Owner's Manual

SOUTHWORTH

Surface Mount Dock Lift Series



Model #		
Serial#		
Date plac	ced in Service	

SOUTHWORTH PRODUCTS CORP

P.O. Box 1380 • Portland, ME 04104-1380

Telephone: (207) 878-0700 or (800) 743-1000

Fax: (207) 797-4734

www.SouthworthProducts.com

Email: service@SouthworthProducts.com

Please note: This manual was current at the time of printing.

To obtain the latest, most updated version, please contact

Southworth's Customer Service Department or go to our website:

www.SouthworthProducts.com, under Parts & Service

you will find a complete list of current

owner's manuals to print.

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INTRODUCTION

The basic Surface Mount Dock Lift series lift may be modified in many ways to meet special requirements for load capacity, vertical travel, table size, power source, and other characteristics. The Surface Mount Dock Lifts can also be fitted with many optional accessories and modifications to suit the customer's needs.

This manual contains information to acquaint you with the safe and proper installation, use, and upkeep of this dock lift. You should ensure that this manual is available to personnel working with and on the lift and require its use by these personnel.

Surface Mount Dock Lifts are designed for lifting and vertical positioning of equipment and materials in a wide variety of industrial settings. The instructions set forth in this manual are not necessarily all-inclusive, as Southworth cannot anticipate all conceivable or unique situations.

In the interest of safety, please read all of this manual carefully, and be familiar with its contents before you install, use, or service a Dock Lift. If you have any questions about any of the instructions in this manual, please contact your dealer or Southworth Products Corp.

Southworth's product warranty is shown on the back cover of this manual.

This instruction manual is **not intended to be or to create any other warranty**, express or implied, including any implied warranty of merchantability or fitness for a particular purpose, all of which are hereby expressly excluded.

As set forth more specifically in the product warranty, Southworth's obligation under that warranty is **limited** to the repair or replacement of defective components, which shall be the buyer's **sole remedy**, and Southworth shall not be liable for any loss, injury, or damage to persons or property, nor for any direct, indirect, or consequential damage of any kind resulting from this Dock Lift series lift.

Responsibility of Owners and Users

Inspection and Maintenance

The device shall be inspected and maintained in proper working order in accordance with Southworth's owner's manual.

Removal from Service

Any device 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 pneumatic lines, damaged or malfunctioning controls or safety devices, etc. shall be removed from service until it is repaired to the original manufacturer's standards.

Deflection

It is the responsibility of the user/purchaser to advise the manufacturer where deflection may be critical to the application.

Repairs

All repairs shall be made by qualified personnel in conformance with Southworth's instructions.

Operators

Only trained personnel and authorized personnel shall be permitted to operate the lift.

Before Operation

Before using the device, the operator shall have:

- Read and/or had explained, and understood, the manufacturer's operating instructions and safety rules.
- Inspected the device for proper operation and condition. Any suspect item shall be carefully examined and a determination made by a qualified person as to whether it constitutes a hazard. All items not in conformance with Southworth's specification shall be corrected before further use of the equipment.

During Operation

The device shall only be used in accordance with this owner's manual.

- Do not overload.
- Ensure that all safety devices are operational and in place.

Modifications or Alterations

Modifications or alterations to any Southworth industrial positioning equipment shall be made only with written permission from Southworth.

SAFE SERVICING OF THE LIFT

AWARNING

Only authorized personnel should perform inspection or maintenance and service procedures. Unauthorized personnel attempting these procedures do so at the risk of severe injury or death.

A DANGER

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.

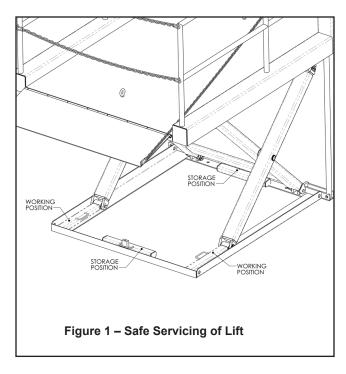
This procedure describes the only factory-approved method of working under a lift. Follow these instructions **EVERY** time you plan to reach or crawl beneath the lift to perform service or maintenance – no matter how momentary that might be.

If the factory-provided maintenance device is damaged or missing, stop immediately and consult the factory for assistance. The manufacturer is not liable for your failure to use the approved maintenance device(s) and procedures that have been provided.

- 1. Any load must be removed from the lift prior to engaging the maintenance device(s). These devices are designed to support an unloaded lift only. Failure to remove the load from the lift prior to blocking could cause the failure of the maintenance device(s) and allow the lift to fall unexpectedly. This can result in personal injury or death, or permanent damage to the maintenance device(s) and/or the lift.
- 2. Raise the lift to its fully raised position. If you do not, the maintenance device(s) may not be able to be placed properly in its/their designed blocking position.
- Remove the maintenance device(s) from its/their storage location and place it/them into the engaged position as shown in Figure 1. (Note: further information may be useful here to provide additional instructions as to the location and method of storage and engaged positions).
- 4. Lower the lift until it makes complete contact with the maintenance device(s). Re-check to ensure that all provided devices are fully and securely engaged. If the device(s) is/are not fully engaged the lift could fall unexpectedly, resulting in permanent damage to the device(s) or the lift.

