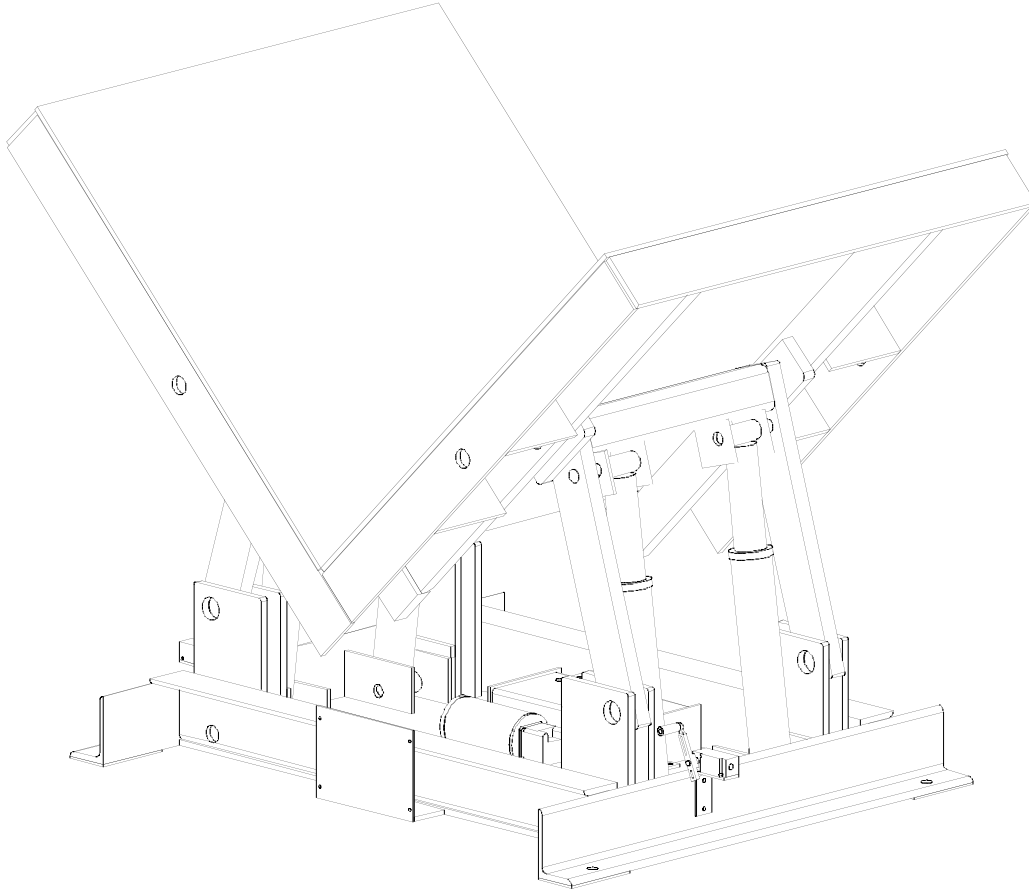


# INSTALLATION, OPERATION, AND SERVICE MANUAL

## TITAN UPENDER



P.O. Box 1058 • 1058 West Industrial Avenue Guthrie, OK 73044-1058 405-282-5200 •  
FAX: 405-282-8105 • [www.autoquip.com](http://www.autoquip.com)

Item # 830UP

Version 1.0  
09/2001

# TABLE OF CONTENTS

Identification and Inspection	3
Dangers, Warnings, and Cautions	4
Label Identification	8
Specifications	12
Installation Instructions	14
Operating Instructions	17
Routine Maintenance	18
General Maintenance	20
Replacement Parts List	27
Troubleshooting Analysis	28

---

## 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 Upender.

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 Upender and inspect the base frame, platform, tilt linkages, 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 Upender. All labels are provided in accordance with ANSI Z535.4.

---



## DANGER!

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

---



## DANGER!

Do not install the Upender 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!

Upenders 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 Upender platform until the load is removed and the platform is securely blocked in position.

---



## **WARNING!**

NEVER stand, sit or ride on the Upender.

