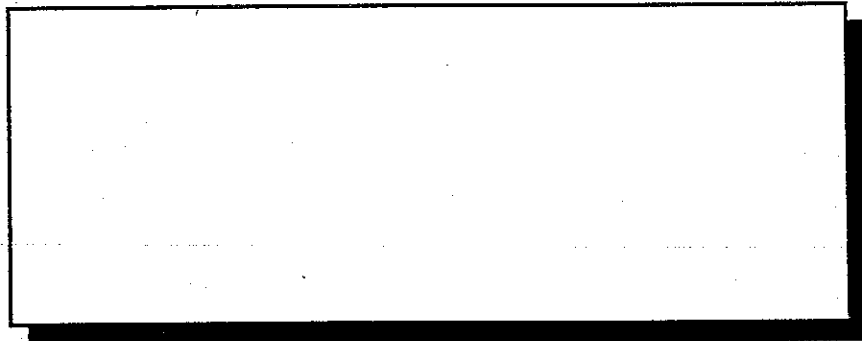


**POWERAMP®**

**LIZARD LIP  
EXTENDABLE  
DOCK LEVELER  
INSTALLATION &  
OPERATION MANUAL**



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## Safety Alert Symbols



**This Safety Alert Symbol Means ATTENTION is Involved!**

The Safety Alert Symbol identifies important safety messages on equipment, safety signs, in manuals, or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.



**WARNING**

The use of the word "Warning" signifies the presence of hazards or unsafe practices which could result in severe personal injury or death if instructions, including recommended precautions, are not followed.

**CAUTION**

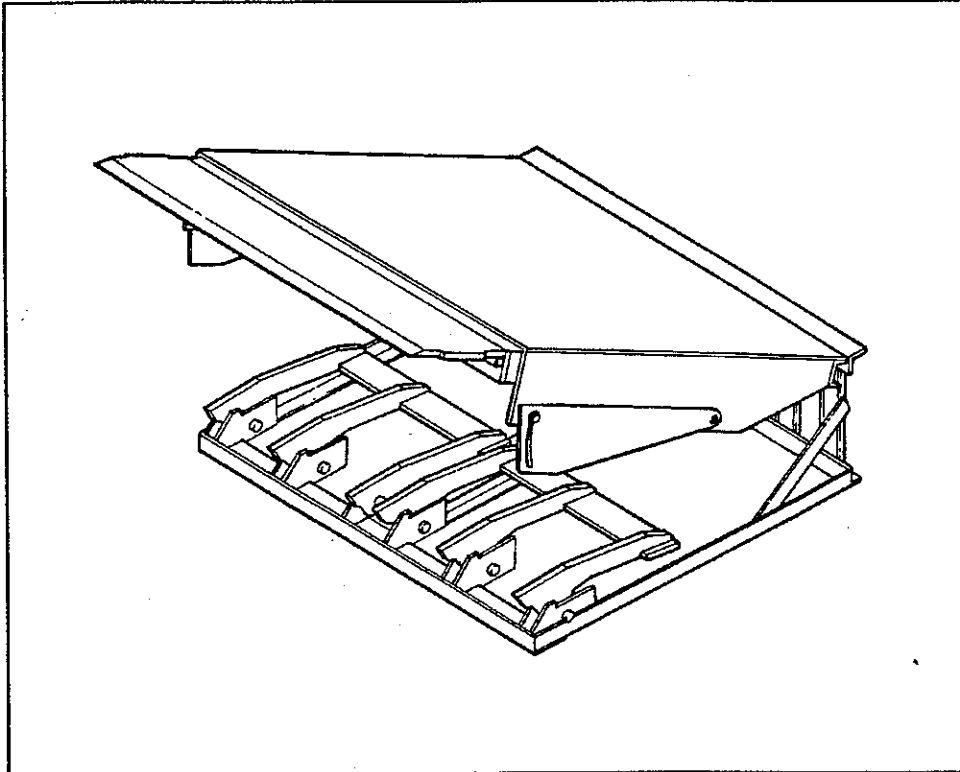
The use of the word "Caution" signifies possible hazards or unsafe practices which could result in minor injury, product or property damage if instructions, including recommended precautions, are not followed.

## General Safety Precautions

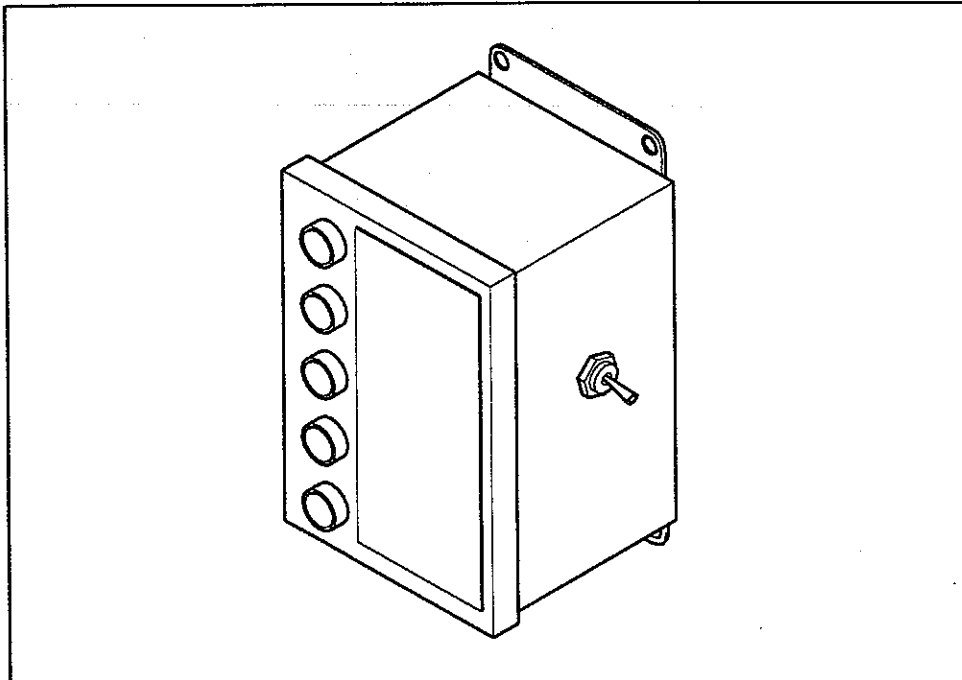
1. Do not operate this equipment until you read and understand the operating instructions and become thoroughly familiar with the equipment and its controls.
2. Never operate a machine while a safety device or guard is removed or disconnected.
3. Never remove Warning or Caution signs or decals on the equipment unless they are to be replaced.
4. Do not start the equipment until all other personnel in the area have been warned and have moved outside the operating zone.
5. Remove any tools or other foreign objects from the operating zone before starting.
6. Keep operating zone free of obstacles that could cause a person to trip or fall.
7. Hydraulic and electrical power must be off when servicing equipment.  
**NOTE:** For maximum protection, all power sources should be locked out using a lock for which only you have the key. This prevents anyone from accidentally turning on the power while you are servicing the machine.
8. Keep alert.
9. Do not operate faulty equipment. Make certain proper service and maintenance procedures have been performed.
10. Avoid placing fingers, hands, or any part of your body near moving parts.

# Introduction

The LIZARD LIP Dock Leveler consists of a Hydraulic dock leveler with a unique telescoping platform, and a control unit. Optional barrier pictured in stored horizontal position.



**Poweramp Lizard Lip Dock Leveler**



**Control Unit**

# Introduction

The LIZARD LIP offers unparalleled operator control. At the touch of a button the dock attendant can raise the platform, extend the lip, adjust the length of the platform to provide optimum safety and efficiency, or store the dock leveler with the platform flush with the dock floor and the lip behind closed dock doors.

The dock leveler is available with either a standard or "Clean Pit" frame. The Clean Pit version allows water or steam cleaning of the pit beneath the dock leveler platform.

Either frame version is available with the exclusive hydraulic LIZARD LIP BARRIER which prevents lift trucks from driving over the dock's edge and eliminates damage to overhead doors.

An integral hydraulic power pack (motor, pump and reservoir) are standard. All hydraulic valve blocks, hoses and cylinders are also integral on standard units. Optionally, the unit may be powered by a remotely mounted power pack or by a POWERAMP CENTRAPOWER system.

# Installation



## WARNING

Barricade the work area to prevent unauthorized use of the unit before installation has been completed



## WARNING

Do not ground welding equipment to any hydraulic or electrical components of the unit.

Do not make any final electrical connections until all welding is complete.

All welding required for installation is at the frame of the unit. Always ground to the frame to minimize possibility of hydraulic or electrical component failure. Failure to follow these warnings could result in injury or death.

This manual covers installation and operation of units with standard and Clean Pit frames, both with and without the hydraulic barriers, and with an integral power pack. Instructions for units powered by a remote power pack or a CENTRAPOWER system are furnished separately or as an addendum to this manual.

## Preparation

Additional installation procedures not given in this manual are required if the unit is part of a CENTRAPOWER system or if the unit has a power pack mounted in a location that is remote from the unit.

1. Some units are shipped with the control assembly and dock bumpers attached to the unit. Remove these items from the unit prior to installing unit in the pit. DO NOT remove the shipping bands from around the lip at this time.
2. Remove all debris from the pit.
3. Check the pit dimensions with the certified Pit Drawing attached to this manual. Make sure that the walls of the pit are plumb and square with no bulges. Verify and record depth of pit at each end of imbedded channel and at the rear of the pit, (refer to Figure 1, Page 4, shim locations "A" and "B").

**NOTE:** If your dock leveler is equipped with a barrier, shims used under the barrier (shim location "B") MUST be of single thickness stock and must be of size shown in Figure 1. Shims MUST NOT be stacked. Thickness of shims can be determined by subtracting 23.75" from measured pit depth. Multiple stacked plates may be used at shim location "B" if unit does not have a barrier. Stacked shims may also be used at shim locations "A" and "C" on all units.

