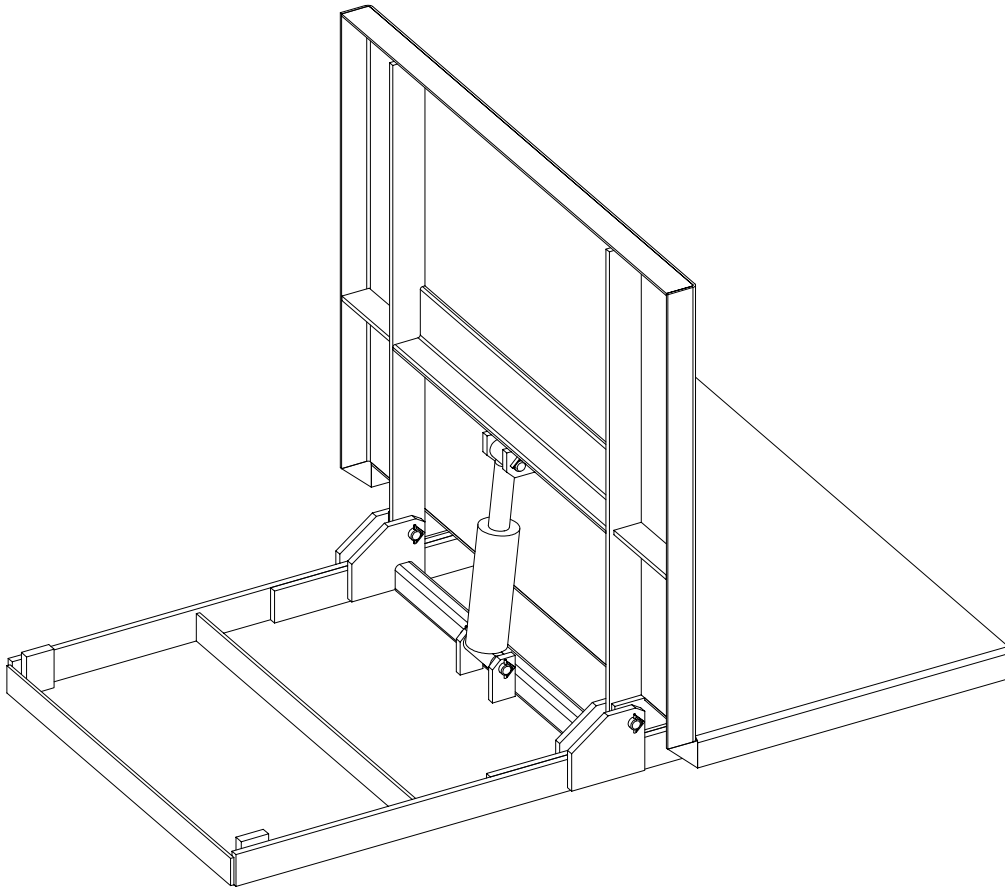


INSTALLATION, OPERATION, AND SERVICE MANUAL

FLIP-FLOP STYLE 90 DEGREE TILTER



P.O. Box 1058 • 1058 West Industrial Avenue • Guthrie, OK 73044-1058 • 405-282-5200 •
FAX: 405-282-8105 • www.autoquip.com

Item # 830FF

Version 1.0
05/2002

TABLE OF CONTENTS

Identification and Inspection	3
Dangers, Warnings, and Cautions	4
Label Identification	8
Specifications	12
Installation Instructions	13
Operating Instructions	16
Routine Maintenance	17
General Maintenance	19
Replacement Parts List	26
Troubleshooting Analysis	27

IMPORTANT

Please read and understand this manual prior to installation or operation of this unit. Failure to do so could lead to property damage and/or serious personal injury. If any questions arise, call a local representative or *Autoquip Corporation* at 1-888-811-9876 or 405-282-5200.

PLANNED MAINTENANCE PROGRAM

A local *Autoquip* representative provides a Planned Maintenance Program (PMP) for this equipment using factory-trained personnel. Call a local representative or *Autoquip Corporation* at 1-888-811-9876 or 405-282-5200 for more information.

IDENTIFICATION & INSPECTION

IDENTIFICATION

When ordering parts or requesting information or service on this unit, PLEASE REFER TO THE MODEL AND SERIAL NUMBER. This information is on a nameplate attached to the assembly. Replacement parts are available from a local *Autoquip* distributor.

INSPECTION

Immediately upon receipt of the unit, a visual inspection should be made to determine that it has not been damaged in transit. Any damage found must be noted on the delivery receipt. In addition to this preliminary inspection, the unit should be carefully inspected for concealed damage. Any concealed damage found that was not noted on the delivery receipt should be reported in writing to the delivering carrier within 48 hours.

The following is a checklist that will aid in the inspection of the tilter.

1. Examine the entire unit for any signs of mishandling. Pay special attention to the power unit and pushbuttons.
2. Thoroughly examine all connections, making sure they have not vibrated loose during transit.
3. After installation, raise the tilter and inspect the base frame, platform, tilter stops, and cylinder plumbing connections.

DANGERS, WARNINGS & CAUTIONS

SAFETY ALERTS (Required Reading!)