---



## **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!**

Upender platforms traveling below floor levels may create openings, and the shape of the load and how the load is arranged on the Upender 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 Upender.

---

# DANGERS, WARNINGS & CAUTIONS



## CAUTION!

Do not continue to depress the “TILT” or “TILT RETURN” button on the controller if the Upender 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.

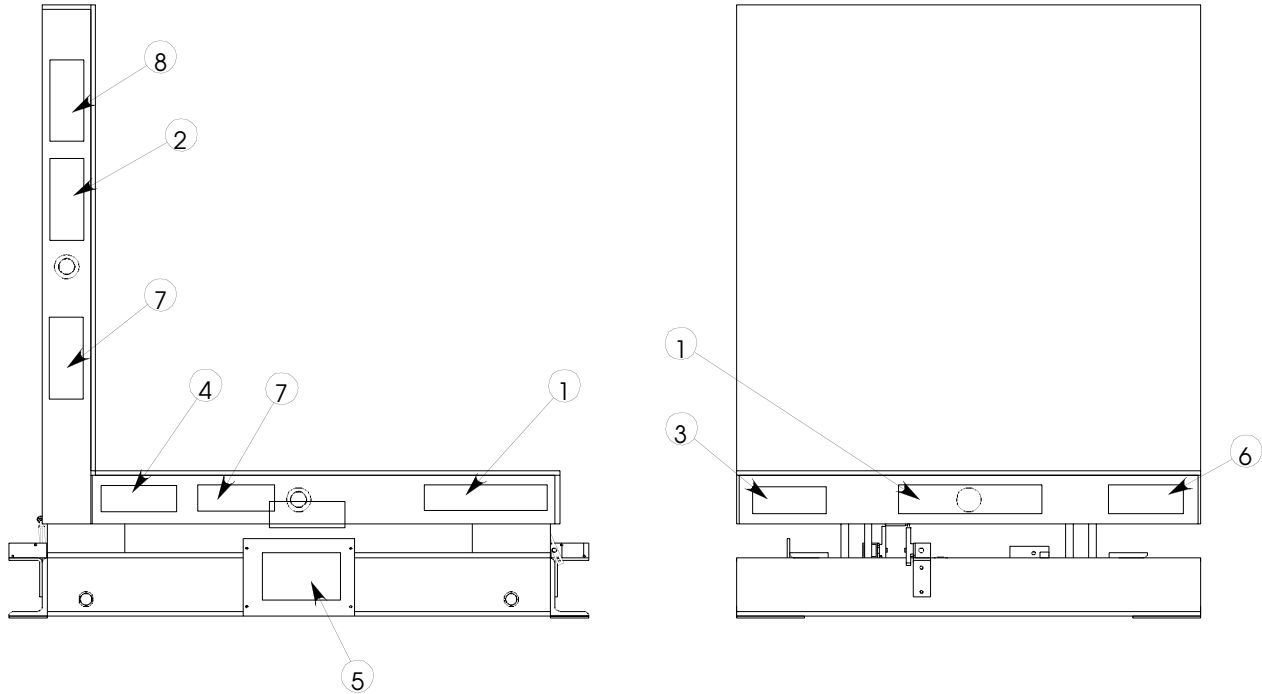
---



## CAUTION!

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

# LABEL IDENTIFICATION



**Figure 1 Label Placement Diagram**

<b>Titan Upender</b>			
<b>Item No.</b>	<b>Qty</b>	<b>Description</b>	<b>Part No.</b>
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	1	Fill with Recommended Oils Only	36400661
6	2	Capacity	36401586
7	4	Warning – Stay Clear When Tilted	36403822
8	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

