

HJ, HR, HJA, HT Jet Pump Installation & Service Manual

Myers®
**Country
water™**

WARNING! IMPORTANT SAFETY INSTRUCTIONS! READ CAREFULLY BEFORE INSTALLATION



FAILURE TO FOLLOW THESE INSTRUCTIONS AND COMPLY WITH ALL CODES MAY CAUSE SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE.

⚠ 1) Before installing or servicing your pump, BE CERTAIN THE

PUMP POWER SOURCE IS TURNED OFF AND DISCONNECTED.

⚠ 2) All installation and electrical wiring must adhere to state and local codes. Check with appropriate community agencies, or contact your local electrical and pump professionals for help.

⚠ 3) CALL AN ELECTRICIAN WHEN IN DOUBT. Pump must be connected to a separate electrical circuit directly from the entrance box. There must be an appropriately sized fuse or circuit breaker in this line. Tying into existing circuits may cause circuit overloading, blown fuses, tripped circuit breakers, or a burned up motor.

⚠ 4) Do not connect pump to a power supply until the pump is grounded. For maximum safety, a ground fault interrupter should be used. CAUTION: FAILURE TO GROUND THIS UNIT PROPERLY MAY RESULT IN SEVERE ELECTRICAL SHOCK.

⚠ 5) WARNING: Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding:

a) If the means of connection to the supply-connection box is other than grounded metal conduit, ground the pump back to the service by connecting a copper conductor, at least the size of the circuit conductors supplying the pump, to the grounding screw provided within the wiring compartment.

b) This pump is provided with a means for grounding. To reduce the risk of electric shock from contact with adjacent metal parts, bond supply box to the pump-motor-grounding means and to all metal parts accessible including metal discharge pipes, and the like, by means of a clamp, a weld, or both if necessary, secured to the equipment-grounding terminal.

⚠ 2) The voltage and phase of the power supply must match the voltage and phase of the pump.

⚠ 3) Do not use an extension cord; splices must be made with an approved splice kit. Above ground joints must be made in an approved junction box.

⚠ 4) Do not work on this pump or switch while the power is on.

⚠ 5) Never operate a pump with a frayed or brittle power cord, and always protect it from sharp objects, hot surfaces, oil and chemicals. Avoid kinking the cord.

⚠ 6) Never service a motor or power cord with wet hands or while standing in or near water or damp ground.

⚠ 7) The three phase units must be wired by a qualified electrician, using an approved starter box and switching device.

⚠ 8) Do not use this pump in or near a swimming pool.

⚠ 9) Single phase motors are equipped with automatic resetting thermal protectors. The motor may restart unexpectedly causing the leads to unenergized pump to turn. Three phase motors should be protected by proper, thermal and amperage protection. (Check local codes.)

⚠ 10) Check for nicks in the wire and pump insulation by using an ohm meter and checking resistance to ground before installing the pump and after installing the pump. If in doubt on the proper procedure check with a qualified electrician.

⚠ 11) Do not pump gasoline, chemicals, corrosives, or flammable liquids; they could ignite, explode, or damage the pump, causing injury and voiding the warranty.

⚠ 17) Do not run this pump with the discharge completely closed. This will create superheated water, which could damage the seal, and shorten the life of the motor.

This superheated water could also cause severe burns. Always use a pressure relief valve, set below the rating of the tank or system.



CAUTION!

⚠ 18) The following may cause severe damage to the pump and void warranty. It could also result in personal injury:

- Running the pump dry.
- Failure to protect the pump from below freezing temperatures.
- Running the pump with the discharge completely closed.
- Pumping chemicals or corrosive liquids.

⚠ 23) Never work on the pump or system without relieving the internal pressure.

⚠ 24) Do not pump water above 120° Fahrenheit.

⚠ 25) Never exceed the pressure rating of any system component.

HJ-HR-HJA-HT Jet Pump Installation and Service

WARNING:

Important Safety Instructions

Rules for Safe Installation and Operation

1. Read these rules and instructions carefully. Failure to follow them could cause serious bodily injury and/or property damage.
2. Check your local codes before installing. You must comply with their rules.
3. For maximum safety, this product should be connected to a grounded circuit equipped with a ground fault interrupter device.
4. Before installing this product, have the electrical outlet checked by an electrician to make sure it is properly grounded.
5. **Before installing or servicing your pump, BE CERTAIN pump power source is disconnected.**
6. Make sure the line voltage and frequency of the electrical power supply agree with the motor wiring. If motor is dual voltage, **be sure** it is wired correctly for your power supply.
7. While installing the pump, always keep the well covered to prevent foreign matter from falling into the well and contaminating the water—and/or causing possible serious damage to the mechanical operation of the pump.
8. Always test well water for purity before using. Check with local health department for proper testing.
9. Complete pump and piping system **must** be protected against below-freezing temperatures. Failure to do so could cause severe damage and will void the warranty.
10. Pumping chemicals or corrosive liquids will shorten the life of pump seals and moving parts, and will void the warranty.
11. Do not run your pump dry. This will damage the pump seal and void the warranty. Follow priming instructions.
12. After carefully removing your pump from the carton, make a visual inspection for any apparent shipping damage.
13. Do not use extension cords.
14. Do not pump gasoline or other flammable liquids.
15. Do not use this pump in or near a swimming pool.

GENERAL INSTRUCTIONS

Well Water Level

Shallow well water systems are recommended for use in wells where the sum of: (1) the vertical measurement from the pump to the water level in the well; (2) the well water drawdown; and (3) the suction pipe friction in feet equals 25 feet or less.

Location

The unit may be installed in any convenient location to the well that provides sufficient space for installation and servicing the well. A dry basement, pit or utility room is an excellent choice when allowed by law. Check with state and local agencies to determine restrictions in your area.

Wells

A new well should be sand-pumped until clear before installation. Sand will damage pumping parts and the seal. The drawdown level of the well should not exceed the maximum rated depth for the pump or the capacity will be reduced and may cause loss of prime.

Note: Chlorinating the well may be required before installing a new pump. Check with local health department for recommendations.

Piping

Plastic pipe is shown in the illustrations. Galvanized iron pipe can be used if desired.

- The piping must be clean and free of all foreign matter to prevent clogging of the jet.
- If the unit is installed offset from the well, the piping should slope upward from the well to the pump. Unions should be provided where necessary.
- Provide a drain cock at a low point in the service line to drain the pressure tank.

Be Sure All Suction Connections Are Airtight.

Use a thread compound to make joints airtight. The primary cause of problems in a new installation is air leaks in one or more joints in the suction line.

Draining for Winter

The pump should be drained before it is disconnected for servicing or is in danger of freezing. To drain:

- Remove the drain plug from the bottom of the pump case.
- Remove priming plug to vent the pump.
- Drain all piping to a point below the freeze line.

MAJOR COMPONENTS AND WHAT THEY DO

Tank and Air Volume Control

The tank serves two functions: (1) It provides a reservoir of water—some of which can be drawn through the house fixture before the pump must start. (2) It maintains a cushion of air under pressure.

