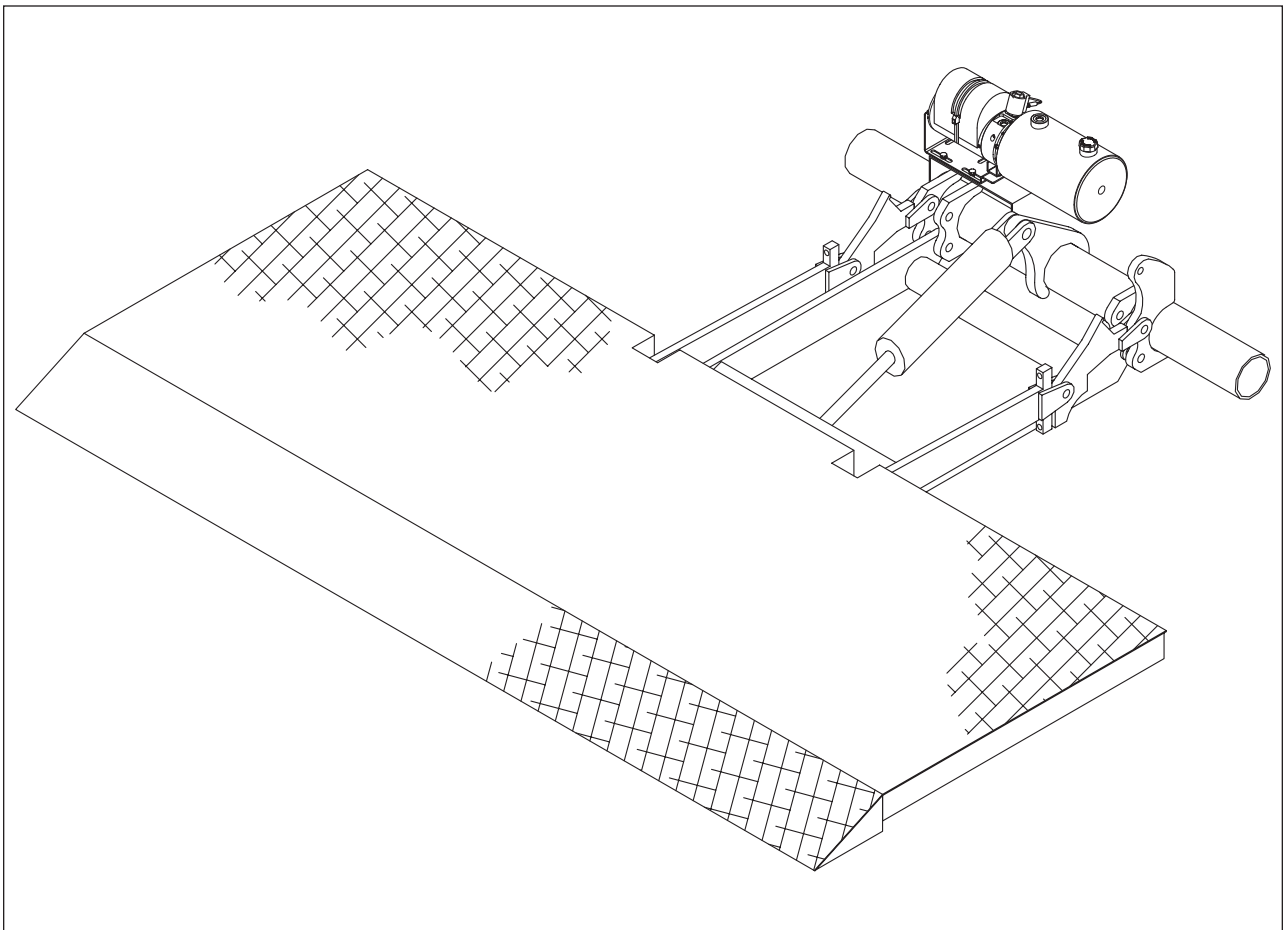


WEIGHTLIFTER

Tailgates By THIEMAN

TWL 125, 16, 20 OWNERS MANUAL/PARTS LIST



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
PARTS ORDERING PROCEDURE	2
WARNINGS	3
OPERATING INSTRUCTIONS	4
MAINTENANCE GUIDE	5
SEMI-ANNUAL INSPECTION.....	6
ELECTRICAL PICTORIALS	6&7
INSPECTION AND LOCATION OF DECALS.....	7&8
PLATFORM ASM	8
CONTROL AND CLOSING LINKAGE AND PARTS	9
TRUNNION, LIFT ARM, AND IDLER ARM ASM.....	10
PUMP ASM-ELECTRIC CONTROL, GRAVITY DOWN	11
PUMP ASM-ELECTRIC CONTROL, POWER DOWN.....	12
TROUBLESHOOTING GUIDE	13-16

FOR YOUR RECORDS

Model No. _____ **Date Purchased** _____

Serial No. _____

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:

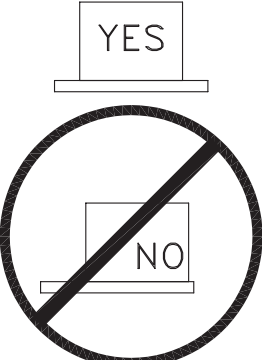
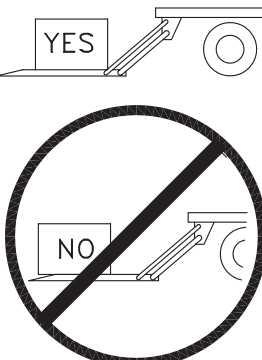
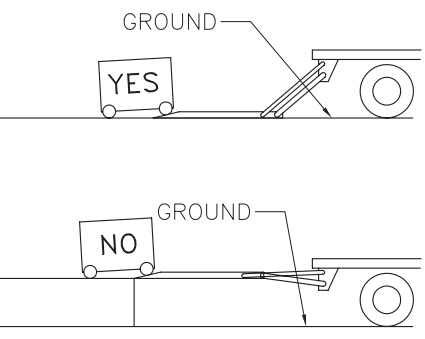
1. Serial Number - Thieman liftgate serial numbers can be found on the tag located on the right hand mounting plate.
2. Model Number and Capacity.
3. Platform size and Material - Steel or Aluminum.
4. Part number.
5. Description.
6. Quantity required.

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>
---	--	---

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

The following list of warnings are to be read before operating the TWL 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 TWL series liftgate differs with each model as follows:
- | | | |
|------------------------|-----------------------|-----------------------|
| TWL125 6626 - 1250 LBS | TWL16 7832 - 1600 LBS | TWL20 7832 - 2000 LBS |
| TWL125 7832 - 1250 LBS | TWL16 8432 - 1600 LBS | TWL20 8432 - 2000 LBS |
| TWL125 8432 - 1250 LBS | TWL16 9032 - 1600 LBS | TWL20 9032 - 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 and the transit chains latched properly before transit.
- + Always load as close to the center of the platform and as close to the vehicle 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 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 20 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 15% duty cycle, which means the liftgate can be cycled no more than 9 cycles/10 minutes constantly with a maximum load.

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. Unhook the stow chains on each side of the platform.
2. Raise assembly following step 6 until vertical platform is tight against the rear of the vehicle.
3. Lower platform 1/2 way to ground and disengage closing lever by rotating closing handle counterclockwise until it locks into place before loading platform. Closing lever must be disengaged to raise and lower platform in the horizontal position.

LOWERING OF PLATFORM

4. Push the lower switch to lower platform to the desired position.

RAISING OF PLATFORM

5. Make sure closing lever is disengaged to operate gate with platform in a horizontal position.
6. Push the raise switch to raise platform to the desired position.

CLOSING OF PLATFORM

7. Lower or raise platform 1/2 way between the ground and the truck bed.
8. Engage closing lever by rotating closing handle clockwise until it locks into place. Raise assembly following step 6 until the platform is vertical.
9. Secure platform with the stow chains on both sides of the platform.

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 platform height relative to bed height. If platform is lower, adjust cylinder with a 13/16 wrench to obtain the necessary height.
3. Check for apparent damage to the liftgate such as bent or distorted members, any cracked welds that may have resulted from overloading or abuse.
4. Check for excessive wear in the following areas:
 - A. Platform hinge pins and lift arms
 - B. All cylinder pins, bolts, and clevis
 - C. Platform extension pivots
 - D. Linkage pins and clevises
5. Check that the 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 pump reservoir. With the liftgate in the lowered position the oil should be within 1/2" from the top of the reservoir. See chart below for oil applications.
9. Check that all wiring and battery cable connections are tight and free of corrosion.
10. Lubrication of the TWL series liftgate should be as follows:

<u>Area of Tailgate</u>	<u>Type of Lubrication*</u>	<u>Frequency</u>
Pivot pins w/zerk	Grease	50 cycles
Pump oil change	see chart below	yearly

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

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

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

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(R) TG
-50 to 80 F	Shell Aero Fluid 4 Mobil Aero HFA Exxon Univis J-13 MIL H-5606