A DANGER

If for any reason you are unable to lower the lift completely onto the maintenance device(s), stop immediately and consult the factory. Failure to properly use the factory approved



maintenance device(s) could result in severe injury or death.

 Once the maintenance device(s) is/are properly and securely engaged, continue to press the down button, valve or switch for an additional 5-10 seconds to relieve all pressure in the operating system.

AWARNING

Failure to relieve operating system pressure could result in the sudden and unexpected release of high pressure fluids (or air) during maintenance and/or repair of the lift and result in severe injury or death.

- Follow OSHA electrical lock-out/tag-out procedures. Disconnect and tag all electrical and/or other power sources to prevent an unplanned or unexpected actuation of the lift.
- 7. Once inspection or work is complete, reverse the performance of the steps above to raise the lift off the maintenance device(s) and place the device(s) back into its/their designated storage position(s).

A DANGER

HIGH VOLTAGE! – Disconnect and/or lock out the electrical supply to the power unit prior to any installation or maintenance being performed.

SAFETY

The safety of all persons operating, maintaining, repairing, or in the vicinity of the Dock Lift is of paramount concern to Southworth. The dock lift is a powerful machine with moving parts, and is capable of causing personal injury if proper precautions are not taken.

Therefore, throughout this manual, Southworth has identified certain hazards which may occur in the use of the dock lift, and provided appropriate **instructions** or **precautions** which should be taken to avoid these hazards.

In some cases, Southworth has also pointed out the **consequences** which may occur if Southworth's instructions or precautions are not followed. Southworth uses the following system of identifying the severity of the hazards associated with its products:

▲ DANGER - Immediate hazard which will result in severe personal injury or death.

AWARNING

- Hazard or unsafe practice which could result in severe personal injury or death.

▲ CAUTION - Hazard or unsafe practice which could result in minor personal injury or property damage.

> Please read and follow this instruction manual, including all safety instructions and precautions, carefully and completely.

INSTALLATION INSTRUCTIONS

Preparation

Before you start to install the lift, check for local codes and ordinances which may apply. It is your responsibility to obtain any necessary permits.

> Read all of these installation instructions carefully. Be sure to read and understand all of the warnings!

Surface Mount Dock Lift Installation

- 1. Ensure the area the Surface Mount Dock Lift will sit on is flat and level.
- 2. Remove the shipping material.
- 3. Install lifting eyes to fasten platform to base.
- 4. Lift using lifting eyes with spreader bar or fork truck lifting (must be from side).
- 5. Remove the lift from the skid and set in place and remove the lifting eyes.
- 6. The power unit is prewired from the factory and will only need the proper voltage supplied. If three phase, a fused disconnect will need to be supplied by the customer and proper wiring done from the disconnect to the control panel.
- 7. Once the lift is in position and properly set up electrically, the lift is now ready to be powered up. The hydraulic system has been installed and plumbed at the factory.
- 8. If the lift is equipped with lag plates lag the lift down. If a portability kit is supplied ignore this step.
- 9. Cycle the lift and inspect.
- 10. Clean any debris; wipe up any oil and ensure all operators are fully trained on the operation of the lift.

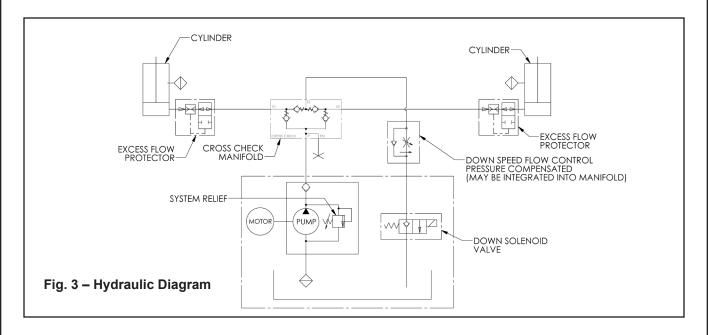


Table 1 – Electrical Interface, Supplied by Customer

Motor	Required Fuse	Required Fuse	Wire
Voltage	1.0 HP Motor	3.2 HP Motor	Gauge
120/1/60	20 AMP	_	12 AWG
208/1/60	20 AMP	_	12 AWG
230/1/60	20 AMP	_	12 AWG
208/3/60	10 AMP	12 AMP	14 AWG
230/3/60	10 AMP	12 AMP	14 AWG
460/3/60	5 AMP	6 AMP	4 AWG
575/3/60	5 AMP	5 AMP	14 AWG

Table 2 - Hydraulic Oil Specifications

Southworth supplies the unit with Ecoterra AW 32 oil.

