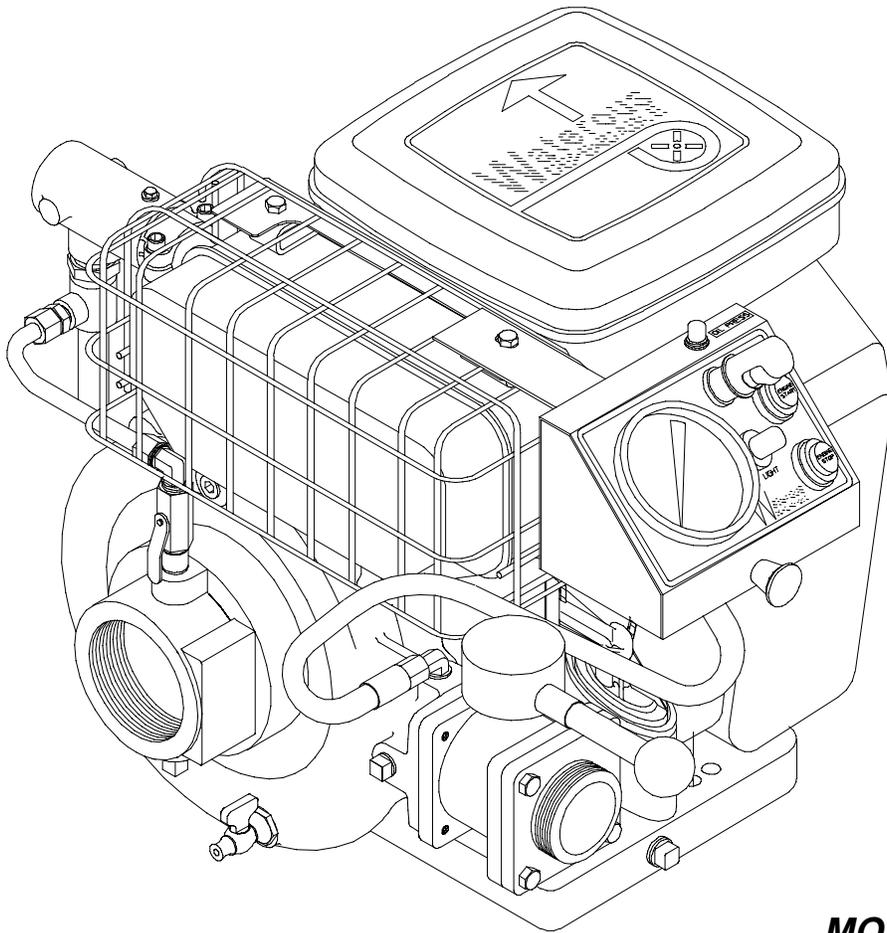


# PB18 SERIES PORTABLE PUMPS

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## OPERATION, MAINTENANCE AND OVERHAUL INSTRUCTIONS



**MODELS:**  
**PB18-G2015B**  
**PB18-2515**  
**PB18-2515B**  
**PB18-3030**  
**PB18-3030C**

# SAFETY INSTRUCTIONS

## DANGER

### **Exhaust gas hazard. Can cause illness or death.**

Do not run the Floto-Pump engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless, deadly poison.

## DANGER

### **Fire or explosion hazard. Can cause personal injury or death.**

A fire or explosion may result if the following instructions are not followed:

1. **DO NOT FILL GASOLINE TANK** while engine is running. Allow engine to cool for two minutes before refueling.
2. **DO NOT** operate the engine when an odor of gasoline is present or other explosive conditions exist.
3. If gasoline is spilled, move machine away from the area of the spill and avoid creating any source of ignition until the gasoline has evaporated.
4. **DO NOT STORE, SPILL OR USE GASOLINE NEAR AN OPEN FLAME**, or devices such as a stove, furnace or water heater which utilize a pilot light, or devices which can create a spark.
5. Refuel outdoors or only in well ventilated areas.
6. **DO NOT OPERATE ENGINE WITHOUT A MUFFLER.** Inspect muffler periodically and replace, if necessary.
7. Periodically clean the muffler area to prevent grass, dirt and combustible material from accumulating.
8. **DO NOT** use this unit on forest covered, brush covered or grass covered unimproved land unless the spark arrester is attached to the muffler.
9. **DO NOT** operate the engine if air cleaner or cover directly over the carburetor air intake is removed.
10. **DO NOT** choke carburetor to stop the engine.

## WARNING

Death or serious personal injury might occur if proper operating procedures are not followed. The pump operator, as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with these pump operating instructions as well as other operating instructions and manuals for the apparatus, water hydraulics and component limitation.

## WARNING

### **Pressure Hazard. May result in personal injury.**

Prior to connection or removal of hoses, caps or other closures with pump intake or pump discharge connections, relieve pressure by opening drains.

## WARNING

### **Scalding Water Hazard. May result in serious burns.**

When operating the pump, be sure to open at least one discharge valve slightly to prevent the pump from overheating. If the pump runs for a few minutes completely closed, it may heat the water enough to scald someone when the valve is opened. Overheating can damage the packing, seals and other pump parts. If the apparatus builder has installed a by-pass system or other provision designed to prevent overheating, opening a discharge valve may be unnecessary.

## WARNING

### **Accidental starting hazard. May cause personal injury to the hand, arm or feet.**

When servicing the engine or equipment, always remove the spark plugs or wire from the spark plug to prevent accidental starting.

## WARNING

### **Excessive speed notice. May cause personal injury.**

Operating an engine at excessive high speeds increases the danger of personal injury. Do not tamper with the governor springs, governor links or other parts which may cause an increase in governed engine speed. Do not tamper with the engine speed selected by the original equipment manufacturer.

## WARNING

### **Moving or rotating parts hazard. May cause personal injury.**

Always keep hands and feet clear of moving or rotating parts to prevent injury.

# SAFETY INSTRUCTIONS

## WARNING

### **High temperature components. May cause severe burns.**

Do not touch hot mufflers, cylinders or fins as contact may cause burns.

## WARNING

### **Kickback notice. May cause injury to hand or arm.**

To prevent hand or arm injury, pull the starter cord rapidly to avoid kickback.

## CAUTION

### **Spark arrestor notice.**

If this engine is equipped with a spark arrestor for use on forest covered, brush covered or grass covered unimproved land, it must be maintained in effective working order by the operator. In the state of California, the above is required by law (Section 4442 of the California Public Resources Code.) Other state may have similar laws.

## Preparation Before Operation

**NOTE: Engines and transmissions are shipped with oil. Check oil level before operating.**

1. Inspect the unit carefully for damage resulting from shipment. Abusive handling during shipment resulting in obvious damage to the engine or the pump may cause rubbing of moving parts resulting in severe engine or pump damage if operation is attempted.
2. Check the unit for bolts or other fasteners which may have vibrated loose during shipment.
3. These units are equipped to use a type 12N14-3A "motorcycle" battery.

