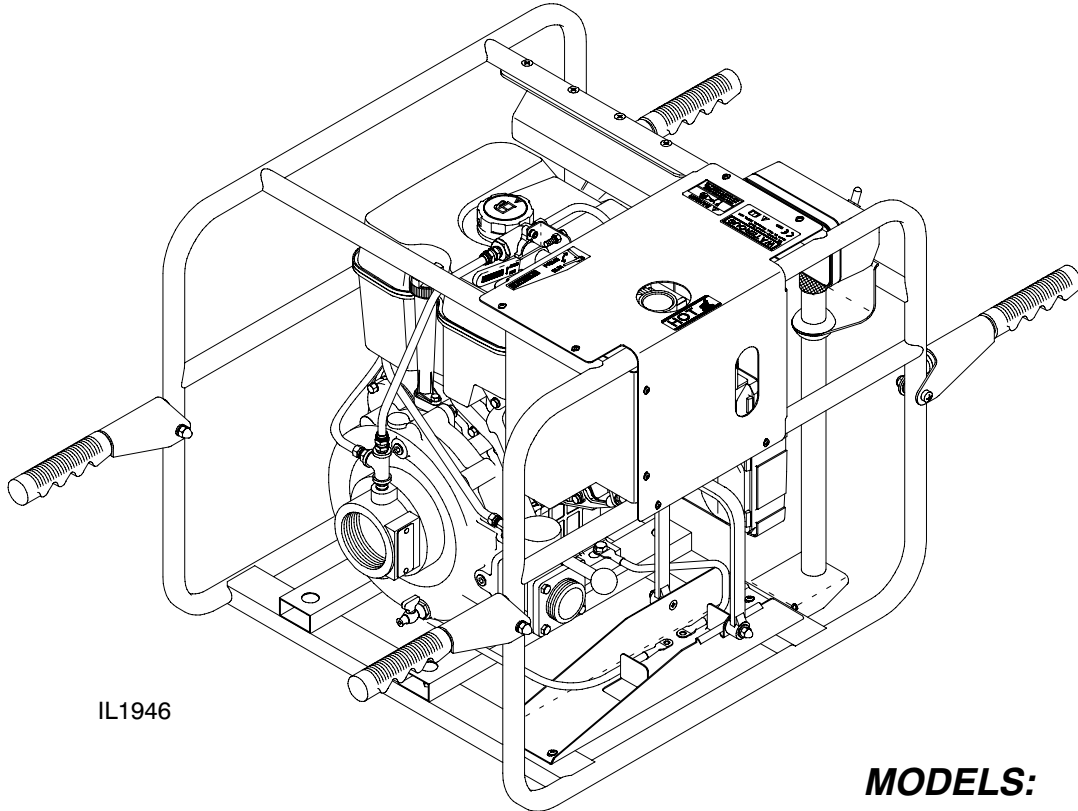


PB13 Series Portable Pump

OPERATION, MAINTENANCE AND OVERHAUL INSTRUCTIONS



IL1946

MODELS:
PB13-2515
PB13-2515B
PB13-2515F
PB13-2525
PB13-2525C
PB13-3025
PB13-3025C
PB13-G2015B
PB13-G2015F

WATEROUS COMPANY
SOUTH ST. PAUL, MINNESOTA 55075 U.S.A.

WATEROUS

SAFETY INSTRUCTIONS

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.

Prevent accidental starting by removing the spark plug wire and grounding it when servicing the engine or equipment. Disconnect negative wire from the battery terminal if equipped with electric starting system.

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.

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 cord slowly until resistance is felt then pull the starter cord rapidly to avoid kickback.

CAUTION

Spark arrestor notice.

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.

WARNING

DO NOT strike the flywheel with a hammer or hard object as this may cause the flywheel to shatter in operation. Use correct tools to service the engine.

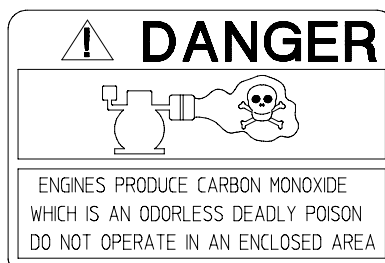
SAFETY INSTRUCTIONS

The PB13 Series Portable Pump is designed and intended for use as portable firefighting equipment.

DANGER

Exhaust gas hazard. Can cause illness or death.

Do not run the 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** remove fuel tank cap nor fill fuel tank while engine is hot or running. (Allow engine to cool two minutes before refueling.)
2. 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.
3. **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.
4. Refuel outdoors or only in well ventilated areas.
5. **DO NOT OPERATE ENGINE WITHOUT A MUFFLER.** Inspect muffler periodically and replace, if necessary.
6. **DO NOT** use this unit on forest covered, brush covered or grass covered unimproved land unless the spark arrester is attached to the muffler.
7. **DO NOT** operate the engine with an accumulation of grass, leaves or other combustible material under, around or behind the muffler.
8. **DO NOT** operate the engine if air cleaner or cover directly over the carburetor air intake is removed.
9. **DO NOT** choke carburetor to stop the engine.
10. **DO NOT** check for spark with spark plug removed (use an approved tester).
11. **DO NOT** crank engine with spark plug removed. (If the engine floods, place throttle in "FAST" and crank until engine starts.)
12. **DO NOT** use the pump to pump flammable liquids.

WARNING

Suction and high pressure hazard.

May cause injuries to the hands, fingers or severe cuts or abrasions to the skin.

Never insert hands or fingers into the intake or discharge openings while engine is running. Never spray high pressure water at a person or animal.

WARNING

Equipment Tipping Hazard. May cause personal injury or equipment damage.

DO NOT run the engine if the equipment is not stable and tipping can occur. Mount equipment to a stable base. If pump is hand carried, place the pump on a firm, level surface to operate. Maximum operating slope is 15°.

WARNING

Pump overheat hazard.

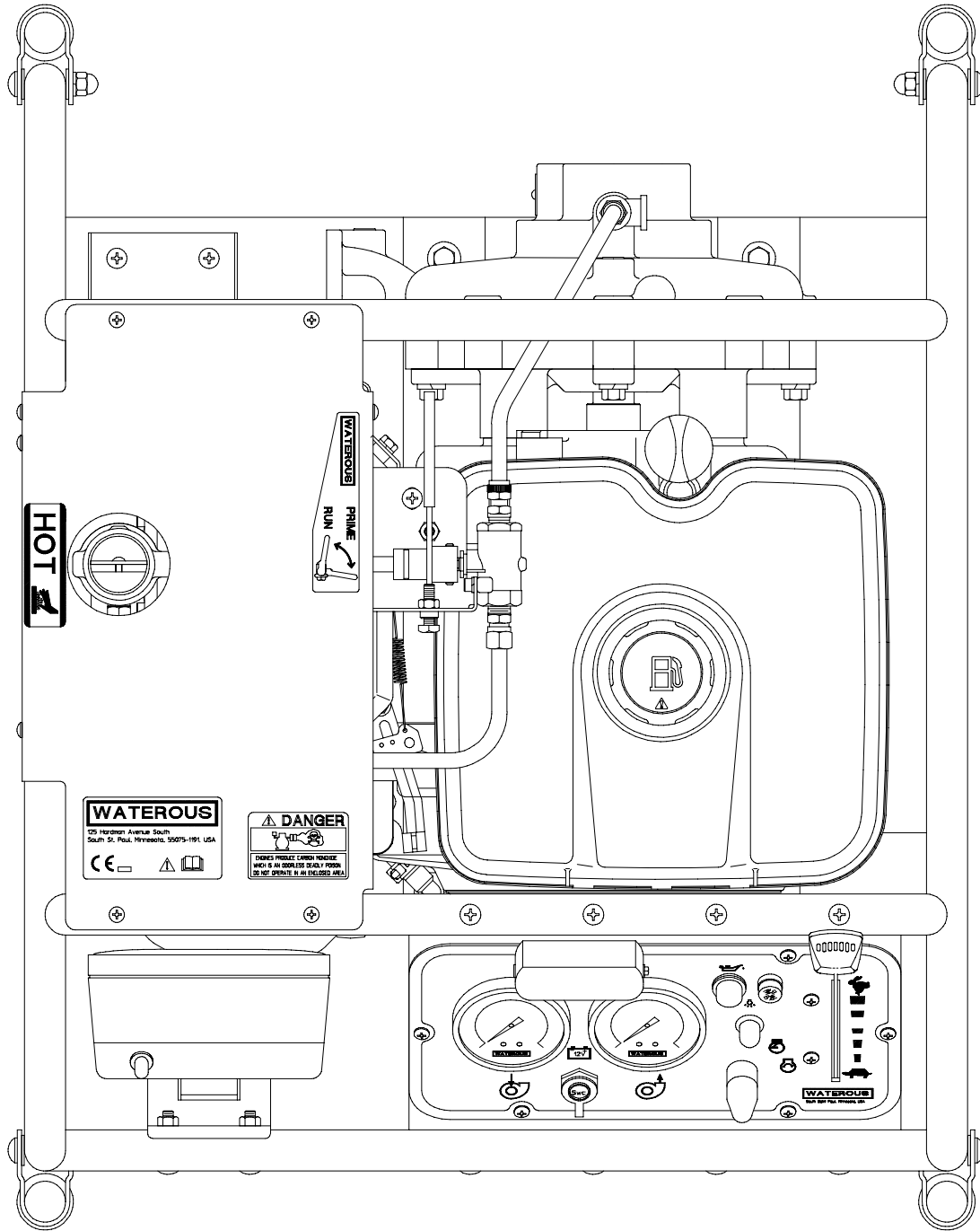
May cause damage to the pump.