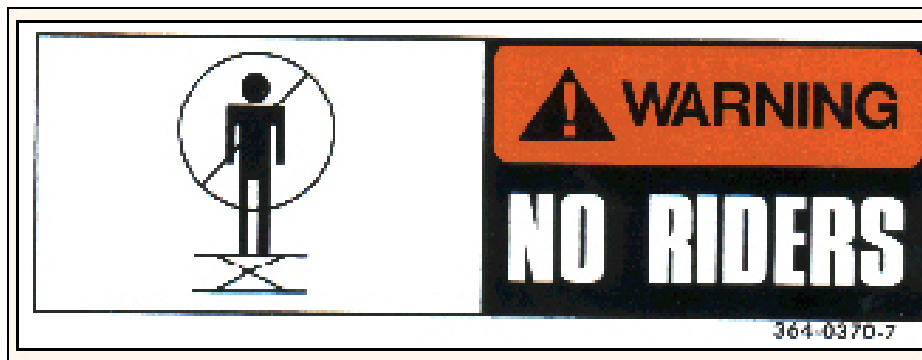


Figure 4 Label 36403707

# LABEL IDENTIFICATION



Figure 5 Label 36401511



Figure 6 Label 36400661



Figure 7 Label 36401586

# LABEL IDENTIFICATION



Figure 8 Label 36403822



Figure 9 Label 36403830

# SPECIFICATIONS

Model	Max Cap (lbs)	Platform Dimensions (inches)	Lowered Height (inches)	Base Dimensions (inches)	90° Cycle Time (secs)	HP	Rams Per Side	Appx. Weight (lbs)
136-30	3,000	36 x 36	12	36 x 45 _	29	1 1/2	1	1,500
136-40	4,000	36 x 36	12	36 x 45 _	29	1 1/2	1	1,550
136-60	6,000	36 x 36	12	36 x 45 _	29	1 1/2	2	1,650
142-25	2,500	42 x 42	12	36 x 45 _	29	1 1/2	1	1,650
142-50	5,000	42 x 42	12	36 x 45 _	29	1 1/2	2	1,750
148-20	2,000	48 x 48	12	36 x 45 _	29	1 1/2	1	1,700
148-40	4,000	48 x 48	12	36 x 45 _	29	1 1/2	2	1,800
248-60	6,000	48 x 48	15	48 x 60	42	1 1/2	2	2,800
248-80	8,000	48 x 48	15	48 x 60	42	1 1/2	2	2,900
248-120	12,000	48 x 48	15	48 x 60	41	5	3	3,000
248-150	15,000	48 x 48	15	48 x 60	55	5	4	3,200
254-40	4,000	54 x 54	15	48 x 60	41	1 1/2	2	3,100
254-60	6,000	54 x 54	15	48 x 60	41	1 1/2	2	3,150
254-80	8,000	54 x 54	15	48 x 60	41	5	3	3,300
254-120	12,000	54 x 54	15	48 x 60	55	5	4	3,500
260-40	4,000	60 x 60	15	48 x 60	41	1 1/2	2	3,350
260-60	6,000	60 x 60	15	48 x 60	41	5	3	3,500
260-100	10,000	60 x 60	15	48 x 60	55	5	4	3,700

## 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 an Upender 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. **Upenders 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 end and/or side load capacity is reduced. If the load is rolling onto the platform (in any but the fully-lowered position) the end and/or side load capacity is also reduced.

# SPECIFICATIONS

## **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 Upender in the installation area.



### **CAUTION!**

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

4. Make temporary electrical connections and permanent hydraulic connections. Raise the Upender 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 Upender to its fully tilted position then tilt return to ensure the tilt path is unobstructed and that the Upender operates satisfactorily throughout its full travel.



### **DANGER!**

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

# INSTALLATION INSTRUCTIONS

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

## **PIT INSTALLATION -- MODELS WITH BEVEL TOE GUARDS.**



**DANGER!**

**Do not install the Upender 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 Upender 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 Upender into the pit and check for proper height. The Upender should be solid and flush with the pit angle framing. If needed, shim to the desired height.



**CAUTION!**

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

# INSTALLATION INSTRUCTIONS

4. Make temporary electrical connections and permanent hydraulic connections. Raise the Upender 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 Upender to make positioning adjustments and align the platform in the pit with a proper clearance of  $\frac{1}{2}$ ” minimum around the edges from the platform to the pit angle.



