



**Operating and Maintenance Manual
Gas & Diesel Engine Powered
Self-Priming Trash Pumps**

3200 Series

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Serial Number / Model Number:

A nameplate listing the Model Number and Serial Number is located on each pump. **The Model Number and Serial Number are necessary for ordering parts or requesting service; it is important that you document these numbers.**

Record Model Number and Serial Number Here:

Serial Number

Model Number

Safety Information:

DANGER! INDICATES AN IMMINENTLY HAZARDOUS SITUATION, FAILURE TO ABIDE BY SAFETY PRECAUTIONS WILL RESULT IN DEATH OR SERIOUS INJURY.

Engine Power:

DO NOT: Operate in an enclosed area, as exhaust fumes are lethal.

DO NOT: Smoke while operating the pump.

DO NOT: Smoke when refueling the engine.

DO NOT: Spill fuel when refueling.

DO NOT: Refuel or operate the engine near an open flame.

DO: Replace the fuel cap after refueling.

WARNING! INDICATES A POTENTIALLY HAZARDOUS SITUATION; FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN DEATH OR SERIOUS INJURY.

Engine Power:

DO NOT: Touch hot surfaces, particularly the muffler; doing so may cause serious burns.
DO NOT: Operate without the guards in place.

DO: Read and understand the engine operator manual.

Pump Safety:

DO NOT: Pump flammable liquids.
DO NOT: Pump corrosive liquids. Contact local authorities for assistance.
DO NOT: Remove hoses, drain plug, fill plug or any access covers if the pump has not primed in ten minutes. Water in the pump will be hot and could be under high pressure. Allow pump to cool completely before attempting maintenance.
DO NOT: Operate this equipment without understanding the operating procedures.

DO NOT: Attempt to clear blockages or clean the pump while the pump is operating; rotating parts can cause serious injury.
DO: Read, understand, and follow pump and operation manual procedures.
DO: Be sure pump is on a firm, level surface and will not tip, roll or fall while in operation.
DO: operate only when guards are in place.

CAUTION! INDICATES A POTENTIALLY HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, MAY RESULT IN PROPERTY DAMAGE.

DO NOT: Run pump against a closed discharge.
DO NOT: Run the pump dry.
DO: Drain the pump in freezing weather.

DO: Flush the pump with clean water after each use.
DO: Store equipment properly when it is not in use.

Operating Instructions:

1. Read the "Pump Safety" pamphlet in its entirety before operating the pump and observe safe pump operating procedures at all times.
2. Examine the pump carefully and read all instructions thoroughly before beginning pump operation.
 - a. Notify the transportation company at once of any damage or loss that may have occurred during transit.
3. **Gas or Diesel Engine Pumps:** Read the engine operator manual in order to understand proper starting and stopping techniques. **Always start and stop the engine in accordance with the engine manufacturer's instructions.**
4. Install the appropriate nipple or quick coupling to the pump suction inlet.
 - a. The inlet and discharge are female pipe threads.
 - b. When using male and female couplings, the hose gasket must be in place and sealed properly.
5. Use grease or thread sealer on threaded connections to make them airtight.
6. Make sure that the hose does not leak and that the hose lining, if so equipped, is not loose or it will collapse under suction pressure and block the hose.

- a. A hose guard should be used on the end of the suction line to prevent pumping solids too large for the pump to handle.
7. A hose or pipe can be attached to the discharge connection at the top of the pump to lead water away.
 - a. To pump at maximum capacity, use a hose or pipe of the same size or larger than the pump discharge.
8. Fill the pump case with water through the filler plug at the top of the flap valve housing.
 - a. Do not run the pump without liquid in the pump case.
 - b. If the pump must be run for short periods of time to check the motor, fill the case with water to keep the rotating seal lubricated.
9. All gaskets and joints must be airtight.
10. Check that the automatic grease cup is in the run position.
 - a. The T-Bar should be turned counterclockwise to the end of the stem.
 - b. If the stem recedes into the grease cup, refill the cup with soft, easy flowing lithium complex grease such as Exxon Ronex MP.
 - c. Do not allow the grease cup to run dry; the seal must be lubricated at all times.
11. Priming time depends on the height of the vertical suction lift, the length of the hose between the pump and the water level, and the speed of the pump.
 - a. Maximum practical suction lift is approximately 25ft vertically from the surface of the water to the pump suction.
 - b. Suction lines running long, horizontal distances from the water will reduce capacity due to the increased loss of friction.
 - c. Fastest priming and greatest capacity are achieved at low suction lifts.
 - d. For optimum performance, locate the pump close to water.
 - e. The pump primes faster at higher speeds.
12. When shutting down the pump, screw the T-Bar of the automatic grease cup down to the top of the cup plus one turn.
 - a. Drain the pump through the drain plug located in the bottom of the cover.
 - b. Flush the pump with clean water after each use.

