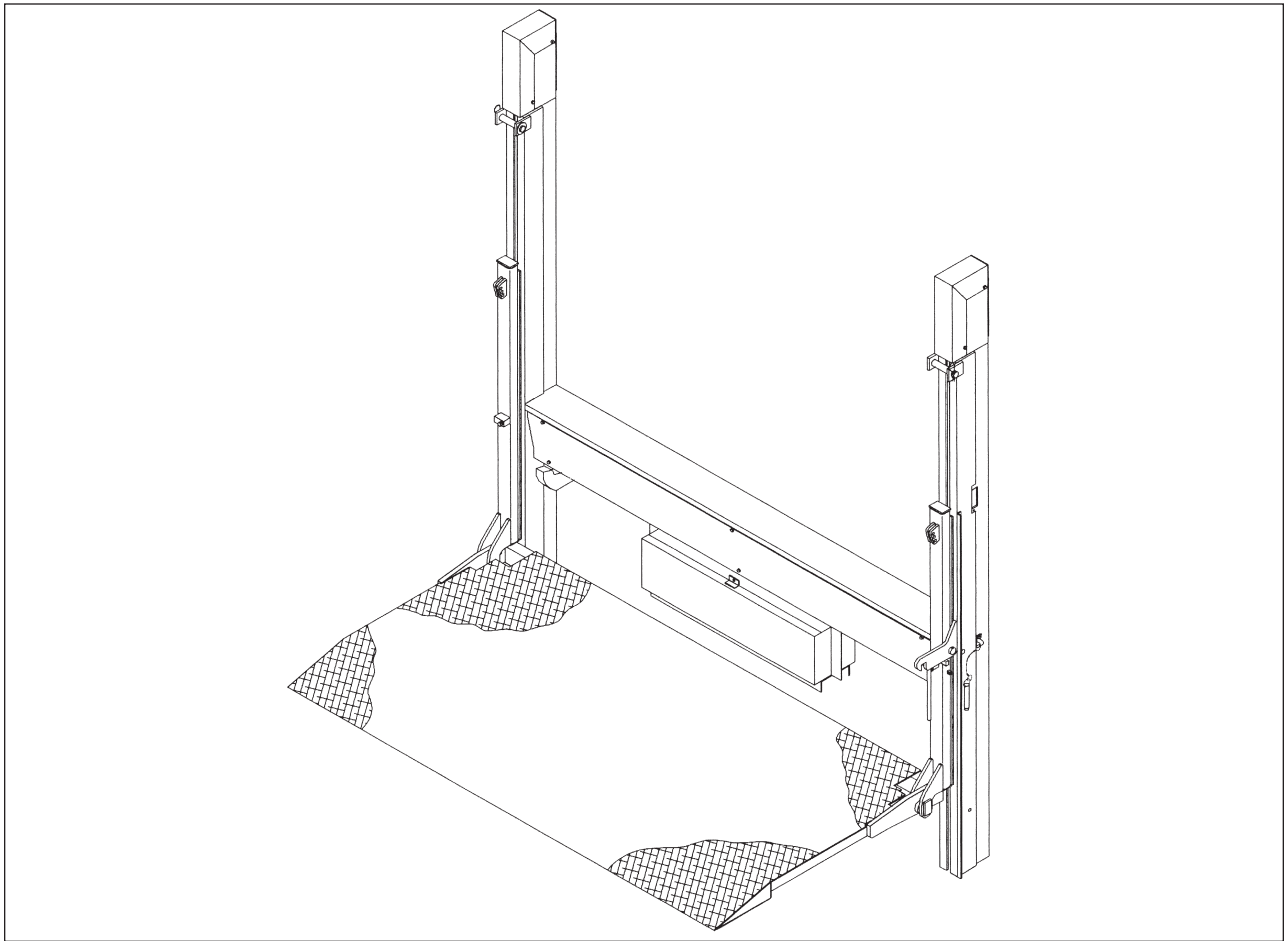


VL SERIES

Railgates By THIEMAN

VL-30, 40, 50 OWNERS MANUAL/PARTS LIST



IMPORTANT! KEEP IN VEHICLE!

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



THIEMAN

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FOR YOUR RECORDS

Model No. _____ Date Purchased _____

Serial No. _____

Note: Include This Information When Ordering Parts!

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.

PARTS ORDERING PROCEDURE

When ordering parts, please include all the information asked 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 VL liftgate serial numbers can be found on the tag located on the inner side of the curb side frame rail.
2. Model number and capacity.
3. Platform size
4. Part number
5. Description
6. Quantity required

WARNING!

The following list of warnings are to be read before operating the VL 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 VL series differs with each model as follows:

VL30 – 3000lbs

VL40 – 4000lbs



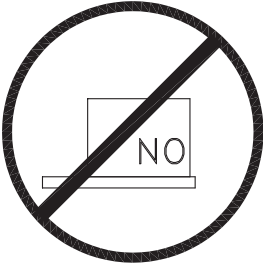
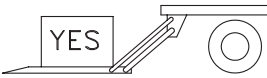
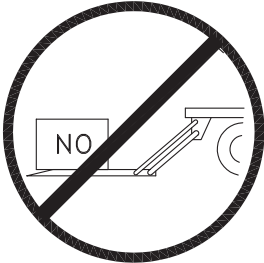
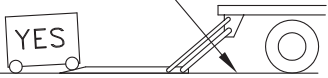
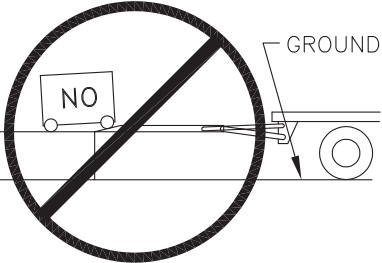
VL50 – 5000lbs

- +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 operation of the liftgate.
- +Keep hands and feet clear of all pinch points.
- +The platform must be in the closed position and the slider stop pins engaged properly before transit.
- +Always load as close to the center of the platform and as close to the cylinder housing 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. Never remove the platform support chains to load or unload.
- +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.
- +This liftgate is equipped with a cable brake. If a break in the cable should occur and the cable brake engages, these items **MUST BE REPLACED!**
- +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 4 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 12% duty cycle, which means the liftgate can be recycled no more than 2 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>   <p>DO NOT OFF CENTER LOAD</p>	<p>FRONT TO BACK</p>   <p>DO NOT OFF CENTER LOAD</p>	<p>GROUND</p>   <p>DO NOT LOAD OR UNLOAD WITH RAMP OFF GROUND</p> <p style="text-align: right;"><small>4671050D</small></p>

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.

OPENING OF PLATFORM

1. Push raise switch up slightly to remove pressure from slider stop pins.
2. Remove both street side and curb side pins.
3. Lower platform and at the same time raise platform latch. Platform will unfold automatically as it passes by the cams.