Battery Spec:

Capacity - 14 Amp Hour  
 Approx 130 cold cranking amp  
 Size: 3-1/2 x 5-1/4 x 6-1/2 tall

4. Prepare the engine for starting by reading completely and following the Briggs and Stratton Operation and Maintenance Instructions.
5. Fill engine with oil per Briggs & Stratton instructions. When filter is new, oil pressure light may remain on for 30 seconds or more. When the crankcase is full the light will go out within 5 seconds.
6. Fill transmission with 1 pint of SAE 90 oil (pumps with gear cases only) through top plug or breather elbow. Remove oil level plug to check oil level.
7. While holding the "STOP" button down, rotate the engine crankshaft several times with "START" button or with the rewind start rope to make sure the engine and pump turn over freely with no abnormal rubbing noises.

### Priming The Pump

1. Close the discharge valve if so equipped and open the priming line petcock at the suction inlet of the pump body.
2. Advance the throttle to full open with suction and discharge hoses (or piping) connected.
3. Pull the primer knob at the control panel to route the engine exhaust through the primer.  
**Alternate:** Pull the primer knob and advance the throttle to full open.
4. Hold the primer knob in this position until a steady stream of water is mixed with the exhaust coming out of the primer, indicating the pump is primed.



### WARNING

**Low oil. May result in engine power loss, personal injury or property damage.**

Maintain correct oil level. Check oil level each time engine is refueled. Low oil level may cause loss of engine power and may result in personal injury or property damage.

Connections between the pump and suction and discharge hoses or piping should be made leakproof. Wrench torque should be limited to 80 ft. lb. maximum when making connections. If more than 80 ft. lb. torque is required, use two wrenches, one wrench on the pump suction or discharge fitting and one wrench on the hose or pipe being attached. Balancing the torque applied between the two wrenches will avoid excessive forces to the pumping unit.

When pumping units are permanently mounted in an apparatus and attached to rigid piping, connections between the pump and the piping should be made using flexible couplings to avoid applying excessive forces to the pump.

Refer to Briggs & Stratton Operating and Maintenance Instructions for starting a cold or warm engine. The PB18 series pumping engines are equipped with a choke located under the flywheel side of the air cleaner, to the right of the operator's panel.

5. Close the priming line petcock and release the primer knob.
6. Open the discharge valve if so equipped.

When a PB18 pump is used from draft in below freezing weather the following shut-down procedure should be used:

1. When pumping is completed and discharge hose disconnected, open the priming line petcock to drain the suction and the priming line back into the water supply.
2. Stop the engine and open the volute drain.
3. Disconnect the suction hose. Start the engine and operate the primer until no more water comes out.

## Engine Maintenance

Refer to Briggs and Stratton Operation and Maintenance Instructions.

## Pump Maintenance

The pump requires no maintenance other than draining the volute body after each use. If the pump has been handling chemicals, salt water or dirty water, flush entire system with clean, fresh water for several minutes to remove all traces of impurities.

## Transmission Maintenance

Drain and refill with one pint SAE 90 weight gear oil after 100 hours of operation or one year.

## Spark Arresting Muffler

Every 100 hours, examine the spark arrestor located inside the exhaust primer adapter. Clean screen or replace if damaged. Removal of the spark arrestor will require removal of the butterfly assembly from the primer adapter.

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# ENGINE AND PUMP REPAIR

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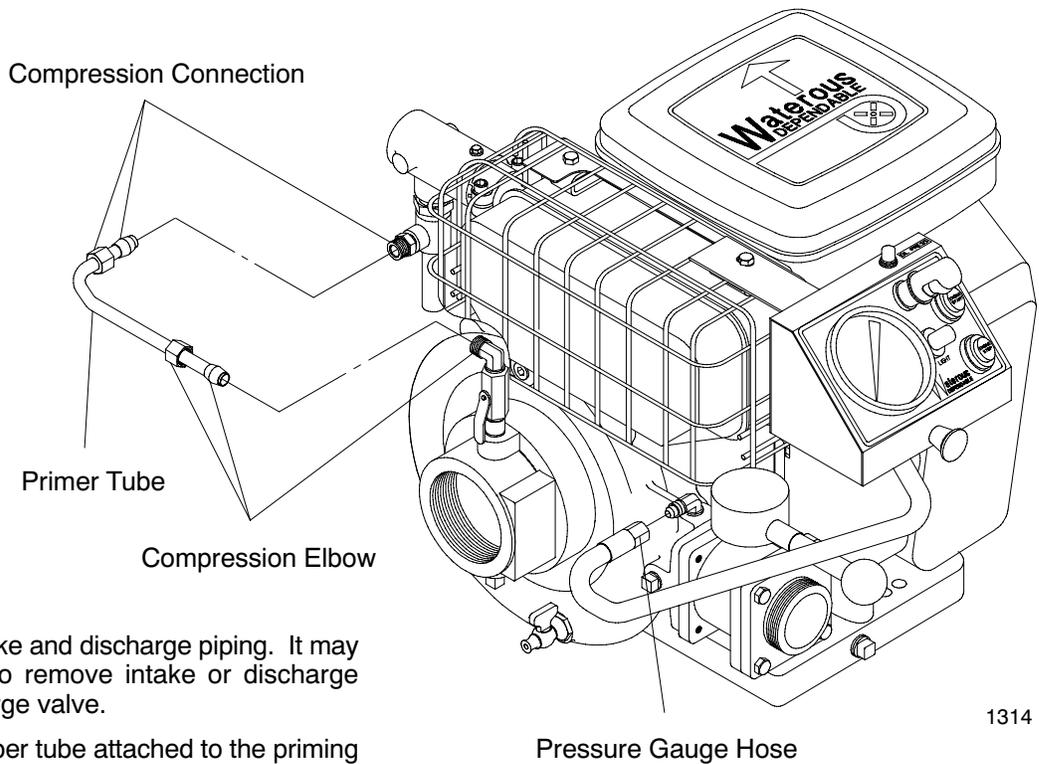
Repairs to be done during the Waterous or Briggs and Stratton warranty period must be done in accordance with the appropriate warranty policy.

## Engine Repair

If engine service or repair is needed, refer to Briggs and Stratton Operation and Maintenance Instructions. NOTE: The control panel, primer and spark arrestor are not furnished by the engine manufacturer. Refer to Waterous Company Service Parts List supplied with the pump for these parts.