When a **Precharged Bladder Tank** is used, no air volume control is needed. This tank contains a permanent precharge of air. See instructions with tank for proper air charge.

When a **non-bladder type tank** is used, an air volume control adds air to the tank as needed. The air volume control is hooked to the side of the tank, and a pressure tube is connected from the air volume control to the suction side of the pump.

Pressure Switch

The pressure switch provides for automatic operation. The pump starts when the pressure drops to the cut-in setting and stops when pressure reaches the cut-out setting.

Impeller, Jet and Pressure Regulator

The pump impeller rotates with the motor shaft, causing an increase in pressure. The rotation of the impeller creates a vacuum, allowing water to be drawn in. Part of the water is diverted back to the jet, where it again passes through the nozzle and venturi, creating additional vacuum to draw in more water and deliver it at high pressure to the impeller.

In a **deep well installation**, the jet assembly is submerged in the well because the vertical distance to the water level exceeds the suction lift of the pump. Adjustment of the regulator causes the right amount of water to be diverted back to the jet for the most efficient operation.

In a **shallow well installation**, the jet assembly is attached directly to the pump because a vacuum will lift water to the pump.

The regulator may be used to restrict the flow of water in a shallow well system if the convertible pump has the capacity to draw more water than the well can produce.

Lubrication of Motor Bearings

Follow Motor Manufacturer's recommendation for lubrication. Generally, the bearings are sufficiently lubricated for 5 years.

ELECTRICAL INFORMATION

Installation Instructions

Wiring to this pump must be installed and maintained in accordance with both the **National Electric Code and state/local codes**. If more information is needed, call your local licensed electrician or your power company.

WARNING: Motor Grounding Instructions

Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding. **Caution: Failure to ground this unit properly may result in severe electrical shock.** If the means of connection to the supply-connection box is other than grounded metal conduit, ground the pump back to the service by connecting a copper conductor, at least the size of the circuit conductors supplying the pump, to the grounding screw provided within the wiring compartment. NOTE: National Electric Code requires pumps be grounded at installation.

Grounding the Motor: Permanently ground the motor in accordance with the National Electric Code Article 250 and applicable local codes and ordinances. It is recommended that a permanent ground connection be made to the unit using a conductor (of appropriate size) from a **metal** underground water pipe or a grounded lead in the service panel. A metal underground water pipe or well casing at least 10 feet long makes the best ground electrode.

If plastic pipe or insulated fittings are used, run the ground wire directly to the metal well casing or use ground electrode furnished by the power company.

Caution: Do not ground to a gas supply line and do not connect to an electric power supply until unit is permanently grounded. Connect the ground wire to the approved ground and then connect to the terminal provided.

Important: For your safety, be sure electrical circuit to pump is shut off (disconnected) before attempting to wire pump. Pump should be connected to a separate electrical circuit directly from main switch. A fuse box or circuit breaker must be used in this line (see Fuse Chart). Plugging into existing outlets can cause low voltage at motor, resulting in blown fuses, tripping of motor overload, or burned-out motor. All wiring must follow local codes.

Note: If ever in doubt, call a licensed electrician.

HJ-HR-HJA-HT Jet Pump Installation and Service

Motor Voltage: 1/3 HP and 1/2 HP motors are wired for 115 volts. The 3/4 HP and 1 HP motors are wired for 230 volts, but may be converted to 115 volts by referring to instructions printed on motor. If motor is converted to 115 volts, have a qualified electrician check the entire Electrical and Power Leads System to be sure they can handle the higher AMPS.

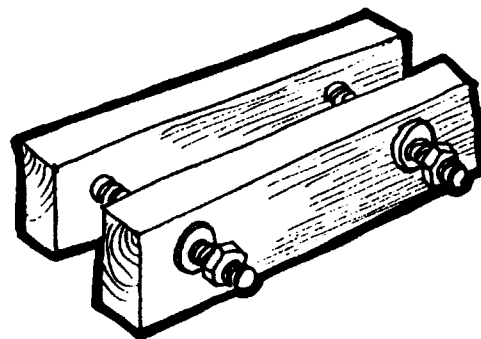
To Wire Pump: Remove cover from pressure switch and make electrical connections (see wire size chart below) with ground. First connect bare copper ground to ground screw in pressure switch. Next make power connections onto terminals marked "Line."

TOOLS NEEDED FOR INSTALLATION

- Screwdriver
- Pipe Wrench
- Adjustable Wrench (medium-large)
- Hacksaw with 24-Tooth Blade for cutting plastic pipe.
- Knife or Round File for smoothing inside of all plastic pipe connections.
- Pipe Clamps. Make with two pieces of 2 x 4 board 12" long. Drill holes for 1/2" bolts about 8" long. Assemble as shown.

Jet Pump Wire Selection Guide

Motor HP	Voltage	Name Plate AMPS	Max. Wire Length Using AWG Wire Size			
			#14	#12	#10	#8
1/3	115	8.2	148	236	370	580
1/2	115	10.6	118	189	296	464
	230	5.3	475	756	1184	1857
3/4	115	14.8	84	135	211	331
	230	7.4	339	540	845	1327
1	115	17.0	74	118	185	290
	230	8.5	297	472	740	1161



Recommended Fuse Sizes (Amps)

HP	*Standard Line Plug Fuse		Low Peak Cartridge Type Fusetron Cartridge Type *Fustat-Plug Type	
	115V	230V	115V	230V
1/3	15	—	10	—
1/2	20	10	12	6-1/4
3/4	25	10	15	8
1	30	15	20	10

* For circuits not over 150 volts to ground.

Shallow Well Jet Pumps for 4" Diameter Wells

Myers®

INSTALLATION INSTRUCTIONS Materials Needed

- 1 can PVC cement
(Read manufacturer's instructions carefully.)
- Foot valve
- 1 1/4" PVC adapters (2 required)
- 1 1/4" rigid PVC pipe and couplings
(Couplings not required for flared pipe.)
- Well seal
- 1 1/4" PVC elbow
- Discharge tee
- Pressure gauge
- 1" x 4" nipple
- 1" check valve
- Copper electric wire with ground
(see Wire Selection Guide on page 4)
- Fuse box or circuit breaker

Step 1: Connect foot valve to 1 1/4" plastic pipe adapter. Cement adapter to 1 1/4" PVC rigid plastic pipe. **All connections must be watertight for pump to operate properly.**

Step 2: Add rigid PVC pipe sections and couplings (as required) while lowering foot valve into well. As much as 30 feet of pipe could be required. **Note:** Removing foot valve screen could void warranty.

Step 3: Install well seal over rigid PVC pipe and onto well casing. Cement 1 1/4" PVC elbow to top of pipe at correct length to position foot valve 5 feet above bottom of well. Lower foot valve-piping assembly carefully into well, using pipe clamp. Draw up bolts on well seal until rubber gaskets are tight against both the well casing and the pipe.

Step 4—For Shallow Well Pumps: Cement one end of horizontal 1 1/4" pipe into elbow. Add sections to reach the pump. This pipe should slope up to the pump from the elbow. Thread 1 1/4" adapter into pump. Cement horizontal pipe into adapter that has been threaded into pump.