Maintenance Requirements:

- Keep the suction hose connection airtight.
 - Check the suction hose for leaks and/or a loose lining frequently.
- Check all of the bolts on the pump frequently, keeping them drawn up tightly.
- Replace "O" Rings after long periods of disuse as they will become dry and lose resiliency.
- If the impeller and/or volute are badly worn, they should be replaced to regain the best pump performance.
- Check the impeller gap annually; it should be set at .015" to .030".
- Flush out the pump after each use.
- Drain the pump after each use.
- Block the suction and discharge openings before storing the pump.

Servicing the Pump:

Disassembling the Pump:

1. Remove the four clamp handles that hold the cover to the pump case.
 - To remove the cover, pull it towards you until the cover clears the studs in the pump case.
2. Remove the volute and wear plate by pulling towards you until they clear the locating dowel pin in the pump case.
3. It is necessary to remove the impeller to remove the seal.
 - To remove the impeller, unscrew it in a counterclockwise direction.

- Then with a lead hammer, strike the impeller in a counterclockwise direction to unscrew it from the crankshaft.
- If necessary, remove the engine recoil and hold the pulley with a pipe wrench to keep the crankshaft from turning.

Seal Replacement:

Removing the Seal

1. If the seal becomes worn and needs to be replaced, begin by disassembling the pump as described above.
2. Remove the four hex screws that hold the seal seat plate in place.
3. Remove the stationary seal ring from the seal seat support.
4. By hand, remove the rotating portion of the seal from the shaft.
5. The second stationary seal ring is most easily replaced after the pump has been removed from the engine and can be pushed out from the back.

Installing the New Seal

- * When replacing the seal, the shaft and seal surface must be clean and smooth.
- * DO NOT damage the seal parts when handling.
- * Both the rotating and stationary portions of the seal must be replaced when installing a new seal.

1. Clean the seal chamber and all associated parts thoroughly. Check the "O" Ring and the seal sleeve and replace if scratched.
2. Push the stationary seal portions into the seats in the case and the seal seat support.
 - a. Lubricate the outside of the rubber boot only with a light oil or rubber lubricant and push squarely until the seal rings are fully seated. Do not scratch the sealing surface in any way.
3. Install the sleeve onto the shaft with the "O" Ring towards the engine.
4. Lubricate the inside diameter of the rubber boots of the rotating portion of the seal with rubber lubricant or soapy water and install onto the shaft sleeve.
5. Put the seal seat support gasket in place and carefully install the seal seat support.
6. Tighten the hex screws in a crossing pattern to pull the seal seat support evenly into position.
7. Reinstall impeller shims, impeller, and socket jam screw.
8. Reinstall the volute, wear plate, and cover.
9. Refill the seal chamber with grease.
 - a. Remove the pipe plug to vent the chamber while filling.
 - b. Use a Grade 2 lithium-based Exxon™ Ronex MP or equivalent.
10. Run a vacuum test.
 - a. Install a 0-30" Hg Vacuum Gauge in an appropriate fitting to block the pump suction.
 - b. Fill the pump case with water and run the pump for approximately two minutes.
 - c. The pump should pull 25"-28" Hg vacuum.
11. When reassembling, make sure that the "seal bleed hole" in the engine adapter is clean.

Troubleshooting Guide:

Pump fails to prime	<ul style="list-style-type: none">• Check that there is water in the pump case.• Check lift – maximum 25ft.• Check the strainer and line for blockage.• Check the hose and hose fittings for leaks.• Check pumpage for “flowability”• Check that the pump is not air-bound – air evacuated from the pump during priming must be able to move out of the discharge.
Vacuum is low or absent at the suction fitting	<ul style="list-style-type: none">• Check tightness of fitting in the suction connection• On electric pumps, check for impeller rotation – counterclockwise when looking at the back of the motor• Check all pump “O” Ring and gasket joints• Check the impeller gap – factory setting is .015” to .030” – as parts wear, the vacuum level will go down• Check for impeller rotation – no rotation, the pump shaft is broken or the drive coupling has failed• Check the seal, if the grease cup stem retracts into the cup at a fast rate then the seal is cracked• Check for blockage• Check the pump speed
Pump fails to develop rated discharge head	<ul style="list-style-type: none">• Check pump speed – need maximum speed for maximum head• Check for air leaks on the suction side of the pump• Check for blockages in the pump and impeller• Check for blockages in the suction and discharge lines• Check for impeller/volute wear

