Service height may vary with design specifications

DO NOT overload the dock leveler.

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

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

Operating Instructions

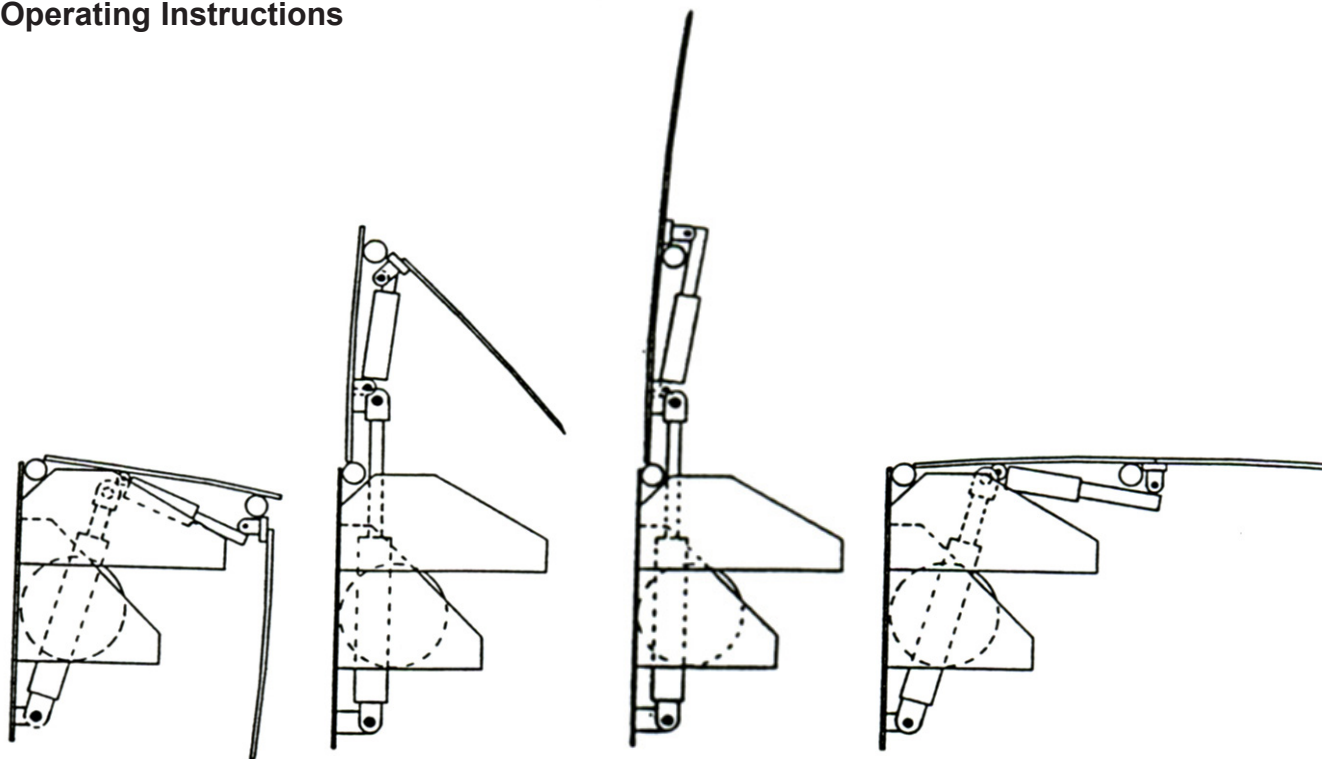


Figure 14

1. Before activating dock leveler, check to make sure the transport vehicle is positioned squarely against dock bumpers. Ensure lip will avoid contact with transport vehicle frame, sides and cargo during dock leveler activation. If contact is likely or observed, reposition transport vehicle.
2. Instruct driver to remain at the dock until the loading or unloading process has been completed.
3. Chock the transport vehicle wheels, or use a vehicle restraint if available.
4. 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 14):
 - 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

