



**PENTALIFT EQUIPMENT CORPORATION**

# **ELEVATING DOCK OWNERS MANUAL**

MODEL NUMBER : \_\_\_\_\_ SERIAL NUMBER : \_\_\_\_\_  
CAPACITY : \_\_\_\_\_

Individual Model Number(s) and Serial Number(s) must be filled out by the user for future reference.



DO NOT INSTALL, OPERATE OR SERVICE THIS PRODUCT  
UNLESS YOU HAVE READ AND FULLY UNDERSTAND THE  
ENTIRE CONTENTS OF THIS MANUAL. FAILURE TO DO SO  
MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY OR  
DEATH.

# PRODUCT REGISTRATION



## PRODUCT REGISTRATION CARD

To validate warranty and to advise of product updates  
please complete the following information and return to  
**Pentalift Equipment Corporation**  
To validate warranty on-line go to: [www.pentalift.com](http://www.pentalift.com)

### End User Information

*Company Name:		
Contact *First Name:	*Last Name:	Title:
*Mailing Address:		
*City:	*State/Prov.	*Zip/Postal Code:
*Phone: (    )    -	Fax: (    )    -	Email:
Check Products Purchased: <input type="checkbox"/> Levelers, <input type="checkbox"/> Vehicle Restraints, <input type="checkbox"/> Seals/Shelters, <input type="checkbox"/> Elevating Docks, <input type="checkbox"/> Lift Tables		
*Serial Number(s):		Invoice # (if available):
Dealer Name:		Sales Rep.:
Manual Verification *Manual Number:		

\*Indicates information that must be provided.

Please return to:

Pentalift Equipment Corporation  
P.O. Box 1510,  
Buffalo, NY 14240-1510

or

Pentalift Equipment Corporation  
P.O. Box 1060  
Guelph, Ontario  
N1H 6N1

Attention: Service Department



Or Fax to (519) 763-2894

# SAFETY INFORMATION AND WARNINGS

## DANGER

READ THESE SAFETY PRACTICES BEFORE INSTALLING, OPERATING OR SERVICING THE ELEVATING DOCK. FAILURE TO FOLLOW THESE SAFETY PRACTICES MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY OR DEATH.

THE OPERATION OF THIS EQUIPMENT IS SUBJECT TO CERTAIN HAZARDS THAT CAN BE PROTECTED AGAINST ONLY BY THE EXERCISE OF CARE AND COMMON SENSE AND NOT BY MECHANICAL MEANS. IT IS, THEREFORE, ESSENTIAL TO HAVE COMPETENT, QUALIFIED OPERATORS TRAINED IN THE SAFE OPERATION AND CARE OF THIS TYPE OF EQUIPMENT. ALL PERSONNEL MUST COMPLETELY UNDERSTAND THIS SAFETY INFORMATION BEFORE WORKING ON OR NEAR THIS EQUIPMENT.

1.  **DANGER** BEFORE DOING ANY INSTALLATION, MAINTENANCE, INSPECTION OR TROUBLE SHOOTING, BARRICADE THE WORK AREA FOR SAFETY, POST APPROPRIATE WARNING SIGNS AND BE CERTAIN THAT THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. ALL ELECTRICAL WORK MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH ALL APPLICABLE CODES.
2.  **DANGER** NEVER GO BENEATH THE ELEVATING DOCK FOR ANY REASON UNLESS THE DECK AND LIP(S) ARE PROPERLY SUPPORTED (SEE FIGURE 11, PAGE 14) AND THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. IT IS THE RESPONSIBILITY OF THE OWNER TO ENSURE THAT NO LOAD OR TRAFFIC IS PLACED ON THE DECK WHILE THE MAINTENANCE STAND IS ENGAGED. THE CONSTRUCTION OF THE MAINTENANCE STAND IS INTENDED TO SUPPORT THE WEIGHT OF THE UNLOADED ELEVATING DOCK ONLY.
3. Before loading/unloading the truck, assure the trailer is in position firmly against both of the dock bumpers or bollards and **CHOCK THE TRUCK WHEELS** to eliminate the possibility of the truck rolling or inching forward.
4. NEVER EXCEED THE MAXIMUM RATED CAPACITY OF THE ELEVATING DOCK. (i.e. The maximum load for a 6,000 lb. rated unit is 6,000 lb. with the load center at the center of the deck.) The single axle load capacity across the ends is 75% of the rated capacity. The single axle load across the sides is 50% of the rated capacity. Refer to the specification plate (see Figure 2, Page 3) for each elevating dock's particular rating.
5. Never stand between the dock and a truck.
6. Return the elevating dock to the stored position before allowing truck to depart.
7. When not in use, the unit **MUST** be in the fully lowered position.
8. Elevating docks must be lagged to the floor.
9. Do not apply shock loads to the unit. (i.e. Do not drop loads onto the deck, lower loads onto the deck at a high rate of speed, stop unit abruptly or jog in lower range of travel.)
10. The deck surface must be kept clean and free from oil, debris, etc. Keep debris, etc. from underneath the unit.
11. Keep any obstructions and personnel clear of the elevating dock and load and their operating path to eliminate injury and/or damage. Avoid or eliminate any and all potential pinch points.
12. Prior to each use, ensure elevating dock and load does not create pinch points during operation when located adjacent to or near other equipment or structures.
13. Never use the unit for lifting personnel unless it has been suitably designed and manufactured for that purpose by Pentalift Equipment Corporation. Guard rails and access chains must be used.

14. It is the owner's responsibility to assure protection is provided for the operator (ie. access chains) to prevent falling off of the elevating dock when the unit is above ground/floor level.
15. All electrical, hydraulic and/or pneumatic lines must be carefully routed to prevent them from being pinched or severed.
16. Regular inspection and maintenance must be performed to keep the equipment in proper operating condition. Pay particularly close attention to all hoses and/or wires in order to detect possible cracks or wear. Always follow the instructions as per the 'HOW TO SUPPORT THE ELEVATING DOCK DURING ROUTINE MAINTENANCE AND INSPECTION' section in this manual (See page 14) prior to performing any activity within the operating path of the elevating dock.
17. **HYDRAULIC FALLSAFE:** The basic purpose of the fallsafe feature (velocity fuse) is to arrest the deck's downward movement in the event of ruptured or severed hose. If a fallsafe situation should occur, the elevating dock must be inspected by an authorized Pentalift Representative before continuing to use the elevating dock. The owner must receive written authorization from Pentalift Equipment Corporation through the authorized Pentalift representative before continuing to use the elevating dock.
18. Assure that the Owner's Manual is at all times accessible to anyone who may require it.
19. Assure that the equipment is not used by anyone if you believe that any part of it might be in disrepair (e.g. loose wires, leaking hoses, bent structural members, broken welds, etc.). See Warranty Section.
20. Do not use the elevating dock while under the influence of drugs or alcohol.
21. If you have any questions, contact your immediate supervisor or your authorized Pentalift representative for assistance.

**⚠ DANGER**

This is the highest level statement. Failure to follow the listed instructions will most likely result in severe injury or death.

**⚠ WARNING**

This is a statement of serious hazard. Failure to follow the listed instructions could place the individual at risk of serious injury or death.

**⚠ CAUTION**

The statements used with this level of warning deal with a safe operating procedure. If the procedure is ignored, the possibility of personal injury may exist.

**IMPORTANT**

This statement draws attention to a procedure that needs to be followed to prevent machine or property damage.

# OWNER RESPONSIBILITY

*The Owner's Responsibilities include the following:*

1. The owner should recognize the inherent danger of the interface between dock and transport vehicle. The Owner should, therefore, train and instruct operators in the safe use of dock leveling devices.
2. When a transport vehicle is positioned as closely as practicable to a dock leveling device, there shall be at least 4" (100 mm) of overlap between the front edge of the lip and the edge of the floor or sill of the transport vehicle.
3. Nameplates, cautions, instructions and posted warnings shall not be obscured from the view of operating or maintenance personnel for whom such warnings are intended.
4. Manufacturer's recommended periodic maintenance and inspection procedures in effect at date of shipment shall be followed, and written records of performance of these procedures should be kept.
5. **Removal from Service:** Any lift not in safe operating condition such as, but not limited to excessive leakage, missing rollers, pins or fasteners, any bent or cracked structural members, cut or frayed electric, hydraulic or air lines, damaged or malfunctioning controls or safety devices, etc. shall be removed from service until it is repaired to Pentalift Equipment Corporation's standards.
6. **Pentalift Equipment Corporation** shall supply replacement nameplates, caution or instruction labels and operating and maintenance manuals upon request of the owner. The owner shall see that all nameplates and caution and instruction markings or labels are in place and legible and that the appropriate operating and maintenance manuals are provided to users.
7. Modifications or alterations of dock leveling devices shall be made only with written permission of **Pentalift Equipment Corporation**. Alteration permission must be signed by both the Pentalift Post Sale Customer Service Manager and the President to be valid.
8. When industrial trucks are driven on and off transport vehicles during the loading and unloading operation, the brakes on the transport vehicle shall be applied and wheel chocks or positive restraints that provide the equivalent protection of wheel chocks engaged.

**NOTE:** It is recognized that these devices are intended to secure a transport vehicle to a loading dock by mechanical means. However, no standards currently exist for the strength, construction or attachment of the underride guard on a transport vehicle. It is therefore recommended that users of such positive restraint devices review:

- ☐ The means of attachment to the transport vehicle
- ☐ The strength of the overall connection
- ☐ The proper coordination of the actuation of devices with any signalling system used
- ☐ The need to use wheel chocks

9. In selecting dock leveling devices, it is important to consider not only present requirements, but also future plans or adverse environments.



Unless specifically agreed to in writing by Pentalift Equipment Corporation at the time the equipment is ordered and prior to the equipment's manufacture, this equipment is sold as a complete package. It is not to be altered, changed or added to in any way or form, in its configuration and function, without the written permission of Pentalift Equipment Corporation.

If requested by a customer, Pentalift Equipment Corporation is not supplying all or some of the power unit and / or control components for the equipment's application. The power unit and controls constitute important safety and functional aspects of the equipment. It is the customer's responsibility to address the operational and safety issues associated with providing the required controls and power units to satisfy the operational and safety requirements of the equipment.

The customer's decision to supply all or some of these components indicates that the customer is taking full responsibility for any and all possible operational, safety and liability issues associated to the product and its configuration. The customer also agrees to absolve Pentalift Equipment Corporation from any and all possible operation, safety and liability issues.