# Installation

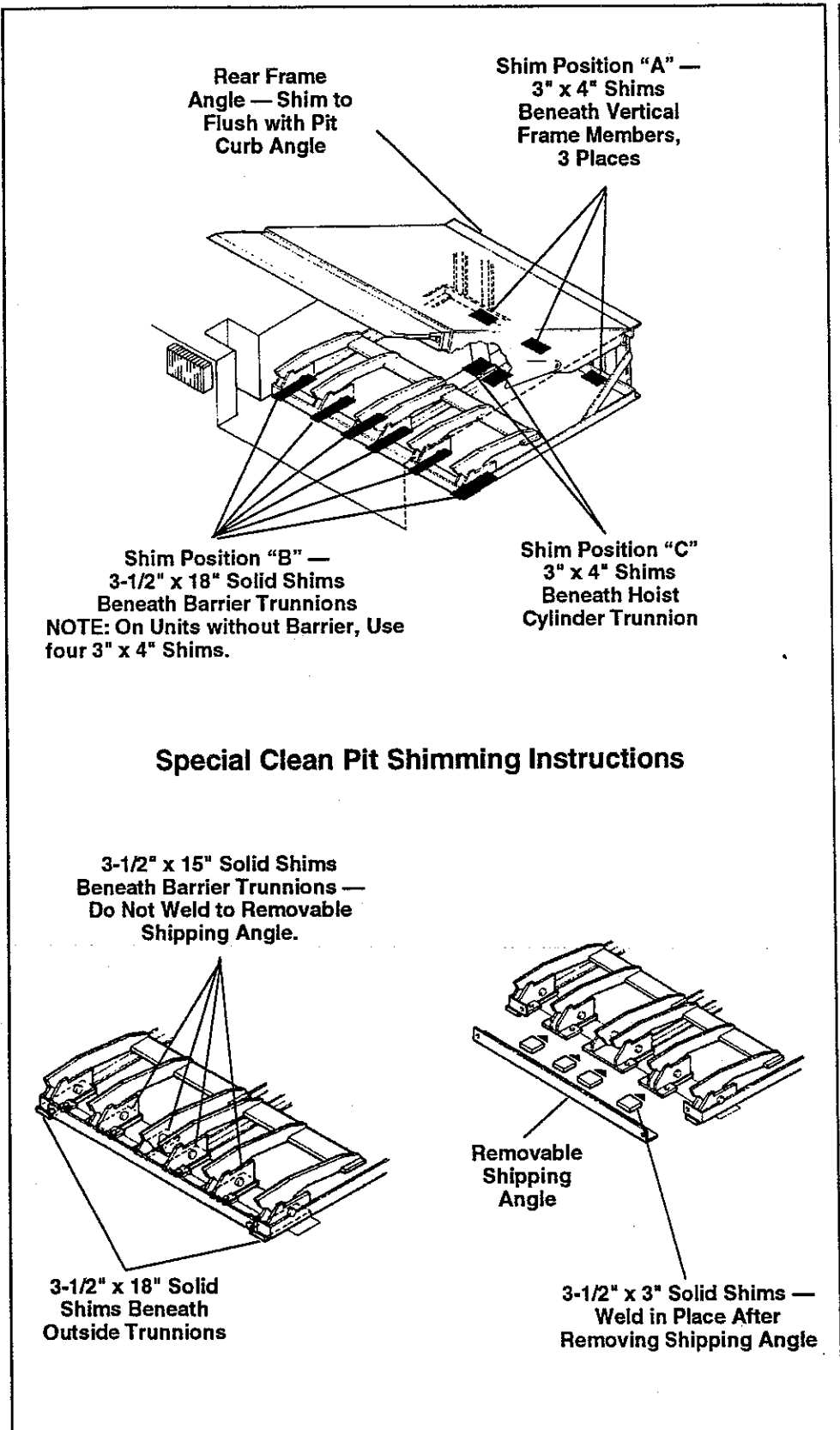


Fig. 1. Shim Locations and Recommended Sizes

## CAUTION

When raising platform, make sure forks do not damage hydraulic hoses beneath platform.

## Installing Unit in Pit

4. Place the shims at positions "A" and "B", Figure 1. Position shims so that the frame will rest firmly on the shims when the unit is lowered into the pit. Pay careful attention to the spacing of the shims for the front angle. This is especially important for the installation of the Clean Pit unit or if the unit is equipped with a hydraulic barrier. Shim so that the dimension from the top of the shims to the dock floor is 23.75".
5. Hoist the unit into the pit with a chain/sling using the lifting plates on the sides of the dock leveler platform. Perform the following checks when setting the unit into the pit:
  - A. Make sure the front and rear of the frame will rest securely on the shims on the pit floor.
  - B. Make sure the top rear frame angle of the dock leveler is tight against the rear pit curb angle and is flush with the dock floor.
  - C. Make sure there is equal clearance between the sides of the leveler platform and the pit walls.
6. Remove the shipping bands from around the lip of the unit.
7. Use one of the following methods to raise the platform of the dock leveler (open the dock leveler):
  - A. If the unit is equipped with a barrier, use a chain/sling attached to the lifting plates on the sides of the platform. Make sure that only the platform rises and that the frame does not move out of position.
  - B. If the unit is not equipped with a barrier, use a fork truck to raise the platform from the front with the forks extending under the lip.
8. Lower the maintenance prop which is hinged to the under side of the platform. The bottom of the prop should be positioned securely into the front frame angle or prop keeper. See Figure 2. Be sure there are shims positioned under the front angle at the point the maintenance prop rests.

**NOTE: CLEAN PIT UNITS ONLY.** The front angle is bolted to the frame at the front of the Clean Pit unit for shipping and installation purposes only and is to be removed following installation. Do not shim beneath this bolted frame member or weld it in place. Do not remove this angle at this time.

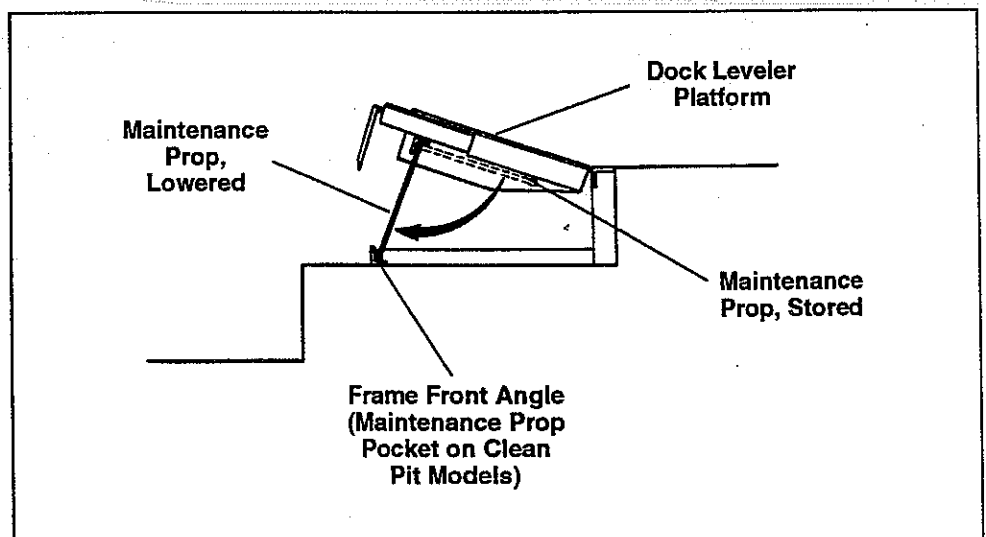


Fig. 2. Maintenance Prop in Position

# Installation

9. Make sure the front and rear of the frame is resting firmly and securely on the shims set on the pit floor. Add or subtract shims as needed at rear pit wall ("A" shims) to bring the top rear frame angle of the leveler flush with the rear pit curb angle.
10. Weld "A" shims to bottom rear frame angle of leveler. Make sure there is firm contact between leveler and pit floor.
11. Using the method employed in step 7, raise the dock leveler platform and store the maintenance prop under the platform. Lower the platform, setting it in the cross traffic position (lip fully folded, inside the keepers, and the platform level with the dock floor). See Figure 3.



## WARNING

Do not weld if hydraulic fluid or other flammable liquids are present. Always keep a fire extinguisher of the proper type nearby.

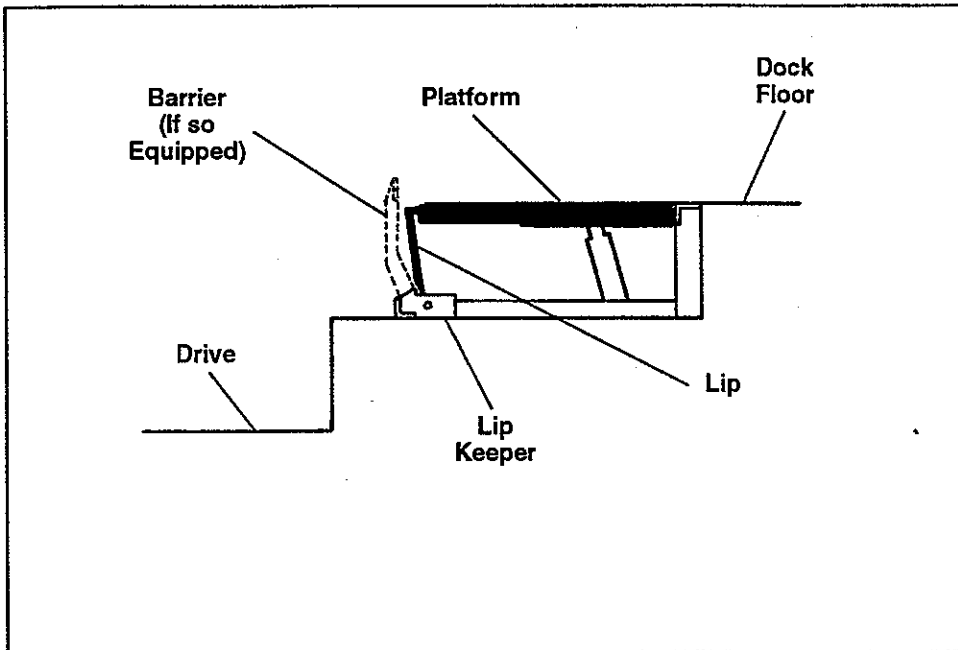


Fig. 3. Dock Leveler in Cross Traffic Position

12. Make sure the dock leveler deck is flush with the dock floor and that the top, rear frame angle of the unit is tight against and flush with the rear pit curb angle. Tack weld the top rear frame angle of the leveler to the rear pit curb angle.
13. Check shims at front of frame (location "B").
  - A. If unit is equipped with barrier, make sure shim plates are positioned squarely and securely beneath barrier trunnions. Shims in this area must be of single thickness stock, not stacked, and of the size shown in Figure 1.
  - B. If unit is not equipped with barrier, make sure shims are spaced as shown in Figure 1. If there is no barrier, shims may be stacked in conventional manner.
  - C. Make sure there is a shim under the maintenance prop keeper.
  - D. CLEAN PIT UNITS ONLY: Make sure shims do not extend beneath removable shipping angle.