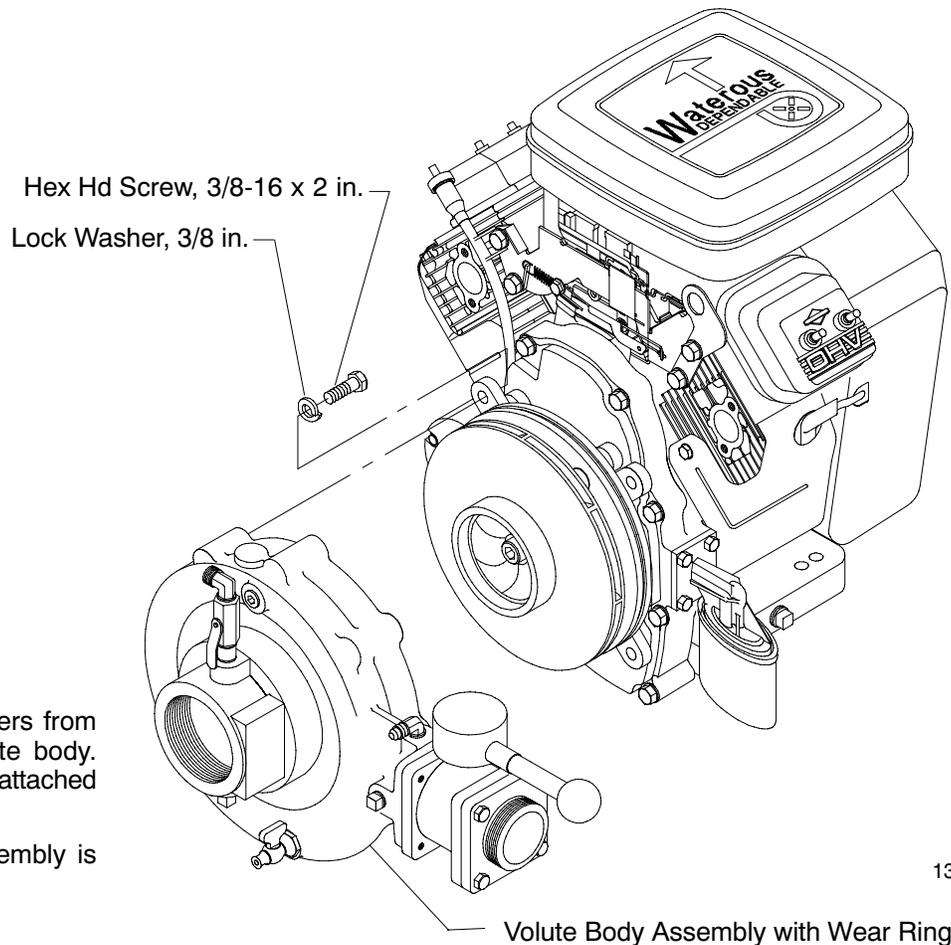
## Pump Repair

Pump repair should be done by Waterous authorized service personnel. Alternatively, parts can be purchased from Waterous Company and installed by any mechanic familiar with pump overhaul and repair practices and procedures. Service Parts Lists are provided which give part descriptions and part Reference Numbers for ordering. Be sure to give pump model and serial number and Parts List number when ordering parts.



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1. Disconnect any intake and discharge piping. It may not be necessary to remove intake or discharge adapters, or discharge valve.
2. Disconnect the copper tube attached to the priming line petcock at the inlet of the pump.



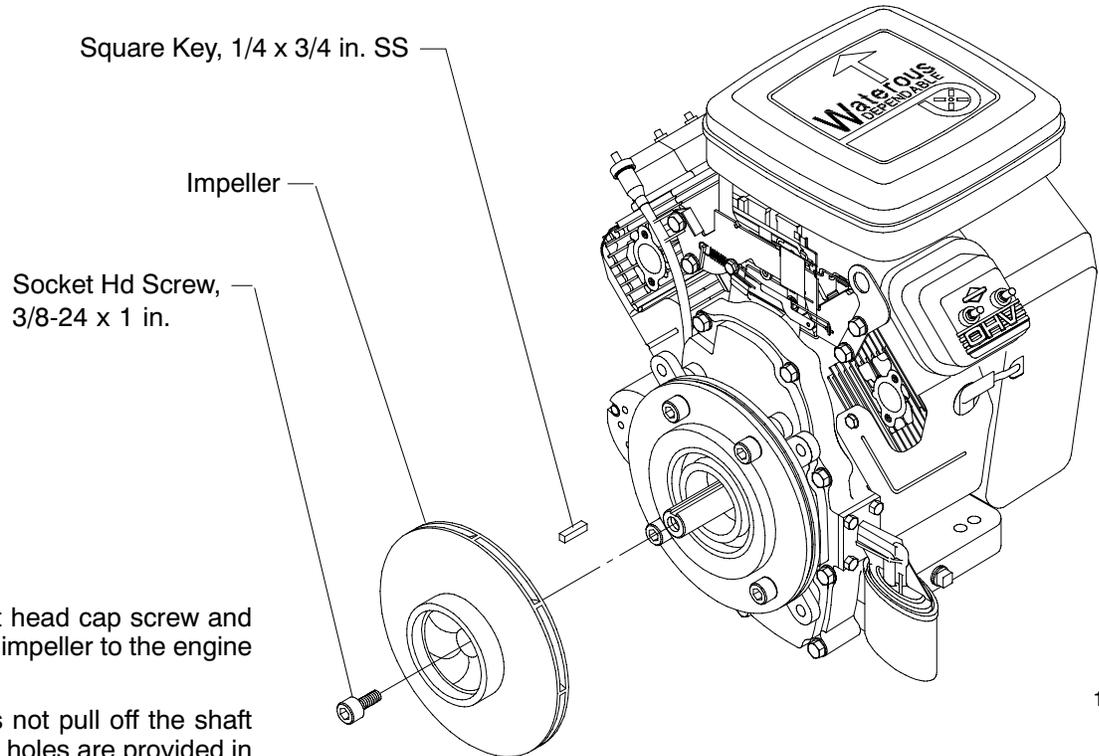
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Remove (4) cap screws and washers from the engine side of the pump volute body. Slide the volute body off the adapter attached to the engine.

The muffler and control panel assembly is shown removed for clarity.

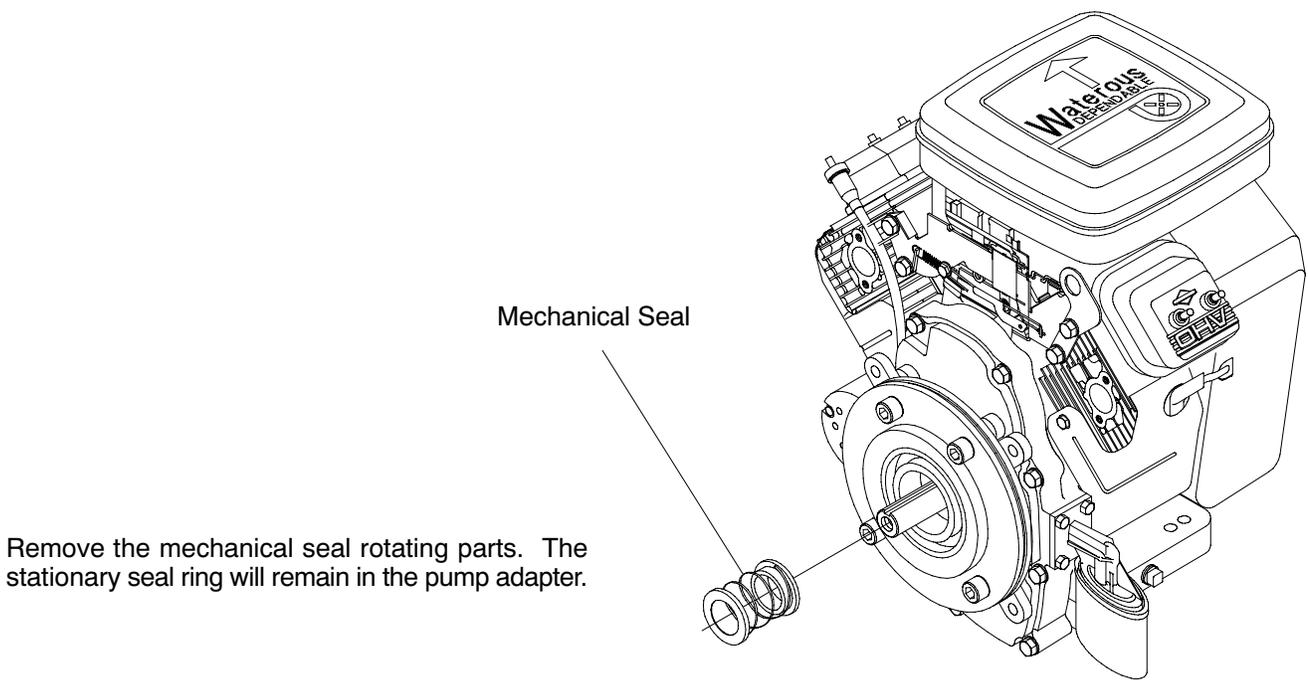
Remove wear ring if required.