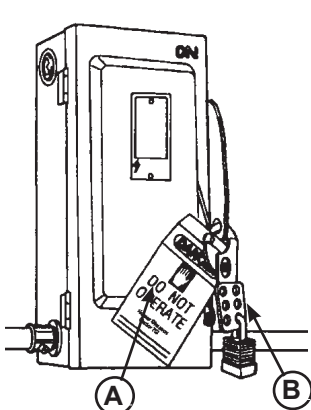


Figure 15

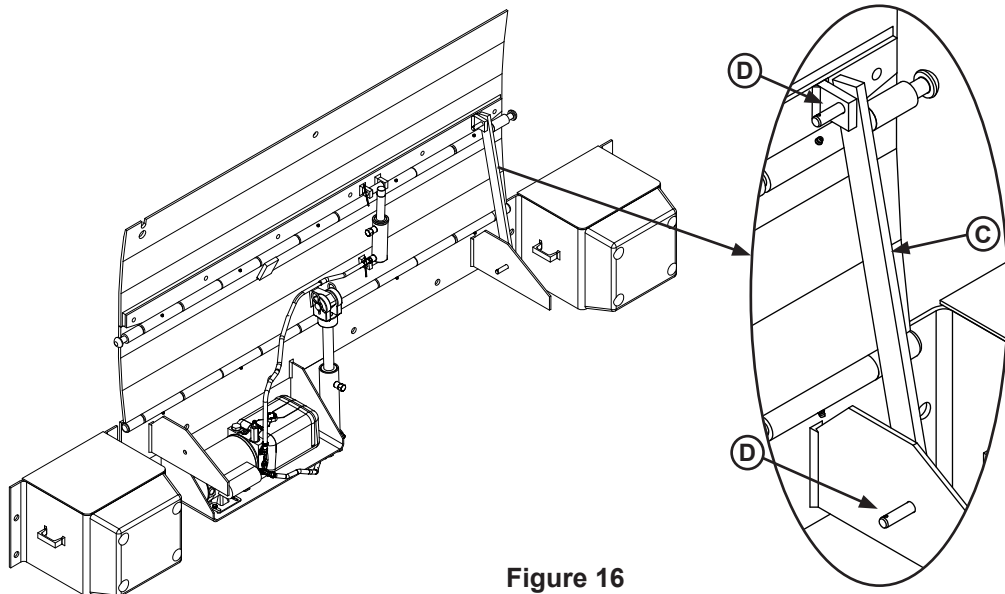


Figure 16

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 15).

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 16.

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

This page intentionally left blank.

MAINTENANCE

Periodic Maintenance

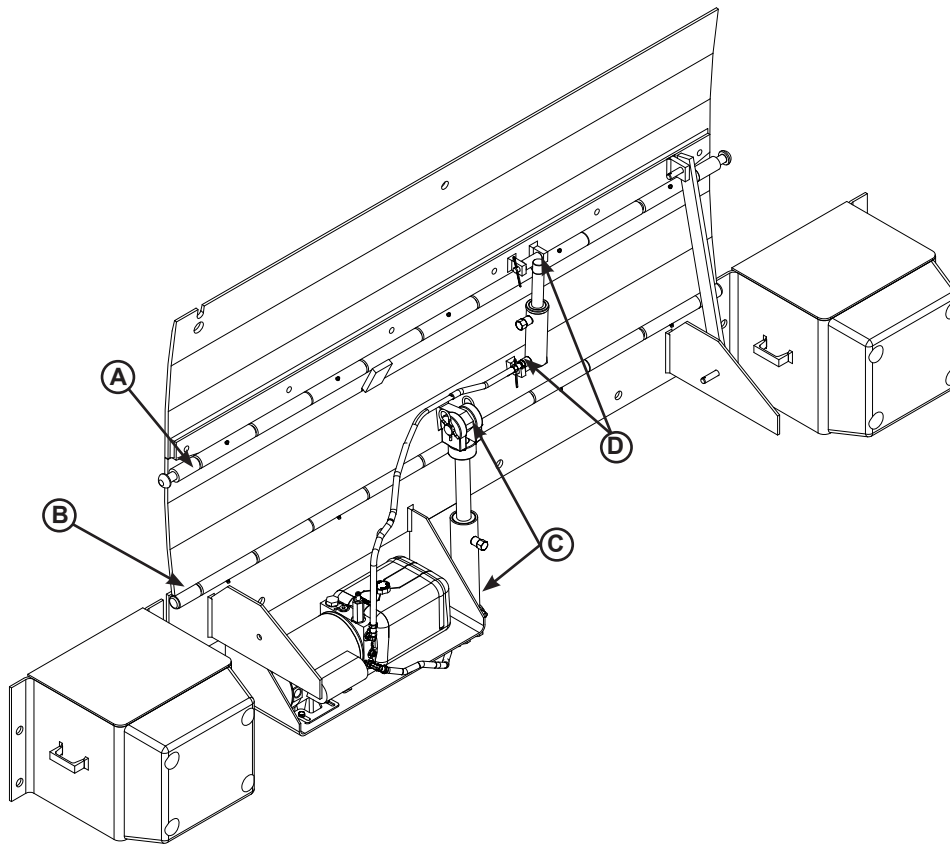


Figure 17

A— Lip Hinge Area

B —Platform Hinge Area

C — Platform Cylinder Trunnions

D— Lip Cylinder Trunnions

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 17):
 - (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) — Platform 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.