Do not run the pump dry for any extended period of time to prevent the pump from overheating.

IMPORTANT NOTES:

1. Ambient operating temperature range: -18°F to 118°F (-28°C to 48°C)
2. Maximum sound pressure level: 95 dBa @ 1.5 meters
3. The PB13 Series Portable Pumps are designed to be carried by two or more people.

WARNING LABELS



IL2030

Figure 1. Preparation Before Operation

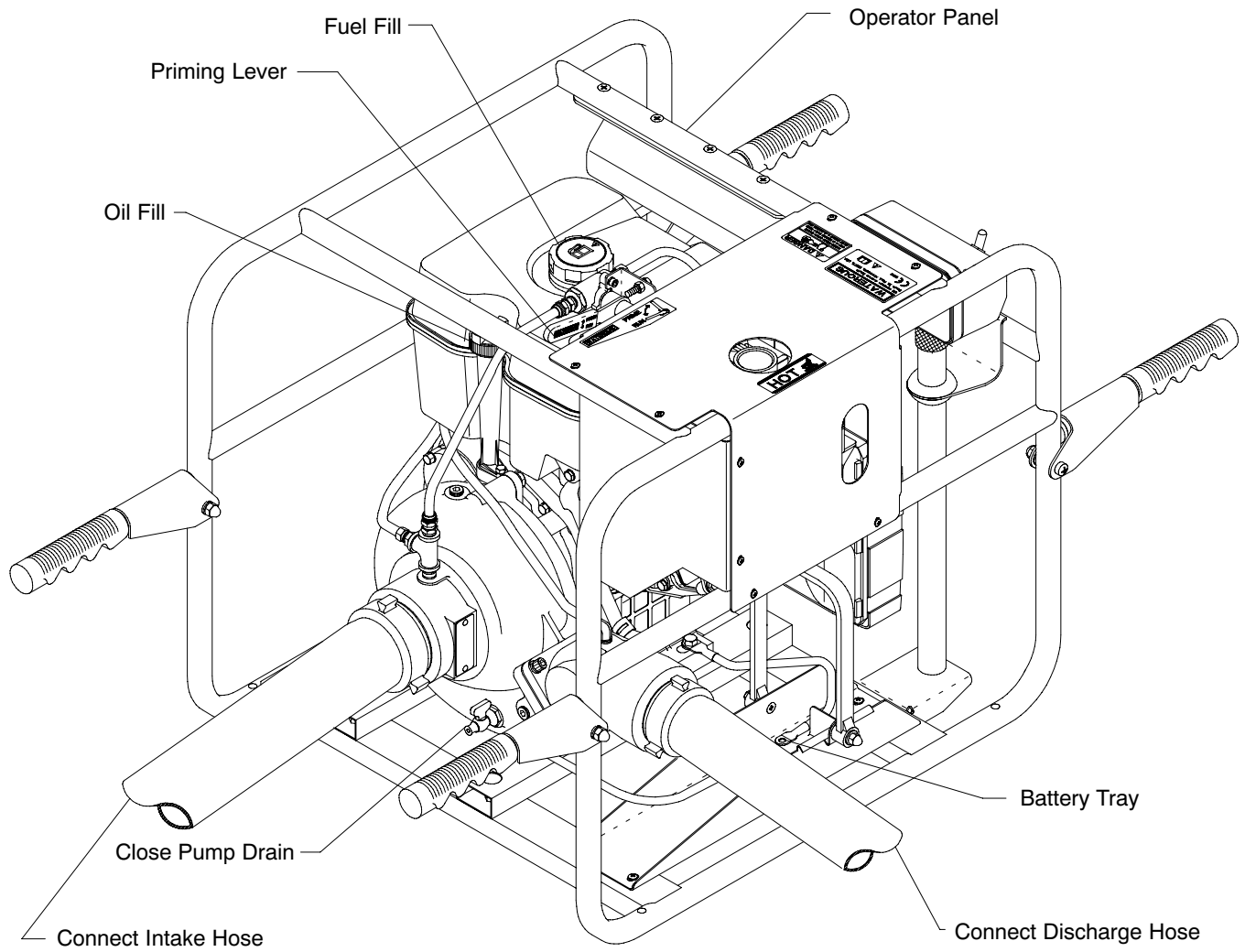
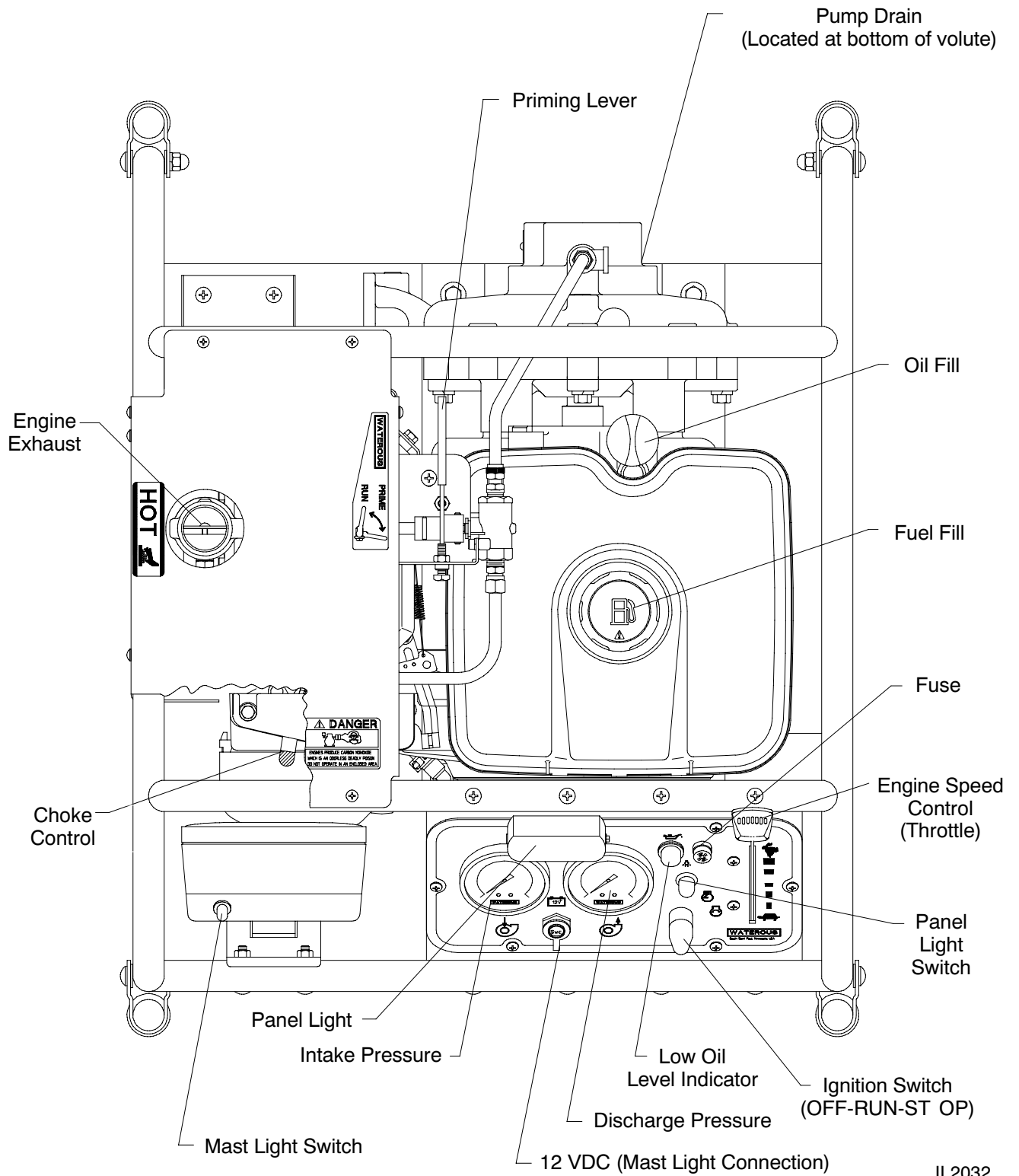