Volute Body Assembly with Wear Ring

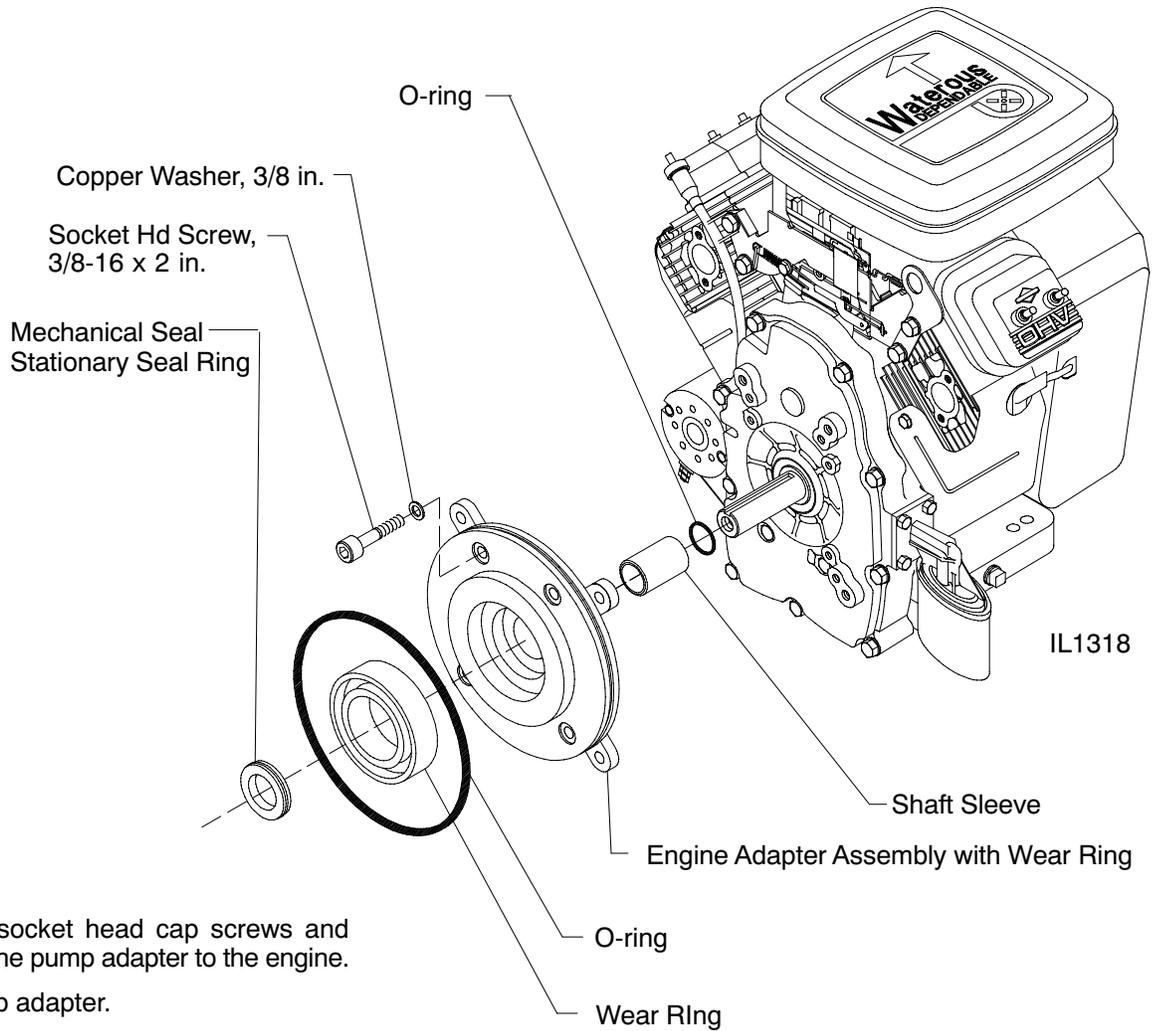


1. Remove the socket head cap screw and washer holding the impeller to the engine crankshaft.
2. If the impeller does not pull off the shaft easily, 1/4-20 puller holes are provided in the impeller to assist in removal. Be sure to protect the tapped hole in the shaft when using any type of puller.
3. Remove the impeller key.

