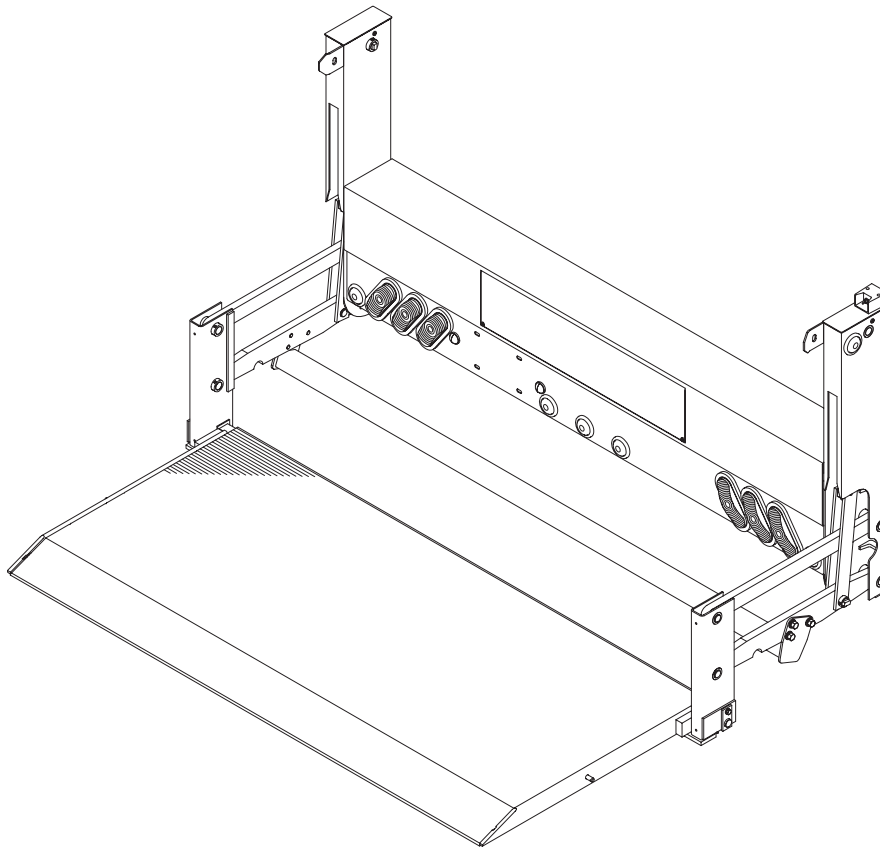


TopLifter

Tailgates By THIEMAN

TT-16/20RM OWNERS MANUAL/PARTS LIST

SHOWN WITH OPTIONAL ALUMINUM PLATFORM AND LIGHT KIT



IMPORTANT! KEEP IN VEHICLE!

**PLEASE READ AND UNDERSTAND THE CONTENTS OF THIS
MANUAL BEFORE OPERATING THE EQUIPMENT.**



THIEMAN
TAILGATES, INC.

600 East Wayne Street
Celina, Ohio 45822

Phone: 419-586-7727 Fax: 419-586-9724

TABLE OF CONTENTS

	PAGE
WARNINGS	3
OPERATING INSTRUCTIONS.....	5
MAINTENANCE GUIDE	5
SEMI-ANNUAL INSPECTION	6
INSPECTION AND LOCATION OF DECALS.....	7
ELECTRICAL PICTORIALS	8
PARTS ORDERING PROCEDURE	8
PUMP & CYLINDER ASSEMBLY	9
UNDERCARRIAGE & PLATFORM ASSEMBLY	10 & 11
LIGHT ASSEMBLY -OPTIONAL.....	12
TROUBLESHOOTING GUIDE.....	13-15

FOR YOUR RECORDS

Model No. _____ Date Purchased _____

Serial No. _____

NOTE: When Ordering Parts Be Sure To Include This Information!

Your Thieman Tailgate is constructed of top quality material and is warranted to be free from defects in material and workmanship under normal use. With routine maintenance and proper operation this liftgate will provide long lasting service and dependability.

WARNING!


The following list of warnings are to be read before operating the TT series liftgate.

- Read this Owner's Manual and all of the decals on the liftgate BEFORE operating the liftgate.
- All protective covers and guards must be in place before operating the liftgate.
- DO NOT operate the liftgate if you do not have a thorough knowledge and understanding of the operation of the liftgate.
- NEVER OVERLOAD THE LIFTGATE. The maximum rated capacity of the TT16/20 series liftgate is:
 - TT16-1600 lbs.
 - TT20-2000 lbs.
- Never use the liftgate if it makes any unusual noises, has vibrations, or fails to operate freely.
- Make certain that the area below the platform is clear before and at all times during the operation of the liftgate.
- Keep hands and feet clear of all pinch points.
- The platform must be in the closed position with the latches engaged before transit.
- Always load as close to the center of the platform and as close to the truck as possible. See Figure 1.
- Never operate lift trucks on or over any part of the platform.
- Load and unload the platform from the rear and not from the side of the platform.
- Only operate Liftgate when vehicle is on level ground and parking brake is set.
- Follow the maintenance guide as outlined in this manual.
- DO NOT attempt any repairs unless you are a qualified and authorized Thieman distributor.
- If any repairs, adjustments, or maintenance not covered in this manual are required, contact your nearest Thieman distributor or the factory.
- DO NOT ride the liftgate, it is not intended as a personnel lift.
- This liftgate is intended for the use of loading and unloading cargo only, and is not to be used for anything other than this.
- + DO NOT modify this liftgate. Altering this liftgate may cause serious personal injury or damage the liftgate and will void all warranties.