**NOTE:** Clean Pit units with barrier only. Outer shims, on each side, are to be 3 1/2" x 18" x required thickness. Four inner shims are to be 3 1/2" x 15" x required thickness. In these four places, 3 1/2" x 3" shims must be added after shipping angle is removed (step 19).

14. Securely weld the "B" shims which are under the front of the frame to the barrier trunnions or angle and to the channel imbedded in the pit floor. This should be done from outside the pit prior to raising the platform.  
**NOTE:** On units equipped with barrier, use a 3/8" fillet full pass weld on all sides.
15. Repeat steps 7 and 8.
16. Shim under center angles at points marked "C". These points are critical for proper operation. Always shim under the hoist cylinder trunnions.
17. Weld "C" shims to angles of leveler. Make sure there is firm contact between leveler and pit floor.
18. Finish welding top rear frame angle to rear curb angle. Six foot wide levelers to be stitch welded with five, 6 inch welds. Seven foot wide levelers to be stitch welded with six, 6 inch welds.
19. **CLEAN PIT UNITS ONLY:** Remove all shipping/installation angles. If unit is equipped with a barrier, add 3 1/2" x 3" shims of required thickness to ends of four center trunnion shims. See Figure 1.
20. Weld and/or bolt bumpers in place on face of dock. Refer to certified Pit Drawing for proper location.
21. Clean and paint all welds.

## Hydraulic Installation

**NOTE:** If unit is part of a CENTRAPOWER system or if the power pack is located remotely, connect the hydraulic hoses to the dock leveler as indicated in separate CENTRAPOWER or remote power pack instructions.

22. Check the hydraulic fluid level. Standard units are shipped with the fluid at the recommended level. However, fluid level should be checked before operating unit for the first time to make sure no fluid loss occurred during shipment or installation. See Preventive Maintenance section, page 12, of this manual for complete information.  
**NOTE:** For CENTRAPOWER or remote power pack units, see appropriate instructions for checking hydraulic fluid level.
23. If electrical installation is to be performed at a later date, use a fork truck to set the unit in the cross traffic (stored) position.

## Electrical Installation

24. If the dock leveler is in the cross traffic position (see Figure 3), use a fork truck (or other method) to raise the platform and set it on the maintenance prop. Refer to steps 7 and 8, page 5.
25. Make electrical hookup of leveler pigtail to field wiring in rear wall junction box. See wiring diagram attached to this manual.
26. Install control assembly on inside wall beside dock door or on other secure support. Refer to Pit Drawing attached to this manual.

### IMPORTANT:

- Make sure that the power supply requirements as shown on the dock leveler serial plate, the decal affixed to the control assembly, and the attached wiring diagram are the correct requirements for the application.
- For 3 phase applications, check motor rotation if the unit does not begin to operate within four seconds after the hydraulic pump motor is energized. If rotation is incorrect, reverse any two of the three main motor leads. Be sure power is disconnected before attempting this procedure.

27. Remove lifting plates from sides of unit.



### WARNING

Be sure power supply circuit is opened at main service box or circuit breaker box prior to electrical installation. Failure to disconnect power supply could result in equipment damage and/or personal injury or death.

### CAUTION

Have all electrical work performed only by qualified electricians.

# Installation

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## Testing

28. Refer to OPERATING INSTRUCTIONS section in this manual. Perform these tests without a truck present. Be sure power is on to the unit. Move ON-OFF Toggle switch to ON position. Test function of each push button as follows:
- A. Push and hold RAISE button. Platform should fully raise, the barrier (if unit is so equipped) should lower, and the lip should fully extend. Hold button until lip is fully extended.
  - B. Push and hold EXTEND button. Inner section of platform (movable section) should extend toward truck. Release and push button several times. Platform should stop extending when button is released and further extend when button is pushed.
- NOTE:** Platform should not drift down while platform is being extended or retracted.
- C. Push and hold RETRACT button several times. Each time button is pushed, the secondary platform should retract back towards the primary platform. Each time the button is released, the platform should stop.
  - D. Push and hold EXTEND Button. Fully extend the secondary platform.
  - E. Momentarily push LOWER button. Platform should lower. While platform is lowering, momentarily push RAISE button to stop and lock into position the platform. Again push LOWER button and allow platform to lower to full below dock position.
  - F. Momentarily push STORE button. The secondary platform should fully retract then the primary platform should raise to its highest position. The lip should lower to its vertical position. Next, the barrier (if so equipped) should rise to a vertical position. Lastly, the platform should lower to a fully supported, cross traffic position (lip fully folded inside the keepers and behind the barrier and the platform level with the dock floor).
29. Check movement of sliding toe guards on sides of platform. Free-up as needed if toe guards do not slide to lowest position when platform is fully raised.



## WARNING

Do not operate the unit if any personnel are on or in front of the unit.

Do not operate the unit until truck/trailer is parked squarely against the dock bumpers.

Do not enter the truck/trailer with a wheeled material handling vehicle unless:

1. The dock leveler lip is resting securely on the truck/trailer bed with the lip position indicator above the edge of the truck bed. See Figure 7.
2. The truck/trailer wheels have been securely chocked or truck/trailer is restrained at the dock.

Failure to follow these instructions could result in serious personal injury or death.

## CAUTION

Do not operate this dock leveler until you read and understand the operating instructions and become fully familiar with the equipment and its controls.

## Controls

Figure 4 shows a standard control assembly and describes the function of each switch or push button.

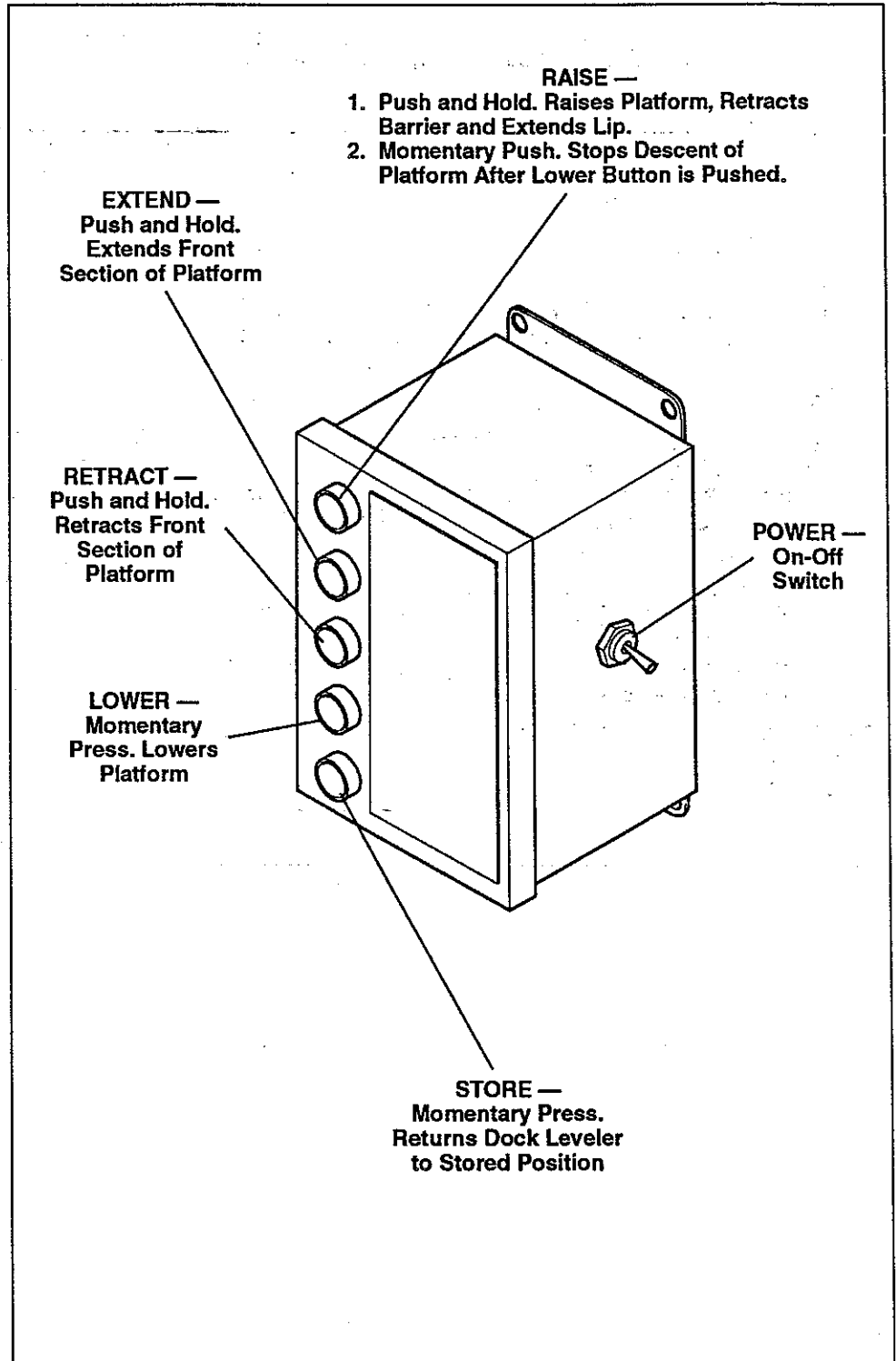


Fig. 4. Control Assembly Functions

# Operating Instructions

## Operation

1. After truck has backed into the dock, securely chock the truck wheels or otherwise restrain the truck at the dock.
2. Move "ON/OFF" toggle switch to ON position.
3. Press and hold "RAISE" button. Dock leveler platform will raise, barrier (if so equipped) will lower, and lip will extend to horizontal position. Hold button until lip is fully extended and all movement stops. See Figure 5.