3200 SERIES 3" TRASH PUMPS, DIESEL ENGINE POWER

Ref. #	Part #	Description	Qty.
1	P3486-C2	COVER, CAST IRON	1
2	0002-1572	1 1/4" PIPE PLUG, FILL	1
3	P3041	3" SUCTION NIPPLE	1
4	0002-1606	1/2" PIPE PLUG, DRAIN	1
5	A010.037.0100	3/8" – 16 X 1" HEX SCREW, (4) LW, (4) SW	8
6	W466-600-0101	3/8" SEAL WASHER	4
7	P3466	"O" RING 11" ID X 1/8"	1
8	P3497	"O" RING 4 1/8" ID X 1/8"	1
9	P3489-C2	3" SUCTION CONNECTION, CAST IRON	1
10	A010.037.0075	3/8" – 16 X 3/4" HEX SCREW, JN	1
11	P3206	FLAP VALVE WASHER	1
12	P3490N	FLAP VALVE, NEOPRENE	1
13	P3492	FLAP VALVE WEIGHT	1
14	P3491	FLAP VALVE BINDER	1
15	DF200.R19.0062Z	#10 – 32 X 5/8" RD SCREW, SELF-LOCKING	2
16	P3498	"O" RING 6 3/4" ID X 1/8"	1
17	P3493	WEAR PLATE	1
18	P3488	VOLUTE	1
19	P4830	1" – 14 UNS X 1/2" SOCKET JAM SCREW	1
20	P3487	IMPELLER	1
21	P3383	IMPELLER SHIM	AS REQ'D
22	P4667	SHAFT SEAL SLEEVE	1
22	P4667C	SHAFT SEAL SLEEVE (3239)	1
23	P3454-A1	SEAL SEAT SUPPORT, ALUMINUM	1
23	P3454-C2	SEAL SEAT SUPPORT, CAST IRON	1
24	A010.025.0075	1/2" – 20 X 3/4" HEX SCREW, LW	4
25	W105-6A	1 1/2" DOUBLE SEAL SHAFT ASSEMBLY	1
26	P3455	SEAL SEAT SUPPORT GASKET	1
27	P3485-C1	3" PUMP CASE, CAST IRON	1
28	0002-1603	1/8" PIPE PLUG, VENT	2
29	EC410.037	3/8" – 16 JAM NUT	1
30	P3458	STUD 3/8" – 16 X 2"	4
31	W300-1/4X1	1/4" X 1" NIPPLE	1
32	W305-1/4	1/4" PIPE COUPLING	1
33	W31D4S	#1-1/4" AUTOMATIC GREASE CUP	1
34	W494-1/4X7/8	1/4" X 7/8" GROOVE PIN	1
35	GC010.10.10035Z	M10-1.5 X 35MM HEX SCREW, LW (3235)	4
35	GC010.10.08040Z	M8-1.25 X 40 MM HEX SCREW, LW (3283)	4
35	A010.037.0150	3/8" – 16 X 1 1/2" HEX SCREW, LW (3239-3249)	4
36			
37			
38	W300-3X3 1/2	3" X 3 1/2" NIPPLE	1
39	W301-3X90	3" X 90 DEG. ELBOW	1
40	P3453-C2	ENGINE ADAPTER, CAST IRON	1
41	W1-G50	HATZ 1D41Z DIESEL ENGINE (3235)	1
41	W1-L32	ROBIN DY35D DIESEL ENGINE (3239)	1
41	W1-N10	LOMBARDINI 6LD360 DIESEL ENGINE (3249)	1
41	W1-Q33	YANMAR L100EE DIESEL ENGINE (3283)	1
42	P3496-A1	CLAMP HANDLE, ALUMINUM	4
43	P4089	"O" RING 1" ID X 1/16"	1
44	P3274A	SHAFT SLINGER (3239-3249)	1
44	P3274C	SHAFT SLINGER (3235-3283)	1
45	F620.025	1/4" LOCKWASHER	4
46	F620.037	3/8" LOCKWASHER (3239-3249)	8
47	G620.10.080Z	M8 LOCKWASHER (3283)	4
47	G620.10.100	M10 LOCKWASHER (3235)	4

#3200 SERIES - DIESEL ENGINE POWER

