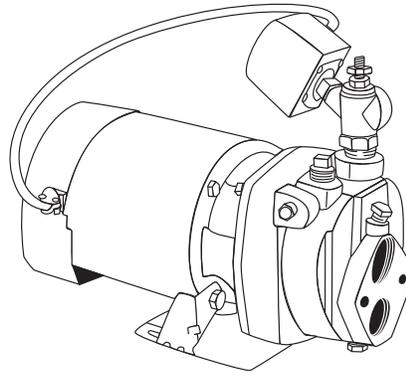
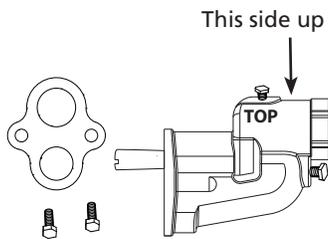


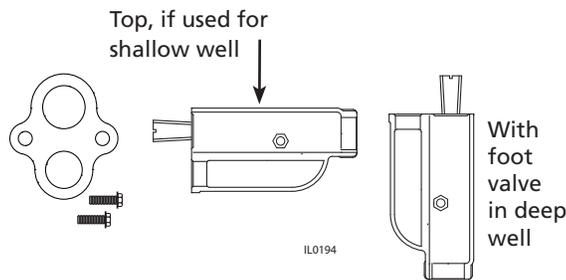
CONVERTIBLE JET PUMPS



Ejectors (Purchase separately)



Shallow Well Ejector for lifts to 25 ft.



Convertible Ejector For Shallow or Deep well applications (4 inch inside diameter wells).



Single Pipe Deep Well Ejector (2 inch inside diameter wells).



For loose, missing or damaged parts, or if the unit does not seem to be operating properly, please call before returning unit to the place of purchase

Phone No.: 1-800-742-5044

Service Hours:

Monday thru Friday - 7:30 am to 5:00 pm EST

SAFETY INFORMATION

Please read and understand this entire manual before attempting to assemble, operate or install the product. If you have any questions regarding the product, please call customer service at 1-800-742-5044, 7:30 a.m.-5:00 p.m., EST, Monday-Friday.

SAFETY INFORMATION

DANGER:

1. Always disconnect power source before performing any work on or near the motor or its connected load. If the power disconnect point is out-of-sight, lock it in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electrical shock.
2. Do not handle the pump with wet hands or when standing in water as fatal electrical shock could occur. Disconnect main power before handling unit for ANY REASON!
3. RISK OF ELECTRIC SHOCK. These pumps have not been investigated for use in swimming pool areas.

WARNING:

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
2. Replace damaged or worn wiring cord immediately.
3. Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces, or chemicals.
4. Wire motor to correct supply voltage - see motor nameplate and wiring diagrams and check voltage of power supply.
5. Unit must be securely and adequately electrically grounded. This can be accomplished by wiring the unit to a ground metal-clad raceway system or by using a separate ground wire connected to the bare metal of the motor frame or other suitable means.

6. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
7. Hazardous Pressure! Install pressure relief valve in discharge pipe. Release all pressure on system before working on any component.
8. Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in flammable and/or explosive atmospheres.

CAUTION:

1. Protect the power cable from coming in contact with sharp objects.
2. Be careful when touching the exterior of an operating motor - It may be hot enough to be painful or cause injury.
3. Make certain that the power source conforms to the requirements of your equipment.
4. Do not run pump dry.
5. Pump and plumbing must be full of water before startup.
6. Do not pump water which contains sand, mud, silt, or debris

NOTE: Pumps with the "UL" Mark and pumps with the "US" mark are tested to UL Standard UL778.CSA certified pumps are certified to CSA Standard C22.2 No. 108. (CUS)

IMPORTANT:

This jet pump is wired for either 115V or 230V. The label on the pump will state whether pump is pre-wired for 115V or 230V. To change pump voltage, see pump label diagram or page 18 in these instructions.

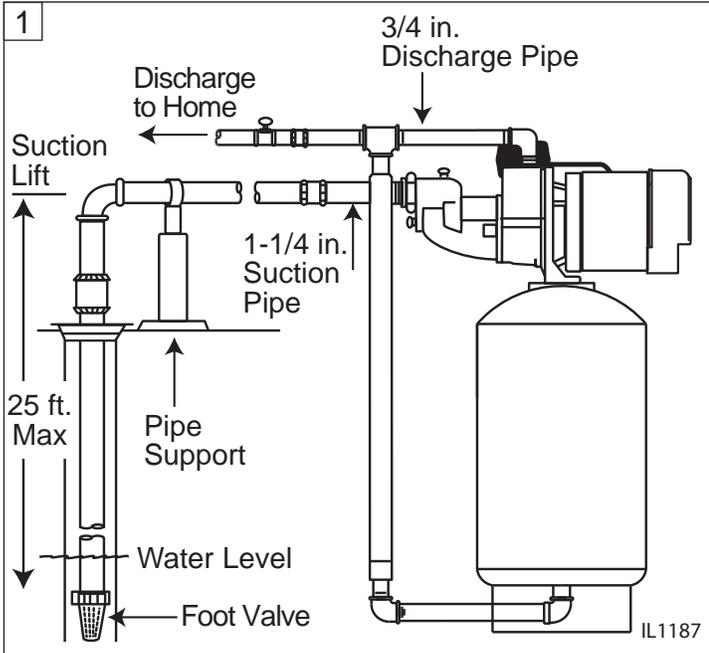
GENERAL PUMP INFORMATION

Typical Pump Setup

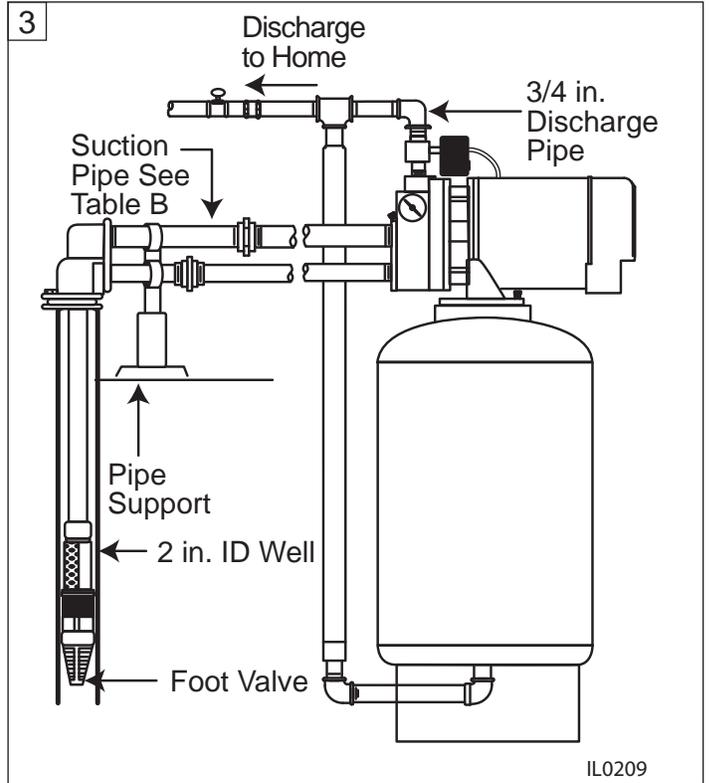
Convertible jet pumps are designed for use in these applications:

1. Shallow wells (0 - 25 ft. lift) where ejector bolts to pump (Fig. 1)
2. Deep wells where well ID is 4" or more and a two pipe ejector is installed in the well. (Fig. 2)
3. Deep wells where well ID is 2" or more and a single pipe (packer) ejector is installed in the well. (Fig. 3)

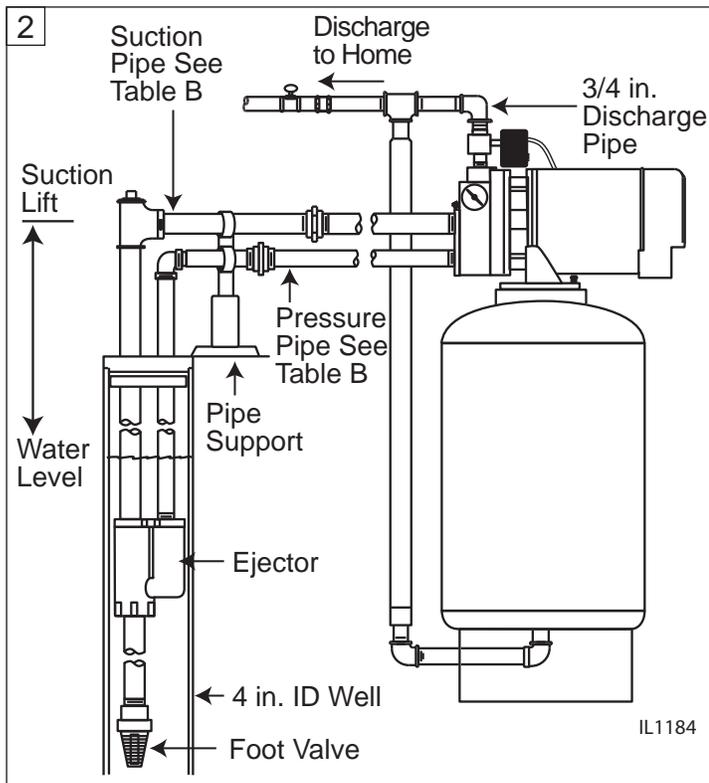
Shallow Well Application



Deep Well Application for 2 in. Wells



Deep Well Application for 4 in. Wells



GENERAL PUMP INFORMATION (CONTINUED)

Ventilation

Ventilation and drainage must be provided to prevent damage to the motor from heat and moisture.

Freezing

The pump and all piping must be protected from freezing. If freezing weather is forecast, drain pump or remove completely from the system.

Water Supply

The water source must be able to supply enough water to satisfy the capacity of the pump and water needs.

Suction Lift

Suction lift is the vertical distance from the lowest level of the water to the pump intake. See performance charts on page 2 and 3 to determine how far your pump can lift water.

Horizontal Distance

The horizontal distance is the horizontal measurement between the pump suction and the water source. This distance may affect the ability of the pump to operate. If it is over 100 feet, call the manufacturer for assistance at 1-800-742-5044.

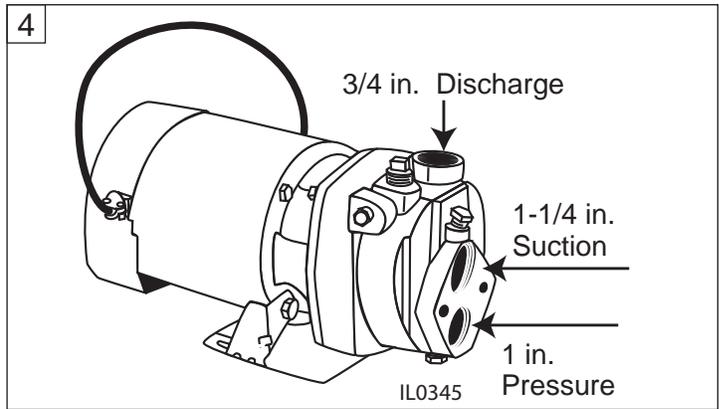
Pipe And Fittings

Use galvanized steel or NSF PW Schedule 40 PVC pipe and fittings. This material is designed for water pressure and will seal against air and water under pressure. Do Not Use: DWV fittings, as these are designed for drains without pressure and will not seal properly. (Fig. 4)

⚠ CAUTION: The entire system must be air and water tight for efficient operation and to maintain prime.

Wire Size:

The wire size is determined by the distance from the power source to the pump motor, and the horsepower rating of the motor. See the wire chart on below for proper wire size.



