

SOUTHWORTH

Hydraulic Lift & Tilt Owner's Manual



SOUTHWORTH PRODUCTS CORP

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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 E-Parts & Service you will find a complete list of current owner's manuals to print.

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INTRODUCTION

This manual contains information to acquaint you with the safe and proper installation, use and up-keep of the machine. You should ensure that this manual is available to personnel working with the machine and require its use by these personnel.

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

Southworth's product warranty is provided in the back of this manual. This instruction manual is not intended to be or to create any other warranty, expressed 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. 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 the lift table.

SAFETY

The safety of all persons operating, maintaining, repairing or in the vicinity of the machine is of paramount concern to Southworth. This 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 that may occur in the use of this machine and provided appropriate instruction or precautions that should be taken to avoid these hazards. In some cases, Southworth has also pointed out the consequences that 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

SIGNAL WORD

The word or words that designates a degree or level of hazard seriousness. The signal words for product safety signs are "**DANGER**, **WARNING** and **CAUTION**."

" DANGER "	Immediate hazard which will result in severe personal injury or death.
" WARNING "	Hazardous or unsafe practice which could result in severe personal injury or death.
" CAUTION "	Hazardous or unsafe practice that could result in minor personal injury or property damage.

Please read and follow the instructions in this manual, including all safety instructions and precautions carefully and completely.

SAFETY CONSIDERATIONS

Southworth Hydraulic Lift tables are designed and manufactured to meet the safety requirements of the *ANSI Standard MH29.2-2000, Industrial Tilters*.

Southworth Hydraulic Lift Tables are equipped with a pressure safety relief valve so overloading will not “burst” the air bag.

Southworth Hydraulic Lift Tables have a safety orifice speed control. This regulates the down speed. Should an air line rupture, the unit will descend at about the normal rate. This orifice is not adjustable.

All Southworth Hydraulic Lift Tables can be fitted (optional) with industrial, high quality dampers to provide smooth movement even when loads are abruptly introduced to the platform.

Southworth units are also equipped with safe, reliable Firestone air spring actuators rather than vinyl air bags.

All Southworth models are designed with a generous safety factor of three to one.

INSTALLATION & OPERATING INSTRUCTIONS

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

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

3. If the hydraulic power unit will be mounted away from the machine, the power unit should be sheltered from the weather. It should be mounted within 30 feet of the machine to minimize the pressure drop in the hydraulic system. Be sure the hydraulic lines have been installed properly.

WARNING!

Protect the hydraulic power unit from rain or moisture. If the electrical parts in the power unit get wet, workers may be hurt by electrical shock or the electrical parts may fail.

WARNING!

The electric motor in the lift can create sparks. Do not install the hydraulic power unit in an area where flammable gases may be present.

POSITIONING THE LIFT

1. Remove the shipping material and unskid the machine.

2. Move the machine into position, supporting the base frame of the machine. Mount the machine on a firm level surface, if necessary, insert shims to level the machine. Install lag bolts to hold the machine in place. Make sure to shim or grout under the base frame to prevent any flexing.

WARNING!

If the machine is mounted on an unstable surface, it may tip over when in use. You may be hurt, and the machine or the load may be damaged.

HYDRAULIC CONNECTIONS

1. Mount the hydraulic power unit in a desired place.

2. Connect the hydraulic line between the hydraulic power unit and the machine.

WARNING!

Be sure that the hydraulic line will not be pinched by the machine during operation. If you allow the line to be pinched, the machine may not work properly. A hose may break, the machine may drop suddenly, and someone may be hurt.

CAUTION!

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

ELECTRICAL CONNECTIONS

DANGER!

The lift may use a power supply of up to 460 Volt AC. This voltage can kill you. Do not work with the electrical parts unless you are a qualified electrician.

1. A machine with a 115 Volt power unit needs to have a designated outlet and breaker of at least 20 AMP.

2. A machine designed for three phase AC, you must be sure the pump and motor is turning in the right direction. The machine should start to move quickly when you press the up or down button. If the machine does not move in 2 or 3 seconds, do not try to operate the machine! Exchange any two of the three phase leads. If this does not correct the problem, please contact Southworth 's Customer Service Department.

TESTING

1. Check the level of the hydraulic oil. With the machine in the lowered position the tank should be full, add oil if necessary.

2. Clear the area around the machine. Remove any loose wires, lumber or other material that might get in the way of the machine as it is in use.

3. Operate the machine through its full range of travel. The machine should rise smoothly with a quiet humming sound and lower smoothly and quietly. Raise and lower the lift a few times to check the clearances around the lift table.

WARNING!

As the machine moves, "pinch points" are created. If you are standing too close to the machine when it is moving, your arm or leg may be caught in the moving parts and you may be hurt. Stay away from the pinch points when the lift is moving.

COMPLETING INSTALLATION

1. Test the machine with the rated load. If the machine does not move and you hear a loud squealing noise, this means the pressure relief valve is operating. Contact Southworth for instructions.

WARNING!

Do not continue to use the machine if this happens. The pump will overheat very quickly and may be permanently damaged. Do not try to adjust the relief valve. You may overwork the machine. This can cause the machine to fail suddenly and you may be hurt.

MAINTENANCE

All service 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 of Southworth Products Corporation Customer 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:

Before working on the machine be sure to insert any and all maintenance devices.

DANGER!

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

WARNING!

As the machine moves, “pinch points” are created. Keep hands, feet and loose clothing away from these pinch points. If your arms, hands or your clothing is caught, you may be hurt.

WARNING!

Do not change the setting on the relief valve in the pump. If you do, this may damage the machine and you may be hurt. The relief valve has been included for the protection of all of the workers who use the machine.

WARNING!

Before working on the machine, be sure to release pressure on the hydraulic system.

CAUTION!

The warning labels on the machine are there for the safety of the operator. If the labels are worn or missing, replace them.

ROUTINE PERIODIC MAINTENANCE**Every month:**

1. Visually inspect the center pivot bushing and pins, cylinder clevis pins and bushings. Apply oil or WD-40 to all parts listed above.

Note: Although the bearings are “lifetime lubricated” their performance may be extended by additional periodic lubrication (WD-40).

2. Check the level and appearance of the hydraulic fluid. With the machine in the lowered position, there should be about $\frac{3}{4}$ of an inch of air space in the tank or with the machine fully elevated, there should be about $\frac{3}{4}$ of an inch of oil left in the tank. Use a dipstick to check the oil level and add oil if necessary. Change the oil if it has darkened from its original color, turned milky white or if it feels gritty or sticky.

CAUTION!

It is important to use hydraulic fluid with the correct grade and properties. The hydraulic fluid the machine is provided with is Texaco Rando HD-32

Every six months:

1. Check all of the hydraulic fittings and hoses and repair the connections if necessary. Occasionally, the fittings can be worked loose by vibrations from the machine.

WARNING!

If a hydraulic fitting becomes loose or if a hydraulic hose breaks, the hydraulic fluid will escape from the system under pressure. If the machine is elevated when this happens, it will drop very quickly. Someone may be hurt or the product or the machine may be damaged.

2. Remove the down valve from the pump and the solenoid. Disassemble and clean using compressed air. Reassemble and reinstall.

3. Drain all of the hydraulic fluid from the tank and cylinders and discard it.

4. Remove the suction filter from the tank. Clean by using compressed air. Reinstall and tighten all fittings.

5. Refill the tank with new hydraulic fluid.

Maintenance for machines with high cycle package:

1. Every 10,000 cycles or every month, visually inspect the entire lift. Replace all worn or broken parts. Change the hydraulic fluid. Lubricate all pivot points and clean the roller tracks.

2. Every 30,000 cycles or every three months, visually inspect the entire lift. Check the motor starter contacts and limit switch. Clean and lubricate all pivot points. Replace all worn or broken parts. Replace all hydraulic filters and change the hydraulic fluid.

Maintenance for units with Air Motors:

On this type of unit, the air motor is used to power the hydraulic pump (see figure 1). When the lift is raised, a valve sends compressed air to the air motor. The air motor powers the pump and provides hydraulic power for the unit. When the lift is lowered, an air operated down valve allows the hydraulic fluid to escape from the cylinders.

The vanes in the rotary type air motor take up their own wear and will last 5,000 to 15,000 hours of operation. (The actual service lift depends on the operating speed, method of oiling, operating pressure, and the precautions taken in maintaining the machine.) The type of shaft seal used will not withstand pressures of more than 100 psi.

An automatic airline lubricator must be installed in the airline just ahead of the motor. (The filter, regulator, and lubricator are not supplied by Southworth.) The lubricator must be adjusted to feed on drop of oil for every 50 to 75 cfm of air going through the motor. This lubrication is necessary to reduce friction on all internal moving parts and to prevent rust.

The starting torque of the air motor is greater than the running torque. This could vary depending on the position at which the vanes stop in relation to the air intake port. It is advisable to use a pressure regulator or a simple shut off valve to obtain the desired power, speed, and torque; and to conserve air.

CAUTION!

Do not allow the air motor to “run free” at high speed with no load. This can cause buildup of excessive heat and loss of internal clearances and can damage the motor quickly.

If the motor is sluggish or inefficient, try flushing it with solvent. To flush a motor, disconnect the airline and muffler. Add several teaspoons of solvent directly into the motor. (Southworth recommends the following solvents for this purpose: Gast Flushing Solvent AH255, Dem Kote 2X726 and Loctite Safety Solvent.) Rotate the shafts by hand in both directions for a few minutes. Reconnect the airline and gradually increase the air pressure and flow until there is no trace of the solvent in the exhaust air. Re-lubricate the motor with a squirt of oil in the chamber.