Ecoterra Hydraulic Oil is a high-quality, zinc-free antiwear hydraulic oil specifically developed for use in industrial and mobile equipment operating in environmentally sensitive areas. It is specially formulated for reduced environmental impact in case of leaks or spills. It is nontoxic to fish and aquatic species as determined by OECD Test Method 203 1-12, and is classified as inherently biodegradable by the OECD Test Method 301B. It passes the visual "no sheen" requirements of the U.S. EPA Static Sheen Test.

Ecoterra Hydraulic Oil is formulated with an ashless (zinc-free) antiwear additive package to provide excellent wear protection for hydraulic pumps and motors, and to protect hydraulic system components against rust and corrosion. It has excellent oxidation resistance and thermal stability at high temperatures to minimize deposit formation and provide long service life. It has excellent water-separating properties to minimize the formation of emulsions, and is resistant to excessive foam buildup that can cause poor or sluggish hydraulic system response.

NOTICE

It is very important to keep the hydraulic oil free of dirt, dust, metal chips, water, and other contamination. Most of the problems with hydraulic systems are caused by contamination in the oil.

Electrical Connections for Single-Phase AC

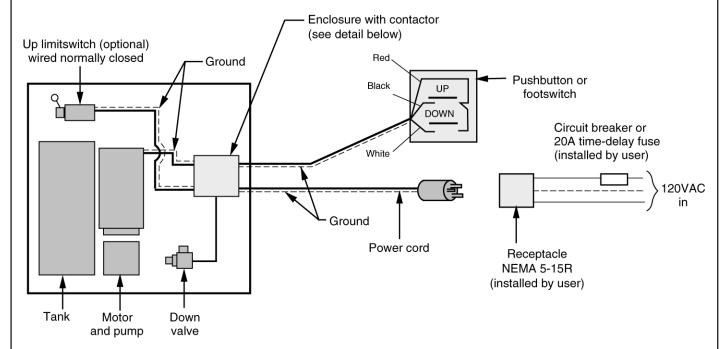


Fig. 6 – Electrical Connections, Lifts Wired for Single-Phase AC

If your lift has a dual-voltage motor, determine the correct voltage and make the connections as shown on the nameplate. Connections shown above are for lifts operating on 120 VAC. For lifts operating on 230 VAC, a NEMA L6-15R receptacle is required. The pump, motor, and down valve may be mounted on the lift unit itself (internal power unit) or in a separate location (external power unit). The pump has a built-in relief valve and check valve. The down speed control is pressure-compensated.

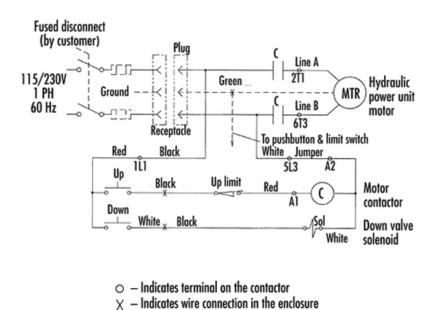


Fig. 7 - Wiring Diagram, Lifts Wired for Single-Phase AC

Electrical Connections for Three-Phase AC

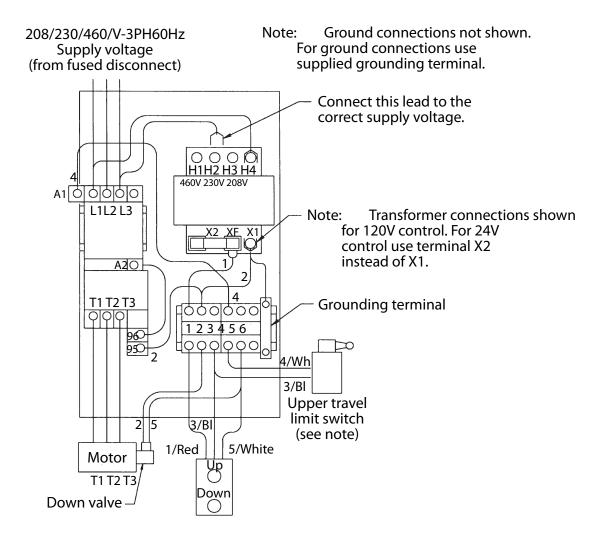


Fig. 8 – Electrical Connections, Lifts Wired for Three-Phase AC

Connect the power and control wiring to the proper terminals located in the control panel. The pump, motor and valve may be mounted on the lift unit itself (internal power unit) or in a separate location (external power unit).

ACAUTION

If on power-up the motor rotates in the wrong direction, don't continue to operate the lift. You may damage the pump. To correct the problem, interchange any two of the motor leads (T1, T2 or T3).