The following SAFETY ALERTS are intended to create awareness of owners, operators, and maintenance personnel of the potential safety hazards and the steps that must be taken to avoid accidents. These same alerts are inserted throughout this manual to identify specific hazards that may endanger uninformed personnel. Identification of every conceivable hazardous situation is impossible. Therefore, all personnel have the responsibility to diligently exercise safe practices whenever exposed to this equipment.



DANGER!

Identifies a hazardous situation that presents the imminent probability of death or of severe personal injury!!



WARNING!

Identifies a hazardous situation that has the potential of causing death or serious personal injury.



CAUTION!

Identifies a hazardous situation that could lead to the possibility of personal injury of death, and/or may result in equipment damage.

DANGERS, WARNINGS & CAUTIONS

Read and understand this manual and all labels prior to operating or servicing this Tilter. All labels are provided in accordance with ANSI Z535.4.



DANGER!

To avoid personal injury, stand clear of tilter mechanism while it is in motion.



DANGER!

Do not install the tilter in a pit unless it has a bevel toe guard or other approved toe protection. A shear point can exist which can cause severe injury to the foot.



DANGER!

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



DANGER!

Tilters are designed individually for a specific load and application. To avoid personal injury, do not change the load or application from the original design.

DANGERS, WARNINGS & CAUTIONS



DANGER!

To avoid personal injury, NEVER go under the tilter platform until the load is removed and the platform is securely blocked in position.



WARNING!

NEVER stand, sit or ride on the Tilter.



WARNING!

All warning and information decals should be in place as outlined in the “Label Identification” section. If decals are missing or damaged, they should be replaced with new ones. Contact *Autoquip* for replacements.



WARNING!

Do not attempt to remove the velocity fuse until the cylinders have all hydraulic pressure removed. Failure to do so could result in personal injury or death!



WARNING!

Tilter platforms traveling below floor levels may create openings, and the shape of the load and how the load is arranged on the Tilter may create a toe hazard as the load passes the top edge of the pit. Both situations may require guarding in accordance with Federal Regulations. Any such guarding must be installed prior to operating the Tilter.

DANGERS, WARNINGS & CAUTIONS



CAUTION!

Do not continue to depress the “TILT” or “TILT RETURN” button on the controller if the tilter is not raising. To do so may result in permanent damage to the motor or pump.



CAUTION!

Never run the pump for more than a couple of seconds without pumping oil. This applies to low oil conditions, improper motor rotation, running the pump against the relief pressure, running overloaded beyond capacity, or running at reduced speed because of pinched or obstructed hydraulic lines.



CAUTION!

Do not operate the power unit on relief for more than a few seconds. When on relief, the valve will make a squealing sound.



CAUTION!

Precautions should be taken to prevent the introduction of contaminants such as dirt or other foreign material into the system through open fittings, pipes or disassembled components. Contamination will ruin the hydraulic system.



CAUTION!

Use only approved oils in the tilter. See “Specifications” section.

LABEL IDENTIFICATION

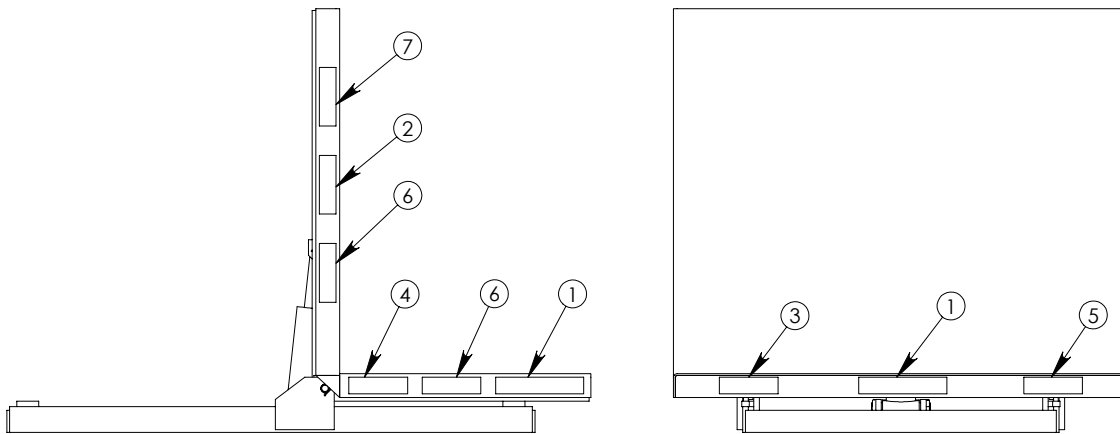


Figure 1 Label Placement Diagram

Flip-Flop Tilter			
Item No.	Qty	Description	Part No.
1	2	Caution – Familiarize Yourself With Operators Manual	36401487
2	4	Caution – Do Not Go Under Lift Platform . . .	36400679
3	2	Warning – No Riders	36403707
4	1	<i>Autoquip</i> Serial Number Nameplate	36401511
5	2	Capacity	36401586
6	4	Warning – Stay Clear When Tilted	36403822
7	4	Warning – Stand Clear When Tilting	36403830

LABEL IDENTIFICATION

Note: Labels shown here are not actual size.