Figure 2. Operation Controls



Preparation Before Operation (See Figure 1)

Symbols



This safety alert symbol indicates that this message involves personal safety. Words danger, warning and caution indicated degree of hazard. Death, personal injury and/or property damage may occur unless instructions are followed carefully.



You are not ready to operate this engine if you have not read and understood the following safety items. Read this entire owner/operator manual and the operating instructions of the equipment this engine powers.



You are not ready to operate this engine if you have not read and understood the following safety items. Read this entire owner/operator manual and the operating instructions of the equipment this engine powers.

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 Specifications:

- Capacity - 14 Amp Hour
 - Approximately 130 cold cranking amps
 - 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. The PB13 Series Portable Pumps use Briggs & Stratton Model Series 245400 engines.
 6. Fill fuel tank. Use clean, fresh, lead-free gasoline with a minimum of 85 octane. (See Briggs & Stratton instructions for more detail.) The engine should be refueled prior to use to avoid the need to refuel when it is hot.
 7. Fill transmission with 1 pint of SAE 90W oil through top plug or breather elbow. Remove oil level plug to check oil level (gear driven pump only).

8. With the ignition switch OFF, rotate the engine crankshaft several times with the rewind start rope to make sure the engine and pump turn over freely with no abnormal rubbing noises.



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 intake 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 intake 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.

Starting the Engine (See Figure 2)

1. Refer to the Briggs & Stratton Operation & Maintenance Instructions.
2. Move the choke control lever to the "CHOKE" position.
3. Move the throttle control to the "FAST" position.
4. Rotate ignition switch to the "RUN" position.
5. Rotate and hold the ignition switch in the "START" position to operate the starter motor relay and start engine. (Alternate: Use manual rope start.)
6. After the engine starts, return the ignition switch to the "RUN" position, return the choke control to the "RUN" position and adjust the throttle as required.

Priming the Pump

The PB13 Series utilize an exhaust primer.

1. Connect intake and discharge hoses or piping.
2. Close the discharge valve if so equipped.
3. Start engine and advance the throttle to "FAST" position.
4. Pull the priming lever located at the top of the engine to "PRIME" position.
Alternate: Pull the primer lever and advance the throttle.
5. Operate primer until water is ejected from it.

NOTE: For high lift applications (10 foot or higher) when the pump is new, priming operation may be improved if the engine choke is engaged slightly (no more than 1/4 of choke lever travel) after advancing the throttle to full open. Once the pump is primed, return choke to the "RUN" position.

6. Return the priming lever to the "RUN" position.
7. Open the discharge valve if so equipped.

When a PB13 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, move the priming lever to the "PRIME" position to drain the intake and the priming line back into the water supply.
2. Disconnect the intake hose. Start the engine and operate the primer until no more water comes out.
3. Stop the engine and open the volute drain.

Operating the Pump

The pump performance can be varied by:

1. Controlling a discharge valve or nozzle. Opening the valve increases flow and decreases discharge pressure.
2. Controlling engine speed via the throttle control. Increasing the engine speed increases the discharge pressure and flow.

WARNING

Pump Overheating.
May cause personal injury or pump damage.

When operating the pump, be sure to open the discharge valve slightly to prevent the pump from overheating. If the pump runs even for a few minutes completely closed it may heat the water enough to scald someone when the valve is opened. Overheating can damage the seals and other pump parts.

CAUTION

Freezing water hazard.
May cause damage to the pump.

If the pump is exposed to freezing temperatures, drain all water from pump, lines and accessories.

WARNING

Pressure Hazard.
May cause personal injury.

When the pump stops there is no stored pressure but there could be pressure in the hoses. Use care when disconnecting hoses and allow any residual pressure to bleed off before uncoupling.

Pumping from Water Tank

1. Open valves in piping between water tank and pump intake, and the discharge valve.
2. Allow about 30 seconds for water to flow into pump.

NOTE: Priming the pump may be necessary under some conditions because of the air trapped in pump and piping.

3. Adjust engine speed and discharge nozzle or valve to obtain desired discharge pressure and flow.

CAUTION

Do not attempt to pump more water than is available from water tank. Always make sure the intake pressure gauge reading stays above zero.

After Pumping

1. Stop engine.
2. If pumping anything but clean water, open all valves and open all drains. Flush entire system with clean, fresh water for several minutes to remove all traces of impurities.
3. Close all drains and install intake and discharge caps.
4. Operate primer lever to drain any fluid from the priming pump.

Pumping from Hydrant or Relay

1. Start Engine.
2. Open intake, hydrant and other valves as necessary to allow water to enter the pump.

CAUTION

Pump has a mechanical seal, limit intake pressure to 75 psi if possible. Although the pump will operate properly with higher intake pressure, such operation will greatly accelerate mechanical seal wear.

3. Open the discharge valve and increase engine speed to obtain desired discharge pressure and capacity.

CAUTION

Do not attempt to pump more water than is available from the hydrant or relaying pumper. Make sure the intake pressure gauge reading stays above zero. Some fire departments operate at a minimum intake pressure of 10 psi when pumping from hydrant or in relay to prevent a "soft" intake hose from collapsing.

After Pumping (See "Pumping from Tank" above)

Pumping from Draft

NOTE: To get full capacity, quick prime and maintain pump efficiency:

- a.) Position truck as near as possible to water supply.
- b.) Avoid humps or sharp bends in intake hose. Make sure no part of hose is higher than pump intake inlet. (Air pockets in intake hose may cause loss of prime or erratic pump action and may reduce pump capacity.)
- c.) Make sure all intake connections are tight and discharge valves are closed.
- d.) Immerse intake strainer at least two feet below water surface to prevent pump from drawing air. (Whirlpools forming above intake strainer indicate that strainer is too close to surface of water.)
- e.) Make sure intake strainer is far enough from bottom to prevent pumping sand, gravel or other foreign matter.
 1. Prime the pump (see separate).
 2. Open discharge valves and increase engine speed to obtain desired discharge pressure and capacity.

After Pumping (See “Pumping from Tank” above)

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

(PB13G Gear Case Models Only)

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.

ENGINE AND PUMP REPAIR

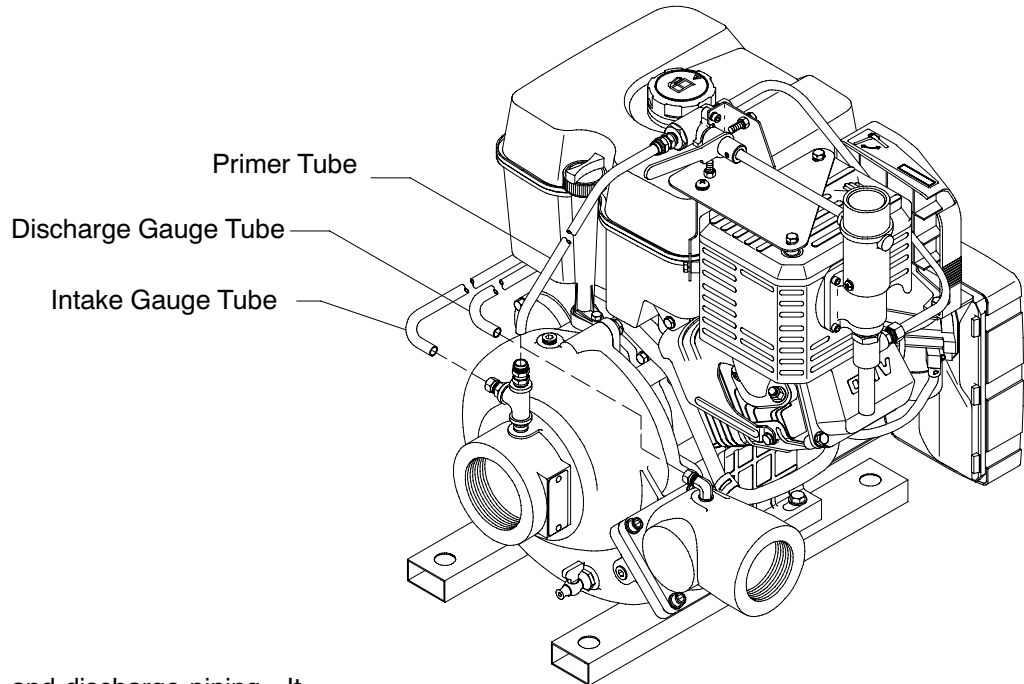
Repairs to be done during the Waterous or Briggs and Stratton warranty period must be done in accordance with the appropriate warranty policy.