Fig. 9 – Standard 3.2 HP Power Unit

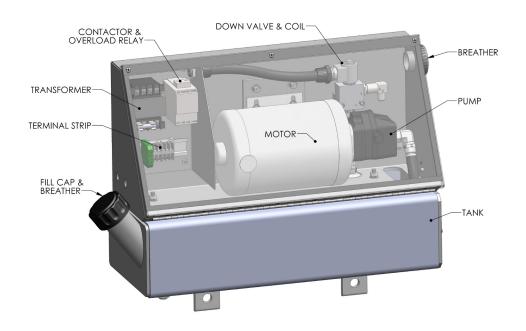
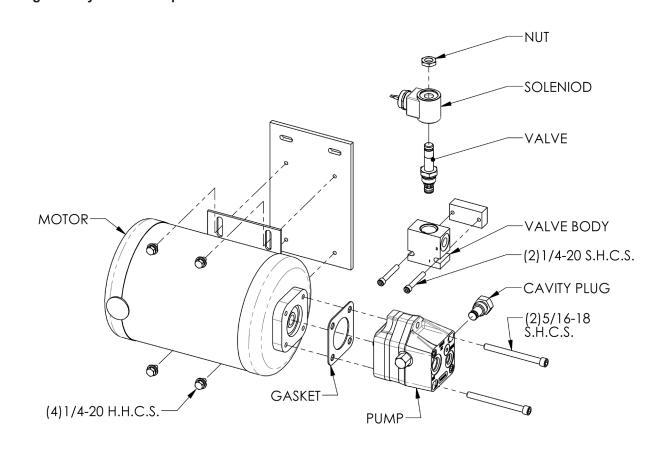
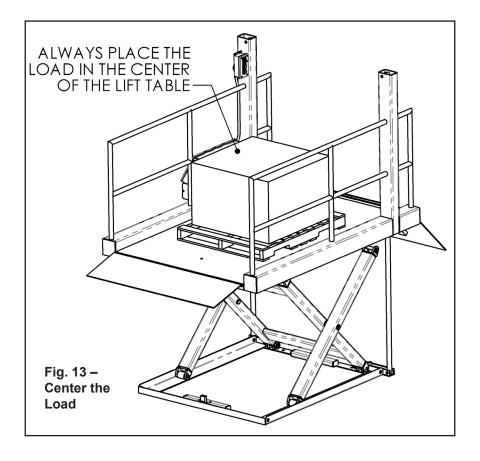
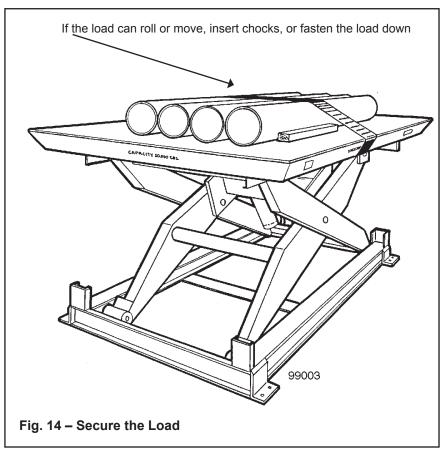


Fig. 10 - Hydraulic Pump and Down Valve







OPERATING INSTRUCTIONS SAFETY LABEL COMPLIANCE

To aid in understanding the concept and the importance of the symbol and signal word, the following has been excerpted from ANSI Z535.4.

4.10 Safety Alert Symbols

A symbol which indicates a potential personal injury hazard. It is composed of an equilateral triangle surrounding an exclamation mark. The safety alert symbol shall not be used to alert persons to property-damage-only accidents.



For use with DANGER signal word

(Red Background)



For use with WARNING signal word

(Orange Background)



For use with CAUTION signal word

(Yellow Background)

4.1 Signal Words

The meaning of different signal words as defined by ANSI Z535.6 and Z535.4 standards may be provided in collateral materials. The following artwork may be used for this purpose.