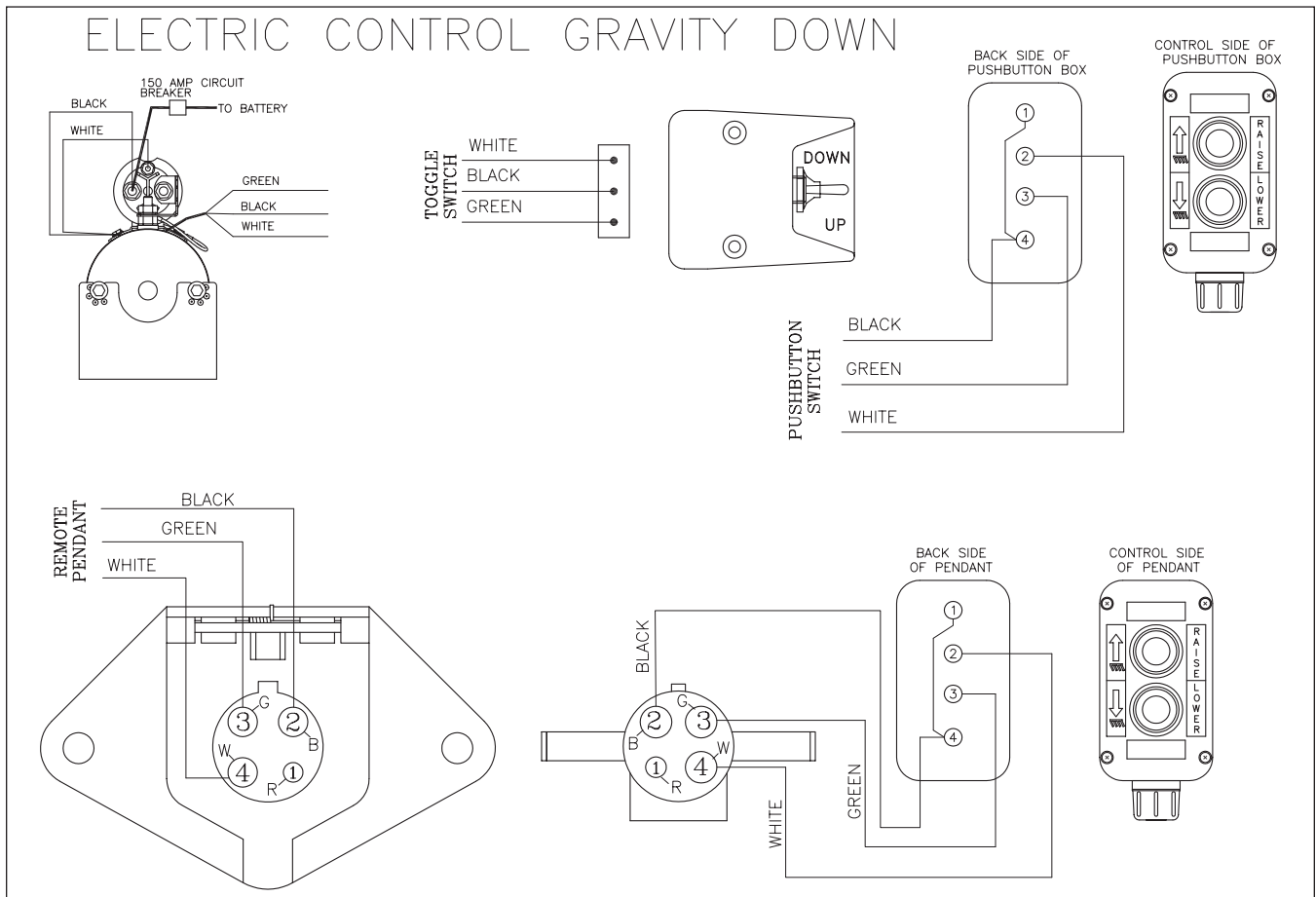
11. Check the pump relief pressure and also the motor amperage at this pressure. These values should be as follows:

Model	Max Amp Draw	Relief Pressure (psi)
TWL 125	165	1750
TWL 16	180	2150
TWL 20	205	2650