Step 4A—For Convertible Pumps: Install venturi into ejector. Secure shallow well ejector assembly and gasket to pump case with bolts supplied (see diagram). Connect tube between pump case and pressure switch on pump. Thread 1 1/4" PVC adapter into shallow well ejector. Cement horizontal pipe into adapter threaded into ejector.

Step 5: Using pipe wrench, install discharge tee in pump discharge until tight.

Step 6: Important—Go to Electrical Instructions on pages 3 and 4. Make electrical connections as described.

Step 7: After electrical work is completed, and before pump is connected to pressure tank, the pump should be primed and test run. To prime, remove bushing from top of discharge tee. Fill piping and pump with water until the water overflows from top of tee. Replace bushing and tighten to seal. Install pressure gauge. Before starting pump, place large bucket or other container under check valve opening.

Step 8: Start motor. If pump is installed with a horizontal offset line of 4 feet or more, it may take several minutes to prime. If pump does not prime in 5 minutes: (1) stop motor; (2) remove discharge plug and pressure gauge; and (3) add more water.

Step 9: Allow pump to empty into container long enough to clear the well of any sand or dirt, and to be sure well is not going to run out of water.

Step 10: Stop pump and complete connections to pressure tank. Allow pump to cycle automatically several times to check pressure switch setting and operation. To adjust pressure switch settings, see instructions inside pressure switch cover. If a new pressure tank is required, follow "Pressure Tank Installation Instructions."

If pump is being used as a lawn sprinkler or irrigation pump, you MUST remove the pressure switch and wire the pump direct. Also, no pressure tank is used.

Caution: Make sure the pressure switch is set low enough to shut off the pump. If a valve is shut off and the pressure switch setting is too high, the pump will run continuously without water flow. This will overheat and damage the pump.

Note: Check valve between tank and pump can cause short cycling in the following conditions:

- 1) Leaky foot valve
- 2) Long horizontal suction line
- 3) Air trapped in suction line
- 4) Wells with gaseous water

To resolve this problem you can do the following:

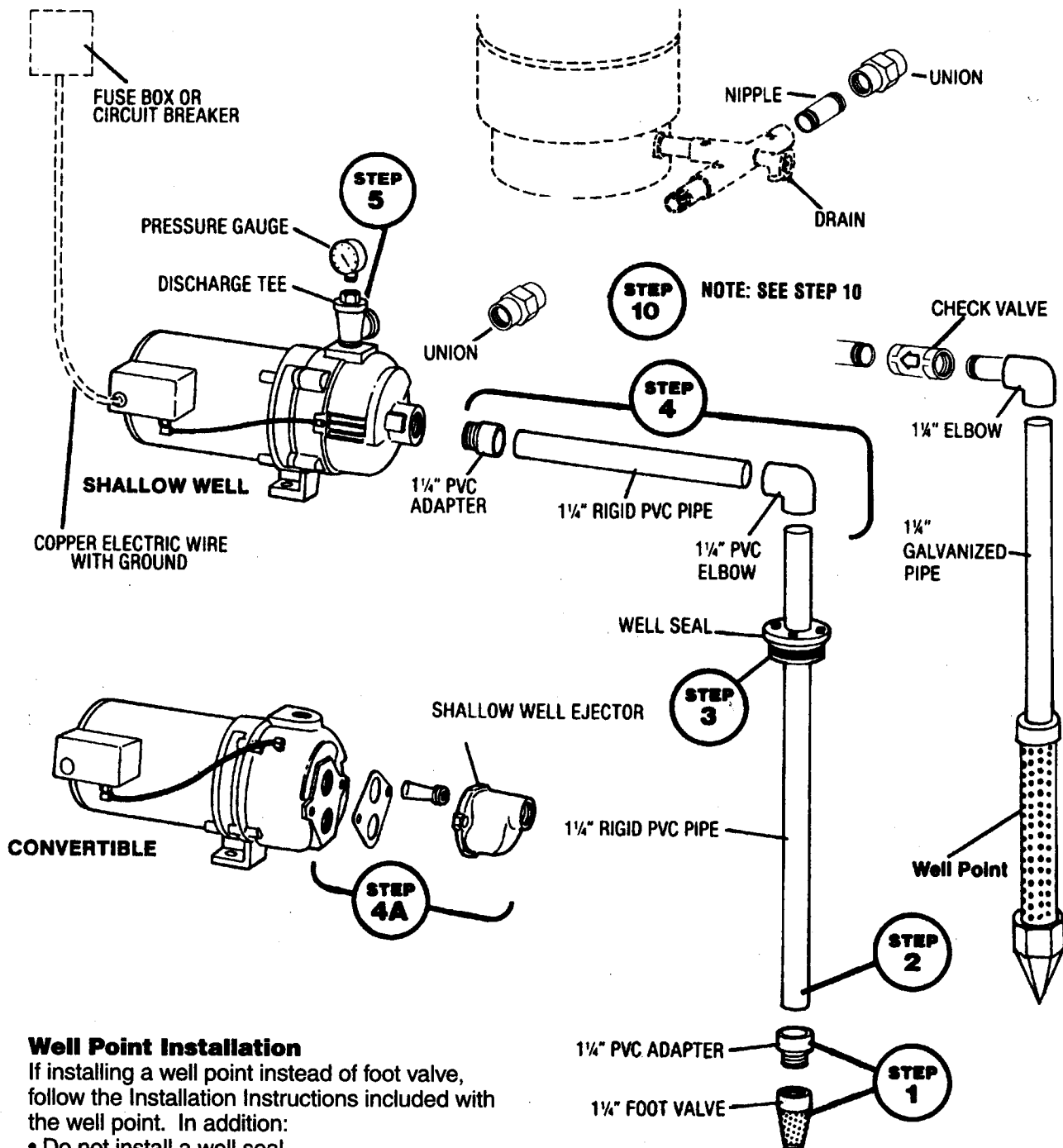
- 1) Remove the check valve completely.
- 2) Move the check valve beyond the tank.
- 3) Change the pressure switch. Tap to the tank tee.

Shallow Well Jet Pumps for 4" Diameter Wells

TYPICAL SHALLOW WELL PUMP INSTALLATION

Note: 1/3 HP and 1/2 HP motors are pre-wired for 115 volts. All other motors are pre-wired for

230 volts. The wiring may be converted to 115 volts; see instructions printed on motor.



Well Point Installation

If installing a well point instead of foot valve, follow the Installation Instructions included with the well point. In addition:

- Do not install a well seal.
- Install two check valves: one on the well side of the pump, and one on the house side. (See installation drawing.)