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

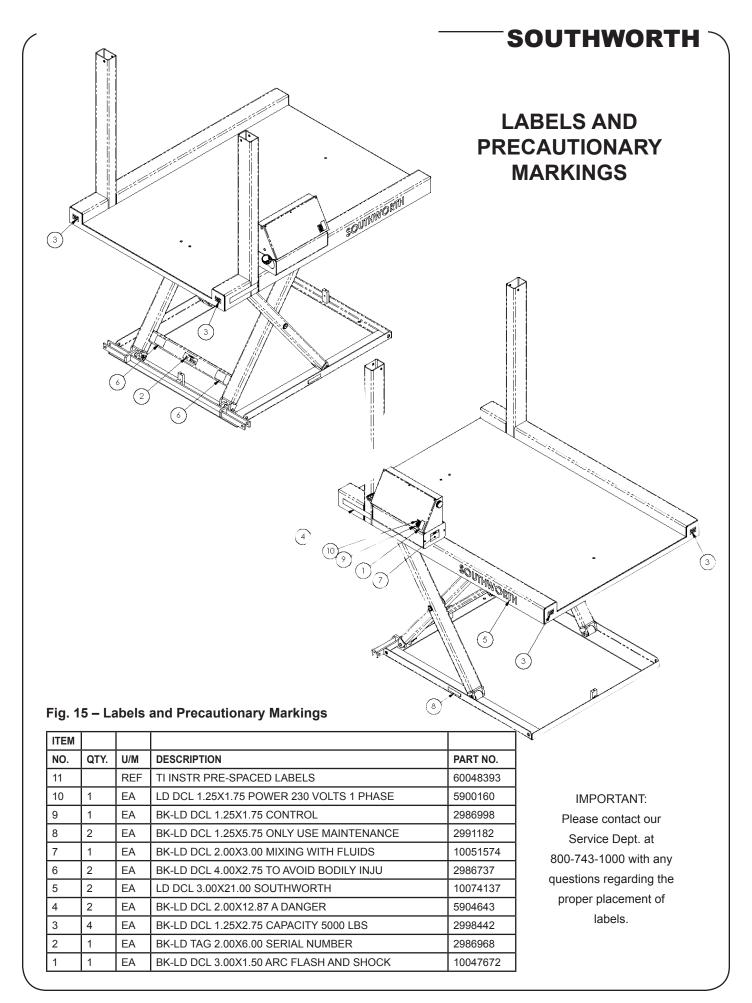


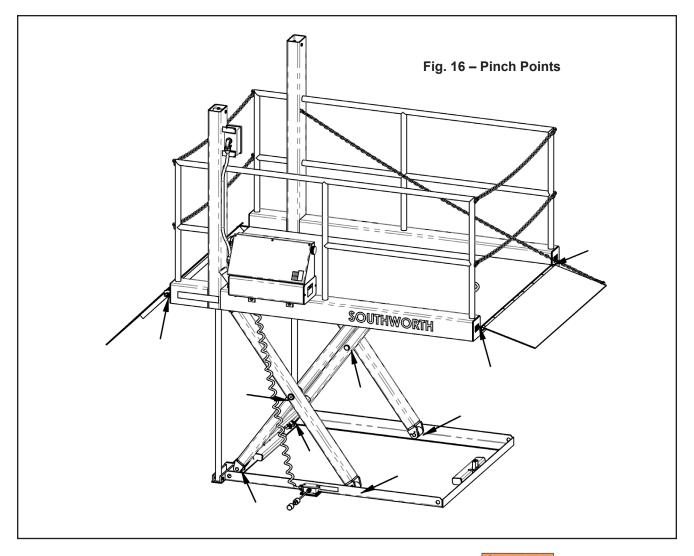
CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to personal injury.

(Blue Background)





11. Operating Procedure

Before operating the lift, read and understand this entire section.

A DANGER

The lift may use a power supply of up to 575 Volts AC. This voltage can kill. Do not work with the electrical parts unless you are a qualified electrician!

Locate the lift on a firm, flat surface as shown in Figure 2. Stationary lifts should be lagged to the floor.

AWARNING

If you place the lift on a soft surface, it may tip over, especially when it is loaded or raised. Someone may be hurt, and the lift and load may be damaged.

Load the lift correctly.

• Be sure that the load weighs no more than the maximum rated for the lift. The maximum rated load is shown on the platform skirt.

AWARNING

Do not try to lift a load that exceeds the maximum rating. If you try this, the lift may fail suddenly. Someone may be hurt, and the lift and load may be damaged.

- Place the load in the center of the dock lift, as shown in Figure 7.
- Do not try to load the lift while the dock lift is moving.
- If you are lifting pipes or other objects which may be able to roll or move, fasten them down, or chock them as shown in Figure 8.

Be sure all workers are clear of the lift. Remove any lumber or other material which may fall onto the lift.

AWARNING

Do not use the unit to lift people unless it has been specially equipped for this purpose. A specially equipped lift will include operator protection, and an excess flow protector to keep the lift from dropping suddenly if a

hydraulic line is damaged. Retrofit kits are available if you want to add these features to your lift.

AWARNING

As the dock lift moves up and down, "pinch points" are created as shown in Figure 16. Stay away from these pinch points! Part of your body or clothing may become caught, and you may be hurt.

Operate the lift. Press and hold the "up" button to raise the lift, and "down" to lower it. Release the button when the lift reaches the limit of travel. If the lift does not operate within 2 or 3 seconds, turn off the lift and call a qualified maintenance worker.

AWARNING

If you hear a squealing noise from the pump, the pressure relief valve is operating. Do not continue to use the lift! The pump will overheat very quickly, and may be permanently damaged. The relief valve is included to protect the machine operators – don't change the relief pressure setting.