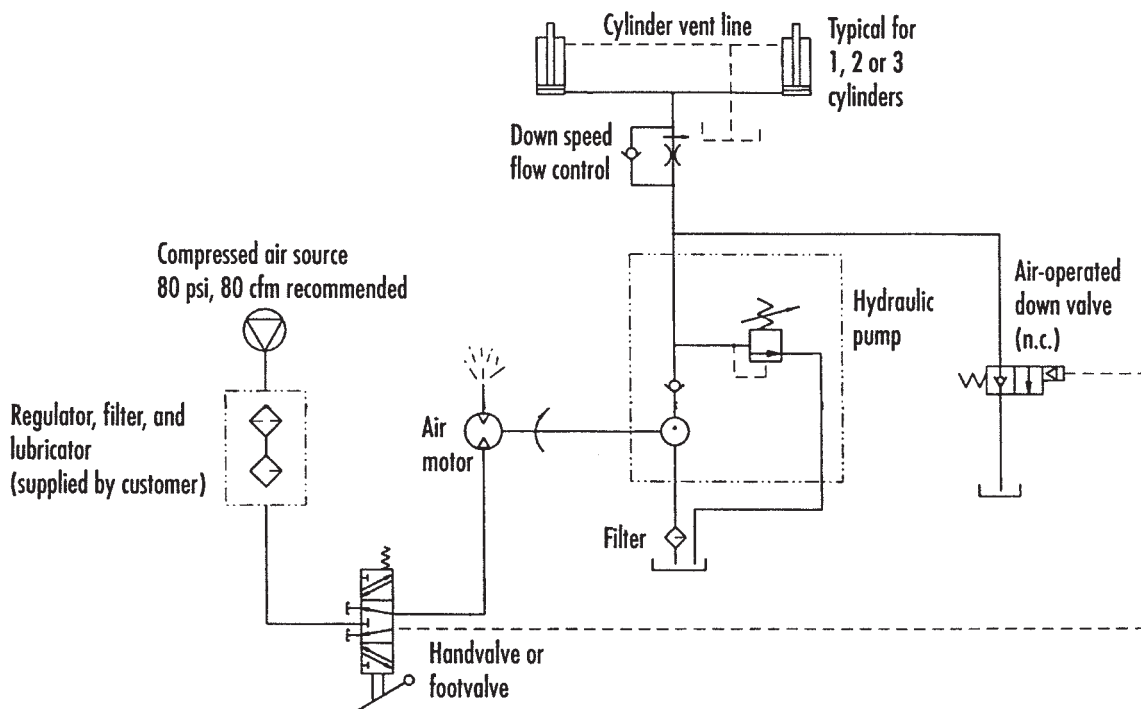


Figure 1. Units with Air Motors

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 in cylinder in the vent line.
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!

If the lift will not raise:

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 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.

CAUTION!

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

If the lift elevates, but fails to hold a load:

WARNING!

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

If the lift fails to lower:

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 unit 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 to the machine.**

Southworth can supply all replacement parts for your Southworth lift. We have identified key replacement parts for your lift. With your order, please include the model number and the serial number of the unit. You will find these numbers on the name plate.

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

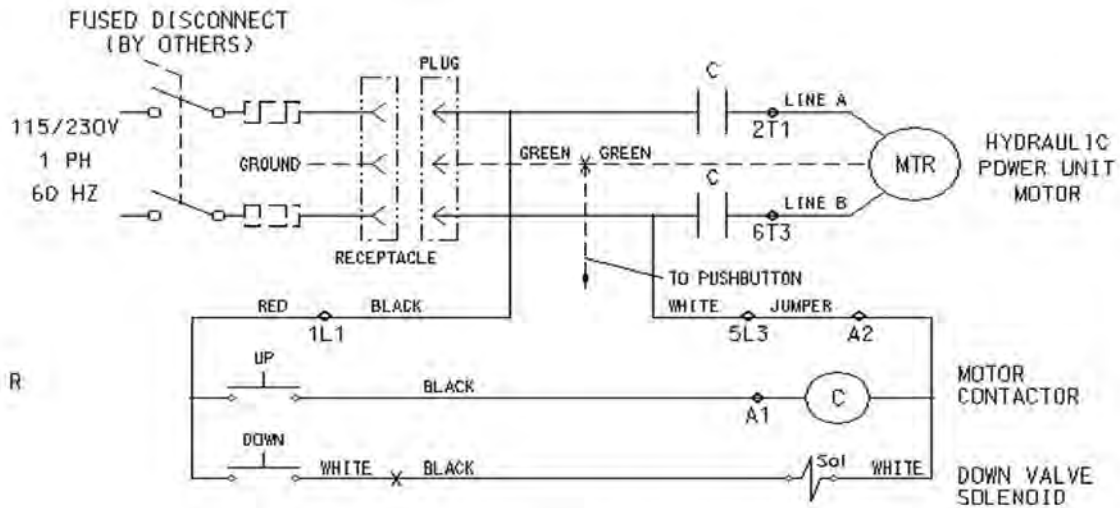
- FOB factory.
- Returns only with the approval of our parts department.
- Payment net 30 days (except parts covered by warranty).
- Freight collect (except parts covered by warranty).

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.

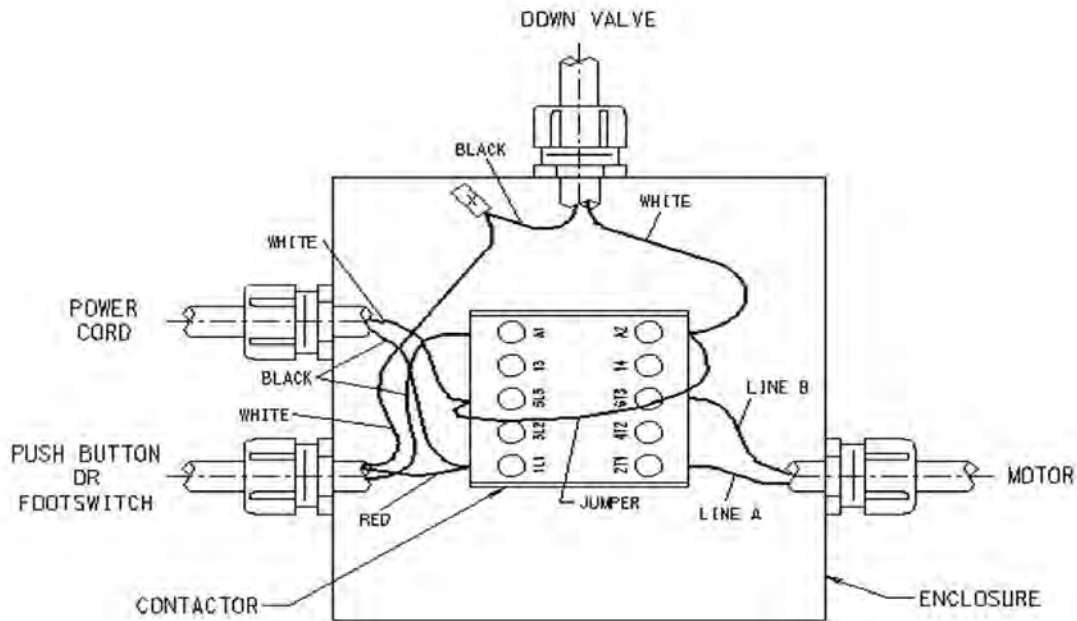
Parts Department
Southworth Products Corp
P.O. Box 1380
Portland, ME 04104-1380
Telephone: (207) 878-0700
FAX: (207) 797-4734
repairparts@SouthworthProducts.com

FIGURES & DIAGRAMS

PART I: SINGLE ACTING TILTER



◇ - INDICATES TERMINAL ON THE CONTACTOR
 X - INDICATES WIRE CONNECTION IN THE ENCLOSURE



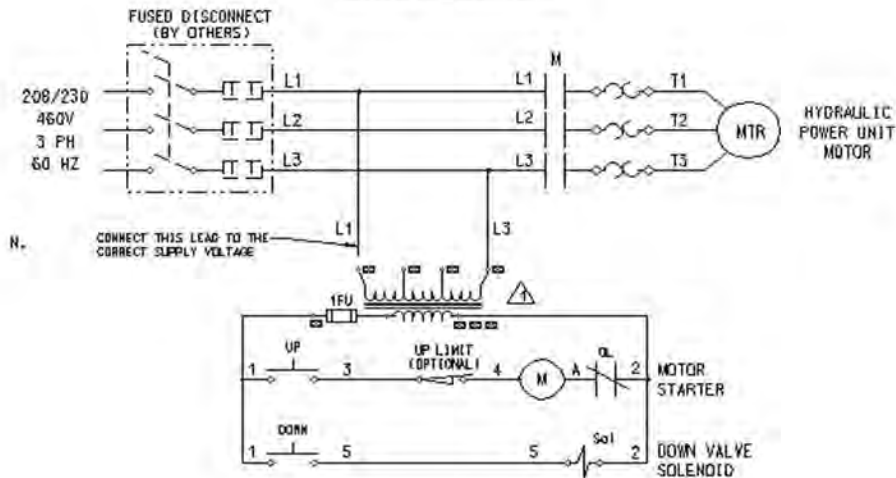
NOTE:
 - ENTRY LOCATIONS MAY DIFFER FROM THOSE SHOWN.
 - GROUND CONNECTIONS, ALTHOUGH NOT SHOWN, ARE REQUIRED.