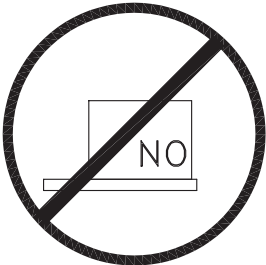

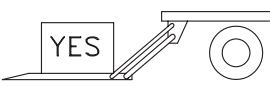
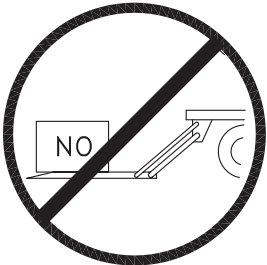

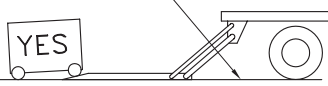
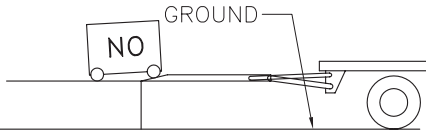
THERMAL DATA: To avoid overheating the motor do not operate this unit for more than 23 cycles/10 minutes with the maximum load. The motor then must be allowed to completely cool down to ambient temperature before cycling the lift again. This unit also has a 16% duty cycle, which means the liftgate can be cycled no more than 9 cycles/10 minutes constantly with a maximum load.

WATER LEVEL LOADING

When a maximum load is to be raised or lowered, this load must be centered on the load bearing platform, both front to back and side to side.



WARNING

<p>SIDE TO SIDE</p> <div><div>YES</div></div> <div><div>NO</div></div> <p>DO NOT OFF CENTER LOAD</p>	<p>FRONT TO BACK</p> <div><div>YES</div></div> <div><div>NO</div></div> <p>DO NOT OFF CENTER LOAD</p>	<p>GROUND</p> <div><div>YES</div></div> <div><div>NO</div></div> <p>DO NOT LOAD OR UNLOAD WITH RAMP OFF GROUND</p>
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OPERATING INSTRUCTIONS

CAUTION:

Be sure to operate liftgate at a safe distance and never improperly load platform as this may cause personal injury or damage to the liftgate.
ALWAYS SET PARKING BRAKE BEFORE OPERATING THIS LIFTGATE!

OPENING OF PLATFORM

- STEP 1:** Remove safety cotter pin from curb side lock pin.
- STEP 2:** Disengage lock pins with one hand while holding platform upright with the other hand. Unfold platform using both hands until it is in the horizontal position.
- STEP 3:** Push toggle switch down and lower platform to the ground.

RAISING OF PLATFORM

- STEP 4:** Push toggle switch up and raise platform to bed height.

LOWERING OF PLATFORM

- STEP 5:** Push toggle switch down and lower platform to the ground.

CLOSING

- STEP 6:** Raise platform to bed height and manually fold platform to the vertical position and be sure both lock pins are engaged. Replace cotter pin in curb side lock pin.

MAINTENANCE GUIDE

The following inspection and maintenance operations should be performed at the recommended intervals or anytime the liftgate shows signs of abuse, and improper or abnormal operation.

MONTHLY INSPECTION AND MAINTENANCE

Operate the liftgate throughout its entire operational cycle and check the following:

1. Check that there are no unusual noises or vibrations.
2. Check that the platform is level when raised to bed height.
3. Check for apparent damage to the liftgate such as bent or distorted members, any cracked welds, which may have resulted from overloading or abuse.
4. Check for any excessive wear in the following areas:
 - A. Platform Hinge Pins and Pivot Plates
 - B. All Pivot Points
 - C. All Cylinder Pins and Bolts
5. Check that all platform pivot pins are in place and retained by their proper retainers.
6. Check support cable for excessive wear and check that the locknuts on either end of the support cable are secure and pulling the cable tight between the pivot supports.
7. Check that all protective covers and guards are properly in place and secured.
8. Check for oil leaks in these areas:
 - A. Lift Cylinder
 - B. Hydraulic Hose- Replace if it shows signs of wear or cracking.
 - C. Hydraulic Fittings – Tighten or replace as may be required to stop leakage.
9. Check the oil level in the hydraulic reservoir. Release the safety latches and lower the platform to the ground. The oil should be within 1/2 inch from the top of the reservoir. See chart on next page.

HYDRAULIC FLUID CHART	
Temperature Range	Acceptable Fluids
-75 to 165°F	Exxon Univis J-26
-20 to 130°F	Dexron III Exxon Superflo ATF Shell Donax® TG
-50 to 80°F	Shell Aero Fluid 4 Mobil Aero HFA Exxon Univis J-13 MIL H-5606

10. Check that all wiring and battery cable connections are tight and free of corrosion.

11. Lubrication of the TT series gate should be as follows:

Area of Tailgate	Type of Lubrication	Frequency
Extension Pivot	SAE 10 to SAE 20 oil	50 cycles
Pump Oil Change	See Above Chart	Yearly

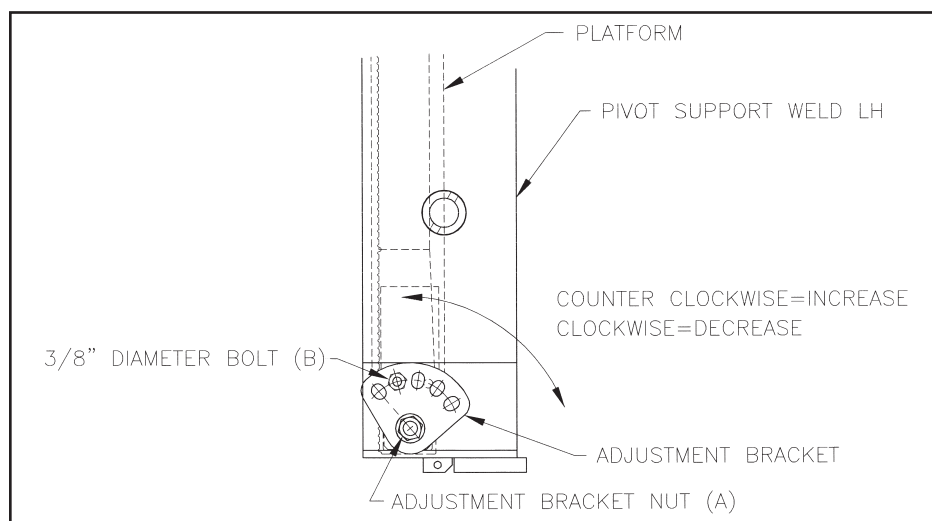
*The pivot points on the TT-16 have special bushings that do not require lubrication.