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# SAFETY LABELING

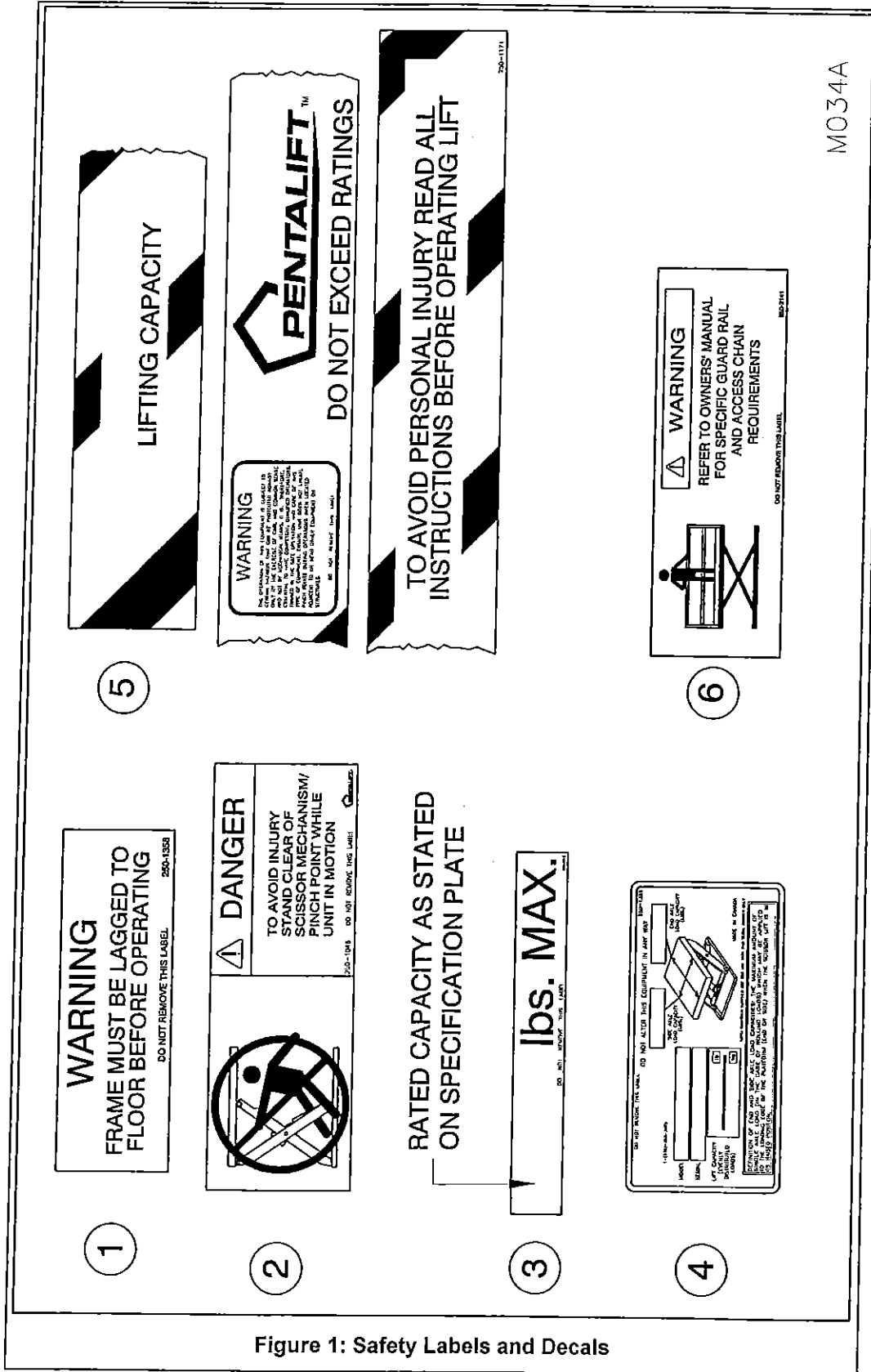
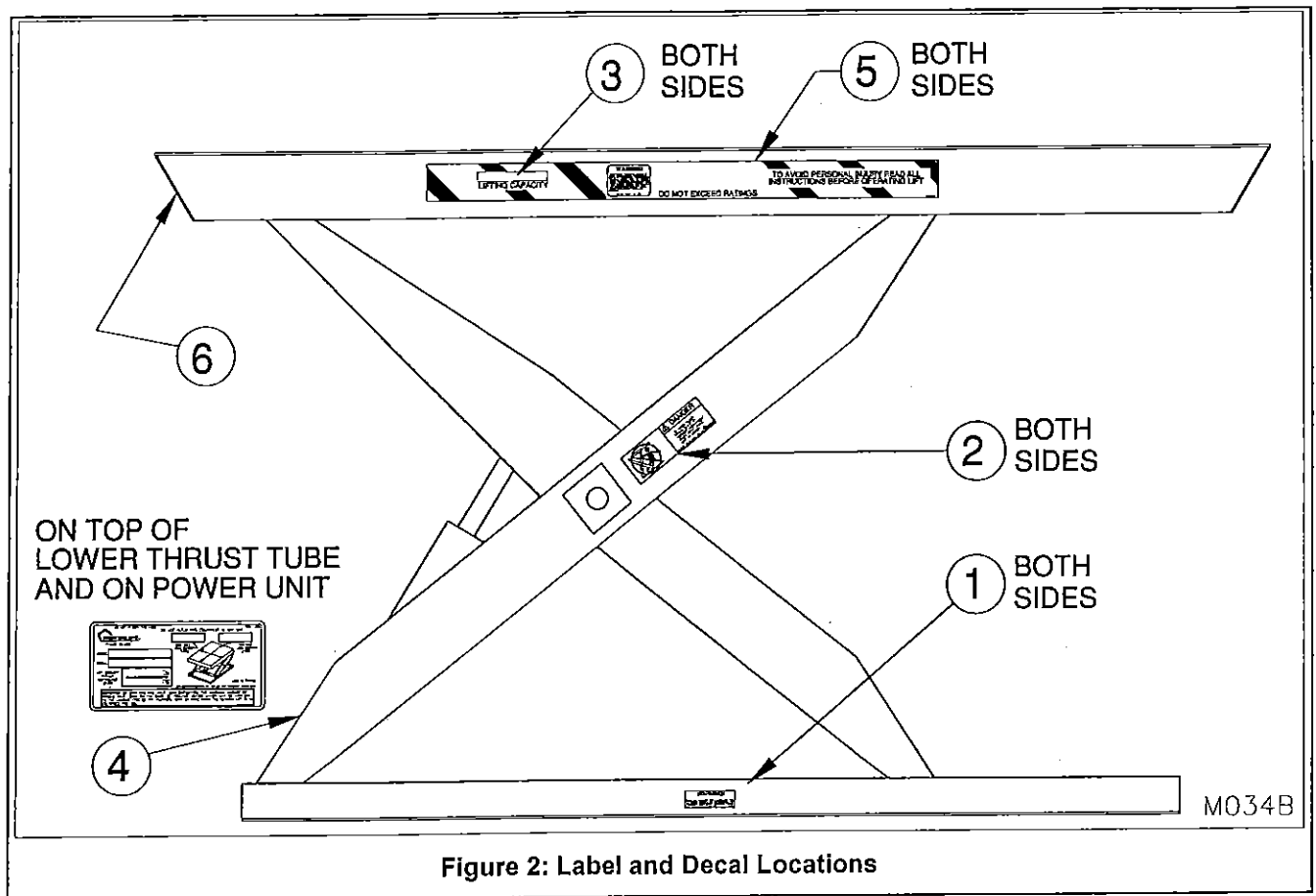


Figure 1: Safety Labels and Decals



Be sure that all labeling is in place and intact when the unit is received. If any of the safety labels or decals are missing or illegible, contact your Pentalift representative for immediate replacement.

**NOTE:** It is the owner's responsibility to assure that all safety labeling remains legible and in its original position throughout the life of the product. If any of the safety labels or decals are missing or illegible, contact your Pentalift representative for immediate replacement. Inspection shall be done during regular maintenance and lubrication (see MAINTENANCE & LUBRICATION, page 15).

To re-order labels and decals, use the following part numbers:

ITEM #	PART NUMBER	QTY/UNIT	DESCRIPTION
1	250-1358	2	"WARNING – FRAME MUST BE LAGGED..."
2	250-1046	2	"DANGER ....STAND CLEAR..."
3	NOTE	2	CAPACITY LABEL
4	250-1385	2	SPECIFICATION PLATE
5	250-1171	2	SAFETY STRIPE
6	250-2141	1	"WARNING...GUARD RAILS...CHAINS"

**NOTE:** State Model # and Serial # when ordering replacement parts.

# INSTALLATION INSTRUCTIONS

**⚠ DANGER**

DO NOT INSTALL, OPERATE OR SERVICE THIS PRODUCT UNLESS YOU HAVE READ AND FULLY UNDERSTAND THE ENTIRE CONTENTS OF THIS MANUAL. FAILURE TO DO SO MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY OR DEATH.

## IMPORTANT PREPARATION PRIOR TO INSTALLATION

Perform installation instructions in the same sequence as they are listed below.

**⚠ DANGER**

BEFORE DOING ANY INSTALLATION, MAINTENANCE, INSPECTION OR TROUBLE SHOOTING, BARRICADE THE WORK AREA FOR SAFETY, POST APPROPRIATE WARNING SIGNS AND BE CERTAIN THAT THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. ALL ELECTRICAL WORK MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH ALL APPLICABLE CODES.

**⚠ DANGER**

MAKE SURE LIFTING AND SLINGING DEVICES ARE OF SUFFICIENT CAPACITY, USED IN THE CORRECT MANNER AND ARE IN GOOD WORKING ORDER. ALL LIFTING, POSITIONING AND INSTALLATION, AS WELL AS THE BREAK-IN AND PERFORMANCE CHECK, MUST BE DONE BY QUALIFIED PERSONNEL TRAINED AND EXPERIENCED IN THE NECESSARY SAFETY PROCEDURES.

Assure pit conforms to appropriate Pentalift pit drawing. Ensure drain, if required, is in place prior to installing the elevating dock.

Make sure the installation surface is clean, level and flat before installing the unit.

The installation surface must be capable of supporting any loads that will be applied to it.