- REFERENCE:
- B-3032834 STANDARD 1 PHASE
 - B-3032835 WITH UP LIMIT
 - B-3039865 WITH DOWN LIMIT
 - B-3032836 WITH UP/DOWN LIMITS
 - B-60012199 WITH INTERMEDIATE UP (N.D. HELD CLOSED)
 - B-3060340 WITH UP PROXIMITY (N.C.)
 - B-60003103 WITH UP PROXIMITY (N.D.)
 - B-3034986 WITH TURNTABLE LIMIT
 - B-3058888 WITH UP LIMIT & TURNTABLE LIMIT
 - B-3031360 WITH MOTORSTARTER & O.L.
 - B-3060468 WITH CONTROLS BY OTHERS & NO LIMITS
 - B-3042174 WITH CONTROLS BY OTHERS & UP/DOWN LIMITS
 - B-3062437 FOR MAINTAINED UP WITH UP LIMIT
 - B-3060356 FOR MAINTAINED DOWN WITH DOWN LIMIT
 - B-3045005 FOR MAINTAINED UP/DOWN (N.C. UP/DN LIMITS)
 - B-60006251 FOR MAINTAINED UP/DOWN (N.D. UP / N.C. DN LIMITS)
 - B-3038842 FOR DOUBLE-ACTING WITH UP/DN LIMITS