LOADING AND UNLOADING

4. Raise or lower platform to the desired level for loading or unloading.

DOCK LOADING

5. Push raise switch up slightly to remove pressure from slider stop pins.
6. Remove both street side and curb side pins.
7. Lower platform with latch engaged until the desired height is reached.

CLOSING OF PLATFORM

8. Grasp cam follower handle on curb side and rotate clockwise until it stops.
9. While holding handle in place, raise platform until it starts to fold and release handle. Continue to raise until sliders contact upper stop pins.
10. Replace slider stop pins on both curb and street sides before transit.

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. If adjustments are necessary, this can be done by adjusting the locknuts on the U-bolt thru the platform block.
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 excessive wear in the following areas:
 - A. Roller assemblies on slider
 - B. Platform and hinge pins and pivot plates
 - C. Platform support chains and chain support plates
 - D. Lifting cable which is frayed or worn
 - E. Cable sheaves and bearings
5. Check that all platform pivot pins are in place and retained by their proper retainers.
6. Check that all protective covers and guards are properly in place and secured.
7. 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.
8. Check the oil level in the hydraulic reservoir located in the pump enclosure. With the platform open and at ground level, the oil should be within .50” from the top of the reservoir. See chart below.

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

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

10. Lubrication of the VL series gate should as follows for all user conditions:

<u>Area of Tailgate</u>	<u>Type of Lubrication</u>	<u>Frequency</u>
Platform Pivots	Grease*	100 cycles
Slider rails	SAE 10 to 20 oil	100 cycles
Lifting Cable	SAE 10 to 20 oil	100 cycles
Chain Anchor Links	SAE 10 to 20 oil	100 cycles
Pump Oil Change	See chart	Yearly
Lift Cable & Sheave Change		5000 cycles
Cam Follower Rollers	Grease*	100 cycles
Platform Hinges	Grease	100 cycles

* See the parts list for the location of the grease zerks.

For -40 to 120° F use #0 Grade grease.

For -20 to 200° F use #1 Grade grease.

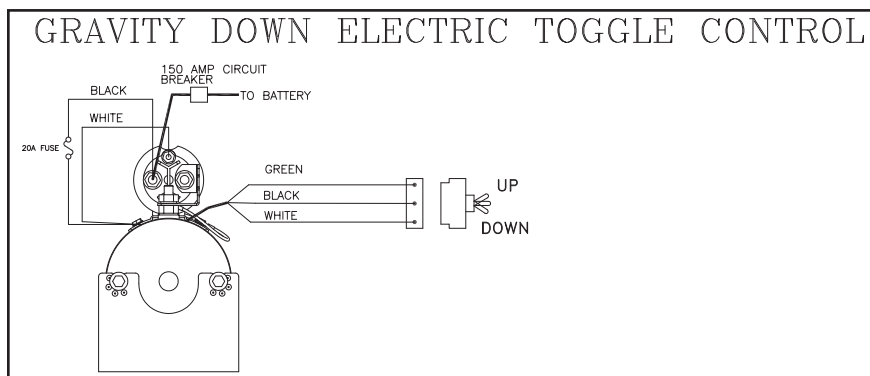
11. Check the pump relief pressure and also the motor amperage at this pressure. These values should be as follows:

Model	Max Amp Draw	Relief Pressure (psi)
VL30	165	1300
VL40	195	1750
VL50	200	2050

SEMI-ANNUAL INSPECTION

1. Perform the procedures outlined in the "Monthly Inspection and Maintenance."
2. Repaint original painted components as necessary to prevent rust and corrosion from reducing structural integrity of original components.
3. 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 .12" long).
 - D. Clean out all residue from inside of the motor housing.
 - E. Apply several drops of light weight machine oil to the armature shaft bearing in the motor end.
4. If the hydraulic oil in the reservoir is contaminated:
 - A. Unfold platform and lower platform to the ground until the cylinder is fully extended.
 - B. Drain the oil from the system and flush the entire system.
 - C. Remove the reservoir from the pump and clean the suction line filter. Also clean out any contaminants from the reservoir. Remount the reservoir when completed.
 - D. Replace the oil as outlined in Section 8 under Monthly Maintenance and Inspection.

ELECTRICAL PICTORIAL

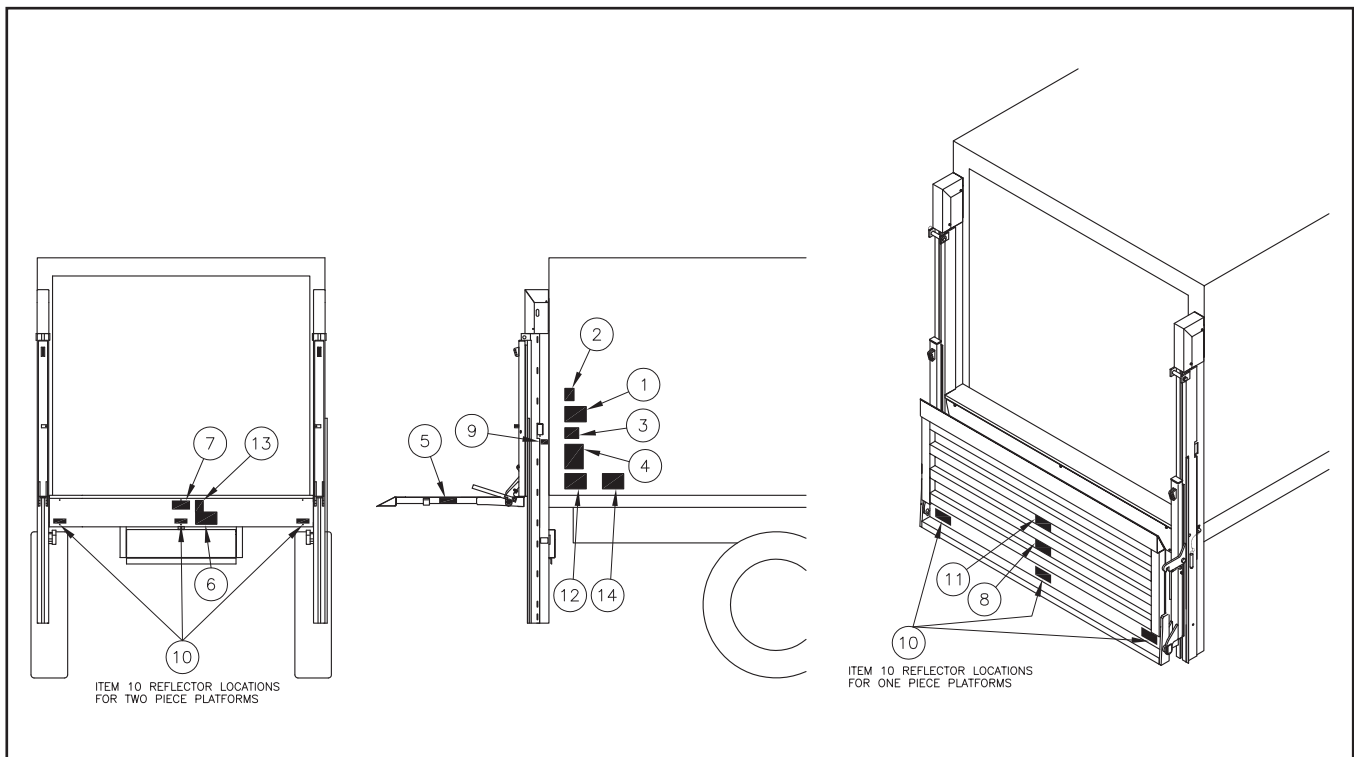


INSPECTION AND LOCATION OF DECALS

Inspect all decals listed below to be certain they are in the proper location and they are legible.