Engine Repair

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

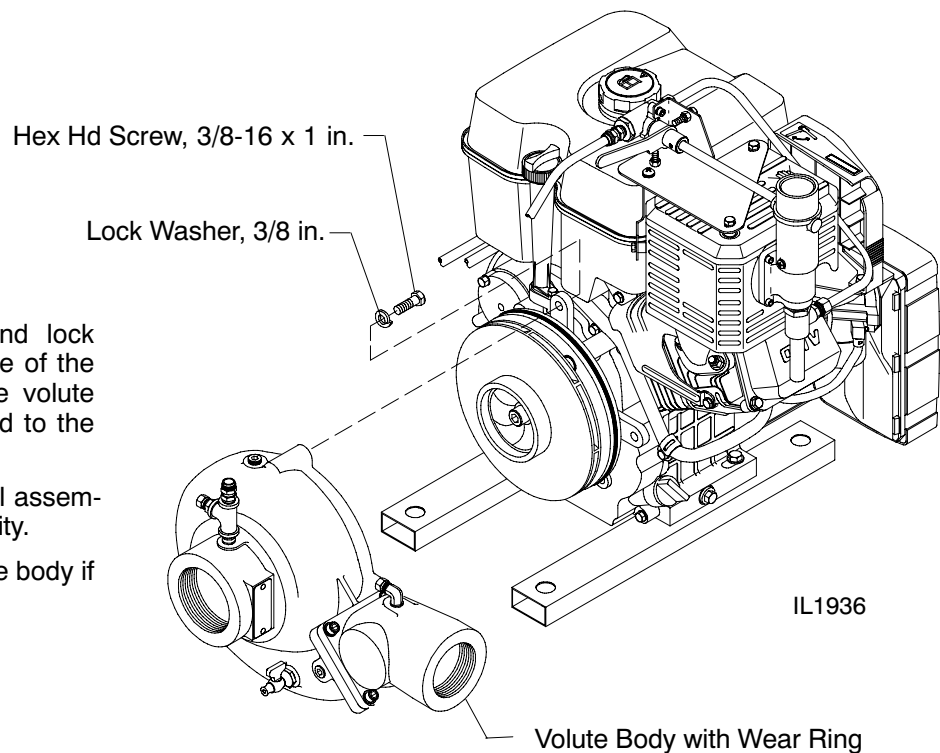
Pump Repair

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.



IL1935

1. Disconnect any intake and discharge piping. It may not be necessary to remove intake or discharge adapters, or discharge valve.
2. Disconnect the nylon tubes attached to the volute body and discharge elbow.

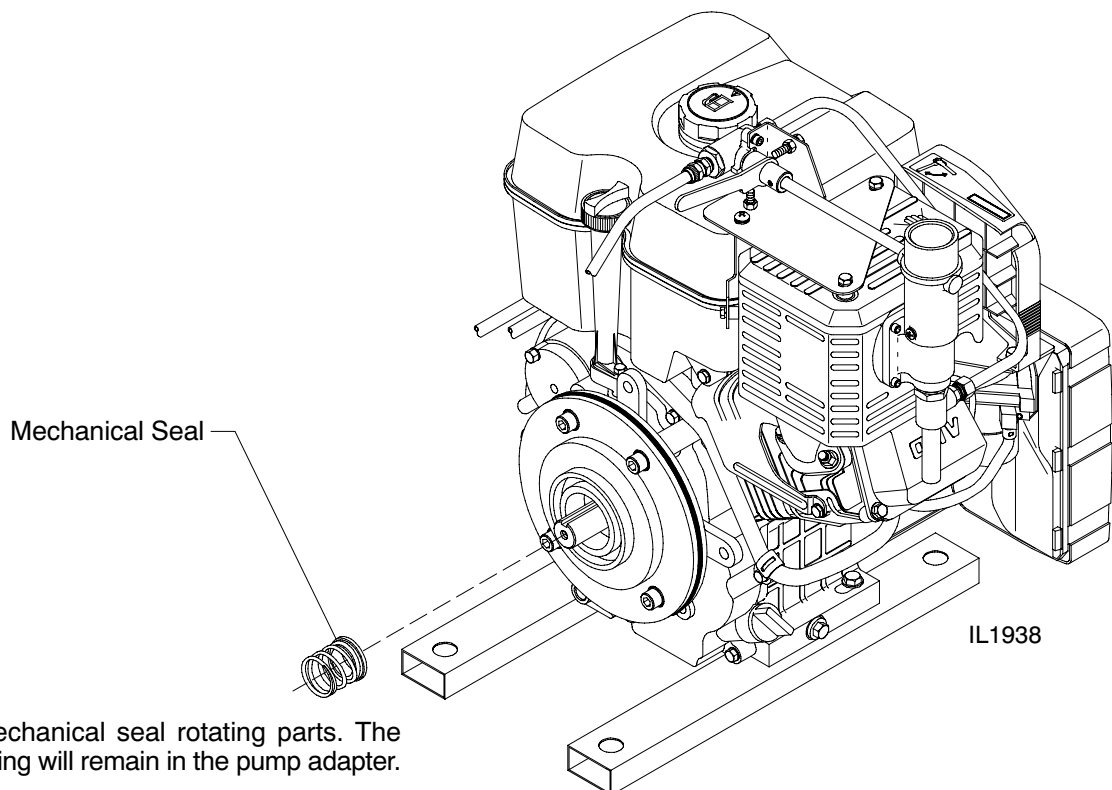
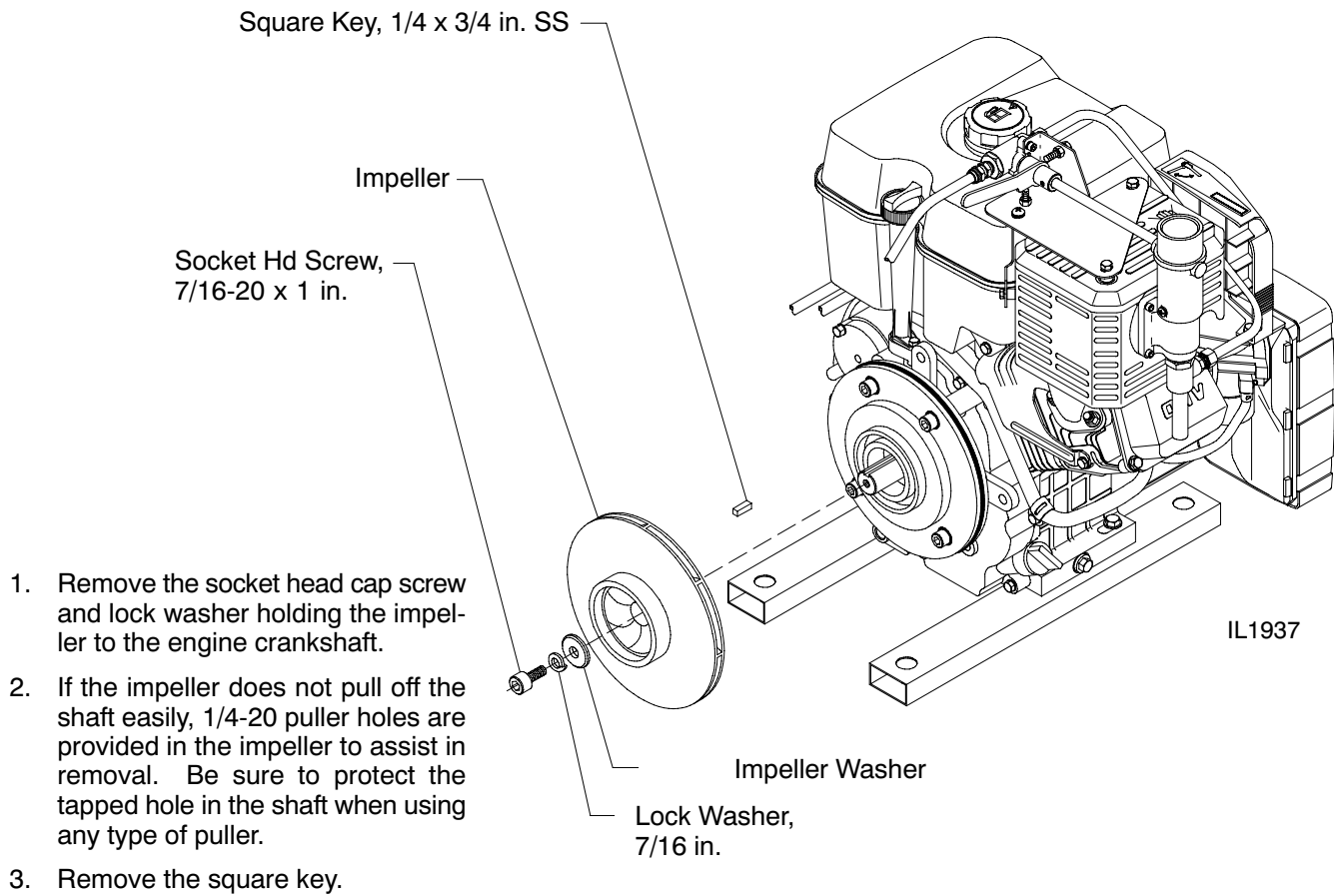