12. Check the pump relief pressure and also the motor amperage at this pressure. These values should be as follows:

Model	Max Amp Draw	Relief Pressure (psi)
TT16	175	2300
TT20	185	2600

13. Torsion Bar Adjustment:

- Place platform in the stowed (vertical) position.
- Turn the adjustment bracket nut (A) clockwise to relieve tension on 3/8" diameter bolt (B) and remove it from the bracket.
- To increase tension, rotate the bracket counterclockwise until desired tension is reached. Line up the hole in the bracket to a hole in the pivot support and replace bolt (B).



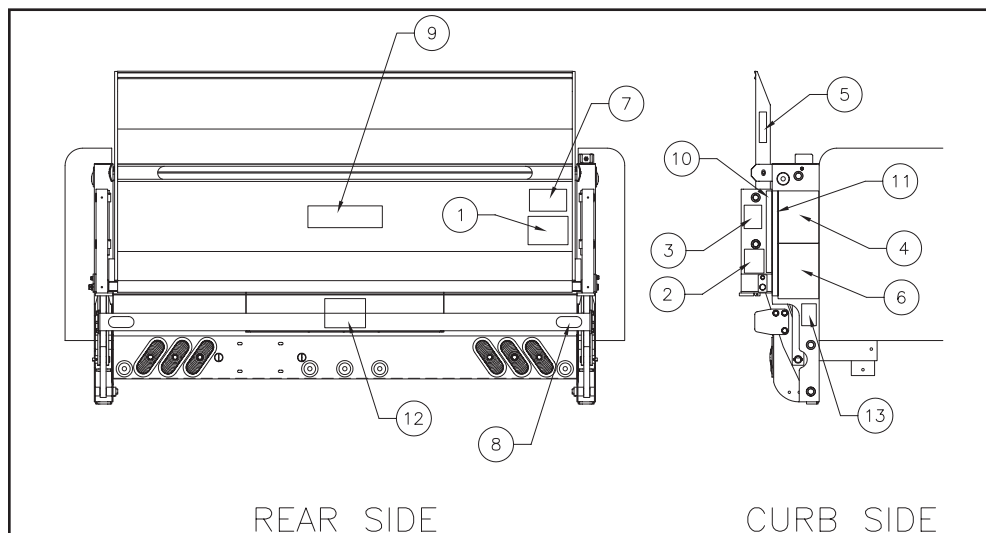
SEMI-ANNUAL INSPECTION

1. Perform the procedures outlined in the “Monthly Inspection and Maintenance.”
2. Inspect pump motor by:
 - A. Disconnecting battery cable
 - B. Remove motor end cover
 - C. Examine the armature brushes for wear. (Brushes should be replaced if they are less than 1/8” long.)
 - D. Clean all residue out from inside of the motor housing.
 - E. Apply several drops of light weight machine oil to the armature shaft bearing in the motor cover end and reassemble the motor end cover.
3. If the hydraulic oil in the reservoir is dirty:
 - A. Lower the platform completely to the ground.
 - B. Drain the oil from the hydraulic system and flush the entire system.
 - C. Remove reservoir from pump and clean suction line filter. Also, clean out any contaminants from reservoir. Remount reservoir when completed.
 - D. Replace the oil as outlined in Section 8 under Monthly Maintenance and Inspection.

