Notice to Installer: Instructions must remain with installation.

"Quality Pumps Since 1939"

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER® PUMP CO.

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SECTION: 6.10.127
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Supersedes
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INSTALLATION INSTRUCTIONS

These installation instructions are applicable for Models 320, 321, 322 and 323 General Purpose and Solids Handling Gas Engine Pumps

PREINSTALLATION CHECKLIST - ALL INSTALLATIONS

ATTENTION: Before starting the pump, study all the instructions in both the pump and engine booklets. Make sure you thoroughly understand how to operate the equipment. Never allow inexperienced persons or children to operate the equipment as injury may result. Make sure all guards and shields are in place before starting and USE COMMON SENSE! Most accidents can be avoided by using common sense and concentrating on the job to be done.

⚠ WARNING

SEE BELOW FOR LIST OF WARNINGS

TO AVOID FIRE, EXPLOSION AND/OR PERSONAL INJURY:
Never use this equipment to pump gasoline or other flammable liquids, or caustic fluids.

Never operate equipment in an explosive atmosphere.

Fuel:

a. Never add fuel to the tank while the engine is running. Stop engine and allow it to cool. Avoid spilling fuel!
b. Make sure fuel lines and fittings are tight and in good condition.
c. Do not smoke while refueling the engine.
d. Do not refuel near open flame.
e. Store gasoline in approved container and location.

Exhaust Gases:

a. Never operate in an enclosed building or area where exhaust gases can accumulate.
b. Do not breathe exhaust fumes when working in the area of the engine. (Exhaust gases are odorless and deadly poison.)
c. Never operate near a building where exhaust gases can seep inside, for example: through an open window or a door.
d. Never operate in a pit or sump without making provisions to suck the exhaust gases out.

Never operate the engine without a muffler, with a damaged muffler or without the air cleaner in place.

Never operate the equipment near combustible materials or where ventilation is not sufficient to carry away poisonous exhaust fumes.

Never use this equipment without a spark arrestor attachment for the muffler on any forest covered, brush covered or grass unimproved land.

Maintenance and Repair:

a. Disconnect spark plug wire while performing maintenance or repair on the pump or engine.
b. Always replace safety devices removed during service or repair before operating.

Keep hands and feet clear of moving parts. DO NOT stick hands or fingers in pump when operating.

Note direction of rotation as operating pump in the wrong direction can cause the impeller to unscrew and cause damage or injury.

When lifting pump, use only lifting equipment in good repair and with adequate capacity.

Make sure lifting device's fasteners are tight each time before lifting.

ADDITIONAL WARNINGS OR CAUTIONS FOR PLASTIC PUMPS

Use extreme caution in handling corrosive liquids. Provide the safeguards, ventilation and safety equipment recommended by the manufacturer of the liquid and/or prescribed by regulatory bodies. This pump is glass-filled polypropylene material with EPDM elastomers and stainless steel internal hardware, optional Viton® elastomers are available. Any liquids pumped must be compatible with these materials.

⚠ THIS SYMBOL MEANS WARNING OR CAUTION. PERSONAL INJURY AND/OR PROPERTY DAMAGE MAY OCCUR UNLESS INSTRUCTIONS ARE FOLLOWED CAREFULLY.

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

REFER TO WARRANTY ON PAGE 2.

Limited Warranty

Zoeller Pump Company warrants, to the purchaser and subsequent owner during the warranty period, every new Zoeller Pump Company product to be free from defects in material and workmanship under normal use and service, when properly installed, used and maintained, for Standard Warranty - a period of 30 months from date of installation. Parts that fail, that inspections determine to be defective in material or workmanship, will be repaired, replaced or remanufactured at Zoeller Pump Company's option, provided however, that by so doing we will not be obligated to replace an entire assembly, the entire mechanism or the complete unit. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to any material that has been disassembled without prior approval of Zoeller Pump Company, subjected to misuse, misapplication, neglect, alteration, accident or act of God; that has not been installed, operated or maintained in accordance with Zoeller Pump Company installation instructions; that has been exposed to but not limited to the following: sand, gravel, cement, mud, tar, hydrocarbons or hydrocarbon derivatives (oil, gasoline, solvents, etc), wash towels or feminine sanitary products, etc. or other abrasive or corrosive substances. This warranty is in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products.

Contact Zoeller Pump Company, 3649 Cane Run Road, Louisville, Kentucky 40211-1961, Attention: Customer Service Department to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty.

