

Fig. 3 – Hydraulic Diagram

Table 1 – Electrical Interface, Supplied by Customer

Motor Voltage	Required Fuse 1.0 HP Motor	Required Fuse 3.2 HP Motor	Wire 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

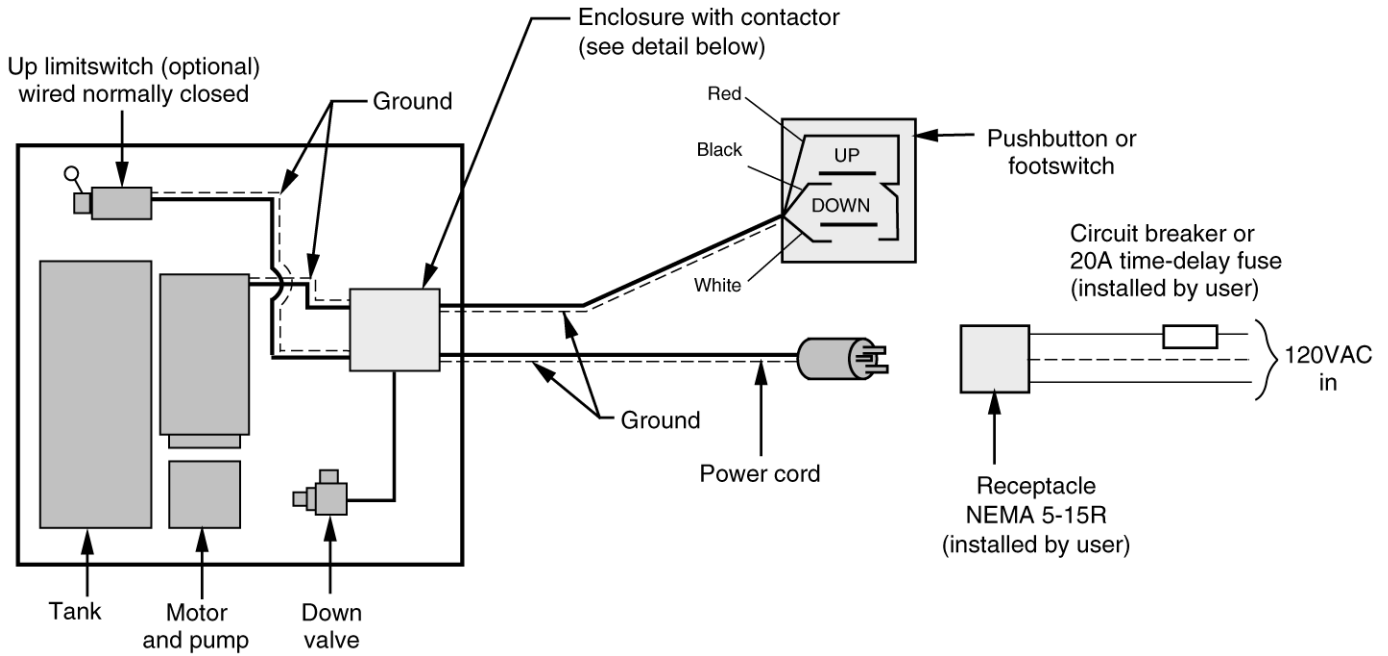


Fig. 6 – Electrical Connections, Lifts Wired for Single-Phase AC

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.