Figure 2 Label 36401487



Figure 3 Label 36400679

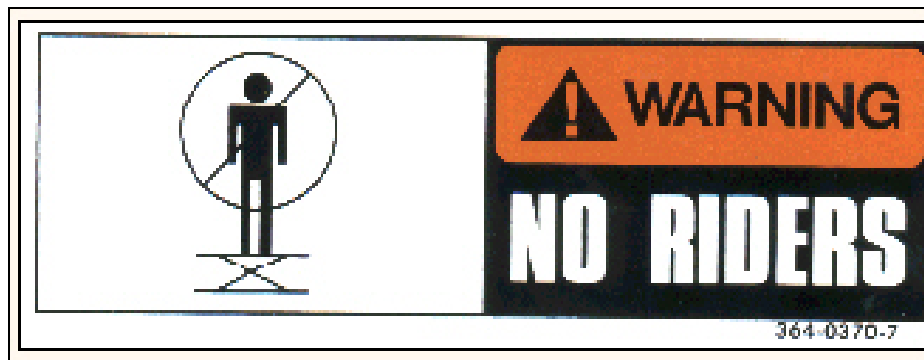


Figure 4 Label 36403707

LABEL IDENTIFICATION



Figure 5 Label 36401511



Figure 6 Label 36401586



Figure 7 Label 36403822

LABEL IDENTIFICATION



Figure 8 Label 36403830

SPECIFICATIONS

LOAD CAPACITY

The load capacity rating is stamped on a metal plate attached to one side of the platform. This figure is a net capacity rating for a Flip-Flop furnished with the standard platform. The relief valve of the pumping unit has been set to raise the weight, plus a small amount for overload. **Tilters should not be overloaded beyond the established capacity as damage and/or personal injury may result.**

UNBALANCED LOADING

The stabilization provided is basically for balanced loads. If special attachments extend beyond the length and/or width dimensions of the platform, the capacity is reduced.

PUMP PRESSURE

This lift incorporates a positive displacement pump machined to a high degree of accuracy and specially adapted to requirements of higher-pressure ranges over that of a standard pump. Therefore, standard factory models of the same manufacture cannot replace it.

The pump can operate efficiently at intermittent pressures up to 3200 PSI and continuous duty to 2500 PSI. The safety relief valve in the power unit is factory-set to stay within the parameters of the pump and lift requirements.

INSTALLATION INSTRUCTIONS

FLOOR INSTALLATION

1. Make sure installation area is clean before starting.



DANGER!

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

2. If the permanent electrical work is not complete, some means of temporary lines with an on-off device for the power supply should be set up for testing purposes.
3. Place the Flip-Flop in the installation area.



CAUTION!

When moving the Tilter, do not attempt to pick it up by the platform; it is hinged and could be damaged. Pick up the Tilter from under the base frame ONLY using a strap sling.

4. Make temporary electrical connections and permanent hydraulic connections. Raise the tilter approximately one foot using the "TILT" button. Then tilt it back fully, holding the "TILT RETURN" button for approximately 60 seconds. Repeat this process five to seven times to bleed any air out of the hydraulic system, alternating directions each time.
5. Tilt the Flip-Flop to its fully tilted position then tilt return to ensure the tilt path is unobstructed and that the tilter operates satisfactorily throughout its full travel.



DANGER!

To avoid personal injury, NEVER go under the tilter platform until the load is removed and the platform is securely blocked in position.

INSTALLATION INSTRUCTIONS

6. The base frame of the tilter has pre-drilled holes for lagging it securely to the floor. Mark the holes, drill, and install with anchors. Tilters with oversize platforms have minimum pull out requirements of 2,000 lbs. for each anchor.
7. Make permanent electrical connections and operate the tilter through a few cycles.

PIT INSTALLATION -- MODELS WITH BEVEL TOE GUARDS.



DANGER!

Do not install the tilter in a pit unless it has a bevel toe guard or other approved toe protection. A shear point can exist which can cause severe injury to the foot.

1. Check the pit dimensions. Length and width should be 2" minimum longer and wider than the tilter platform.
2. Check the conduit chase entrance into the pit. The diameter should be 3". If the permanent electrical work is not complete, some means of temporary lines with an on-off device for the motor should be set up for testing purposes.



DANGER!

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

3. Lower the tilter into the pit and check for proper height. The tilter should be solid and flush with the pit angle framing. If needed, shim to the desired height.



CAUTION!

When moving the Tilter, do not attempt to pick it up by the platform; it is hinged and could be damaged. Pick up the tilter from under the base frame ONLY using a strap sling.

INSTALLATION INSTRUCTIONS

4. Make temporary electrical connections and permanent hydraulic connections. Raise the tilter approximately one foot using the “TILT” button. Then tilt it fully, holding the “TILT RETURN” button for approximately 60 seconds. Repeat this process five to seven times to bleed any air out of the hydraulic system, alternating directions each time.
5. Raise and lower the tilter to make positioning adjustments and align the platform in the pit with a proper clearance of $\frac{3}{4}$ ” minimum around the edges from the platform to the pit angle.



