



Ledwell Vacuum Equipment



Ledwell & Son Enterprises, Inc.

3300 Waco Street | Texarkana, TX | 75501

903-838-6531 | 903-831-2719 FAX | Toll-free 888-LEDWELL

www.ledwell.com | sales@ledwell.com | parts@ledwell.com

Se Habla Español



LEDWELL EQUIPMENT WARRANTY

Ledwell warranty assures the purchaser that should a defect in material or workmanship occur during the warranty period, Ledwell will assume specific repair responsibilities as listed in this warranty statement. Warranty period shall begin on the date the product is delivered to the customer and continue for one year from that date. The following guidelines should be followed when making repairs to Ledwell equipment whenever possible.

1. Reimbursement for parts used in warranty repairs will be credited only when the replacement parts are ordered from and returned to Ledwell & Son Enterprises.
 2. All replacement parts sent to the customer will be billed to the customer. The warranty claim will be reviewed, and determination will be made as to its disposal. If approved, replacement parts cost will be credited to the customer.
 3. When replacement parts are shipped from Ledwell, freight will be prepaid by Ledwell and will be shipped by the most economical means to arrive in the shortest possible time. Air, Next Day Air, Priority and other special shipments requested by the customer will be at the customer's expense.
 4. Warranty labor reimbursement for labor expense to the customer will be paid at the most reasonable and customary rate. Repair times will be reviewed by Ledwell and may be adjusted to average repair times required by other shops to make similar repairs.
 5. Reimbursements for repairs made by outside sources other than customer shops will be made for those services deemed necessary for the resolution of the warranty by Ledwell's warranty department. Outside repair invoices must have prior approval from Ledwell's warranty department.
 6. In all cases, the most economical repair should be performed unless otherwise directed.
 7. Only those parts provided by Ledwell will be covered by our warranty.
 8. Service bulletins will be issued when necessary to alert customer of special repairs and maintenance procedures.
 9. Approved Claims will be paid in a timely manner.
 10. Notice of denied claims will be sent along with a statement as to the reason for the denial within 30 days of receipt of said claim.
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CAUTION

When loading or unloading, be aware of any overhead obstructions — power lines, buildings, etc. — that could create a safety hazard during the operation.

NEVER GET UNDER YOUR TRUCK IF THE ENGINE IS RUNNING!

Hands, clothes, hair, etc. can get caught on spinning shafts and U-joints.

YOU COULD BE HURT OR EVEN KILLED!

It is against Federal Law to try to fix P.T.O. driven machinery if the engine is running. Always turn the engine off. Then, put the keys in your pocket.
(OSHA 1910.147)

Pre-Start Check List



- Check for proper oil level in vacuum pump and hydraulic oil reservoir
- Check hydraulic oil reservoir suction line ball valve to be sure it is in the open position; located on driver's side between can and tank
- Check for proper oil level in water pump or other optional pump systems



- Check the moisture trap on the secondary shut-off for fluid using the drain ball valve
- The float ball should be free in the canister
- Check the vacuum pump muffler for fluid using the drain ball valve



- Top—Check for proper operation of change over valves, rear loading and unloading valves



- Bottom—Water must be drained from truck air tanks daily

Raise and lower engine speed with the Aux. Throttle Control to ensure proper operation

Verify full air pressure in the truck system before proceeding as the vacuum system will need at least 90 PSI to operate

Engage PTO (see example switches above) and operate all power controlled functions to ensure proper operation