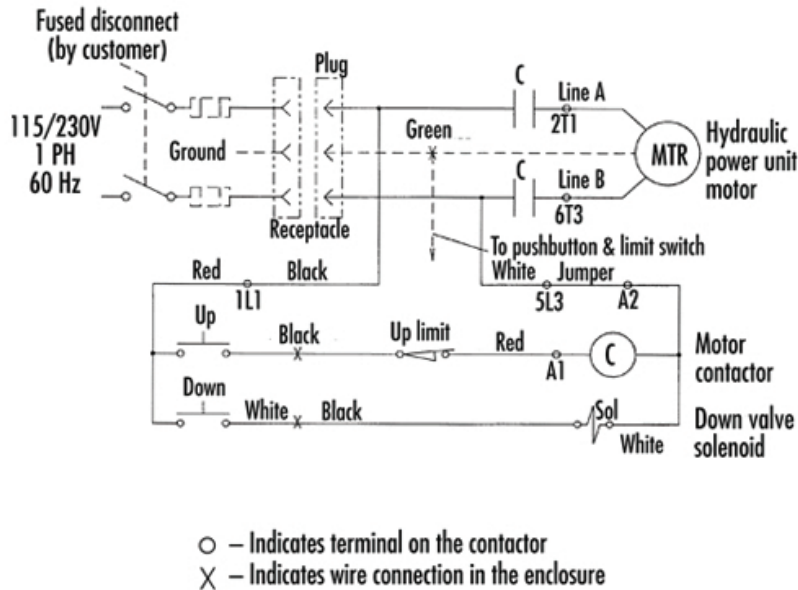


Fig. 7 – Wiring Diagram, Lifts Wired for Single-Phase AC

Electrical Connections for Three-Phase AC

208/230/460V-3PH60Hz
Supply voltage
(from fused disconnect)

Note: Ground connections not shown.
For ground connections use
supplied grounding terminal.