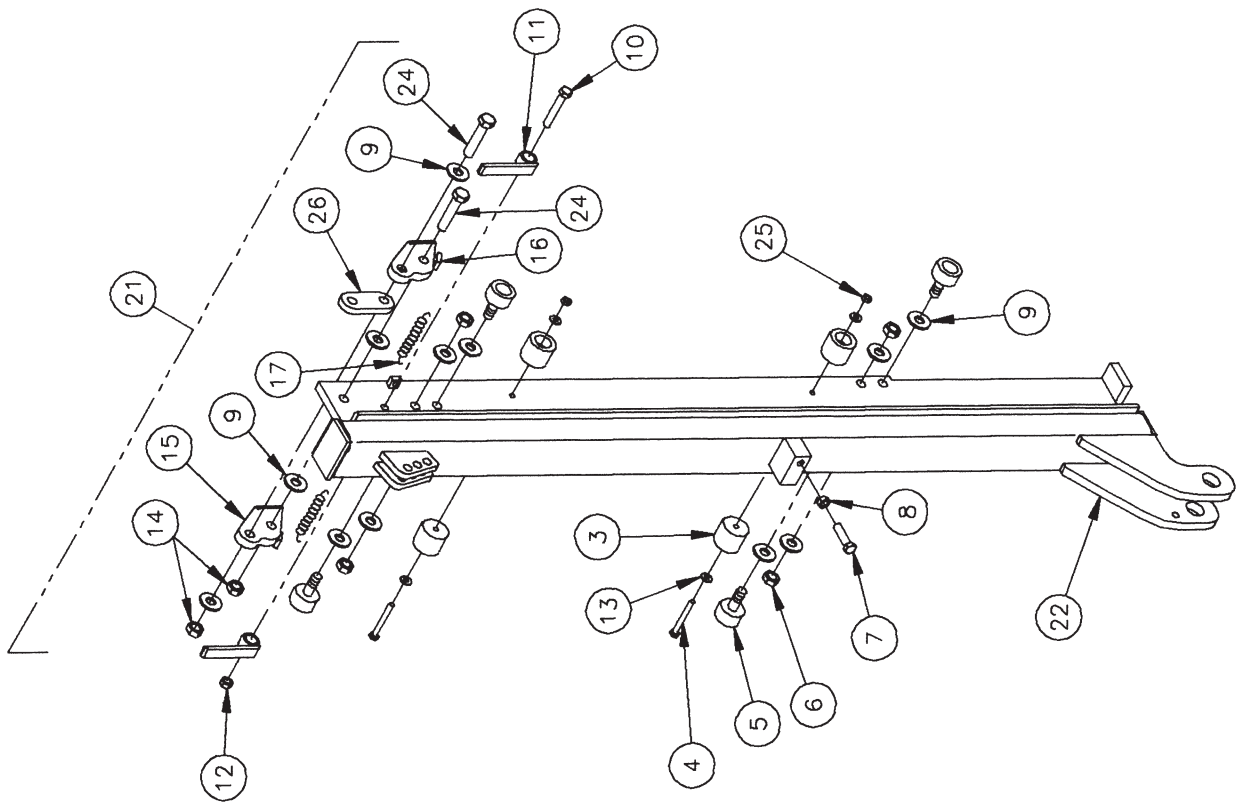
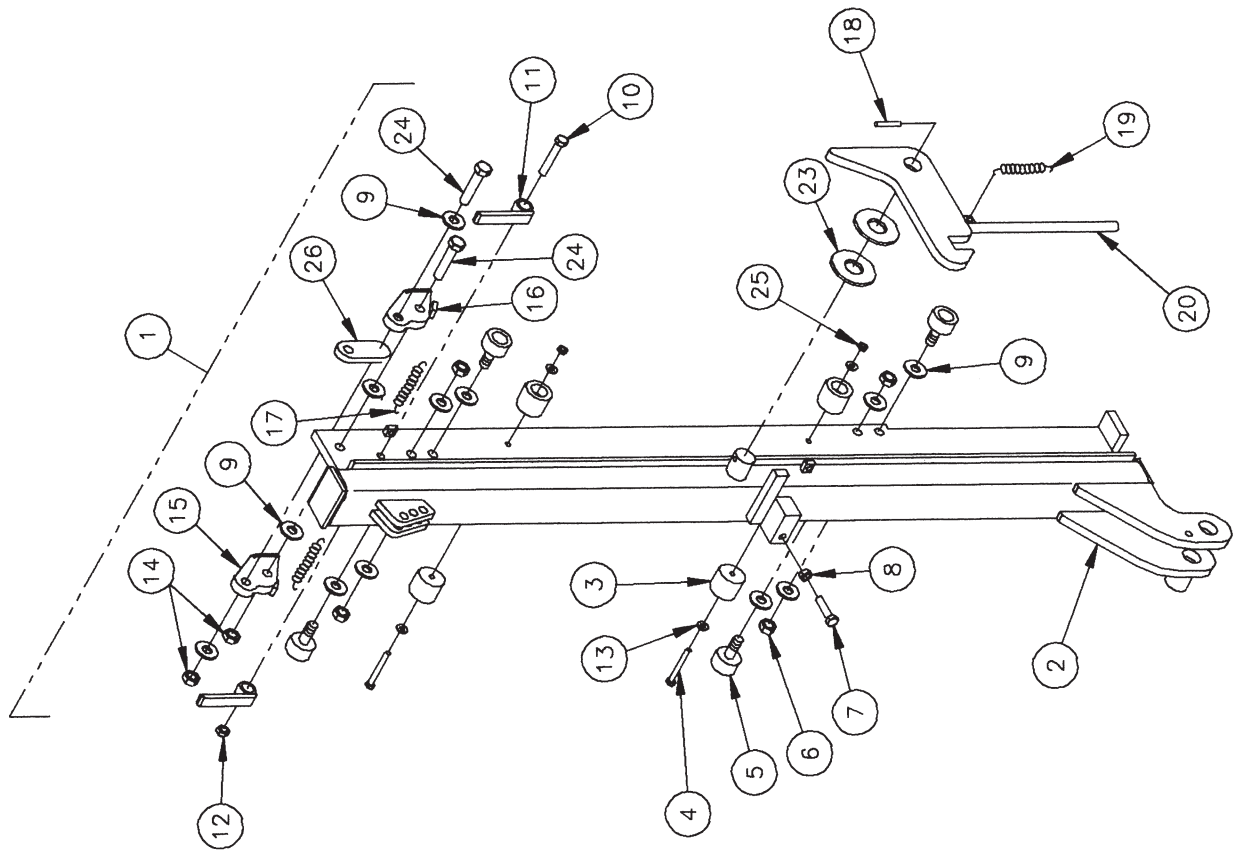
ALL DECALS MUST BE IN PLACE AND LEGIBLE OR ALL WARRANTIES ARE VOID!