Deep Well Jet Pumps for 4" Diameter Wells

Myers®

INSTALLATION INSTRUCTIONS Materials Needed for Two-Pipe Deep Well Installation

- 1 can PVC cement
(Read manufacturer's instructions carefully.)
- 1" foot valve
- 1" close nipple
- Twin ejector
- 1" PVC adapter
- 1 1/4" female PVC adapter
- 1" rigid PVC pipe and couplings
- 1 1/4" rigid PVC pipe and couplings
- Well seal
- 1" PVC elbow
- 1 1/4" PVC elbow
- 1 1/4" PVC adapter
- 1" x 4" nipple
- 1" PVC female adapter
- Pressure regulator
- Pressure gauge
- Copper electric wire with ground
(see Wire Selection Guide on page 4)
- Fuse box or circuit breaker

Step 1: Begin installation by attaching foot valve to close nipple of corresponding size. Connect nipple/foot valve assembly to bottom of ejector body. Next install clear plastic venturi into top of ejector body. **All connections must be watertight for pump to operate properly.**

Step 2—For 1/3 and 1/2 HP Pumps and HJA 3/4 and 1 HP Pumps: Install 1" PVC adapter in ejector body. Then install 1 1/4" female PVC adapter on ejector body over the plastic venturi.

Step 2A—For 3/4 and 1 HP Pumps (except HJA): Install a 1 1/4" female PVC adapter on ejector body over the plastic venturi. Then install a 1 1/4" x 5" nipple in ejector body, followed by a 1 1/4" female PVC adapter.

Cement rigid PVC pipes into the pipe adapters on the ejector body. Add rigid PVC pipes and couplings (as required) while lowering ejector assembly into the well with pipe clamps.

Note: Removing foot valve screen could void warranty.

After lowering pipes and ejector assembly into well, install well seal. Draw up bolts on well seal until the rubber gaskets are tight against the well casing and the two plastic pipes.

Step 3—For 1/3 and 1/2 HP Pumps and HJA 3/4 and 1 HP Pumps: Cut pipes at length to position foot valve 5 feet above bottom of well. Cut top of 1" pipe 2" shorter than the 1 1/4" pipe, as shown in the installation diagram.

Cement 1 1/4" PVC elbow and 1" PVC elbow to the top of each pipe. Cement 1 1/4" and 1" rigid PVC horizontal pipes to elbows. Thread 1 1/4" PVC adapter into top opening in pump face. Install 1" x 4" nipple into bottom opening of pump face. Add 1" female PVC adapter onto nipple. Cut 1" horizontal pipe 3 1/2" shorter than 1 1/4" horizontal pipe. Cement 1 1/4" and 1" horizontal pipes into these adapters. Horizontal pipes should slope up to pump from elbows.

Step 3A—For 3/4 and 1 HP Pumps (except HJA): Cut length of pipe to position foot valve 5 feet above bottom of well. Cut the top of the pressure pipe 2 1/4" shorter than delivery pipe, as shown in the installation diagram. Cement PVC elbows to each pipe. Cement rigid PVC horizontal pipes to elbows at the top of the well. Add pipe sections and couplings (as needed) to connect to the pump. Thread 1 1/4" PVC adapters into openings in pump face. Cement rigid PVC horizontal pipes into adapters. Horizontal pipes should slope up to pump from elbows.

Step 4: Install pressure regulator into pump discharge outlet. Install brass fittings and tubing to connect pressure switch to pressure regulator (see installation diagram). Install pressure gauge into pressure regulator.

Note: Check valve between tank and pump can cause short cycling in the following conditions:

- 1) Leaky foot valve
- 2) Long horizontal suction line
- 3) Air trapped in suction line
- 4) Wells with gaseous water

To resolve this problem you can do the following:

- 1) Remove the check valve completely.
- 2) Move the check valve beyond the tank.
- 3) Change the pressure switch. Tap to the tank tee.

Deep Well Jet Pumps for 4" Diameter Wells

INSTALLATION INSTRUCTIONS cont'd

Step 5: Important—Go to Electrical Instructions on pages 3 and 4. Make electrical connections as described.

Step 6: After electrical work is completed, and before pump is connected to pressure tank, the pump should be primed and test run. To prime, remove plug from top of pressure regulator (for deep well packer installations, remove plug from packer adapter instead) and fill the system with water until water overflows from top of tee; then replace plug. Before starting pump, place large bucket or other container under check valve opening.

Step 7: Start motor. Turn regulator adjusting screw down tight. If pump is properly primed, a high pressure will immediately show on pressure gauge. If no pressure is obtained, refill system with water.

With pump operating at high pressure, slowly unscrew regulator adjusting screw until maximum water flow is obtained without pressure dropping to zero. If pressure does drop completely, again tighten down regulator adjusting screw and readjust until steady operation is obtained. Then tighten the jam nut on regulator adjusting screw. The steady pressure will be the operating pressure and must not be less than shown in the chart below.

Operating Pressure (2 Pipe - Deep Well)			
1/3 HP	1/2 HP	3/4 HP	1 HP
18 lbs.	24 lbs.	26 lbs.	32 lbs.

Step 8: Allow pump to discharge into container long enough to clear the well of any sand or dirt, and to be sure well is not going to run out of water.

Step 9: Stop pump and complete connections to pressure tank. Allow pump to cycle automatically several times to check pressure switch setting and operation. To adjust pressure switch settings, see instructions inside pressure switch cover. If a new pressure tank is required, follow "Pressure Tank Installation Instructions."

Caution: Make sure the pressure switch is set low enough to shut off the pump. If a valve is shut off and the pressure switch setting is too high, the pump will run continuously without water flow. This will overheat and damage the pump.

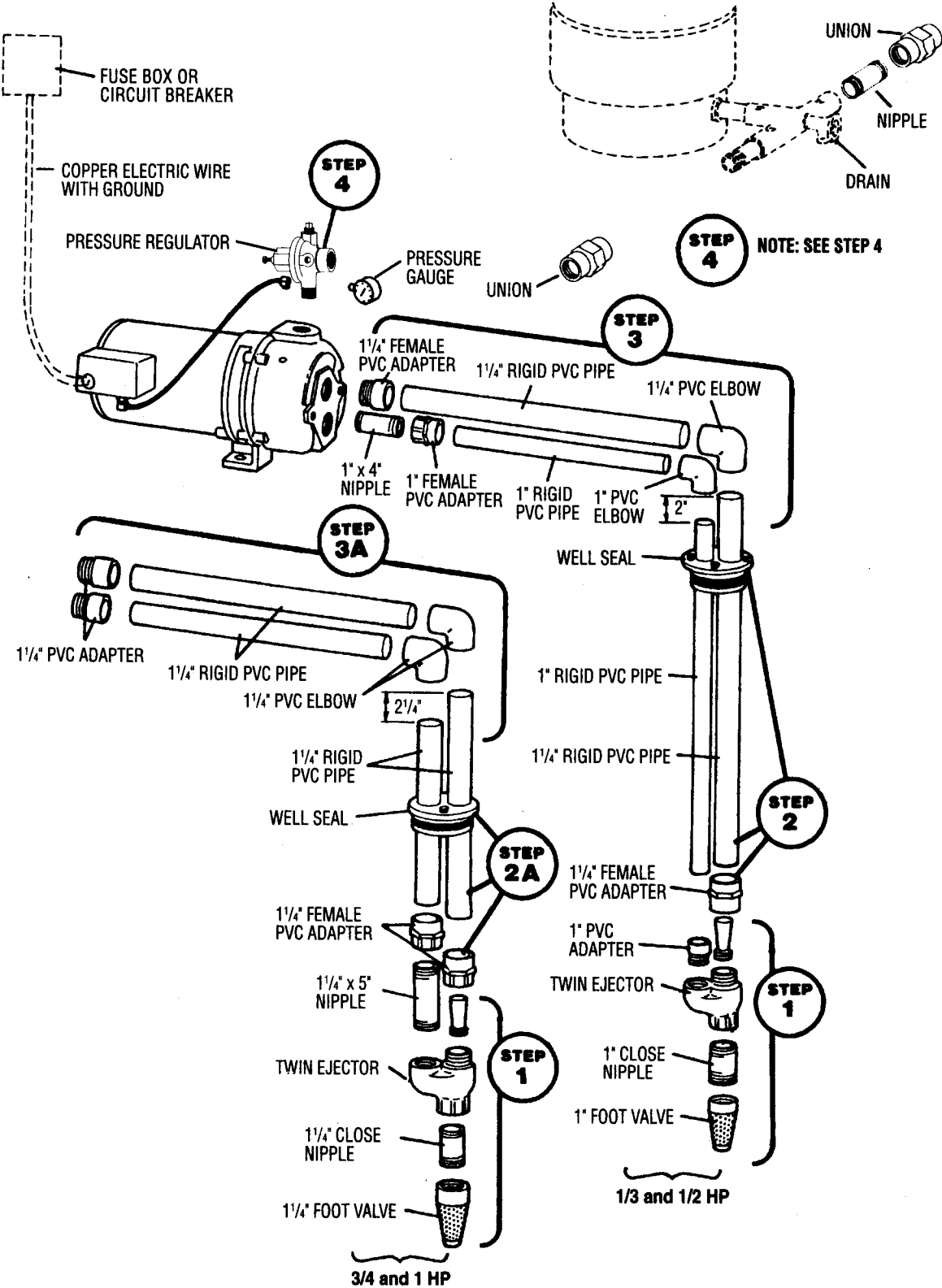
Note: Check valve between tank and pump can cause short cycling in the following conditions:

- 1) Leaky foot valve
- 2) Long horizontal suction line
- 3) Air trapped in suction line
- 4) Wells with gaseous water

To resolve this problem you can do the following:

- 1) Remove the check valve completely.
- 2) Move the check valve beyond the tank.
- 3) Change the pressure switch. Tap to the tank tee.

TYPICAL DEEP WELL PUMP INSTALLATION



Deep Well Packer Jet Pumps for 2" Diameter Wells

INSTALLATION INSTRUCTIONS Materials Needed

- 1 can PVC cement
(Read manufacturer's instructions carefully.)
- Foot valve
- Packer ejector
- 1" PVC adapter
- 1" rigid PVC pipe and couplings
(Couplings not required for flared pipe.)
- 1" x 8" nipple
- 1" PVC female adapter (2 required)
- 2" Packer well adapter
- 1 1/4" x 1" PVC reducer bushing
- 1 1/4" PVC adapter
- 1 1/4" rigid PVC pipe
- 1" x 4" nipple
- Pressure regulator
- Pressure gauge
- Copper electric wire with ground
(see Wire Selection Guide on page 4)
- Fuse box or circuit breaker

Step 1: Begin installation by attaching foot valve to bottom of packer ejector body. Remove brass coupling from top of ejector. Next install clear plastic venturi into top of packer body. Re-install brass coupling over venturi. **All connections must be watertight for pump to operate properly.**

Step 2: Thread 1" PVC adapter into brass coupling. Cement the 1" PVC rigid pipe to the pipe adapter.

Step 3: Carefully lower pipe/packer ejector assembly into well, adding PVC rigid plastic pipe sections and couplings as required. Use pipe clamps shown on page 4. Cut 1" PVC rigid pipe at length to position packer ejector assembly at least 5 feet above bottom of well casing.

Note: Removing foot valve screen could void warranty.

Step 4: Install 1" x 8" nipple into bottom of packer well adapter. Install 1" PVC female adapter onto nipple.

Step 5: Slip packer adapter compression plate and compression gasket over the PVC rigid pipe. Cement 1" female PVC pipe adapter to top of PVC rigid pipe.

Step 6: Install the 3 nuts and bolts and alternately tighten the packer adapter to the packer compression plate—sealing it with the well casing.

Step 7: If desired, pumps may be bolted directly to the well adapter. If pump is installed directly to adapter, proceed to step 9.

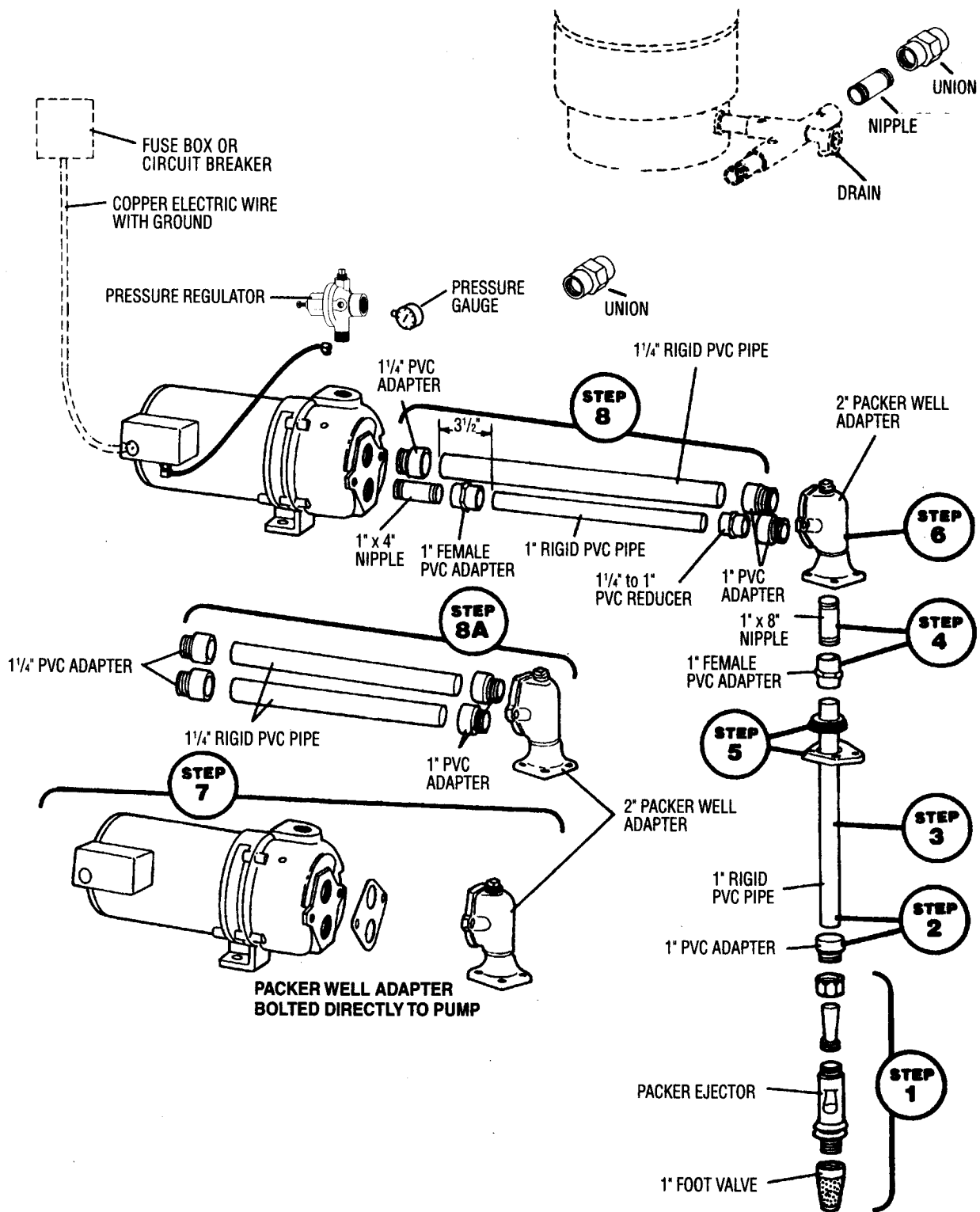
Step 8—For 1/3 and 1/2 HP Pumps and HJA 3/4 and 1 HP Pumps: Thread 1 1/4" PVC adapters into packer adapter. Cement 1 1/4" x 1" PVC reducer into lower adapter. Cement 1 1/4" and 1" rigid PVC horizontal pipes into PVC adapter and reducer. Add pipe sections and couplings (as needed) to connect to the pump. Because of different center distances, these pipes will deviate slightly.