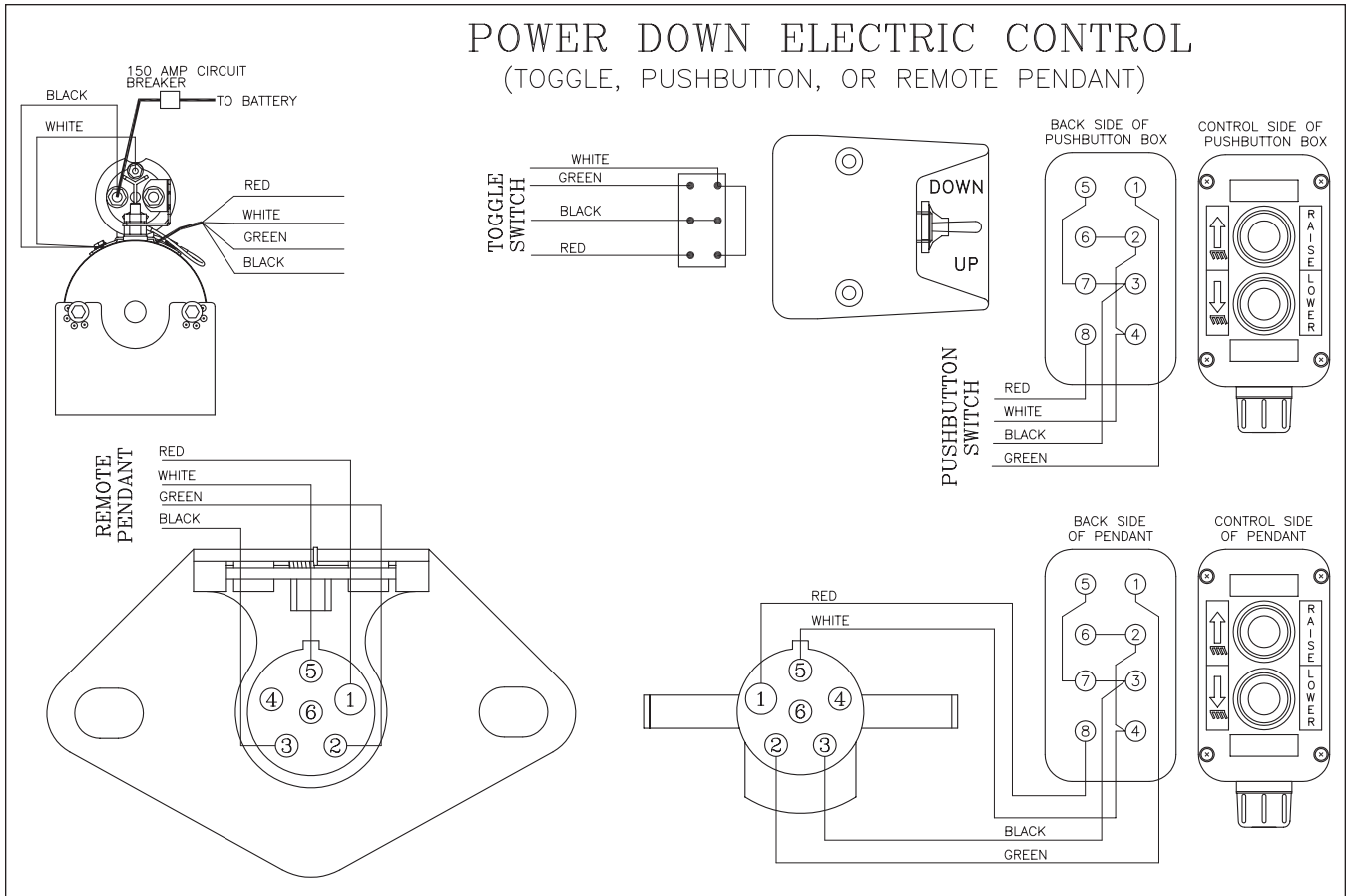
Semi-Annual Inspection

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 end cover and reassemble the motor end cover.
3. If the hydraulic oil in the reservoir is dirty:
 - A. Unfold platform and lower platform 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 inside reservoir. Remount reservoir when completed.
 - D. Replace the oil as outlined in Section 9 under Monthly Maintenance and Inspection.

ELECTRICAL PICTORIALS



POWER DOWN ELECTRIC CONTROL (TOGGLE, PUSHBUTTON, OR REMOTE PENDANT)



INSPECTION AND LOCATION OF DECALS

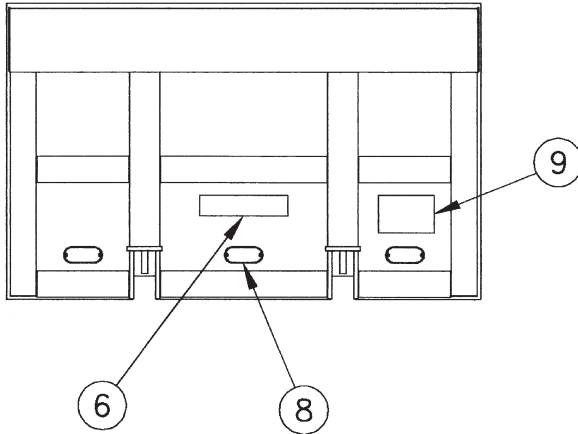
Inspect all decals listed below to be certain they are in the proper location and they are legible.

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

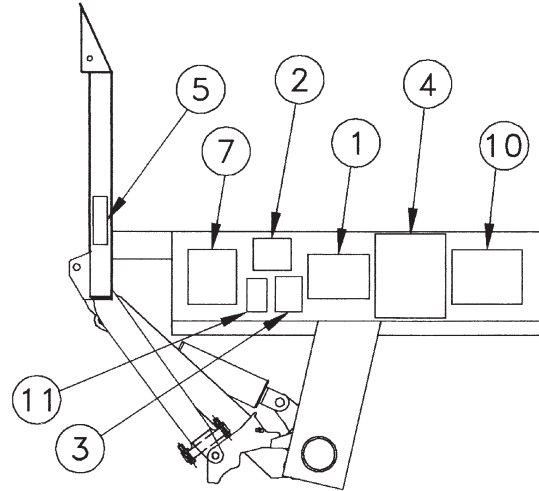
Item	Part Name	Part Number
1	Warning Decal-off center	4671050
2	Fast Idle Decal	4650150
3	Danger Decal-no riding	4609
4	Operating Decal	4657
5	Capacity Decal-1250#	4650060
5	Capacity Decal-1600#	4650750
5	Capacity Decal-2000#	4650100
6	Thieman Nameplate	4650800
7	Urgent Warning Decal	4650530
8	Reflector (3)	5705
9	Caution Decal-Platform Area	4650770
10	Wiring Decal-Gravity Down	4612
10	Wiring Decal-Power Down	4613
11	Warning-Leaking Fluid Decal	4620