Engaging Hydraulics

MANUAL TRANSMISSION

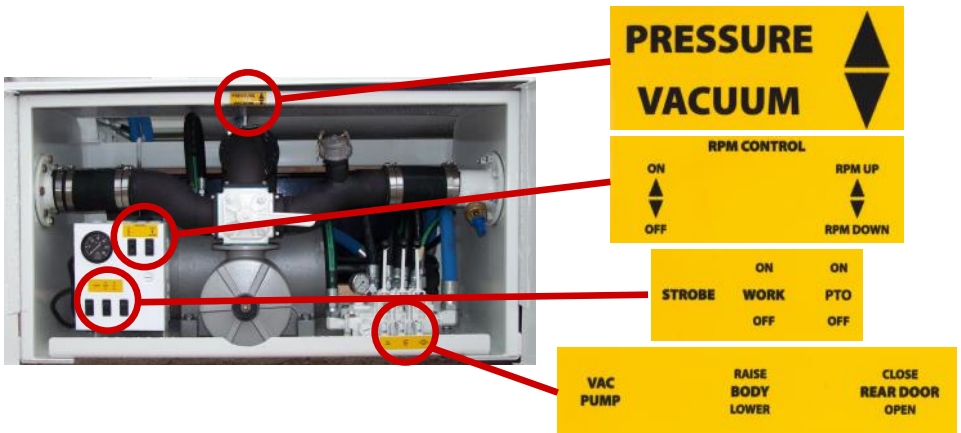
- Activate emergency brake
- Push the truck's clutch pedal down then move shift lever into any forward gear position.

(This allows the gears inside the transmission to come to a complete stop before engaging the PTO)

- Shift the PTO selector (example switches below) for the system you are trying to operate to the engage position.
- Make sure transmission is in the neutral position. Engage at idle.

Manual Controls

- Located in the driver's side cabinet is the main system control station. From this panel the operator can engage the pump, raise and lower the tank, open or close the rear door, set the engine speed and operate selected optional equipment. These functions are controlled by manual push/pull levers. Decals attached near each control details its function.



Vacuum Systems

- Engage the PTO for the vacuum system, and now you're ready to engage the vacuum pump.
- Place pump into the vacuum mode by moving the 4-way valve to the vacuum position.
- Engage pump by placing the hydraulic lever marked "VACUUM" to the engaged position.
- Vacuum pump is engaged, and then the engine speed can be increased to the normal operating RPM by the engine throttle switches.
- Be sure to run the vacuum pump at a minimum of 900 RPM, Ledwell recommends operating at 1500 RPM during the loading operation.
- Make necessary hose connections while tank vacuum is building or before.
- Open inlet valve to load tank, using the liquid level indicator as a guide to how full the tank is.
- WHEN CHANGING FROM "VACUUM MODE" TO "PRESSURE MODE" VENT TANK TO "0" HG. FIRST.
- DO NOT EXCEED RECOMMENDED RPM SPEED.
- DO NOT OVERFILL TANK.
- Once loading operation is complete, return engine to idle, disengage vacuum pump, vent tank to "0" HG and disengage PTO.
- NEVER STOP OR START THE VACUUM PUMP WITH THE ENGINE RUNNING OVER IDLE SPEED AS DAMAGE WILL OCCUR TO VACUUM PUMP, DRIVE SYSTEM OR BOTH.



VACUUM PUMP TACHOMETER
Should be run at NO LESS THAN 900RPM

To Unload Under

- NEVER OPEN ANY DUST CAPS, VALVES, OR CONNECT ANY HOSES WITH "PRESSURE" IN THE TANK.
- Make all connections in the "Vacuum Mode"
- Vent the tank to "0" HG
- Turn off the vacuum pump.
- Open the discharge valve. This allows the payload to start discharging under "gravity" pressure
- With the discharge valve open, the pump may be set to the pressure mode and engaged.
- Make sure to empty secondary shut off/moisture trap after each load is discharged prior to loading.



Liquid Level Indicator
DO NOT OVERFILL TANK



Secondary Shut-Off Moisture Trap

Always empty moisture trap after each load is discharged and prior to reloading.



Tank Pressure/Vacuum Gage

Located above rear door
When changing from Vacuum to Pressure mode vent tank to 0 HG

To Open Rear Door



- Drain out all liquid first, start the vacuum pump and draw a vacuum on the tank.
- HAVE THE PUMP IN THE VACUUM MODE BEFORE ATTEMPTING TO OPEN ANY HATCH ON THE TANK.
- Run the pump until the vacuum/pressure gauge needle moves to a vacuum of 20 HG.
- Loosen all of the large wing nuts on the rear head and swing the latch bolts out of their catches, park latch bolts on outer ring of rear head.
- Vent the tank by FIRST disengaging the pump, then open the vent valve, or by moving the vacuum pump 4-way valve to the center position.