DANGER!

To avoid personal injury, NEVER go under the tilter platform until the load is removed and the platform is securely blocked in position.

6. Make the permanent electrical connections and operate the Flip-Flop through a few cycles.

CLEAN UP

1. Clean up any debris from the area. A clean installation makes a good impression and creates a much safer environment!
2. Touch-up paint is available from *Autoquip* for repair of damaged paint surfaces.



WARNING!

All DANGER, WARNING, and CAUTION labels and informational decals and plates must be intact and in place on the tilter. Contact an Autoquip representative if labels are missing or damaged. See “DANGERS, WARNINGS, and CAUTIONS” section of this manual.

OPERATING INSTRUCTIONS

1. Tilters have maximum lifting capacity ratings (See the "Specifications" section). The safety relief valve has been factory set to open at a point slightly above the rated load and allows the oil to bypass into the reservoir. **The safety relief valve should not be adjusted for any reason as it could cause the motor to prematurely burn out.** Applying loads exceeding the rated capacity of the Tilter may result in excessive wear and damage.
2. This type of tilter utilizes a double-acting cylinder and is designed primarily for in-plant applications. It is furnished with a constant pressure foot switch or pushbutton controls. Actuating the "TILT" or "TILT RETURN" buttons will cause oil to enter one side of the cylinder piston, and oil to be dumped to a tank from the other side, thus causing the tilter platform to travel.
3. The Flip-Flop is designed to tilt a full ninety degrees. As the platform tilts it will reach a point just past mid-travel where the center of gravity of the load will attempt to force the platform to travel the remaining distance under force of gravity. During this last 35-40 degrees of tilt, the tilt speed is regulated by a counter balance valve and fixed flow controls.
4. At any point during the complete tilting sequence, removal of the operators' foot or hand from the "TILT" or "TILT RETURN" switch or button interrupts the tilt sequence by causing all oil flow to or from any of the cylinders to cease. This will immediately stop movement of the Flip-Flop and "lock" the platform into its current position.



CAUTION!

Do not continue to activate the "TILT" button if the tilter is not raising or if it has reached the fully tilted position. To do so may result in permanent damage to the Tilter.

ROUTINE MAINTENANCE

Normally tilters will require very little maintenance. However, a routine maintenance program could prevent costly replacement of parts and/or downtime.



DANGER!

To avoid personal injury, NEVER go under the tilter platform until the load is removed and the platform is securely blocked in position.

MONTHLY INSPECTION

1. Check oil level (see oil recommendations in this section) and add appropriate oil when necessary.
2. Check for any visible leaks. Correct as necessary.
3. Check any unusual noise when it occurs. Determine the source and correct as necessary.
4. Check all wiring for looseness or wear. Repair at once.

OIL REQUIREMENTS

Change oil yearly, or more frequently if it darkens materially or feels gummy or gritty. Do not use hydraulic-jack oil, hydraulic fluids, brake fluids, or automatic transmission fluid.

ROUTINE MAINTENANCE

Oil Viscosity Recommendations

Environment (Ambient Temperatures)	Recommended Oil
Indoor location, variable temperatures (30 - 100° F)	10W30 or 10W40 Multiviscosity motor oil
Indoor location, consistent temperatures (70° F)	SAE-20W motor oil
Outdoor location, (-10 - 100° F)	SAE 5W30 Multiviscosity motor oil
Cold-storage warehouse (10 - 40° F)	5W30 Multiviscosity motor oil
Freezer (-40° F to 0° F)	Consult Factory

OIL CAPACITY

Oil capacity varies with tank size, but can be calculated with the following formula:

$$\frac{\text{Tank Width X Length X Height (in inches)}}{231 \text{ (cubic inches per gallon)}}$$

GENERAL MAINTENANCE

CYLINDER REPACKING

1. Tilt the Tilter to its fully tilted position and the platform wing resting on the base supports.
2. Hold the “TILT” or “TILT RETURN” control for several seconds once the platform is at rest to make sure pressure in the lines is bled down.
3. Disconnect the cylinder hose at the power unit end and insert into the oil-fill hole of the reservoir (if possible).



DANGER!

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

4. Loosen and remove the transition hose from the velocity fuse and remove the velocity fuse from the elbow in the lower cylinder port. A plug should be placed in the ends of the transition hose and velocity fuse to prevent oil spillage or contamination. Remove the pin retainers and pins and take the cylinder out.
5. Push the rod fully into the cylinder to eject any remaining oil.
6. Pull the rod out of the cylinder sufficiently to gain access to the face spanner wrench holes on the rod end of the cylinder. **Do not allow oil or dirt to be pulled back into the cylinder open port.**
7. Using a spanner wrench, turn the bearing assembly clockwise until the tip of the retainer appears in the slot in the outer surface of the cylinder tube.
8. Insert a small blade screwdriver under the tip of the retainer and turn counter clockwise until the retainer is free of the slot. **NOTE: The wire retainer may be a cutting or puncturing hazard.**
9. Pull the rod out of the tube slowly to remove the rod and bearing assembly. **NOTE: Use caution to prevent surface damage to the rod that could result in seal failure and/or leakage.**