## **DANGER!**

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

6. Make the permanent electrical connections and operate the Upender 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 Upender. Contact an Autoquip representative if labels are missing or damaged. See “DANGERS, WARNINGS, and CAUTIONS” section of this manual.**

# OPERATING INSTRUCTIONS

1. Upenders 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 Upender may result in excessive wear and damage.
2. This type of Upender is designed primarily for in-plant applications and is furnished with a constant pressure foot switch or pushbutton controls. Actuating the "TILT" or "TILT RETURN" buttons will cause oil to enter the extending cylinders and oil to be dumped to a tank from the retracting cylinders, thus causing the Upender platform to begin the tilt travel.
3. The Upender is designed to tilt a full ninety degrees. As the platform tilts it will reach a point just past mid-travel where a limit switch will be tripped, the motor will be turned off, and the Upender platform will be allowed to travel the remaining distance under force of gravity. During this last 35-40 degrees of tilt the oil interflows from the retracting cylinders to the extending cylinders and the tilt speed is regulated by fixed flow controls.
4. At any point during the complete tilting sequence – whether tilting under power or under gravity – 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 Upender and "lock" the platform into its current position.



## CAUTION!

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

# ROUTINE MAINTENANCE

Normally Upenders 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 Upender 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

<b>Environment (Ambient Temperatures)</b>	<b>Recommended Oil</b>
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

The internal steel tube tank capacity is approximately 2 gallons.

# GENERAL MAINTENANCE

## CYLINDER REPACKING

1. Tilt the Upender 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).
4. Remove the Ram clevis pin from the (plunger) end of the cylinder and force the ram slowly back to its fully closed position to push oil back into the reservoir.
5. Pull the ram all of the way out of the cylinder. Support it carefully so that it does not drop when it clears the cylinder end. Lay it down in a safe, clean place. Some oil may drip from the end of the cylinder so have waste cloth or paper beneath the lift to protect the floor.
6. Remove the seal ring and backup ring.
7. After all of the internal components are removed, use a bright light to inspect the inner walls of the barrel. Use a cylinder hone to remove any apparent nicks or scratches. Clean and flush the barrel after honing.
8. Inspect the ram and seal groove for nicks or scratches that could affect the seal or barrel walls; remove as necessary.
9. Clean the groove thoroughly and install the new seal and backup. Make sure the backup ring is toward the open end of the cylinder.
10. Clean the ram of all foreign materials.
11. Liberally lubricate the ram and seal with CLEAN grease or oil.
12. Insert the ram carefully back into the cylinder taking precaution against pinching or tearing the seal ring.
13. Reinstall the clevis pin.
14. Reconnect the cylinder hose.

# GENERAL MAINTENANCE

15. Restore the oil level.
16. Fully tilt the Upender and hold the “TILT RETURN” button for 45 – 60 seconds to allow air in the lines to bleed back into the tank.
17. Cycle the Upender 10 – 15 times.
18. Check the oil level.
19. Clean the oil fill breather cap.
20. Clean up any debris and/or spilled oil from the area.