Wait until the dock lift has stopped. Unload the lift.

AWARNING

The warning labels on the lift are there for your safety. If you find that the labels are worn or missing, or have been painted over, ask Maintenance to replace the labels before you use the lift. The labels are shown in Figure 7.

MAINTENANCE

All servicing should be done by qualified personnel. Qualified personnel should be able to read and understand wiring and hydraulic diagrams. They should be able to troubleshoot live electrical circuits safely and in accordance with accepted practice. For safety's sake, if in doubt, please contact your dealer or Southworth Products Corp Service Department at (207) 878-0700 or (800) 743-1000.

Before servicing the lift, read and understand this entire section and the section entitled "Operating Instructions."

Hazards

There are several hazards you should be aware of as you service the lift:

A DANGER

The lift may use a power supply of up to

575 Volts AC. This voltage can kill. Do not work with the electrical parts unless you are a qualified electrician!

AWARNING

- As the lift moves up and down, "pinch points" are formed as shown in Figure 16.
 Keep hands, feet, and loose clothing away from these pinch points. If your hand or arm or a part of your clothing is caught, you may be hurt.
- A falling lift can cause severe personal injury. Before working under the lift, raise the lift and insert the maintenance chocks, as shown in Figure 1. Do this every time you work under the lift!
- Do not change the setting on the relief valve. If you do change the setting, this may cause a hydraulic part to fail. The hydraulic components in the lift are designed to handle a certain amount of pressure. If the relief valve does not open, this pressure may be exceeded. The lift may drop suddenly. Someone may be hurt, and the lift and load may be damaged.
- Release of fluids under high pressure can cause personal injury. Before you open any part of the hydraulic system, be sure to release the hydraulic pressure.
- The warning labels on the lift are there for the safety of the operators. See Figure 15.
- If the labels are worn or missing, or have been painted over, replace them before releasing the lift for operation.

Routine Periodic Maintenance

Every month:

Visually inspect the leg rollers, center pivot bushings and pins, cylinder clevis pins and bushings, and the leg hinge pins and bushings for signs of wear. Contact Southworth for instructions for repair of the center pivot pins and bushings.

AWARNING

If you are going to repair the center pivot pins and bushings, you must support the dock lift in a special way. Each set of leg plates, on both sides of the unit, must be clamped together firmly, using large C-clamps. You cannot use the chocks shown in Figure 1. With the pivot pins removed, they will not support the table top. If you do not support the dock lift correctly, the top may drop

suddenly when you remove the pivot pins. Please contact Southworth for instructions.

Apply oil or WD-40 to the parts listed in the last step.

NOTE: Although the bearings are "lifetime lubricated" their performance may be extended by additional periodic lubrication.

Check the level and appearance of the hydraulic fluid. First, **raise the lift and insert the maintenance chocks, as shown in Figure 1.** On most models, when the lift is fully elevated, the oil should be about 3/4 inch above the bottom of the tank. Use a dipstick to check the oil level, and add oil as necessary. Change the oil if it has darkened, or feels gritty or sticky.

ACAUTION

It is important to use hydraulic fluid with the correct grade and properties. See the hydraulic oil specification in this manual, Table 2.

Every six months or 500 hours of operation, whichever comes first:

Raise the lift and insert the maintenance chocks, as shown in Figure 1.

Check all of the hydraulic fittings and hoses, and repair the connections as necessary. Occasionally the fittings can be worked loose by the vibrations from the power unit.

AWARNING

If a hydraulic fitting becomes loose, or if a hydraulic hose breaks, the hydraulic fluid may escape from the system under pressure. If the lift is raised when this happens, it can drop quickly. Someone may be hurt, or the lift or load may be damaged.

Disassemble the down valve as shown in Figure 10. Blow the valve plunger clean with compressed air. Reassemble and reinstall.

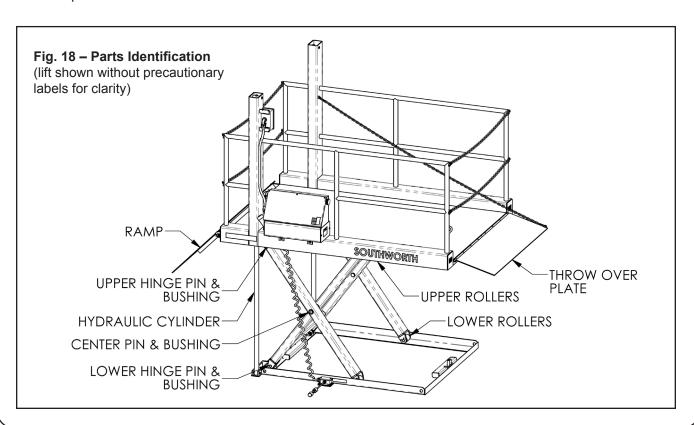
Drain and discard the hydraulic fluid. The suction filter is in the tank, at the point where the suction line runs out to the pump. Unscrew the hydraulic filter. Blow the filter clean. Reinstall the filter in the tank and reassemble the hydraulic line.