Connect the two hydraulic hoses to the hydraulic junction block located on the fixed end of the frame. (See Figure 4, Page 4)

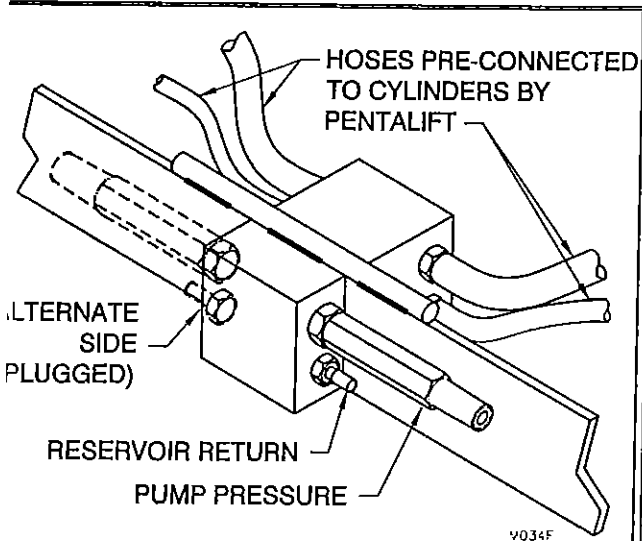


Figure 4: Connect Hoses to Junction Box on Side Nearest to the Power Unit

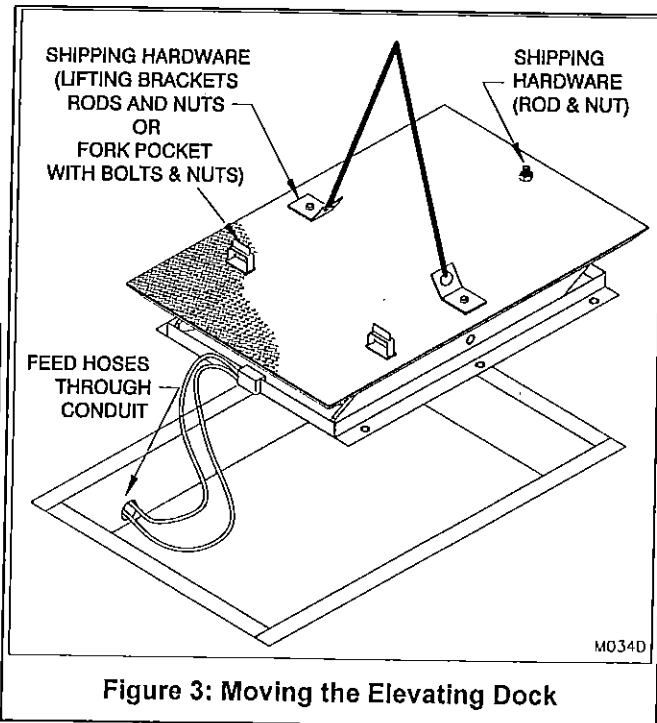


Figure 3: Moving the Elevating Dock

7. Hoist the elevating dock into the pit. At the same time, feed the hydraulic hose through the conduit from inside the pit toward the power unit. (See Figure 3, Page 4)
8. Mount the power unit in the desired location and connect the two hydraulic hoses.

9. Remove all shipping bolts and hardware. (See Figure 3, Page 4).
10. Connect the appropriate supply voltage to the motor control panel. (Refer to the **WIRING DIAGRAM** located inside the motor control panel and the electrical specification label located on the side of the motor control panel).

**NOTE:** All wiring must be performed by a qualified electrician in accordance with all applicable codes.

**NOTE:**

- a. On 3 phase units assure phase polarity is correct. Incorrect polarity will cause the elevating dock not to lift. The motor will run backwards resulting in cavitation and possible damage to the pump.
- b. To prevent tripping the motor overload relay, the motor requires the specified voltage at the motor while the motor is working under full load. If there is a problem confirm that the supply conductors are sufficient in relation to the run length. See Electrical Reference Chart. (Consult all applicable electrical codes as well.)

Ensure that the thermal overload relay is set to match the full load current as shown on the motor name plate. Consult all applicable electrical codes.

<b>ELECTRICAL REFERENCE - 1 HP</b>							
Length of branch circuit which will have a 2% voltage drop at full load current (copper wire) ft.  The values given are intended to be a rough wiring guide only.  Be sure to check all local electrical codes before wiring.	AWG	115/1/60	230/1/60	230/3/60	380/3/50	460/3/60	575/3/60
	14	36 ft	143 ft	249 ft	865 ft	997 ft	1870 ft
	12	57 ft	227 ft	396 ft	1376 ft	1586ft	2973 ft
	10	90 ft	362 ft	630 ft	2187 ft	2521 ft	4726 ft
	8	143 ft	575 ft	1002 ft	3478 ft	4009 ft	7518 ft
	6	228 ft	914 ft	1594 ft	5529 ft	6375 ft	11953 ft
Approximate Motor Current (full load)		12 A	6 A	4.2 A	2 A	2.1 A	1.4 A

### ELECTRICAL REFERENCE - 1 1/2 HP

<p>Length of branch circuit which will have a 2% voltage drop at full load current (copper wire) ft.</p> <p>The values given are intended to be a rough wiring guide only.</p> <p>Be sure to check all local electrical codes before wiring.</p>	AWG	115/1/60	230/1/60	230/3/60	380/3/50	460/3/60	575/3/60
	14		107 ft	209 ft	692 ft	838 ft	1455 ft
	12	43 ft	171 ft	333 ft	1100 ft	1332 ft	2313 ft
	10	68 ft	271 ft	529 ft	1749 ft	2118 ft	3676 ft
	8	108 ft	432 ft	842 ft	2782 ft	3368 ft	5847 ft
	6	172 ft	686 ft	1339 ft	4424 ft	5355 ft	9297 ft
Approximate Motor Current (full load)		16 A	8 A	5 A	2.5 A	2.5 A	1.8 A

### ELECTRICAL REFERENCE - 3 HP

<p>Length of branch circuit which will have a 2% voltage drop at full load current (copper wire) ft.</p> <p>The values given are intended to be a rough wiring guide only.</p> <p>Be sure to check all local electrical codes before wiring.</p>	AWG	115/1/60	230/1/60	230/3/60	380/3/50	460/3/60	575/3/60
	14		59 ft	87 ft	368 ft	106 ft	545 ft
	12		94 ft	139 ft	585 ft	169 ft	867 ft
	10	39 ft	150 ft	221 ft	930 ft	269 ft	1379 ft
	8	62 ft	238 ft	351 ft	1480 ft	428 ft	2193 ft
	6	98 ft	379 ft	558 ft	2353 ft	680 ft	3486 ft
Approximate Motor Current (full load)		28 A	14.5 A	12 A	4.7 A	6 A	4.8 A

ELECTRICAL REFERENCE - 5 HP							
Length of branch circuit which will have a 2% voltage drop at full load current (copper wire) ft.  The values given are intended to be a rough wiring guide only.  Be sure to check all local electrical codes before wiring.	AWG	115/1/60	230/1/60	230/3/60	380/3/50	460/3/60	575/3/60
	14			87 ft	228 ft	106 ft	545 ft
	12			139 ft	362 ft	169 ft	867 ft
	10		103 ft	221 ft	575 ft	269 ft	1379 ft
	8		164 ft	351 ft	915 ft	428 ft	2193 ft
	6		261 ft	558 ft	1455 ft	680 ft	3486 ft
Approximate Motor Current (full load)			21 A	12 A	7.6 A	6 A	4.8 A

ELECTRICAL REFERENCE - 7-1/2 HP							
Length of branch circuit which will have a 2% voltage drop at full load current (copper wire) ft.  The values given are intended to be a rough wiring guide only.  Be sure to check all local electrical codes before wiring.	AWG	115/1/60	230/1/60	230/3/60	380/3/50	460/3/60	575/3/60
	14				136 ft	223 ft	374 ft
	12			89 ft	217 ft	354ft	595 ft
	10			141ft	344 ft	563 ft	945 ft
	8		104.6 ft	224 ft	578 ft	896 ft	1504 ft
	6		166 ft	356 ft	871 ft	1424 ft	2391 ft
Approximate Motor Current (full load)			33 A	18.8 A	12.7 A	9.4 A	7A

## ELECTRICAL REFERENCE - 10 HP

Length of branch circuit which will have a 2% voltage drop at full load current (copper wire) ft.	AWG	115/1/60	230/1/60	230/3/60	380/3/50	460/3/60	575/3/60
The values given are intended to be a rough wiring guide only.  Be sure to check all local electrical codes before wiring.	14					145 ft	273 ft
	12				178 ft	231 ft	434 ft
	10			92 ft	282 ft	368 ft	689 ft
	8			146 ft	448 ft	585 ft	1096 ft
	6			232 ft	714 ft	930 ft	1743 ft
Approximate Motor Current (full load)				28.8 A	15.5 A	14.4 A	9.6A

### SELF CONTAINED UNITS:

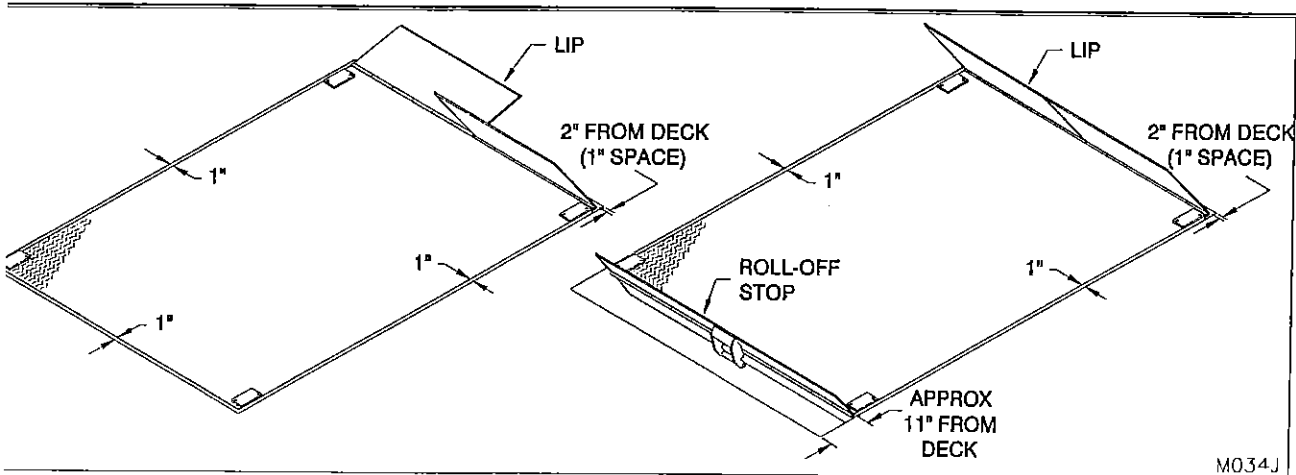
If the power unit is self-contained, assure the temporary wire is routed out of the pit for easy hook-up.

**NOTE:** The temporary wires supplied are intended to be used for lifting the deck for the initial installation only. Once the maintenance stand is in position, the temporary wires are to be removed from both the power supply and the elevating dock. Permanent wiring must be installed immediately.

**NOTE:** The temporary wires should be connected only if they meet the requirements of the applicable local electrical codes. If they do not, the electrician should rewire to meet all applicable codes prior to applying any electrical power.