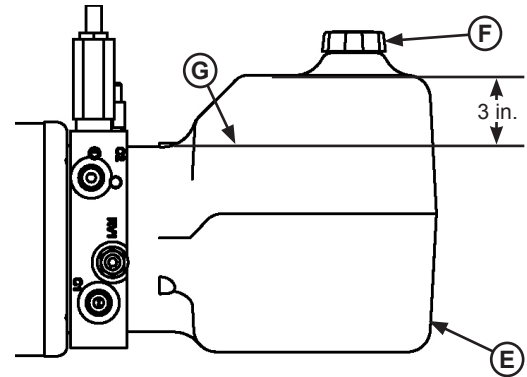


Figure 18

E - Reservoir

G - Fluid Level

F - Breather Cap

- Check reservoir fluid level (G, see Figure 18):
 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 32).
 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 36-39 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.

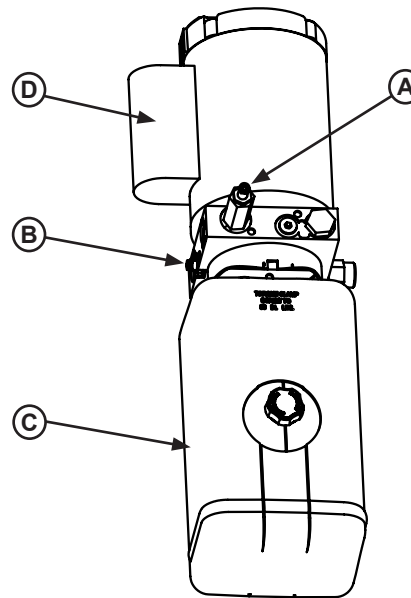


Figure 19

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

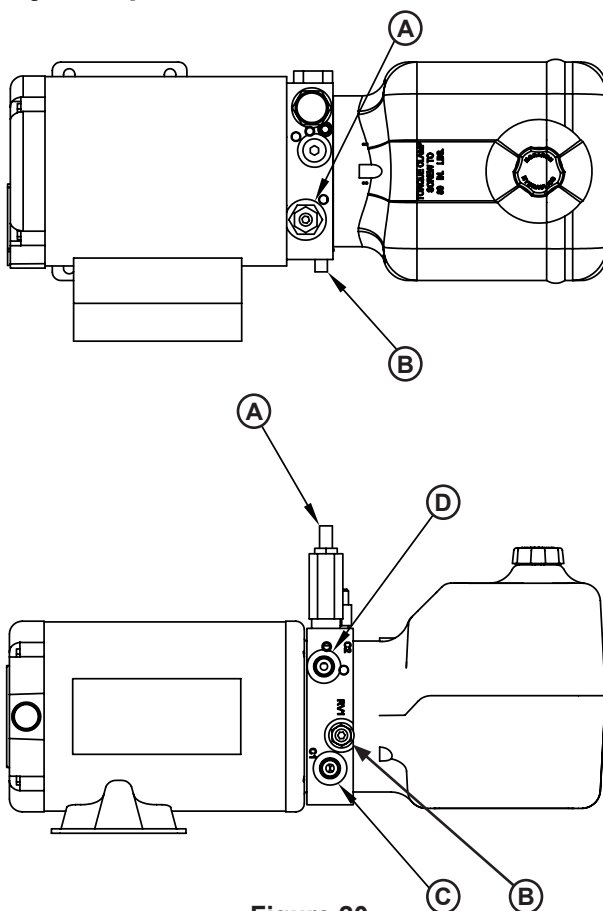


Figure 20

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

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.

NOTICE

Sequence Valve Adjustment

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

See Troubleshooting section on pages 36-39 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.

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

TROUBLESHOOTING

Symptom	Possible Cause	Solution
<u>Three-phase units only:</u> Platform does not rise. Motor hums, but does not run.	No voltage is present on one line. Note: A motor that is missing voltage on one line is said to be single-phased.	Check for blown fuses at branch circuit disconnect. Replace fuse. Determine cause of blown fuse.
		Check motor starter as follows: 1. Disconnect wires at load side of starter. 2. Energize the starter. 3. Measure line-to-line voltage at line side of starter. 4. Measure line-to-line voltage at load side of starter. 5. Line-side and load-side voltages should be approximately the same. Replace starter if voltage values are considerably different from one another.
		Check all wiring to motor for high resistance or no connection.
<u>Three-phase units only:</u> Platform does not rise. Motor runs in reverse	Phase reversed.	Reverse any two legs at the branch circuit disconnect.
<u>Single-phase units only:</u> Platform does not rise. Motor energizes, but does not run.	Line voltage too low.	Check wiring to motor for high resistance. Check for loose or corroded connections. Check if gauge of wires to motor are of correct size and specification for load requirement. Replace if necessary.
	Faulty motor centrifugal switch.	Replace motor.
	Faulty motor capacitor.	Replace motor.