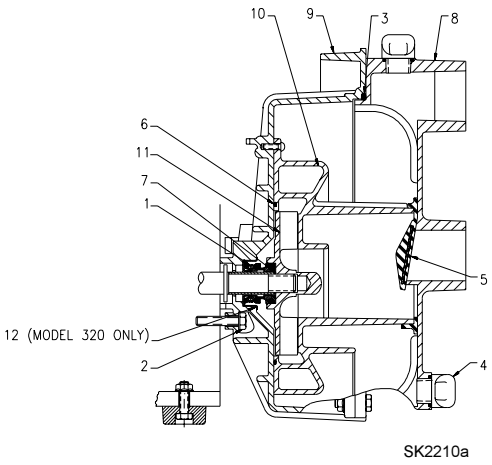
ZOELLER PUMP COMPANY EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY.

Some states do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Replacement Parts List

REPLACEMENT PARTS LIST		APPLICABLE MODELS			
REF. #	**PART NAME**	**320**	**321**	**322**	**323**
1	SHAFT SEAL, SIC-VITON®	X	X	X	X
2	SEALING WASHER (SET OF FOUR)	X	X	X	X
3	BODY O-RING, EPDM	X	X	X	X
4	PLUG & EPDM O-RING ASSY	X	X	X	X
5	CHECK VALVE, LARGE, EPDM	X	X	X	X
6	VOLUTE O-RING, EPDM	X	X	X	X
7	SHIM SET (SET OF FOUR)	X	X	X	X
8	BODY-ROTO FINISH	X	X	X	X
9	BRACKET-ROTO FINISH	X	X	X	X
10	VOLUTE-LARGE	X	X	X	X
11	IMPELLER	X	X	X	X
12	SEAL O-RING	X			
NOT SHOWN	SPACER, IMPELLER			X	X
NOT SHOWN	HANDLES			X	X
NOT SHOWN	SEAL & O-RING KIT EPDM	X	X	X	X



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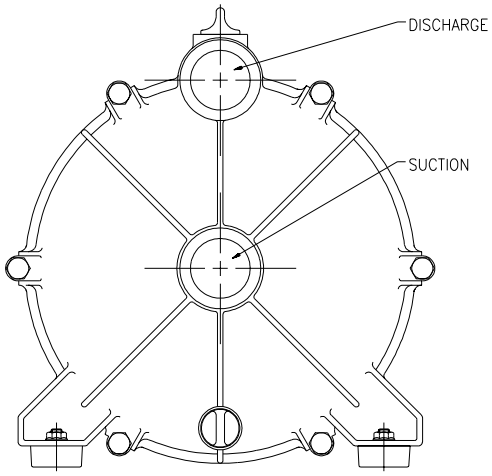
Seal & O-Ring Repair Kit Contains; Body-O-Ring, Sealing Washer Set, Volute-O-Ring, Plugs, Shaft Seal, Shaft Sleeve, Check Valve, Instruction Sheet, and Seal Installation Tool.

How to Order Repair Parts for Your Self-Priming Centrifugal Pump:
All parts shown on the parts list and on the cutaway view drawing may be ordered through the nearest distributor.

When Ordering Repair Parts, Always Give the Following Information:
1. Identify pump model number.
2. Part name
3. Quantity required.



SK2210b

Viton is a registered trademark of DuPont Dow Elastomers.

⚠ CAUTION

SEE BELOW FOR LIST OF CAUTIONS

IN THE INTEREST OF SAFETY AND TO AVOID PERSONAL INJURY:

1. Be sure the machine is on secure footing and cannot be shifted around to injure someone. Secure the pump after it is in its operating position.
2. Never operate pump without guards in place. (If OSHA guards are misplaced or damaged, contact factory for replacements.)
3. When starting the engine, be sure that no one is in a position to be hit by the operator's arm or hand. Remember, the starter cord on a rope start, non-recoil type engine can cause injury when it flies out during starting.
4. Don't wear loose clothing such as scarfs which could become entangled and choke or pull you into moving parts.
5. Never tamper with the governor setting to gain more power. The governor establishes the safe operating speed, to change the setting is extremely dangerous.
6. Observe all safety regulations for the safe handling of fuel.
7. Avoid overheating the pump as overheating can cause burns or injury. A pump operating against a closed discharge line can cause overheating. If overheating occurs, stop pump immediately and allow it to cool down completely. Always check pump temperature before opening fill port or drain plug.
8. Exhaust System:
   a. Keep exhaust system components tight and in good working condition.
   b. Exhaust system parts get very hot and stay hot for some time after shutting the engine off – do not touch.
9. Check the suction strainer regularly to be certain it is not plugged up.
10. Pump towed behind vehicle:
    a. Make sure hitch is properly attached.
    b. Always attach safety chains.
    c. If towing on the highway, make sure the trailer meets Department of Transportation requirements.
11. Pump is not designed to operate near shut-off head. This will cause premature failure of the pump.