Wire Size Chart - Table A

Recommended Copper Wire and Fuse Sizes

Distance from Motor to Meter	HP Rating of Single Phase Motors		
	1/2	3/4	1
0-50'			
115V	12 GA	12 GA	10 GA
230V	14 GA	14 GA	14 GA
50-100'			
115V	12 GA	12 GA	10 GA
230V	14 GA	14 GA	14 GA
100-150'			
115V	12 GA	10 GA	10 GA
230V	14 GA	14 GA	12 GA
150-200'			
115V	12 GA	10 GA	8 GA
230V	14 GA	12 GA	12 GA
200-300'			
115V	10 GA	8 GA	6 GA
230V	14 GA	12 GA	10 GA
Fuse Size	Amps	Amps	Amps
115V	20	20	30
230V	15	15	15

PREPARATION

Before beginning installation of product, make sure all parts are present. If any part is missing or damaged, do not attempt to assemble the product. Contact customer service for replacement parts.

Estimated Installation Time: 2 hours.

Tools required

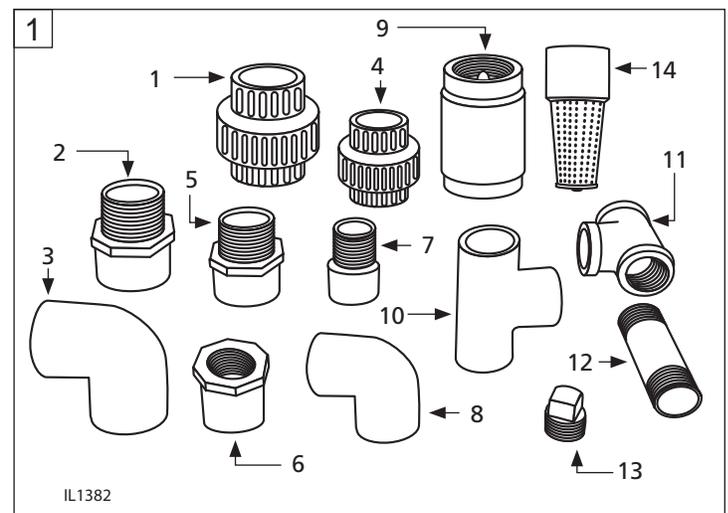
Pipe wrenches (2)
Wire strippers
Needle-nose pliers
Phillips screwdriver

Wire cutters
Adjustable wrench
Pipe tape
Pipe dope

NOTE: For a successful installation, take time to study your application for the correct pipe size and appropriate fittings. The illustrations in these instructions will assist you with required and optional fittings. Sch. 40 PVC plastic pipe and fittings were used in these instructions.

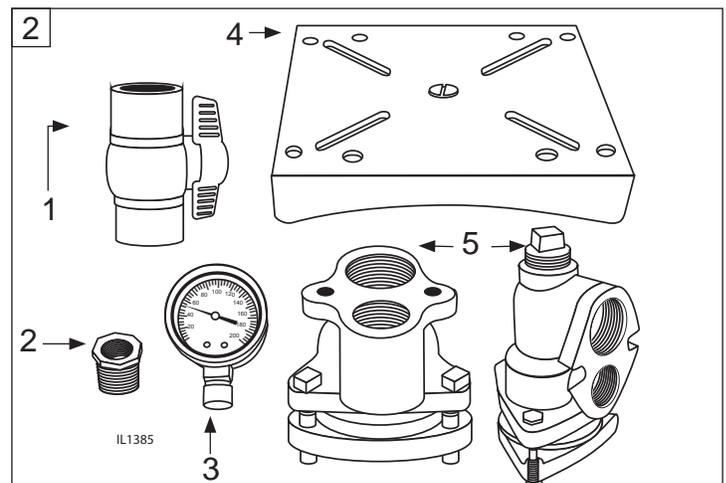
Parts You May Need For Assembly (Not Included) (Fig. 1)

Item	Description
1	1-1/4 in. union
2	1-1/4 in. adapter
3	1-1/4 in. elbow
4	3/4 in. union
5	1 in. adapter
6	1 in. x 3/4 in. reducer bushing
7	3/4 in. adapter
8	1 in. elbow
9	1-1/4 in. check valve
10	3/4 in. tee (plastic)
11	3/4 in. tee (steel)
12	3/4 in. x 3 in. nipple (steel)
13	3/4 in. plug (steel)
14	Foot valve
	Electric cord strain relief
	134349 Flow control package



Optional Parts For Assembly (not included) (Fig 2)

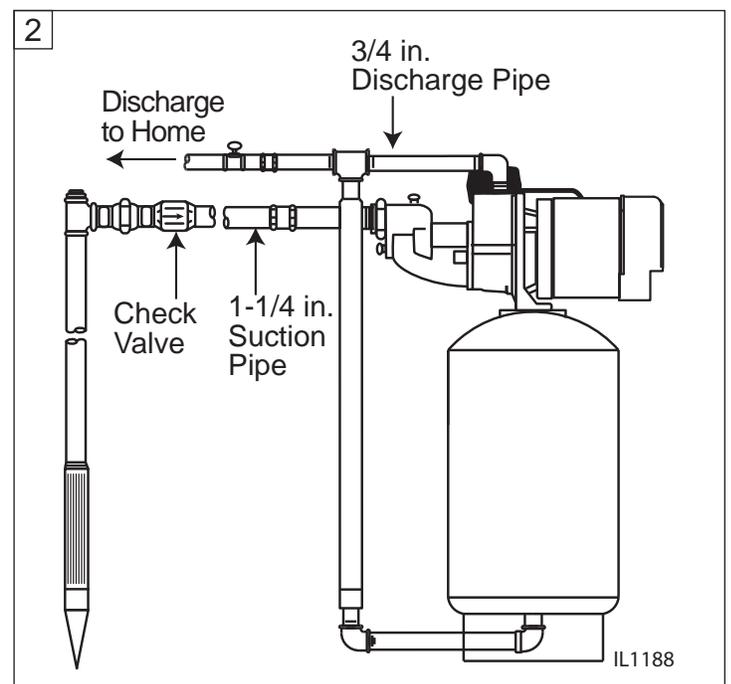
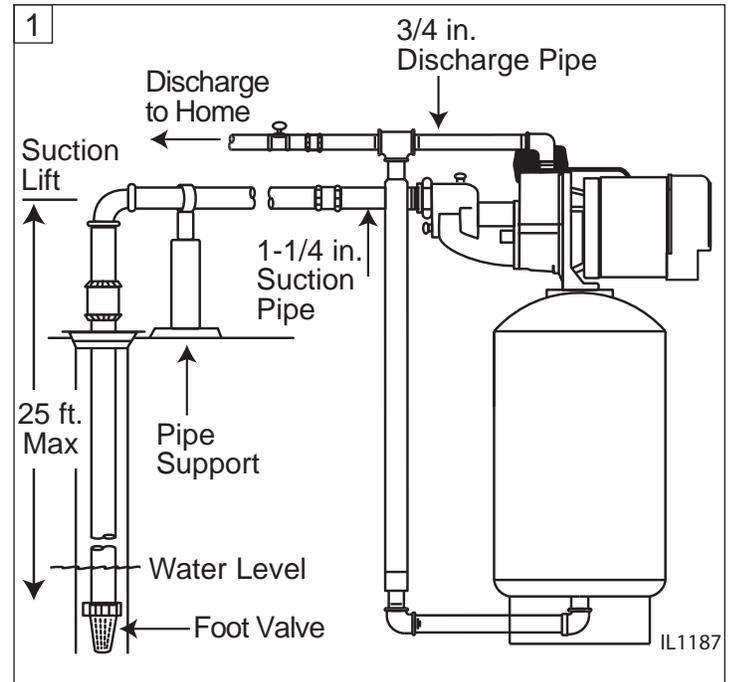
Item	Description
1	Ball Valve (plastic)
2	3/4 in. x 1/4 in. bushing (steel)
3	Pressure Gauge
4	Pump stand for tank
5	Well adapter for single pipe packer installations (straight and right angle shown)



INSTALLING PIPING IN WELL

Shallow Well Application - Where Suction Lift Is Less Than 25 Feet

1. On single pipe installations (Fig. 1) attach foot valve to the end of the suction pipe and set in the well, making certain the valve is below the water level. The foot valve should be at least five (5) feet from the bottom of the well to prevent sand from being drawn into the system.
2. When connecting a drive point (Fig. 2) a check valve must be used in the suction line in place of a foot valve. For easy priming connect the check valve as close to the well as possible.
3. All piping from the well to the pump should slope slightly upward with no sagging. Support suction pipe between water source and pump. Unions in the suction line near the pump and well will aid in servicing. Be sure to leave enough room so that wrenches can be used easily.



INSTALLING PIPING IN WELL (CONTINUED)

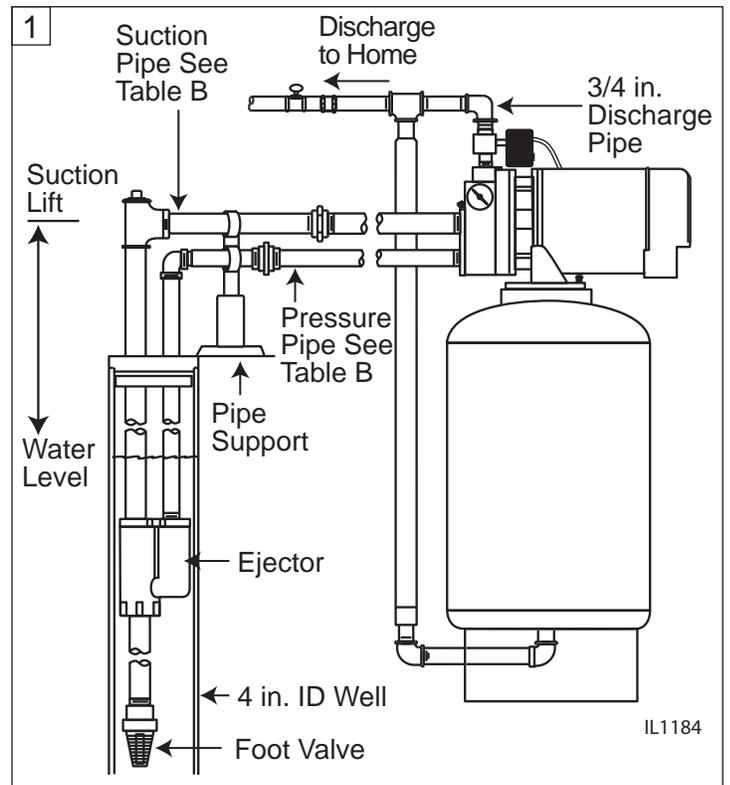
Deep Well (Double Pipe System)

Where water level is greater than 25 feet and inside diameter of well is four (4) inches or larger (Fig. 3).

1. Attach the foot valve to the ejector using a galvanized steel or plastic nipple. Add enough 1 in. pressure pipe and 1-1/4 in suction pipe to submerge ejector 10 to 15' below pumping water level, making certain foot valve is at least five (5) feet from bottom of well. If pressure pipe and suction pipe of the same diameter are used, be sure to identify them clearly so that they will be connected to the proper tappings of the pump.

If a known well leak exists, replace nipple with 21 feet of 1" tail pipe between the ejector and the foot valve. This will provide a continuous source of water for the pumping system.

2. Check pipe and foot valve for leaks by filling pipes with water. A continuous loss of water indicates a leak in the piping, foot valve or unions, and must be corrected.
3. If no leaks are found, proceed to **WELL TO PUMP CONNECTION (SUCTION PIPE)**.
For long offset distances, see chart below for proper pipe size.
4. All piping from the well to the pump should slope slightly upward with no sagging. Support suction pipe between water source and pump. Unions in the suction line near the pump and well will aid in servicing. Be sure to leave enough room so that wrenches can be used easily.