TROUBLESHOOTING

Symptom	Possible Cause	Solution
Platform does not rise. Pump operates in pressure relief mode.	Heavy object(s) on platform.	Remove object(s) from platform. Note: For safety reasons, the dock leveler is designed to lift only the platform's own weight.
	Dock leveler binds.	Check for visible obstructions that could cause binding. Remove obstructions. If no obstructions found, contact NOVA Technology International Technical Services.
	Pressure relief set too low.	Increase pressure relief. See page 34 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>
Platform rises slowly.	Low hydraulic fluid.	Add fluid, see pages 32-33 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 33.
	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 34 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>

TROUBLESHOOTING

Symptom	Possible Cause	Solution
Pump motor loads down when platform reaches the full raised position.	Pressure relief set too high.	Decrease pressure relief. See page 34 for instruction. Note: The pressure relief valve must not be set at a level that causes the motor operating current to exceed the full load amp value* at any time, including when operating in pressure relief. <i>* The full load amp value can be found on the inside cover of the control panel.</i>
Platform does not rise to full height.	Low hydraulic fluid.	Add fluid, see pages 32-33 for proper fluid level and type.
Lip does not stay extended when leveler lowers.	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 35 for adjustment instructions.
	Faulty lip cylinder.	Rebuild or replace lip cylinder.
Platform DOES rise to full height, but lip DOES NOT extend or extend fully.	Low hydraulic fluid.	Add fluid, see pages 32-33 for proper fluid level and type.
	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 35 for adjustment instructions.
Lip does not extend.	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 35 for adjustment instructions.
Lip extends almost immediately when the RAISE button is Pressed.	Sequence Valve requires adjustment.	Adjust valve as necessary. See page 35 for adjustment instructions.