Installation and Operation

Inspection – Look over the unit to see that no parts are missing or broken in shipment. An engine instruction book and pump instruction and parts list are supplied with each pump. Read instruction book carefully.

Placing Pump – Place the pump on a level, firm foundation, putting it near as possible to the level of the liquid, which is to be pumped, but never higher than 25 feet.

Connecting Hose – Connect the hoses or pipe to the pump with a flexible connector at the pump suction and discharge. Fittings screwed to the pump should be sealed with Teflon tape or pipe dope, turned in hand tight and then one full turn with a pipe wrench. Suction hose should be hard-reinforced hose that will not collapse under vacuum. Tighten hose couplings firmly, using the rubber gaskets furnished with the couplings. Hose and pipes must be supported independent of the pump and the pump must not carry their weight. Do not use quick closing valves or any equipment that may cause hydraulic shock in the suction or discharge lines.

Before Starting:

1. A suction strainer should be attached to the suction hose or pipe. It is provided with holes or slots small enough to prevent big stones, etc. from damaging the impeller. Keep the strainer clean and off the bottom by suspending it or putting the strainer in a bucket.
2. Fill the engine crankcase with oil as specified in the engine manual.
3. Fill the fuel tank with unleaded gasoline or diesel fuel as specified in the engine manual.
4. Fill the pump with liquid through the priming port on the top of the pump case. Remember the pump is selfpriming only when the pump is filled. It will prime and reprime itself without refilling. Refilling is necessary only if the pump has been drained or if the fluid has been lost. Do not run the pump dry.

Starting – Starting the engine, follow instructions in the engine manual.

Warning – Use extreme caution in handling corrosive liquids. (Refer to FM2103 for a partial list of acceptable and unacceptable corrosive liquids. This FM is available on our website or by calling our toll free number, 1-800-928-PUMP. Consult Factory for applications in question.) Provide the safeguards, ventilation and safety equipment recommended by the manufacturer of the liquid and/or prescribed by regulatory bodies.

Model 320 only – This pump is glass-filled polypropylene material with EPDM elastomers and stainless steel internal hardware. Any liquids pumped must be compatible with these materials.

Priming Time – With a suction lift from 5 to 10 ft., the pump should discharge liquid in less than a minute. A suction lift of 25 ft. (at sea level) should not require more than 3 minutes for initial prime. If pumping does not start within this time, shut off engine and check carefully to find the difficulty.

Control – A higher engine speed may be necessary for high suction lifts. On low lifts, reducing engine speed until the discharge rate slows slightly will improve fuel efficiency. (See engine manual.)

Check Valve – If discharge line runs vertically more than 30 ft., it is advisable to install a check valve in the discharge line near the pump to stop destructive liquid hammer when the pump is shutdown. If this is done, it may be necessary to vent the top of pump so that air can be expelled during automatic repriming. This air bleed may be accomplished by providing a ¼" line from the pump of the pump back to the liquid source. We will not assume any responsibility for damage to the pump if no check valve is used in the discharge line. A properly fueled and lubricated pump will run without attention.

Draining – During freezing weather, be sure to drain pump when not running. Unscrew the drain plug and drain all the liquid out of the pump.