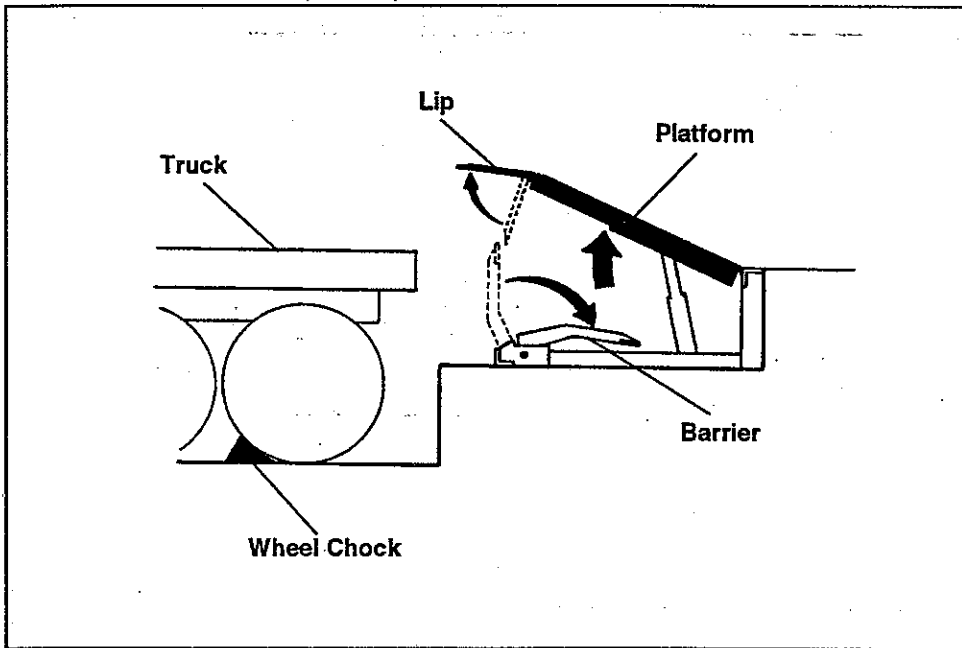


Fig. 5. Raising Dock Leveler

4. Press and hold "EXTEND" button until lip is over back edge of truck bed. See Figure 6.

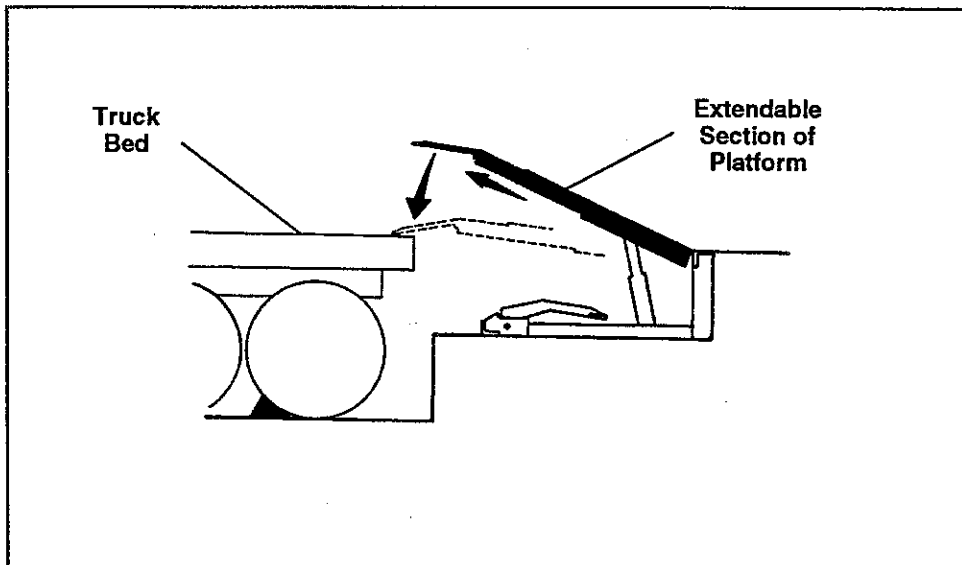


Fig. 6. Extending Platform to Truck Bed

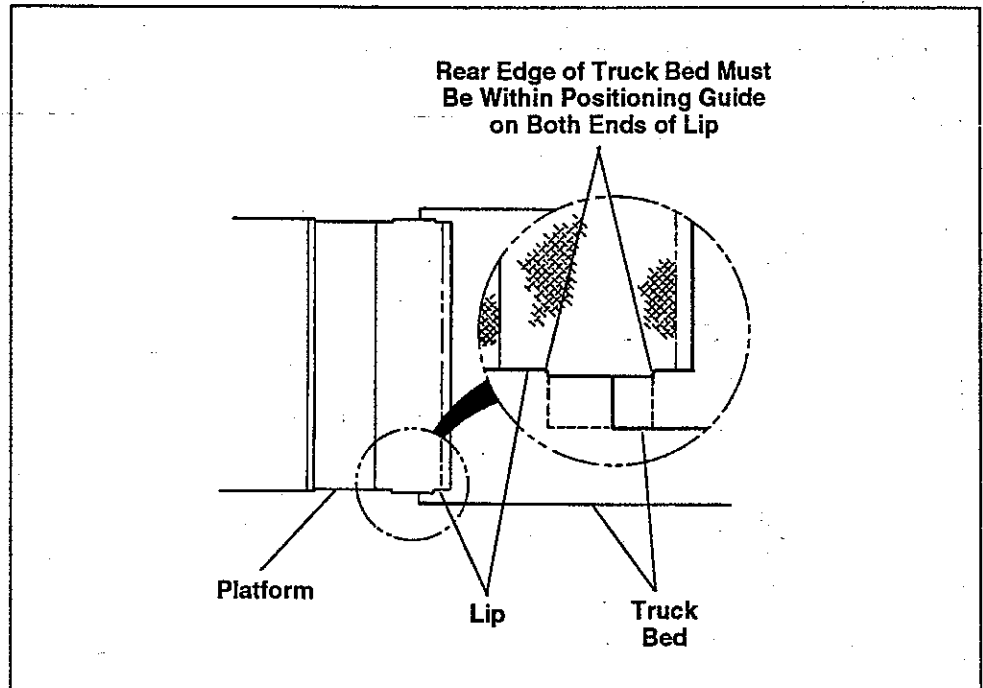


## WARNING

Secure truck prior to operating dock leveler or loading/unloading truck. Failure to follow these instructions could lead to serious personal injury or death.

# Operating Instructions

5. Momentarily press "LOWER" button. Platform will lower until lip comes to rest on truck bed.
6. Use "EXTEND" or "RETRACT" push buttons to properly position lip on truck bed. Lip is properly positioned when the Positioning Guides on the lip are BOTH over the rear edge of the truck bed. See Figure 7.



**Fig. 7. Guide for Positioning Lip on Truck Bed**

7. When loading or unloading is completed, momentarily press "STORE" button. The platform will retract and raise to its highest position, the lip will lower to its vertical position, the barrier (if so equipped) will raise, and the dock leveler will return to the stored position.
8. Remove chocks from truck wheels.

# Preventive Maintenance

## Service Under the Dock Leveler

Set the dock leveler on the maintenance prop if the maintenance procedure (or troubleshooting) requires access to the unit from in the pit. Raise the leveler by pressing the "RAISE" button. Position the prop in the maintenance prop keeper as shown in Figure 3 of the Installation Instructions.

## Recommended Hydraulic Fluids

To assure normal operation of the unit, the following hydraulic fluids are recommended:

- Aero Shell fluid #4 Code #60421 by Shell Oil Co.
- Mobil Aero HFA Mil-Hs606A by Mobil Oil Co.
- Texaco Type BB
- Filmite No. 530
- Exxon "Univis J13"

Use of hydraulic fluids with equivalent specifications to those listed above are acceptable. Use of fluids that do not have equivalent specifications will result in abnormal operation of the unit and possible voiding of the warranty.

## Weekly Maintenance

1. At least once each week, operate the unit through all of its operating cycles to maintain lubrication.
2. Inspect the dock leveler platform hinge area and the lip hinge area. The hinge areas should be kept free of dirt and debris. Build-up of foreign material in the hinge areas will cause abnormal operation of the unit.

**NOTE:** Set the dock leveler platform to the full below dock position to thoroughly inspect the platform (rear) hinge area. Actuate the unit by pressing the "RAISE" button and then lower the platform by pressing the "LOWER" button.

## Monthly Maintenance

1. Lubricate the unit as shown in Figure 8. Failure to properly lubricate the unit will cause abnormal operation of the unit.

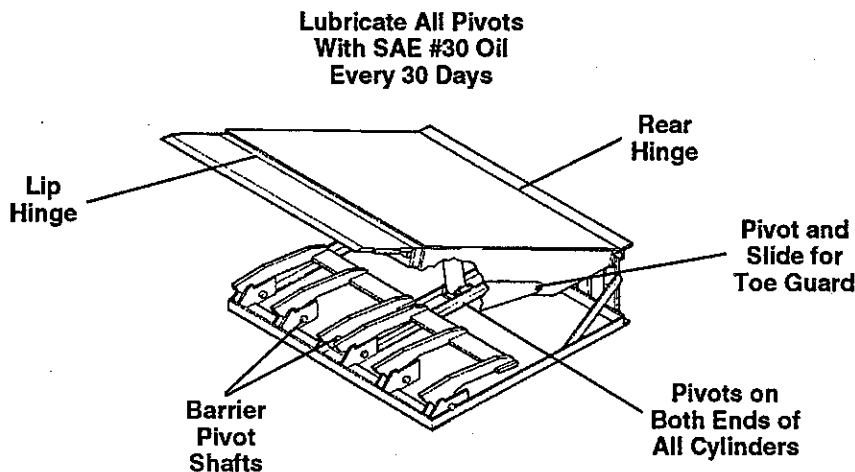


Fig. 8. Lubrication Chart



### WARNING

Always barricade the work area to prevent unauthorized use of the unit before maintenance is complete.

Always lock off all electrical disconnects after raising platform and setting maintenance prop when service under the unit is required. More than one electrical disconnect switch may be required to de-energize the equipment.

