

THIEMAN TDR

Troubleshooting Guide-Gravity Down

NOTE: Please refer to the electrical and hydraulic diagrams in the Owner's Manual when troubleshooting the TDR. **Follow the corrections in the order they are shown.**

- 1. Problem Causes** - Pump motor will not run in the raise mode.
 - a. Tripped circuit breaker
 - b. Defective battery(ies)
 - c. Improper battery cable connections or ground
 - d. Defective keyswitch (SW4)
 - e. Defective top switch (SW1)
 - f. Defective solenoid start switch (K1)
 - g. Defective bottom switch (SW2)
 - h. Defective pump motor
- Corrections**
 - a. Reset circuit breaker.
 - b. The battery(ies) on the vehicle should be that which has a minimum 150 amp reserve capacity. Low voltage problems can be a result of having too small of a battery. Replace battery(ies) as necessary.
 - c. Trace battery and ground cable connections to locate improper connection(s).
 - d. Check for voltage from K1-4 to SW4-1 then check SW4 in the "ON" position and replace if voltage is not present. Keep the keyswitch in the "ON" position for all testing.
 - e. Check for voltage at SW1-5; if none the wire from SW4-2 is broken and needs replaced. If voltage exists then check for voltage at SW1-2 and SW1-1 with switch activated to the "UP" position, if none then replace SW1. If voltage exists then proceed to next step. Be sure the jumper is in place from SW1-5 to SW1-2.
 - f. Check for voltage at K1-1 when SW1 is actuated. If none then wire from SW1-1 is broken and needs replaced. If there is voltage and coil does not energize then replace start switch.
 - g. Check for voltage at SW2-5; if none the wire from SW1-2 is broken and needs replaced. If voltage exists then check for voltage at SW2-2 and SW2-1 with switch activated to the "UP" position, if none then replace SW2. If voltage exists check lead from SW2-1 to SW1-1 and replace wire if broken. Be sure jumper is in place from SW2-5 and SW2-2.
 - h. With the SW1 or SW2 switch activated in the "UP" position and the K1 coil is activated, check for voltage at the motor terminal. If voltage is present and the motor is not running, replace the motor.
- 2. Problem Causes** - Pump motor will not run in the close mode.
 - a. Tripped circuit breaker
 - b. Defective battery(ies)
 - c. Improper battery cable connections or ground
 - d. Defective keyswitch (SW4)
 - e. Defective open/close switch (SW3)
 - f. Defective solenoid start switch (K1)
 - g. Defective pump motor
- Corrections**
 - a. Reset circuit breaker.
 - b. The battery(ies) on the vehicle should be that which has a minimum 150 amp reserve capacity. Low voltage problems can be a result of having too small of a battery. Replace battery(ies) as necessary.
 - c. Trace battery and ground cable connections to locate improper connection(s).
 - d. Check for voltage from K1-4 to SW4-1, then check SW4-2 in the "ON" position and replace if voltage is not present. Keep the key switch in the "ON" position for all testing.
 - e. Check for voltage at SW3-2; if none trace back the circuit to SW4-2 to find the broken line. If voltage exists then check for voltage at SW3-6 with the switch activated in the "CLOSE" position, if none then replace SW3. If voltage exists, check for voltage at K1-1 and if none find broken line from K1-1 to SW1-1 or SW1-1 to SW2-1 or SW2-1 to SW3-6. Be sure jumper is in place from SW3-5 and SW3-2.
 - f. If there is voltage at K1-1 and coil does not energize then replace start switch.
 - g. With the SW3 switch activated in the "CLOSE" position and the K1 coil is activated, check for voltage at the motor terminal. If voltage is present and the motor is not running, replace the motor.
- 3. Problem Causes** - Liftgate will not raise - Perform the corrections as listed in Section 1 then proceed to the following:
 - a. Tapeswitch activated or defective - The K3 relay light will not be illuminated in the raise mode.
 - b. Defective K3 relay

- c. Overload condition
- d. Defective SW1 and/or SW2 switch
- e. Defective SV3 raise solenoid valve and/or coil
- f. Relief valve misadjusted or defective
- g. Lift cylinders are bypassing
- h. Broken hydraulic line or hose
- i. Defective pump