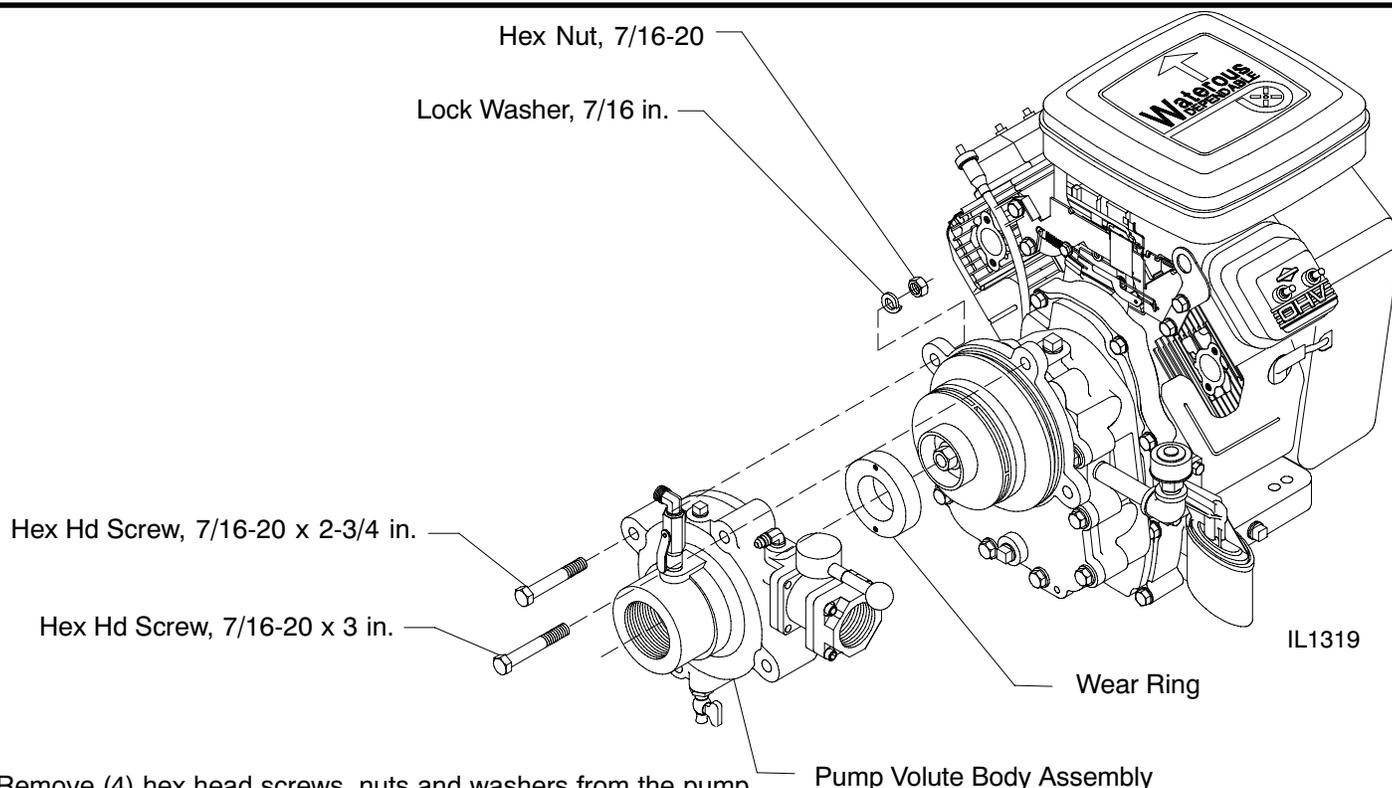
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Remove the mechanical seal rotating parts. The stationary seal ring will remain in the pump adapter.

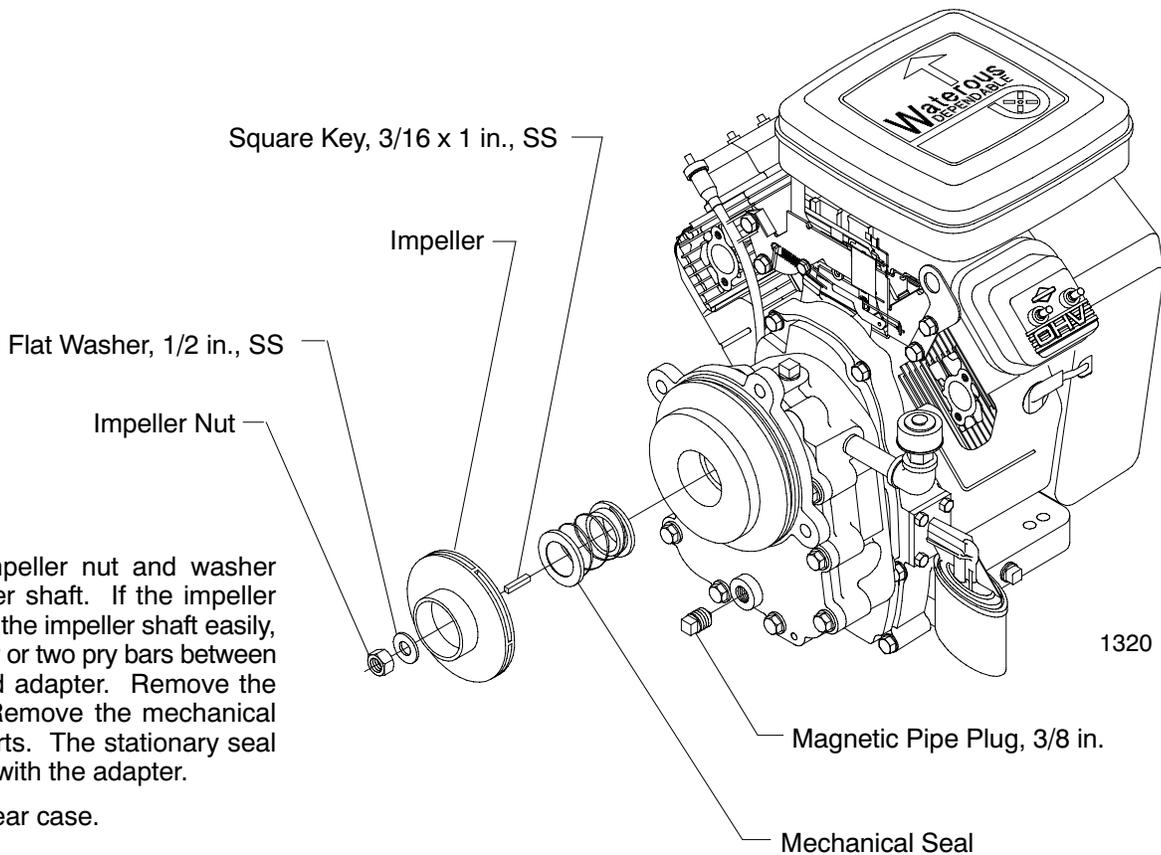


1. Remove the (4) socket head cap screws and washers holding the pump adapter to the engine.
2. Remove the pump adapter.
3. Press out the mechanical seal stationary ring.
4. Remove the engine adapter O-ring.
5. Remove wear ring if required.
6. Remove the shaft sleeve and O-ring.