- Move away from the rear of the tank.
- Once the vacuum is gone out of the tank, the sound of air will diminish and the door will open slightly
- If your tank is equipped with a hydraulic rear door opener, operate valve handle marked "REAR DOOR OPEN" and open door all the way.
- CAUTION: NEVER STAND UNDER AN OPEN REAR DOOR!



Liquid Level Indicator

Drain out all the liquid to open door



Tank Pressure/Vacuum Gage

Located above rear door

For opening/closing rear door HG gauge must be at 20 HG to seal door

To Close Rear Door



- Lower the tank if has been raised for dumping.
- If your unit is equipped with a hydraulic rear door opener, push the valve handle that's marked "REAR DOOR CLOSE"
- Start the vacuum pump running in the vacuum mode.
- Return all latch bolts to their catches and tighten wing nuts. Once the door makes contact with the seal, the vacuum will draw it in.
- Retighten the wing nuts with "20" of vacuum (HG) in the tank.

MAINTENANCE

MAINTENANCE

In this section are basic component descriptions and guidelines. These descriptions and guidelines may or may not apply to your unit based on the options selected. When specific checklists, fluid types and service intervals are listed, they must be followed.

MAIN VACUUM PUMP

1. Belt tension is very important. Maintain 1" of free play at the longest unsupported position. Adjustment is obtained via idler pulley. (130 Barrel trailers)
2. Lubrication is required for Main Pump Bearings, Idler Pulley Bearing, Drive Lines, and should be performed at regular intervals.
3. Proper oil level must be maintained on a daily basis.
4. Final filters should be inspected daily and cleaned when needed.
5. Exhaust muffler should be drained after each use.
6. Vanes should be inspected periodically and replaced as needed.
7. Do not exceed recommended R.P.M. speed for either the engine , PTO, or vacuum pump.
8. Bolt torque on a P.T.O. should be part of a regular preventive maintenance, as well as body bolts for proper tightness.
9. If during operations something either sounds, feels, or looks different, shutdown the unit and try to identify the source of concern.
10. Pump should be flushed with diesel fuel at regular intervals.

VACUUM PUMP FLUSHING INSTRUCTIONS

1. Drain moisture trap and pump muffler. Make sure that the drains are clear and operating properly.
2. Open inlet valve at rear of tank
3. Place an empty 5-gallon bucket under the moisture trap drain. Open drain valve for moisture trap.
4. Start vacuum pump, run at idle speed in pressure mode.
5. Slowly pour 7 to 10 gallons of diesel, mineral spirits or equivalent into top of vacuum pump muffler discharge pipe.
6. Let vacuum pump run until the flushing agent has completely drained from the moisture trap.
7. Shut down the vacuum pump. Drain moisture trap and pump muffler.
8. Remove final inlet filter and clean. Wipe out final filter housing and reassemble.
9. Add a cup of pump oil into the vacuum pump inlet or fill the pre oiler cup (if equipped).
10. Start vacuum pump again and run in vacuum mode for 3 to 5 minutes gradually increasing R.P.M. to full operation speed.
11. Shut down pump. Drain moisture trap and pump muffler.
12. Shut inlet valve on rear of truck.

LUBRICATION POINTS

1. Pillow Block Bearing - Main Shaft (130 Barrel Trailers)
2. Pillow Block Bearing - Idler Pulley (130 Barrel Trailers)
3. Driveline Slip Yokes and Universal Joints (130 Barrel Trailers)
4. Rear Tank Hinge Pins (Classic and Heritage and 130 Barrel Dump Trailers)
5. Hoist Cylinder Mounting Blocks (Classic and Heritage and 130 Barrel Dump Trailers)
6. Rear Wing Bolt Assemblies (Classic and Heritage and 130 Barrel Dump Trailers)

VACUUM PUMP EXHAUST MUFFLER

The pump exhaust muffler also separates discharged oil from the air and traps this contaminated oil. It should be drained after each use. At the bottom of the exhaust muffler there is a ball valve with a drain hose or pipe attached to it. Important, after all pressure is relieved, open this valve at the end of each day's work and drain to a suitable container.