- Corrections**
- a. Lower platform and remove obstruction. If problem still exists, check for voltage on both sides of the R1 resistor with the keyswitch on. If none replace resistor. If the K3 relay light is not illuminated the next step would be to check continuity between TA and TC, then TB and TD. This must be done by disconnecting the wires from R1, K3-2, K3-7, and K2-7. If continuity does not exist and a broken wire can not be found the tapeswitch must be replaced.
 - b. The K3 relay light should be on in the raise mode. It will be deactivated if the tapeswitch is activated or defective. If K3 is not energized in the raise mode it will need to be replaced. If it is energized and the lift will not raise check for voltage at K3-3 and K3-1 with the SW1 and/or SW2 in the "UP" position. If not perform step d below then replace the K3 relay.
 - c. The power unit on the Thieman TDR is equipped with a lifting relief valve to prevent overloading of the liftgate. These relief settings are as follows: TDR44-1850psi, TDR55-2300psi, and TDR66-2750psi. If the liftgate is overloaded it will not raise. Remember the capacities of the TDR are TDR44-4400 lbs, TDR55-5500 lbs, and TDR66-6600 lbs.
 - d. Check for voltage at SW1-4 with the switch in the "UP" position and replace switch if none exists. The next step is to check for voltage at SW2-4 with switch in the "RAISE" position and replace switch if none exists. Next check the lead between SW1-4 and SW2-4 for continuity and replace if necessary. If liftgate does not raise proceed to step e.
 - e. With SW1 or SW2 in the "UP" position check for voltage at the SV3 valve coil terminal, if no voltage is present the wire from K3-3 is broken. If there is voltage and the coil is not energizing to shift the valve, the valve and coil must be replaced.
 - f. See section c for relief valve settings and adjust as necessary by using a pressure gauge. If the relief pressure is not attainable the relief valve must be replaced.
 - g. If liftgate is raising very slowly or only partially and fluid is coming out of the return line or breather at a steady rate the lifting cylinder(s) will need to be replaced.
 - h. Broken or punctured hydraulic lines and hoses must be replaced with care to avoid injury from high pressure oil streams.
 - i. If all else fails replace the power unit, it is probably worn out.

- 4. Problem Causes**
- Liftgate platform will not open-perform the corrections as listed in Section 1a thru 1d and 2e
 - a. Kickout spring is damaged or broken.
 - b. Defective SW3 switch is defective.
 - c. Defective SV1 open solenoid valve and/or coil.

- Corrections**
- a. Replace spring and bolt as needed located on the inside edge of the left hand slider.
 - b. With the SW3 switch activated in the "CLOSE" position check for voltage on SW3-4 and replace if no voltage is present.
 - c. With the SW3 in the "OPEN" position check for voltage at the SV1 valve coil terminal, if no voltage is present the wire from SW3-4 is broken and needs replaced. If there is voltage and the coil is not energizing to shift the valve, the valve and coil must be replaced.

- 5. Problem Causes**
- Liftgate platform will not lower or one side will lower only-perform the corrections as listed in Section 1a thru 1d.
 - a. Defective SW1 top switch
 - b. Defective SW2 bottom switch
 - c. Defective SV4A lowering solenoid valve and/or coil
 - d. Defective SV4B lowering solenoid valve and/or coil

- Corrections**
- a. Check for voltage at SW1-3 with the switch in the "DOWN" position and if none replace the switch.
 - b. Check for voltage at SW2-6 with the switch in the "DOWN" position and if none replace the switch. Check for voltage at SW1-3 with SW2 switch in the "DOWN" position and if none the lead from SW2-6 is broken and needs replaced.
 - c. With SW2 in the "DOWN" position check for voltage at the SV4A valve coil terminal, if no voltage is present the wire(s) from SW1-3 are broken and need replaced. These wires are lead numbers 315 and 303; see wiring pictorial. If voltage is present replace the valve and coil.
 - d. With SW2 in the "DOWN" position check for voltage at the SV4B valve coil terminal, if no voltage is present one of the wires from SW1-3 is broken and needs replaced. These wires are lead numbers 303, 315 and 316; see wiring pictorial. If voltage is present replace the valve and coil.