**Pipe Sizes Required For Offset Piping For
Deep Well Ejector Installation - Table B**

Total Suction Pipe Length	1/2 HP Suct	1/2 HP Press	3/4 HP Suct	3/4 HP Press	1 HP Suct	1 HP Press
0-25'	1-1/4"	1"	1-1/4"	1"	1-1/4"	1"
25-50'	1-1/4"	1-1/4"	1-1/2"	1-1/4"	1-1/2"	1-1/4"
50-75'	1-1/4"	1-1/4"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
75-100'	1-1/2"	1-1/4"	1-1/2"	1-1/2"	2"	1-1/2"
100-150'	1-1/2"	1-1/2"	2"	1-1/2"	2"	2"

INSTALLING PIPING IN WELL (CONTINUED)

Deep Well (Single Pipe System)

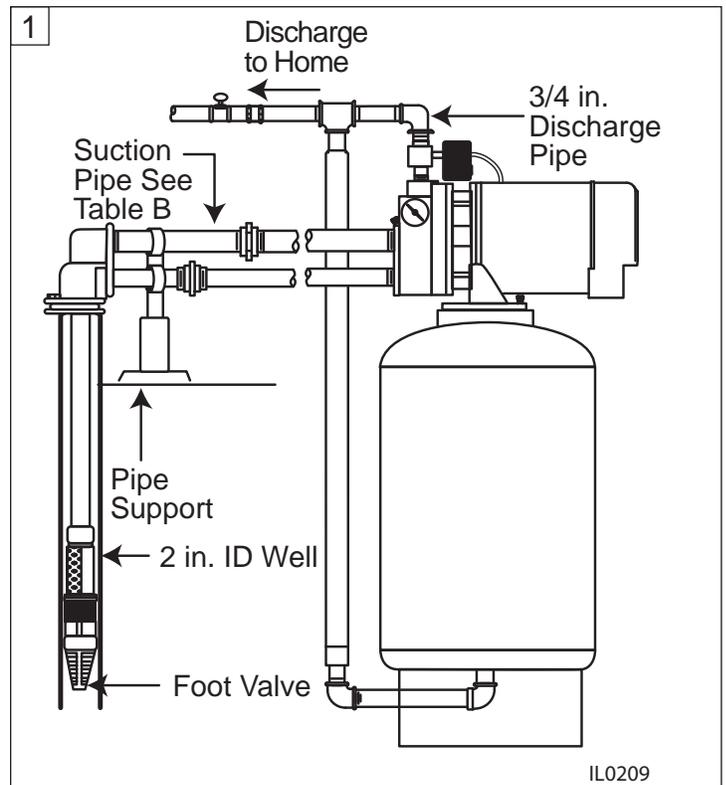
Application - Where pumping water level is greater than 25 feet and inside diameter of well is 2, 2-1/2 or 3 inches. (Fig 1)

On single pipe deep well installations, clean, sound well casing must be used to give a tight seal.

NOTE: This application requires a well adapter for the top of the well.

NOTE: Pre-soak packer leathers for approximately two hours before installation.

1. Attach foot valve directly to bottom of ejector assembly. Ejector must be submerged 10 to 15 feet below pumping water level and the foot valve must be at least five (5) feet from bottom of well.
2. Attach foot valve and packer ejector to suction pipe (presoak packer leathers for approximately two (2) hours). Push the assembly down the well. Some force may be required to push the ejector down the casing.
3. As each section is lowered, check for leaks by pouring water into the suction pipe.
4. Attach well adapter to suction pipe, lower over casing top and tighten adapter flange.
5. If no leaks are found, proceed to **WELL TO PUMP CONNECTION (SUCTION PIPE)** using piping of the same diameter as the suction pipe (1-1/4") and pressure pipe (1") tappings of the pump. For long offset distances, see chart on page 9 for the proper pipe size.
6. Unions in suction and discharge piping near pump and well will aid in servicing. Be sure to leave enough surrounding room so that wrenches can be used easily.



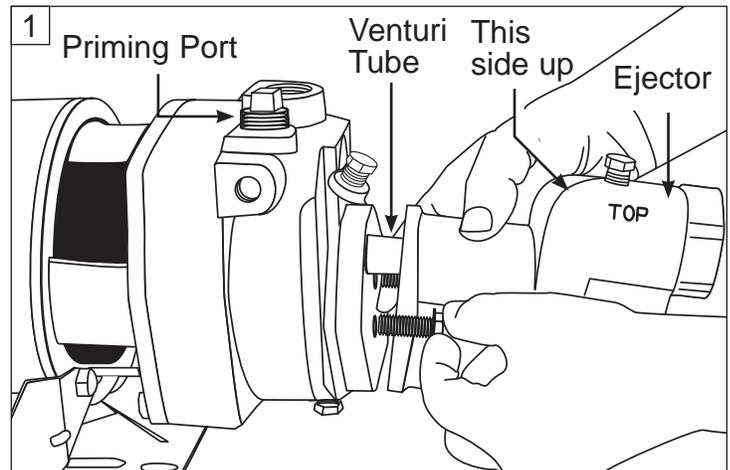
WELL TO PUMP CONNECTION (SUCTION PIPE)

Shallow Well Application Only:

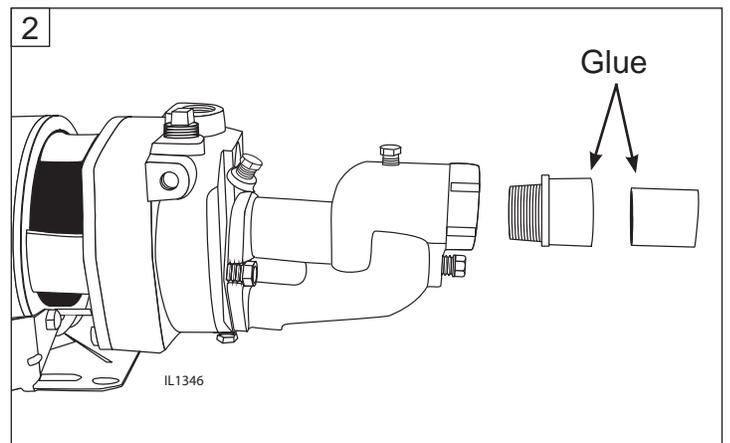
- CAUTION:** Dry-fit entire assembly to ensure proper fit before gluing or taping parts.
- CAUTION:** Follow all proper gluing procedures as specified by the glue manufacturer. Always glue in a vertical direction whenever possible to prevent glue from dripping inside pipe or fittings
- CAUTION:** Use pipe tape and pipe paste compound on all male threads. Tighten with wrench to a snug fit and add another 1/4 turn to ensure proper seal.

WELL TO PUMP CONNECTION (SUCTION PIPE)

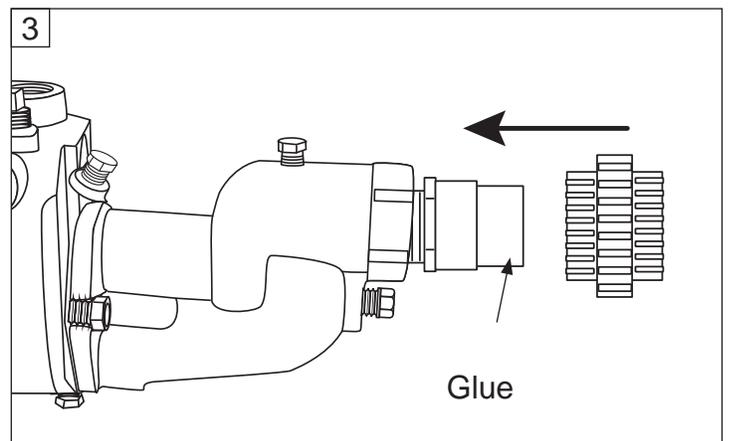
1. Attach ejector to face of pump with two (2) bolts and gasket provided. Venturi tube on the ejector inserts into the top tapping of the face of the pump (Fig. 1).



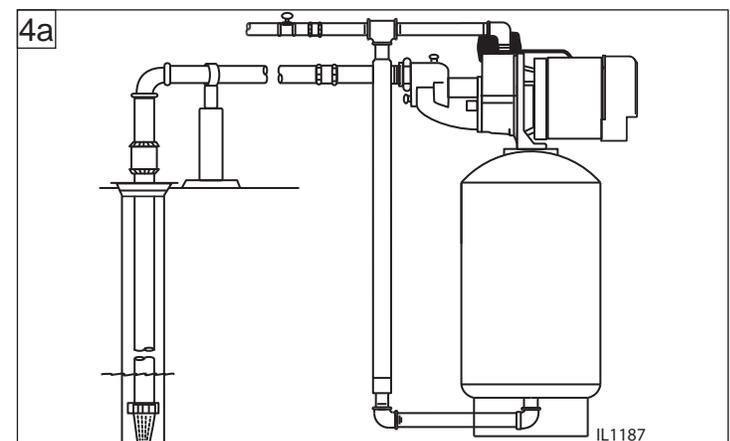
2. Make the connection to your well. Wrap all threaded fittings with pipe tape 5 times or apply a pipe paste (pipe dope) to ensure an air tight connection. (Fig. 2)



3. The use of a union (optional) will assist with easy connection and disconnect. (Fig. 3)

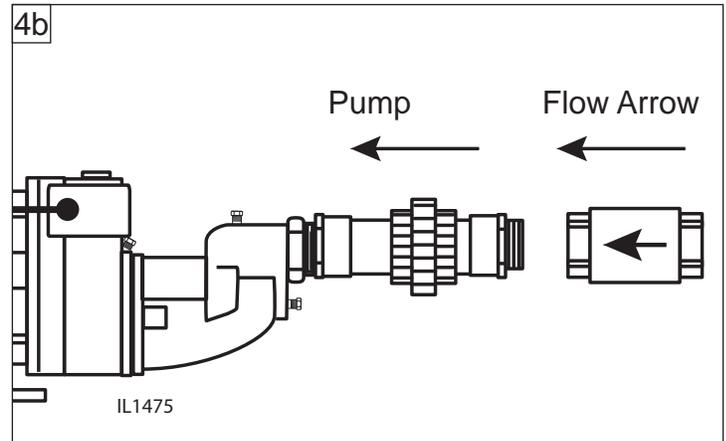


- 4a. NOTE: For drilled (cased) wells, a foot valve is required in the well at the end of the pipe to maintain prime. (Fig 4a)

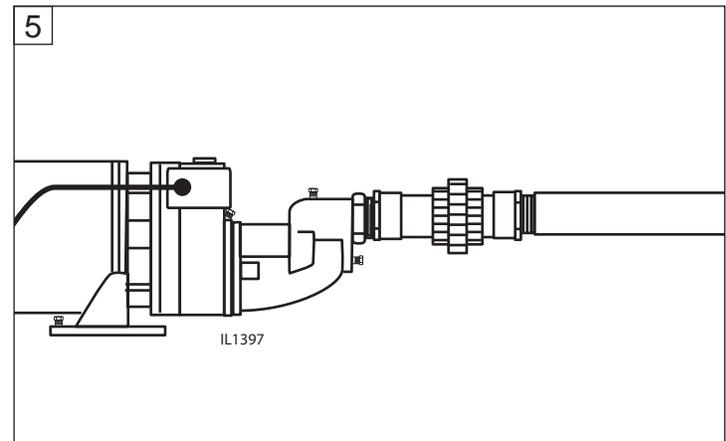


WELL TO PUMP CONNECTION (SUCTION PIPE)

- 4b. For driven wells, a check valve is required at the top of the well to maintain prime. Flow arrow must point toward pump. (Fig. 4b)