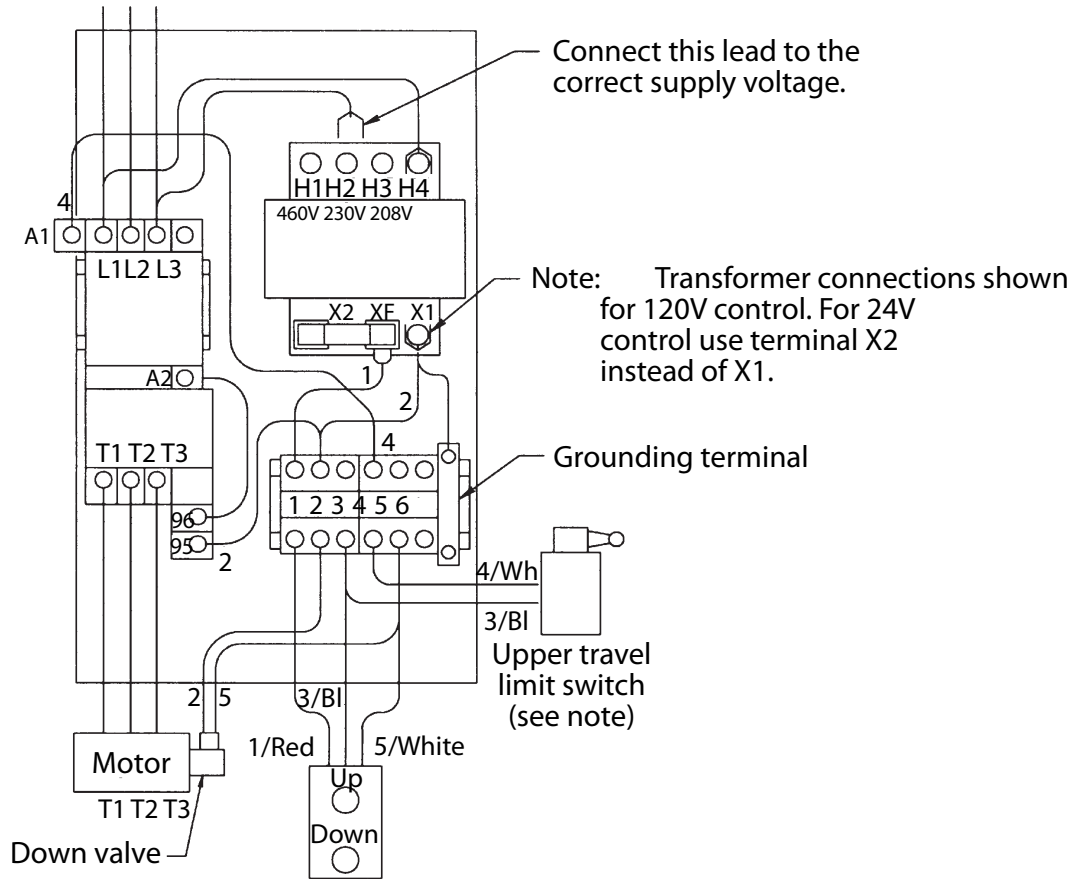


Fig. 8 – Electrical Connections, Lifts Wired for Three-Phase AC

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).