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

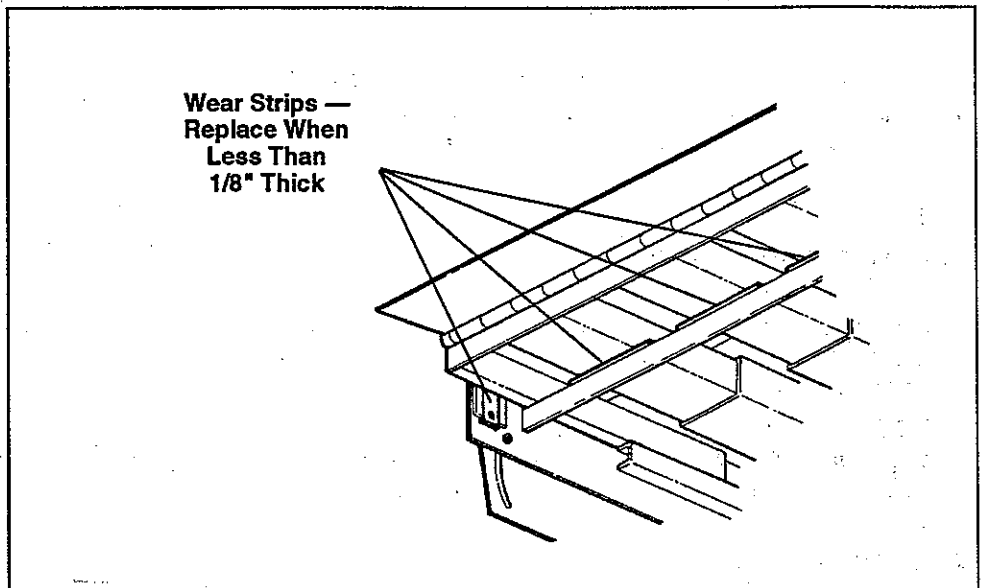


### WARNING

Always use the maintenance prop when inspecting or repairing beneath the dock leveler platform.

## Preventive Maintenance

2. Check the hydraulic fluid level in the reservoir of the power pack (i.e., motor, pump, reservoir). To check fluid level, fully raise dock leveler platform and insert maintenance prop before entering pit. Fluid level should be approximately 1 1/4"-1 1/2" from the top of the reservoir when the platform is raised but not extended and the lip is lowered (vertical position). A low fluid level or the use of non-recommended fluids will cause abnormal operation of the unit. **ADD ONLY A RECOMMENDED TYPE FLUID.**
  - A. See CENTRAPOWER addendum if the unit is part of a CENTRAPOWER system.
  - B. See the Remote Power Pack addendum if the unit is powered by a remotely located power pack.
3. Inspect the wear strips beneath and on each side of the extendable platform section. Replace if severely worn (less than 1/8" thick). See Figure 9.



**Fig. 9. Wear Strips**

# Preventive Maintenance

## Limit Switch Adjustment

**Platform Limit Switch**, located under platform and activated by bar on sliding platform. See Figure 10. Function: When shifted, detects that sliding platform is fully retracted (during store cycle) stopping horizontal movement and starting vertical movement for barrier clearance.

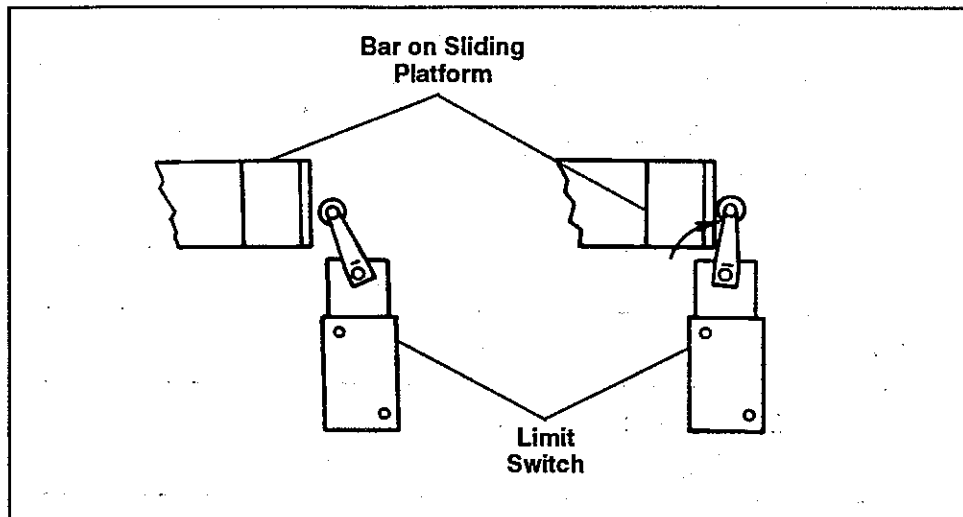


Fig. 10. Platform Limit Switch

**Barrier Limit Switch**, located on frame and activated by cam on barrier. See Figure 11. Clockwise rotation indicates that barrier is fully lowered and therefore allows operation of "Extend" and "Retract" buttons. Counterclockwise rotation indicates that barrier is fully raised and shuts off store cycle. Due to nature of cam operation, adjustments should be made to switch for the storage cycle shut-off, clockwise setting will automatically follow.

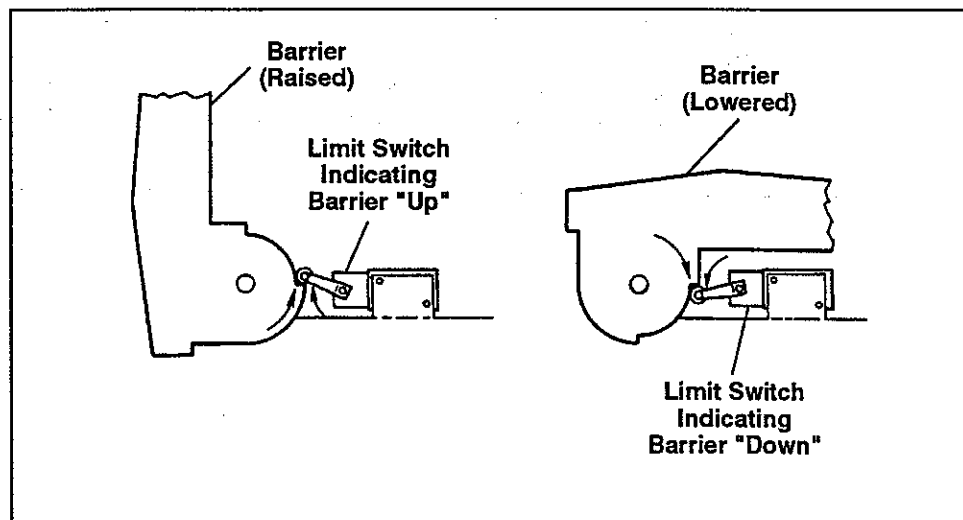
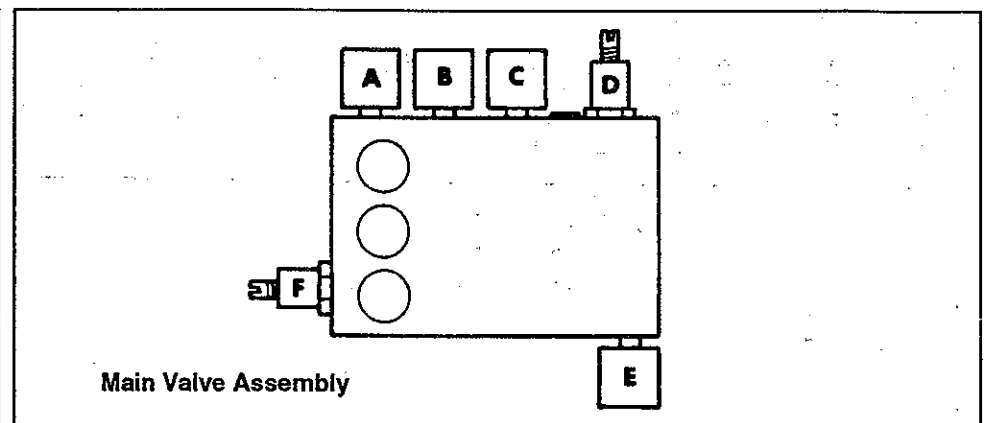


Fig. 11. Barrier Limit Switch

# Valve Function Chart



Valve	Function
A	Energized — Directs oil to extend platform. Not Energized — Directs oil to retract platform.
B	Energized — Directs oil from pump to solenoid "A" for platform horizontal movement. Not Energized — Directs oil from pump to hoisting cylinder for control of vertical movement.
C	Energized — Blocks return line from hoist cylinder preventing platform lowering. Not Energized — Directs return flow from hoist cylinder through speed control "F" to tank.
D	Sequence valve to extend lip after platform reaches top limit of travel.
E	Energized — Directs oil flow to raise barrier for storage, also drains Lip Cylinder to tank during storage cycle. Not Energized — Directs oil flow to lower barrier for leveler use.
F	Needle valve to control lowering speed of platform.

# Troubleshooting Guide



## WARNING

Always barricade the work area to prevent unauthorized use of the unit during repair or maintenance procedures.

Always lock off all electrical disconnects after raising platform and setting maintenance prop when service under the unit is required. More than one electrical disconnect switch may be required to de-energize the equipment.

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

Perform the following procedures prior to beginning detailed troubleshooting:

- A. Check all fuses inside the control assembly(s). Replace any bad fuse with one of equivalent specifications.
- B. Confirm presence of necessary voltage inside the control assembly(s). Check branch circuit fuses and/or circuit breakers if all voltages are not present.