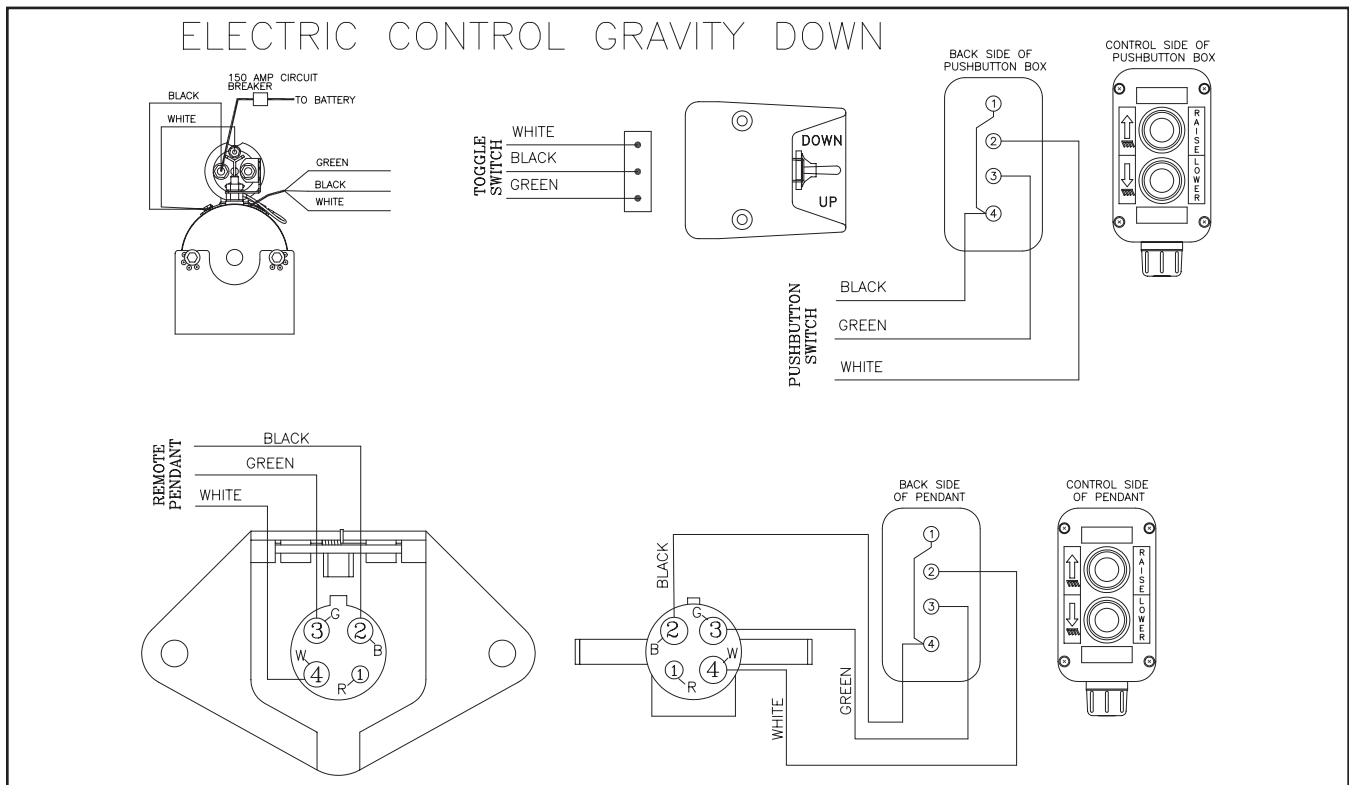
INSPECTION AND LOCATION OF DECALS

Inspect all of the decals listed below to be certain that they are in the proper location and they are legible. All decals must be in place and legible or all warranties are void!

Item	Part Name	Part Number
1	Warning Decal-off center	4671050
2	PTO Decal	4650140
2	Fast Idle Decal	4650150
3	Danger Decal-No Riding	4609
4	Operating Decal	4650870
5	Capacity Decal-1600#	4650750
5	Capacity Decal-2000#	4650100
6	Warning Decal	4650530
7	Caution Decal-Working Area	4650770
8	Reflector (2)	5705
9	Thieman Nameplate	4650801
10	Hazard Marking Tape-Pivot	5760-002
11	Hazard Marking Tape-Frame	5760-003
12	Wiring Decal	4659
13	Warning Decal-High Pressure	4620



ELECTRICAL PICTORIAL



PARTS ORDERING PROCEDURE

When ordering parts, please include all the information asked for below. If this information is not available, a complete written description or sketch of the required part will help Thieman identify and deliver the needed part to you.

THE FOLLOWING INFORMATION MUST BE INCLUDED:

1. Serial Number – Thieman liftgate serial numbers can be found on the tag located on the outside of the curb side post near the bottom.
2. Model Number and Capacity.
3. Platform size and Material – Steel or Aluminum.
4. Part number.
5. Description.
6. Quantity required.

**MAIL OR PHONE YOUR REQUEST TO:
THIEMAN TAILGATES, INC.
600 E. WAYNE ST.
CELINA, OH 45822
PHONE: 419-586-7727
FAX: 419-586-9724**