INSTALL DECALS AS SHOWN

REAR VIEW OF STOWED PLATFORM

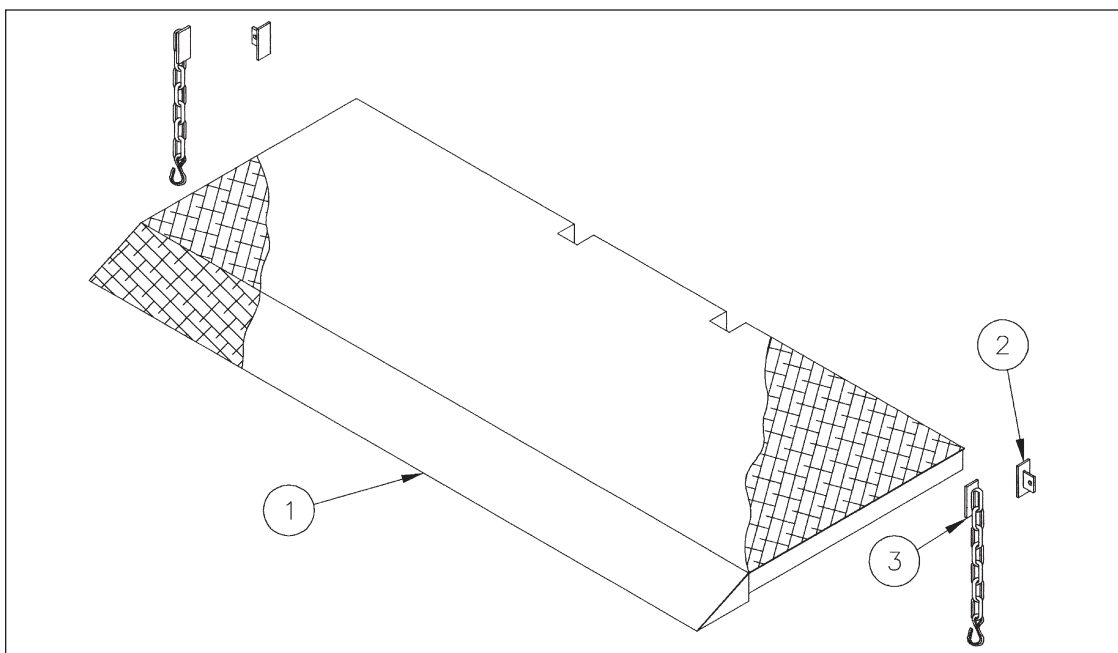


CURB SIDE VIEW



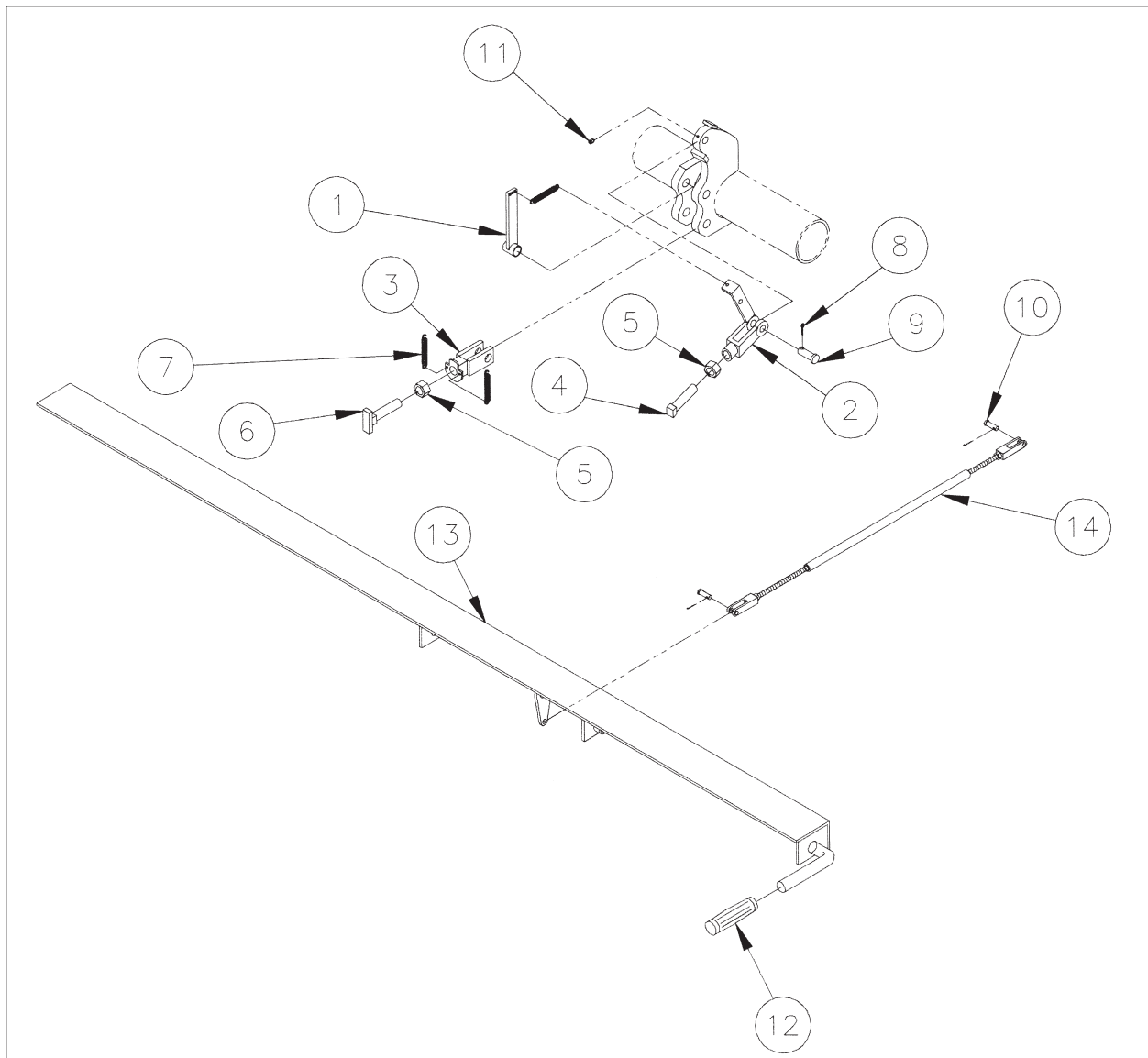
PLATFORM ASSEMBLY

Item	Part Number	Description	Qty/Model		
			125	16	20
1	3400430	Platform 6626	1	1	1
1	3400440	Platform 7832	1	1	1
1	3400450	Platform 8432	1	1	1
1	3400460	Platform 9032	1	1	1
1	3400860	Platform - Exp. Metal 7832	1	1	1
1	3400870	Platform - Exp. Metal 8432	1	1	1
1	3400880	Platform - Exp. Metal 9032	1	1	1
2	3103730	Chain Anchor	2	2	2
3	3103751	Chain and S Hook	2	2	2