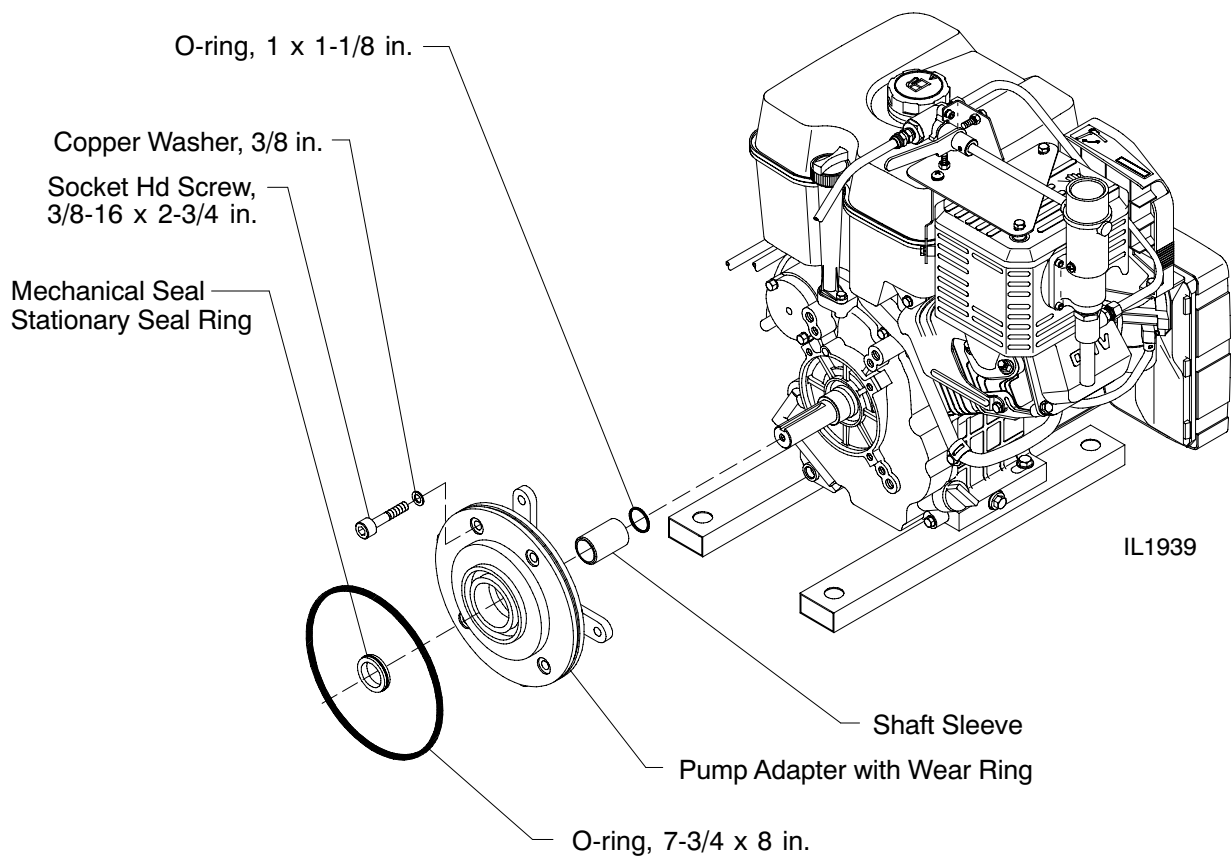
IL1936

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

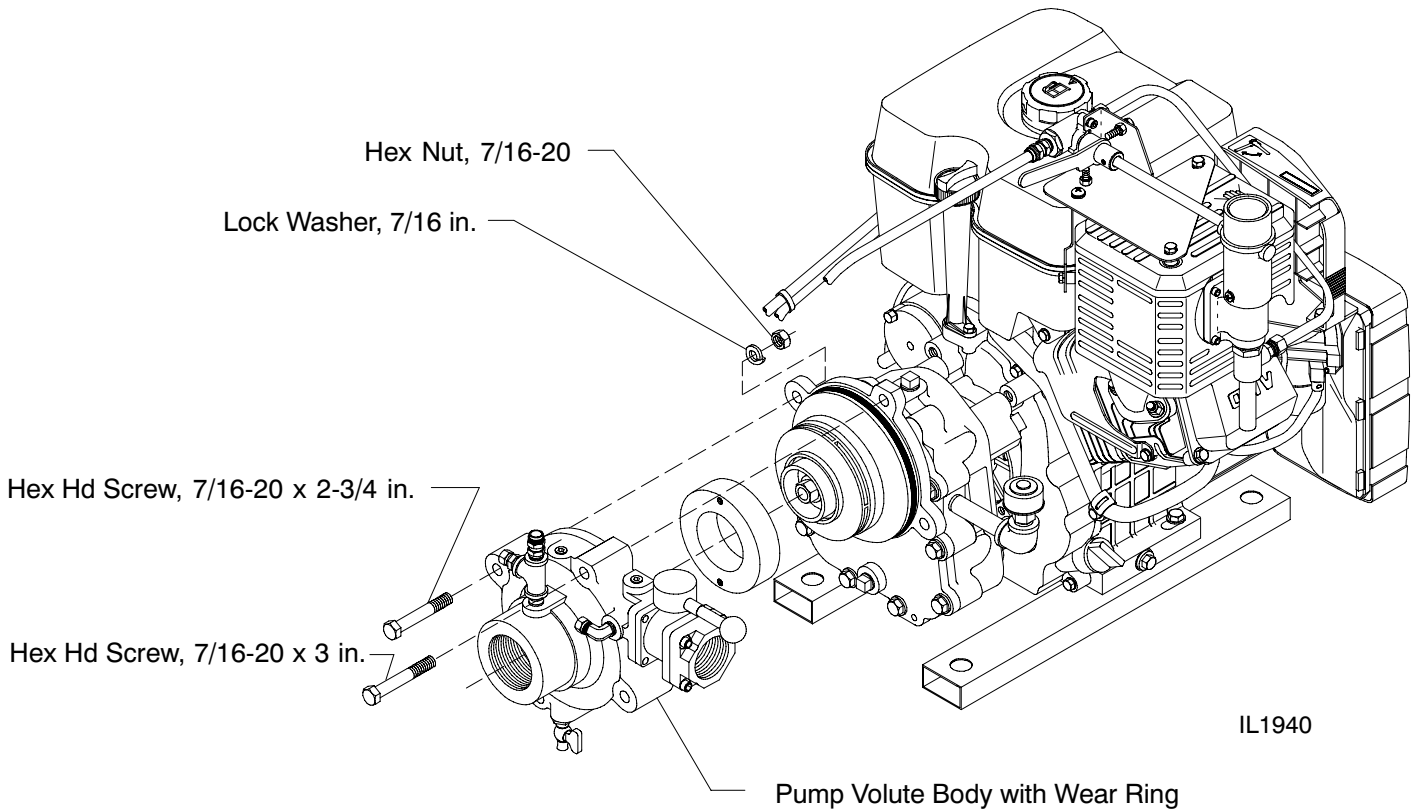
The muffler and control panel assembly is shown removed for clarity.