Item	Part Name	Part Number
1	Warning Decal-off center	4671050
2	PTO Decal	4650140
2	Fast Idle Decal	4650150
3	No Riding Decal	4609
4	Operating Decal	4650720
5	Capacity Decal 3000#	4650120
5	Capacity Decal 4000#	4650130
5	Capacity Decal 5000#	4607-031
6	Danger Decal-pinch point	4650790
7	Warning Decal-cover	4650760
8	Caution Decal-working area	4650770
9	Toggle Switch Decal	4650820
10	Reflector (3)	5705
11	Thieman Nameplate	4650801
12	Wiring Decal	4616
13	Warning Decal	4620
14	Urgent Warning Decal	4650530



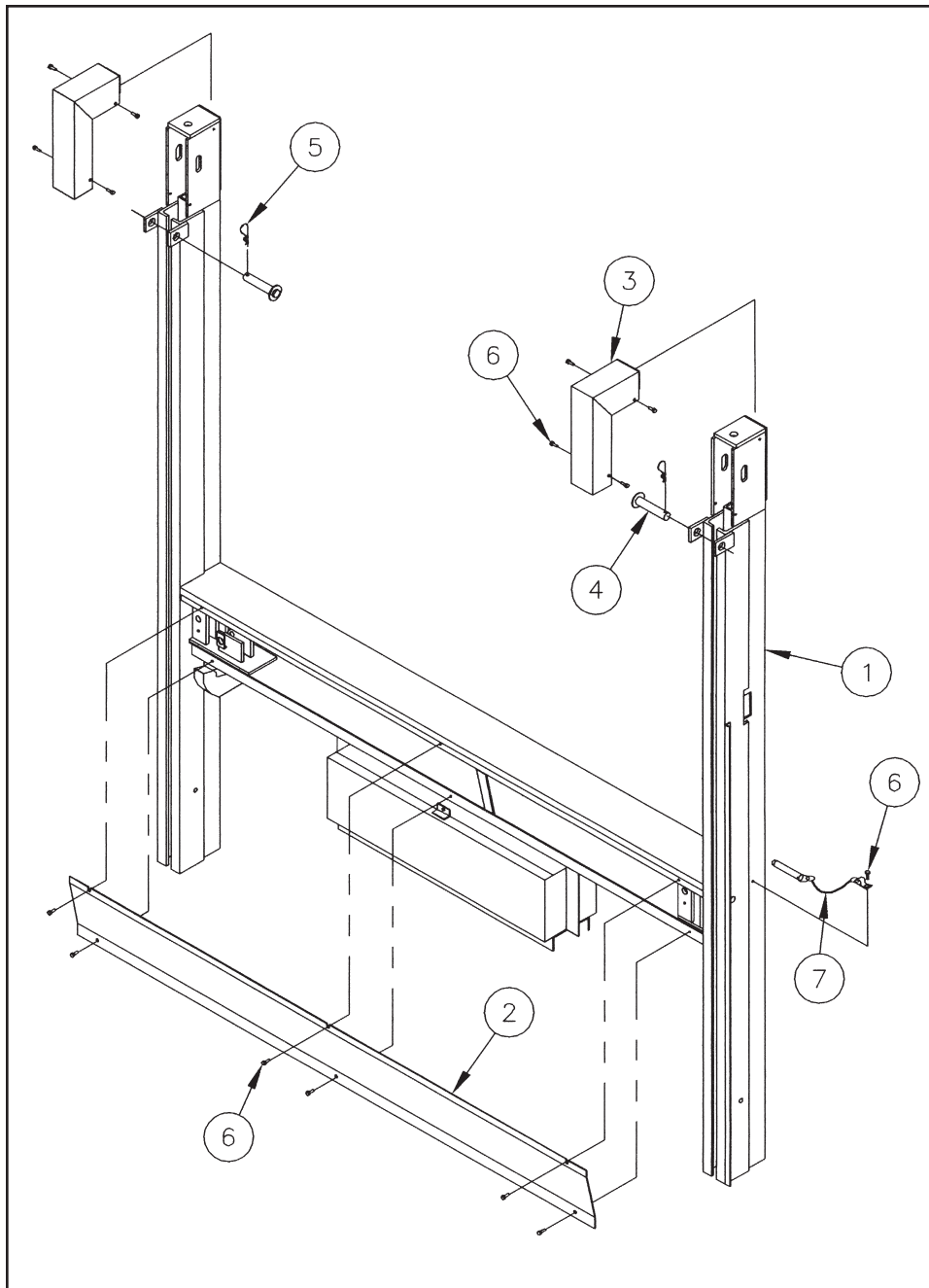
SLIDER ASSEMBLY

Item	Part Number	Description	Qty
1	31076-001	Slider Asm RH-Std	1
1	31076-002	Slider Asm RH-Sm 2 Pc	1
1	31076-003	Slider Asm RH-VL BG	1
2	31074-001	Slider Weld RH-Std	1
2	31074-002	Slider Weld RH-Sm 2 Pc	1
2	31074-003	Slider Weld RH-VL BG	1
3	5717	Wear Pad	8
4	8109-011	Screw .25 x 2.25	4
5	5506	Roller Asm	8
6	8103-011	Locknut .50-20	8
7	8180126	Screw .38 x 1.50	2
8	8103-007	Jam Nut .38	2
9	8120396	Flatwasher .50	20
10	8108-006	Screw .38 x 2.25	2
11	31085	Brake Pad	4
12	9413534	Locknut .38	2
13	8120386	Flat Washer .25	8
14	9414074	Locknut .50-13	4
15	31073-002	Brake Weld RH	2
16	31073-001	Brake Weld LH	2
17	5101090	Spring	4
18	5702371	Spring Pin	1
19	5101100	Spring	1
20	3145	Latch-Sm 2 Pc	1
20	3146	Latch-Std & BG	1
20	3147	Latch-Lg 2 Pc	1
21	31077-001	Slider Asm LH-Std	1
21	31077-002	Slider Asm LH-Sm 2 Pc	1
21	31077-003	Slider Asm LH-VL BG	1
22	31075-001	Slider Weld LH-Std	1
22	31075-002	Slider Weld LH-Sm 2 Pc	1
22	31075-003	Slider Weld LH-VL BG	1
23	8107-010	Flatwasher 1.00	2
24	8100-009	Screw .50 x 2.25	4
25	8103-019	Locknut .25	4
26	2357-002	Link	2