**NOTE: Depending on experience, the job should take 1 – 2 hours.**

## **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.

# GENERAL MAINTENANCE

## HOSE ORIENTATION

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

1. Tilt the Upender platform.
2. Tilt the Upender 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

657-5031-0

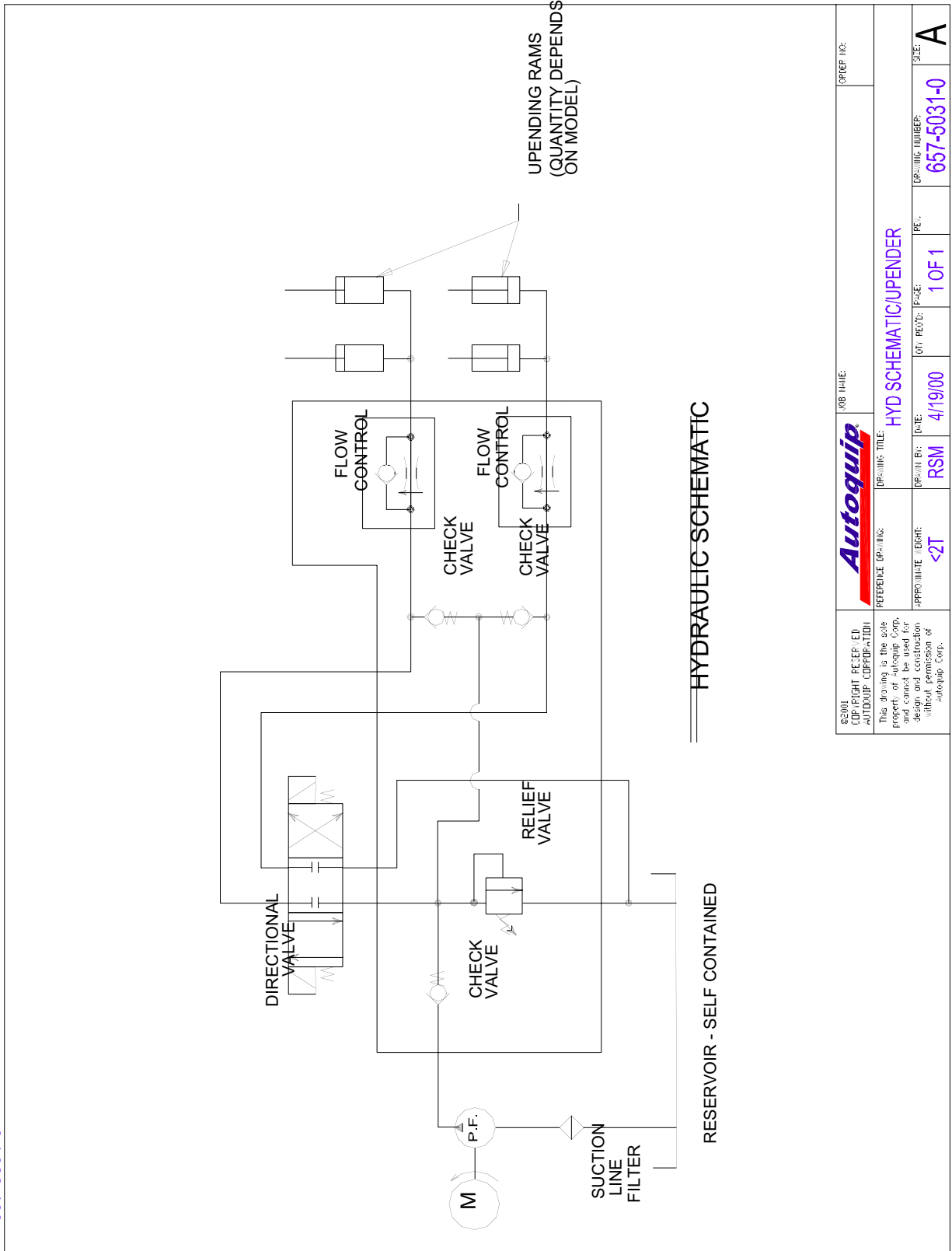


Figure 10 Hydraulic Schematic

©2001 COPRIGHT PETER, ED. -AUTOQUIP CORPORATION	Autoquip	JOB NAME:	OPER. NO.:
This drawing is the sole property of Autoquip Corp. No part of this drawing may be reproduced or used in any form without permission of Autoquip Corp.	REFERENCE (P-1113):	OPER. TITLE:	HYD SCHEMATIC/UPENDER
	APPROVAL (EGHT):	DATE:	
	<2T	RSM	4/19/00
	GT. PCT.:	1 OF 1	
	OP. ILL. NUMBER:	657-5031-0	
	SIZE:	A	

# GENERAL MAINTENANCE

## WIRING AUTOQUIP "SUPER TORQUE" MOTORS

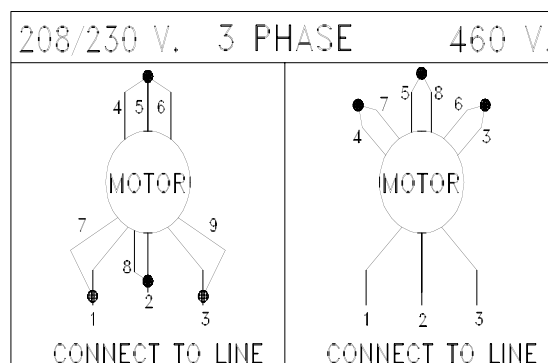
Because *Autoquip* "Super-Torque" motors actually deliver substantially more horsepower than their nameplate rating, they must always be wired for heavier current-draw than standard motors of the same nameplate rating. However, because of the starting efficiency and superior running characteristics of 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
1_ HP / 208-230 V/60 CY/3 PH	15 A	10 A
1_ HP / 460 V/60 CY/ 3 PH	7.5 A	5 A