GENERAL MAINTENANCE

10. Inspect the bore of the tube. Hone if necessary to remove any surface imperfections in the bore. Flush thoroughly after honing to remove chips and grit.
11. Remove the piston locknut and slide the piston and bearing assembly off of the rod. Take care to protect the rod surface from damage.
12. Install new packing and seals on the piston, rod, and bearing assembly, or replace the complete piston. Inspect all grooves and seal surfaces for any imperfections and repair or replace as necessary.
13. Grease all seals and packing liberally and install the bearing assembly and the piston on the rod. Torque the locknut to 500 ft-lbs.
14. Install the rod into the cylinder tube taking care not to damage any seals or packing.
15. Align the retainer hole in the bearing assembly groove with the slot in the tube. Insert the retainer hook end in the hole/slot. Using a spanner wrench, turn the bearing assembly clockwise until the retainer is completely inserted in the groove/slot in the tube.
16. Install the assembled cylinder into the tilter. Line up the upper clevis and insert the clevis pin into the clevis and lug assembly. Install the pin retainer in the pin. Force the cylinder barrel down and locate the lower cylinder clevis on the base clevis. Insert the pin through the clevis and lug assembly and install the pin retainer.
17. Remove the plugs in the velocity fuse and attach it to the cylinder elbow, making certain that the arrow on the velocity fuse is pointing away from the cylinder. Attach the transition hose to the velocity fuse.
18. Turn the electrical supply back on and raise and then lower the platform, continuing to hold the "DOWN" button about 30 seconds after the platform is fully lowered. Repeat this 10 to 15 times to purge air from the cylinders and hydraulic lines. It may take 15 to 30 seconds time to fill the empty cylinders before movement is noted.
19. Check the oil level in the power unit reservoir. See "Oil Requirements" in the Maintenance section of this manual.

GENERAL MAINTENANCE

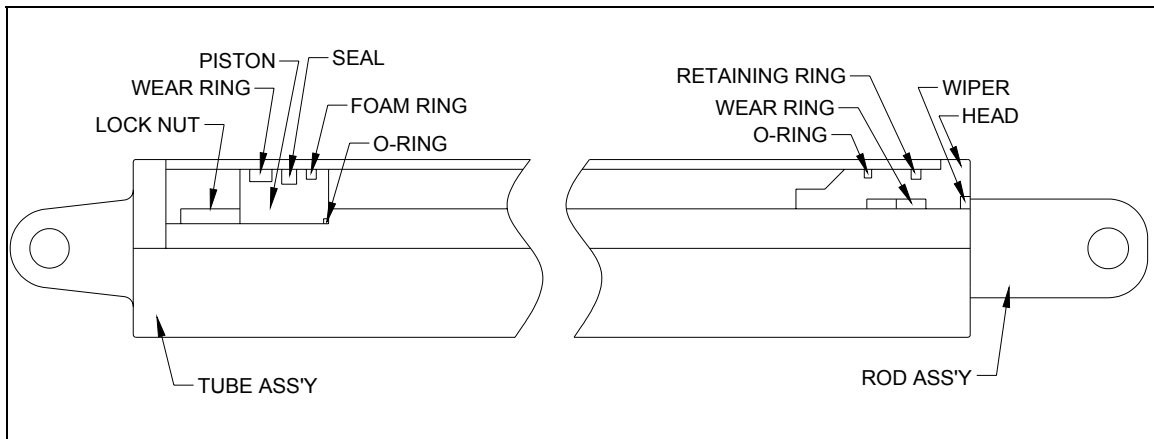


Figure 10 Double Acting Hydraulic Cylinder

GENERAL MAINTENANCE

PIPE THREAD SEALANT

Loctite PST #567 pipe thread sealant or equivalent is recommended. **Do not use Teflon tape.** Tape fragments can cause malfunctioning of the hydraulic system.

VELOCITY FUSE REPLACEMENT



DANGER!

Do not attempt to remove the velocity fuse until the hydraulic pressure has been removed from the lifting cylinders and hydraulic hoses. Failure to follow these instructions could result in personal injury or death!

Never attempt to take a velocity fuse apart and repair it. These are precision devices that are factory assembled under exacting conditions. Velocity fuses should always be replaced.

1. The arrow on the exterior surface of the velocity fuse shows the direction of the restriction to the oil flow. The arrow should always point away from the cylinder.
2. **Do not use Teflon tape on the threaded connections of a velocity fuse.** Tape fragments can cause malfunctioning of the fuse.
3. Check all fitting connections for hydraulic leaks and tighten as necessary.