Figure 2. Electrical connections for Single Phase AC

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WIRING DIAGRAM



CONTROL PANEL

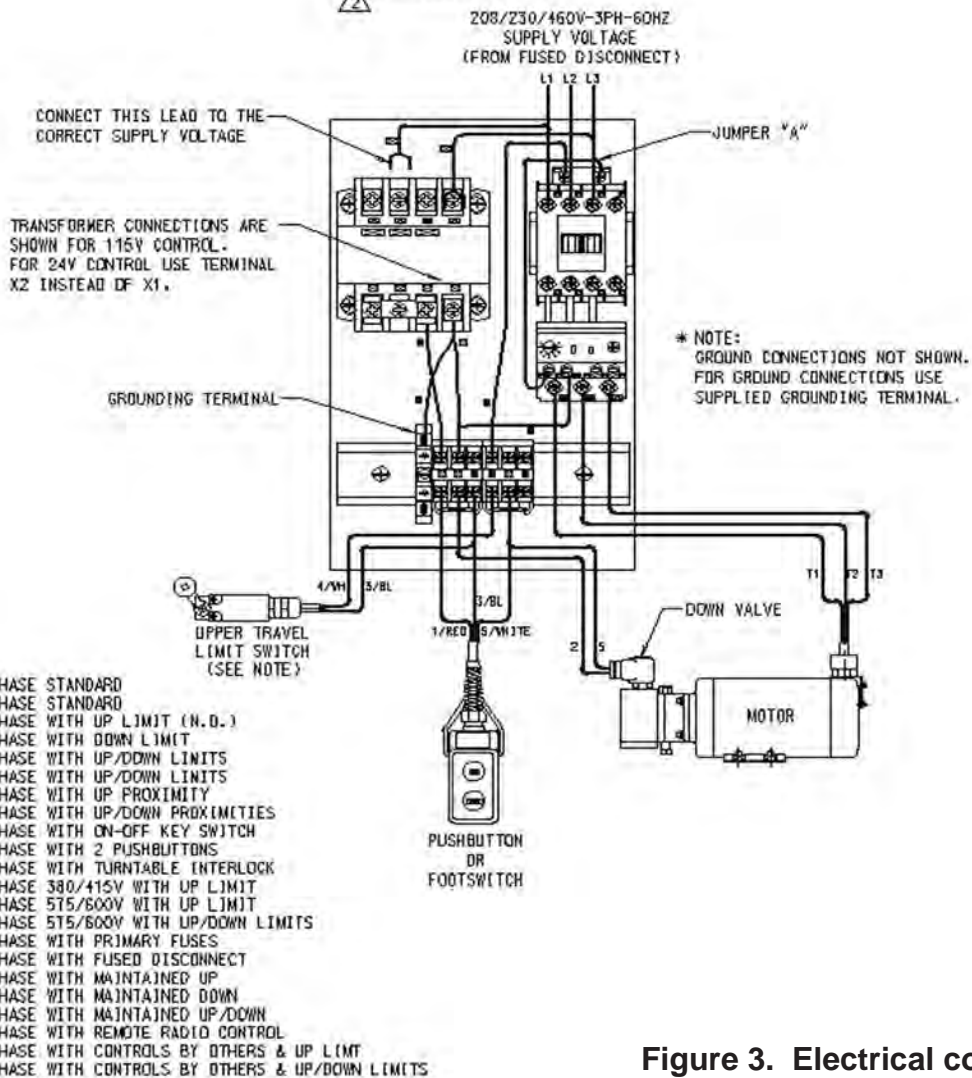


Figure 3. Electrical connections for Three Phase AC

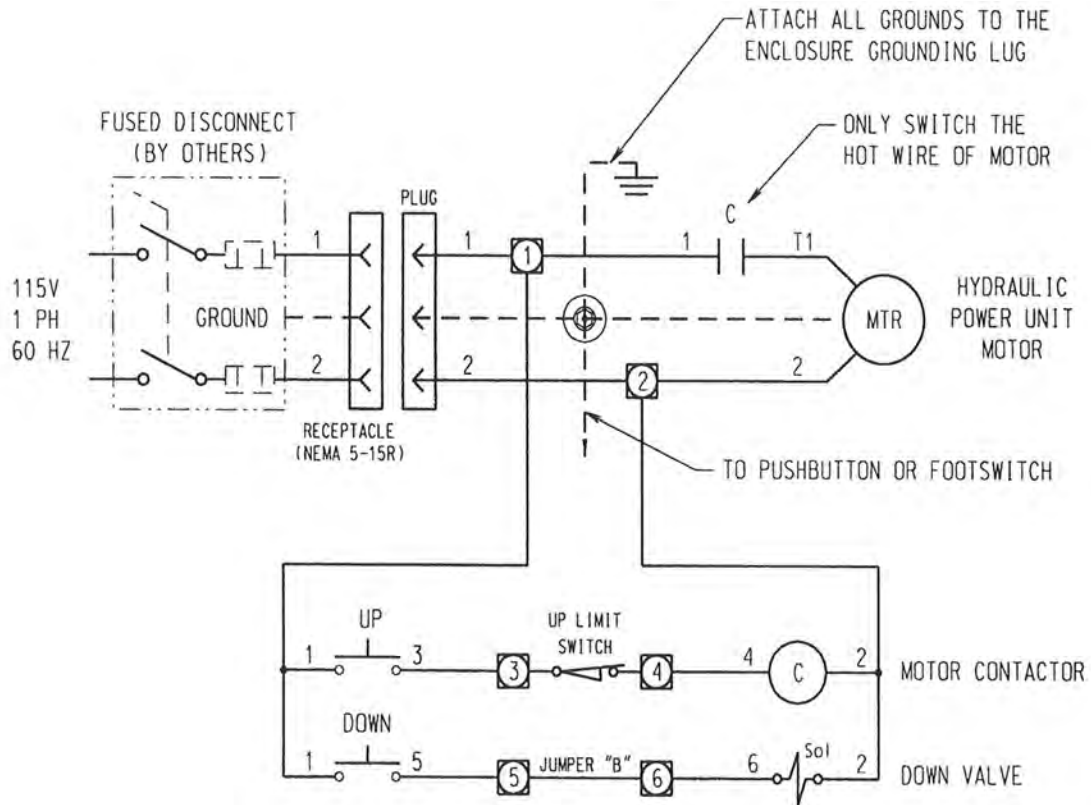


Figure 4. Electrical connections for Single Phase AC

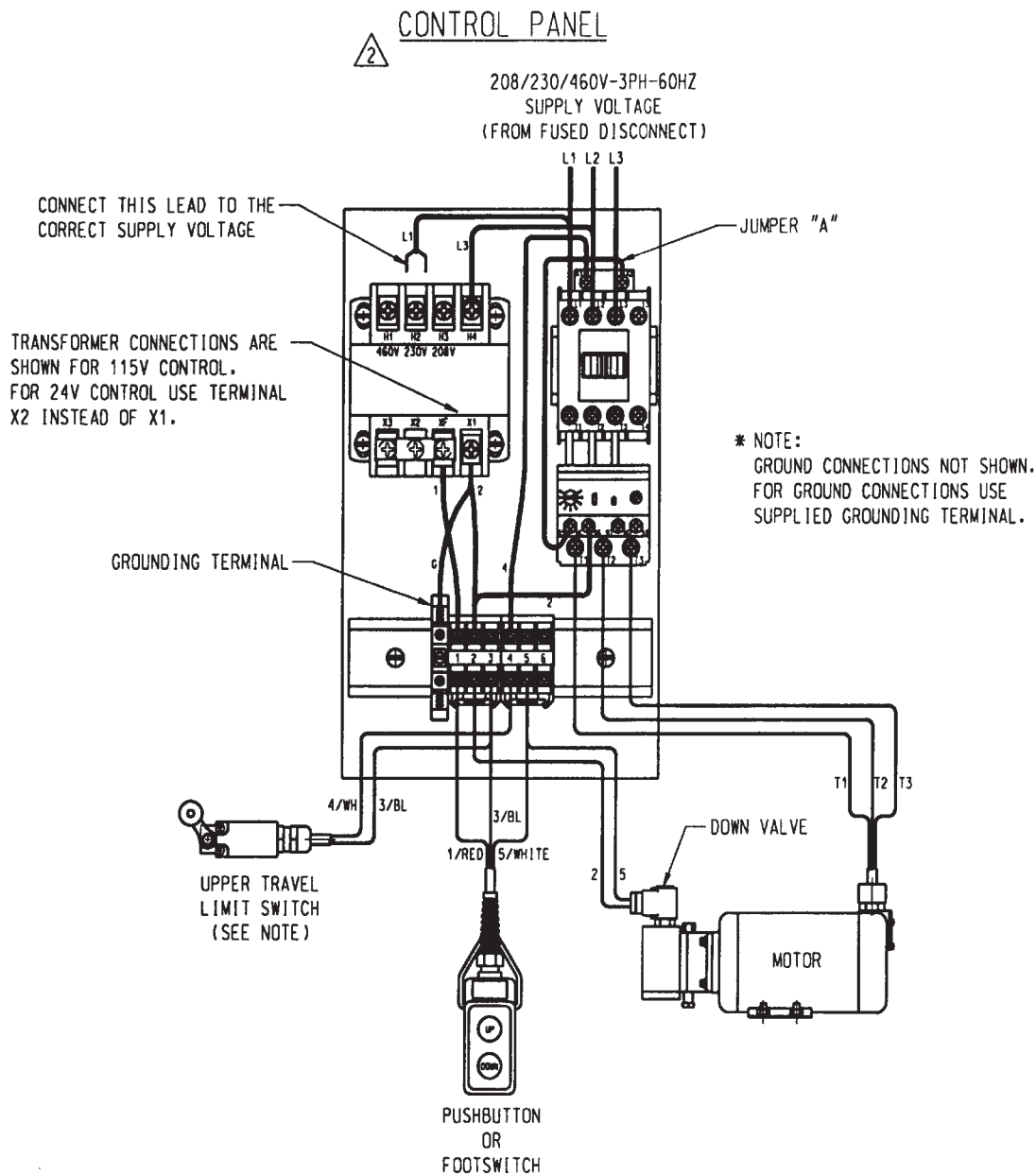


Figure 5. Electrical connections for Three Phase AC

FIGURES & DIAGRAMS

PART II: DOUBLE ACTING TILTER

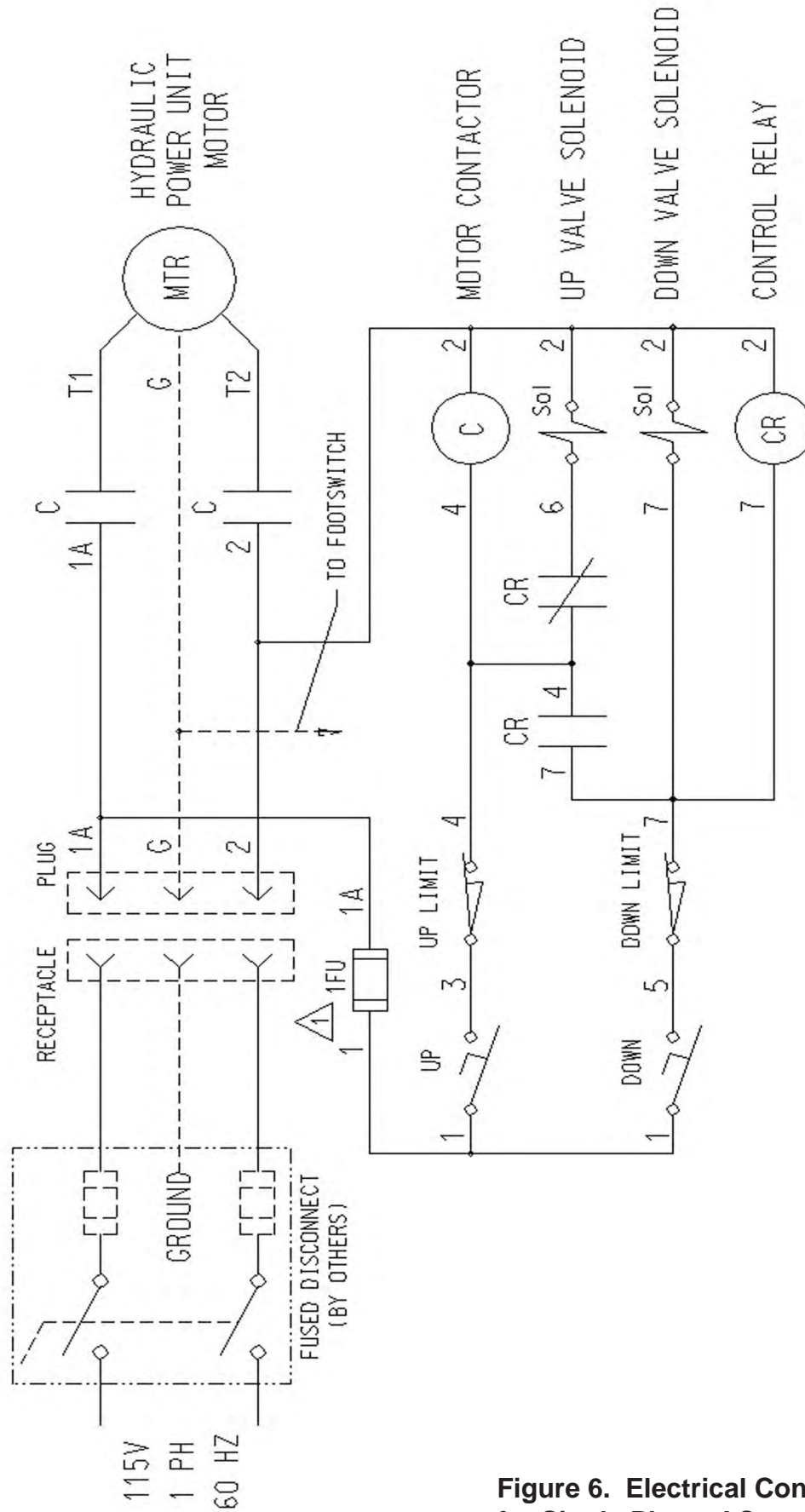


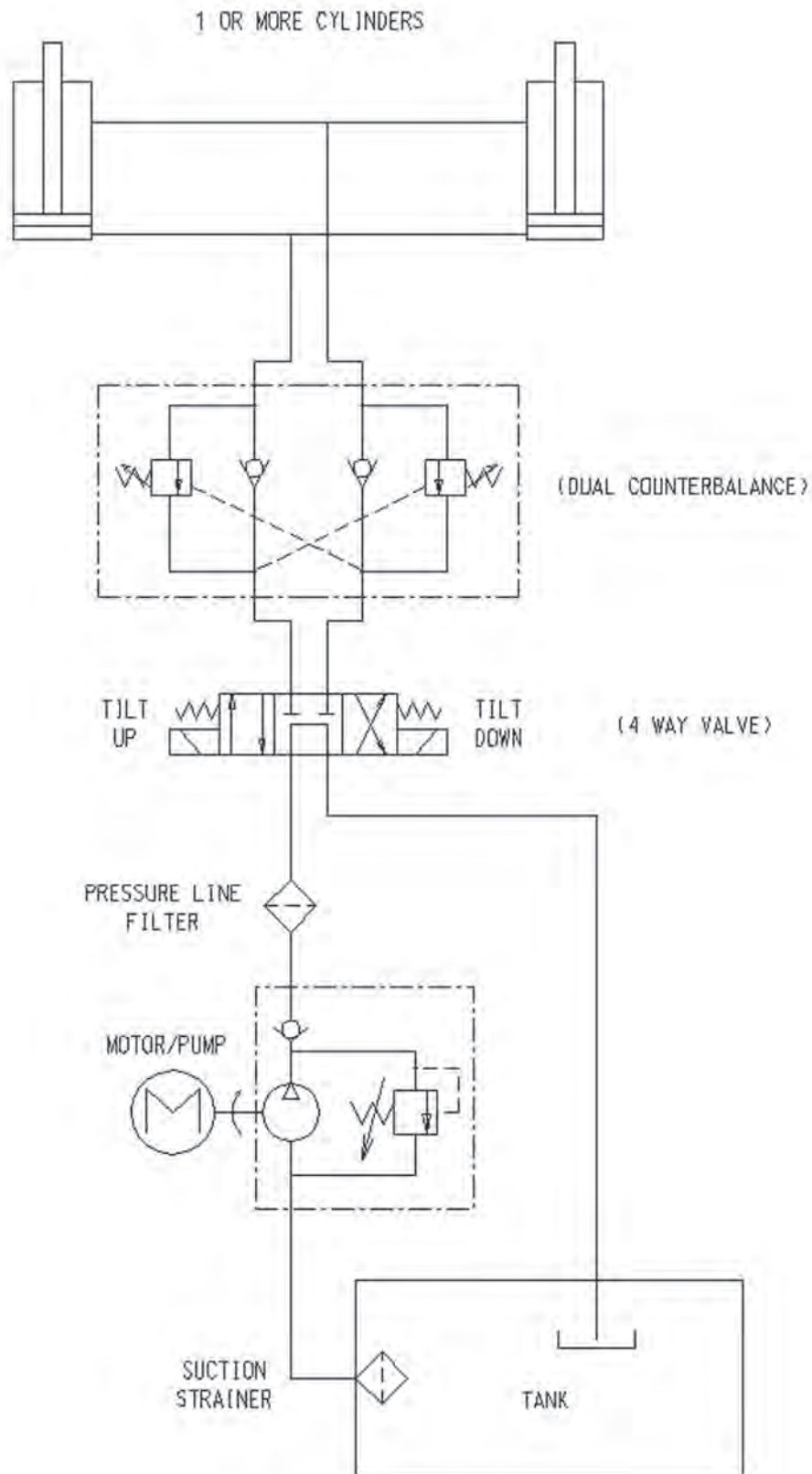
Figure 6. Electrical Connections for Single Phase AC



THE FOLLOWING WIRING DIAGRAMS CAN BE USED FOR MACHINES WITH NO COAST/NO DRIFT VALVING OR DOUBLE-ACTING CYLINDERS.