2. Remove wear ring from volute body if necessary.

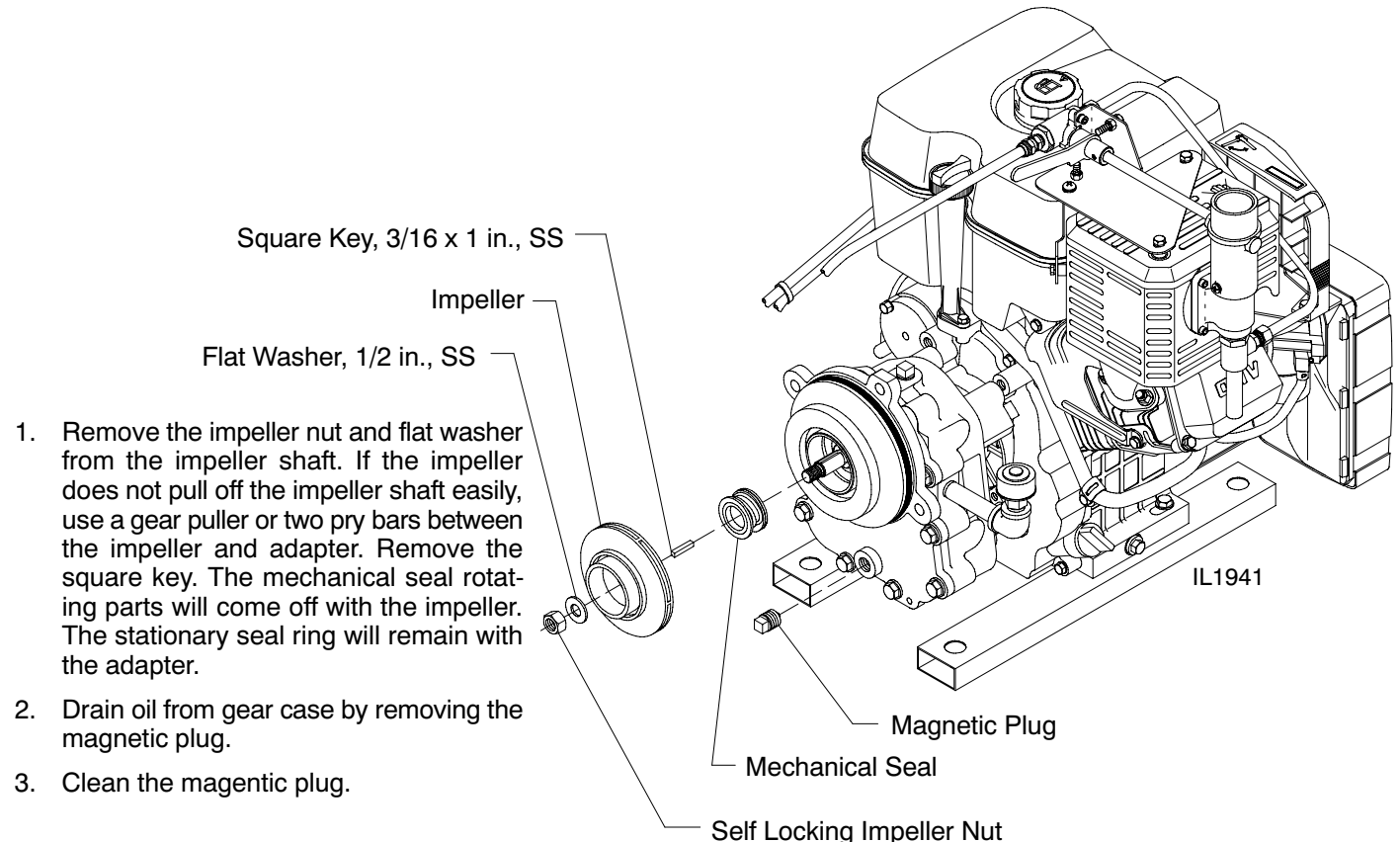




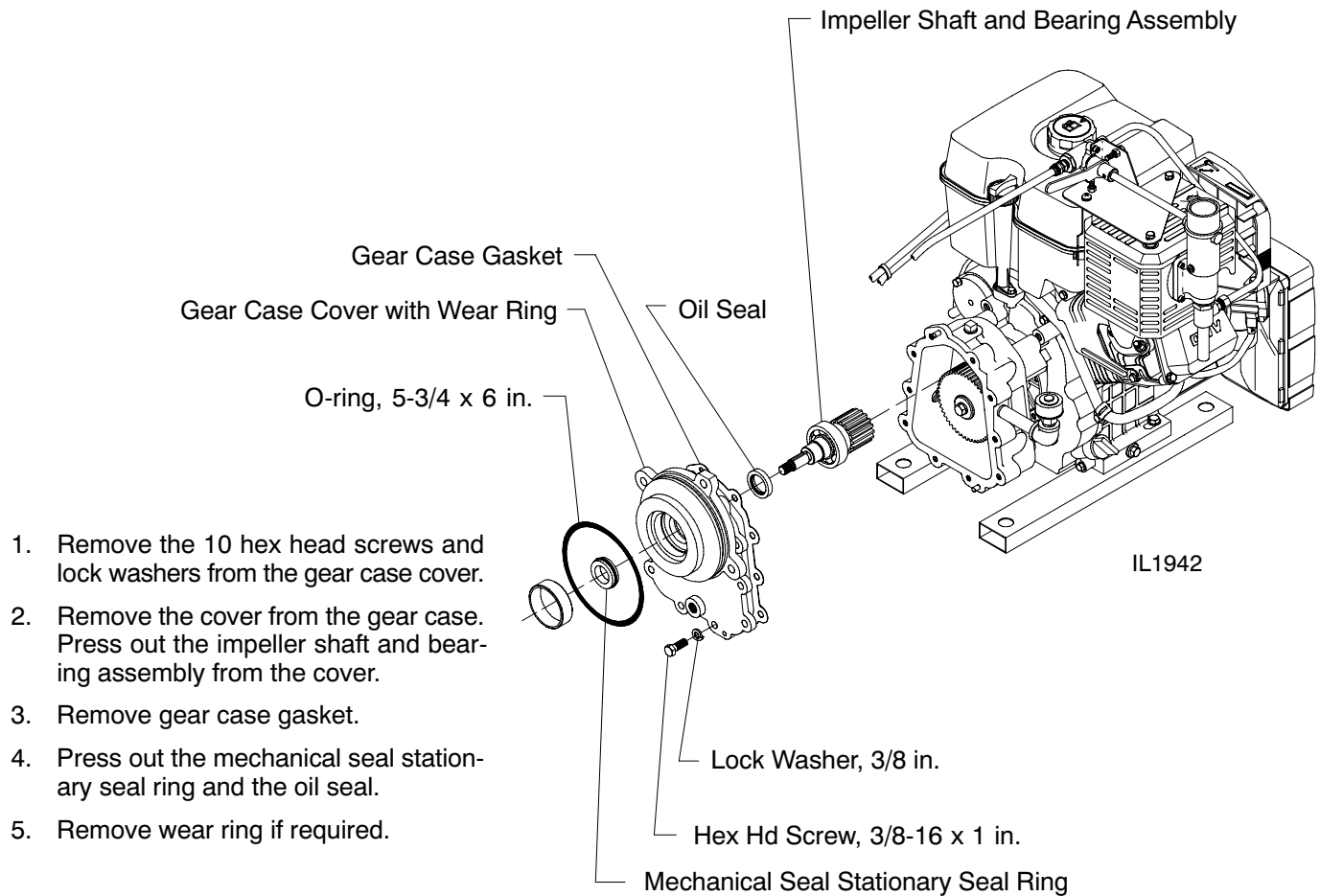
1. Remove the (4) socket head cap screws and copper washers holding the pump adapter to the engine.
2. Remove the pump adapter.
3. Press out the mechanical seal stationary seal ring.
4. Remove the pump adapter O-ring.
5. Remove wear ring if required.
6. Remove the shaft sleeve and O-ring.