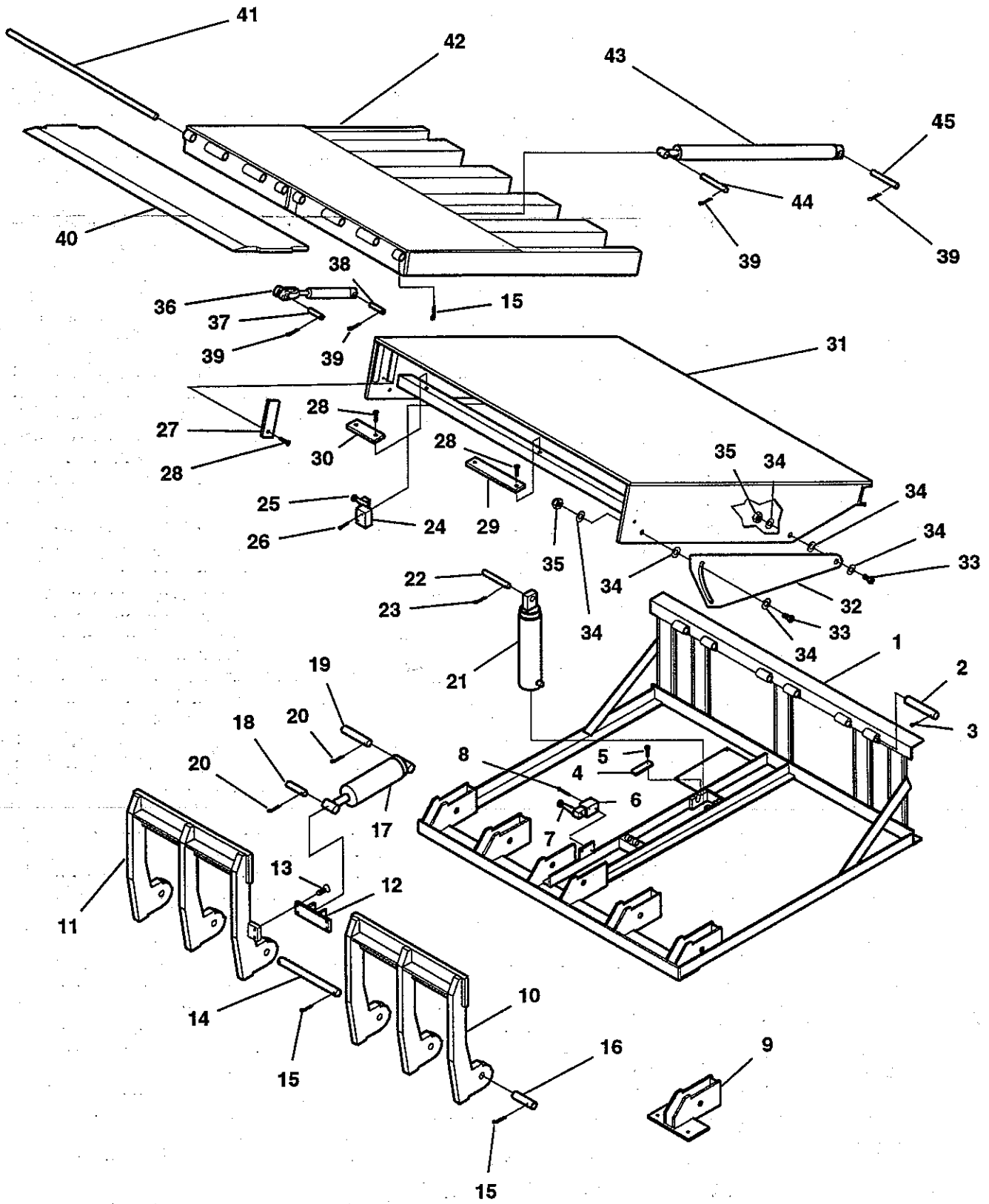
Problem	Causes(s)	Solution(s)
Leveler does not operate. Motor does not energize.	1. Motor Overload device tripped.	1. Reset overload relay (3 phase) or replace fuse (1 phase). Determine cause of device tripping. <b>NOTE:</b> If replacing fuse, replace with device of equal specifications.
Leveler does not operate. Motor energizes but does not run (motor hums, overload device should trip).	1. 3 phase units only — voltage at one line is absent (motor being single phased).  2. 1 phase units only — motor centrifugal switch faulty.	1A. Fuses at motor branch circuit over-current device only — check for tripped fuse. Replace fuse. Determine cause of fuse tripping.  1B. Check motor starter for component failure. Disconnect wires at load side of starter. Use voltmeter to read line-to-line voltages at line side and load side of starter. Line side and load side voltage values should be nearly identical. Replace starter if values are not identical.  1C. Check all wiring to motor for high resistance (loose) or no connection.  2. Replace motor.

# Troubleshooting Guide

Problem	Causes(s)	Solution(s)
<p>Pump operates but leveler does not complete full sequence of operation (see Valve Function Chart).</p>	<ol style="list-style-type: none"> <li>1. Solenoid coil not receiving signal to energize. A solenoid that is energized will act like a magnet. Place a metal tool on coil of solenoid to determine if coil is receiving signal.</li> <li>2. Solenoid coil receiving signal but not energizing.</li> <li>3. Binding inside valve spool.</li> </ol>	<ol style="list-style-type: none"> <li>1A. Check controller output that sends a signal to solenoid. Output may have failed OPEN. Use meter to check for contact closure when output ON.</li> <li>1B. Check all wiring to solenoid for high resistance (loose) or no connection.</li> <li>2. Coil failed OPEN. Consult factory.</li> <li>3. Locate solenoid. Remove coil from spool and spool from valve block. Check spool for contaminants and/or damage. Replace spool if damaged. Carefully wipe off spool with clean rag (do not damage "O" rings on spool). Check valve block for contaminants. Replace spool in block and coil on spool. Maximum tightening torque for spool is 35-40 lb/ft. DO NOT overtighten coil on spool. Operate the unit. Replace spool if problem persists and all other troubleshooting procedures performed.</li> </ol>
<p>Leveler operates slowly.</p>	<ol style="list-style-type: none"> <li>1. Low hydraulic fluid.</li> <li>2. Pressure relief valve set too low.</li> <li>3. Damaged or blocked hydraulic hose(s).</li> </ol>	<ol style="list-style-type: none"> <li>1. Add fluid, see Preventive Maintenance section, page 12.</li> <li>2. Locate valve. Turn valve out CCW. While operating the restraint, slowly turn valve in CW, increasing the valve set point, until the restraint begins to raise. Turn valve in an additional 1/2 turn CW. NOTE: The valve set point should NOT be set at a level that will cause the motor operating current to exceed its full load amp value at any time, including when the unit is operated in pressure relief.</li> <li>3. Replace damaged hose(s). Remove blockage from hose(s).</li> </ol>
<p>Leveler does not fully raise or extend motor overcurrent device and/or overload device continuously tripping.</p>	<ol style="list-style-type: none"> <li>1. Low hydraulic fluid.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add fluid. See Preventive Maintenance section, page 12.</li> </ol>
<p>Leveler will not raise. Pump operates in pressure relief.</p>	<ol style="list-style-type: none"> <li>1. Load on platform.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove load. Unit is designed to raise no more than its own weight as a safety feature.</li> </ol>
<p>While leveler is descending it locks into "safety". Lip drops to vertical position.</p>	<ol style="list-style-type: none"> <li>1. Platform down-speed is too fast. Needle valve (Item "F", Valve Function Chart) improperly adjusted).</li> </ol>	<ol style="list-style-type: none"> <li>1. Loosen jam nut. Turn setscrew clockwise 1/4 turn. Retighten jam nut and retry.</li> </ol>
<p>Platform reaches full height, but lip does not automatically extend when pushbutton pressed.</p>	<ol style="list-style-type: none"> <li>1. Sequence valve (Item "D", Valve Function Chart) improperly adjusted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Loosen jam nut. Turn screw counter-clockwise 1/4 turn. Retighten jam nut and retry.</li> </ol>
<p>Lip extends almost immediately when pushbutton pressed.</p>	<ol style="list-style-type: none"> <li>1. Sequence valve (Item "D", Valve Function Chart) improperly adjusted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Loosen jam nut. Turn screw 1/4 turn clockwise. Tighten jam nut and retry.</li> </ol>

# Parts Lists

## Platform and Frame Parts



## Platform and Frame Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1		FRAME (specify width, length, whether standard or clean-pit and whether equipped with barrier) .....	1
2	9202-0002	HINGE PIN, Rear .....	3
3	2101-0047	PIN, Cotter .....	6
4	7942-0001	KEEPER, Trunnion .....	2
5	2101-0011	CAPSCREW .....	2
<b>NOTE:</b> Items 6 through 20 used only on units with barrier.			
6	0961-0124	LIMIT SWITCH (roller arm not included) .....	1
7	5452-0001	ROLLER ARM, Limit Switch .....	1
8	2101-0072	CAPSCREW .....	2
9	8434-0372	FRONT MIDDLE FRAME (clean-pit with barrier only) .....	2
10	9445-0001	BARRIER WELDMENT, L.H. ....	1
11	9445-0002	BARRIER WELDMENT, R.H. ....	1
12	9443-0001	BARRIER CONNECTION WELDMENT .....	1
13	2101-0074	CAPSCREW .....	4
14	9442-0028	HINGE PIN, Barrier, Center .....	1
15	2101-0047	COTTER PIN .....	12
16	5772-0029	HINGE PIN, Barrier, Outer .....	4
17	0525-0064	POSITIONING CYLINDER (see page 24 for repair parts) .....	1
18	9202-0036	PIN, Positioning Cylinder, Front .....	1
19	9202-0004	PIN, Positioning Cylinder, Rear .....	1
20	2101-0049	COTTER PIN .....	4
21	0525-0041	HOIST CYLINDER (see page 24 for repair parts) .....	1
22	9202-0005	PIN, Hoist Cylinder .....	1
23	9201-0002	CLIP, Spring .....	2
24	0961-0016	LIMIT SWITCH (roller arm not included) .....	1
25	5452-0001	ROLLER ARM, Limit Switch .....	1
26	2101-0072	CAPSCREW .....	2
27	9512-0876	WEAR PAD, Vertical .....	2
28	2101-0007	CAPSCREW, Hex Head .....	14
29	9512-0874	WEAR PAD, Long .....	4
30	9512-0905	WEAR PAD, Short .....	2
31		PLATFORM WELDMENT, Outside (specify unit length and width) .....	2
32	0012-0024	SLIDING TOE GUARD .....	2
33	2101-0115	CAPSCREW, Button Head .....	4
34	2101-0062	WASHER, Flat .....	4
35	2101-0040	LOCKNUT .....	4
36	0525-0050	LIP CYLINDER (see page 26 for repair parts) .....	1
37	0522-0005	PIN, Lip Cylinder, Front .....	1
38	9202-0004	PIN, Lip Cylinder, Rear .....	1
39	2101-0049	HAIR PIN SPRING CLIP .....	12
40	0595-0093	LIP, 6' Wide Units .....	1
	0595-0094	LIP, 6' 6" Wide Units .....	1
	0595-0095	LIP, 7' Wide Units .....	1
41	9202-0033	PIN, Lip Hinge, 6' Wide Units .....	1
	9202-0034	PIN, Lip Hinge, 6' 6" Wide Units .....	1
	9202-0035	PIN, Lip Hinge, 7' Wide Units .....	1
42		PLATFORM WELDMENT, Inside (specify unit width) .....	1
43	0525-0063	EXTENSION CYLINDER (see page 26 for repair parts) .....	1
44	9202-0036	PIN, Extension Cylinder, Front .....	2
45	9202-0004	PIN, Extension Cylinder, Rear .....	2