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

800.236.7325 • fax: 262.502.1511 • www.novalocks.com • sales@novalocks.com

PARTS

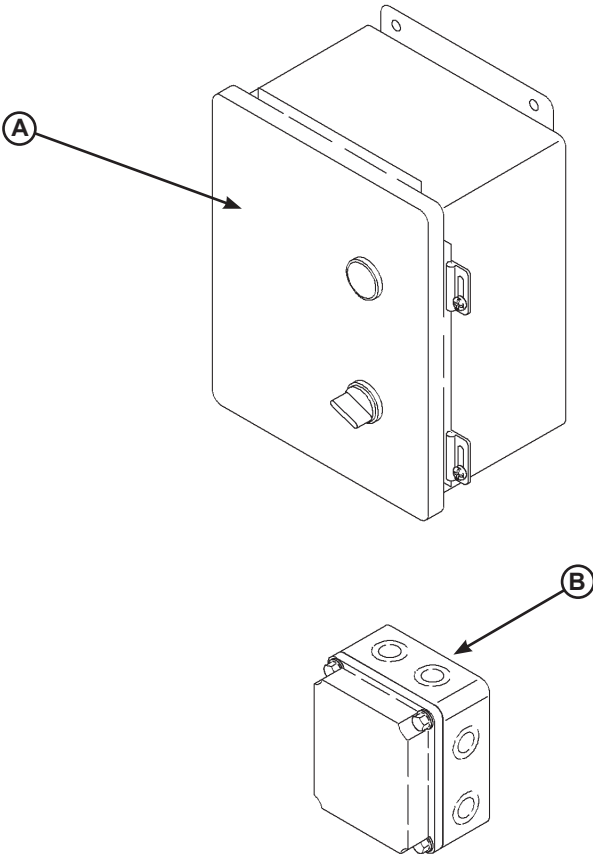
Danfoss Control Box



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

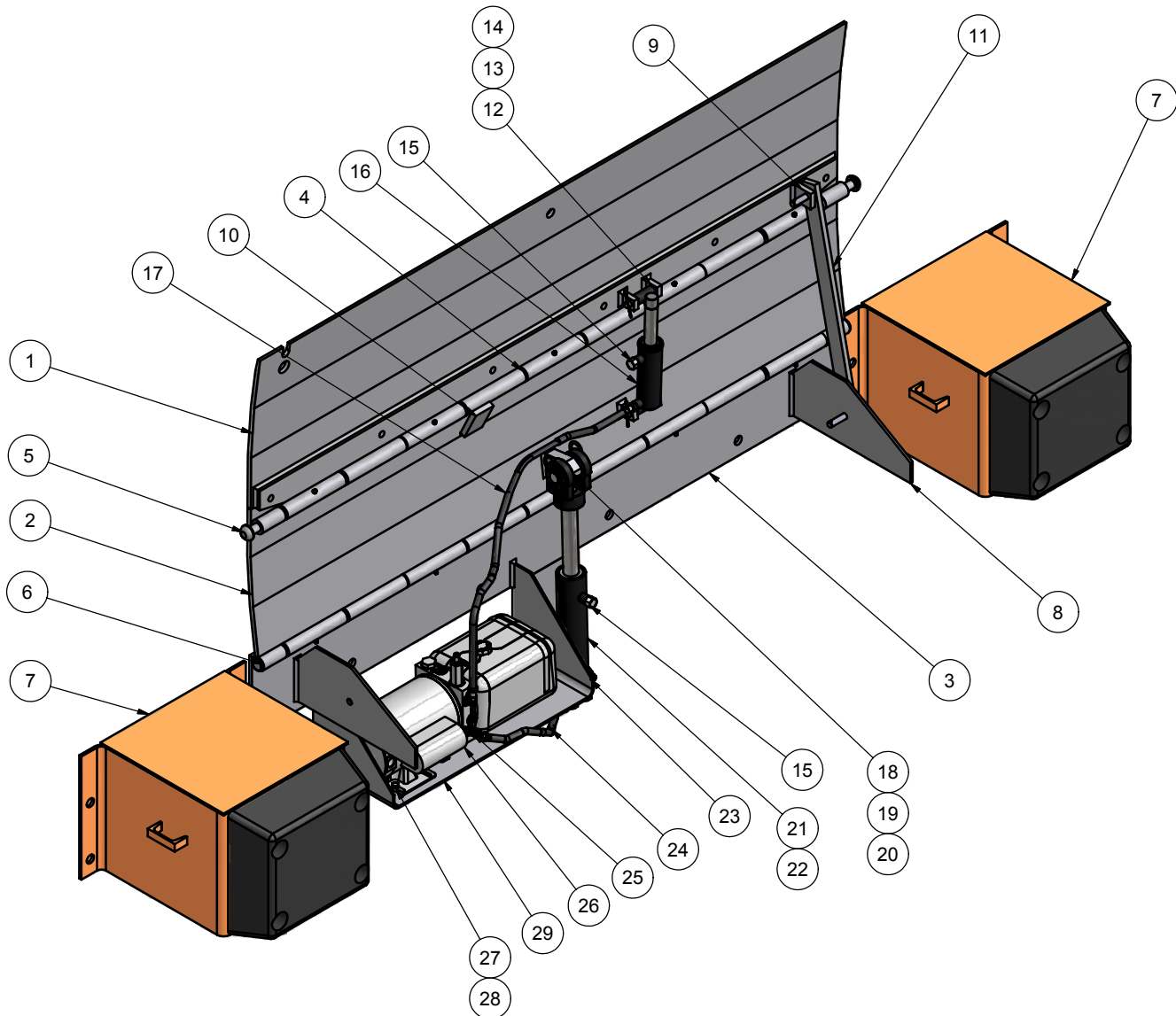


Item	Quantity	Part Number	Description
A	1	*	Control Box w/Optional Equipment
B	1	9511-0004	J-Box, Standard (4 x 4 in. Metal Box)
		2751-0042	J-Box, Cold Weather (5 x 5 in. Plastic Box)

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

PARTS

Leveler Components



ITEM	QTY	SIZE/CAPACITY	DESCRIPTION	PART NUMBER (15" LIP)	PART NUMBER (17" LIP)
1	1	6620/25	Lip Plate & Hinge Assembly	7303-0195	7303-0196
	1	6630	Lip Plate & Hinge Assembly	7303-0197	7303-0198
	1	6635	Lip Plate & Hinge Assembly	7303-0199	7303-0200
	1	7220/25	Lip Plate & Hinge Assembly	7303-0201	7303-0202
	1	7230	Lip Plate & Hinge Assembly	7303-0203	7303-0204
	1	7235	Lip Plate & Hinge Assembly	7303-0205	7303-0206
	1	7820/25	Lip Plate & Hinge Assembly	7303-0207	7303-0208
	1	7830	Lip Plate & Hinge Assembly	7303-0209	7303-0210
	1	7835	Lip Plate & Hinge Assembly	7303-0211	7303-0212
	1	8420/25	Lip Plate & Hinge Assembly	7303-0213	7303-2014
		8430	Lip Plate & Hinge Assembly	7303-0215	7303-0216
	1	8435	Lip Plate & Hinge Assembly	7303-0217	7303-0218