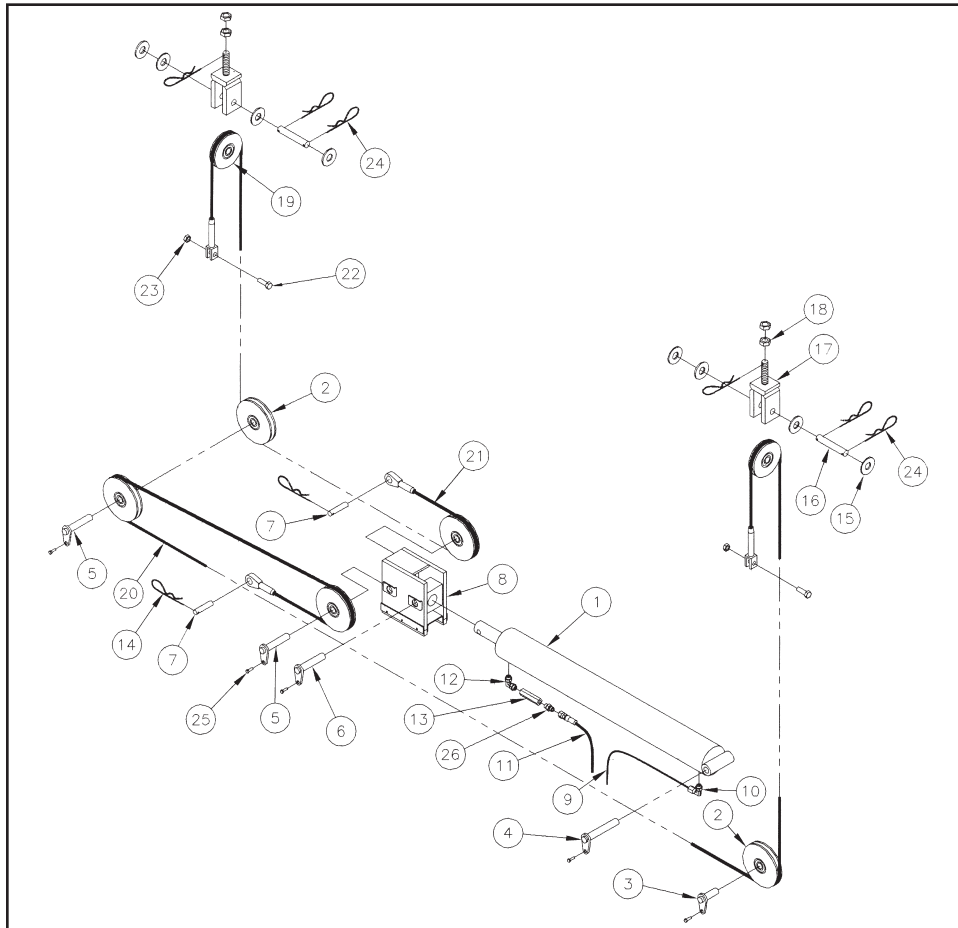
FRAME ASSEMBLY

Item	Part Number	Description	Qty
1	31142-001	Frame Weldment 96"	1
1	31142-002	Frame Weldment 102"	1
2	2777-001	Housing Cover 96"	1
2	2777-002	Housing Cover 102"	1
3	31081	Sheave Cover	2
4	31036	Slider Stop Pin	2
5	5700020	Spring Cotter	2
6	5793010	Self Tap Screw	16
7	3107140	Safety Pin Asm	2