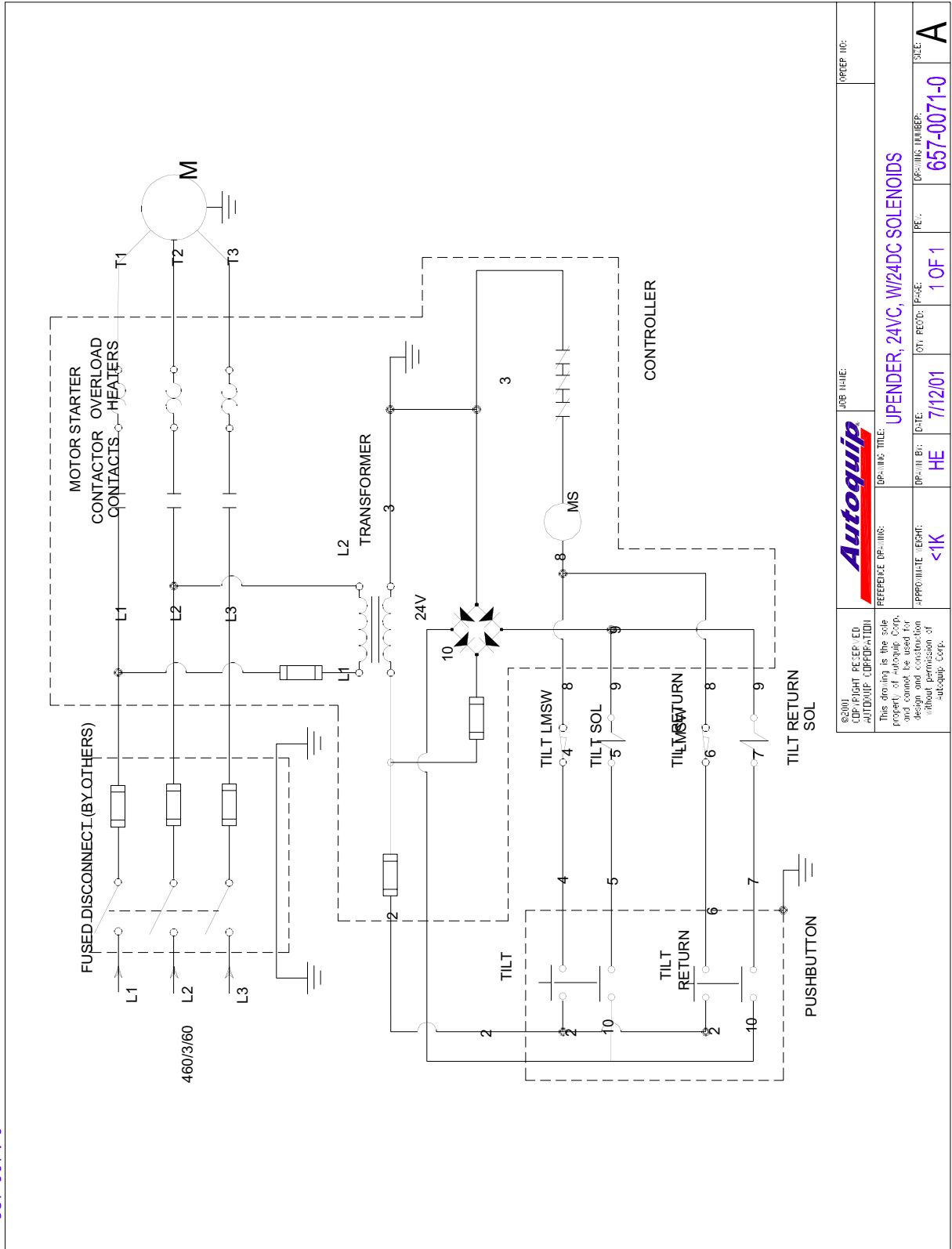
**NOTE:** All amperage draws shown are full-load amperages.