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

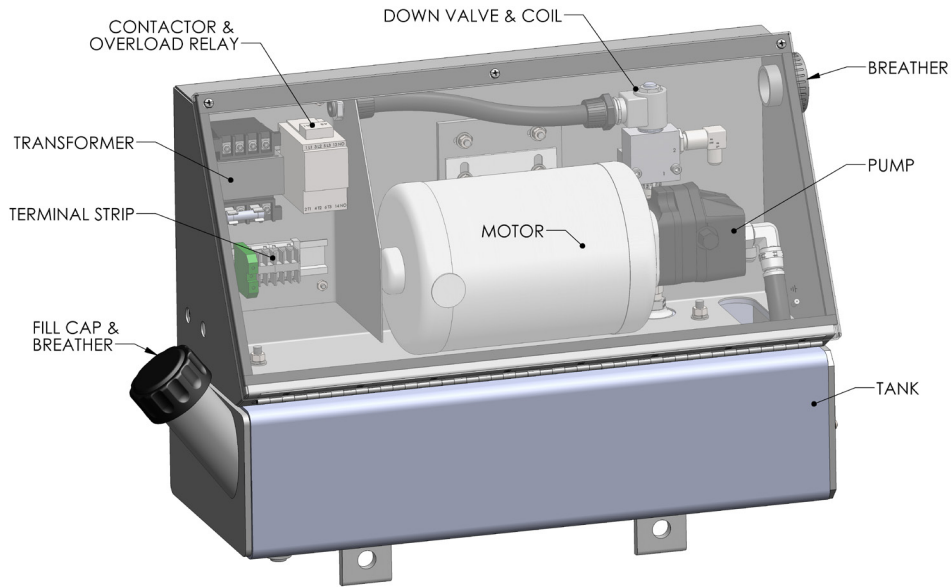