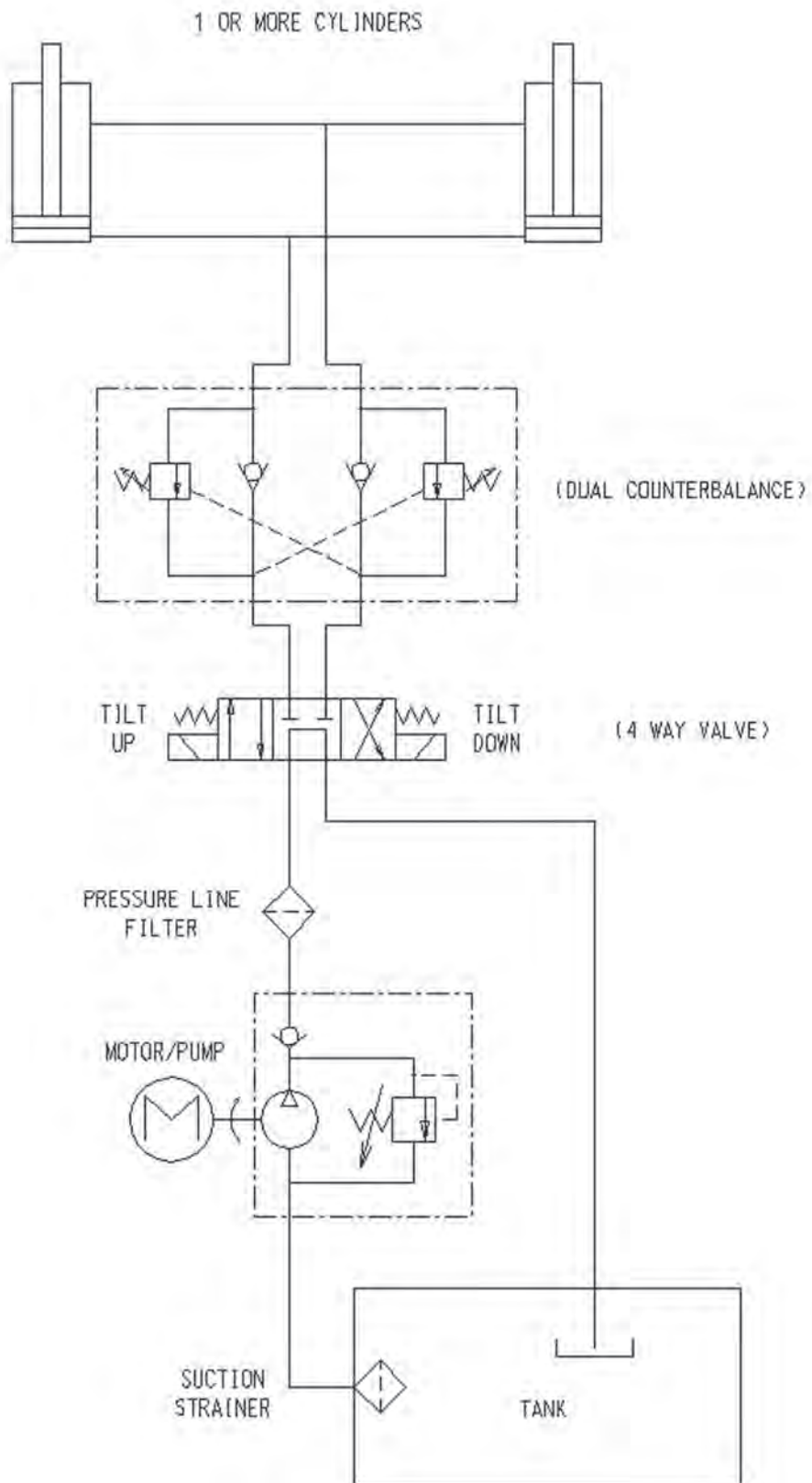
- SEE B-3046184 FOR 3 PHASE, RELAY, NO LIMITS
- SEE B-3048T01 FOR 3 PHASE, RELAY, UP LIMIT
- SEE B-3032618 FOR 3 PHASE, RELAY, UP/DOWN LIMITS
- SEE B-3062462 FOR 3 PHASE, RELAY, NO LIMITS, CONTROLS BY OTHERS
- SEE A-3046872 FOR 115-1-60, RELAY, UP/DOWN LIMITS
- SEE B-3048376 FOR 230-1-60, RELAY, UP/DOWN LIMITS
- SEE B-3058794 FOR 3 PHASE, NO RELAY, NO LIMITS
- SEE B-3027603 FOR 3 PHASE, NO RELAY, UP LIMIT
- SEE B-3035961 FOR 3 PHASE, NO RELAY, UP/DOWN LIMITS
- SEE A-3051890 FOR 115V, NO RELAY, NO LIMITS
- SEE A-3042T25 FOR 115V, NO RELAY, UP LIMIT
- SEE A-3038032 FOR 115V, NO RELAY, UP/DOWN LIMITS
- SEE B-3058T83 FOR 3 PHASE, MAINTAINED OPERATION
- SEE B-3046897 FOR 1 PHASE, MAINTAINED OPERATION
- SEE B-3059199 FOR 3 PHASE, DEADMAN OPERATION w/E-STOP
- SEE B-3062159 FOR 3 PHASE, RELAY, LIMITS, SLOW-UP VALVE
- SEE B-60014267 FOR 3 PHASE, RELAY, LIMITS, DUAL SERIES CONTROLS
- SEE B-60014299 FOR 3 PHASE, RELAY, LIMITS, KEY ON/OFF

Figure 7. Electrical Connections for Three Phase AC



- REFERENCE:
 SEE B-3045535 FOR RETURN LINE FILTER
 SEE B-3047820 FOR PRESSURE LINE FILTER
 SEE B-3050024 FOR PRESSURE LINE FILTER & VELOCITY FUSES
 SEE B-3055204 FOR PRESSURE LINE FILTER & (2) FLOW CONTROLS
 SEE B-3060988 FOR RETURN LINE FILTER & (2) FLOW CONTROLS
 SEE B-60003851 FOR RETURN LINE FILTER & (1) FLOW CONTROL
 SEE B-3062158 FOR RETURN FILTER, FLOW CONTROLS, & SLOW-UP VALVE

Figure 8. Hydraulic Connections for Single Phase AC



- REFERENCE:
 SEE B-3045535 FOR RETURN LINE FILTER
 SEE B-3047820 FOR PRESSURE LINE FILTER
 SEE B-3050024 FOR PRESSURE LINE FILTER & VELOCITY FUSES
 SEE B-3055204 FOR PRESSURE LINE FILTER & (2) FLOW CONTROLS
 SEE B-3060988 FOR RETURN LINE FILTER & (2) FLOW CONTROLS
 SEE B-60003851 FOR RETURN LINE FILTER & (1) FLOW CONTROL
 SEE B-3062158 FOR RETURN FILTER, FLOW CONTROLS, & SLOW-UP VALVE