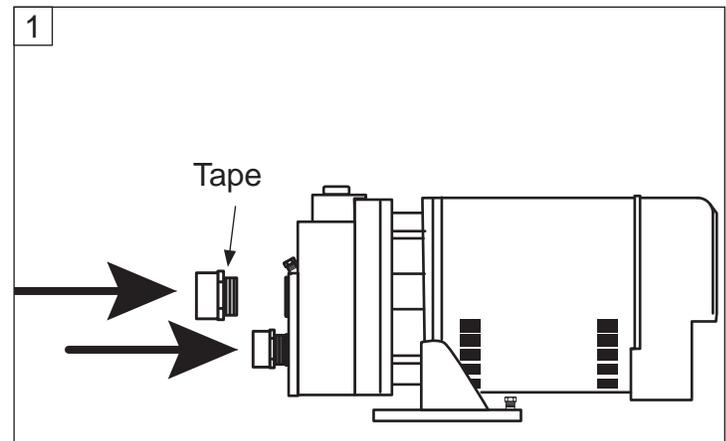


5. Finish the connection to your well with additional pipe and fittings as needed. (Fig. 5)

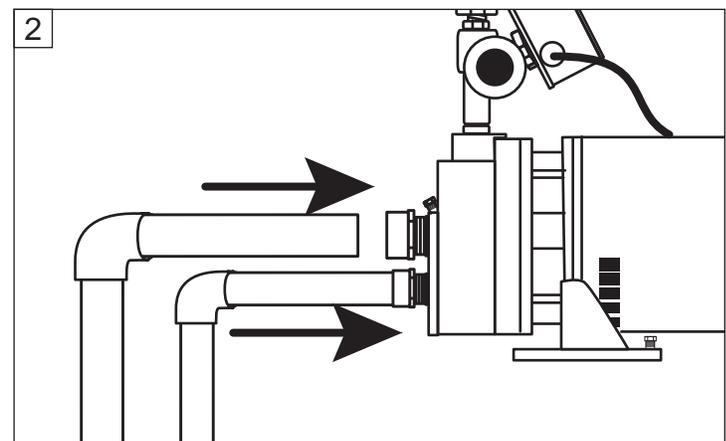


Deep Well Application Only:

1. Make the connection to your well. Wrap all threaded fittings with pipe tape 5 times or apply a pipe paste (pipe dope) to ensure an air tight connection. (Fig. 1)



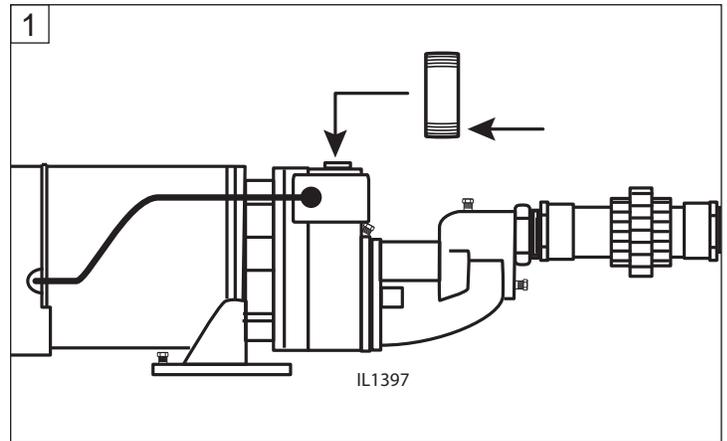
2. Finish the connection to your well with additional pipe and fittings as needed. (Fig. 2)



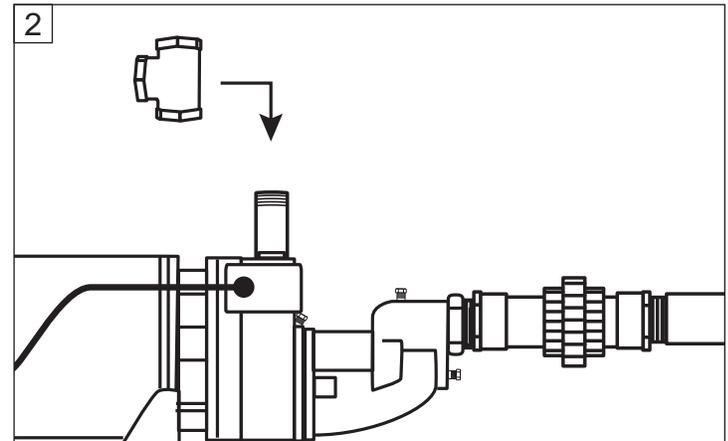
PUMP TO PRESSURE TANK CONNECTION (DISCHARGE PIPE)

Shallow Well Application Only:

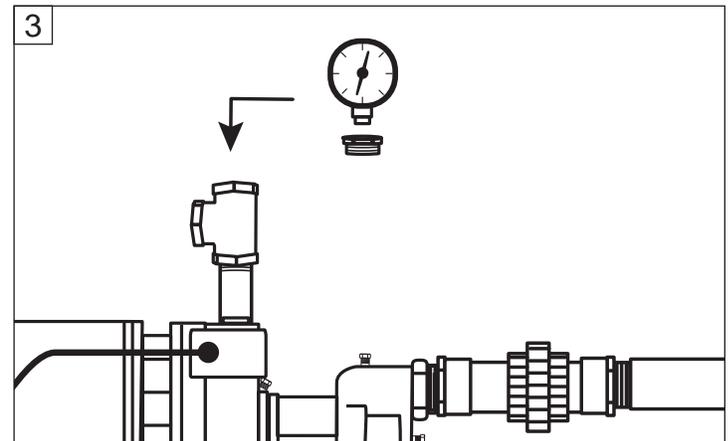
1. Begin the connection to the pressure tank.
Using a 3/4 in. x 3 in. galvanized nipple, wrap the threads 5 times with pipe tape and apply pipe paste (pipe dope) and install in top of pump.
(Fig. 1)



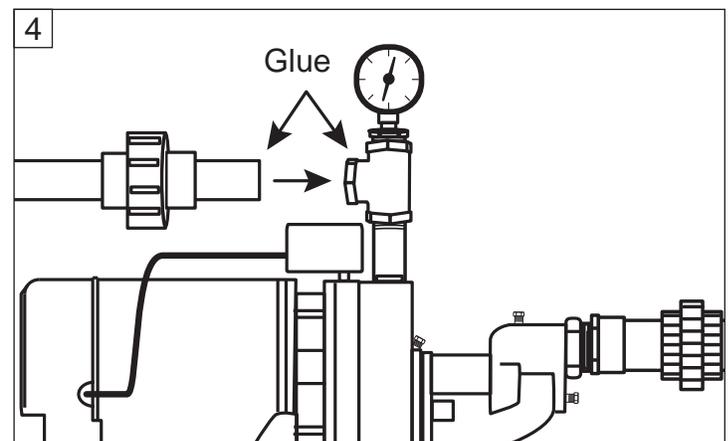
2. Install a 3/4 x 3/4 x 3/4 in. galvanized tee fitting. (Fig. 2)



3. Install a 3/4 in. MPT x 1/4 in. FPT galvanized bushing and pressure gauge (optional), or a pipe plug. Do not tighten, as you will prime your pump later at this location. (Fig. 3)



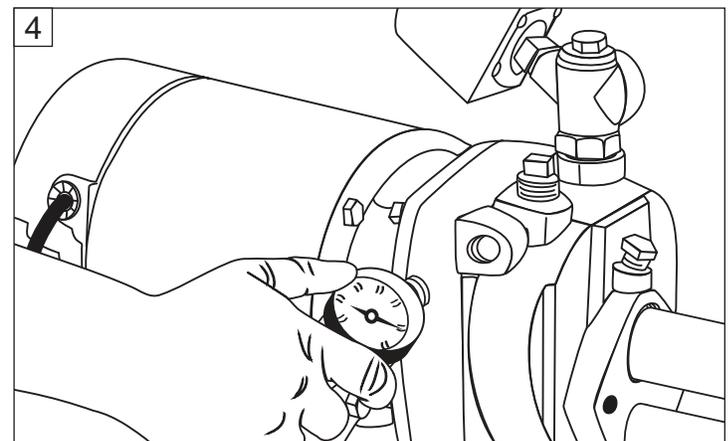
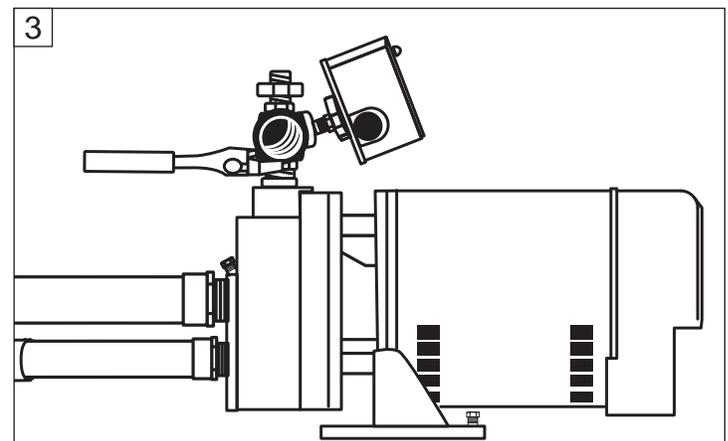
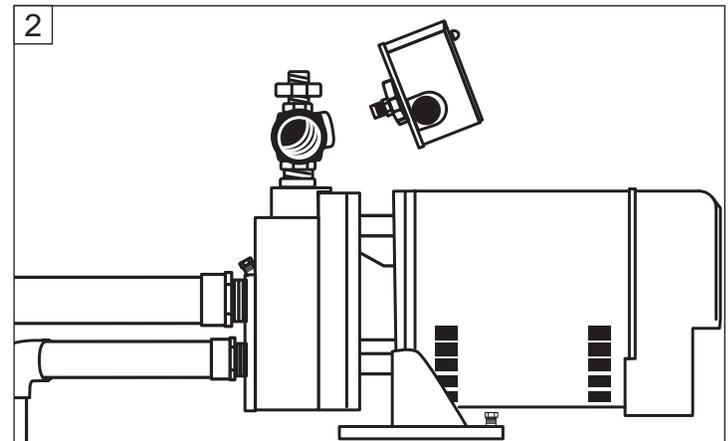
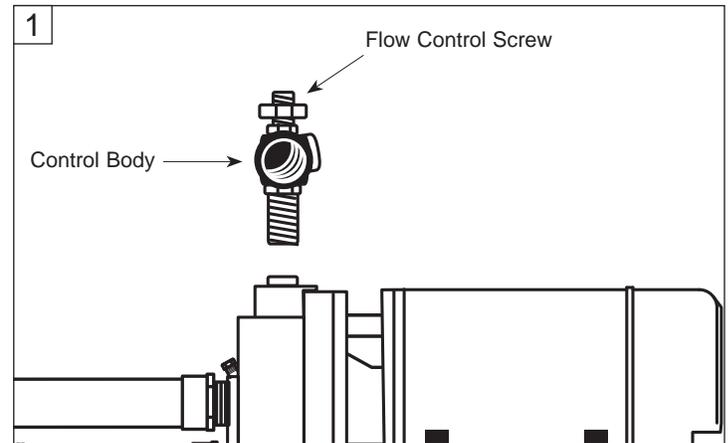
4. Continue with fittings and pipe to the pressure tank. A 3/4 in. union (optional) for easy connection and disconnection. (Fig. 4)



PUMP TO PRESSURE TANK CONNECTION (DISCHARGE PIPE)

Deep Well Application Only:

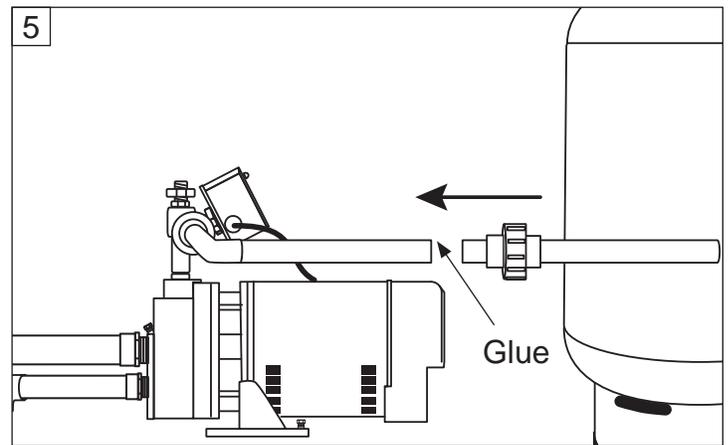
1. To begin the connection to the pressure tank, loosely assemble flow control body to pump head. Using Teflon tape, position the discharge outlet of the control body facing right as you look directly into the face of the pump
2. Assemble the pressure switch in the 1/4" tapping adjacent and to the right of the discharge outlet of the control valve (Fig. 2). Refer to Pump Electrical Connection section for pressure switch wiring.
3. Tighten flow control body. (Fig. 3)
4. Install optional pressure gauge in 1/4" tapping on side of pump body. Face of gauge should be positioned so that dial can be read easily (Fig. 4).