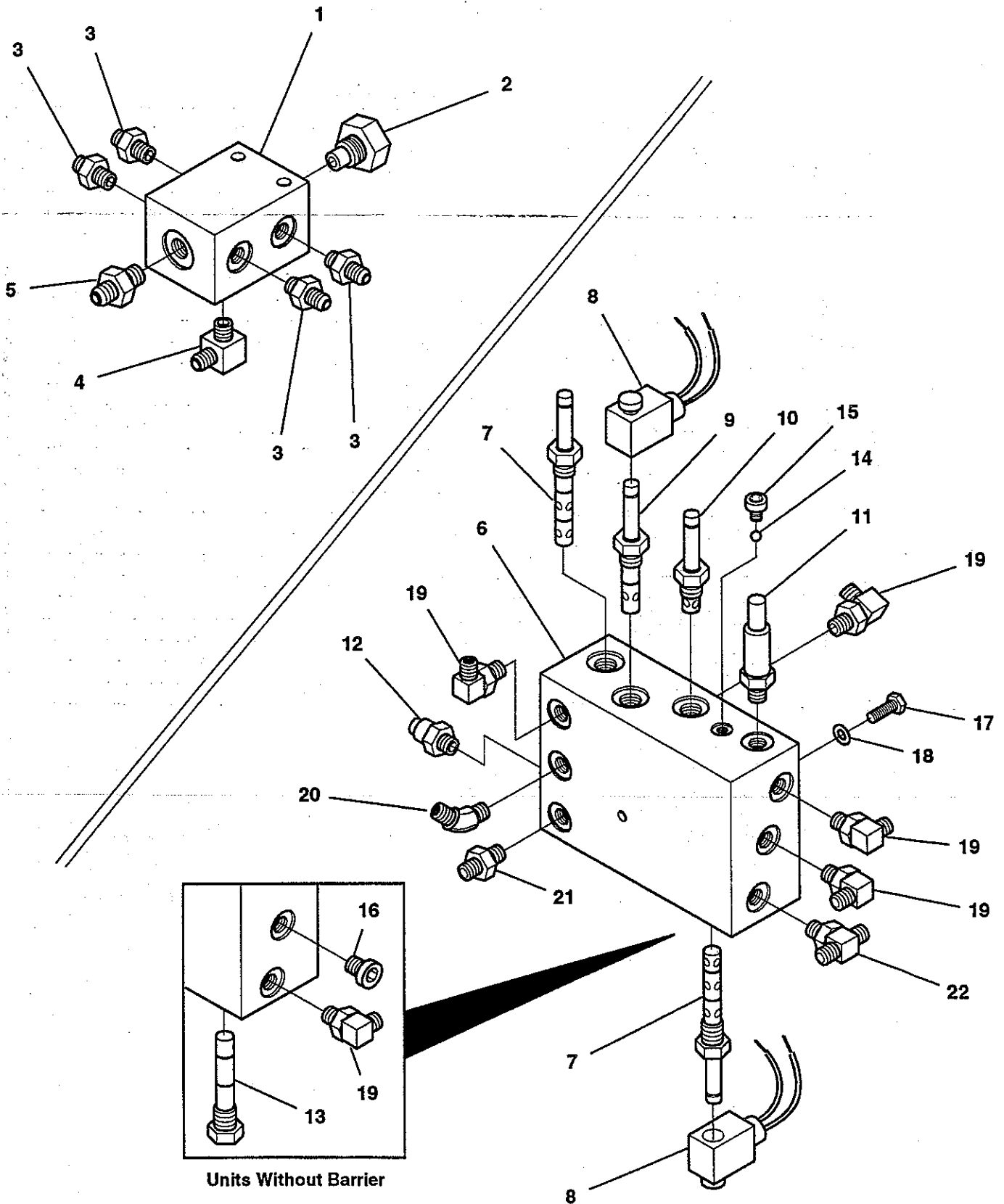


## Power Pack and Hose Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3411-0008	MOTOR, Single Phase.....	1
	3411-0019	MOTOR, Three Phase.....	1
2	9301-0133	PUMP.....	1
3	2101-0077	CAPSCREW, Hex.....	4
4	8585-0070	VALVE ASSEMBLY, Complete (for units with barrier only. See page 22 for repair parts).....	1
	8585-0071	VALVE ASSEMBLY, Complete (for units w/out barrier. See page 22 for repair parts).....	1
5	9303-0015	RESERVOIR.....	1
6	0521-0017	90° HOSE ADAPTOR.....	1
7	9904-0037	HOSE ASSEMBLY (reservoir to pump).....	1
8	9301-0140	90° HOSE ADAPTOR.....	1
9	9301-0139	90° ADAPTOR.....	1
10	9904-0065	HOSE ASSEMBLY (reservoir to pump).....	1
11	9301-0071	HYDRAULIC TEE.....	1
12	9301-0050	NIPPLE.....	1
13	0521-0044	90° ADAPTOR.....	1
14	9904-0088	HOSE ASSEMBLY (reservoir to valve).....	1
15	8585-0067	BLENDING MANIFOLD.....	1
16	9904-0087	HOSE ASSEMBLY (units with barrier).....	4
	9904-0087	HOSE ASSEMBLY (units w/out barrier).....	3
17	9904-0084	HOSE ASSEMBLY (manifold to extension cylinder).....	2
18	9904-0085	HOSE ASSEMBLY (units with barrier only).....	3
	9904-0085	HOSE ASSEMBLY (units w/out barrier only).....	2
19	9904-0086	HOSE ASSEMBLY (valve to lip cylinder).....	1
20	9904-0066	HOSE ASSEMBLY (valve to filter).....	1
21	9301-0085	FILTER, Oil.....	1
22	9301-0086	FILTER ELEMENT ONLY.....	1
23	9301-0107	FITTING STRAIGHT SWIVEL.....	1
24	9301-0113	90° ADAPTOR.....	1
25	9411-0004	ELECTRICAL "J" BOX.....	1
26	9301-0020	BREATHER CAP.....	1
27	2101-0039	NUT, Hex Nylon Lock.....	8
28	2101-0060	WASHER, Flat.....	8
29	9301-0109	STRAIGHT ADAPTOR.....	1
30	2101-0083	CAPSCREW, Hex Head, 5/16-18UNC.....	1
31	2101-0039	LOCKNUT, 5/16-18UNC.....	1

# Parts Lists

## Valve Block Parts



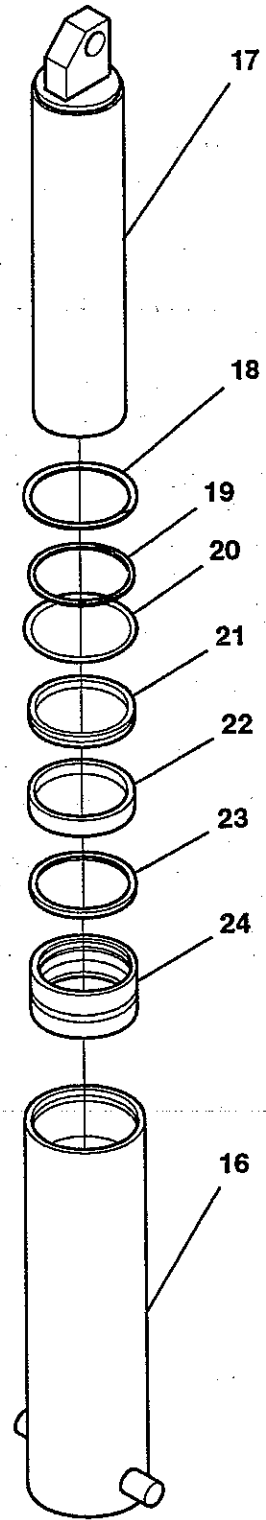
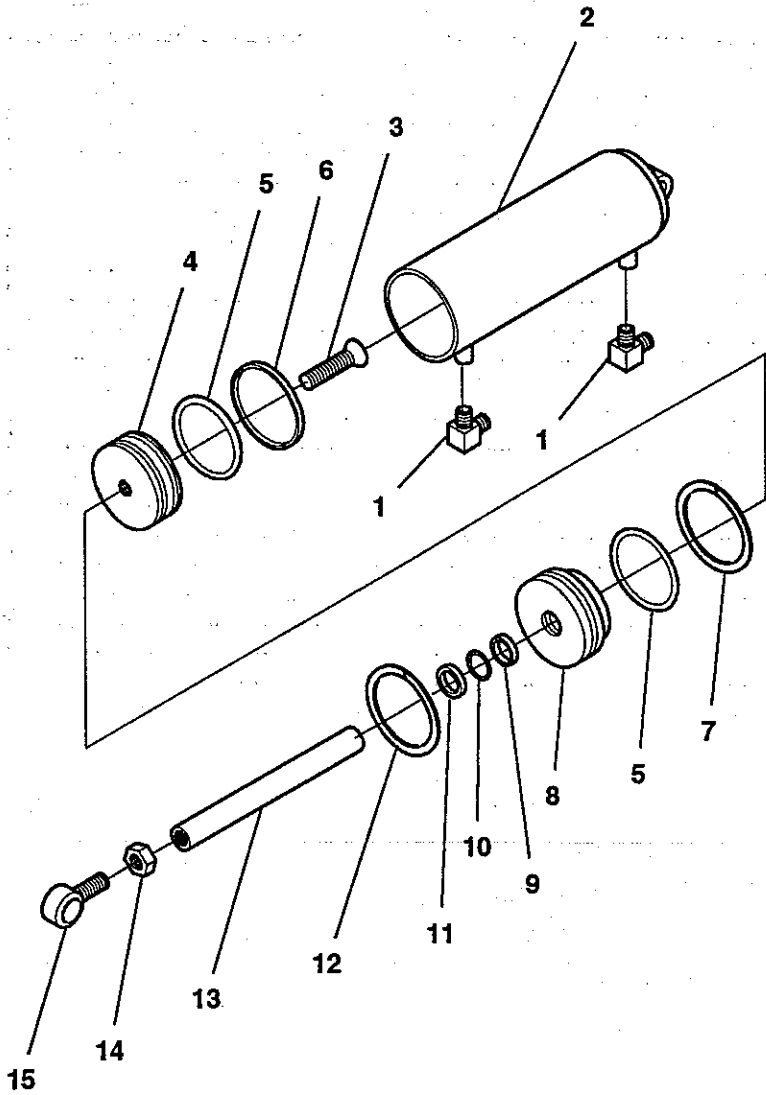
## Valve Block Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	8585-0067	BLENDING MANIFOLD ASSEMBLY .....	1
1	8582-0040	VALVE BODY, Blending Manifold .....	1
2	8581-0081	PILOT OPERATED CHECK .....	1
3	9301-0109	STRAIGHT HOSE ADAPTOR .....	4
4	9301-0137	90° HOSE ADAPTOR .....	1
5	9301-0112	STRAIGHT HOSE ADAPTOR .....	1
	8585-0070	MAIN VALVE ASSEMBLY, Complete (for units with barrier only) .....	1
	8585-0071	MAIN VALVE ASSEMBLY, Complete (for units w/out barrier only) .....	1
6	8582-0038	VALVE BODY .....	1
7	8581-0084	SPOOL, 4 Way (with barrier) .....	2
	8581-0084	SPOOL, 4 Way (w/out barrier) .....	1
8	8583-0011	SOLENOID ASSEMBLY (with barrier) .....	4
	8583-0011	SOLENOID ASSEMBLY (w/out barrier) .....	3
9	8581-0083	SPOOL, 3 Way .....	1
10	8581-0094	SPOOL, 2 Way N.O. ....	1
11	8581-0037	PRESSURE RELIEF .....	1
12	8581-0038	NEEDLE VALVE .....	1
13	8581-0101	CAVITY PLUG, 4 Way (units w/out barrier only) .....	1
14	9571-0003	BALL, Check .....	1
15	9301-0106	HOLLOW HEX PLUG #8 .....	1
16	9301-0105	HOLLOW HEX PLUG #6 (units w/out barrier only) .....	1
17	2101-0007	HEX HEAD CAPSCREW, 1/4-20UNC .....	1
18	9571-0004	THREAD SEAL, 1/4" .....	1
19	9301-0113	FITTING, 90° .....	4
20	9301-0117	FITTING, 45° .....	1
21	9301-0109	FITTING, Straight .....	1
22	9301-0108	STRAIGHT THREAD BRANCH TEE (units with barrier only) .....	1