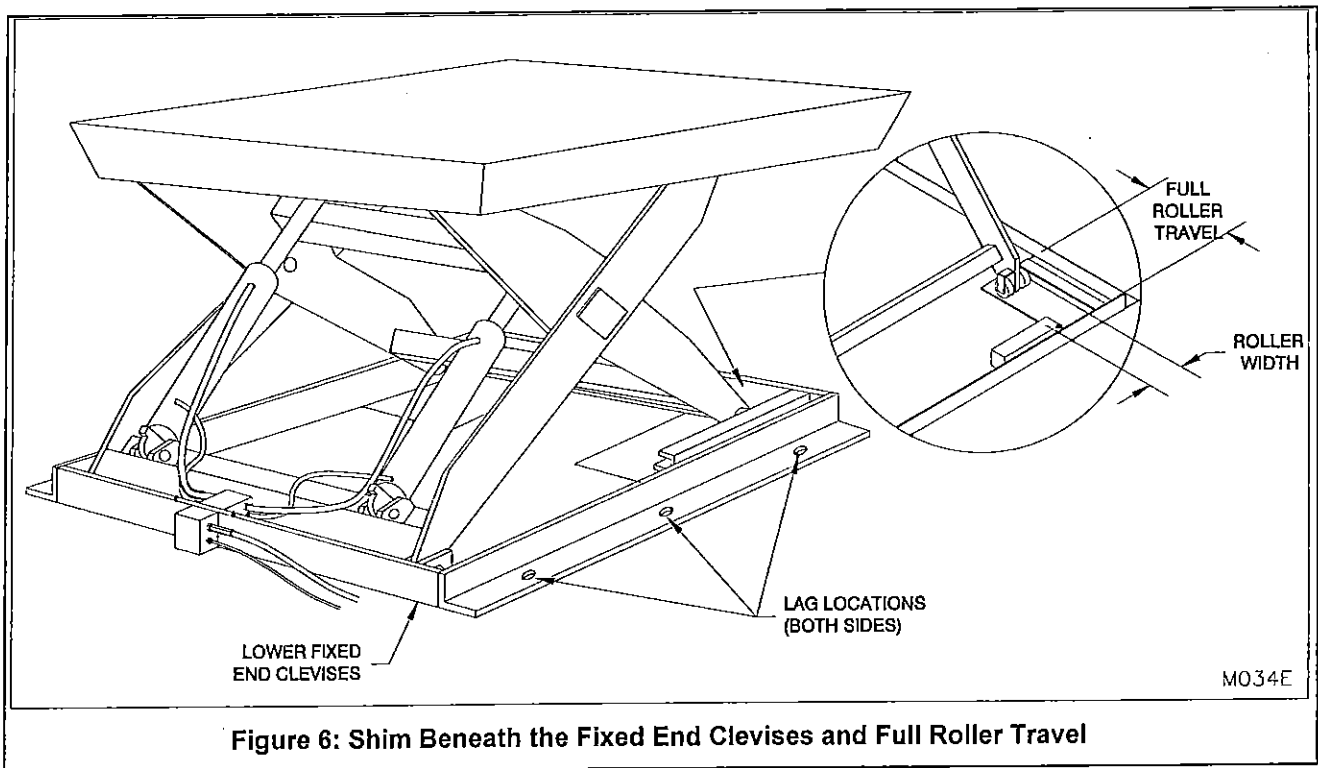
Square the elevating dock deck in the pit; leaving approximately 1" space all around the pit edge.

**NOTE:** If the unit is equipped with a roll-off stop, the deck must be squared evenly on the two sides and offset by 11" on the fixed end (see Figure 5 page 8).



**Figure 5: Square The Elevating Dock In The Pit**

12. Raise the unit to its maximum height and then fully lower. Repeat the cycle a minimum of three times. This allows the table to realign itself after shipping.
13. Re-check the unit to ensure it is square in the pit.
14. If required, level the unit on both sides by shimming under the frame side angle lag locations, the full length and width of the roller travel and the lower fixed end clevises. (See Figure 6, Page 9)

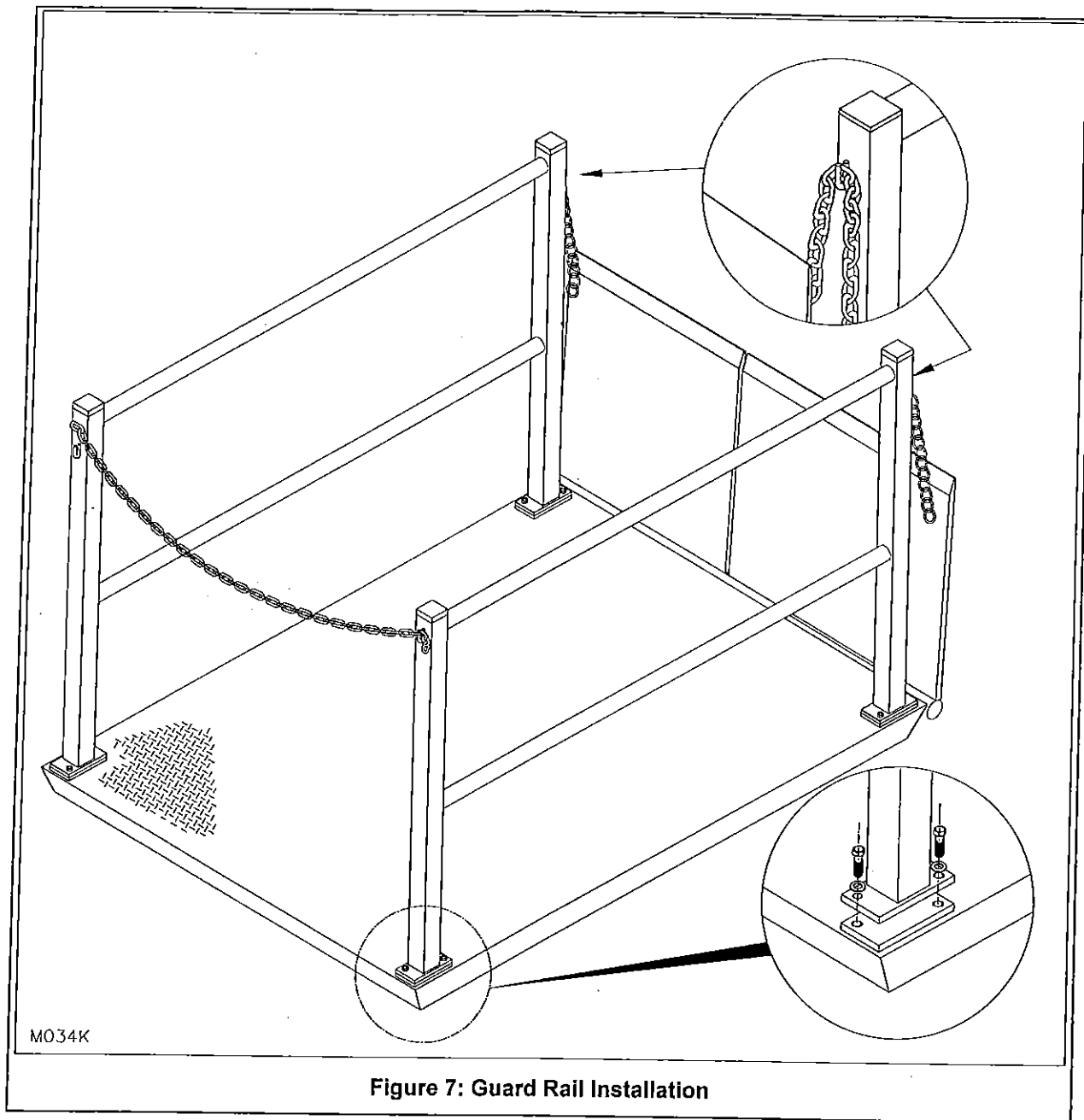


**Figure 6: Shim Beneath the Fixed End Clevises and Full Roller Travel**

15. Fully raise the elevating dock and block the scissor mechanism following the instructions in HOW TO SUPPORT THE ELEVATING DOCK DURING ROUTINE MAINTENANCE AND INSPECTION. (See page 14.)
16. When installing into a concrete pit, lag the unit to the pit floor with recommended fasteners, 5/8" Dia. x 4 1/2" long wedge anchors with a minimum shear value of 12,900 lbs. (5 850 kg), and tension value of 10,200 lbs. (4 630 kg). (See Figure 6, Page 9.) Torque to manufacturer specifications. If the mounting surface is not concrete, utilize a fastener to suit the structural values indicated and appropriate for the mounting surface.
17. Weld all shims together and then to the elevating dock frame.
18. Install the guard rails as shown in Figure 7 page 10.

In some applications such as full depth pits, deck mounted guard rails can create a potentially hazardous condition by creating a pinch point between the guard rail horizontal bars and the edge of the pit floor. It may be necessary to provide protection around the perimeter of the pit. Consult local building codes.

It is the owner's responsibility to assure protection is provided for the operator (ie. access chains) to prevent falling off of the elevating dock when the unit is above ground/floor level.



**Figure 7: Guard Rail Installation**

19. Check the oil in the power unit reservoir and add if necessary (See MAINTENANCE & LUBRICATION, Page 15.)
20. Clean up any debris and/or spilled oil from the area.
21. **INITIAL SET-UP:** It is important to purge air from the hydraulic system. To do this, raise the unit to its maximum raised height and allow the power unit to run for a minimum of 30 seconds additional time. Fully lower the unit. Discontinue use of the unit for 20 minutes to allow air to dissipate from the oil in the reservoir.

**NOTE:** Units equipped with an up travel limit switch will not reach their "maximum raised height" unless the limit switch is removed. The up travel limit switch must be removed to purge the air. **DO NOT remove the up travel limit switch until first assuring there are no obstructions in the operating path of the equipment.** After the air has been purged, lower the elevating dock to its desired raised height and reinstall the limit switch.

## BREAK-IN AND PERFORMANCE CHECK



BEFORE DOING ANY INSTALLATION, MAINTENANCE, INSPECTION OR TROUBLE SHOOTING, BARRICADE THE WORK AREA FOR SAFETY, POST APPROPRIATE WARNING SIGNS AND BE CERTAIN THAT THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. ALL ELECTRICAL WORK MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH ALL APPLICABLE CODES.

**NOTE:** IN SOME CASES THERE IS A CONSIDERABLE AMOUNT OF TIME BETWEEN THE SHIPMENT DATE AND USE OF YOUR ELEVATING DOCK. THIS INITIAL BREAK-IN AND PERFORMANCE CHECK SHOULD BE PERFORMED BEFORE YOU BEGIN REGULAR USE OF YOUR ELEVATING DOCK TO ENSURE THAT IT IS OPERATING PROPERLY.