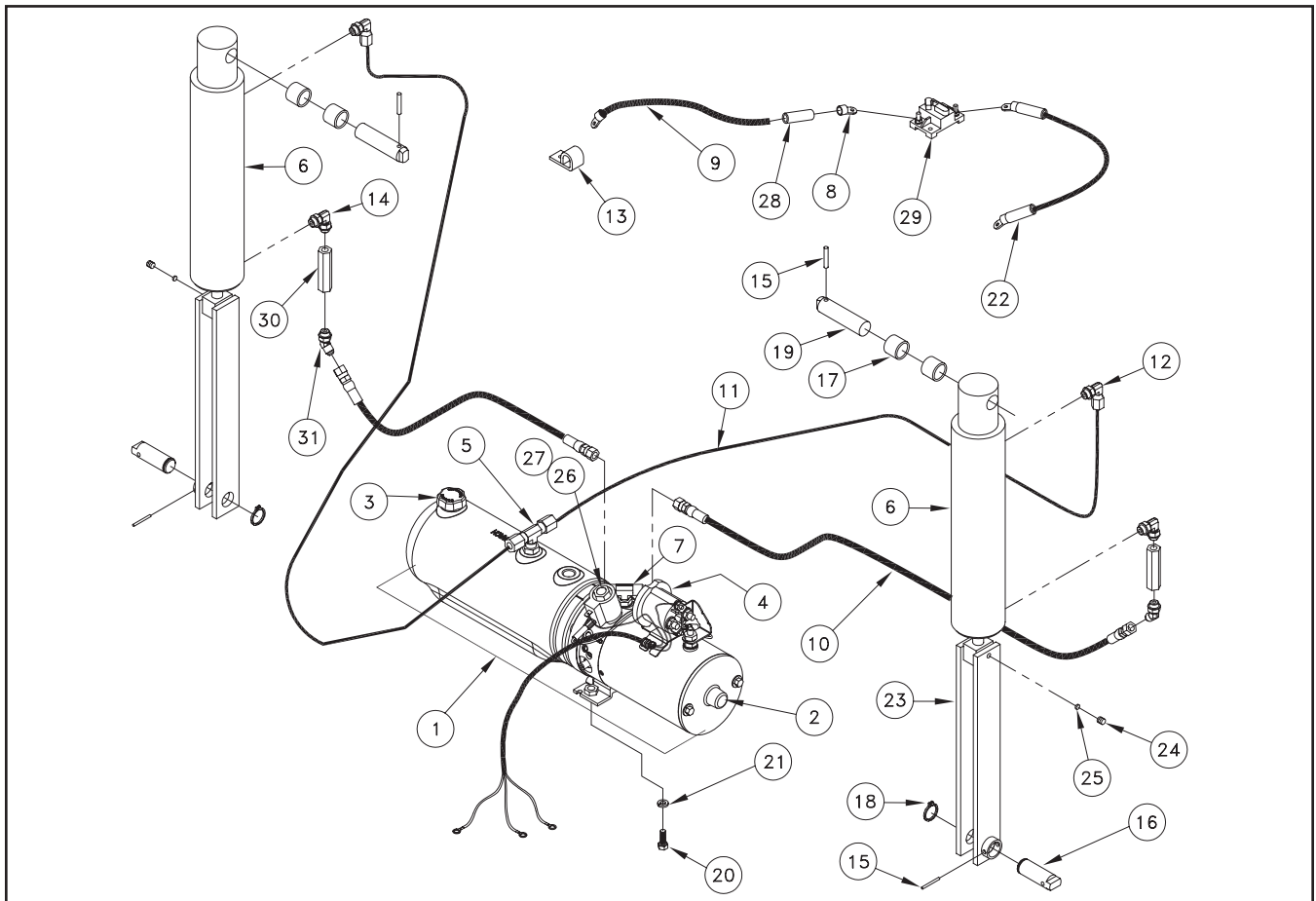
IMPORTANT

IT IS IMPORTANT THAT EVERY VEHICLE THAT HAS A THIEMAN LIFTGATE HAVE LEGIBLE WARNING AND OPERATION DECALS CLEARLY POSTED ON THE VEHICLE AND AN OWNER'S MANUAL IN THE VEHICLE AT ALL TIMES AS A GUIDE FOR PROPER OPERATION AND MAINTENANCE.

ADDITIONAL WARNING DECALS, OPERATION DECALS AND OWNER'S MANUALS CAN BE OBTAINED FROM THIEMAN TAILGATES, INC.