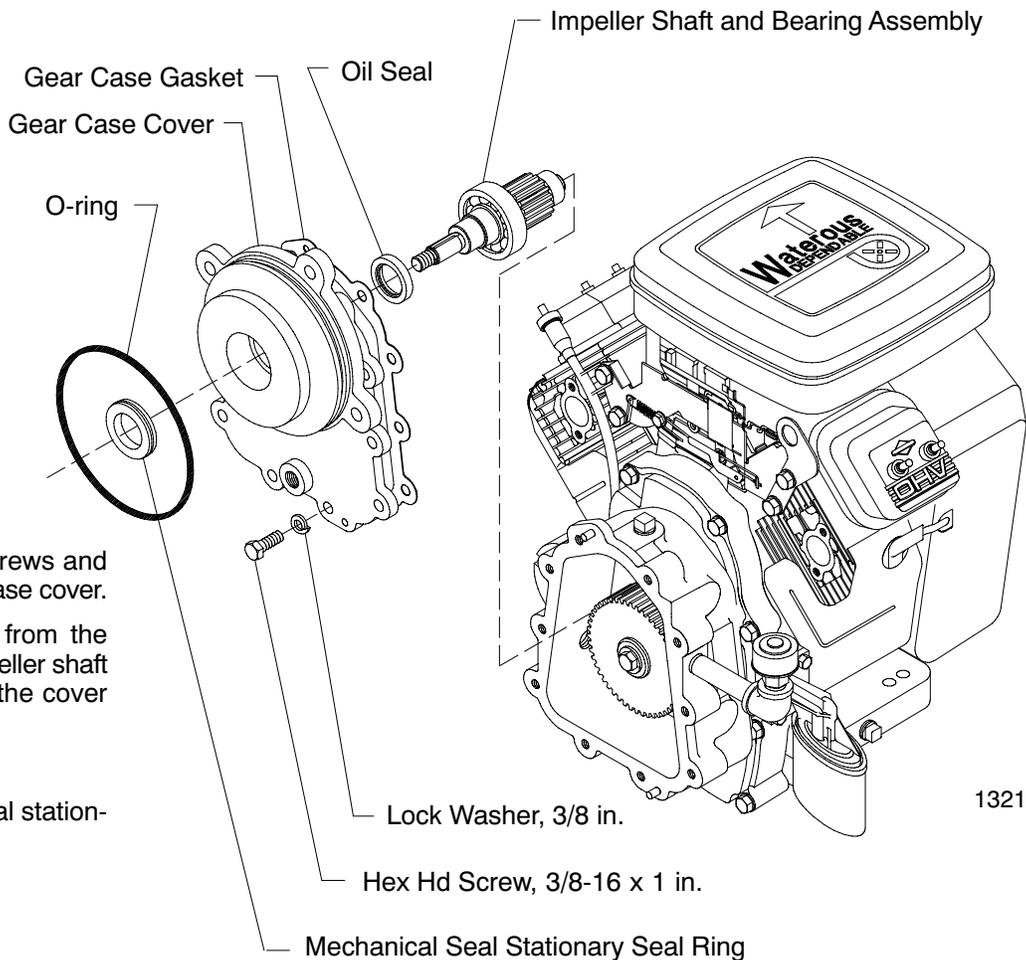


Remove (4) hex head screws, nuts and washers from the pump volute body. Slide the volute body off the adapter attached to the engine. Wear ring will come off with body. Remove if required.

The muffler and control panel are shown removed for clarity.

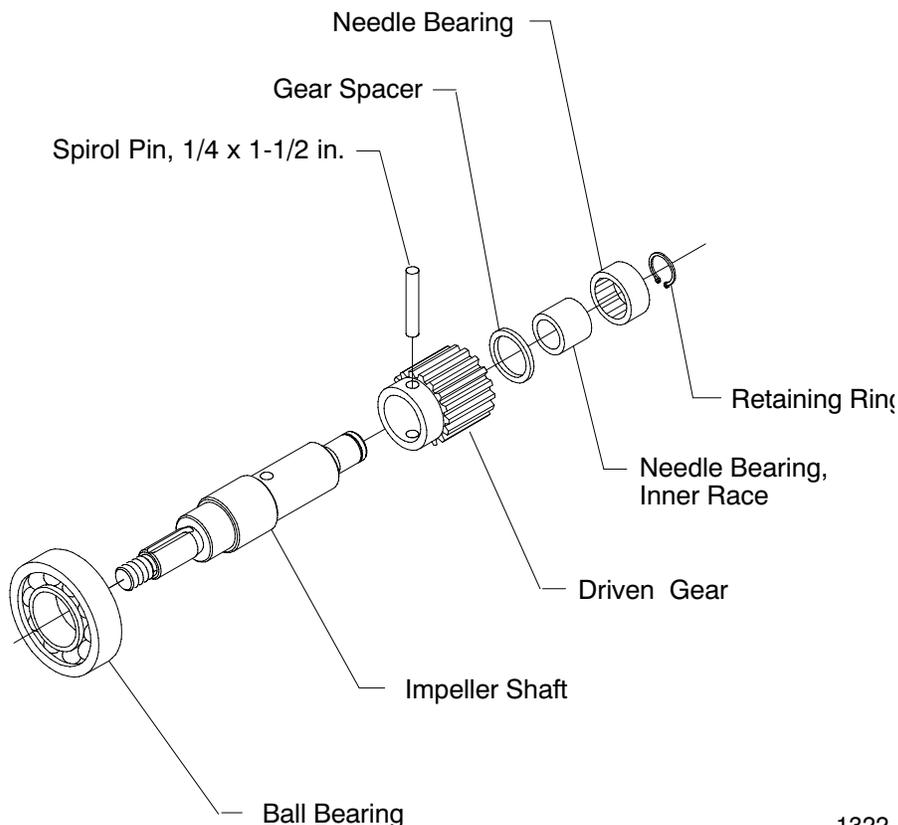


1. Remove the impeller nut and washer from the impeller shaft. If the impeller does not pull off the impeller shaft easily, use a gear puller or two pry bars between the impeller and adapter. Remove the impeller key. Remove the mechanical seal rotating parts. The stationary seal ring will remain with the adapter.
2. Drain oil from gear case.



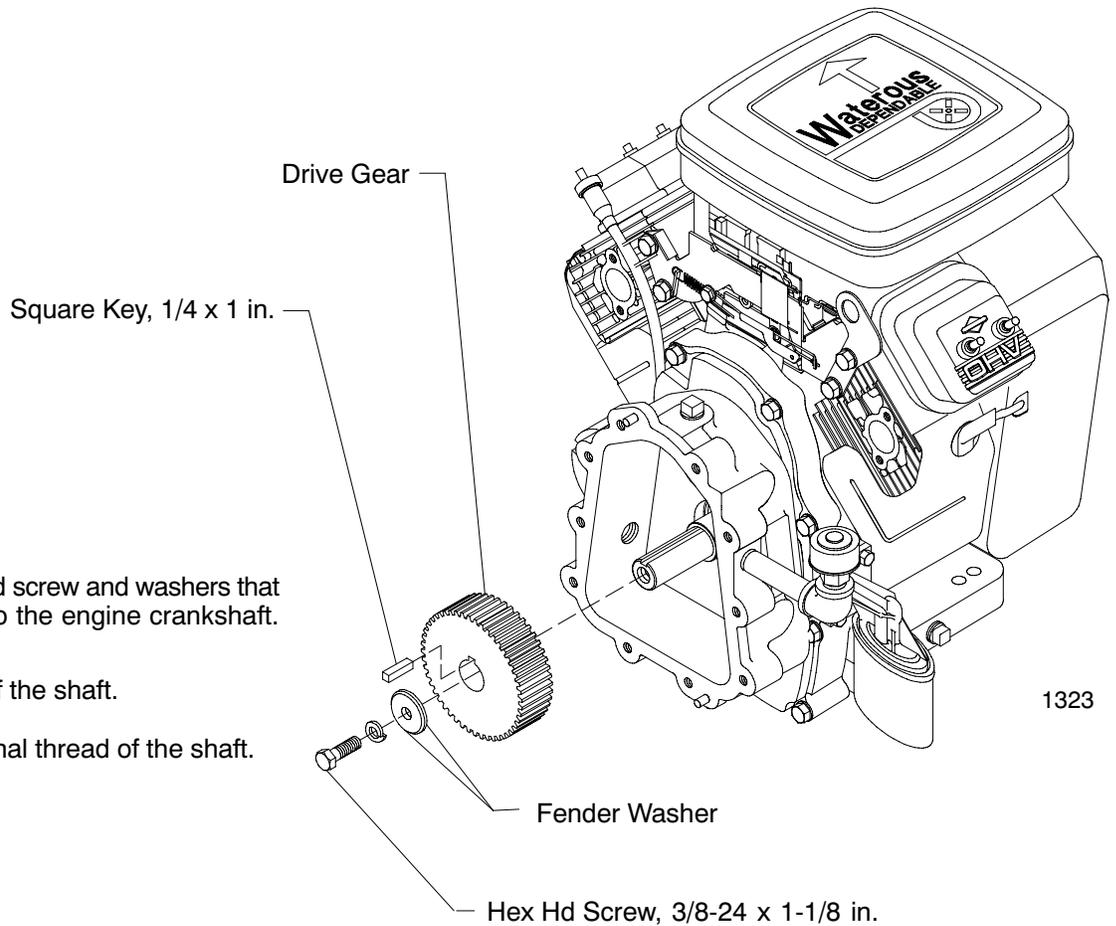
1. Remove the 10 hex head screws and lock washers from the gear case cover.
2. Remove the cover adapter from the gear case. Press out the impeller shaft and bearing assembly from the cover adapter.
3. Remove gear case gasket.
4. Press out the mechanical seal stationary seal ring and the oil seal.