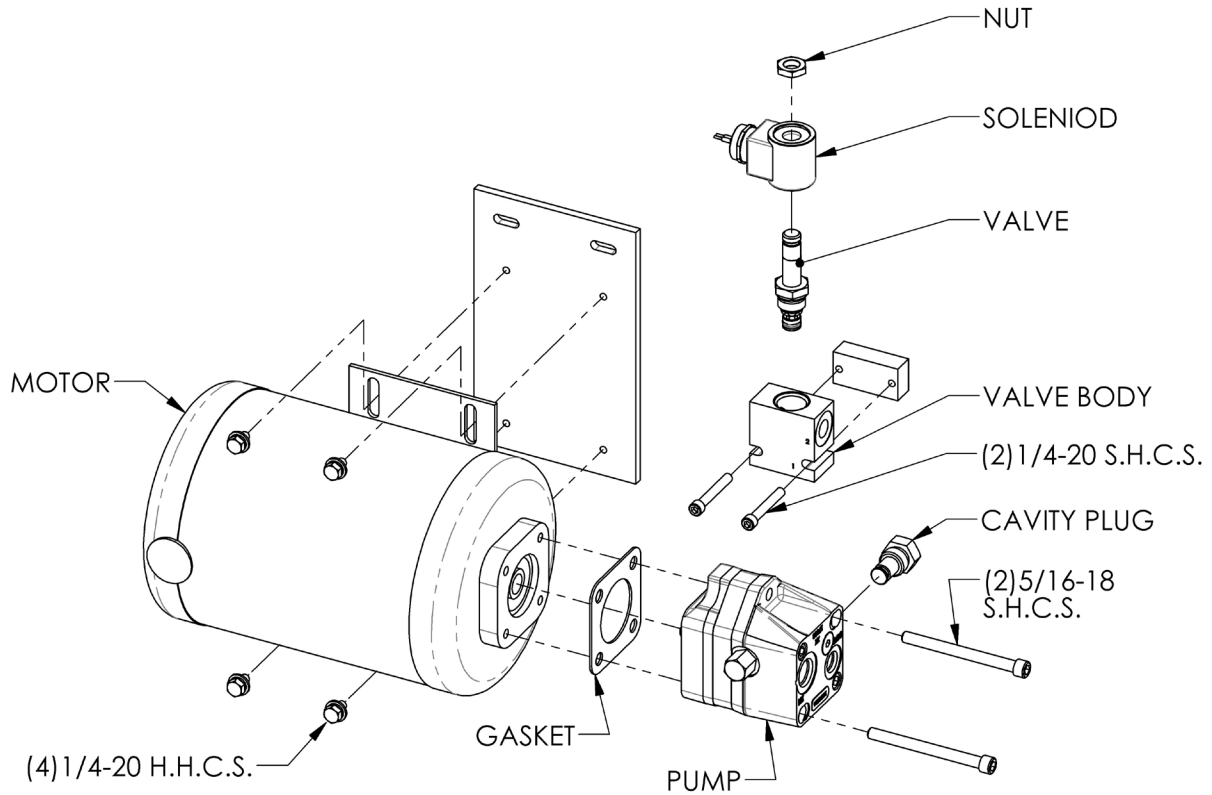
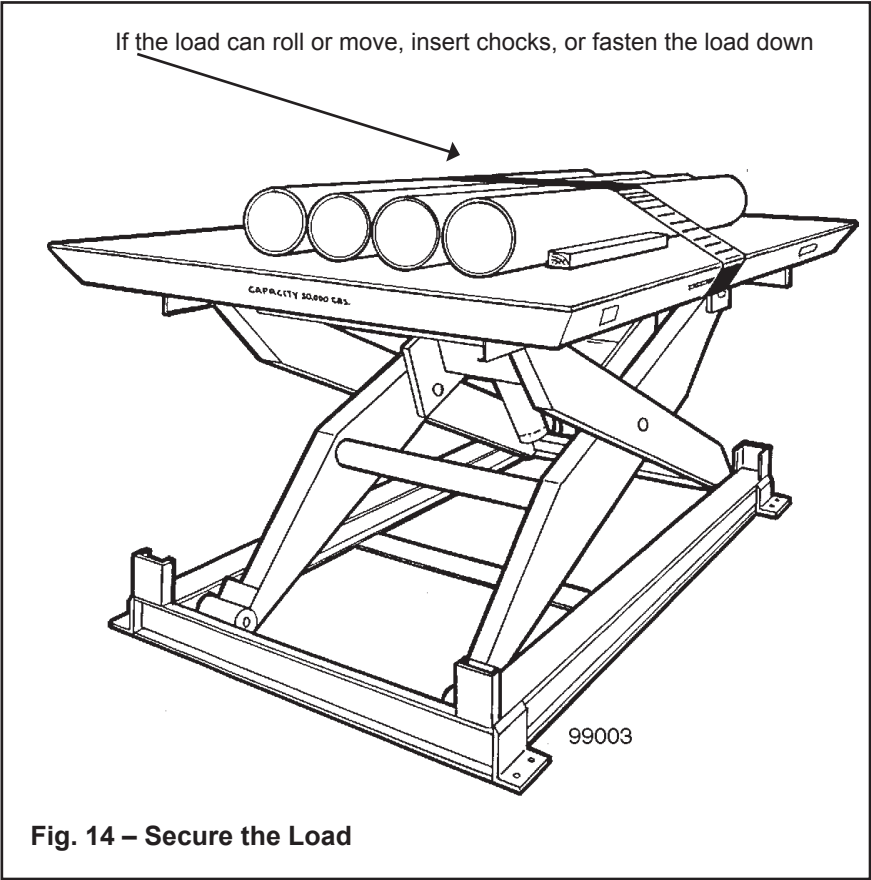
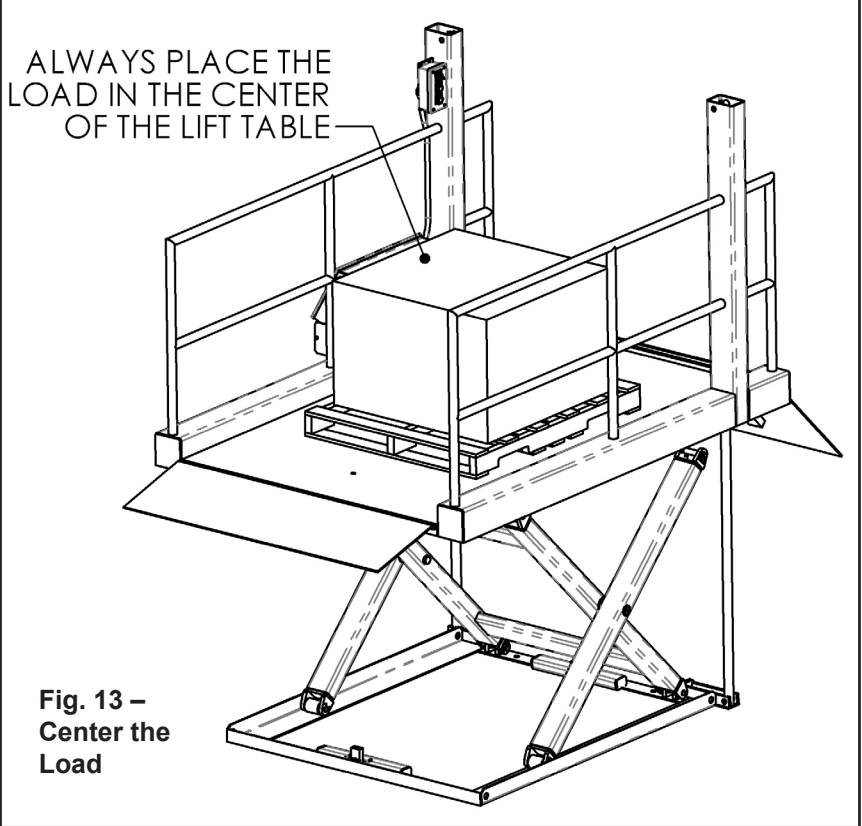