- 6. Problem** - Liftgate platform will not close-perform the corrections listed in Section 2
- Causes**
- a. Defective SW3 open/close switch
 - b. Defective SV2 closing solenoid valve and/or coil
 - c. Defective closing cylinder(s)
- Corrections**
- a. With the SW3 switch in the "CLOSE" position check for voltage at SW3-3 and if none is present this switch needs to be replaced.
 - b. Check for voltage at the coil terminal of the SV2 valve and if none exists the wire from SW3-3 will need replaced. Otherwise the SV2 valve needs replaced if voltage is present and the platform is not closing.
 - c. If fluid is leaking from the closing cylinder(s) breather port or the rod seal at a steady stream the cylinder will need to be replaced or repaired.
- 7. Problem** - One side or the other, or both sides of the platform are drifting at a rapid rate-more than 1" per day
- Causes**
- a. Air in lifting hydraulic circuit
 - b. Defective SV4A and/or SV4B solenoid valve
 - c. Defective cylinder piston seals
- Corrections**
- a. Insert the key into the keyswitch and turn clockwise to the ON position. Raise the liftgate completely then raise the latch on the curb side and at the same time open the platform with the toggle switch. Once the platform is completely open, lower the platform to the ground and then raise the platform completely to bed height and run the pump for five seconds to force any air out of the system.
Additional bleeding of the system can be done by fully extending the lift cylinders. It may be necessary to raise the truck or trailer to obtain a bed of 60 inches. Open one bleeder screw, see parts list for location of this screw on the cylinder valve block. Connect a jumper wire from K1-1 to K3-3 and a loose wire connected to K1-1. Touch the loose lead from K1-1 to K1-4 and hold the toggle switch in the "Down" position. This will force out any air in the cylinder. Then close the bleeder valve when a red stream of fluid is present. Repeat this procedure for the other side.
 - b. Replace the solenoid valve for whichever side is drifting.
 - c. Check the return lines for an excessive amount of fluid bypassing the piston seals and repair or replace the cylinder as necessary.
- 8. Problem** - Alarm does not operate in the "UP", "DOWN", "OPEN", and "CLOSE" only operations - perform the corrections as listed in Section 1a thru 1g then proceed below.
- Causes**
- a. Defective alarm
 - b. Defective top switch SW1
 - c. Defective bottom switch SW2
 - d. Defective open/close switch SW3
 - e. Defective K2 relay
- Corrections**
- a. Activate the SW2 switch in the "UP" position and check for voltage at K2-2. If voltage is present and alarm does not sound, check the ground lead on the alarm for a proper ground and replace alarm if ground is good. If no voltage is present proceed to step b.
 - b. With SW1 in the "DOWN" position check for voltage at SW1-6 and if no voltage is present replace the SW1 switch. If voltage is present check for voltage at SW2-3 if none is present the wire from SW1-6 is broken and needs replaced. If voltage is present proceed to step c.
 - c. With the SW2 switch in the "DOWN" position check for voltage at SW2-3 and if none exists replace SW2. If voltage is present check for voltage at K2-2 and if none exists the wire from SW2-3 is broken and needs replaced. Check for voltage at K2-1 with the SW2 switch in the "UP" position and if none is present the wire from SW2-1 is broken and needs replaced.
 - d. Activate the SW3 switch to the "OPEN" position and check for voltage at SW3-1 and if none exist replace the SW3 switch. If there is voltage present check for voltage at K2-8 and if none is present the wire from SW3-1 is broken and needs replaced.
 - e. Anytime SW1 or SW2 is activated in the "DOWN" position or the SW3 is activated in the "OPEN" position the K2 relay should be energized. If the relay is not energizing it will need to be replaced. If the relay is energized and the alarm is not sounding check for voltage at K2-8 with SW2 in the "DOWN" position and if none is present the wire from K2-2 is broken and needs replaced. If there is voltage at K2-8 and the relay is energized check for voltage at K2-6 and if there is none the relay must be replaced. If voltage does exist here then check voltage at K2-4 and if none the wire from K2-6 is broken and needs replaced.

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.

TAILLIGHT SCHEMATIC