PUMP TO PRESSURE TANK CONNECTION (DISCHARGE PIPE)

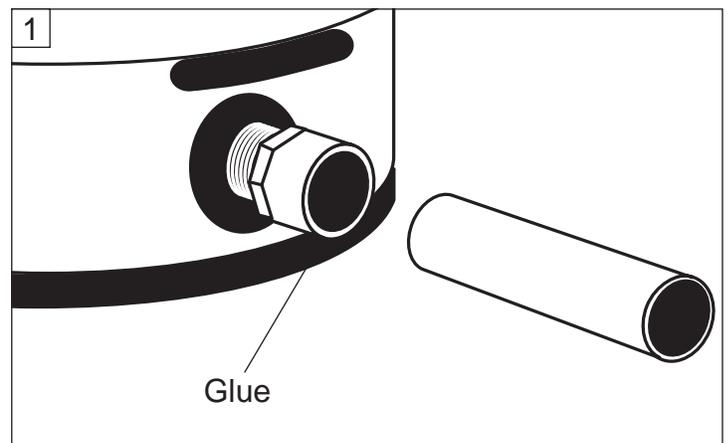
5. Continue with fittings and pipe to the pressure tank. A 3/4 in. union is optional but recommended for easy connection and disconnection. (**Fig. 5**)

CAUTION: Install a pressure relief valve on any installation where the pump pressure can exceed the maximum working pressure of the tank.

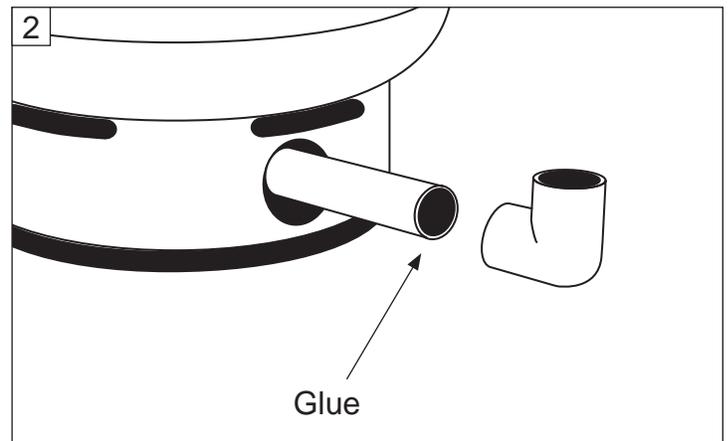


TANK TO HOUSE CONNECTION

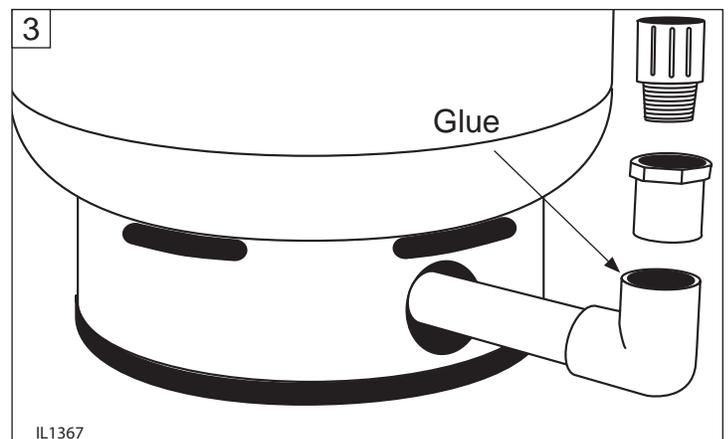
1. Most pressure tanks will have a 1 inch inlet elbow on the bottom. Connect to this elbow with a 1 in. MPT x 1 in. slip (glue) adapter and short piece of pipe. (**Fig 1**)



2. Install a 1 in. elbow. (**Fig. 2**)

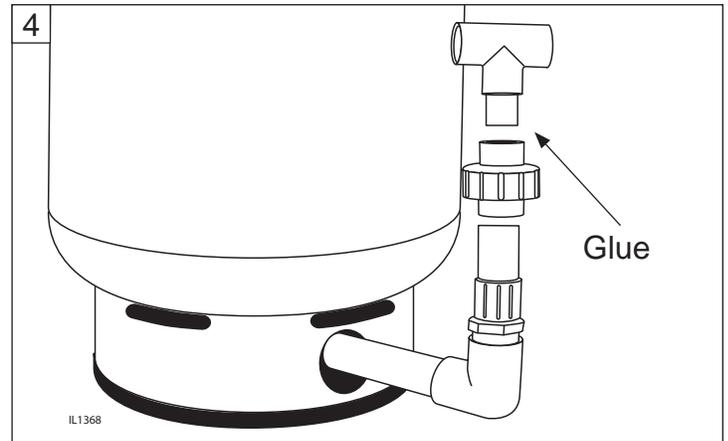


3. Attach a 1 in. slip (glue) x 3/4 in. FPT adapter and 3/4 in. MPT x 3/4 in. slip. (**Fig. 3**)

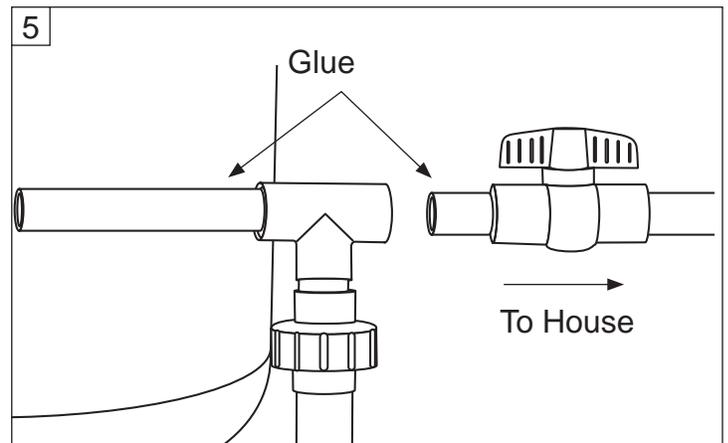


TANK TO HOUSE CONNECTION (CONTINUED)

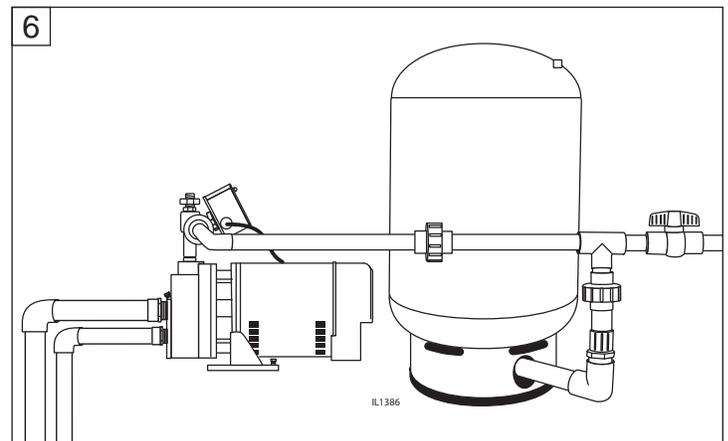
4. Install a 3/4 in. union (optional) and continue with pipe and 3/4 in. x 3/4 in. x 3/4 in. tee. (**Fig. 4**)



5. Make the connection to the house plumbing. From the tee, install pipe and shut off valve (optional). (**Fig 5**)



6. Completed installation with piping and tank is shown (**Fig. 6**)



PUMP ELECTRICAL CONNECTIONS

⚠ CAUTION: All wiring should be performed by a qualified electrician in accordance with the National Electric Code and local electric codes.

⚠ CAUTION: Connect the pump to a separate electrical circuit with a dedicated circuit breaker. Refer to the Wire Size Chart for proper fuse size.

⚠ WARNING: Under-size wiring can cause motor failure and even fire. Use proper wire size specified in the Wire size chart.

⚠ WARNING: Replace damaged or worn wiring cord immediately.

⚠ WARNING: Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces, or chemicals.

⚠ CAUTION: Protect the power cable from coming in contact with sharp objects.

⚠ WARNING: The pump must be properly grounded using the proper wire cable with ground.

⚠ WARNING: Always disconnect pump from electricity before performing any work on the motor.

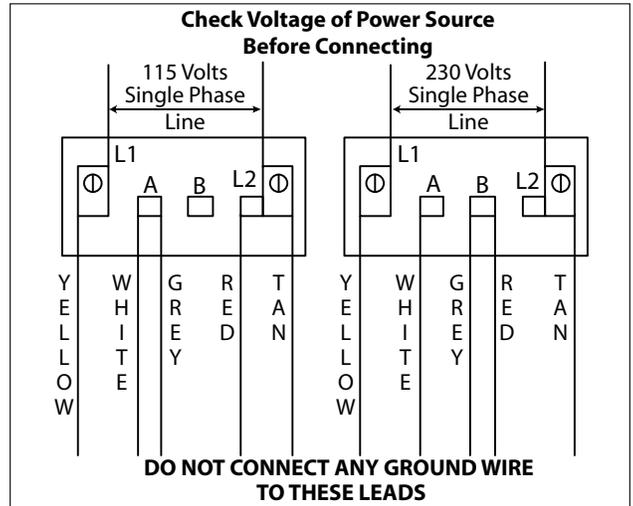
Wiring The Pressure Switch

1. **CAUTION:** Make certain that the power source matches the pump requirements. This pump has a dual voltage motor and can run on 115V or 230V. See motor nameplate for voltage prewired at the factory. **(Fig. 1)**

NOTE: To change pump voltage, see wiring diagram on this page or step-by-step instructions on page 18.