Fig. 10 – Hydraulic Pump and Down Valve





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.



(Red Background)

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



(Orange Background)

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



(Yellow Background)

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



(Blue Background)

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

LABELS AND PRECAUTIONARY MARKINGS

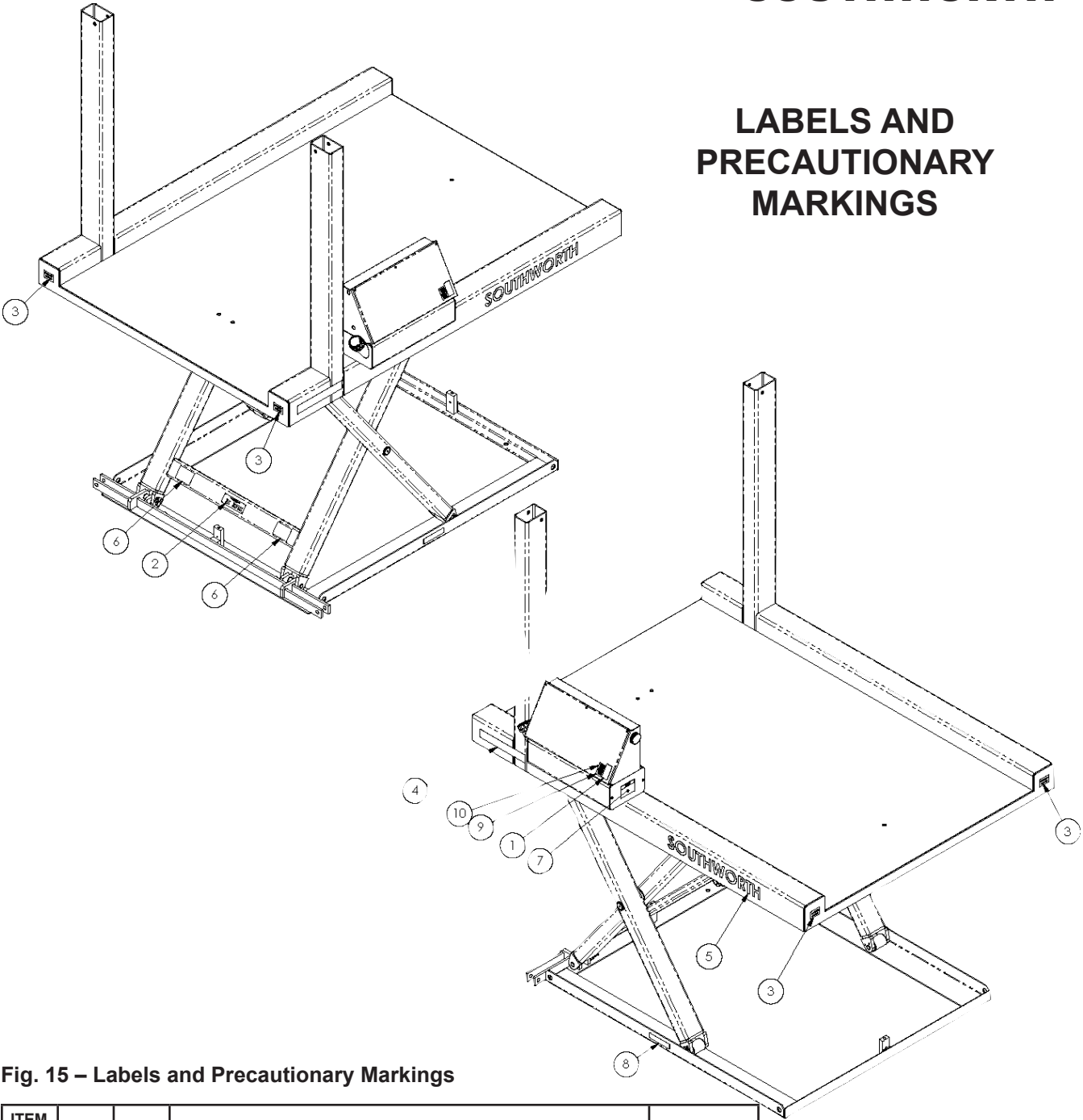
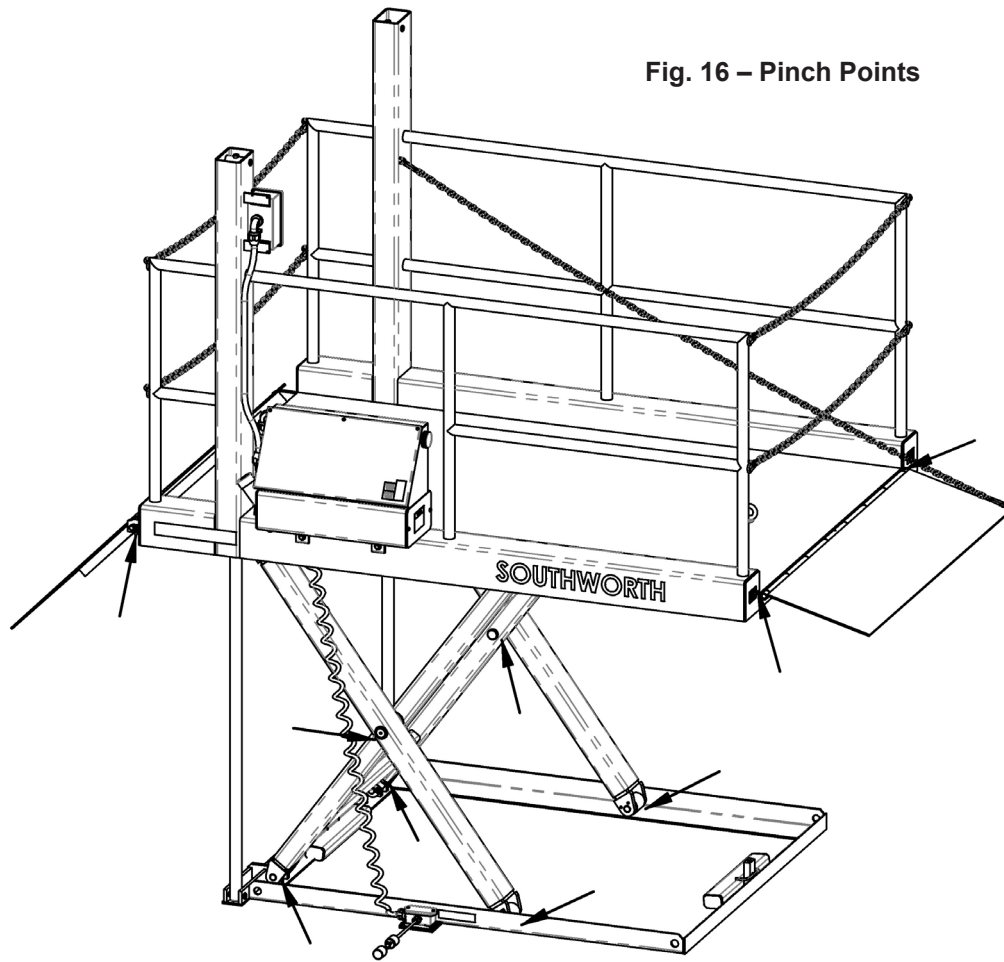