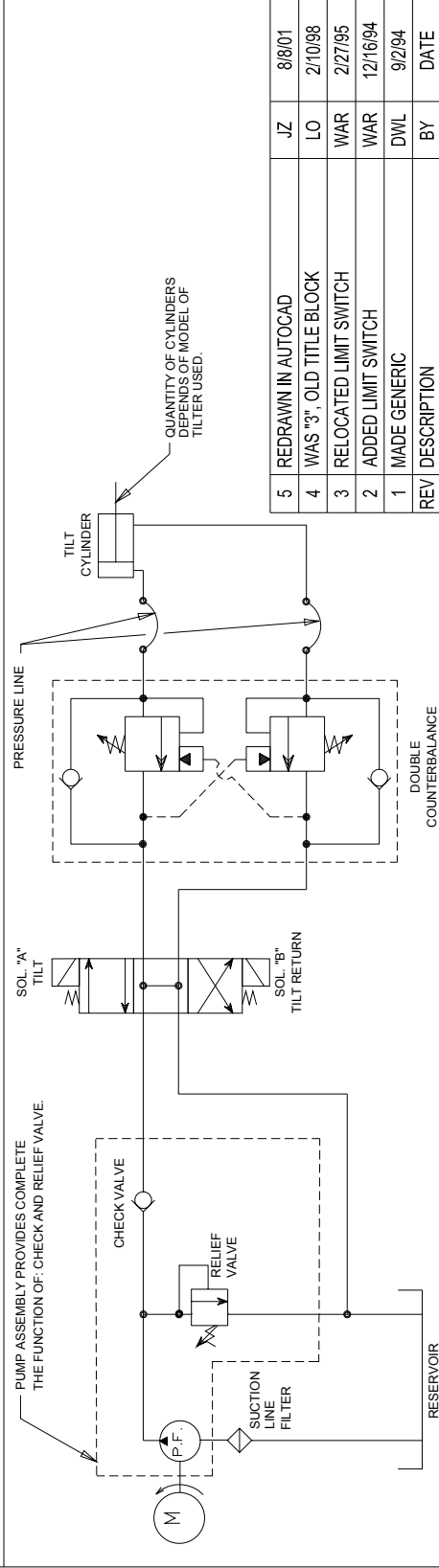
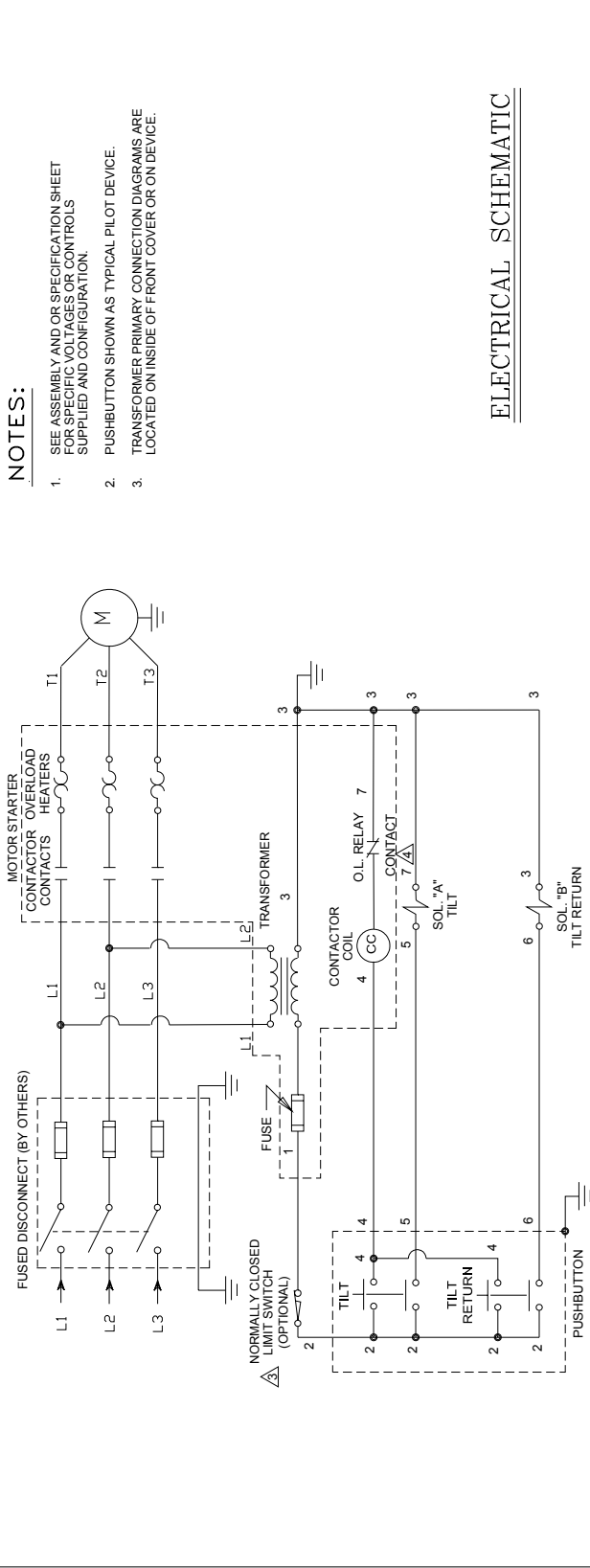
HOSE ORIENTATION

To prevent damage to the cylinder hose and possible failure of tilter, it is necessary to establish a correct hose shape and pattern of movement as follows:

1. Tilt the tilter platform.
2. Tilt the tilter carefully and check to see that the hose is free and clear of the cylinder and the linkage assemblies. If not, twist the hose in the direction necessary to clear it of any obstruction and then lock the swivel fitting securely.