Thread 1 1/4" PVC adapter into top opening in pump face. Install 1" x 4" nipple into bottom opening in pump face. Add 1" female PVC adapter onto nipple. Cut 1" horizontal pipe 3 1/2" shorter than 1 1/4" horizontal pipe. Cement 1 1/4" and 1" horizontal pipes into these adapters. Horizontal pipes should slope up to pump from packer adapter.

Step 8A—For 3/4 and 1 HP Pumps (except HJA): Thread 1 1/4" PVC adapters into packer adapter. Cement rigid PVC horizontal pipes into pipe adapters. Add pipe sections and couplings (as needed) to connect to the pump. Thread 1 1/4" PVC adapters into openings in pump face. Cement rigid PVC horizontal pipes into adapters. Horizontal pipes should slope up to pump from packer adapter.

Remaining Steps: To complete installation, turn to "**Deep Well Jet Pumps**" on page 8 and follow steps 4 through 9. Also read "caution" instructions on pressure switch settings.

TYPICAL DEEP WELL PACKER INSTALLATION



HJ-HR-HJA-HT Jet Pump Installation and Service

JET PUMP TROUBLESHOOTING CHECKLIST

This information is for checking jet pump installations which are not operating properly. It is based on the premise that the installed system will consist of a jet pump taking water from a well where the water well level is below the pump and the pump is delivering water into a pressure storage tank.

Warning: To guard against accidental personal injury, the electric power to the pump should be turned off when conducting the checking procedures outlined herein. There are obvious exceptions, however, and service personnel should take necessary safeguards against the hazard of electrical shock.

Shallow Well

PROBLEM	CHECKING PROCEDURE	
Pump will not prime.	1. Stop motor, remove priming plug, and fill case with water.	4. Check for plugged venturi or nozzle.
	2. Make sure suction line has no leaks, and that it slopes gradually from pump to well with no high or low spots.	5. Make sure the foot valve is not sitting in sand or mud, and that it is not stuck shut.
	3. Make sure pump shaft turns clockwise when viewed from motor end opposite shaft.	
Pump delivers water for a period of time, then stops pumping.	1. Make sure well water is not drawing below the foot valve. Use a water-level tester while pump is operating.	3. Check for plugged impeller parts.
	2. Check for plugged or worn nozzle or venturi tube.	
Pump does not deliver rated capacity.	1. Check nozzle and venturi for wear or partial plugging.	3. Check pressure gauge. It may be defective, resulting in false readings.
	2. On 3/4 and 1 HP models, make sure diffuser O-ring seal is in place.	
Motor overheats and shuts off (overload).	1. Make sure motor is properly wired for the correct voltage. (See Electrical Information on pages 3-4.)	3. Make sure the impeller is not rubbing against the pump case.
	2. Make sure wire is properly sized. (See chart on page 4.)	
Motor fails or does not operate properly.	1. If within warranty, return pump/motor unit to place of purchase (with proof of purchase) for repair or exchange, if necessary.	

JET PUMP TROUBLESHOOTING CHECKLIST cont'd.

Deep Well

PROBLEM	CHECKING PROCEDURE	
Pump will not prime.	1. Stop motor, remove plug from pressure regulator body and fill case with water.	5. Take pump apart to see whether diffuser O-ring seal is properly positioned.
	2. If pump is offset, check horizontal piping for dips or high spots. Pipe must have a gradual slope from pump downward to well.	6. Be sure motor is running in correct rotation; clockwise when viewed from motor end opposite shaft.
	3. Check well water level to be sure ejector is in water.	7. Pull well piping and check ejector for plugged nozzle or venturi.
	4. Check piping and pump for air leaks.	8. Make sure foot valve is not sitting in sand or mud.
Pump delivers water for a period of time, then stops pumping.	1. Make sure well water is not drawing below the foot valve. Use a water-level tester while the pump is operating.	3. Pull well piping and check ejector for plugged nozzle or venturi.
	2. Make sure the regulator is set properly, especially is well draws down. Regulator must be set to provide minimum operating pressure at the maximum drawdown. (See chart on page 8.)	
Pump delivers water but will not kick off pressure switch.	1. Well may be drawing down below limit of ejector. Check with water-level tester while pump is operating.	4. Check for wear at impeller neck.
	2. Make sure tube from pressure switch to pressure regulator is not plugged.	5. Make sure diffuser O-ring seal is properly positioned.
	3. Check pressure switch for defects.	
Pump does not deliver rated capacity.	1. Check well lift. Use water-level tester while pump is operating.	3. Operating pressure may be too high. Set the regulator to the minimum operating pressure for your pump size. (See chart on page 8.)
	2. Check submergence depth of ejector. If the ejector is installed more than 10 feet below the pumping level, capacity will be reduced due to increased friction in piping.	4. Pull well piping and check the ejector for proper size and depth setting.
Motor overheats and shuts off (overload).	1. Make sure motor is properly wired for the correct voltage. (See Electrical Information on pages 3-4.)	3. Make sure the impeller is not rubbing against the pump case.
	2. Make sure wire is properly sized. (See chart on page 4.)	
Motor fails or does not operate properly.	1. If within warranty, return pump/motor unit to place of purchase (with proof of purchase) for repair or exchange, if necessary.	

Repair Instructions

DISCONNECT POWER AND DRAIN PRESSURE TANK BEFORE SERVICING PUMP.