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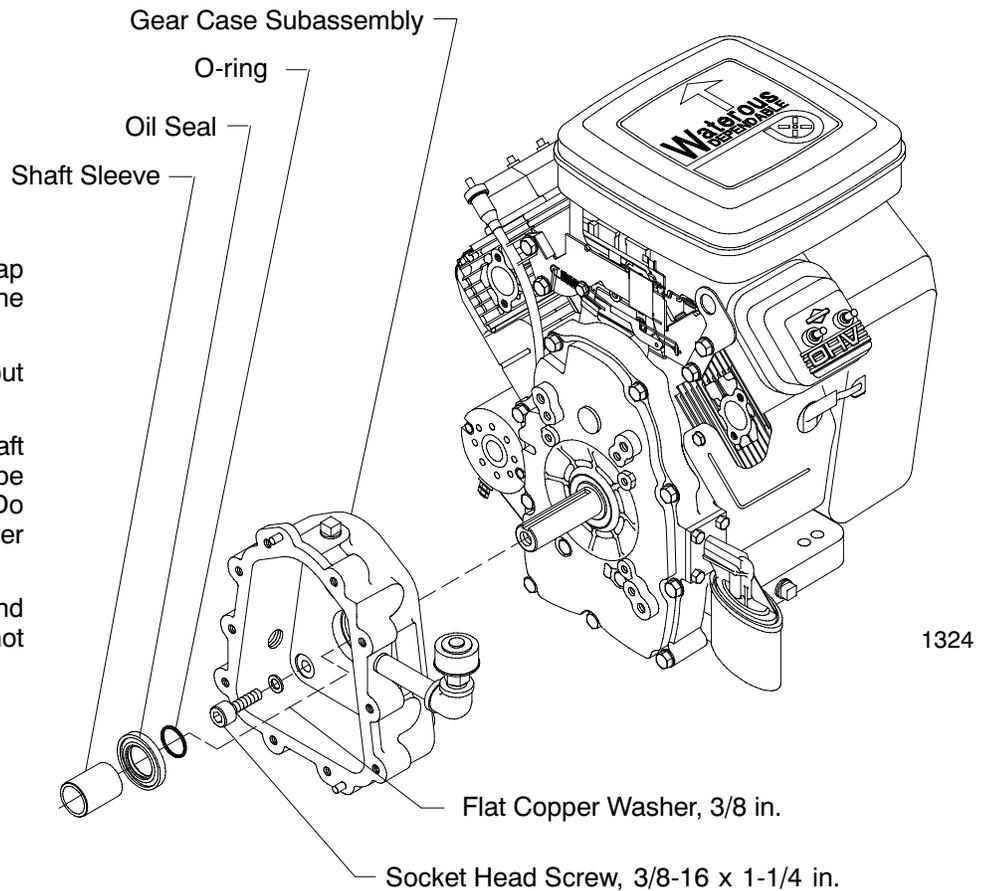


1. The impeller shaft assembly with the ball bearing, pinion gear, spacer, needle bearing inner race and snap ring should not require disassembly unless inspection reveals wear of the ball bearing, needle bearing race or pinion gear.
2. Drive the roll pin out of the gear. Using a suitable sleeve, press the bearing and the gear off the gear end of the shaft.
3. Remove the snap ring from the end of the impeller shaft and slide the needle bearing inner race off.

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1. Remove the hex head screw and washers that hold the drive gear to the engine crankshaft.
2. Pull the drive gear off the shaft.  
**CAUTION:**  
Do not damage internal thread of the shaft.
3. Remove the key.



1. Remove the (4) socket head cap screws and washers holding the gear case to the engine.
2. Remove the gear case. Press out the shaft seal.
3. If oil has been leaking past the shaft sleeve, the O-ring seal should be replaced. Remove the sleeve. Do not mar the sleeve surface under the seal.
4. Clean the magnetic drain plug and check to be sure the breather is not plugged.

After the pump has been disassembled, check the following before reassembly:

**Impeller Wear**

1. Check the wear hubs on the impeller for excessive wear, or clearance with the wear rings. If the clearance exceeds 0.020/0.025in., or if the impeller hubs are badly scored or grooved, replace the impeller and both wear rings. Tapped holes are provided in each wear ring to aid in removing them.
2. Check all O-rings for cuts, nicks, or other damage.