MAINTENANCE

FREEZE PROTECTION

WATER PUMP SYSTEM

- Drain from bottom plug on water pump
- Remove suctions strainer bowl (if Equipped)
- Drain tube and shell cooler (If Equipped)
- Drain water from water tank
- Run water pump for a few seconds to discharge any trapped water in the chamber

INITIAL CHANGE/SERVICE INTERVALS

Component	Interval
● Hydraulic Oil Filter	4 to 8 Hours

FLUID CHANGE SERVICE INTERVALS

Component	Interval
● Main Vacuum Pump (Service Liquid)	1 every month/ or when needed
● Main Vacuum Pump (Oil)	1 every 2100 Hrs
● Hydraulic Oil Filter	1 every 400 Hrs Repeated every 6 months and in severe dusty locations more often
● Hydraulic Oil Reservoir	1 every 2000 Hrs or once a year

HYDRAULIC OIL RESERVOIR

The oil reservoir contains hydraulic oil for the hydraulic system and, when applicable for the vacuum pump cooling. The hydraulic oil reservoir is positioned behind the cab of the truck. This level should be checked cold and with the debris tank in the lowered position. A fill cap with strainer is located on the top of the reservoir. An industrial grade 10W or 20W hydraulic oil should be used in cold climates; AW32 or AW36 else where. Maintain the oil level in the reservoir between, 1/2 and 3/4 full in the sight glass at all times. The oil is pulled out through the oil line connected to the bottom center of the reservoir and returns it through the return line filter located at the end of the reservoir. Change the return line filter after the first 4 to 8 hours use. Thereafter change the filter following each 400 hours of operation or as needed.

THE HYDRAULIC OIL PRESSURE GAUGE

The oil pressure gauge mounted on the control valve shows the pressure at which hydraulic system is the operating. After starting the truck and engaging the P.T.O., the hydraulic pressure should be reading between 0-200 psi (pounds per square inch) at idle speed. When the Vacuum Pump handle is engaged the pressure should increase to 500 to 800 p.s.i. at idle speed. When the Vacuum Pump handle is engaged and then you run the truck's r.p.m. up to operation speed (1500 r.p.m. on the tachometer), the truck's hydraulic pressure will increase to 1500-1800 psi, depending if you are vacuuming or pressuring; (1800 p.s.i. for pressure and 1500 p.s.i. for vacuum). After turning hydraulic pressure off and disengaging P.T.O. then turn off truck engine, hydraulic oil pressure gauge needle should read zero. If the gauge needle does not sit at zero, it should be replaced immediately.

MAIN VACUUM PUMP SIGHT GLASS

The main vacuum pump is equipped with a sight glass on one end with a fill cap. The level should be checked periodically. The proper level is 1/2 to 3/4 visible in the sight glass. This level should be checked cold and with the pump not turning. This oil is not consumed by the pump operation. It functions as a splash type of lubrication for each end bearing. This oil should be changed once every 12 to 18 months.

MAINTENANCE

AUTOMATIC PRESSURE RELIEF VALVE

The automatic pressure relief valve is set at 10 -15 psi and responds only when pressurizing the tank. As the pump pushes air into the tank, pressure builds until it reaches the pressure setting of the relief valve. At this point the valve automatically opens to discharge excess air (pressure). It will remain open until the pressure drops 2 - 3 pounds below the valve pressure setting. Once the pressure in the tank has been lowered, the valve will close automatically. If you continue to operate the pump, this opening and closing of the pressure relief valve will continue in order to maintain maximum pressure. The tank is designed to withstand maximum vacuum and does not require a vacuum relief valve. If your unit is equipped with ASME certification the automatic pressure relief valves are sealed and certified to the design pressure of the tank. An additional automatic pressure relief valve, if applicable, is installed in the tank piping to protect the vacuum pump.

LIQUID LEVEL INDICATOR

The float level indicator is an all brass assembly. A stainless steel shaft with an 8" stainless steel ball, attached to it floats on the top of material pumped into the tank. The other end of the shaft protrudes through the rear of the tank where it has an indication arrow attached to it. As the material in the tank raises, the ball raises, swinging the shaft and the indication arrow upward showing the level of material in the tank.