2. Screw the pressure switch into the 1/4 in. opening on the side of the flow control and remove the switch cover. **(Fig. 2)**

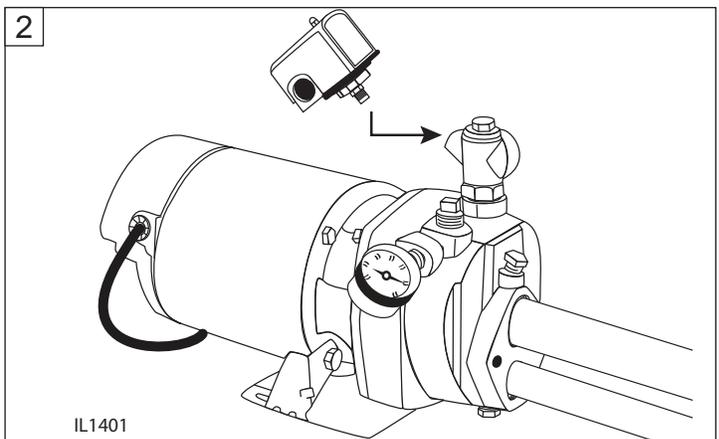
WIRING DIAGRAM



1	Motor:	96L105				
	HP:	1/2	PH	1	Hz	60
	Volts:	115/230	S.F.	1.2	Amps	6.4/3.2
	S.F. Amps:	8.6/4.3	RPM	3450	Type	C
	Duty:	Cont.	Temp	65C	KVA Code	G
	Frame	56L	Ins Class	B	Thermally protected automatic	
	Factory prewired for 115V				Use copper conductors only	
	Check voltage of power source					

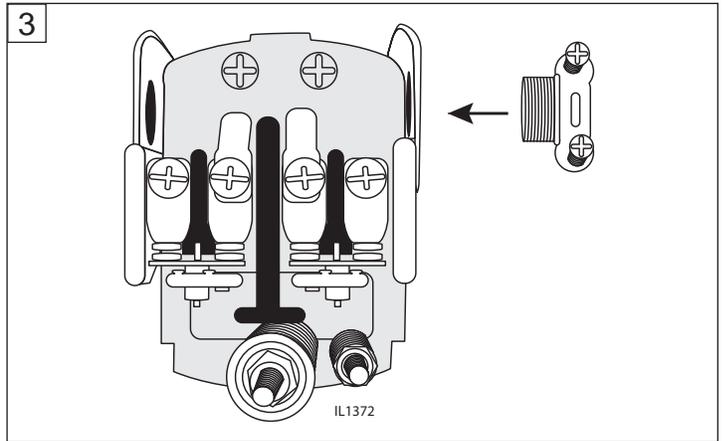
⚠ ELECTRICAL HAZARD ⚡

Improper installation may result in fire, explosion, electrical short or injury. Replace all covers before operating. Ground motor in accordance with local and national electrical codes. Disconnect power source before touching internal parts. Motors equipped with automatic protection may restart without warning. See instruction manual for proper installation procedure. Se reporter au manuel d'instructions pour suivre la procédure adéquate d'installation. Consulte el instructive para conocer el procedimiento de instalación correcto.

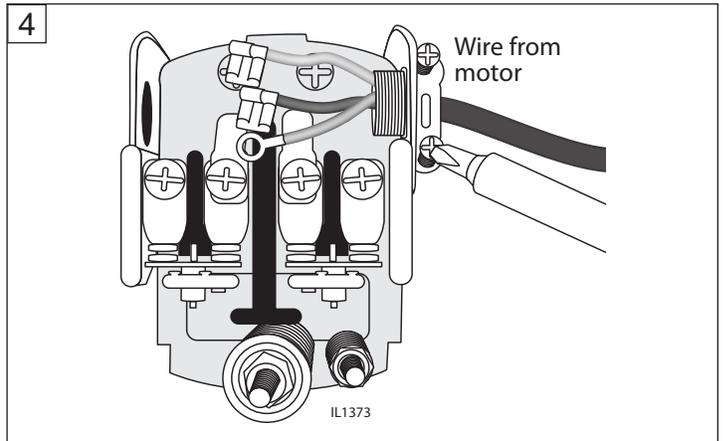


PUMP ELECTRICAL CONNECTIONS (CONTINUED)

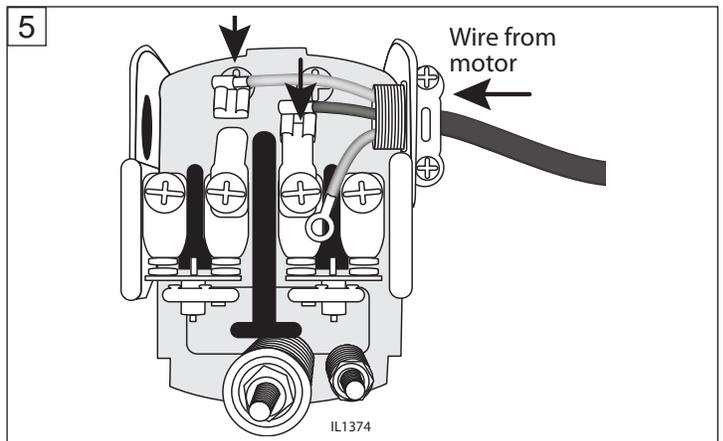
3. Insert an electrical wire strain relief into the opening in the side of the pressure switch closest to the motor. (**Fig. 3**)



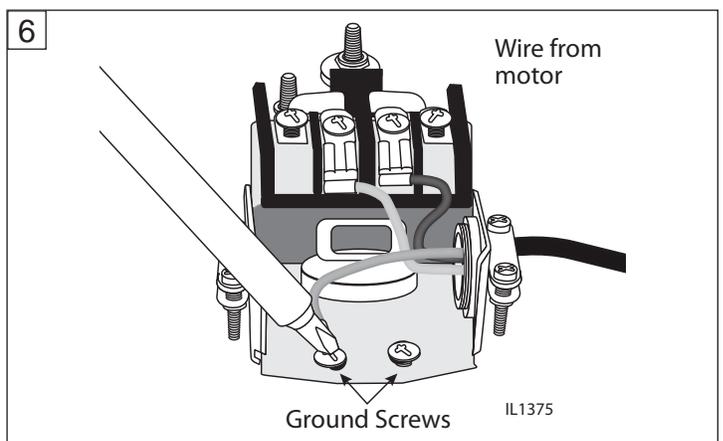
4. Thread the cable from the pump motor through the strain relief into the pressure switch cavity and tighten both screws on the strain relief. Do not crush wire. (**Fig. 4**)



5. Connect the two motor wires of the motor cable to the two inside terminals on the pressure switch. (**Fig. 5**)

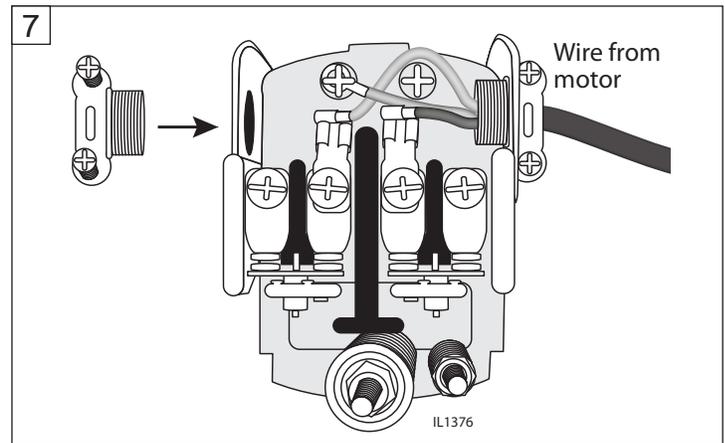


6. Connect the green ground wire from the motor cable to one of the green ground screws at the bottom of the pressure switch. (**Fig. 6**)

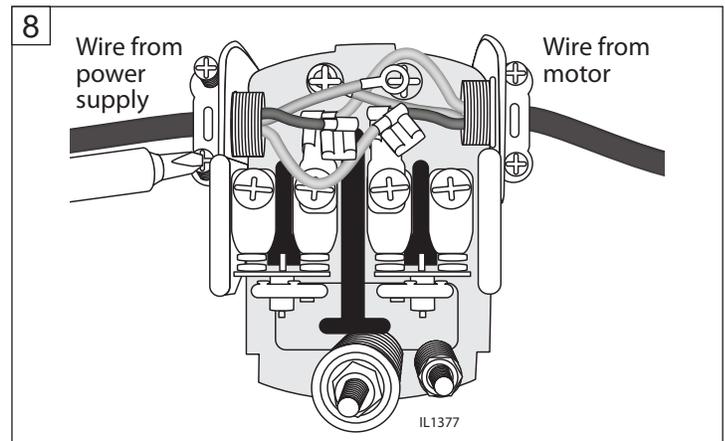


PUMP ELECTRICAL CONNECTIONS (CONTINUED)

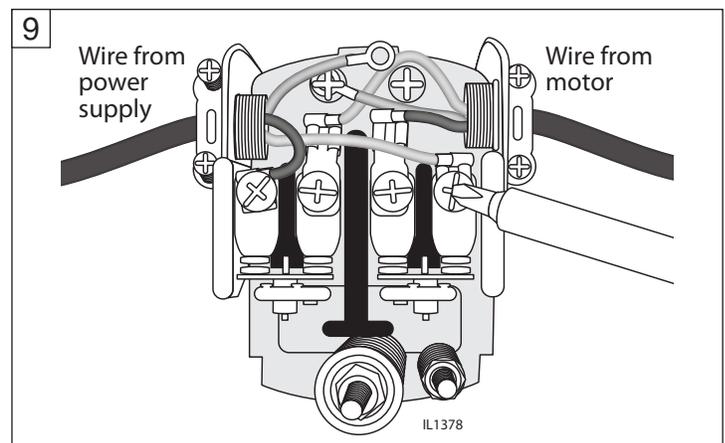
7. Insert an electrical wire strain relief into the opening in the opposite side of the pressure switch. (**Fig. 7**)



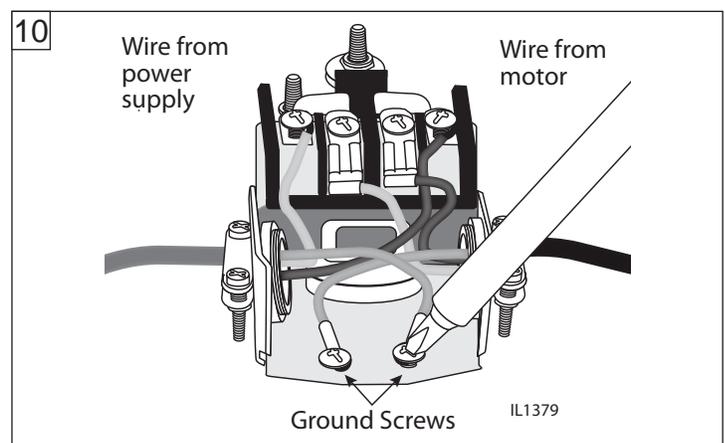
8. Thread the cable from the power supply through the strain relief and tighten both screws on the strain relief. Do not crush wire. (**Fig. 8**)



9. Connect the two wires from the power supply to the two outside terminals on the pressure switch. (**Fig. 9**)



10. Connect the green ground wire from the power supply to the remaining green ground screw in the pressure switch and re-attach the pressure switch cover. (**Fig. 10**)



PUMP ELECTRICAL CONNECTIONS (CONTINUED)

To change from 115V to 230V

11. The motor of this pump is dual voltage and can run on either 115V or 230V. In general, 230V is more economical to run, and requires a smaller wire size. Most models are factory preset to run at 115V.