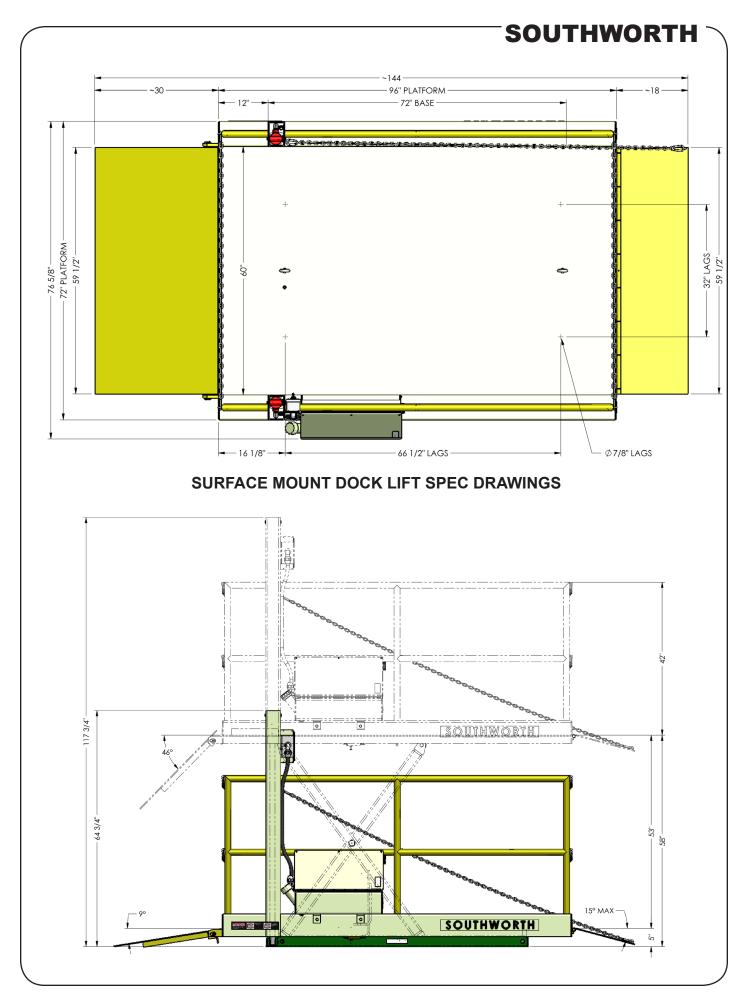
Refill the tank with new hydraulic fluid.

ACAUTION

If you continue to use fluid after it has "worn out," the moving parts in the system will wear more quickly.

Be sure all of the warning labels are in position and legible. The labels are shown in Figure 15. **The warning labels are intended to protect your workers.** If the labels are missing, or if they have been painted over, replace them.





TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CHECK THIS	
	Weight of load too heavy	Check the actual weight of the load	
	Motor not running	Check the main disconnect switch, fuses, and wiring to the motor. A 20 amp, designated braker must be supplied for 110V	
	Hydraulic oil level low	When lift is raised as far as possible, oil level should be 3/4" from bottom of tank. When lift is down, 3/4" from top	
	Lift has reached its upper limit	Upper limit switch may need to be adjusted	
	Motor may be "single phasing"	If motor hums but does not turn, check motor wiring and line fuses.	
Lift will not raise	Motor voltage too low	Supply voltage should be +/- 10% of the rating at the motor terminals.	
	Tank vent plugged	If supplied, remove solid plug from tank, insert vent plug.	
	Suction filter clogged	Clean suction filter as described in periodic maintenance	
	Vacuum leak in suction line	Check all fittings in suction line	
	Down valve may be energized	Check wiring to down valve, and solenoid in the valve	
	Missing coupling	Check to insure the coupling has been installed between the pump and motor	
	Down valve may be leaking	Remove down valve and inspect for debris which may be preventing it from closing.	
The lift fails to hold	Down valve may be energized	Check the solenoid in the valve with a volt meter.	
	Cylinder may be leaking	Check for oil leaking at top of 90° fitting.	
Lift will not lower	Down valve may be de-energized	Check the solenoid in the valve with a volt meter	
	Flow control needs adjustment	Adjust flow control as needed	
	Voltage may be low	Check voltage at motor to ensure proper voltage is being supplied	
Lift raises too slowly	Foreign material clogging suction filter, breather cap or pressure line	Remove necessary components and clean	
	Pump may be overheating due to insufficient oil	Check oil level and oil viscosity	
Lift lowers too	Down valve may not be fully open or stuck closed	Remove down valve and clean	
slowly	Flow control may need adjust- ment	Adjust flow control as needed	

If the steps listed above do not solve the problem, please call the Southworth's Customer Service Department

TROUBLESHOOTING WARNINGS

All servicing should be done by qualified personnel. Qualified personnel should be able to read and understand wiring and hydraulic diagrams. They should be able to troubleshoot live electrical circuits safely and in accordance with accepted practice. **For safety's sake**, if in doubt, please contact your dealer or Southworth Products Corp.