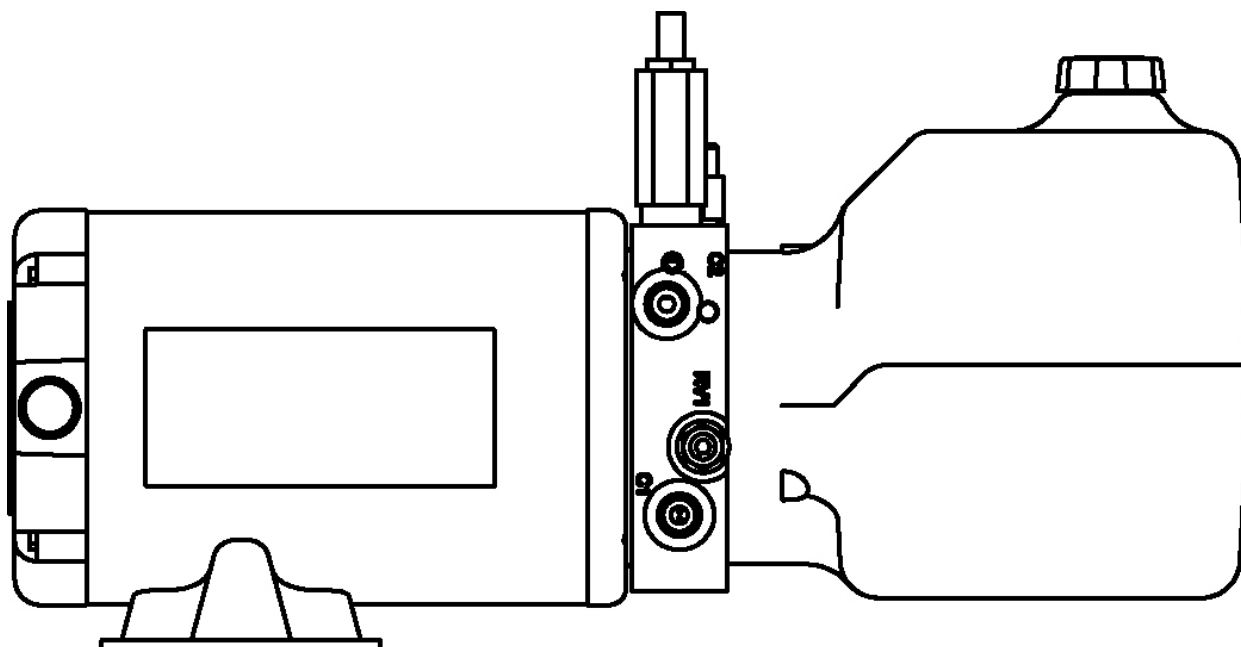
*Provide dock leveler serial number, platform size, lip size and type of installation when e-mailing, calling or faxing orders.

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

ITEM	QTY	SIZE/CAPACITY	DESCRIPTION	PART NUMBER (15" LIP)
2	1	6620/25	Center Plate & Hinge Assembly	7303-0219
	1	6630	Center Plate & Hinge Assembly	7303-0220
	1	6635	Center Plate & Hinge Assembly	7303-0221
	1	7220/25	Center Plate & Hinge Assembly	7303-0222
	1	7230	Center Plate & Hinge Assembly	7303-0223
	1	7235	Center Plate & Hinge Assembly	7303-0234
	1	7820/25	Center Plate & Hinge Assembly	7303-0225
	1	7830	Center Plate & Hinge Assembly	7303-0226
	1	7835	Center Plate & Hinge Assembly	7303-0227
	1	8420/25	Center Plate & Hinge Assembly	7303-0228
	1	8430	Center Plate & Hinge Assembly	7303-0220
	1	8435	Center Plate & Hinge Assembly	7303-0230
3	1	ALL	Base Plate & Hinge Assembly	Consult Factory
4	2	6620/25/30	Hinge Pin	DOTH-3104
	2	6635	Hinge Pin	DOTH-4312
	2	7220/25/30	Hinge Pin	DOTH-3122
	2	7235	Hinge Pin	DOTH-4313
	2	7820/25/30	Hinge Pin	DOTH-3946
	2	8420/25/30	Hinge Pin	DOTH-3920
5	2	ALL	Rivet - Button	DOTH-2400
6	2	ALL	Rivet - Flat	DOTH-2398
7	2	ALL	18" Projection Bumper Block	DBBS-3550
8	2	ALL	HED Gusset	DOTH-4309
9	1	ALL	Pivot Block	DOTH-3316
10	1	ALL	Lip Stop	DOTH-3734
11	1	ALL	Maintenance Strut Assembly	DOTH-4325
12	4	ALL	Pivot Block	DOTH-3113
13	2	ALL	Clevis Pin	DOTH-2364
14	2	ALL	Cotter Pin	DOTH-2374
15	2	ALL	Breather Vent Plug	DOTH-2717
16	1	ALL	Lip Cylinder	0521-0200
17	1	ALL	Hose Assembly - 39"	DOTH-2799
18	1	ALL	Upper Cylinder Pivot	DOTH-4202
19	2	ALL	Main Cylinder Pin	DOTH-2358
20	2	All	Hitch Clip	DOTH-2815
21	1	ALL	Main Cylinder	DOTH-2725
22	1	ALL	Lower Cylinder Mount Assembly	DOTH-4302
23	1	ALL	90 Degree Fitting	DOTH-2738
24	1	ALL	Hose Assembly - 22"	DOTH-2797
25	2	ALL	90 Degree Fitting	DOTH-2739
26	1	ALL	Powerpack, 115/230v, 1ph, 60Hz	DOTH-2854
	1	ALL	Powerpack, 230/460v, 3ph, 60Hz	DOTH-2855
	1	ALL	Powerpack, 110/220v, 1ph, 50Hz**	DOTH-2856
	1	ALL	Powerpack, 208/380v, 3ph, 50Hz**	DOTH-2857
27	4	ALL	Carriage Bolt	2101-0029
28	4	ALL	Flange Nut	2101-0214
29	1	ALL	Motor Mount Bracket	DOTH-4305