GENERAL MAINTENANCE

658-1273-3



5	REDRAWN IN AUTOCAD	JZ	8/8/01
4	WAS "3", OLD TITLE BLOCK	LO	2/10/98
3	RELOCATED LIMIT SWITCH	WAR	2/27/95
2	ADDED LIMIT SWITCH	WAR	12/16/94
1	MADE GENERIC	DWL	9/2/94
REV DESCRIPTION		BY	DATE
JOB NAME:		ORDER NO:	

Autoquip

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REFERENCE DRAWING: 658-1181-2C
 APPROXIMATE WEIGHT: <2T

DRAWING TITLE: EHS FOR STE TILTER W/ POWERED TILT RETURN

DRAWN BY: BY DATE: 3/6/92

QTY REQD: 1 OF 1

REV: 5

DRAWING NUMBER: 658-1273-7

SIZE: A

Figure 11 Electro-Hydraulic Schematic

GENERAL MAINTENANCE

WIRING AUTOQUIP "SUPER TORQUE" MOTORS

Because *Autoquip* "Super-Torque" motors actually deliver substantially more horsepower than their nameplate rating, they must always be wired for heavier current-draw than standard motors of the same nameplate rating. However, because of the starting efficiency and superior running characteristics of the "Super-Torque" motor, circuit components do not have to be as large as for standard motors of equal delivered horsepower.

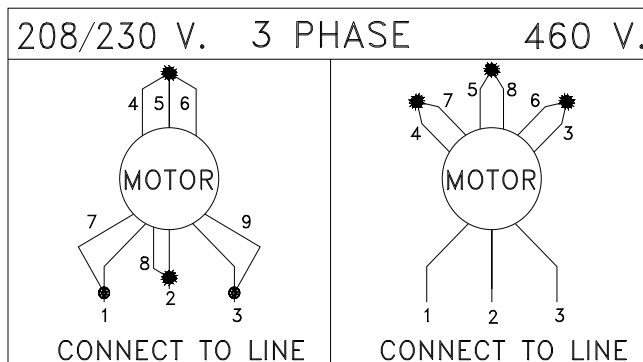
The following chart should be referenced in connecting these motors to power sources.

HP and Source	Fuse Size	Circuit Breaker
1½ HP / 208-230 V/60 CY/3 PH	15 A	10 A
1½ HP / 460 V/60 CY/ 3 PH	7.5 A	5 A

5 HP	208 Volts	230 Volts	460 volts
Full Load Amperages	15.8 AMPS	14.8 AMPS	7.4 AMPS

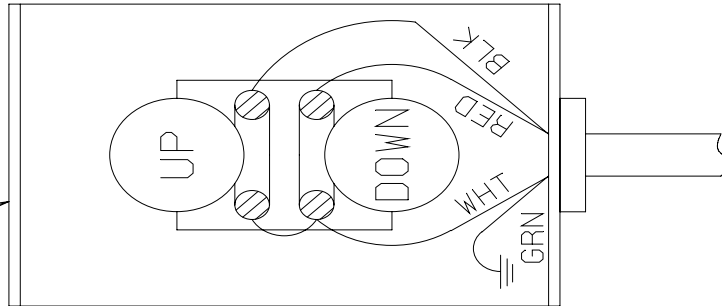
NOTE: All amperage draws shown are full-load amperages.

MOTOR CONNECTION DIAGRAMS



GENERAL MAINTENANCE

STANDARD WALL MOUNT PUSHBUTTON SWITCH
(FRONT VIEW, COVER REMOVED)



NOTES:

1. WARNING: ELECTRICAL HAZARD
DISCONNECT POWER BEFORE
WIRING THIS ACCESSORY.
2. COLOR CODING SHOWN CORRESPONDS TO
EXISTING 16/4 SO CONTROL CORD ON
LIFT.
3. USE APPROPRIATE WIRE, CONDUIT, ETC.
TO SATISFY LOCAL CODES. (BY OTHERS.)

© 2000 COPYRIGHT RESERVED AUTOEQUIP CORPORATION This drawing is the sole property of Autoequip Corp. and cannot be used for design & construction without permission of Autoequip Corp.	REFERENCE DWG.	DRAWING TITLE STD WALL MOUNT PUSHBUTTON WIRING DIAGRAM	JOB NAME: EX: 108 C/PSE: OK 73044 888-311-4876	NO.	REVISIONS	BY	DATE
	APPROXIMATE WEIGHT: (2T)	DRAWN BY: SC	DATE: 3/23/88	QTY. REQUIRED:	PAGE:	DRAWING NUMBER:	SIZE
				1	REDRAWN IN CAD.	CWG	18/21/00

Figure 13 Pushbutton Assembly

REPLACEMENT PARTS LIST

Specific part numbers vary from job to job, depending on the model and options chosen for the application. Call the *Autoquip* Service Department with the serial number of the specific FREIGHTLIFT equipment to order the appropriate parts.

TROUBLESHOOTING ANALYSIS



DANGER!