## MOTOR CONNECTION DIAGRAMS



# GENERAL MAINTENANCE

657-0071-0



©2001 CUMMINS DIESEL ENGINE DIVISION AUTOQUIP CORPORATION This drawing is the sole property of Autoquip Corp. and cannot be used for design and construction without approval of Autoquip Corp.	<b>Autoquip</b>	JOB TITLE:	UPREP ID:
REFERENCE DRWING:	DRWING TITLE:	DATE:	REV.:
APPROVAL:	HE	7/12/01	1 OF 1
DRWING NUMBER:	657-0071-0	SCALE:	A

Figure 11 Electric Schematic; 208-230-460V/3Ph

# GENERAL MAINTENANCE

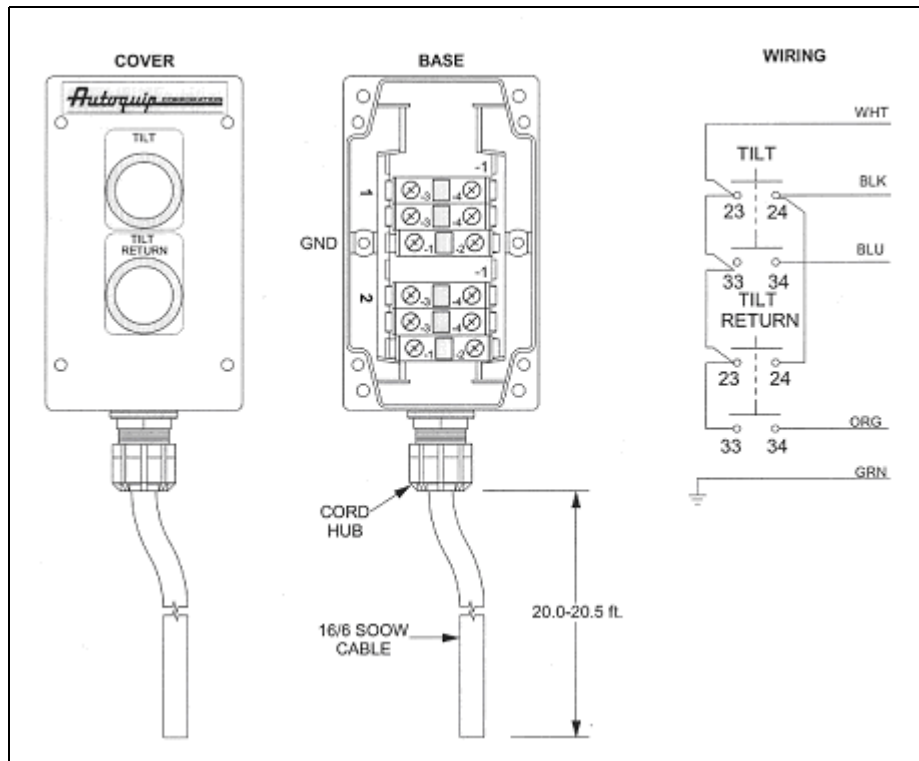


Figure 12 Pushbutton Assembly

# REPLACEMENT PARTS LIST

20001137	Pump and Motor Coupling
27000322	Roll Pin, 3/16 X 1-1/2
PART #	DESCRIPTION
30300016	1.5 HP motor, 208-220-440/60/3/42FR/TANG, 3450 rpm
34000018	Limit Switch
35151390	Control Panel, NEMA 4 460v/3ph/24 vac/24 vdc
40150005	Pump Tang Shaft
41000647	Hydraulic Valve Block, complete
41400610	Solenoid Valve, 24 vdc
41600677	Check Valve
41800541	Velocity Fuse, 2.0 gpm
42500009PO	Cylinder, 2-3/4 bore, 10-1/2 stroke, clevis mount
45400116	Retainer Ring, 1.503
45400256	Retainer Ring, 2"
45500360	Q38 Packing Kit
52500394	Top Arm to Platform Pin, 1-5/8 X 31-1/4 (2) ring grooves
52500402	Cylinder Pin, 1-1/8 X 21-1/4 long (2) holes
54700018	Limit Switch Kit