1. Ensure that any specified interlocks (e.g. overhead doors, restraints) are fully functional.
2. It is important to purge air from the hydraulic system. To do this, raise the unit to its maximum raised height and allow the power unit to run for a minimum of 30 seconds additional time. Fully lower the unit. Discontinue use of the unit for 20 minutes to allow air to dissipate from the oil in the reservoir.

**NOTE:** Units equipped with an up travel limit switch will not reach their "maximum raised height" unless the limit switch is removed. The up travel limit switch must be removed to purge the air. **DO NOT remove the up travel limit switch until first assuring there are no obstructions in the operating path of the equipment.** After the air has been purged, lower the elevating dock to its desired raised height and reinstall the limit switch.

3. Raise the elevating dock and install the maintenance stand as outlined on page 14.
4. Inspect hydraulic system for leaks, especially at fittings and hose connections.
5. Elevating docks do not require lubrication of the pivot points. For ease of maintenance, lifetime lubricated bushings have been used on all rollers, leg pivot points as well as the upper cylinder pivot. However, units installed outdoors or in wet and dirty environments should be lubricated. See the Maintenance and Lubrication Section, Page 15.
6. Ensure the safety trip bar (if equipped) is functional.

**NOTE:** The safety trip bar option is an electrical safety device with an actuator suspended beneath the platform which halts downward travel of the elevating dock if it contacts with an obstruction. (This feature is not functional in the event of hydraulic failure.)

7. Completely raise and lower the elevating dock three times.

**IMPORTANT:** As the performance test is being conducted, watch closely for any signs that the elevating dock might not be operating properly. If you are in doubt, refer to Operating Instructions on page 12 and Trouble Shooting Guide on page 17 or contact your Pentalift representative.

# OPERATING INSTRUCTIONS

## **⚠ DANGER**

USE BY UNTRAINED PEOPLE CAN RESULT IN PROPERTY DAMAGE, BODILY INJURY OR DEATH. READ, KNOW, AND OBEY ALL OPERATING INSTRUCTIONS AND SAFETY INFORMATION. FOLLOW ALL OSHA REGULATIONS REGARDING THE USE OF THIS EQUIPMENT. DO NOT USE THE ELEVATING DOCK IF ANY PART OF IT LOOKS BROKEN OR IF IT DOES NOT SEEM TO OPERATE PROPERLY. IF REPAIRS ARE NEEDED, CONTACT YOUR PENTALIFT REPRESENTATIVE.

## **⚠ DANGER**

DO NOT INSTALL, OPERATE OR SERVICE THIS PRODUCT UNLESS YOU HAVE READ AND FULLY UNDERSTAND THE ENTIRE CONTENTS OF THIS MANUAL. FAILURE TO DO SO MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY OR DEATH.

**NEVER EXCEED THE MAXIMUM RATED CAPACITY OF THE ELEVATING DOCK.** (i.e. The maximum load for a 3,000 lb. rated unit is 3,000 lb. with the load center at the center of the deck.) The single axle load capacity across the ends is 75% of the rated capacity. The single axle load across the sides is 50% of the rated capacity. Refer to the specification plate (see Figure 2, Page 3) for each elevating dock's particular rating.

**NOTE:** The load is defined as the entire weight applied to the deck of the elevating dock including all loading/unloading equipment, etc. If you are unsure in any way as to the suitability of this product to your application, consult a Pentalift representative prior to using the elevating dock.

Do not apply shock loads to the unit. (i.e. Do not drop loads onto the deck, lower loads onto the deck at a high rate of speed, stop unit abruptly or jog in lower range of travel.) Do not load or unload the elevating dock while it is in motion. Properly secure all loads.

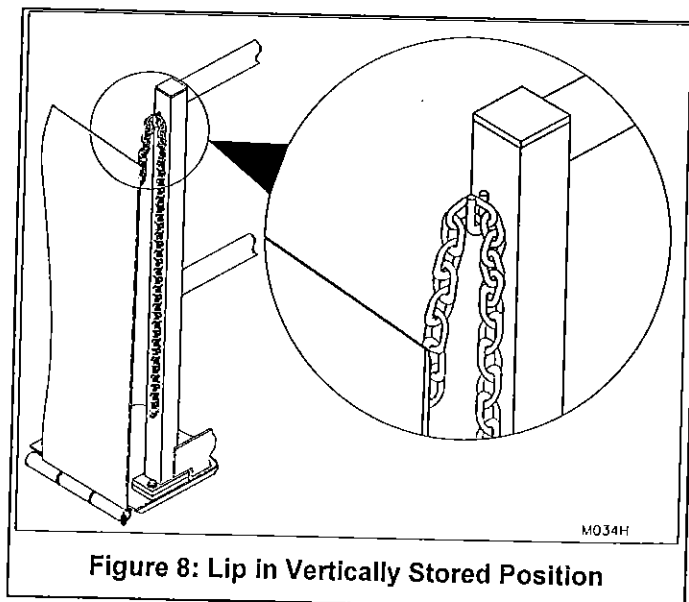
Keep any obstructions and personnel clear of the elevating dock and load and their operating path to eliminate injury and/or damage. Avoid or eliminate any and all potential pinch points.

Prior to each use, ensure elevating dock and load does not create pinch points during operation when located adjacent to or near other equipment or structures.

Never use the unit for lifting personnel unless it has been suitably designed and manufactured for that purpose by Pentalift Equipment Corporation. Guard rails and access chains must be used.

The deck surface must be kept clean and free from oil, debris, etc. Keep debris, etc. from underneath the unit.

When not in use, the deck should be in the lowered position with the lip(s) in an upright vertically stored position with the lip chain(s) engaged. (See Figure 8, Page 12 and Figure 9, Page 13)



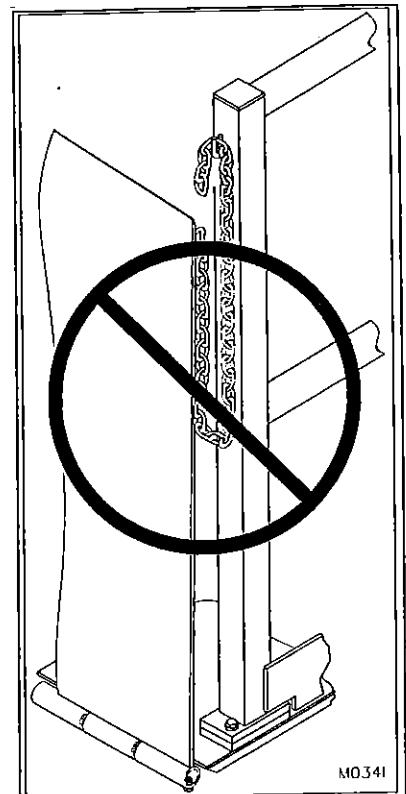
8. To raise the elevating dock, ensure the lip(s) are in the vertically stored position. Push and hold the "UP" button. Allow the elevating dock to raise to the desired height and then release the button.

9. Carefully lower the lip(s) onto the truck bed.

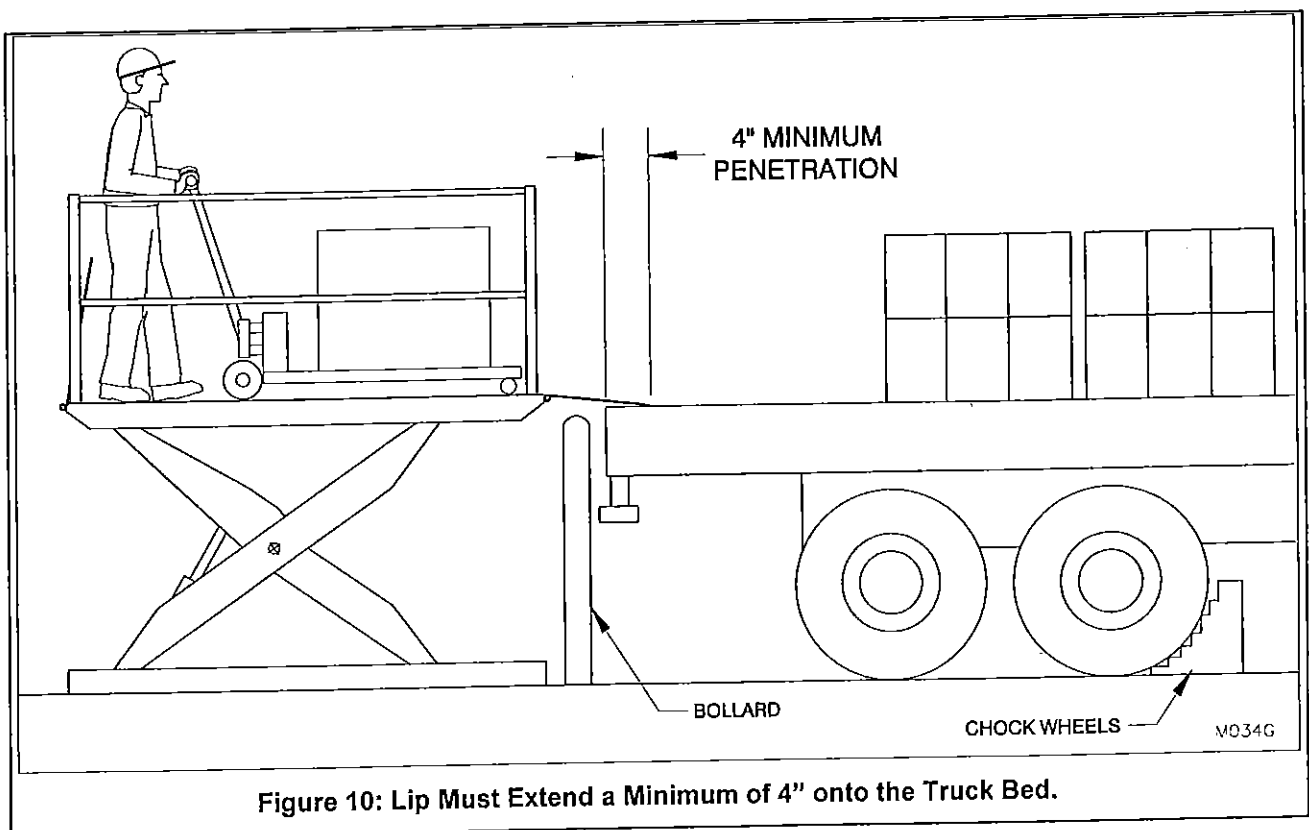
**NOTE:** The lip(s) must extend a minimum of 4" onto the truck bed. (See Figure 10, Page 13)

10. To lower the elevating dock, return the lip(s) to the vertically stored position. Push and hold the "DOWN" button and the unit will descend to its lowered position.

**NOTE:** Push-button requires constant pressure in either raising or lowering mode. The elevating dock movement may be halted at any time by releasing the push-button.