# Parts Lists

## Positioning and Hoist Cylinder Parts

Positioning Cylinder



Hoist Cylinder

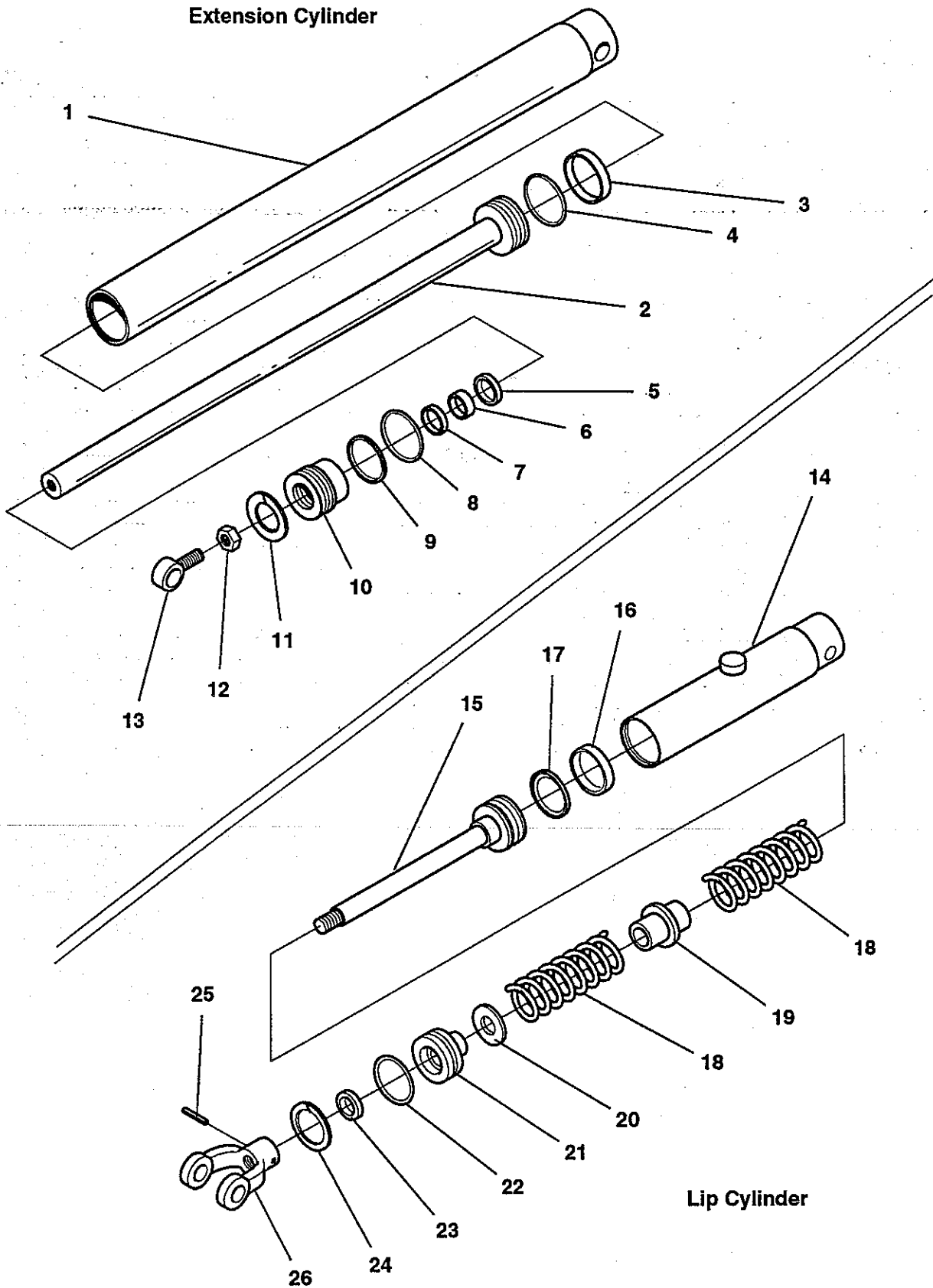
## Positioning and Hoist Cylinder Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	0525-0064	POSITIONING CYLINDER (complete) (includes items 1-15) .....	1
1	0521-0042	90° ELBOW, 1/4 NPT – 3/8 JIC .....	2
2	0524-0059	CYLINDER WELDMENT .....	1
3	2101-0130	CAPSCREW, Flat Socket Head, 5/8-18 x 2-1/4 Long.....	1
4	0522-0110	PISTON GLAND .....	1
5	0521-0069	O-RING .....	2
6	0521-0068	SLIDE RING .....	1
7	0521-0064	RETAINING RING.....	1
8	0522-0104	FRONT GLAND .....	1
9	0521-0067	SLIDE RING .....	1
10	0521-0070	O-RING .....	1
11	0522-0066	WIPER RING .....	1
12	0521-0065	RETAINING RING.....	1
13	0522-0135	CYLINDER ROD .....	1
14	2101-0056	NUT, Hex .....	1
15	9461-0001	ROD END.....	1
	0525-0041	HOIST CYLINDER (complete) (includes items 1-9).....	1
16	0524-0004	TUBE WELD ASSEMBLY .....	1
17	0524-0044	PISTON WELDMENT .....	1
18	0521-0013	RETAINING RING.....	1
19	0521-0009	RING, Back-Up .....	1
20	0521-0008	O-RING .....	1
21	0521-0105	EXCLUDER PLUS .....	1
22	0521-0103	SLYD RING .....	1
23	0521-0104	STEP SEAL.....	1
24	0522-0120	GLAND.....	1

# Parts Lists

## Extension and Lip Cylinder Parts

### Extension Cylinder



### Lip Cylinder

## Extension and Lip Cylinder Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	0525-0063	EXTENSION CYLINDER (complete) (includes items 1-13) .....	2
1	0524-0058	TUBE WELDMENT .....	1
2	0524-0057	PISTON WELDMENT .....	1
3	0521-0109	WEAR RING, Piston .....	1
4	0521-0110	SEAL, Piston .....	1
5	0521-0124	STEP SEAL .....	1
6	0521-0114	WEAR RING, Rod .....	1
7	0521-0115	SEAL, Rod .....	1
8	0521-0116	O-RING .....	1
9	0521-0117	RING, Back-Up .....	1
10	0522-0136	GLAND .....	1
11	0521-0026	RETAINING RING .....	1
12	2101-0056	HEX NUT .....	1
13	9461-0001	ROD END .....	1
	0525-0050	LIP CYLINDER (complete) (includes items 14-26) .....	1
14	0524-0050	TUBE WELDMENT .....	1
15	0524-0049	PISTON WELDMENT .....	1
16	0521-0109	WEAR RING .....	1
17	0521-0110	PISTON SEAL .....	1
18	0521-0050	SPRING, Compression .....	2
19	0522-0091	SPRING GUIDE/SPACER .....	1
20	2101-0085	WASHER, Flat .....	1
21	0522-0087	CYLINDER HEAD .....	1
22	0521-0003	O-RING .....	1
23	0521-0002	SEAL, Rod .....	1
24	0521-0004	RETAINING RING .....	1
25	0521-0005	ROLL PIN, 1/4 x 1-1/2" Long .....	1
26	0522-0084	YOKE .....	1