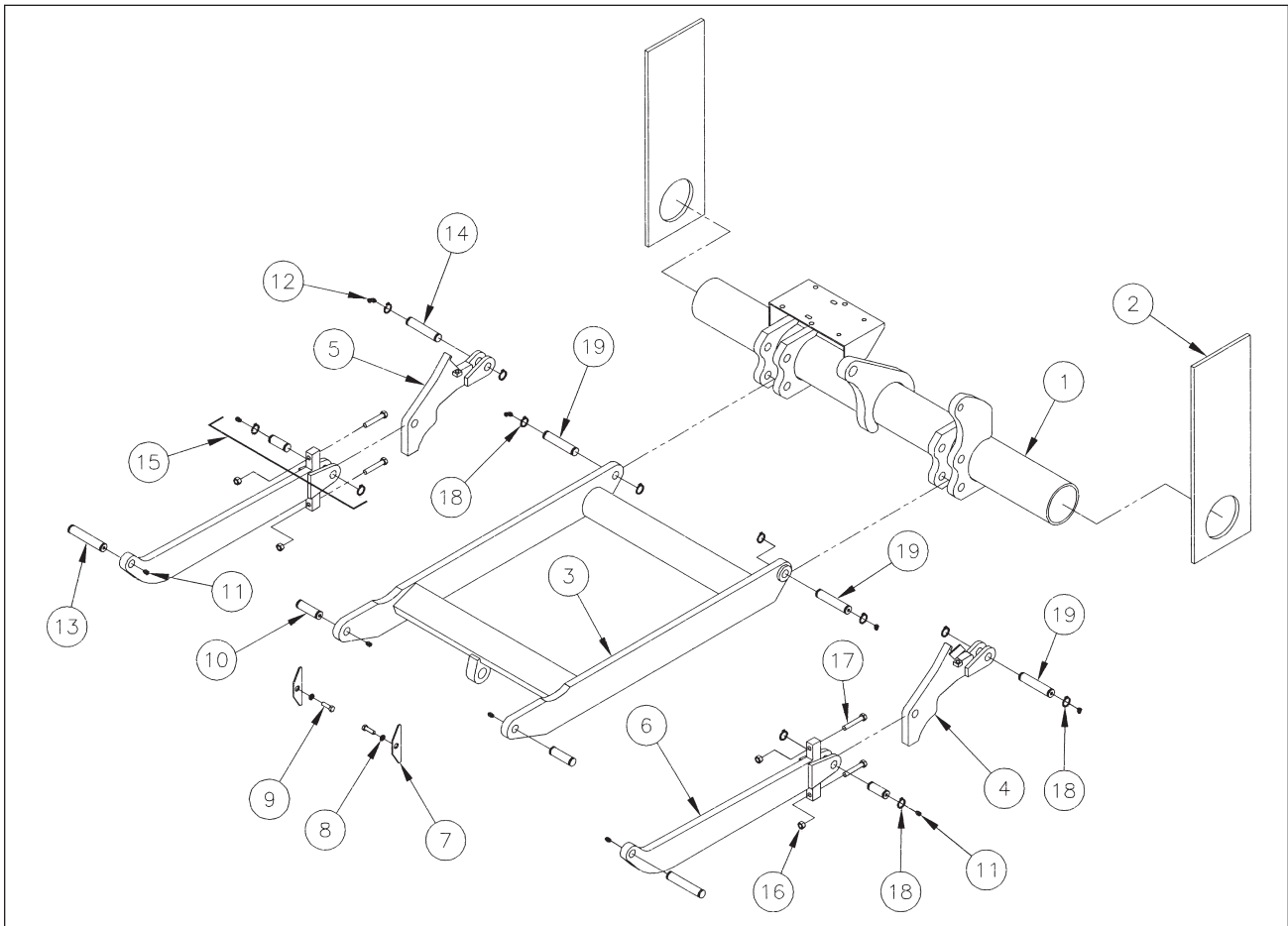
CLOSING LINKAGE PARTS

Item	Part Number	Description	Qty/Model		
			125	16	20
1	3101910	Spring Adjustment Bracket	1	1	1
2	3101920	Closing Bracket	1	1	1
3	31261	Opening Adjustment Bracket	2	2	2
4	5792004	Square Head Set Screw .75 x 3.00	1	1	1
5	8426897	Jam Nut .75	3	3	3
6	3107760	Adjustment Stud	2	2	2
7	5101100	Spring	5	5	5
8	8137185	Cotter Pin	3	3	3
9	5794001	Clevis Pin .62	1	1	1
10	8138078	Clevis Pin .38	2	2	2
11	8271291	Grease Fitting	1	1	1
12	5701043	Handle Grip	1	1	1
13	3501	Spacer	1	1	1
14	31268	Linkage Rod Asm	1	1	1