Figure 9. Hydraulic connections for Three Phase AC

FIGURES & DIAGRAMS

PART III: UPENDER

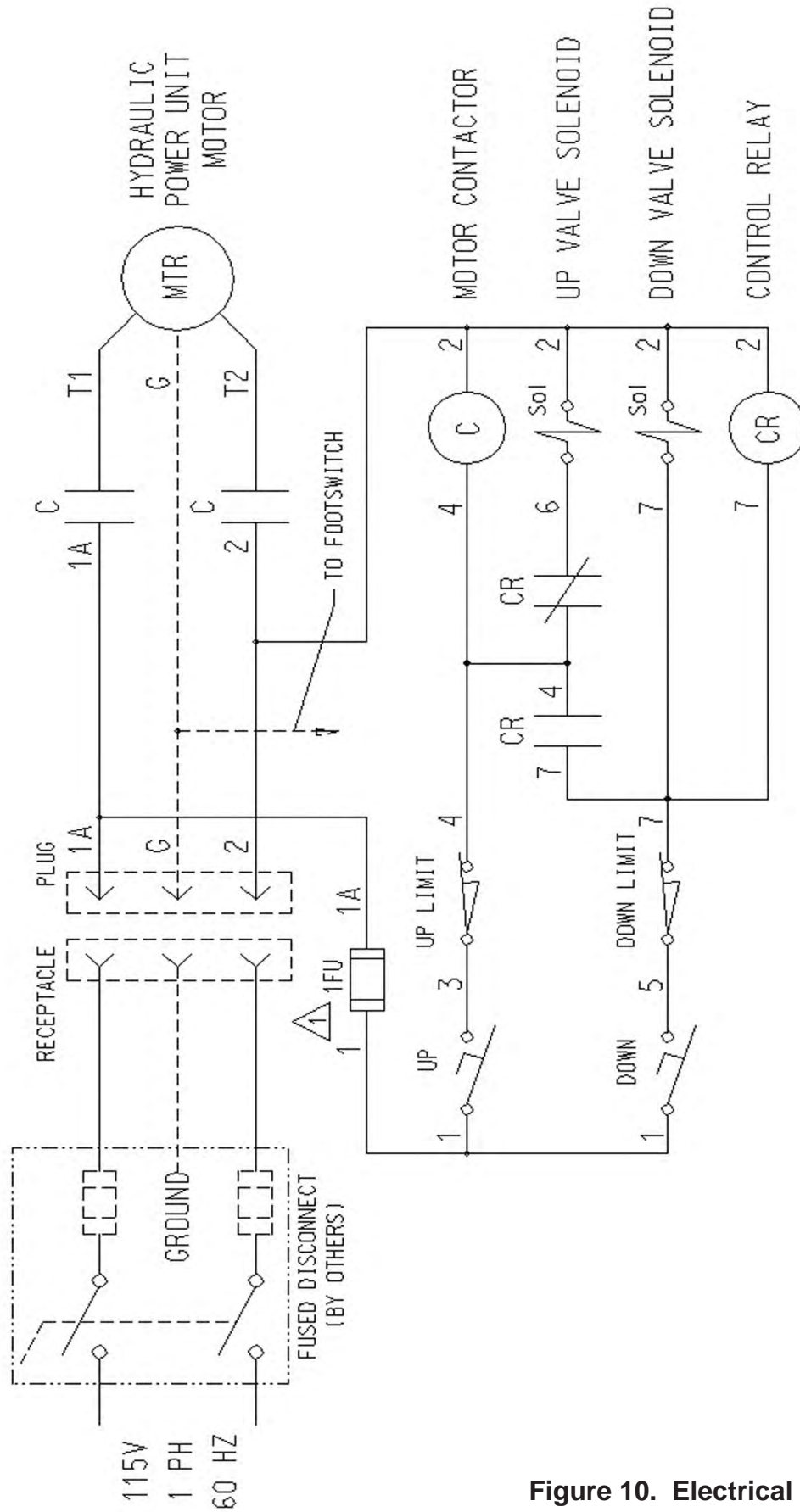
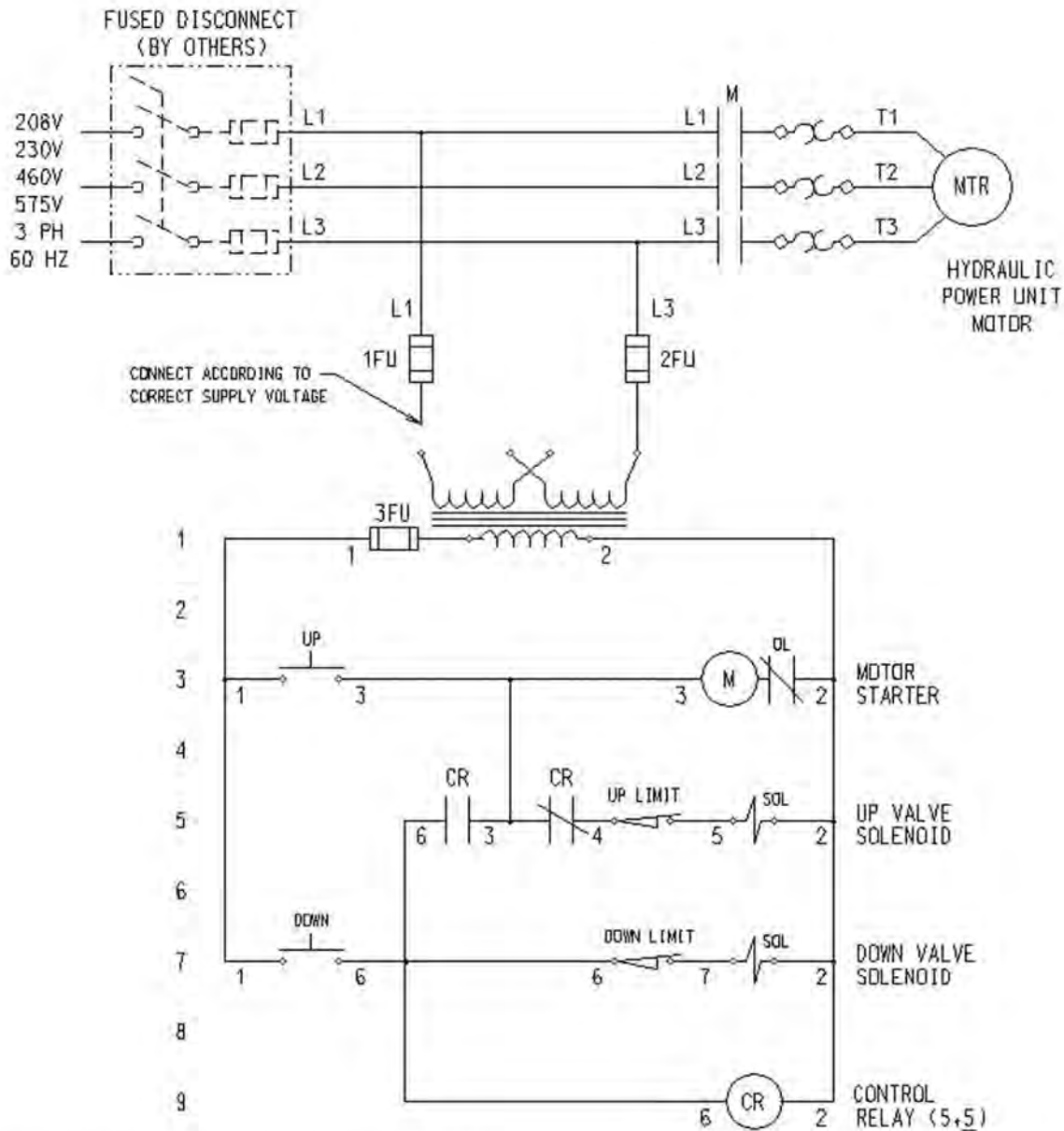


Figure 10. Electrical Connections for Single Phase AC

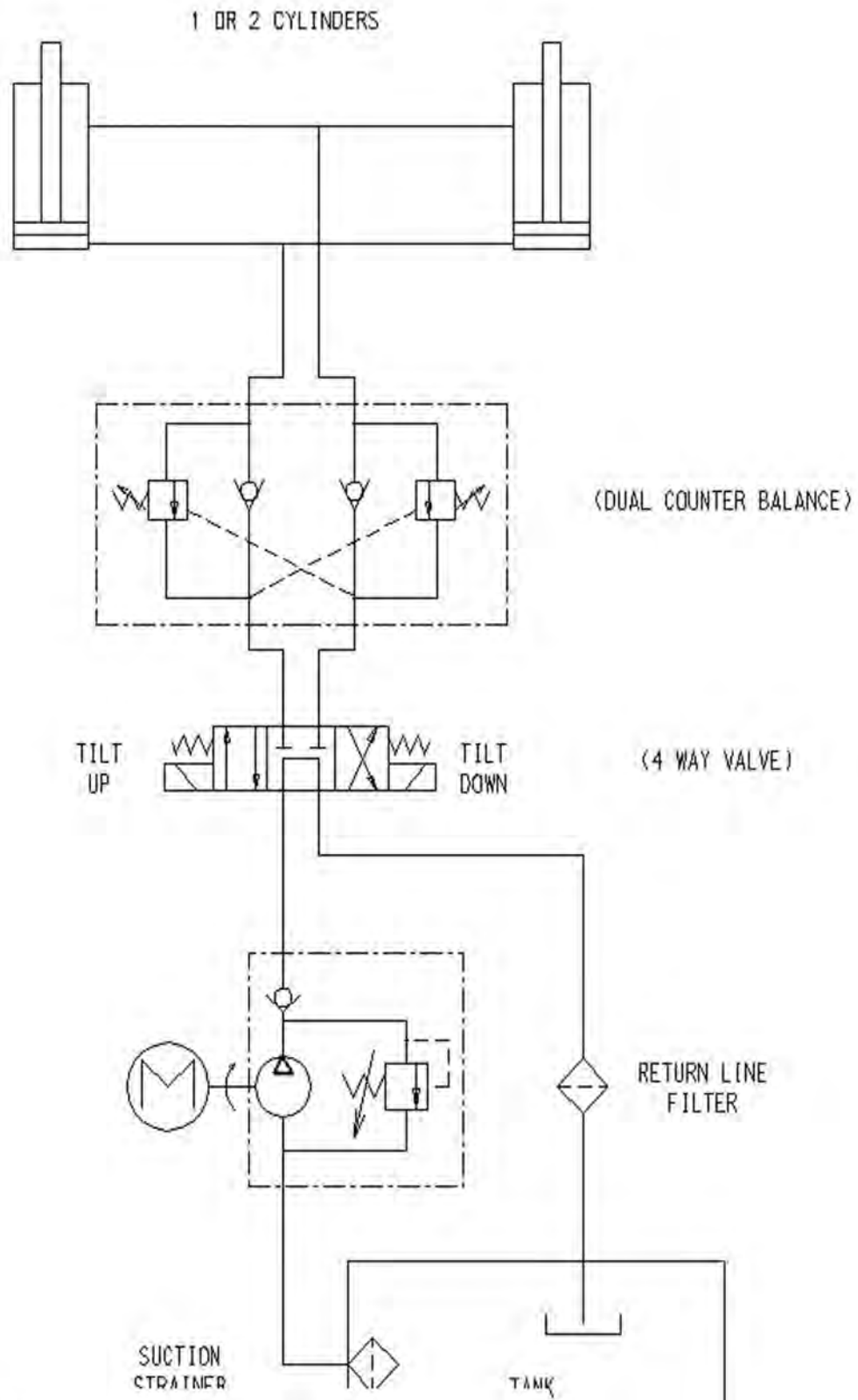
OPERATING AND MAINTENANCE MANUAL



THE FOLLOWING WIRING DIAGRAMS CAN BE USED FOR MACHINES WITH NO COAST/NO DRIFT VALVING OR DOUBLE-ACTING CYLINDERS.