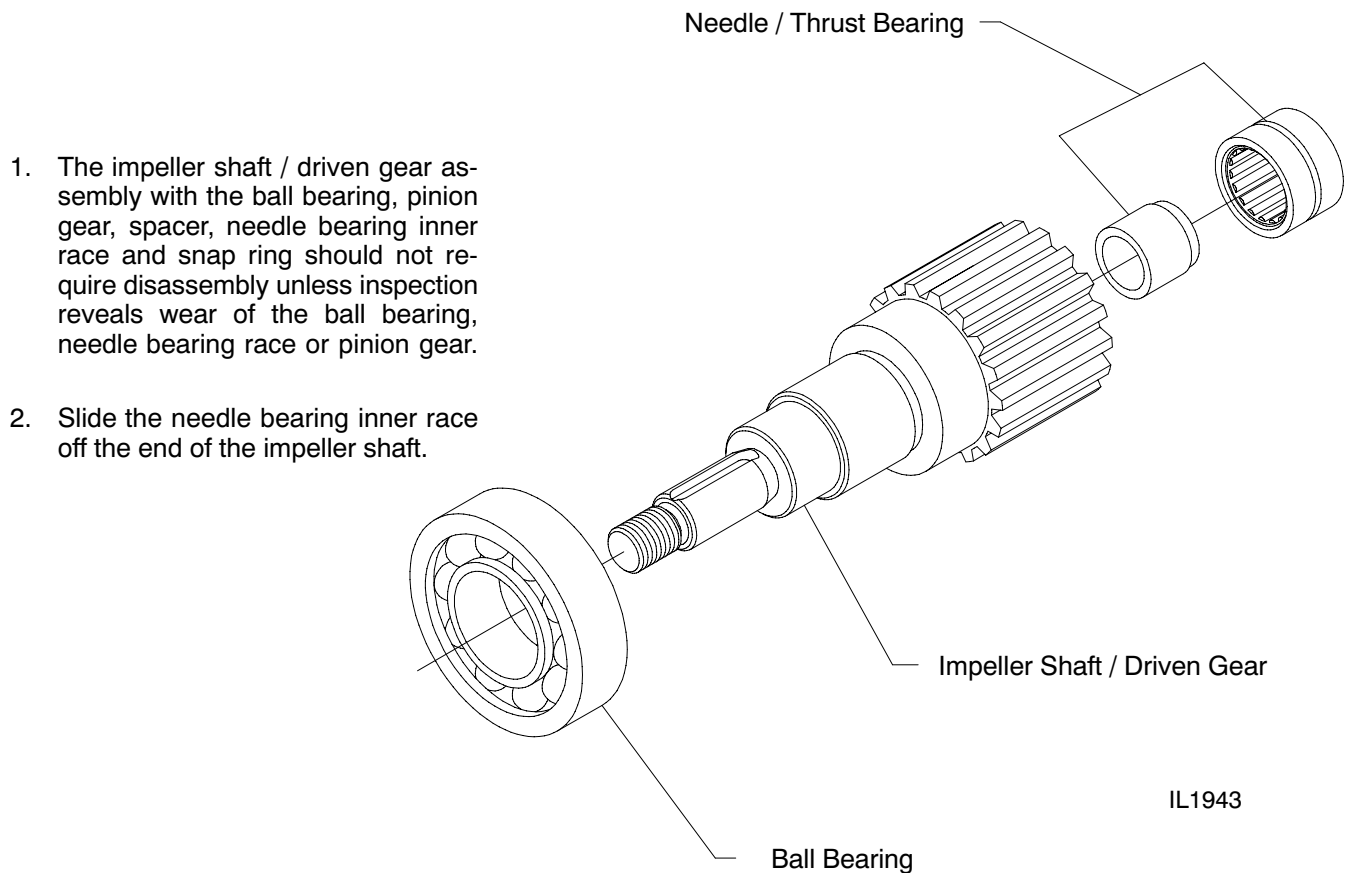
1. Remove (4) hex head screws the pump volute body. Slide the volute body off the adapter attached to the engine. Wear ring will come off with body.
The muffler and control panel are shown removed for clarity.
2. Remove wear ring if required.