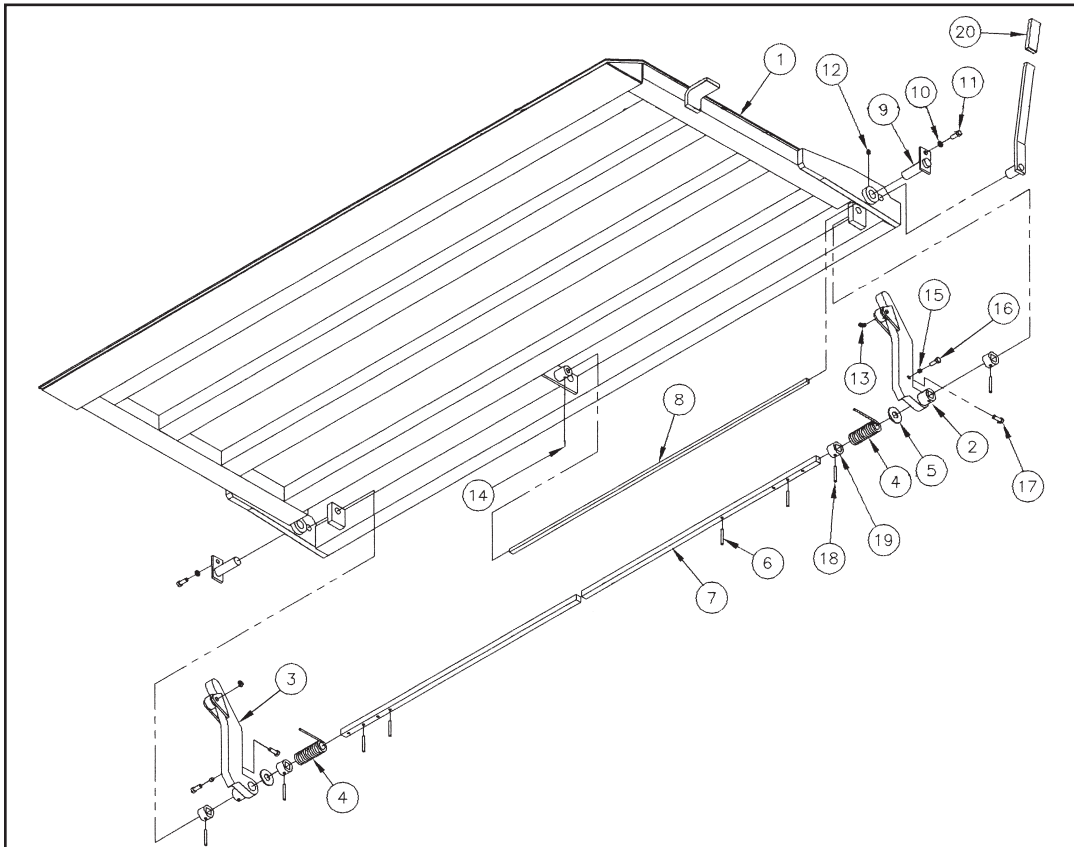
LIFTING CABLE ASSEMBLY

Item	Part Number	Description	Qty.
1	42007	Cylinder $\phi 3.50 \times 30$	1
2	31270-002	Large Sheave	5
3	31149-003	Pin-CS Sheave	1
4	31149-004	Pin-Cylinder	1
5	31149-002	Pin-Pusher Sheaves	2
6	31149-001	Pin-Pusher to Cylinder	1
7	5025-005	Pin-Cable to Housing	2
8	31134	Pusher	1
9	4921-010	Tube 63.00	1
10	4933-001	Elbow BT-MAORB	1
11	4951-006	Hose 34.00	1
12	4936-001	Elbow MAORB-MAORB	1
13	4948-005	Flow Control 6GPM	1
14	5700022	Hairpin Cotter Small	2
15	9429664	Flatwasher .75	8
16	5026	Pin	2
17	31068	Upper Sheave Bracket	2
18	8426897	Jam Nut .75	4
19	31270-001	Small Sheave	2
20	3800-002	Cable CS (102 Wide Body)	1
20	3800-004	Cable CS (96 Wide Body)	1
21	3800-001	Cable SS (102 Wide Body)	1
21	3800-003	Cable SS (96 Wide Body)	1
22	8100-014	Screw .50 x 1.50	2
23	9414074	Locknut .50-13	2
24	5700020	Hairpin Cotter Large	6
25	8109-012	Screw .25 x .75	5
26	4941-001	Straight Adapter MJ-MAORB	1



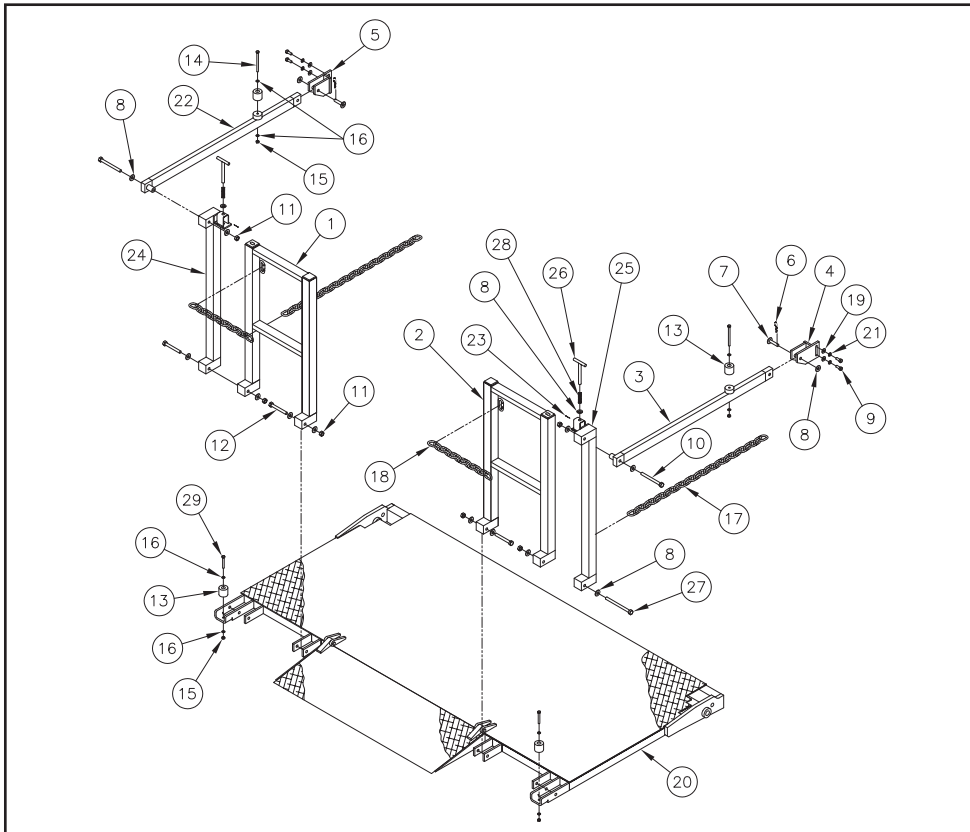
ONE PIECE PLATFORM ASSEMBLY

Item	Part Number	Description	Qty.
1	31145-002	Platform 9036	1
1	31145-001	Platform 9042	1
1	31145-003	Platform 9636	1
1	31145-004	Platform 9642	1
2	31136	Cam Follower RH	1
3	31144	Cam Follower LH	1
4	5103	Spring	2
5	8107-010	Flatwasher 1.00	2
6	3110100	Spring Pin Asm	4
7	31139-001	Shaft Lever Asm 90"	1
7	31139-002	Shaft Lever Asm 96"	1
8	5100150	Torsion Bar	1
9	3106280	Pivot Pin	2
10	8120382	Lockwasher .38	2
11	8180122	Screw .38 x 1.00	2
12	8271291	Zerk	2
13	9411032	Zerk 90°	2
14	8137243	Cotter Pin	1
15	4220240	Nylon Lock	2
16	8181635	Screw .38 x .75	2
17	5793004	Screw .50 x 1.00	2
18	5708-006	Spring Pin .25 x 1.25	4
19	5716	Bearing	4
20	5767	Handle Grip	1