- SEE B-3046184 FOR 3 PHASE, RELAY, NO LIMITS
- SEE B-3048T01 FOR 3 PHASE, RELAY, UP LIMIT
- SEE B-3032618 FOR 3 PHASE, RELAY, UP/DOWN LIMITS
- SEE B-3062462 FOR 3 PHASE, RELAY, NO LIMITS, CONTROLS BY OTHERS
- SEE A-3046872 FOR 115-1-60, RELAY, UP/DOWN LIMITS
- SEE B-3048376 FOR 230-1-60, RELAY, UP/DOWN LIMITS
- SEE B-3058794 FOR 3 PHASE, NO RELAY, NO LIMITS
- SEE B-3027603 FOR 3 PHASE, NO RELAY, UP LIMIT
- SEE B-3035961 FOR 3 PHASE, NO RELAY, UP/DOWN LIMITS
- SEE A-3051890 FOR 115V, NO RELAY, NO LIMITS
- SEE A-3042T25 FOR 115V, NO RELAY, UP LIMIT
- SEE A-3038032 FOR 115V, NO RELAY, UP/DOWN LIMITS
- SEE B-3058183 FOR 3 PHASE, MAINTAINED OPERATION
- SEE B-3046897 FOR 1 PHASE, MAINTAINED OPERATION
- SEE B-3059199 FOR 3 PHASE, DEADMAN OPERATION w/E-STOP
- SEE B-3062159 FOR 3 PHASE, RELAY, LIMITS, SLOW-UP VALVE
- SEE B-60014267 FOR 3 PHASE, RELAY, LIMITS, DUAL SERIES CONTROLS
- SEE B-60014299 FOR 3 PHASE, RELAY, LIMITS, KEY ON/OFF

Figure 11. Electrical connections for Three Phase AC



- REFERENCE:
- SEE B-3045535 FOR RETURN LINE FILTER
 - SEE B-3041820 FOR PRESSURE LINE FILTER
 - SEE B-3050024 FOR PRESSURE LINE FILTER & VELOCITY FUSES
 - SEE B-3055204 FOR PRESSURE LINE FILTER & (2) FLOW CONTROLS
 - SEE B-3060908 FOR RETURN LINE FILTER & (2) FLOW CONTROLS
 - SEE B-60003051 FOR RETURN LINE FILTER & (1) FLOW CONTROL
 - SEE B-3062150 FOR RETURN FILTER, FLOW CONTROLS, & SLOW-UP VALVE

Figure 12. Hydraulic schematic for Single Phase AC

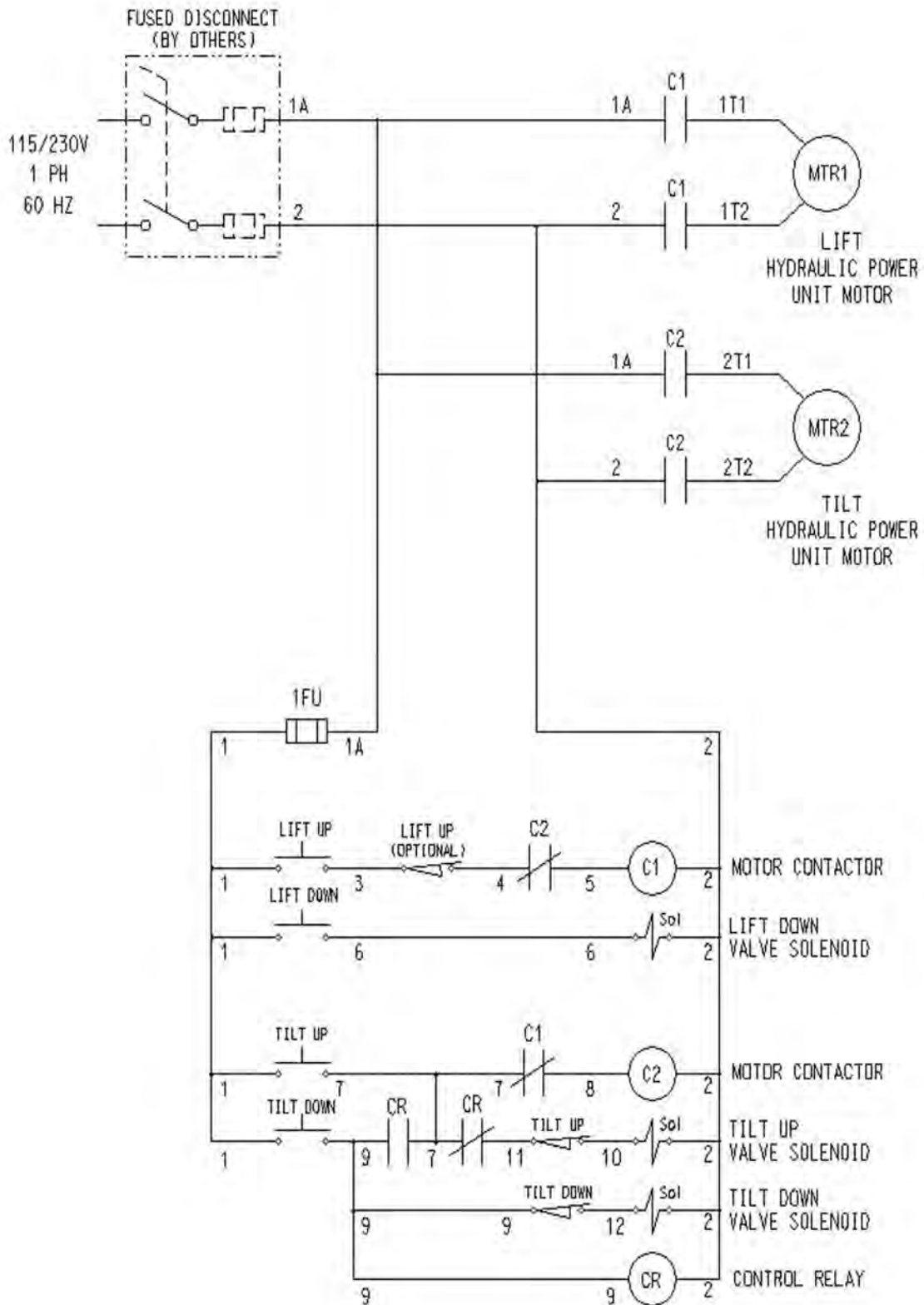


- REFERENCE:
- SEE B-3045535 FOR RETURN LINE FILTER
 - SEE B-3041820 FOR PRESSURE LINE FILTER
 - SEE B-3050024 FOR PRESSURE LINE FILTER & VELOCITY FUSES
 - SEE B-3055204 FOR PRESSURE LINE FILTER & (2) FLOW CONTROLS
 - SEE B-3060908 FOR RETURN LINE FILTER & (2) FLOW CONTROLS
 - SEE B-60003051 FOR RETURN LINE FILTER & (1) FLOW CONTROL
 - SEE B-3062150 FOR RETURN FILTER, FLOW CONTROLS, & SLOW-UP VALVE

Figure 13. Hydraulic Schematic for Three Phase AC

FIGURES & DIAGRAMS

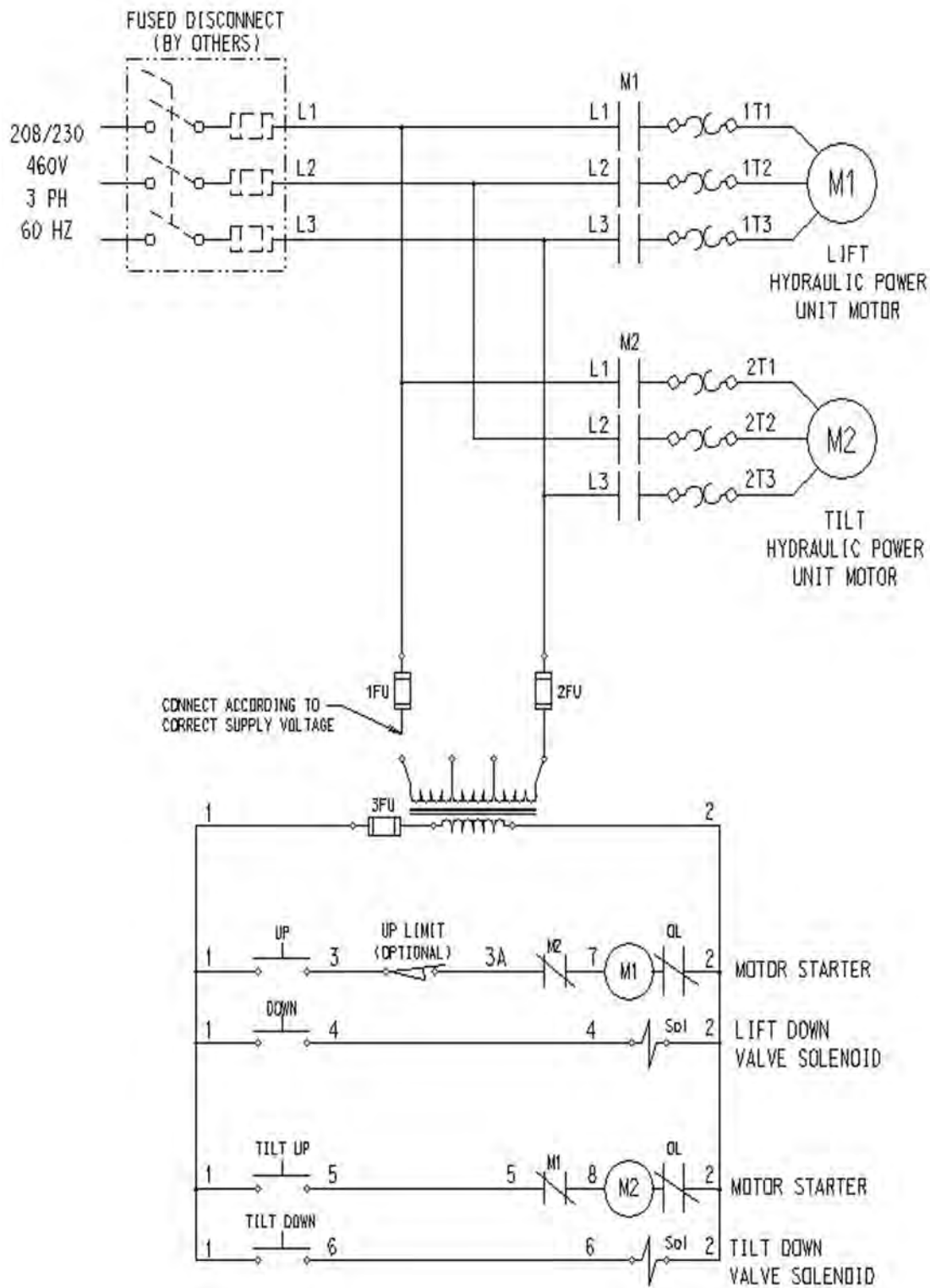
PART IV: LIFT / TILT



NOTE:

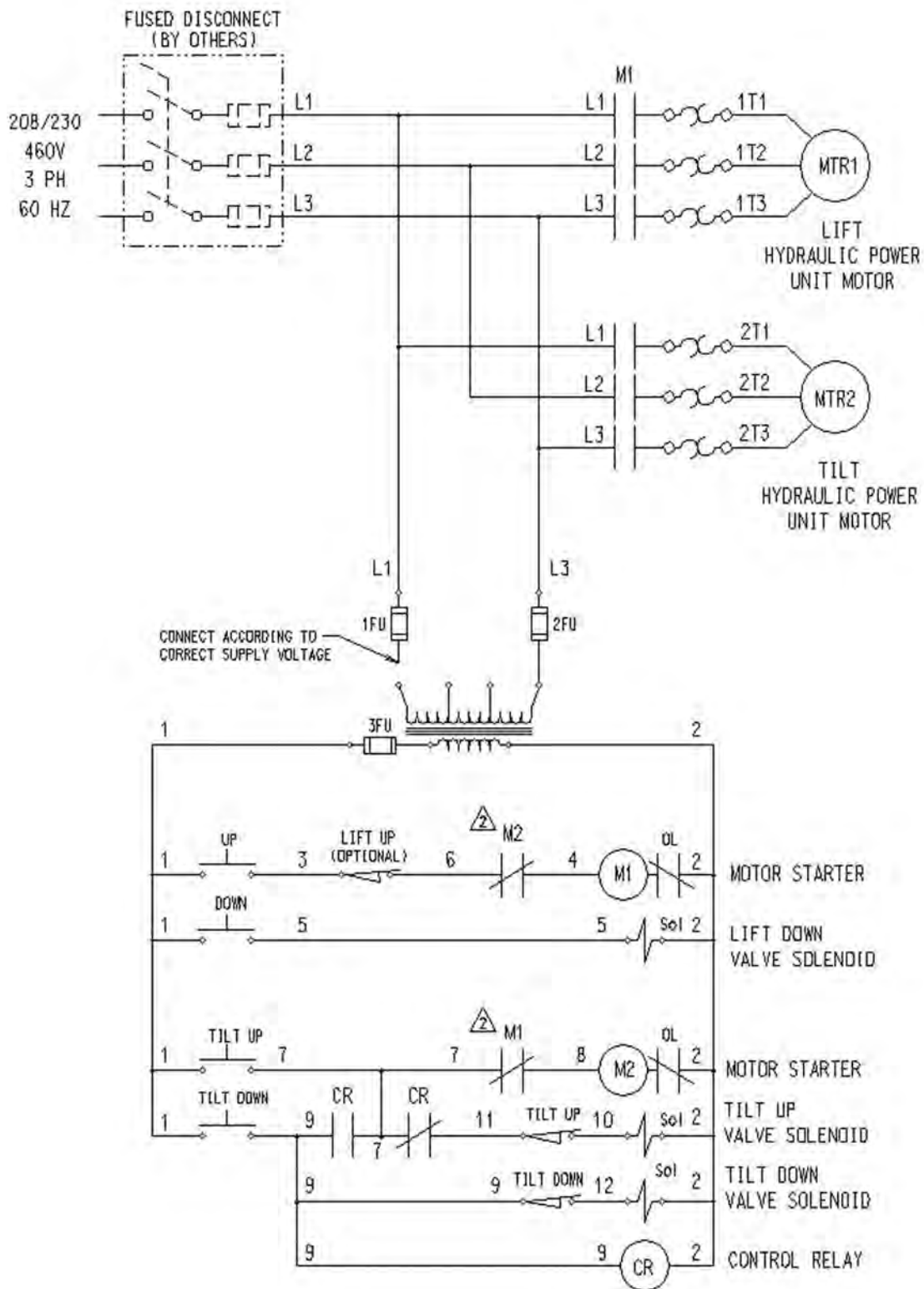
- 1.) THIS DIAGRAM MAY ALSO BE USED WHEN FOOTSWITCHES ARE USED IN PLACE OF PUSHBUTTONS.
- 2.) IF UP LIMIT SWITCH (OPTIONAL) IS ABSENT RUN WIRE #3 TO THE AUXILIARY CONTACT ON TILT MOTOR CONTACTOR.

Figure 14. Electrical Connections for Single Phase AC



NOTE:
UPPER TRAVEL LIMITSWITCH IS OPTIONAL.
IF UP LIMIT IS ABSENT, CONNECT WIRE 3
DIRECTLY TO NC CONTACT ON MOTORSTARTER.

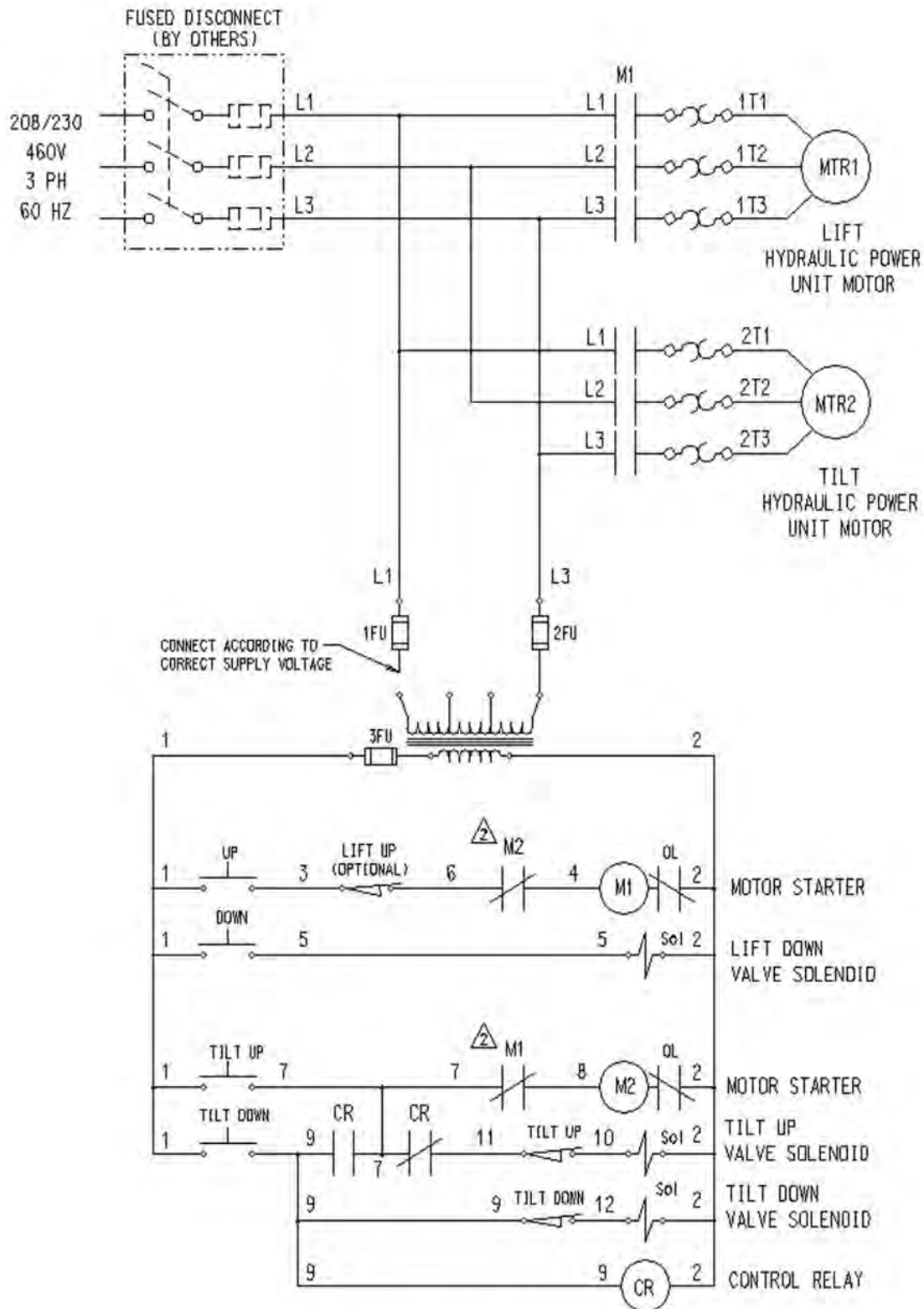
Figure 15. Electrical connections for Three Phase AC



NOTE:

- 1.) THIS DIAGRAM MAY ALSO BE USED WHEN FOOT SWITCHES ARE USED IN PLACE OF PUSHBUTTONS.
- 2.) IF LIFT UP LIMIT SWITCH IS ABSENT RUN WIRE #3 DIRECTLY TO THE N.C. CONTACT ON M2 MOTOR STARTER.

Figure 16. Hydraulic Schematics for Single Phase AC



NOTE:

- 1.) THIS DIAGRAM MAY ALSO BE USED WHEN FOOT SWITCHES ARE USED IN PLACE OF PUSHBUTTONS.
- 2.) IF LIFT UP LIMIT SWITCH IS ABSENT RUN WIRE #3 DIRECTLY TO THE N.C. CONTACT ON M2 MOTOR STARTER.

Figure 17. Hydraulic Schematics for Three Phase AC

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.

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. 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.

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Pallet Rotators



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