Before servicing the lift, read and understand this entire section and the section entitled "Operating Instructions."

AWARNING

Before working underneath the lift, always raise the lift and insert the maintenance devices, as shown in Figure 1. Failure to do so may result in damage to the lift and severe personal injury!

ACAUTION

Do not continue to hold the "up" button for more than 2 or 3 seconds. You may damage the pump.

AWARNING

Do not change the relief valve setting. This valve has been included for the protection of workers who install, use, or service the lift. If it is ever necessary to repair or reset the valve, contact Southworth Products Corp. for instructions.

AWARNING

Do not disconnect the up limitswitch. Instead, loosen the adjusting screw, and change the position of the arm. If you do disconnect the switch, when the lift platform moves up, it may not stop at the correct point. If the platform rises above the normal stopping point, the frame of the unit may be damaged. People working nearby may be hurt.

ACAUTION

If cavitation is allowed to continue, the pump may be damaged, and may have to be replaced.

AWARNING

Failure to insert the maintenance devices may result in damage to the lift and severe personal injury!

AWARNING

Failure to insert the maintenance devices may result in damage to the lift and severe personal injury!

A DANGER

Do not try to adjust the flow control while pressing the "down" button. If you try this, the lift table may drop suddenly, and you may be hurt.

ORDERING REPLACEMENT PARTS

Southworth has carefully chosen the components in your lift to be the best available for the purpose. Replacement parts should be identical to the original equipment. Southworth will not be responsible for equipment failures resulting from the use of incorrect replacement parts or from unauthorized modifications of the machine.

Southworth can supply all replacement parts for your Southworth lift. Key parts are identified in Figures 9 through 11. With your order, please include the model number and the serial number of the lift. You may find these numbers on the name plate, which is located on the crossbar at the base of the cylinder(s). When you are ordering parts for a cylinder, also include the cylinder number. This is stamped on the base of the cylinder housing.

To order replacement parts, please call the Parts Department at (207) 878-0700 or (800) 743-1000. Parts are shipped subject to the following terms:

FOB factory

- Returns only with the approval of our Parts Department.
- Payment Net 30 days (except parts covered by warranty).
 - Freight collect (except parts covered by warranty).
- The warranty for repair parts is 30 days from date of shipment.

Parts replaced under warranty are on a "charge-credit" basis. We will invoice you when we ship the replacement part, then credit you when you return the worn or damaged part, and we verify that it is covered by our warranty. Labor is not covered under warranty for Parts orders.

Parts Department Southworth Products Corp

Telephone: (207) 878-0700 or (800) 743-1000 FAX: (207) 797-4734

email: partsgroup@southworthproducts.com

2 YEAR WARRANTY

Southworth Products Corp warrants this product to be free from defects in material or workmanship for a period of 2 years of single shift usage from date of shipment, providing claim is made in writing within that time period. This warranty shall not cover modified designs for special applications, failure or defective operation caused by misuse, misapplication, negligence or accident, exceeding recommended capacities, failure to perform required maintenance or altering or repairing, unless alteration is authorized by Southworth Products Corp. Except as set forth herein, there are no other warranties, express or implied, including the warranties of merchantability and fitness for a particular purpose, all of which are hereby excluded.

All batteries have a 90 day parts and labor warranty, this warranty covers any defects in material and workmanship from the date of shipment.

Southworth Products Corp also carries a 10 year structural warranty with this product line.

Southworth Products Corp makes no warranty or representation with respect to the compliance of any product with state or local safety or product standard codes, and any failure to comply with such codes shall not be considered a defect of material or workmanship under this warranty. Southworth Products Corp shall not be liable for any direct or consequential damages arising out of such noncompliance.

Southworth Products Corp's obligation under this warranty is limited to the replacement or repair of defective components at its factory or another location at Southworth Products Corp's discretion. The Southworth Warranty is for product sold with in North America. For products shipped outside of North America the warranty will be for replacement of defective parts only. Labor is not included. This is buyer's sole remedy. Except as stated herein, Southworth Products Corp will not be liable for any loss, injury or damage to persons or property, nor for direct, indirect, or consequential damage of any kind, resulting from failure or defective operation of said product.

This warranty may be altered only in writing by Southworth Products Corp, Portland, Maine.



SOUTHWORTH PRODUCTS CORP

P.O. Box 1380, Portland, ME 04104-1380 Telephone: (800) 743-1000 • (207) 878-0700

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