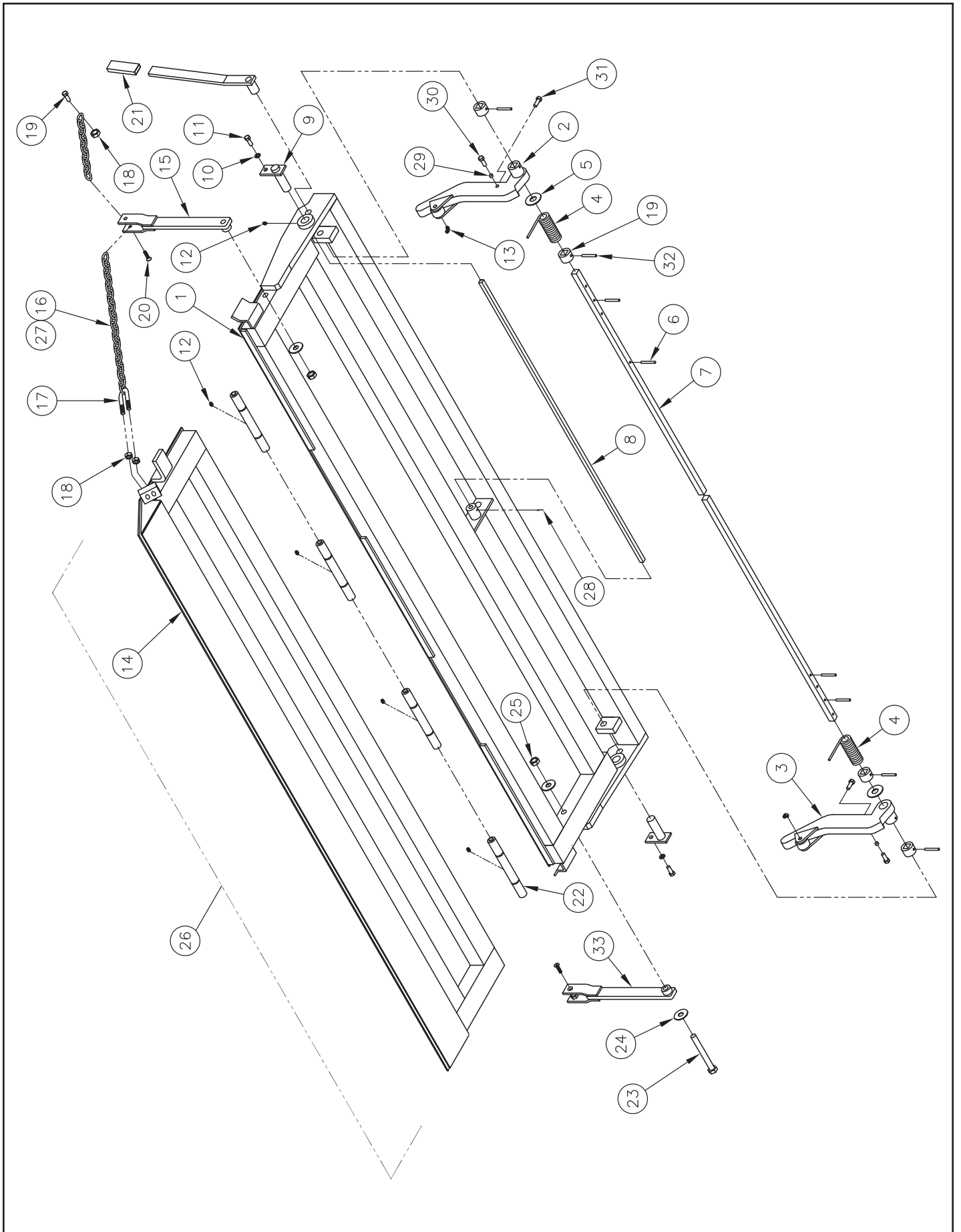
FOLD DOWN BOTTLE GAS RACK ASSEMBLY

Item	Part Number	Description	Qty
1	31342-001	End Rail Weld LH	1
2	31342-002	End Rail Weld RH	1
3	31340-001	Hor. End Rail 42" Deep RH	1
3	31340-002	Hor. End Rail 36" Deep RH	1
4	31084-002	Bracket RH	1
5	31084-001	Bracket LH	1
6	5700022	Spring Cotter	2
7	31027	Pin	2
8	8120396	Flatwasher .50	16
9	8180122	Screw .38 x 1.00	4
10	8100-008	Screw .50 x 5.25	2
11	9414074	Locknut .50-13	6
12	8100-007	Screw .50 x 4.00	2
13	5702290	Rubber Bumper	4
14	8104-011	Screw .31 x 4.50	2
15	9413447	Locknut .31	4
16	8120386	Flatwasher .31	8
17	4100301	Chain 42" Deep	2
17	4100303	Chain 36" Deep	2
18	4100302	Chain 36" Deep	2
18	4100304	Chain 42" Deep	2
19	8120388	Flatwasher .38	4
20	3438-001	Platform 9036	1
20	3438-002	Platform 9042	1
20	3438-003	Platform 9636	1
20	3438-004	Platform 9642	1
21	8120382	Lockwasher .38	4
22	31339-001	Hor. End Rail 42" LH	1
22	31339-002	Hor. End Rail 36" LH	1
23	8121222	Cotter Pin	2
24	31337-001	Vertical Rail Weld LH	1
25	31337-002	Vertical Rail Weld RH	1
26	31336	Locking Pin Weld	2
27	8100-013	Screw .50 x 6.50	2
28	5101160	Spring	2
29	8180091	Screw .31 x 2.50	2