HJ & HJA

Replacing Mechanical Seal:

1. The seal used on all HJ & HJA units is $\frac{5}{8}$ " size.
 2. This seal is made in two parts.
 - (a) Rotating assembly, stainless steel spring, drive ferrule with rubber ring and carbon seal ring.
 - (b) Stationary ceramic seal ring mounted in synthetic rubber cup.
 3. Always replace both rotating assembly and stationary ceramic seat. **DO NOT USE OLD STATIONARY SEAT WITH NEW ROTATING ASSEMBLY SEAL.**
 4. Old ceramic ring can be removed from housing by cracking with a chisel or screwdriver without removing the pump shaft.
 5. Housing and shaft must be clean and free of sand and dirt before replacing new seal. Wash parts with clean water.
 6. Place stationary ceramic seat into housing. Press in with fingers only.
 7. Place rotating assembly unit on shaft, carbon ring toward ceramic seat, and press into position with fingers.
 8. Dirt on seal faces can cause failure.
- All pumping parts of unit can be removed from case without disturbing well piping or tank piping.

How to Dismantle: HJ & HJA – Deep Well

1. Disconnect power and drain pressure tank before dismantling pump.
2. Disconnect pressure switch tube, remove pump case bolts and bracket foot bolts.
3. Use heavy screwdriver behind bolt ears and pry motor bracket from case.
4. Remove diffuser plate bolts and take off diffuser. (Fig. 1) When replacing diffuser, use three .010" thick shims equally spaced between impeller eye and diffuser to prevent impeller rubbing diffuser and bindings.
5. Remove impeller by holding pump shaft with water pump pliers and unscrewing impeller, left hand counterclockwise facing the impeller to remove. (Fig. 3.) Impeller can also be removed by prying out motor shaft end cap. Place screwdriver in slot in end of shaft and hold to prevent shaft rotation. Unscrew impeller counterclockwise. On A.O. Smith motors remove motor end cover and hold shaft with $\frac{7}{16}$ " open end wrench.
6. Using two screwdrivers, pry out rotating assembly of shaft seal.

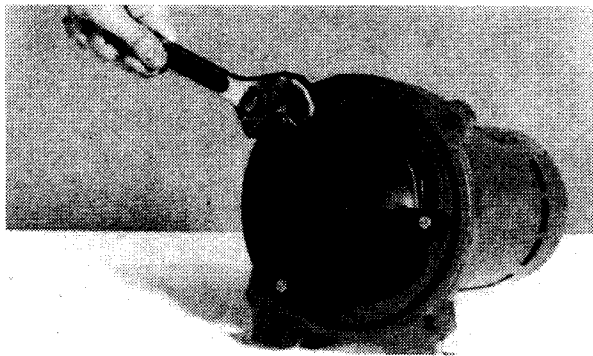


Fig. 1

7. Pump shaft is extension of motor shaft so it is not necessary to replace or adjust for seal position.
8. Remove 4 bolts holding motor to bracket and remove motor.

13800A715

How to Dismantle: HJ – Shallow Well

1. Remove case bolts and pry bracket from pump case.
2. Remove screen and plastic diffuser plate. When replacing diffuser, use three .010" thick shims equally spaced between impeller eye and diffuser to prevent impeller rubbing diffuser and bindings.
3. On $\frac{1}{3}$ and $\frac{1}{2}$ HP models hold impeller with pliers and unscrew venturi tube. On $\frac{3}{4}$ and 1 HP models venturi tube is screwed into the pump case. (Fig. 2.)

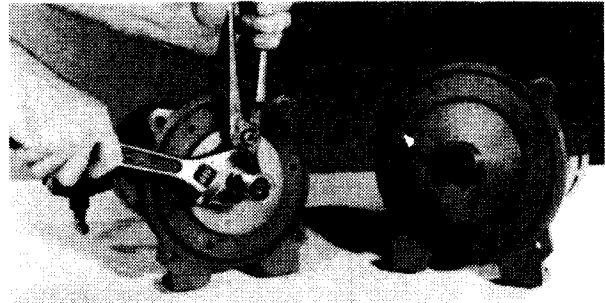


Fig. 2

4. Hold pump shaft with pliers and unscrew impeller as shown. (Fig. 3.)

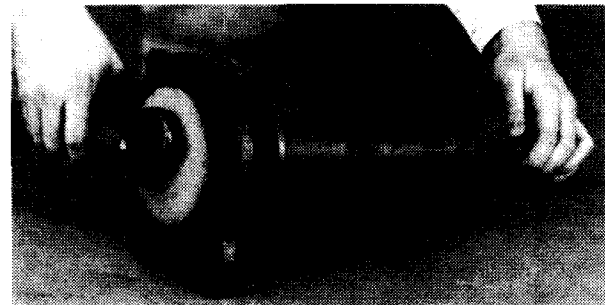


Fig. 3

5. When replacing impeller, file any plier cuts smooth after tightening in place.
6. Priming screen must be placed with dimple down. **THIS IS IMPORTANT FOR PUMP TO PRIME PROPERLY. DO NOT LEAVE THIS SCREEN OFF.**
7. Nozzle on $\frac{1}{3}$ and $\frac{1}{2}$ HP models can be removed from pump case with any standard $1\frac{1}{4}$ " socket wrench with an extension. On $\frac{3}{4}$ and 1 HP models venturi tube and nozzle can be removed in same manner using $\frac{27}{32}$ socket for the venturi and $\frac{9}{16}$ socket with extension for the nozzle.

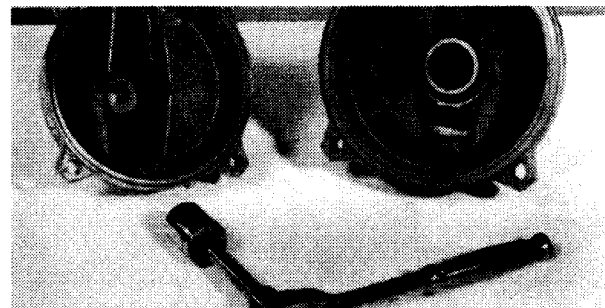


Fig. 4

8. When replacing nozzle and venturi, be sure they are tight against the shoulder. Use care not to cross threads. If nozzle is not screwed clear in, flow will be blocked by venturi entrance.
9. Remove 4 bolts holding motor to bracket and remove motor.

HT & HR

Replacing Mechanical Seal:

Before handling shaft seal parts make sure your hands are clean. Always replace both the ceramic stationary seal half and the rotating spring seal half.

1. Clean the shaft and seal cavity with water.
2. Lubricate the seal cavity and the rubber cup of the ceramic stationary seal half with soapy water.
3. Press the stationary seal in the seal cavity with fingers only.
4. Install seal plate on motor. Take care not to scratch ceramic seal.
5. Install carbon rotating seal on shaft. The carbon face should be lubricated with soapy water and should be positioned against the ceramic seal.
6. Install the impeller. Tighten with a screwdriver holding the shaft.

All pumping parts of unit can be removed from volute case without disturbing well or tank piping.