To avoid personal injury, **NEVER** go under the Tilter platform until the load is removed and the platform is securely blocked in the open position.

PROBLEM	POSSIBLE CAUSE AND SOLUTION
<p>Tilter tilts, then drifts back slowly after the pushbutton is released.</p>	<ul style="list-style-type: none"> • The solenoid valve may not be seating. Remove the solenoid coil and check again. If the Tilter does not hold, the valve cartridge should be removed and cleaned or replaced as necessary. • The oil line, hose, or fitting may be leaking. Check and repair if necessary. • The “check valve” may not be seating. This is indicated by the pump shaft and motor turning backward on their own with no power applied. Generally, this condition can be heard. Replace the pump assembly. • The counter balance valve may be out of adjustment. Adjust per the factory recommendations.
<p>Tilter tilts very slowly.</p>	<ul style="list-style-type: none"> • Check for pinched tubing or hose. Where pipe is used, check for obstruction in the line. • The oil is extremely viscous due to low ambient temperatures. Add or replace with lower weight oil that stays thinner in cold conditions (5W-15, etc.)

TROUBLESHOOTING ANALYSIS

PROBLEM	POSSIBLE CAUSE AND SOLUTION
Tilter does not tilt.	<ul style="list-style-type: none"> • The motor rotation for a 3-phase motor may be reversed. Reverse only two motor electrical leads. • Check for a line or hose leak. • Check for oil shortage in the reservoir. Add oil as necessary (See Oil Requirements in the “Routine Maintenance” section.) • The load may exceed the rating. (See the “Specifications” section.) Remove the excess load. • The suction screen may be clogged, starving the pump. Remove and clean the screen. Drain and replace the oil. • The suction line may be leaking air due to a loose fitting. Tighten as needed. • The breather holes in the reservoir fill plug may be clogged. Remove and clean. • The voltage at the motor terminals may be too low to run the pump with the existing load. Check by measuring the voltage at the motor terminals, or as near as possible, <u>while the pump is running under load</u>. Reading the source voltage or pump-idling voltage is meaningless. Inadequate or incorrect wiring can starve the motor when the source voltage is ample. Correct as necessary. • The 4-way valve might not be shifting due to over-tightening of the mounting bolts to the sub-plate. Loosen and re-tighten until snug. • The solenoid valve may not be energized due to faulty wiring or stuck open. Remove the solenoid valve and check. <p style="text-align: center; margin-top: 10px;">(CONTINUED ON NEXT PAGE)</p>

TROUBLESHOOTING ANALYSIS

PROBLEM	POSSIBLE CAUSE AND SOLUTION
<p>Tilter does not tilt. (continued from previous page)</p>	<ul style="list-style-type: none"> • The motor may be single phasing. Check wiring, fuses, etc. • The pump may be seized if motor is humming or blowing fuses on overload protection devices. Remove the pump. The pump should be able to be rotated by hand. Check for cracks in the housing.
<p>Tilter won't lower.</p>	<ul style="list-style-type: none"> • The solenoid coil may be incorrectly wired, burned out, not rated for the voltage, or the line voltage may be excessively low. Check voltage near the coil. • The velocity fuse may be locked. Do not attempt to remove the velocity fuse. The following steps should be followed: <ol style="list-style-type: none"> 1. Remove the load from the Tilter. Inspect all fittings, hoses, and other hydraulic components for leaks or damage. 2. If no leak or damage is noticed, attempt to pressurize the lifting cylinder by depressing the "Tilt" button on the controller for a few seconds. Immediately upon releasing the "Tilt" button, depress the "Tilt Return" button. If the Tilter starts to lower, continue pressing the "Tilt Return" button until it is in the fully lowered position. 3. If the Tilter does not lower after trying Step 2, wait approximately 10 – 15 minutes for the pressure in the hydraulic system to equalize. • Should the above steps not correct the problem, contact <i>Autoquip</i> to obtain instruction for further action.

TROUBLESHOOTING ANALYSIS

PROBLEM	POSSIBLE CAUSE AND SOLUTION
<p>Tilter seems bouncy during operation.</p>	<ul style="list-style-type: none"> • Lower the Tilter to the Tilt Return position and continue to hold “Tilt Return” button an additional 10-30 seconds to bleed air from the cylinder. • Check for oil starvation.
<p>Motor labors or heats excessively.</p>	<ul style="list-style-type: none"> • The voltage may be low. Check at the motor terminals while the pump is <u>running loaded</u>, not at the line source or while the pump is idling. Inadequate wiring can starve the motor even when the source voltage is ample. • Most of <i>Autoquip</i>’s standard motors are rated for intermittent duty (two minute run times with two minute rests). If a single-phase motor is being run more than 15 – 20 motor starts per hour, or a 3-phase motor more than 200 starts per hour, the problem may be motor over-heating. • Running against relief pressure unnecessarily due to over loaded Tilter or hitting physical stops. • Failure to observe wiring diagram on nameplate for proper voltage connections. • The pump may be binding from oil starvation, which develops high internal heat. Check for low oil level or closed breather holes in the reservoir fill plug. The pump can be irreparably damaged by oil starvation and may have to be replaced.