LIQUID LEVEL INDICATION SEAL SERVICE

A large brass bushing which contains two internal o-ring seals is threaded on the outside so it can easily be removed for o-ring replacement in the event they become damaged or worn.

To remove this bushing simply remove the indication arrow by first removing the bolt on the indicating arrow. Now turn the hex headed bushing counter clock-wise until it comes out of the tank. Once you have it out, look inside of the bushing there you will see the two o-ring seals. Remove and replace them. As you start to screw the bushing back into the rear of the tank, be carefully not to push the float level main shaft inside the tank. Slide the bushing very carefully over the shaft. As the main shaft comes through the bushing, grasp it with a small pair of locking pliers to hold it while turning the bushing tightly into position. Now remove the pliers and re-install the indication arrow making certain to align the arrow with the float ball.

PRIMARY SHUT-OFF SYSTEM

The primary shut off dome cages a stainless steel ball which lies dormant until the liquid level in the tank raises to nearly a full loaded condition. As the level of material being pumped into the continues to raise, the ball floats up closer to the suction line which has a rubber seat attached to it. The vacuum grabs the ball and pulls it tightly against the seat shutting off the air flow. The tank is now full. Vacuum gauge pressure on the gauge will drop off once the tank is full and the primary (check) seats. This primary needs to be checked and cleaned daily or bad material will pass to the secondary, vacuum pump and the oil catch muffler.

SECONDARY SHUT-OFF SYSTEM

A secondary shut-off which is mounted on the front head of a vacuum tank or either on the front section of the tank on the driver's side. It also has stainless steel cage and stainless steel ball inside. A secondary shut-off has the same design of your primary shut-off and is your second line of defense to protect you from over filling your tank. It is also used as a moisture trap and should be drained each and every time you unload your tank. The secondary also needs to be cleaned and inspected daily, depending on the material you are vacuuming. If material gets past your primary shut-off and into your secondary shut-off your vacuum tank is not working correctly and needs to be cleaned.

MAINTENANCE

VACUUM PUMPS

Recommended Lubricant

Above 0°F SAE 40 or ISO - 100 SD100/60W

Below 0°F SAE 30 or ISO - 100 SD100/60W

Lubricant Level

Check periodically the oil level of the vacuum pump through the 2 oil level gauges located on the cover of the tank. The level should never be lower than the half of the lower level gauge.

Lubricant Maintenance

The first 50 hours of actual operation of the pump are the running-in period. Regularly check the consumption of disposable oil, the discharge temperature and the wear of the vanes. Vane wear should be minimum or negligible. If excessive, wear must be checked at regular frequent intervals and the phenomenon should be notified to an authorized dealer. In any case, replace the vanes when wear is 5 mm or more.

Periodic Checks—Vacuum System

Check Daily:

Check the maximum temperature at discharge & Check the vacuum and the pressure during operation

Check Weekly:

Check the level of the disposable oil & Clean the filtering elements of all the filters

Check Monthly:

Check the safety valve

Check vane wear—Every 300 working hours; Should be changed once every 12 to 18 months

No maintenance of the non-return valve is necessary. We recommend an initial check after 300 hours of operation. The valve must be checked for oil carbon deposit, and depending on its condition, the interval for the next check must be fixed. The layer of carbon oil must not exceed 3/4 inch in thickness. KEEP THE PUMP CLEAN IN ORDER TO ALLOW BETTER COOLING.

HYDRAULIC OIL RESERVIOR

Recommended Lubricant—Inspect level daily; change once a year

Above 0°F

AW32/20W

AW36 can be used in hot climates

Lubricant Level

The hydraulic oil reservoir is mounted behind the cab on the truck. The sight gauge is located on the driver side and is viewed from ground level. The proper level is 1/2 to 3/4 in the sight gauge. The level should be checked cold and the tank in the down position. The fill cap with a strainer is located on the top of the reservoir.

Oil Filter

Ledwell

Change 1st 4-8 hours then every 6 months thereafter.