How to Dismantle: HT & HR – Deep Well

1. Disconnect the pressure switch tube, remove the 4 cap screws and separate the volute case from the seal plate.
2. Remove the 3 cap screws holding the diffuser to the seal plate and remove the diffuser. When replacing the diffuser use three .010" thick shims equally spaced between the impeller eye and diffuser opening. This centers the diffuser and prevents impeller rub. (Fig. 5)
3. Remove the impeller by holding the pump shaft with a screwdriver placed in the slot end of the shaft, and rotating the impeller counterclockwise. (Fig. 6)
4. Remove the rotating assembly of the shaft seal.
5. The seal plate may now be removed.
6. The ceramic stationary seal can be driven out using a $\frac{3}{4}$ " dowel.

How to Dismantle: HT & HR – Shallow Well

1. Disconnect the pressure switch tube, remove the 4 cap screws and separate the volute case from the seal plate.
2. Remove the 3 cap screws holding the diffuser to the seal plate and remove the diffuser and screen. When replacing the diffuser use three .010" thick shims equally spaced between the impeller eye and diffuser opening. This centers the diffuser and prevents impeller rub. (Fig. 5)
3. On $\frac{1}{3}$ and $\frac{1}{2}$ HP models unscrew venturi tube from impeller. On $\frac{3}{4}$ and 1 HP models venturi tube is screwed into ejecto body. (Figs. 6 & 7)
4. Remove the impeller by holding the pump shaft with a screwdriver placed in the slot end of the shaft, and rotating the impeller counterclockwise.
5. The nozzle on the $\frac{1}{3}$ and $\frac{1}{2}$ HP models can be removed with a $1\frac{1}{4}$ " socket wrench and an extension. On the $\frac{3}{4}$ and 1 HP models the nozzle is part of the ejecto body. When replacing the nozzle and venturi use care not to cross-thread and that they are tight against the shoulder. If nozzle is not screwed completely in, the flow will be blocked by the venturi entrance. (Fig. 8)
6. Remove the rotating assembly of the shaft seal.
7. The seal plate may now be removed.
8. Drive the ceramic stationary seal out with a $\frac{3}{4}$ " dowel.

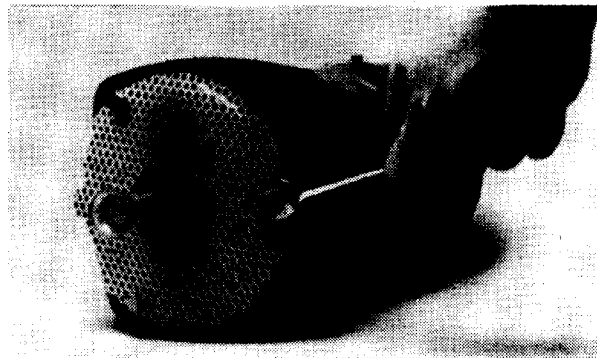


Fig. 5



Fig. 6

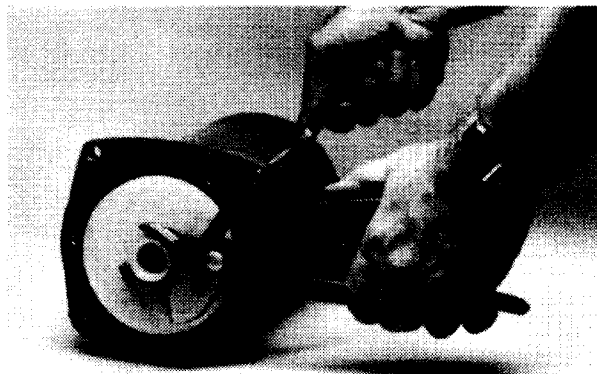


Fig. 7

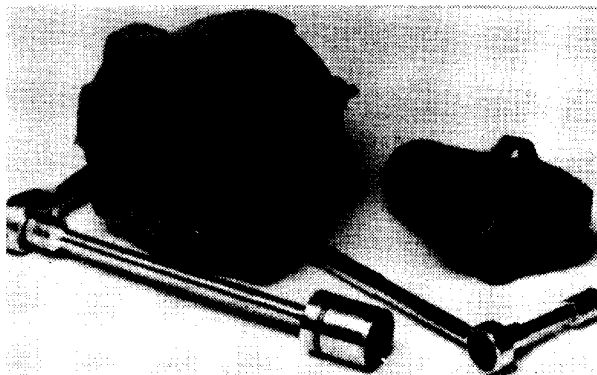


Fig. 8

General Servicing Instructions

When to Drain:

If system is used for seasonal periods only, pump, tank and piping must be drained when not in use to prevent freezing in winter.

DRAIN AS FOLLOWS:

1. Release pressure in system by draining at discharge outlet normally located in discharge line leading from pressure tank. Connect a section of water hose to outlet to assist in draining water to an outside area, if possible, being careful not to elevate hose higher than drain outlet. (Fig. 9)
2. Disconnect pressure and delivery pipes for drainage. Drain below ground freeze level if pipes are not sufficiently buried.
3. Disconnect pipes from tank and lay vertical tank on side or horizontal tank on end for complete drainage. (Not required on diaphragm tanks.)
4. Remove drain plugs from pump case.
5. Care should be taken not to scratch finish of epoxy tanks.

NOTE:

Before starting pump after long period of non-operation, be sure pump shaft turns freely. Turn shaft clockwise when facing motor end of pump. Use pliers, if necessary.

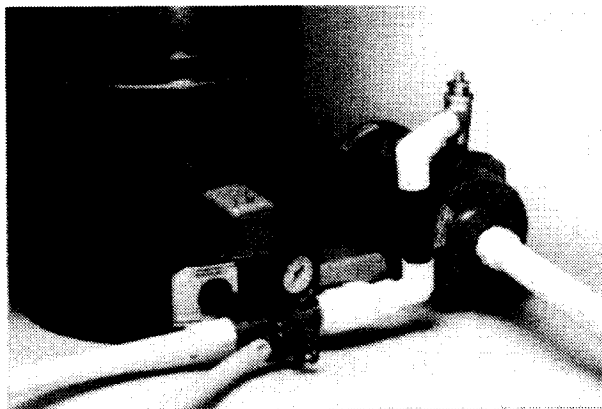


Fig. 9

Tank Mounted Units:

1. All general instructions apply to tank mounted pumps.
2. With tank mounted unit the air control must be connected at time of installation.
3. Always install air control in position shown and connect to pump in accordance with instructions given under "Installation Twin Type". (Fig. 10)

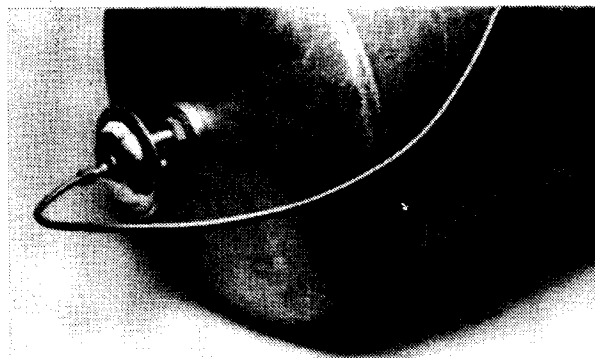


Fig. 10

Myers®

F.E. Myers, 1101 Myers Parkway, Ashland, Ohio 44805-1969
419/289-1144, FAX: 419/289-6658, TLX: 948-7443