Fig. 15 – Labels and Precautionary Markings

ITEM				
NO.	QTY.	U/M	DESCRIPTION	PART NO.
11		REF	TI INSTR PRE-SPACED LABELS	60048393
10	1	EA	LD DCL 1.25X1.75 POWER 230 VOLTS 1 PHASE	5900160
9	1	EA	BK-LD DCL 1.25X1.75 CONTROL	2986998
8	2	EA	BK-LD DCL 1.25X5.75 ONLY USE MAINTENANCE	2991182
7	1	EA	BK-LD DCL 2.00X3.00 MIXING WITH FLUIDS	10051574
6	2	EA	BK-LD DCL 4.00X2.75 TO AVOID BODILY INJU	2986737
5	2	EA	LD DCL 3.00X21.00 SOUTHWORTH	10074137
4	2	EA	BK-LD DCL 2.00X12.87 A DANGER	5904643
3	4	EA	BK-LD DCL 1.25X2.75 CAPACITY 5000 LBS	2998442
2	1	EA	BK-LD TAG 2.00X6.00 SERIAL NUMBER	2986968
1	1	EA	BK-LD DCL 3.00X1.50 ARC FLASH AND SHOCK	10047672

IMPORTANT:
 Please contact our Service Dept. at 800-743-1000 with any questions regarding the proper placement of labels.

Fig. 16 – Pinch Points



11. Operating Procedure

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

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.

WARNING

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.

WARNING

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.

WARNING

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.



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.



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.



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:



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!



- 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.



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.

CAUTION

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.

WARNING

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.