PARTS

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**

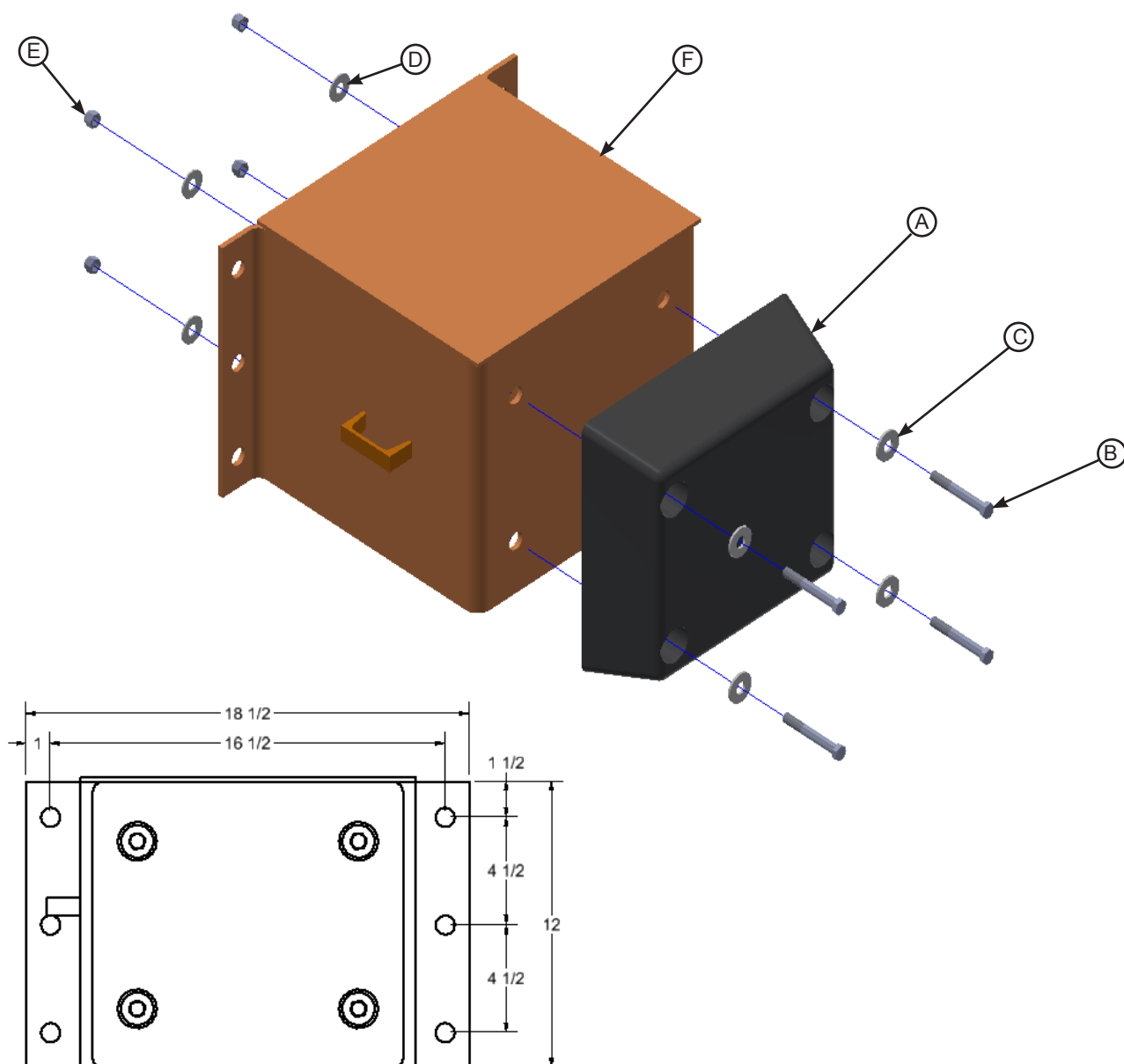
**Provide dock leveler serial number when e-mailing, calling or faxing orders.*