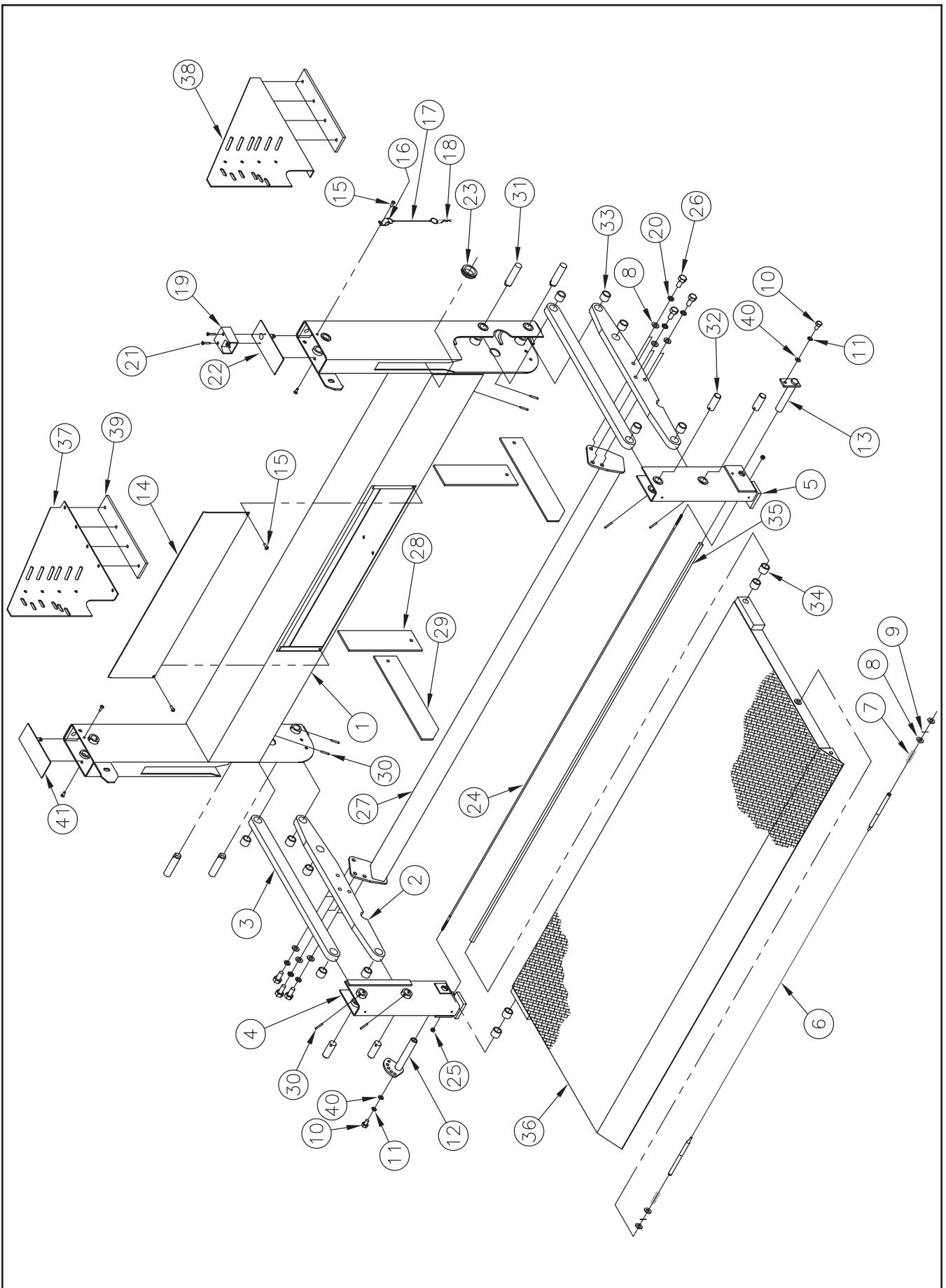
PUMP & CYLINDER ASSEMBLY

Item	Part Number	Description	Platform Width	
			80" Wide	86" Wide
1	4400871	Pump Asm-Items 2-5	1	1
2	4423520	Motor 8111	1	1
3	4420409	Breather	1	1
4	4468	Solenoid	1	1
5	4934-001	Tee BT-BT-MAORB	1	1
6	4292	Cylinder Asm	2	2
7	4932-001	Branch Tee MJ-MJ-MAORB	1	1
8	4350	Battery Lug	1	1
9	4301240	Battery Cable #2 x 3'	1	1
10	4951-015	Hose 51.00	2	
10	4951-005	Hose 60.00		2
11	4921-007	Tube 68.00	2	
11	4921-008	Tube 72.00		2
12	4933-001	Tube Elbow BT-MAORB	2	2
13	5701260	Cable Retainer	16	16
14	4936-001	Elbow MAORB-MAORB	2	2
15	5702371	Spring Pin	4	4
16	5061	Pin	2	2
17	5504-001	Bushing	4	4
18	5781008	Retaining Ring	2	2
19	5059	Pin	2	2
20	8180122	Screw .38 x 1	2	2
21	8106-010	Internal Tooth Lockwasher .38	2	2
22	4318-001	Battery Cable #2 x 2'	1	1
23	31297	Clevis Weld	2	2
24	8108-005	Screw .38 x .75	2	2
25	4220240	Nylon Insert	2	2
26	4445	Valve Asm	1	1
27	4452	Valve Coil	1	1
28	4319-002	Heat Shrink	1	1
29	4301770	Circuit Breaker	1	1
30	4948-004	Flow Control .75 GPM FAORB	2	2
31	4940-001	Elbow 45° MJ-MAORB	2	2