**Figure 9: Lip Not Properly Secured (See Figure 8)**



**Figure 10: Lip Must Extend a Minimum of 4" onto the Truck Bed.**

# HOW TO SUPPORT THE ELEVATING DOCK DURING ROUTINE MAINTENANCE AND INSPECTION

## **⚠ DANGER**

THE BLOCKING PROCEDURES DESCRIBED BELOW ARE SUITABLE ONLY FOR THE INSPECTION, TROUBLE SHOOTING AND MAINTENANCE PROCEDURES DESCRIBED IN THIS MANUAL. THEY MAY NOT BE SAFE FOR OTHER INSPECTION, MAINTENANCE AND REPAIR PROCEDURES THAT MAY BE REQUIRED. CONTACT YOUR AUTHORIZED PENTALIFT REPRESENTATIVE FOR DIRECTION PRIOR TO UNDERTAKING ANY ACTIONS OTHER THAN THOSE DESCRIBED IN THIS MANUAL. FAILURE TO PROPERLY ADHERE TO LIFT BLOCKING PROCEDURES IS TO RISK THE SUDDEN AND UNCONTROLLED DESCENT OF THE LIFT DURING MAINTENANCE OR INSPECTION. A FALLING LIFT CAN CAUSE SEVERE INJURY OR DEATH.

## **⚠ DANGER**

ONLY TRAINED AND QUALIFIED PERSONNEL SHOULD PERFORM INSPECTION OR MAINTENANCE AND SERVICE PROCEDURES.

## **⚠ DANGER**

BEFORE DOING ANY INSTALLATION, MAINTENANCE, INSPECTION OR TROUBLE SHOOTING, BARRICADE THE WORK AREA FOR SAFETY, POST APPROPRIATE WARNING SIGNS AND BE CERTAIN THAT THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. ALL ELECTRICAL WORK MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH ALL APPLICABLE CODES.

## **⚠ DANGER**

PRIOR TO PERFORMING ANY ACTIVITY WITHIN THE OPERATING PATH OF THE ELEVATING DOCK, ALWAYS ENSURE THAT THERE IS NO LOAD ON THE ELEVATING DOCK AND THAT THE INSTRUCTIONS LISTED BELOW ARE FOLLOWED.

## **⚠ DANGER**

NEVER GO BENEATH THE ELEVATING DOCK FOR ANY REASON UNLESS THE DECK AND LIP(S) ARE PROPERLY SUPPORTED (SEE FIGURE 11, PAGE 14) AND THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. IT IS THE RESPONSIBILITY OF THE OWNER TO ENSURE THAT NO LOAD OR TRAFFIC IS PLACED ON THE DECK WHILE THE MAINTENANCE STAND IS ENGAGED. THE CONSTRUCTION OF THE MAINTENANCE STAND IS INTENDED TO SUPPORT THE WEIGHT OF THE UNLOADED ELEVATING DOCK ONLY.

NOTE: ANY LOADS INCLUDING LOADING/UNLOADING EQUIPMENT, ETC., ARE TO BE REMOVED.

The blocking procedure is as follows:

1. Raise the unloaded elevating dock to its maximum height.
2. At the rolling end of the elevating dock, the swing away maintenance stand pivots on a pin. Swing the maintenance stand as far around as possible into the path of the rollers. (See Figure 11, Page 14)

**IMPORTANT:** If your unit is equipped with TWO swing away maintenance stands, one on each side of the elevating dock frame, use both maintenance stands simultaneously.

3. Lower the elevating dock until the leg rollers are securely supported by the maintenance stand(s). Confirm the scissor legs are now securely blocked from downward movement.
4. Disconnect, properly tag and lock out power to the elevating dock prior to commencing inspection, trouble shooting or maintenance.

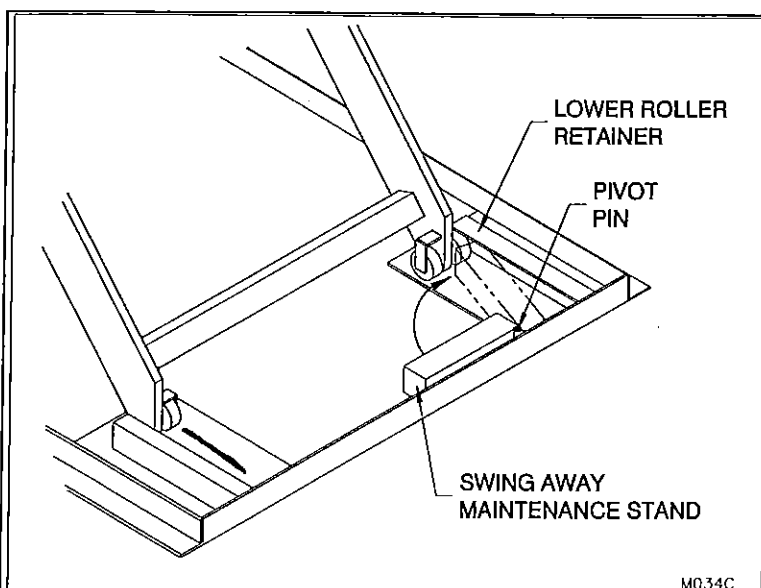


Figure 11: How to Support the Elevating Dock for Maintenance

## MAINTENANCE & LUBRICATION

UNLESS OTHERWISE NOTED, THE FOLLOWING MAINTENANCE AND INSPECTION PROCEDURES SHOULD BE CONDUCTED AT A MINIMUM OF EVERY 30 DAYS. INCREASE FREQUENCY FOR MORE SEVERE ENVIRONMENTS.

### **⚠ DANGER**

ONLY TRAINED AND QUALIFIED PERSONNEL SHOULD PERFORM INSPECTION OR MAINTENANCE AND SERVICE PROCEDURES.

### **⚠ DANGER**

NEVER GO BENEATH THE ELEVATING DOCK FOR ANY REASON UNLESS IT IS PROPERLY SUPPORTED (SEE HOW TO SUPPORT THE ELEVATING DOCK DURING ROUTINE MAINTENANCE AND INSPECTION, PAGE 14.), THE AREA IS BARRICADED FOR SAFETY, APPROPRIATE WARNING SIGNS ARE POSTED AND THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. IT IS THE RESPONSIBILITY OF THE OWNER TO ENSURE THAT NO LOAD EXISTS ON THE DECK WHILE THE MAINTENANCE STAND IS ENGAGED. THE CONSTRUCTION OF THE MAINTENANCE STAND IS INTENDED TO SUPPORT THE WEIGHT OF THE UNLOADED ELEVATING DOCK ONLY.

### **⚠ DANGER**

THE RELIEF VALVE ON THE POWER UNIT IS PRESET AT THE FACTORY. IT IS AN IMPORTANT SAFETY DEVICE. DO NOT ADJUST OR REMOVE THE RELIEF VALVE.

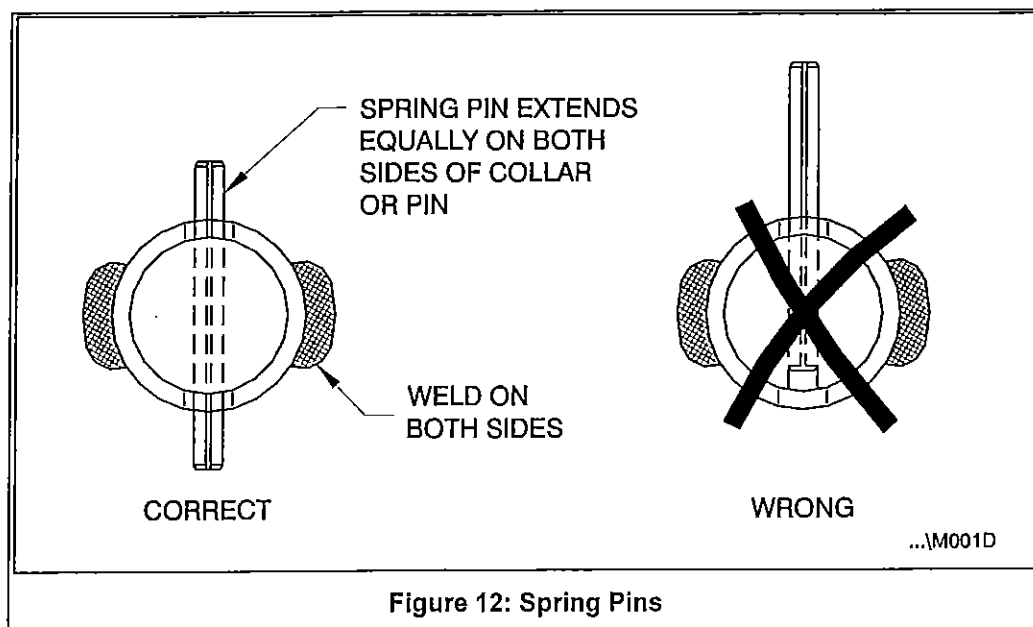
**NOTE:** Read the SAFETY INFORMATION AND WARNINGS before servicing the elevating dock. (See page i.)

**NOTE:** It is the owner's responsibility to assure that all labeling remains legible and in its original position throughout the life of the product. (See SAFETY LABELING Section, page 2)

**NOTE:** Inspect equipment for protective coatings (i.e. paint) that have deteriorated or been removed. Prepare affected area and reapply protective coating as required.

**NOTE:** At every maintenance interval, inspect the elevating dock for any damaged or worn parts. If any damaged or worn parts are found, discontinue use of the elevating dock and/or repair immediately.

Check all spring pins, items 2, 29 and 35 in Figure 14, Page 19, to confirm they are not damaged and that they are properly inserted. Confirm that all welds on the spring pin collars are intact. (See Figure 12, page 15.)