# TROUBLESHOOTING ANALYSIS



**DANGER!**

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

<b>PROBLEM</b>	<b>POSSIBLE CAUSE AND SOLUTION</b>
Upender tilts, then drifts back slowly after the pushbutton is released.	<ul style="list-style-type: none"> <li>• The solenoid valve may not be seating. Remove the solenoid coil and check again. If the Upender does not hold, the valve cartridge should be removed and cleaned or replaced as necessary.</li> <li>• The oil line, hose, or fitting may be leaking. Check and repair if necessary.</li> <li>• 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.</li> </ul>
Upender tilts very slowly.	<ul style="list-style-type: none"> <li>• Check for pinched tubing or hose. Where pipe is used, check for obstruction in the line.</li> <li>• 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.)</li> </ul>

# TROUBLESHOOTING ANALYSIS

<b>PROBLEM</b>	<b>POSSIBLE CAUSE AND SOLUTION</b>
<p>Upender does not tilt.</p>	<ul style="list-style-type: none"> <li>• The motor rotation for a 3-phase motor may be reversed. Reverse only two motor electrical leads.</li> <li>• Check for a line or hose leak.</li> <li>• Check for oil shortage in the reservoir. Add oil as necessary (See Oil Requirements in the “Routine Maintenance” section.)</li> <li>• The load may exceed the rating. (See the “Specifications” section.) Remove the excess load.</li> <li>• The suction screen may be clogged, starving the pump. Remove and clean the screen. Drain and replace the oil.</li> <li>• The suction line may be leaking air due to a loose fitting. Tighten as needed.</li> <li>• The breather holes in the reservoir fill plug may be clogged. Remove and clean.</li> <li>• 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.</li> <li>• The solenoid valve may not be energized due to faulty wiring or stuck open. Remove the solenoid valve and check.</li> <li>• The motor may be single phasing. Check wiring, fuses, etc.</li> <li>• 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.</li> </ul>

# TROUBLESHOOTING ANALYSIS

PROBLEM	POSSIBLE CAUSE AND SOLUTION
<p>Upender won't lower.</p>	<ul style="list-style-type: none"> <li>• 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.</li>   <li>• The velocity fuse may be locked. <b>Do not attempt to remove the velocity fuse.</b> The following steps should be followed:               <ol style="list-style-type: none"> <li>1. Remove the load from the Upender. Inspect all fittings, hoses, and other hydraulic components for leaks or damage.</li>   <li>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 Upender starts to lower, continue pressing the "Tilt Return" button until it is in the fully lowered position.</li>   <li>3. If the Upender does not lower after trying Step 2, wait approximately 10 – 15 minutes for the pressure in the hydraulic system to equalize.</li> </ol> </li>   <li>• Should the above steps not correct the problem, contact <i>Autoquip</i> to obtain instruction for further action.</li> </ul>

# TROUBLESHOOTING ANALYSIS

PROBLEM	POSSIBLE CAUSE AND SOLUTION
<p>U-pender seems bouncy during operation.</p>	<ul style="list-style-type: none"> <li>• Lower the U-pender to the Tilt Return position and continue to hold "Tilt Return" button an additional 10-30 seconds to bleed air from the cylinder.</li>   <li>• Check for oil starvation.</li> </ul>
<p>Motor labors or heats excessively.</p>	<ul style="list-style-type: none"> <li>• 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.</li>   <li>• Most of <i>Autoquip's</i> 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.</li>   <li>• Running against relief pressure unnecessarily due to over loaded U-pender or hitting physical stops.</li>   <li>• Failure to observe wiring diagram on nameplate for proper voltage connections.</li>   <li>• 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.</li> </ul>