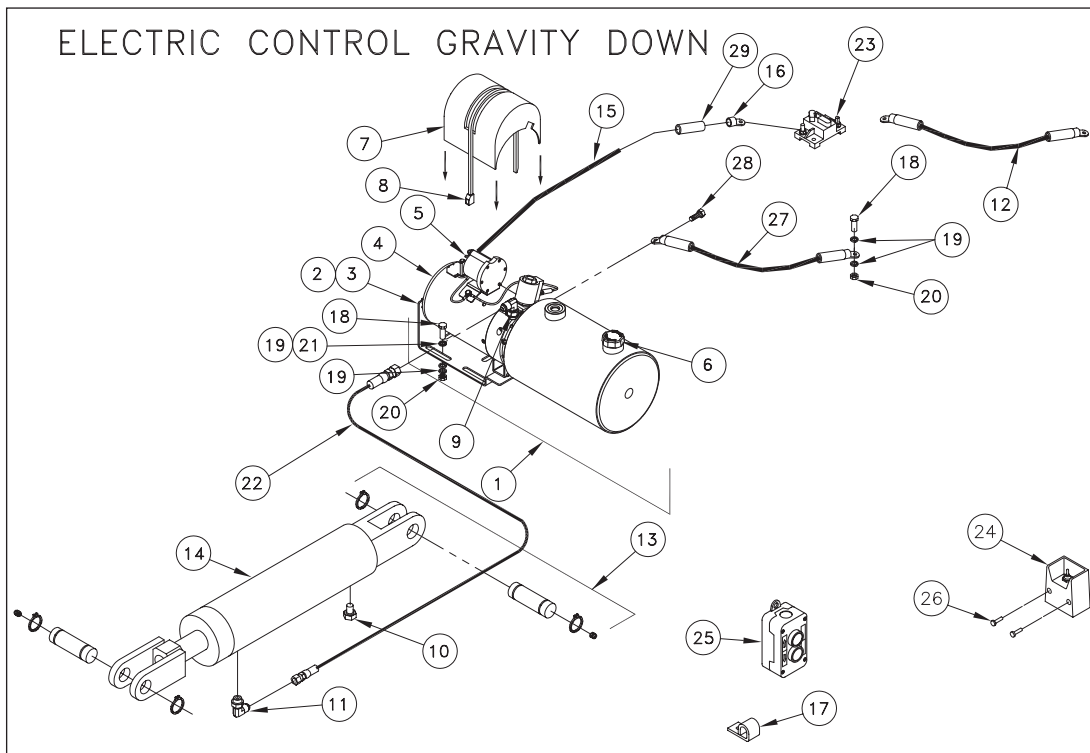
TRUNNION, LIFT ARMS, AND IDLER ARMS

Item	Part Number	Description	Qty/Model		
			125	16	20
1	31262	Trunnion Asm	1		
1	31263	Trunnion Asm		1	1
2	2103070	Mounting Plate	2	2	2
3	31264	Lift Arm	1		
3	31265	Lift Arm		1	1
4	3100290	Idler Arm Pivot R.H.	1	1	1
5	3102090	Idler Arm Pivot L.H.	1	1	1
6	3102110	Idler Arm	2		
6	3102120	Idler Arm		2	2
7	2307020	Pin Strap	2	2	2
8	8120214	Lockwasher .31	2	2	2
9	8104-006	Screw .31 x 1.00	2	2	2
10	5001801	Pin Asm.	2	2	2
11	8271291	Grease Fitting	6	6	6
12	9411032	Grease Fitting 90°	4	4	4
13	5001811	Pin Asm	2	2	2
14	5001271	Pin Asm	1	1	1
15	5001301	Pin Asm	2	2	2
16	8120238	Jam Nut .50	4	4	4
17	8100-001	Square Head Set Screw .50 x 2.00	4	4	4
18	5781015	Retaining Ring	12	12	12
19	5001761	Pin Asm.	3	3	3



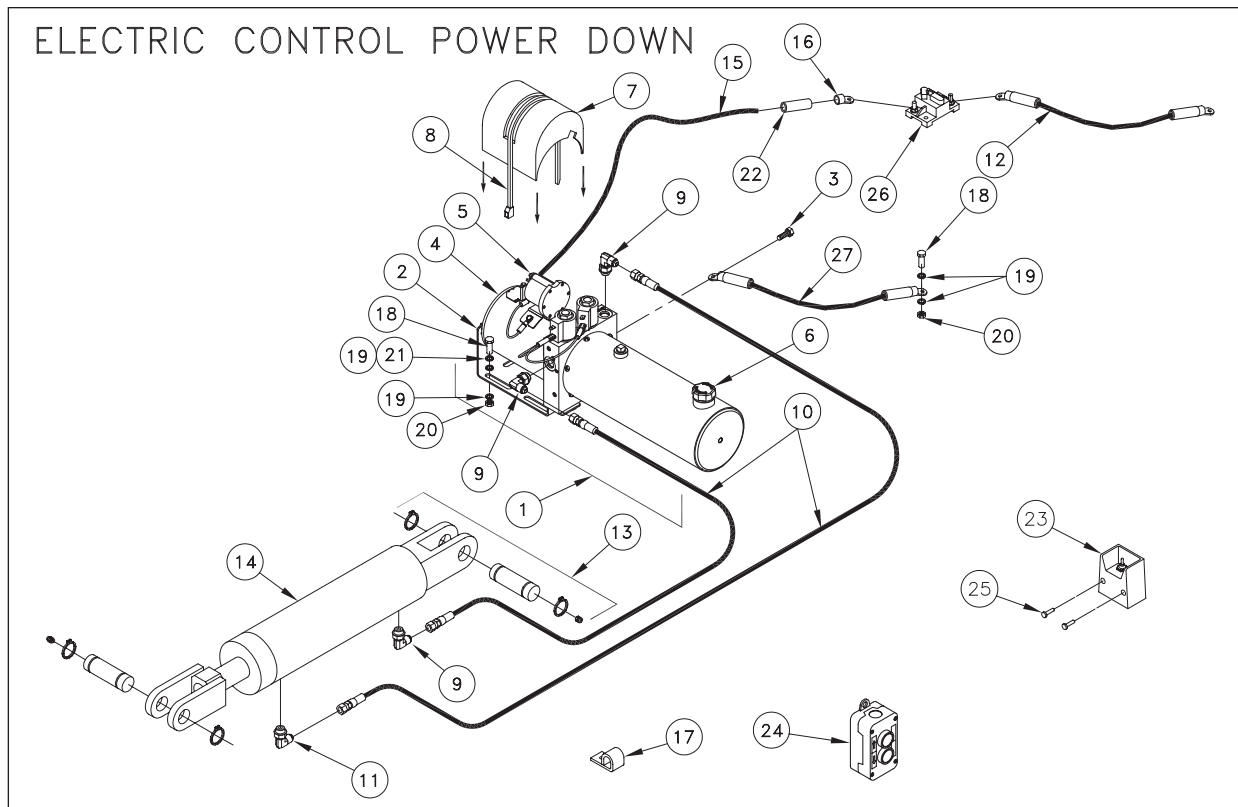
PUMP ASSEMBLY-ELECTRIC CONTROL GRAVITY DOWN