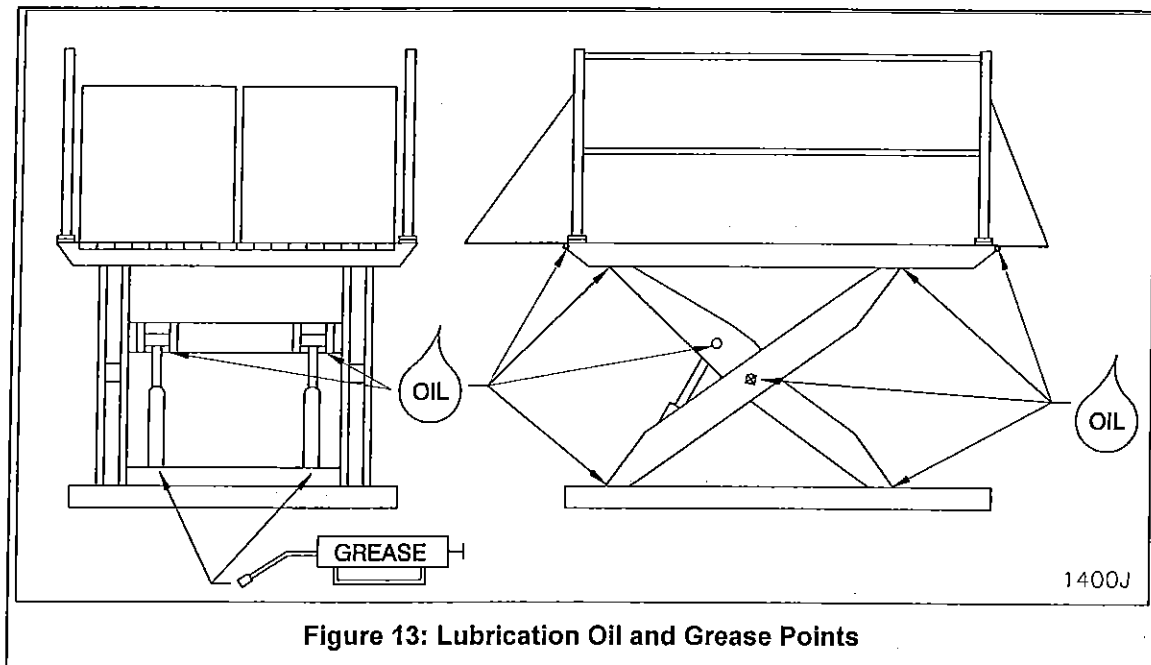


Ensure that any specified interlocks (e.g. overhead doors, restraints) are fully functional.

Ensure the safety trip bar (if equipped) is functional. **NOTE:** The safety trip bar option is an electrical safety device with an actuator suspended beneath the platform which halts downward travel of the elevating dock if it contacts with an obstruction. (This feature is not functional in the event of hydraulic failure.)

**Hydraulic Oil:** Required Hydraulic Oil is DEXRON III Automatic Transmission Fluid. The oil should be changed once a year under normal operating conditions. The oil level, however, should be checked weekly. When the elevating dock is fully lowered, the oil level in the reservoir of a 1 or 3 hp power unit should be approximately 2 – 3 inches from the top. A 5 hp or higher power unit should have the oil in the reservoir filled to the full mark on the sight gauge.

Elevating docks do not require lubrication of the pivot points. For ease of maintenance, lifetime lubricated bushings have been used on all rollers, leg pivot points as well as the upper cylinder pivot. However, units installed outdoors or in wet and dirty environments should be lubricated regularly at the points indicated in Figure 13, Page 16. The recommended lubrication **service interval is every 30 days** or at a greater frequency as required in severe environments. **Dexron III Automatic Transmission Fluid** is recommended.



Elevating docks also require grease at the base of the hydraulic cylinders; see Figure 13, Page 16.

# TROUBLE SHOOTING GUIDE

**NOTE:** This equipment has been fully tested and confirmed to be operational at the factory. Historically, the majority of operating problems are caused by unnecessary tampering by unqualified personnel. To conform to the terms of the Warranty, contact your authorized Pentalift representative if you are having any difficulty with the elevating dock during the warranty period. Do not risk voiding the warranty by tampering with the equipment.

## DANGER

ONLY TRAINED AND QUALIFIED PERSONNEL SHOULD PERFORM INSPECTION OR MAINTENANCE AND SERVICE PROCEDURES.

## DANGER

BEFORE DOING ANY INSTALLATION, MAINTENANCE, INSPECTION OR TROUBLE SHOOTING, BARRICADE THE WORK AREA FOR SAFETY, POST APPROPRIATE WARNING SIGNS AND BE CERTAIN THAT THE POWER IS DISCONNECTED, PROPERLY TAGGED AND LOCKED OUT. ALL ELECTRICAL WORK MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH ALL APPLICABLE CODES. FOLLOW SAFE WORKING PRACTICES AS PER THE SAFETY INFORMATION SECTION.

## DANGER

NEVER GO BENEATH THE DECK UNLESS THE LOAD IS REMOVED AND THE SCISSOR MECHANISM IS PROPERLY BLOCKED (SEE PAGE 14.)

## DANGER

THE RELIEF VALVE ON THE POWER UNIT IS PRESET AT THE FACTORY. IT IS AN IMPORTANT SAFETY DEVICE. DO NOT ADJUST THE RELIEF VALVE.

**IMPORTANT:** See page 16 for recommended hydraulic oil.

- 1) **Elevating dock will not rise when the push button is depressed.**
  - a) Re-check all wiring and hydraulic connections. Refer to the wiring diagram found inside the motor control panel.
  - b) Assure proper hydraulic fluid level. (See page 16)
  - c) Examine all moving parts for obstructions.
  - d) Confirm that power is reaching the power unit.
  - e) On 3 phase units, assure phase polarity is correct. Incorrect polarity will cause the elevating dock not to lift. The motor will run backwards resulting in cavitation and possible damage to the pump.
  - f) If the problem cannot be solved, consult your authorized Pentalift representative.
- 2) **Motor runs, however, the elevating dock does not rise.**
  - a) Assure proper hydraulic fluid level. (See page 16)
  - b) On 3 phase units, assure phase polarity is correct. Incorrect polarity will cause the elevating dock not to lift. The motor will run backwards resulting in cavitation and possible damage to the pump.
  - c) Check for any obstructions.
  - d) Check to ensure the load does not exceed the rated capacity of the elevating dock.
  - e) If the problem cannot be solved, consult your authorized Pentalift representative.
- 3) **Breaker is disengaging or supply line fuses are burning out.**
  - a) Assure proper voltage is reaching the motor. (See Electrical Reference Chart.)
  - b) Check for any obstructions.
  - c) Check all wiring connections.
  - d) If the problem cannot be solved, consult your authorized Pentalift representative.
- 4) **Elevating dock rises or lowers with a jerking movement.**
  - a) Assure proper hydraulic fluid level. (See page 16)
  - b) Air may be present in the hydraulic system. (See initial set-up; Item 21, Page 10.)
  - c) Check for any obstructions.
  - d) Check to ensure load does not exceed rated capacity of elevating dock.
  - e) Assure elevating dock is shimmed properly. (See Figure 6, Page 9.)
  - f) If the problem cannot be solved, consult your authorized Pentalift representative.

**5) Elevating dock will not lower.**

- a) Re check all wiring.
- b) Check for any obstructions.
- c) Ensure electrical lowering valve is energized when down button is depressed.
- d) If equipped with optional safety trip bars, ensure trip bars are not engaged. (i.e. obstruction under trip bars, etc. See item 6, page 11 for definition of safety trip bars.)
- e) If the problem cannot be solved, consult your authorized Pentalift representative.

If damaged or worn parts are detected upon inspection, replacement must be undertaken **immediately**. **The elevating dock must not be used until replacement is completed.** Parts are readily available from your Pentalift representative.

# REPLACEMENT PARTS

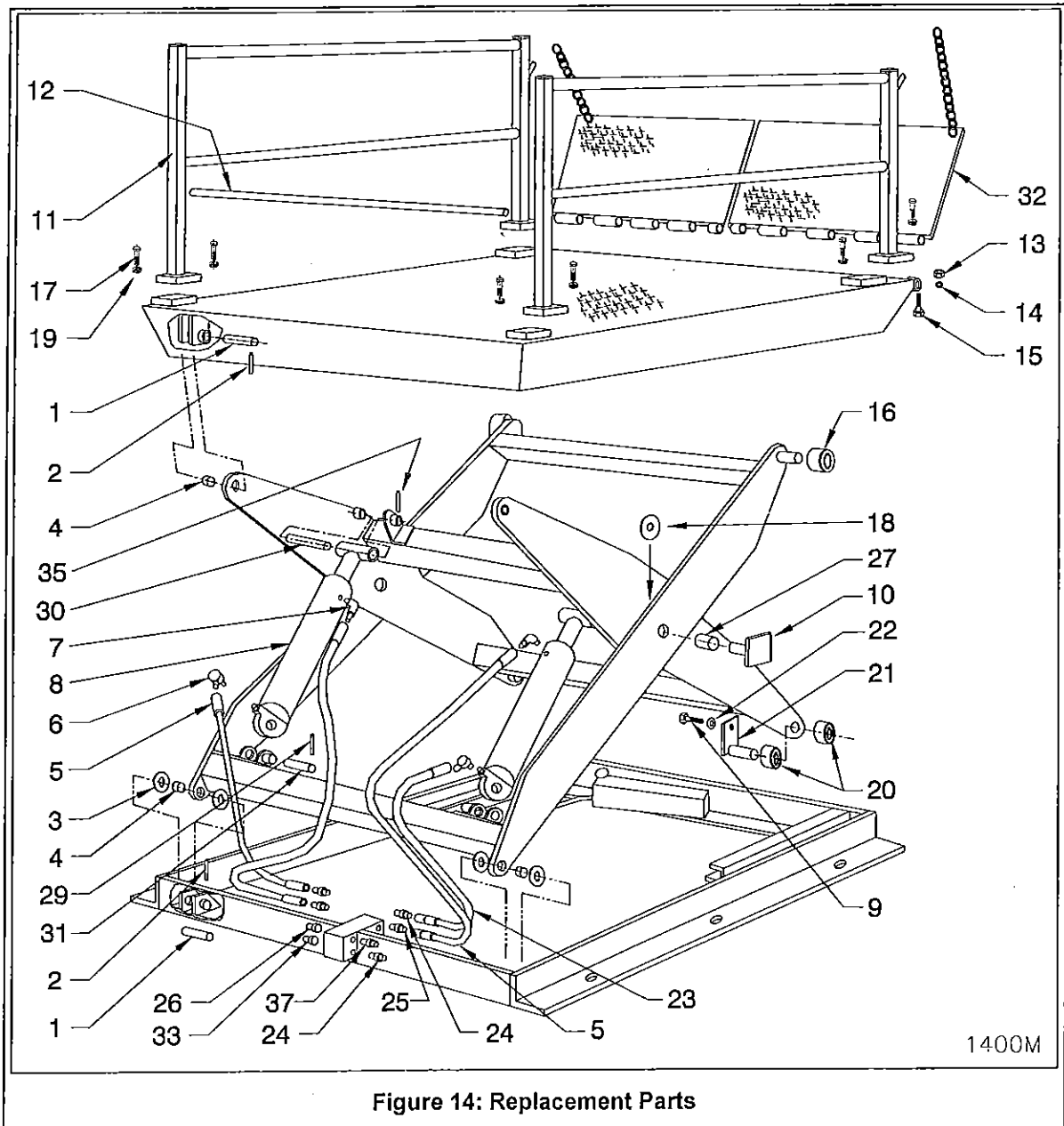
USE ONLY GENUINE PENTALIFT REPLACEMENT PARTS



TO ENSURE PROPER FUNCTIONING, DURABILITY AND SAFETY OF THE PRODUCT, ONLY GENUINE PENTALIFT REPLACEMENT PARTS MUST BE USED. ALTERING THE PRODUCT FROM ITS ORIGINAL MANUFACTURED CONFIGURATION MUST NOT BE DONE. PENTALIFT EQUIPMENT CORPORATION DISCLAIMS ALL LIABILITY FOR FAILURE TO COMPLY WITH THIS WARNING. WARRANTIES ARE SPECIFICALLY DISCLAIMED IN THE EVENT THE PURCHASER FAILS TO COMPLY WITH THIS WARNING.