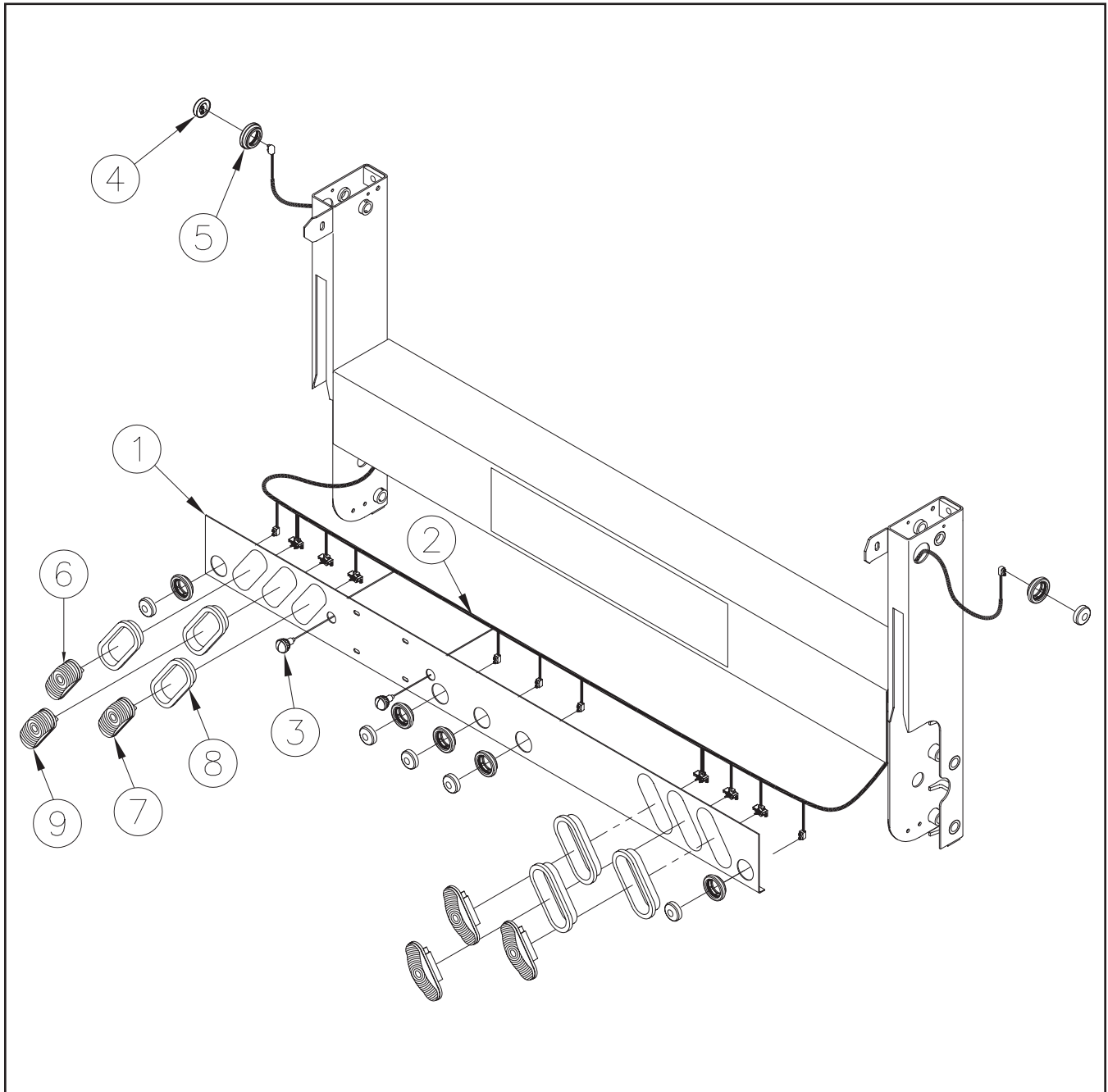
UNDERCARRIAGE & PLATFORM ASSEMBLY

Item	Part Number	Description	Platform Width	
			80" Wide	86" Wide
1	31295-001	Frame Weld w/Lights	1	
1	31295-003	Frame Weld w/Lights		1
1	31295-002	Frame Weld w/out Lights	1	
1	31295-004	Frame Weld w/out Lights		1
2	31355	Lift Arm Asm	2	2
3	31291	Idler Arm Asm	2	2
4	31301-001	Pivot Support Weld LH	1	1
4	31483	Pivot Support Weld LH-TT20	1	1
5	31300-001	Pivot Support Weld RH	1	1
5	31482	Pivot Support Weld RH-TT20	1	1
6	31357-004	Cable Asm	1	
6	31357-005	Cable Asm		1
7	5101160	Spring	2	2
8	8120396	Flatwasher .50	10	10
9	8121222	Cotter Pin	2	2
10	8180120	Screw .38 x .75	2	2
11	8120382	Lockwasher .38	2	2
12	31003	Adjustment Bracket	1	1
13	31283	Pin Weld	1	1
14	27090	Power Unit Cover	1	1
15	8449646	Screw .25 x .62	6	6
16	5702230	Cable Retainer	1	1
17	3801008	Latch Cable	1	1
18	5700022	Hairpin	1	1
19	31446	Toggle Switch Asm	1	1
20	8120384	Lockwasher .50	6	6
21	8111-005	Screw #10 x .75	2	2
22	31298-002	Post Cover RH	1	1
23	5701200	Grommet	2	2
24	3801-004	Support Cable	1	
24	3801-005	Support Cable		1
25	8103-022	Locknut .25	2	2
26	8100-014	Screw .50 x 1.50 Gr. 8	6	6
27	31354-004	Brace Weld	1	
27	31354-005	Brace Weld		1
28	23049-002	Frame Plate	2	2
29	23049-003	Frame Plate	2	2
30	5702371	Spring Pin	8	8
31	5059	Pin	4	4
32	5060	Pin	4	4
33	5504-001	Bushing-LA & IA	10	10
34	5504-001	Bushing-Steel Platform	4	4
34	5504-012	Bushing- Aluminum Platform	4	4
35	5101-012	Torsion Bar-Steel Platform	1	
35	5101-013	Torsion Bar-Steel Platform		1
35	5107-001	Torsion Bar- Aluminum Platform	1	
35	5107-002	Torsion Bar- Aluminum Platform		1
36	3426-001	Platform-Steel Expanded Metal	1	
36	3426-002	Platform-Steel Expanded Metal		1
36	3427-001	Platform-Steel Deckplate	1	
36	3427-002	Platform-Steel Deckplate		1
36	3431-001	Platform-Extruded Aluminum	1	
36	3431-002	Platform-Extruded Aluminum		1
37	27091-001	Post Support-LH	1	1
38	27091-002	Post Support-RH	1	1
39	23048	Backer Plate	2	2
40	8120388	Flatwasher .38	8	8
41	31298-001	Post Cover LH	1	1



LIGHT ASSEMBLY-OPTIONAL

Item	Part Number	Description	Platform Width	
			80" Wide	86" Wide
1	27125-003	Light Plate	1	
1	27125-004	Light Plate		1
2	4395	Wiring Harness	1	1
3	4300550	License Plate Light	2	2
4	4329	Clearance Light	7	7
5	4330	Grommet	7	7
6	4301401	Stop/Tail Lamp	2	2
7	4301400	Back-up Lamp	2	2
8	4301370	Grommet	6	6
9	4301402	Turn Lamp	2	2



TROUBLESHOOTING GUIDE

TT16/20ET

Test Equipment:

1. 0-5000 psi pressure gauge
2. DC voltmeter/ohm meter
3. DC amp meter
4. standard mechanics tools

Note: Please refer to the electrical diagrams and hose connection drawings in the liftgate's owners manual when troubleshooting. This guide is only for standard Thieman liftgates. Special liftgates with options other than those in the owner's manual will require special diagrams for troubleshooting. Read and understand this entire guide completely before doing any troubleshooting. Certain listed problems may be related to other problems listed so a comprehensive knowledge is required before proceeding.

1. Problem – Pump motor will not run in the raise mode

- Causes –
- a. Tripped circuit breaker
 - b. Defective or undercharged battery(ies)
 - c. Improper battery cable connection or improper ground connection
 - d. Defective or improperly wired raise switch
 - e. Defective or improperly wired solenoid start switch
 - f. Defective pump motor

- Corrections –
- a. Reset the circuit breaker located within 2ft of the liftgate supply battery(ies).
 - b. The “at rest” voltage for the batteries without the engine running and under no load should be at least 12.5V. The minimum voltage between the motor stud and ground is 9V at maximum load conditions. If proper voltage is not present, charge or replace the batteries. The battery(ies) on the vehicle should be that which has a minimum 150 amp reserve capacity.
 - c. Trace battery and ground cable connections to locate improper connection(s). Make sure the ground cable from the batteries to the frame is a heavy 2ga. cable and that is connected to bare metal on the frame. Make sure there is 12.5V present at the large terminal on the motor start solenoid where the 2ga. cable from the batteries is connected. Replace any damaged cables and repair any bad connections.
 - d. Check for voltage on the black wire at the control switch. If no voltage is present the black wire from the motor start solenoid is loose or broken and needs repaired. If voltage is present then check for voltage at the white wire on the switch with the switch in the “RAISE” position. If no voltage is present, replace the switch.
 - e. Check for voltage on the white wire at the motor start switch when the switch is activated. If no voltage exists the white wire is loose or broken between the switch and the motor start solenoid. Check that the purple ground wire on the start solenoid is connected properly and there are no bad connections. If there is voltage on the white wire and the coil does not energize or if there is no voltage present at the motor terminal then replace the start switch.