NOTE: See pump label to verify voltage prewired at the factory. (Fig. 11)

11	HP:	1/2	PH	1	Hz	60
	Volts	115/230	S.F.	1.2	Amps	6.4/3.2
	S.F. Amps:	8.6/4.3	RPM	3450	Type	C
	Duty:	Cont.	Temp	65C	KVA Code	G
	Frame	56L	Ins Class	B		
	Factory prewired for 115V				Thermally protected automatic	
	Check voltage of power source				Use copper conductors only	


ELECTRICAL HAZARD

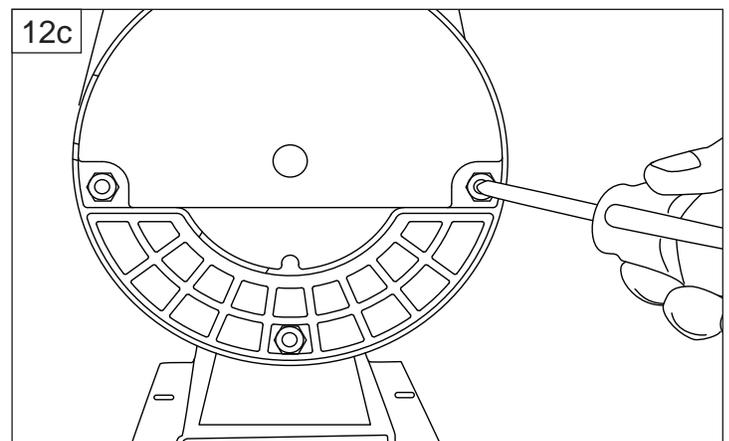
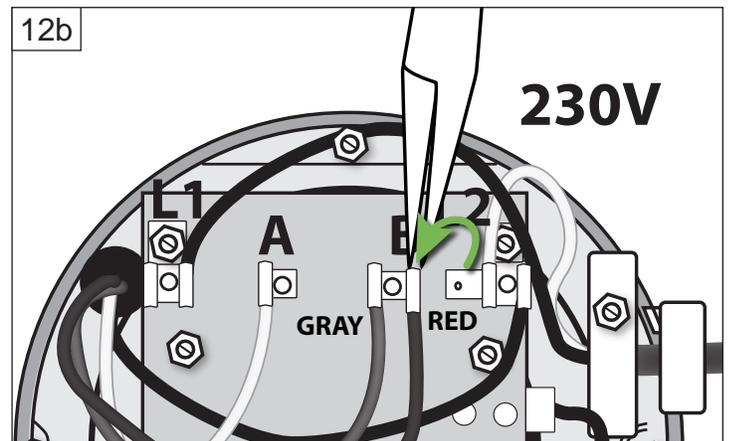
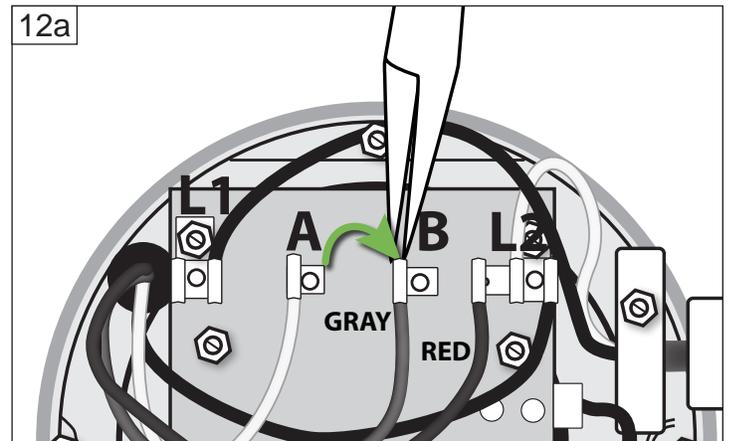
Improper installation may result in fire, explosion, electrical short or injury. Replace all covers before operating. Ground motor in accordance with local and national electrical codes. Disconnect power source before touching internal parts. Motors equipped with automatic protection may restart without warning.

See instruction manual for proper installation procedure.
 Se reporter au manuel d'instructions pour suivre la procédure adéquate d'installation.
 Consulte el instructivo para conocer el procedimiento de instalación correcto.

12. For 230V service, change the following wires on the terminal board:

- a. Using a pair of needle nose pliers, pull the gray wire with the female flag connector from the "A" terminal spade post. Place it to the right on the "B" terminal space post. (Fig. 12a)
- b. Pull the red wire with the female flag connector from the "L2" terminal. Place it to the left on the "B" terminal space post. (Fig. 12b)
- c. Reinstall the rear motor cover. (Fig. 12)

NOTE: To change models from 230V to 115V, simply reverse instructions above.



PUMP PRIMING & STARTUP

Shallow Well Application Only:

⚠ CAUTION: All pumps must be primed (filling the cavity with water) before they are first operated. This may take several gallons of water, as the suction line will be filled in addition to the pump cavity.

1. Remove the priming plug with pressure gauge and air relief plug. (**Fig. 1**)

2. Slowly fill pump cavity until water comes out of air relief hole on top of the pump. (**Fig. 2**)

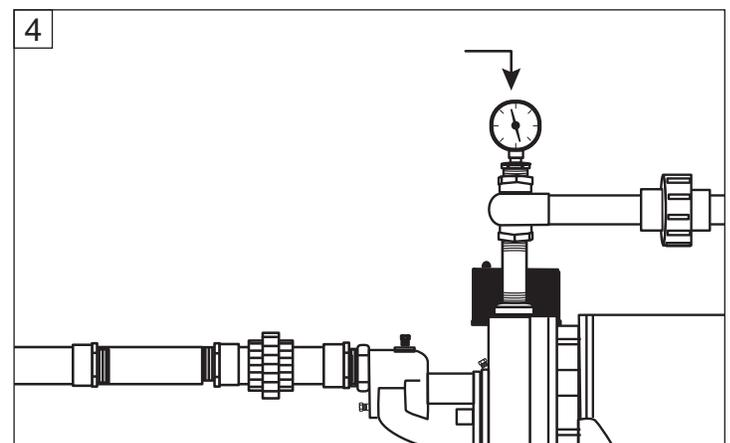
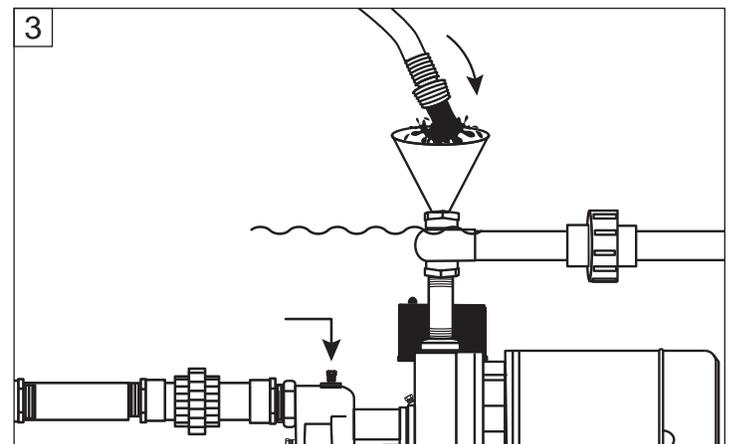
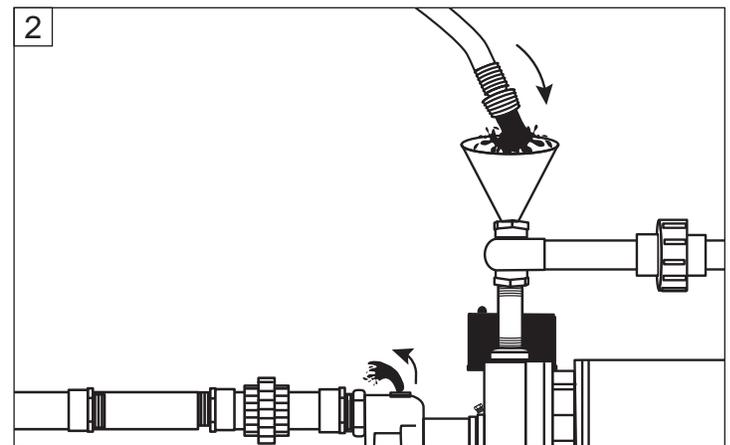
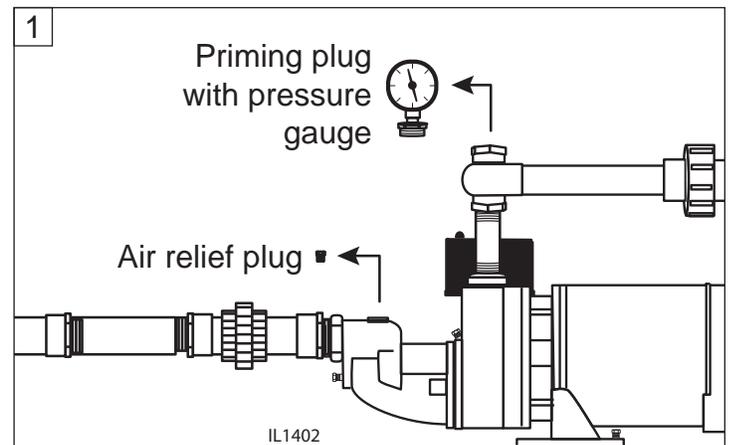
3. Replace air relief plug and continue adding water to pump cavity until water reaches the top of the priming plug. (**Fig. 3**)

4. Thread in priming plug and then open optional ball valve if installed by turning handle to line up with the pipe. (**Fig. 4**)

5. Turn on breaker to start pump

⚠ IMPORTANT: If the pump hums instead of pumping or turns off repeatedly, shut pump off immediately.

Check voltage. Make sure your incoming voltage matches the pump wiring voltage. See wiring guide in the instructions.

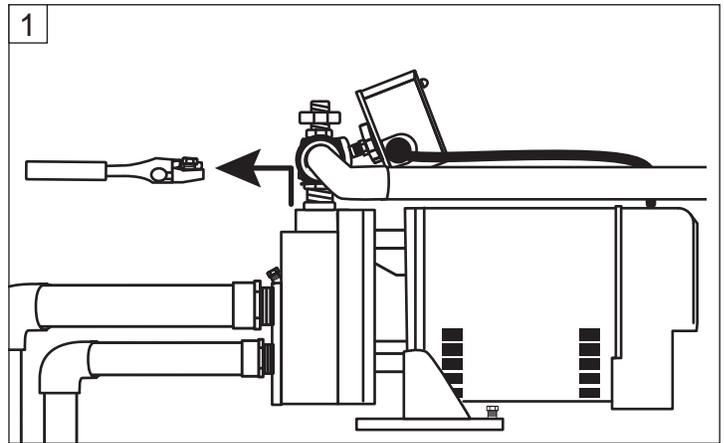


PUMP PRIMING & STARTUP (CONTINUED)

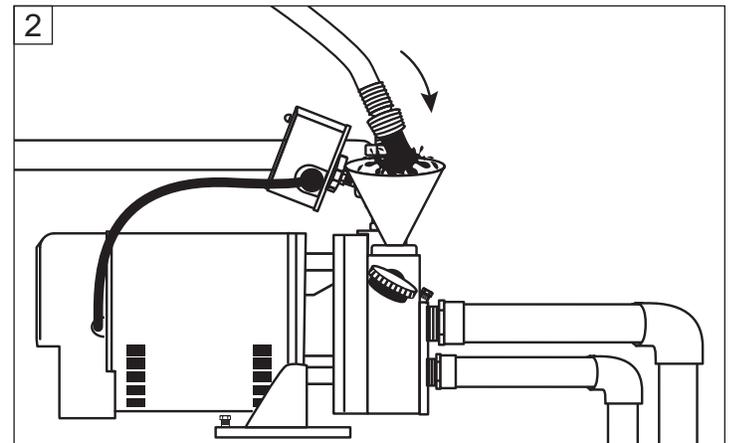
Deep Well Application Only:

⚠ CAUTION: All pumps must be primed (filling the cavity with water) before they are first operated. This may take several gallons of water, as the suction line will be filled in addition to the pump cavity.