To expedite order processing when ordering parts, please provide the following information to your Pentalift representative:

1. Model and Serial Number of equipment.
2. Part Number, Description and Quantity.
3. Shipping Instructions.



# REPLACEMENT PARTS LIST

## USE ONLY GENUINE PENTALIFT REPLACEMENT PARTS

<u>Item No.</u>	<u>Part No.</u>	<u>Description</u>
1	301-0523	Fixed End Clevis Pin
2	080-0001	Spring Pin
3	074-0040	Washer
4	NOTE	Bushings (Set for upper & lower fixed end leg pivot points)
5	NOTE	Bypass Return Cylinder Hose Assembly (Specify length)
6	052-0052	Fitting
7	052-0016	Fitting
8	NOTE	Lift Cylinder
9	072-0090	Bolt
10	See Chart A	Center Pin Assembly
11	NOTE	Guard Rail
12	NOTE	Lip Pin
13	070-0010	Nut
14	074-0076	Lock Washer
15	072-0016	Bolt
16	801-0541	Upper Roller Assembly c/w Bushing (6,000 lb. – 20,000 lb. models)
	801-0542	Upper Roller Assembly c/w Bushing (3,000 lb. – 5,000 lb. models)
17	074-0035	Bolt
18	074-0045	Spacer (3,000 lb. – 12,000 lb. models)
	301-0888	Spacer (15,000 lb. models)
19	074-0083	Lock Washer
20	801-0543	Lower Roller Assembly c/w Bushing (6,000 lb. – 20,000 lb. models)
	801-0544	Lower Roller Assembly c/w Bushing (3,000 lb. – 5,000 lb. models)
21	See Chart B	Lower Roller Pin Assembly
22	074-0077	Lock Washer
23	NOTE	Pressure Cylinder Hose Assembly (Specify length)
24	052-0048	Fitting
25	052-0017	Fitting
26	052-0155	Plug
27	800-0317	Center Pin Bushing (3,000 – 12,000 lb. models)
28	NOTE	Flow Control (Not shown)
29	080-0025	Spring Pin
30	See Chart C	Upper Cylinder Pin
31	301-0836	Lower Cylinder Pin
32	NOTE	Lip
33	052-0066	Plug
34	060-0510	Safety Trip Bar Limit Switch (Optional – Not Shown)
35	080-0025	Spring Pin
36	NOTE	Velocity Fuse (Optional - Not shown)
37	052-0085	Fitting

**NOTE:** State Model # and Serial Number when ordering replacement parts.

# REPLACEMENT PARTS LIST - CHARTS

USE ONLY GENUINE PENTALIFT REPLACEMENT PARTS

CHART A	
ITEM #10 – CENTER PIN ASSEMBLY	
801-0535	For Models with ¾" Thick Legs
801-0536	For Models with 1" Thick Legs
801-0537	For Models with 1 ¼" Thick Legs
801-0568	For Models with 1 ½" Thick Legs

CHART B	
ITEM #21 – LOWER ROLLER PIN ASSEMBLY	
801-0545	For Models with ¾" Thick Legs
801-0546	For Models with 1" Thick Legs
801-0547	For Models with 1 ¼" Thick Legs
801-0548	For Models with 1 ½" Thick Legs

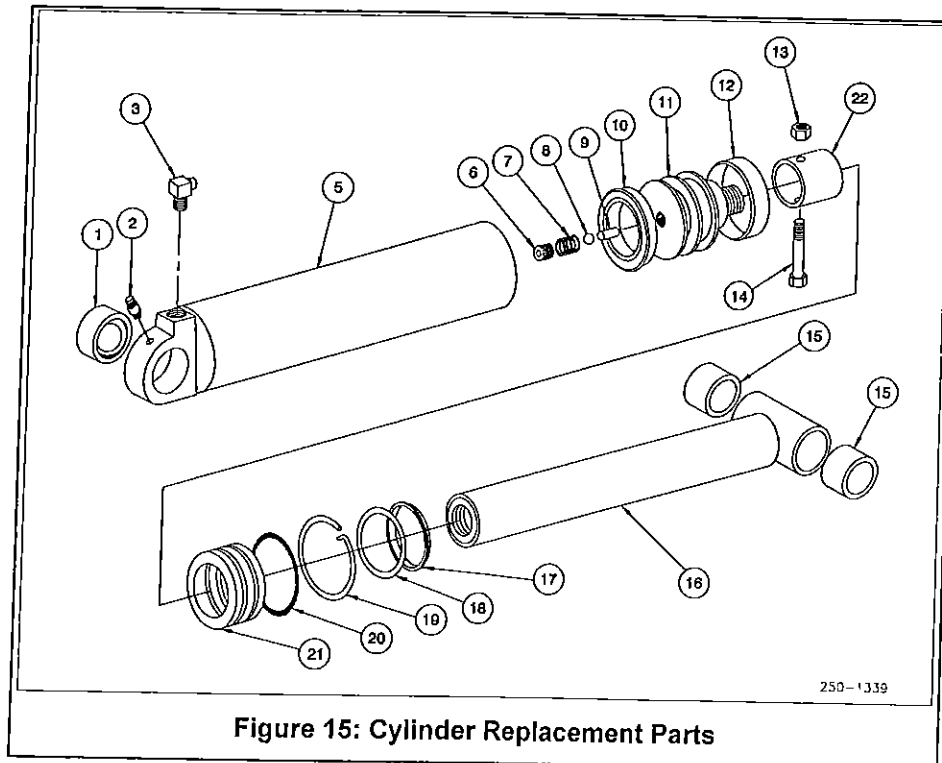
CHART C	
ITEM #30 – UPPER CYLINDER PIN	
301-0834	For Models with ¾" Thick Legs
301-0834	For Models with 1" Thick Legs
301-0834	For Models with 1 ¼" Thick Legs
301-0809	For Models with 1 ½" Thick Legs & Dual Cylinders

# LIFT CYLINDER REPLACEMENT PARTS

USE ONLY GENUINE PENTALIFT REPLACEMENT PARTS

<u>Item No.</u>	<u>Description</u>	<u>Part No for</u> <u>4" OD (3 1/2" ID)</u>	<u>Part No. for</u> <u>4 1/2" OD (4" ID)</u>
1	Swivel Bearing	090-0000	090-0000
2	Grease Fitting	052-0170	052-0170
3	90 Degree Fitting	052-0052	052-0052
5	Cylinder Housing Assembly	-----	-----
6	*Set Screw	250-1879	250-1879
7	*Spring	097-0020	097-0020
8	*Ball	090-0001	090-0001
9	*By-Pass Pin	300-4001	300-4001
10	*"U" Cup	054-0501	054-0502
11	Cartridge	300-0883	300-0888
12	*Wear Ring	054-0521	054-0522
13	Nut	070-0060	070-0060
14	Bolt	072-0044	072-0044
15	Bushing	095-0015	095-0015
16	Piston Rod Assembly	-----	-----
17	*Wiper	054-0504	054-0504
18	*Inner "O" Ring	054-0329	054-0329
19	*Retaining Ring	300-0088	300-0203
20	*Outer "O" Ring	054-0338	054-0342
21	Head Nut	300-0000	300-0001
22	Dump Tube	NOTE	NOTE
23	Seal Kit – Includes all items marked with *	800-0284	800-0316
24	Replacement Cylinder (Items 1-22)	NOTE	NOTE

**NOTE:** State Model # and Serial Number when ordering replacement parts.



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# PENTALIFT EQUIPMENT CORPORATION WARRANTY

## WARRANTY

Pentalift Equipment Corporation expressly warrants that any product manufactured by Pentalift Equipment Corporation will be free from defects in material and workmanship under normal use for a period of one (1) year from the date of shipment of the equipment, provided the original purchaser maintains and operates the product in accordance with proper procedures. In the event the product proves defective in material or workmanship, Pentalift Equipment Corporation will at its option:

1. Replace the product or the defective portion thereof without charge to the purchaser; or
2. Alter or repair the product; on site or elsewhere, as Pentalift Equipment Corporation may deem advisable, without charge to the purchaser.

The warranty stated in the previous paragraph is that expressed by PENTALIFT EQUIPMENT CORPORATION AND IS IN LIEU OF ALL GUARANTEES AND WARRANTIES, EXPRESSED OR IMPLIED BY ANYONE OTHER THAN PENTALIFT EQUIPMENT CORPORATION. This warranty does not cover any failure caused by improper installation, misapplication, overloading, abuse, negligence, or failure to lubricate and adjust or maintain the equipment properly and regularly. Parts requiring replacement due to damage resulting from abuse, improper operations, improper or insufficient lubrication, lack of proper protection or vehicle impact are not covered by this warranty. Pentalift Equipment Corporation assumes no responsibility or liability for:

1. Consequential damages of any kind which result from use or misuse of the equipment.
2. Damage or failure resulting from the use of unauthorized replacement parts.
3. Damage or failure resulting from modification of the equipment.
4. Damage resulting from the misuse of the equipment.

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, AND THERE IS NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

Pentalift Equipment Corporation warranties extend only to the original product itself. In no event shall Pentalift Equipment Corporation be responsible for or liable to anyone, including third parties, for special, indirect, collateral, punitive, incidental or consequential damages, even if Pentalift Equipment Corporation has been advised of the possibility of such damages. Such excluded damages include, but are not limited to, loss of good will, loss of profits, loss of use, interruption of business or other similar indirect financial loss.

Pentalift Equipment Corporation DISCLAIMS all liability arising out of the workmanship, methods and materials used by the installer.

Pentalift Equipment Corporation DISCLAIMS all liability for premature product wear, product failure, property damage or bodily injury arising from improper installation and application.

Pentalift Equipment Corporation will not accept any warranty for which the original purchaser does not notify Pentalift Equipment Corporation's Warranty Department of the defect within ninety (90) days after the product defect is discovered. A fully completed Product Registration Card is required prior to the review or processing of any warranty requests or claims.

WARRANTIES, whether expressed or implied, relating to workmanship and materials used in connection with the installation of Pentalift Equipment Corporation products are specifically DISCLAIMED.

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NOTE: All Pentalift Equipment Corporation products are subject to design improvement through modification without notice.