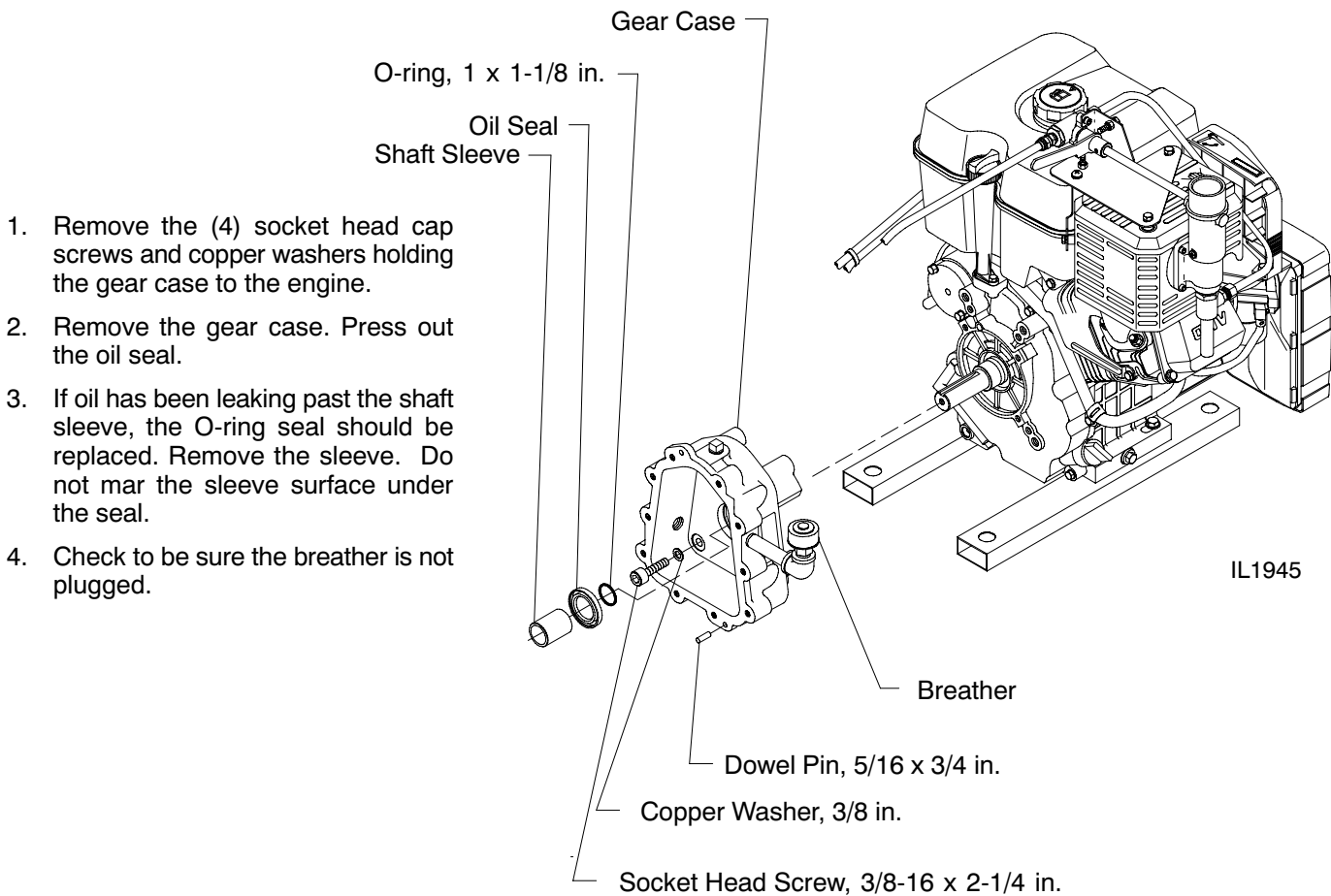
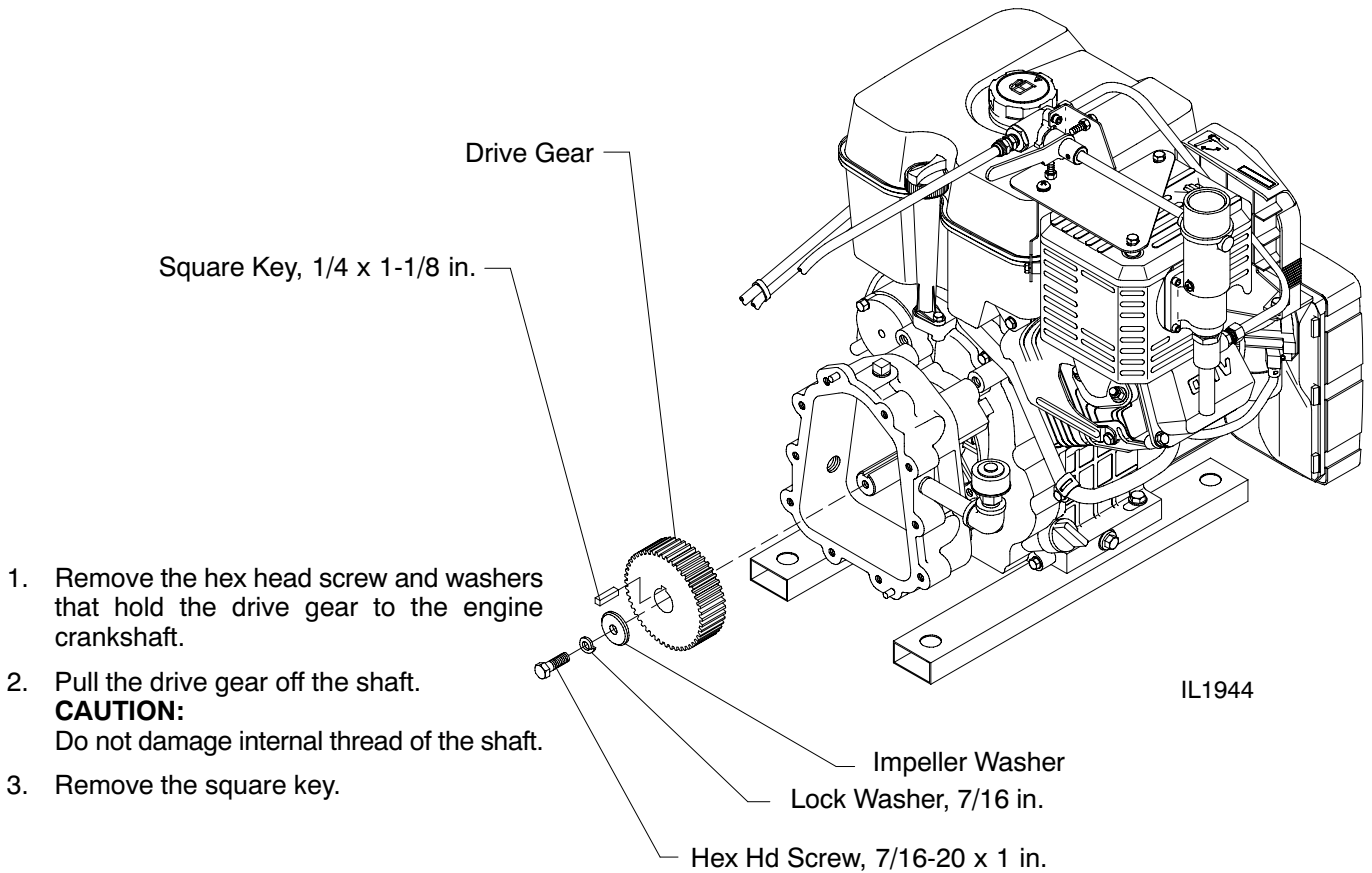
1. Remove the impeller nut and flat washer from the impeller shaft. If the impeller does not pull off the impeller shaft easily, use a gear puller or two pry bars between the impeller and adapter. Remove the square key. The mechanical seal rotating parts will come off with the impeller. The stationary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



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



1. The impeller shaft / driven gear 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. Slide the needle bearing inner race off the end of the impeller shaft.



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 0.020/0.025 in., 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.

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.

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.

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 mechanical seal primary ring.
5. When installing new wear rings, press them into the bores carefully so they seat down square at the bottom of the bore.

Direct Mounted Pump

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 the mechanical seal stationary ring in the pump adapter, being careful to not scratch the sealing surface. Clean sealing surface with soft cloth and denatured alcohol.
3. Install new wear ring if required in pump adapter and volute body.
4. Mount pump adapter to engine. Replace the copper 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.
5. Clean crank shaft. Lubricate shaft and inside diameter of mechanical seal bellows assembly with water based lubricant. Be sure sealing surface of primary ring is clean.

Wipe with soft cloth and denatured alcohol before installation.

6. Install bellows assembly onto crank shaft with sealing surface facing the stationary ring. Push bellows assembly until primary ring contacts stationary ring.
7. Install the impeller key and 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.
8. Press new wear ring (if required) into the volute. Coat outside diameter with never seize product.
9. Place the volute over the lubricated O-ring of the adapter and replace the 4 bolts, nuts and lock washers.
10. 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 gear case 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 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.
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 hub. Lubricate hub and inside diameter of mechanical seal bellows assembly with water based lubricant. Install bellows onto impeller hub with primary ring facing the stationary ring. Push bellows assembly on until it contacts shoulder on impeller hub. Clean sealing surface of primary ring with a soft cloth and denatured alcohol.
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 Loctite 242 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. The spark plug wire 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.

CONDITIONAL WARRANTY POLICY

*WATEROUS warrants, to the original Buyer only, that products and parts manufactured by WATEROUS will be free from defects in material and workmanship under normal use and service for a period of five (5) years from the date the product is first placed in service, or five and one-half (5-1/2) years from the date of shipment by Waterous, whichever period shall be the first to expire; provided the Buyer notifies WATEROUS, in writing, of the defect in said product within the warranty period, and said product is found by WATEROUS to be nonconforming with the aforesaid warranty. When required in writing by WATEROUS, defective products must be promptly returned by Buyer to WATEROUS at WATEROUS' plant at South St. Paul, Minnesota, or at such other place as may be specified by WATEROUS, with transportation and other charges prepaid. A **Returned Material Authorization (RMA)** is required for all products and parts and may be requested by phone, fax or mail. The aforesaid warranty excludes any responsibility or liability of WATEROUS for:*

(a) damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes, or improper maintenance, or attributable to written specifications or instructions furnished by Buyer;

(b) defects in products manufactured by others and furnished by WATEROUS hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, WATEROUS will assign to Buyer, if requested by Buyer;

(c) any product or part, altered, modified, serviced or repaired other than by WATEROUS, without its prior written consent; and

(d) the cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation.

(e) normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, etc.).

This warranty is subject to WATEROUS' Conditions of Sale (Waterous Company form number F-2190) as currently in effect all of which are herein incorporated and by this reference made a part hereof.

All other warranties are excluded, whether express or implied by operation of law or otherwise, including all implied warranties of merchantability or fitness for purpose. WATEROUS shall not be liable for consequential or incidental damages directly or indirectly arising or resulting from the breach of any of the terms of this limited warranty or from the sale, handling, or used of any WATEROUS product or part. WATEROUS' liability hereunder, either for breach of warranty or for negligence, is expressly limited at WATEROUS' option:

(A) to the replacement at the agreed point of delivery of any product or part, which upon inspection by WATEROUS or its duly authorized representative, is found not to conform to the limited warranty set forth above, or

(B) to the repair of such product or part, or

(C) to the refund or crediting to buyer of the net sales price of the defective product or part.

Buyer's remedies contained herein are exclusive of any other remedy otherwise available to Buyer.

W A T E R O U S

WATEROUS COMPANY • 125 HARDMAN AVENUE SOUTH
SOUTH ST. PAUL, MINNESOTA 55075-2456 U.S.A.

Phone: (651) 450-5000 • FAX: (651) 450-5090

Web Site: www.waterousco.com