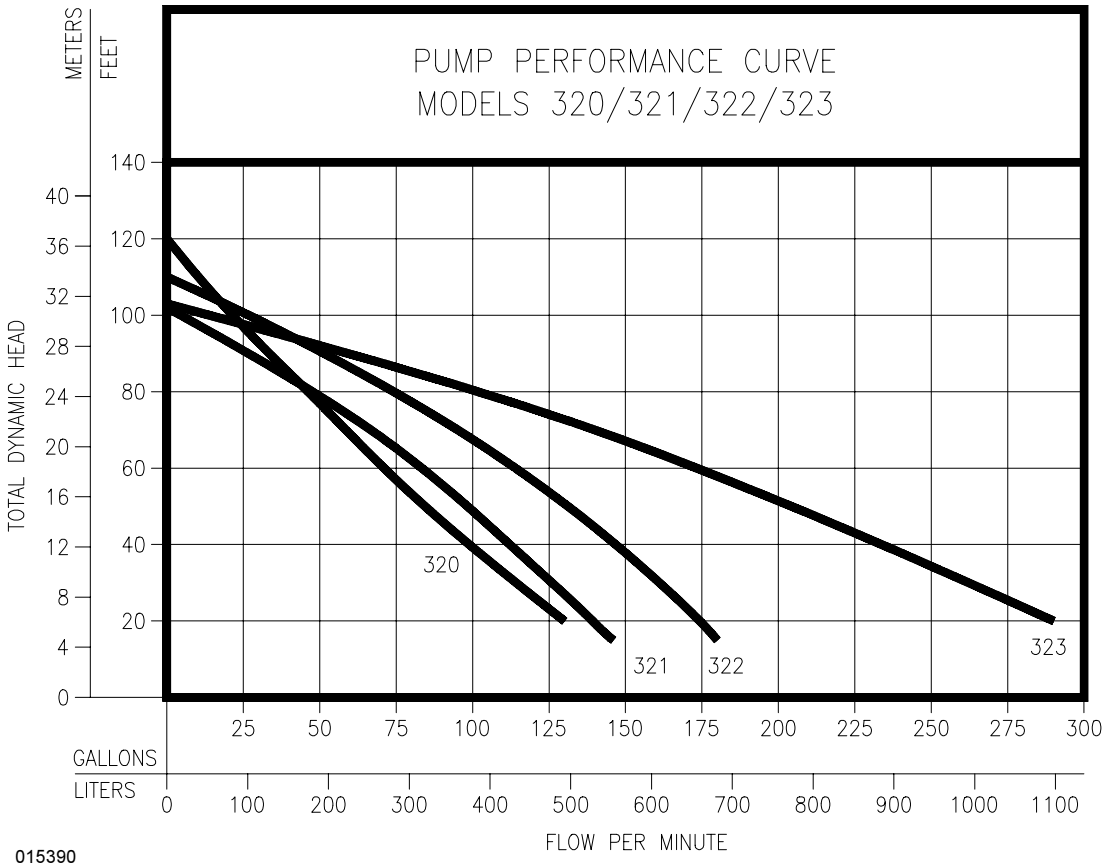
Installation and Operation, *continued*

Storage – When pump is out of service for long periods, drain and store in dry, well-ventilated room. Pull engine hard against compression so that valves will be sealed.

Troubles and Their Cures:
If difficulties are experienced, in the majority of cases they can be traced to well-known causes. We suggest you check these points first to save needless expenses.

If the Pump fails to prime or fails to deliver:

A. Make sure that pump casing is full of cool liquid.
B. If difficulty continues, remove the suction hose, start engine and hold a flat piece of rubber sheet or other suitable material against the suction inlet. If the pump develops a strong pull against the material, the trouble is not in the pump; If there is no pull, the shaft seal may need replacing. Check for worn impeller and/or volute. Check for clogged impeller.
C. Examine suction hose or pipe connections. Air leaks in the suction line and connection to pump are the most frequent causes of priming trouble. Use new gaskets in hose coupling. New couplings sometimes require two gaskets. Lining of hard rubber suction hose may collapse and clog the hose.
D. Keep pump as close to the level of the liquid being pumped. It will give best performance on suction lifts of 15 feet, and is not guaranteed to handle any lift over 25 feet at sea level.
E. Be sure strainer is not clogged.
F. There are no parts or valves to go out of adjustment. The only requirement is that the pump case is full of liquid.
G. Keep the pump unit clean and properly serviced. Care in this respect will repay in many years of trouble-free operation.



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⚠ CAUTION

Models 320 and 323 should not be subjected to less than 20' TDH. Models 321 and 322 should not be subjected to less than 15' TDH.

TOTAL DYNAMIC HEAD/FLOW PER MINUTE DEWATERING

MODEL		320		321		322		323	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters	Gal.	Liters
15	4.6	--	--	145	549	180	681	--	--
20	6.1	130	492	140	530	175	662	290	1098
40	12.2	98	371	112	424	148	560	235	889
60	18.3	70	265	85	322	115	435	175	662
80	24.4	47	178	50	189	76	288	108	409
100	30.5	20	76	--	--	28	106	--	--
Shut-off Head:		120 ft. (36.6m)		102 ft. (31.1m)		110 ft. (33.5m)		103 ft. (31.4m)	