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

This page intentionally left blank.

PARTS

Bumper Components



Item	Quantity	Part Number	Description
*	*	DBBS-3553	HED Bumper Assembly, 18" Proj, 12" Tall, Blue (includes A-F)
*	*	DKIT-3541	18" Rubber Bumper Block & Hardware Kit (includes A-E)
A	1	DOTH-3505	Rubber, Tuf Cord, 4" x 12" x 13"
B	4	DOTH-2056	Hex Head Cap Screw, 7/16-14 UNC x 3-1/4
C	4	DOTH-2210	Washer, Flat, Zinc Plated, 1/2"
D	4	DOTH-2208	Washer, Flat, 1/2"
E	4	DOTH-2129	Nylon Lock Nut, 7/16-14 UNC
F	1	DOTH-3556	18" Proj. x 12" BB Weldment (HED) Slate Blue

This page intentionally left blank.

This page intentionally left blank.

Customer Information

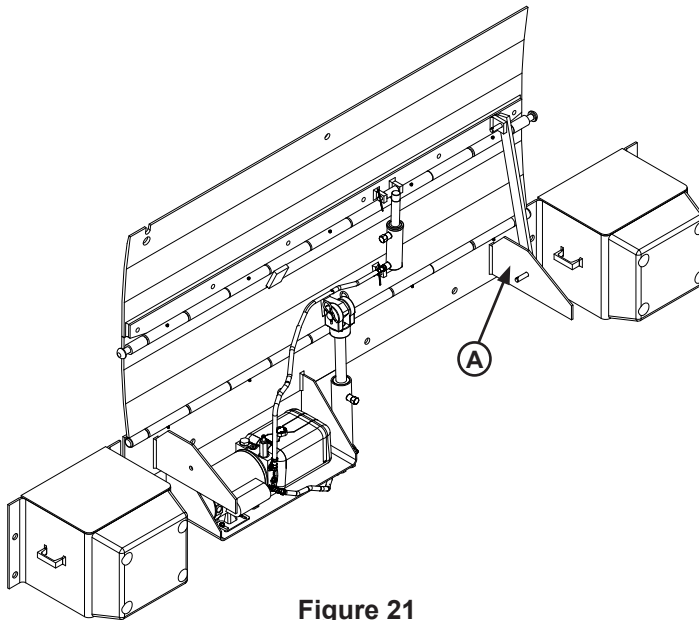


Figure 21

NOTE: Refer to Figure 21 for orientation of dock leveler and Figure 22 for example of decal.

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

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

Also, write down NOVA'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:

NOVA Technology International
N90W14507 Commerce Drive
Menomonee Falls, WI 53051

1-800-236-7325
sales@novalocks.com

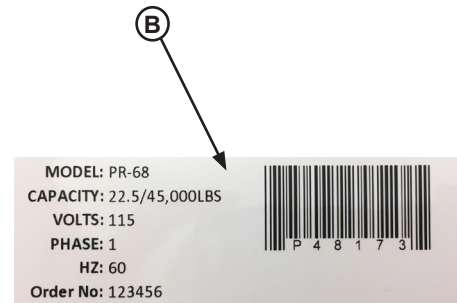


Figure 34

Dock Leveler Information

Model _____

Serial No. _____

NOVA Job No. _____

Vehicle Restraint Information

Model _____

Serial No. _____

NOVA Order No. _____

Original Owner Information

Name _____

Address _____

Installer Information

Name _____

Address _____

Date of Installation _____

STANDARD PRODUCT WARRANTY

NOVA Technology International, 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 NOVA Technology International, LLC, covered by this warranty, NOVA Technology International, 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. NOVA TECHNOLOGY INTERNATIONAL, 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.