**Oil Seals**

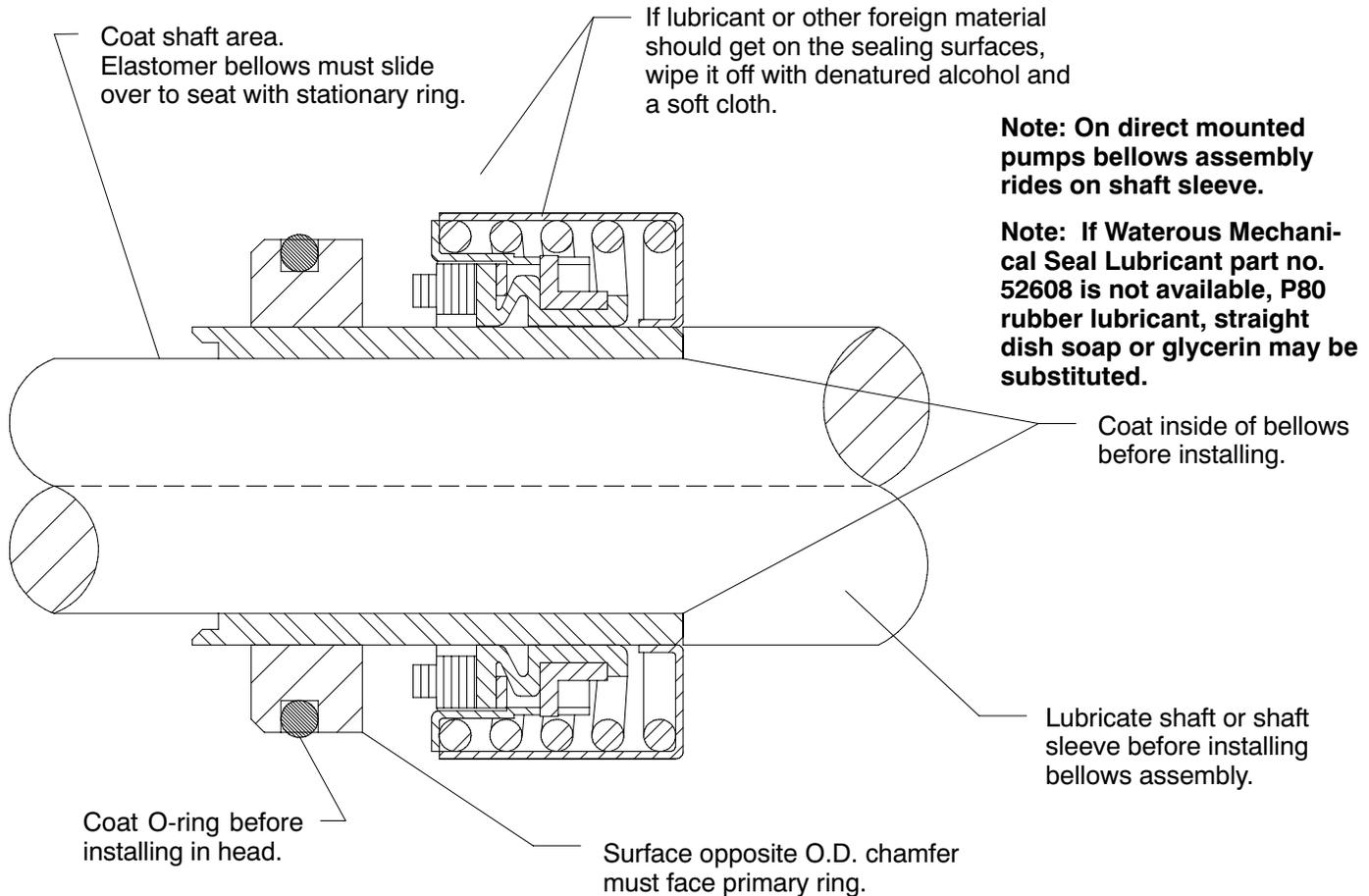
Check the impeller shaft and engine crankshaft sleeve for signs of severe wear from the oil seal.

**Ball Bearing, Gears and Needle Bearing**

Check for severe wear and replace as necessary.

**Mechanical Seal**

1. When a pump is disassembled, it is advisable to install a new mechanical seal during reassembly, especially if the pump had been in service for a long period of time.
2. Check the shaft sleeve in the area under the mechanical seal bellows to be sure it is free of severe scratches or other damage. Also check the impeller hub in the area under the mechanical seal to be sure it is free from scratches or other damage.



Reassembling the pump is basically the reverse of disassembly. The following guidelines will help in reassembly.

1. Check the engine crankshaft for any corrosion deposits that will interfere with seating and sealing of the shaft sleeve.
2. Lubricate all O-rings when installing.
3. The shaft sleeve should seat down tight against the shoulder of the engine crankshaft. It may "pop" back slightly on

initial installation, but will seat down tight when the impeller or drive gear is tightened onto the shaft.

4. When installing mechanical seal seat ring, be careful not to scratch the sealing surface that contacts the polished carbon sealing ring.
5. When installing new wear rings, press them into the bores carefully so they seat down square at the bottom of the bore. Coat O.D. with never seize type product.

## Direct Mounted Pump

**If Waterous Mechanical Seal Lubricant part no. 52608 is not available, P80 rubber lubricant, straight dish soap or glycerin may be substituted.**

1. Lubricate the crank shaft with light oil. Carefully install O-ring followed by the shaft sleeve. Be sure there are no burrs on the end of the sleeve.
2. Install new wear ring if required in pump adapter and volute body.
3. Mount pump adapter to engine. Replace the sealing washers under the socket head cap screws that secure the pump adapter to the engine, if they show signs of being badly bowed, cracked or corroded.
4. Install the mechanical seal stationary ring in the pump adapter, being careful not to scratch the sealing surfaces.

Clean sealing surface with a soft cloth and denatured alcohol.

5. Clean crank shaft. Lubricate shaft and inside diameter of bellows assembly with water based lubricant. Clean primary ring with a soft cloth and denatured alcohol. Install bellows assembly onto impeller shaft with primary ring facing the stationary ring. Push bellows assembly until primary ring contacts stationary ring.
6. Install the impeller. Make sure it is seating tight against the shaft sleeve by checking for any gap where the sleeve seats against the engine crankshaft shoulder. These surfaces should be tight together with no gap.
7. Complete reassembly of the pump and any fittings previously removed.

## Geared Pump

1. Install O-ring and shaft sleeve on engine crank shaft oil seals into gear case. Lubricate the crank shaft with light oil. Carefully install O-ring followed by the shaft sleeve. Be sure there are no burrs on the end of the sleeve.
2. Before installing an oil seal in a housing, apply a thin coat of sealant to housing oil seal seat. (Waterous recommends Loctite Ultra Blue RTV Silicon Sealant to Permatex Super 300). Be sure that the seal, shaft and housing are clean. Always install a seal with the seal lip facing in. Apply force to the outer edge of the seal and press in evenly.
3. Position the gear case over the shaft sleeve on the engine and replace the four socket head cap screws and washers. Inspect and replace washers as necessary.
4. Insert the key, gear, hex head and washers on the engine crankshaft. Tighten screw securely.
5. Install the mechanical seal stationary ring and oil seal in the gear case cover adapter, being careful not to scratch the sealing surfaces. Clean sealing surface with a soft cloth and denatured alcohol.
6. Install new wear ring if required in gear case cover.

7. Insert the impeller shaft assembly in the gear case cover. Be sure that the retaining ring is secure in the groove on the shaft, and that the gear spacer is in place.
8. Using a new gasket, place the gear case cover on the gear case and replace the ten hex head screws and lock washers.
9. Clean impeller shaft. Lubricate shaft and inside diameter of bellows assembly with water based lubricant. Clean primary ring with a soft cloth and denatured alcohol. Install bellows assembly onto impeller shaft with primary ring facing the stationary ring. Push bellows assembly until primary ring contacts stationary ring.
10. Install the key and then the impeller on the shaft.
11. Install the impeller washer and self locking nut. Coat shaft threads and nut with 242 Lotite or equivalent. Tighten nut.
12. Press new wear ring if required into the volute.
13. Place the volute over the lubricated O-ring of the adapter and replace the 4 bolts, nuts and lock washers.
14. Complete reassembly of the pump and any fittings previously removed.

## Testing

1. Before testing the pump, rotate the engine crankshaft with the engine starter or rope. Spark plugs should be disconnected. Be sure there are no abnormal rubbing noises.
2. The mechanical seal may leak when the pump is first run after it has been repaired. This leakage should stop after the seal faces run-in.

3. With the pump running, check for unusual noises or leaks at volute joints, adapter/gear case engine screws, or shaft sleeve. These should be corrected before the pump is returned to service.

# **W A T E R O U S**

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