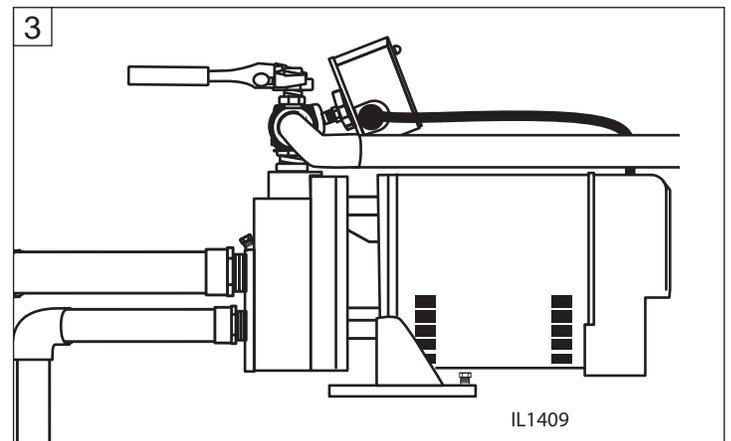
1. Remove the 1/2" priming plug. (**Fig. 1**)



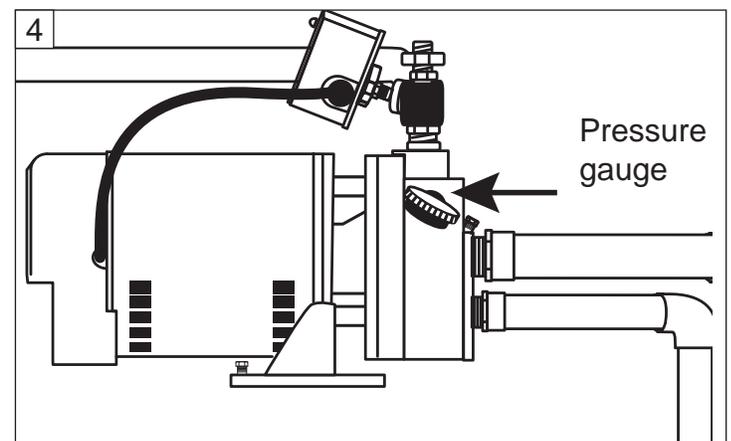
2. Fill pump cavity with water until full and replace priming plug. (**Fig. 2**)



3. Tighten flow control screw completely by turning clockwise, then loosen two turns. Now start the pump. (**Fig. 3**)

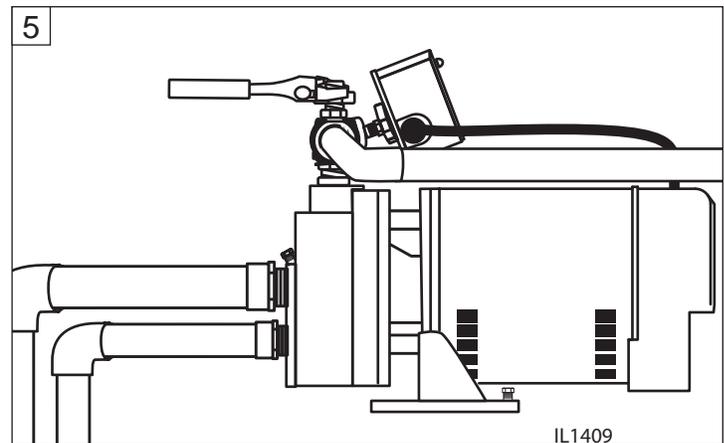


4. If pump is properly primed, pressure will quickly build and register on the gauge mounted directly on the pump body. If pressure does not build repeat priming operation. All air must be vented from the drive and suction pipes as well as the body before the pump will prime. The pump body may need to be filled several times in order to achieve the prime. (**Fig. 4**)



PUMP PRIMING & STARTUP (CONTINUED)

5. With pump operating at high pressure, open two or more faucets and slowly unscrew the flow control screw until maximum flow is obtained. This steady pressure will be minimum operating pressure and should agree with the pressure shown below. The flow control screw diverts the proper amount of water to operate the ejector. **(Fig. 5)**



HP	Pressure Setting
1/3	24 PSI
1/2	27 PSI
3/4	38 PSI
1	46 PSI

The correct control valve setting will depend on the type of well installation and pressure switch setting for the particular pump.

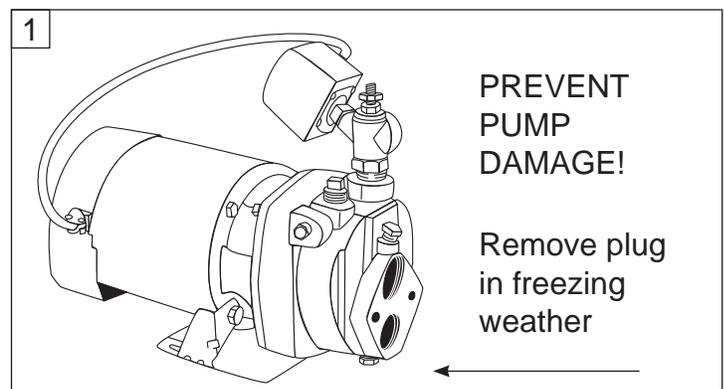
NOTE: Flow control is not required for shallow well applications.

⚠ IMPORTANT: If the pump fails to prime within five minutes:
Turn power off at the breaker box. Look for leaks or a milky color in the discharged water, which indicates an air leak. Re-prime if necessary, following steps 1 through 5 above. Reset breaker at the breaker box. All connections must be water and air tight in order for pump to operate.

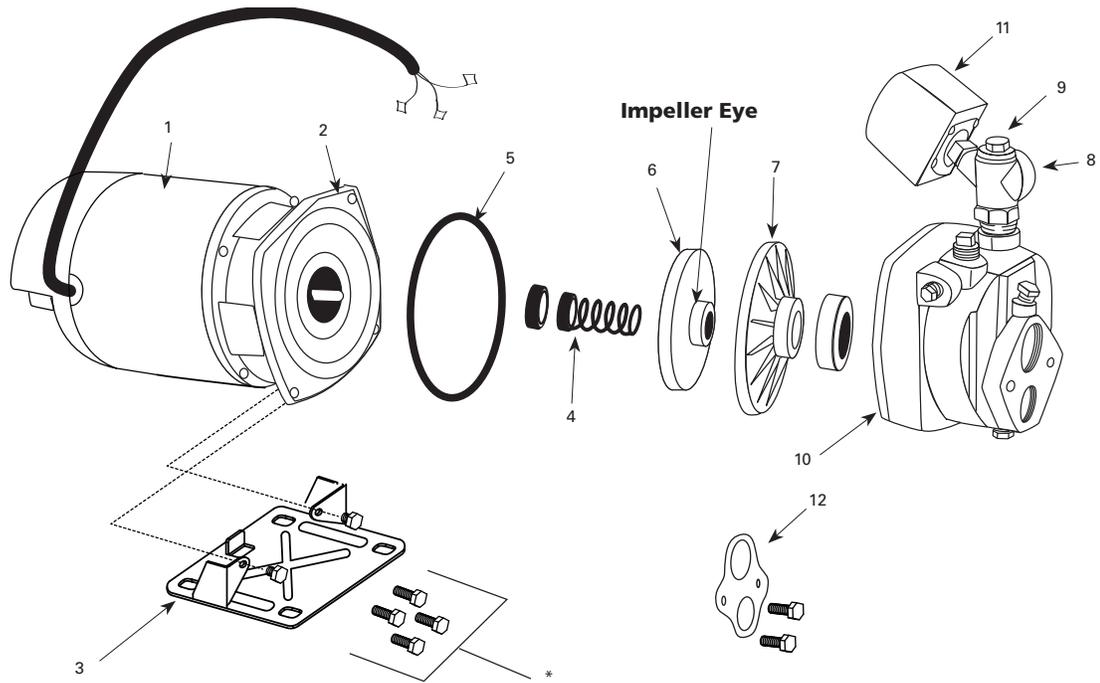
CARE AND MAINTENANCE

Winterizing

⚠ CAUTION: Drain the entire system if there is danger of freezing. A drain plug is provided at the bottom of the pump case for this purpose. **(Fig 1).**



REPAIR PARTS



Repair Parts List

Item	Description	Quantity Required	1/2 HP	3/4 HP	1 HP
			Part Number		
1	Motor Nema 56J	1	98J105	98J107	98J110
2	Mounting Ring	1	134162	134162	134163
3	Base	1	128034A	128034A	128034A
4	Seal, Rotary w/Spring	1	131100	131100	131100
5	Ring, Square Cut	1	132583	132583	132429
6	Impeller	1	139348	139349	134137
7	Diffuser	1	132424	132424	132425
8 & 9	Control Assembly	1	134349	134349	134349
8	Control Body	1	135019	135019	135019
9	Flow Control Screw	1	124330	124330	124330
10	Pump Body	1	134121	134121	134123
11	Pressure Switch	1	020345	020345	020345
12	Ejector gasket	1	132404	132404	132404
	Lead Wire	1	136135A	136135A	136135A
*	Cap Screws 3/8 x 3/4"	4	*	*	*

(*) Standard Hardware Item

TROUBLESHOOTING

Problem	Possible Cause	Corrective Action
Little or no discharge	1. Casing not initially filled with water	1. Fill pump casing
	2. Suction lift too high, or too long	2. Move pump closer to water source
	3. Hole or air leak in suction line	3. Repair or replace. Use pipe tape and pipe sealing compound
	4. Foot valve too small	4. Match foot valve to piping or install one size larger foot valve.
	5. Foot valve or suction line not submerged deep enough in water	5. Submerge lower in water
	6. Motor wired incorrectly	6. Check wiring diagram
	7. Casing gasket leaking	7. Replace
	8. Suction or discharge line valves closed	8. Open
Pump will not deliver water or develop pressure	1. No priming water in casing	1. Fill pump casing
	2. Leak in suction line	2. Repair or replace
	3. Discharge line is closed and priming air has nowhere to go	3. Open ball valve
	4. Suction line (or valve) is closed	4. Open
	5. Foot valve is leaking	5. Replace foot valve
	6. Suction screen clogged	6. Clean or replace
Loss of suction	1. Air leak in suction line	1. Repair or replace
	2. Suction lift too high	2. Lower suction lift, install foot valve and prime
	3. Insufficient inlet pressure or suction head	3. Increase inlet pressure by adding more water to tank or increasing back pressure
	4. Clogged foot valve or strainer	4. Unclog
Pump vibrates and/or makes excessive noise	1. Mounting plate or foundation not rigid enough	1. Reinforce
	2. Foreign material in pump	2. Disassemble pump and clean
	3. Impeller damaged	3. Replace
	4. Worn motor bearings	4. Replace
Pump will not start or run	1. Improperly wired	1. Check wiring diagram on motor
	2. Blown fuse or open circuit breaker	2. Replace fuse or close circuit breaker
	3. Loose or broken wiring	3. Tighten connections, replace broken wiring
	4. Stone or foreign object lodged in impeller	4. Disassemble pump and remove foreign object
	5. Motor shorted out	5. Replace
	6. Thermal overload has opened circuit	6. Allow unit to cool, restart after reason for overload has been determined

QUICK TROUBLE-SHOOTING CHECKLIST

Please review the following troubleshooting questions before returning a pump as defective. If you have any questions, please call Customer Service at (800) 742-5044.

√	CHECK LIST
A	Check date code to make sure pump is within warranty period. Date code is the month and the year. (Example: 0311 is March of 2011. Date Code is found on the top of the pump.)
B	Make certain that the power source matches the pump requirements. This pump has a dual voltage motor and can run on 115V or 230V. See pump label for voltage prewired at the factory.
C	If pump does not run, check the GFI or breaker panel switch to make it is in full operation.
D	If the pump runs all the time, make sure the pump has been primed correctly. If pump is not holding the prime, inspect check valve, foot valve, and piping, then reprime.
E	If the pump runs but won't shut off, check pressure switch.