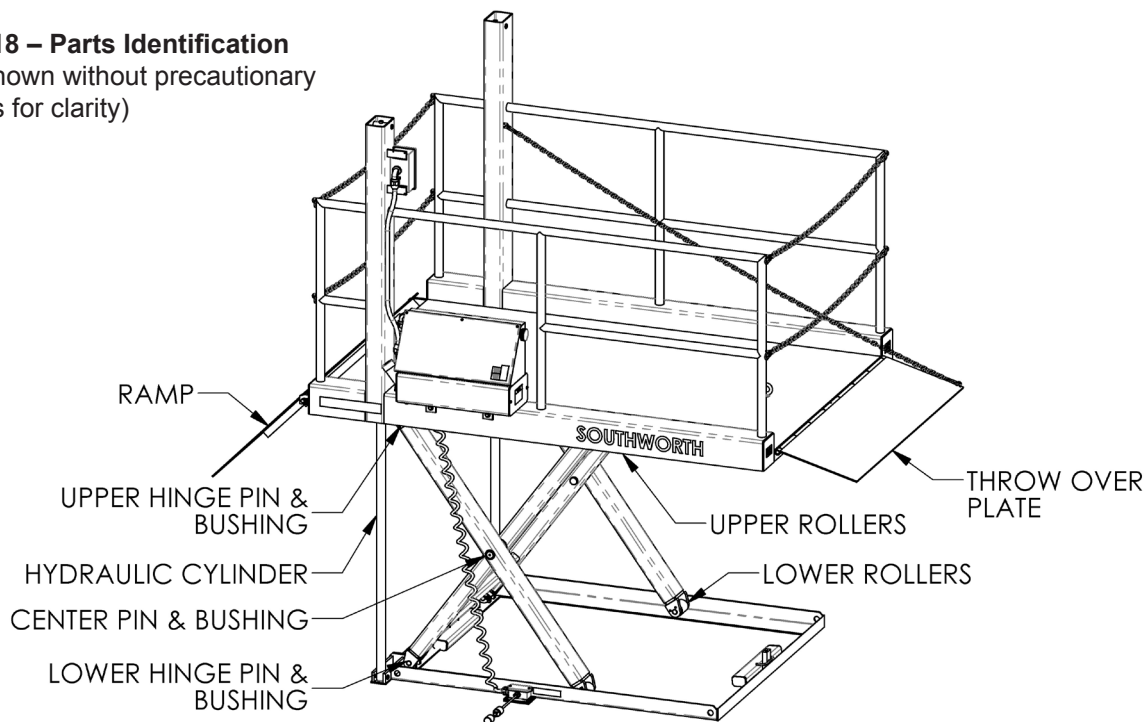
Refill the tank with new hydraulic fluid.

CAUTION

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.

Fig. 18 – Parts Identification
(lift shown without precautionary labels for clarity)



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CHECK THIS
Lift will not raise	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.
	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
The lift fails to hold	Down valve may be leaking	Remove down valve and inspect for debris which may be preventing it from closing.
	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
Lift raises too slowly	Voltage may be low	Check voltage at motor to ensure proper voltage is being supplied
	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 slowly	Down valve may not be fully open or stuck closed	Remove down valve and clean
	Flow control may need adjustment	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."**

⚠ WARNING

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!

⚠ CAUTION

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

⚠ WARNING

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.

⚠ WARNING

Do not disconnect the up limit switch. 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.

⚠ CAUTION

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

⚠ WARNING

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

⚠ WARNING

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

⚠ 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

SOUTHWORTH PRODUCTS CORP

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SOUTHWORTH

making work faster, safer, and easier

Southworth is the world class supplier of products designed to improve productivity and enhance safety. Our staff has over 400 years of engineering experience. If one of our standard products does not meet your needs, our engineers can custom design equipment specifically suited to your material handling application.



Spring PalletPal Load Leveler



Lift with Flush Mount Turntable



Portable Container Tilters



Dock Lifts



Roll on Level Loaders



Portable Lifts



Stack-n-Go Powered Stacker



**Floor Height Lifts
Roll-E**

**Floor to
Mezzanine Lifts**



Pallet Rotators



For more information, contact Southworth Products

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