- f. With the switch activated in the “RAISE” position and the motor start solenoid is activated, check for voltage at the motor terminal. If voltage is present and the motor is not running, replace the motor.
- 2. Problem – Liftgate will not raise to bed with a load and the pump motor running
 - Causes –
 - a. Low hydraulic fluid
 - b. Overload condition
 - c. Improperly adjusted or defective main relief valve
 - d. Lift cylinders are bypassing, liftgate is drifting down
 - e. Broken hydraulic line
 - f. Clogged or disconnected suction line
 - g. Defective pump
 - Corrections -
 - a. Make sure the reservoir has the proper amount of fluid. Check for the fluid line through the plastic reservoir. The hydraulic fluid should be within 1/2” of the top of the reservoir with the liftgate in the lowered position. Fill with Dexron III automatic transmission fluid.
 - b. The power unit on the TT16/20 is equipped with a lifting relief valve to prevent overloading of the liftgate. The relief setting for the TT16/20 is 2300 psi & 2600 psi respectively.
 - c. See section “c” above for relief valve setting. Plumb a pressure gauge into the high pressure circuit of the liftgate. Remove all loads from the liftgate’s platform. Engage the “RAISE” switch until the liftgate is fully raised. Keep the “RAISE” switch engaged until the pump bypasses through the relief valve and note the pressure on the gauge at this time. If the rated relief pressure is not present during relief, adjust the high pressure relief valve setting as necessary. If the relief pressure is not attainable the relief valve must be cleaned and/or replaced or the pump is defective. See part “g” below.
 - d. If the liftgate will not raise with a load on the platform but empty is raising slowly or only partially, the cylinders may be bypassing. To check for bypassing cylinders do the following. Lower the gate to the ground to relieve all pressure from the cylinders. Disconnect the cylinders from the liftarm. Press the “RAISE” switch until the cylinders is fully retracted. Disconnect the return line from the power unit and put the end of the line in a container to catch any oil which comes out during this test. Press the “RAISE” switch for 15 to 20 seconds and watch for a steady stream of fluid coming out of the return line into the container. If no steady stream of oil is present connect the hose to the butt end of the cylinders after removing the return line and fitting. Re-attach the return line and fitting to the rod end port. Put the loose end of the return line in a container to catch any oil, which comes out during this test. Press the “RAISE” switch until the cylinders is fully extended. Press the “RAISE” switch for 15 to 20 seconds and watch for a steady stream of fluid coming out of one of the disconnected hose ends into the container. Replace or rebuild any cylinders with fluid coming out of the return line, as this indicates fluid is bypassing the piston seals on the cylinder. Reconnect rebuilt or replaced cylinders and hoses as before.
 - e. Broken or punctured hydraulic lines and fittings must be replaced with care to avoid injury from high pressure oil streams.
 - f. With the liftgate at the ground, disconnect the power unit and remove the

reservoir. Check to see if the suction tube is clogged or has fallen out of the pump base. Clean the screen or reattach the suction tube as required.

- g. If all else fails replace the power unit, it is probably worn out.

3. Problem – Liftgate will not lower

- Causes -
- a. Defective lowering solenoid coil or valve
 - b. Clogged or defective hydraulic lines, fittings or flow controls

- Corrections -
- a. With the “LOWER” switch engaged check for voltage on the green wire at the switch. If no voltage is present replace the switch. If voltage is present, with the “LOWER” switch engaged, check for voltage at the green wire on the lower solenoid valve coil terminal. If no voltage is present, the green wire from the “LOWER” switch is loose or broken and needs replaced. If there is voltage (minimum of 9.5 volts) and the valve is not opening to allow the gate to lower, either the lower coil is bad or the entire lower coil/valve assembly is bad. To check to see if the coil is defective, remove the green wire from the spade terminal on the lower coil and check for continuity between the spade terminal and the nut, which holds the coil on the valve stem. If continuity does not exist, replace the defective coil, otherwise replace the defective lower coil/valve assembly.
 - b. Remove any obstruction in the hoses, fittings or flow controls or replace any hose, fitting or flow control, which does not allow fluid to flow through freely.

4. Problem – Liftgate raises slowly – The raise speed of the TT16/20 on a 50” bed height while empty at 70°F is approximately 11-12 seconds. The raise speed loaded for the same conditions is approximately 20-22 seconds.

- Causes -
- a. Overload condition
 - b. Cold weather
 - c. Partially blocked suction screen
 - d. Lift cylinders are bypassing
 - e. Improperly adjusted or defective raise relief valve
 - f. Low voltage and/or bad ground
 - g. Worn out pump

- Corrections –
- a. See section 2b
 - b. Refer to Owner’s Manual for alternative oils to use for cold weather conditions.
 - c. Remove reservoir and clean or replace suction screen as necessary.
 - d. See section 2d
 - e. See section 2c
 - f. The minimum voltage between the motor stud and ground is 9.5 volts at maximum load conditions. See section 1b and 1c.
 - g. After all other corrections are performed it will be necessary to replace the pump.

5. Problem – Foamy oil flowing from reservoir breather

- Causes -
- a. Air is present in the system
 - b. Flow control is on backwards
 - c. Inoperable flow control

- Corrections -
- a. This can occur if air enters the system if the fluid level is low, see problem 2, part a, or if the suction tube is disconnected, see problem 2, part f. Also air may enter through fittings, which are not tightened properly, so check for any leaks around fittings or hoses. Once the source of the air is determined, the cylinders must be bled of all air. Most air can be removed from the system by lowering the gate to the ground to relieve all pressure from the cylinders, unpinning the cylinders and cycling them back and forth several times from fully extended to fully retracted and allowing the pump to bypass through the relief valves for a few seconds in each direction.
 - b. The flow control provided is rated at .75 GPM. The arrow on the flow control must point away from the cylinder, designating the direction of the controlled flow. Correct as needed.
 - c. Remove and disassemble the flow control and check for excessive wear and contamination. Clean as needed and reassemble. If this does not correct the problem replace the flow control.

If you have any questions or problems that are not covered in this guide please call Thieman's Engineering Department at 1-800-524-5210.