Item	Part Number	Description	Qty/Model		
			125	16	20
1	4400351	Pump Asm. - incl. 2 thru 6	1	1	1
2	4421420	Pump Bracket	1	1	1
3	4421350	Mounting Bracket	1	1	1
4	4423520	Motor 8111	1	1	1
5	4468	Solenoid	1	1	1
6	4420410	Breather Cap	1	1	1
7	5704	Cover	1	1	1
8	5700100	Strap	1	1	1
9	4930-001	Elbow MJ-MAORB	1	1	1
10	4954	Breather	1	1	1
11	4931-001	Restrictor Elbow MJ-MAORB	1	1	1
12	4318-001	Cable Asm #2 x 2'	1	1	1
13	5001841	Pin Asm.	2	2	2
14	4294	Cylinder 3.00 x 8.00	1		
14	4295	Cylinder 3.00 x 10.38		1	1
15	4300030	Battery Cable #2 x 25'	1	1	1
16	4350	Cable Lug	1	1	1
17	5701260	Cable Retainer	12	12	12
18	8180126	Screw .38 x 1.50	5	5	5
19	8106-010	Internal Tooth Lockwasher .38	10	10	10
20	8120377	Nut .38	5	5	5
21	8120388	Flatwasher .38	4	4	4
22	4951-006	Hose 34.00	1	1	1
23	4301770	Circuit Breaker	1	1	1
24	31446	Toggle Switch Asm	1	1	1
25	4422850	Pushbutton Control	1	1	1
26	8111-005	Screw #10 x .75	2	2	2
27	4318-002	Ground Cable #2 x 2'	1	1	1
28	8104-006	Screw .31 x 1	1	1	1
29	4319-002	Heat Shrink	1	1	1



PUMP ASSEMBLY-ELECTRIC CONTROL POWER DOWN

Item	Part Number	Description	Qty/Model		
			125	16	20
1	4404	EST Pump Asm.-incl. 2 thru 6	1	1	1
2	4421420	Pump Bracket	1	1	1
3	8104-006	Screw .31 x 1	1	1	1
4	4423520	Motor 8111	1	1	1
5	4468	Solenoid	1	1	1
6	4420409	Breather Cap	1	1	1
7	5704	Cover	1	1	1
8	5700100	Strap	1	1	1
9	4930-001	Elbow MJ-MAORB	3	3	3
10	4951-006	Hose 34.00	2	2	2
11	4931-001	Restrictor Elbow MJ-MAORB	1	1	1
12	4318-001	Cable Asm #2 x 2'	1	1	1
13	5001841	Pin Asm.	2	2	2
14	4294	Cylinder 3.00 x 8.00	1		
14	4295	Cylinder 3.00 x 10.38		1	1
15	4300030	Battery Cable #2 x 25'	1	1	1
16	4350	Cable Lug	1	1	1
17	5701260	Cable Retainer	12	12	12
18	8180126	Screw .38 x 1.50	5	5	5
19	8106-010	Internal Tooth Lockwasher .38	10	10	10
20	8120377	Nut .38	5	5	5
21	8120388	Flatwasher .38	4	4	4
22	4319-002	Heat Shrink	1	1	1
23	31445	Toggle Switch Asm	1	1	1
24	4422860	Pushbutton Control	1	1	1
25	8111-005	Screw #10 x .75	2	2	2
26	4301770	Circuit Breaker	1	1	1
27	4318-002	Ground Cable #2 x 2'	1	1	1



TROUBLESHOOTING GUIDE TWL125/16/20ET

- 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 liftgates 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 is installed going from the aluminum pump base 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.
 - 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. Either check for the fluid line through the plastic reservoir or for metal reservoirs 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 TWL is equipped with a lifting relief valve to prevent overloading of the liftgate. The relief settings should be as follows:

TWL125 - 1750psi
TWL16 - 2150 psi
TWL20 - 2650 psi
- c. See section c above for relief valve setting. Plumb pressure gauge into the high pressure circuit of the liftgate. Remove all loads from the liftgates 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 liftarm. 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. 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 TWL125 on a 47 bed height while empty at 70° F is approximately 6-8 seconds. The raise speed loaded for the same conditions is approximately 8-10 seconds. The raise speed of the TWL16/20 on a 52 bed height while empty at 70° F is approximately 7-9 seconds. The raise speed loaded for the same conditions is approximately 14-16 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 2a
 - b. Refer to Owners 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

Corrections- a. This can occur if the motor is not running as the liftgate is lowered. See problem 1, part e and f. Also 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 h. 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.

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