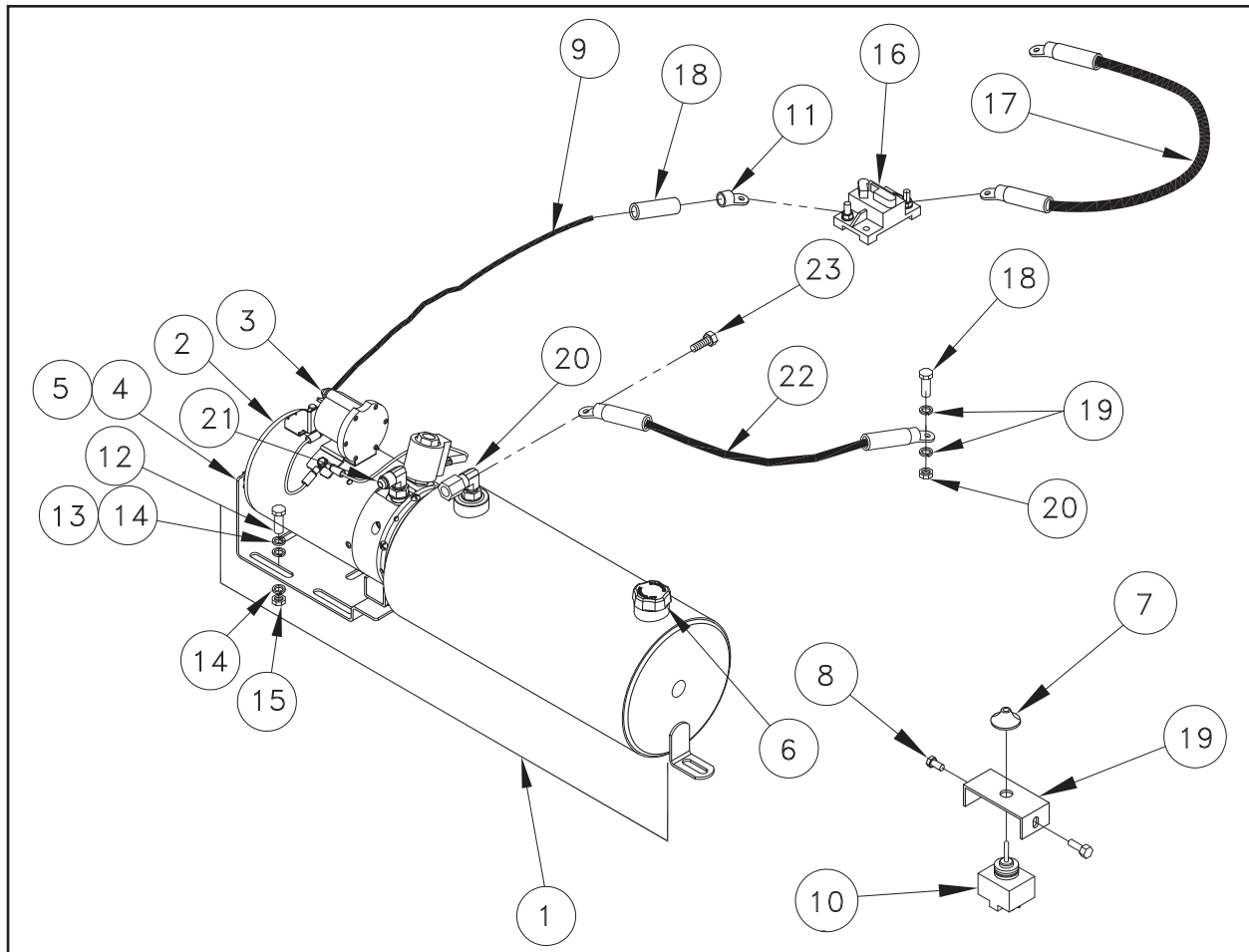
TWO PIECE PLATFORM ASSEMBLY

Item	Part Number	Description	Qty
1	31147-001	Main Section 9060,9072	1
1	31147-002	Main Section 9660,9672	1
1	31148-001	Main Section 9036,9042	1
1	31148-002	Main Section 9636,9642	1
2	31136	Cam Follower RH	1
3	31144	Cam Follower LH	1
4	5103	Spring	2
5	8107-010	Flatwasher 1.00	2
6	3110100	Spring Pin Asm	4
7	31139-001	Shaft Lever Asm 90"	1
7	31139-002	Shaft Lever Asm 96"	1
8	5100150	Torsion Bar	1
9	3106280	Pivot Pin	2
10	8120382	Lockwasher .38	2
11	8180122	Screw .38 x 1.00	2
12	8271291	Zerk	6
13	9411032	Zerk 90°	2
14	3109510	Extension 9036	1
14	3109511	Extension 9042	1
14	3109512	Extension 9636	1
14	3109513	Extension 9642	1
14	3144-001	Extension 9072	1
14	3144-002	Extension 9060	1
14	3144-003	Extension 9672	1
14	3144-004	Extension 9660	1
15	31176-006	Pivot Arm 36" Deep	2
15	31176-003	Pivot Arm 42" Deep	2
15	31176-004	Pivot Arm 60" Deep	2
15	31176-005	Pivot Arm 72" Deep	2
16	4100350	Chain 36" Deep	2
16	4100351	Chain 42" Deep	2
16	4100352	Chain 60" Deep	2
16	4100353	Chain 72" Deep	2
17	5793150	U-Bolt	2
18	9414073	Locknut .44	6
19	5701910	Screw .44 x 1.50	2
20	8108-012	Screw .38 x 1.50	2
21	5767	Handle Grip	1
22	3106270	Hinge Asm	4
23	8102-001	Screw .62 x 5.50	2
24	8130999	Flatwasher .62	4
25	8103-001	Locknut .62	2
26	3416-001	Platform Asm 9072	1
26	3416-002	Platform Asm 9060	1
26	3416-003	Platform Asm 9672	1
26	3416-004	Platform Asm 9660	1
26	3417-001	Platform Asm 9036	1
26	3417-002	Platform Asm 9042	1
26	3417-003	Platform Asm 9636	1
26	3417-004	Platform Asm 9642	1
27	5702300	Protective Sleeve	4
28	8137243	Cotter Pin	1
29	4220240	Nylon Lock	2
30	8181635	Screw .38 x .75	2
31	5793004	Screw .50 x 1.00	2
32	5708-006	Spring Pin .25 x 1.25	4
33	5716	Bearing	4



POWER UNIT ASSEMBLY

Item	Part Number	Description	Qty.
1	4400901	Pump Asm incl-2-6	1
2	4423521	Motor 8112	1
3	4468	Solenoid	1
4	4421420	Pump Bracket	1
5	4421350	Mounting Bracket	1
6	4420410	Breather Cap	1
7	4301750	Toggle Seal	1
8	5793010	Self Tap Screw	2
9	4300030	Battery Cable 2 Ga x 25'	1
10	4301550	Toggle Switch	1
11	4350	Cable Lug	1
12	8180126	Screw .38 x 1.50	5
13	8120388	Flatwasher .38	10
14	8120382	Lockwasher .38	5
15	8120377	Nut .38	5
16	4301770	Circuit Breaker	1
17	4318-001	Cable Asm. 2 Ga. x 2'	1
18	4319-002	Heat Shrink	1
19	27046	Switch Bracket	1
20	4933-001	Elbow BT-MAORB	1
21	4930-001	Elbow MJ-MAORB	1
22	4318-003	Battery Cable #2 x 5'	1
23	8104-006	Screw .31 x 1	1



TROUBLESHOOTING GUIDE VL30/40/50ET

- 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. Blown 20A fuse
 - c. Defective or undercharged battery(ies)
 - d. Improper battery cable connection or improper ground connection
 - e. Defective or improperly wired raise switch
 - f. Defective or improperly wired solenoid start switch
 - g. Defective pump motor
- Corrections -
- a. Reset the circuit breaker located within 2ft of the liftgate supply battery(ies).
 - b. Replace 20A fuse.
 - c. 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.
 - d. Trace battery and ground cable connections to locate improper connection(s). Make sure the ground cable is installed going from the pump mounting screws to bare metal on the truck frame. Make sure the ground cable from the batteries to the frame is a heavy 2ga. cable and that it too 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.
 - e. 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 green and white wire on the switch with the switch in the "RAISE" position. If no voltage is present, replace the switch.
 - f. 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.

- g. 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 cylinder is 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. Remove the breather cap and check the fluid line through the fill hole. 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 VL is equipped with a lifting relief valve to prevent overloading of the liftgate. The relief settings should be as follows:
 - VL30-1300 psi
 - VL40-1750 psi
 - VL50-2050 psi
- c. See section "b" 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 cylinder may be bypassing. To check for a bypassing cylinder do the following. Lower the gate to the ground to relieve all pressure from the cylinder. Disconnect the cylinder from the pusher. Press the "RAISE" switch until the cylinder 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 cylinder 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 cylinder 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 cylinder 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
- c. Cable brake is engaged

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.
- c. The VL models are equipped with a cable brake on each slider in the event a lifting cable is broken. Replace the cables and cable brakes on each side. Refer to parts manual for the location of these items. If a cable is not broken and the lift will not lower then push the RAISE switch as the cable may have become slack.

4. Problem - Liftgate raises slowly - The raise speed of the VL30/40/50 on a 55" bed height while empty at 70° F is approximately 22-25 seconds. The raise speed loaded for the same conditions is approximately 32-45 seconds. These speeds vary with each model.

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. Air can enter 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 cylinder, unpinning the cylinder 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 6 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.