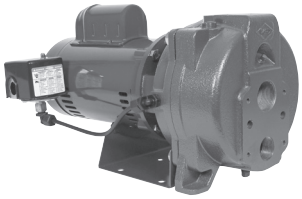
IMPORTANT NOTICE - READ CAREFULLY

Convertible Jet Pumps

1. LOCATION

The pump should be installed in a dry, accessible place not subject to freezing temperatures. If installed in a pump pit or other location subject to dampness, proper ventilation must be provided to avoid moisture damage to the electrical equipment.



8000 Series Convertible

2. PIPING

Galvanized steel or plastic pipe is recommended. If copper or other dis-similar metal piping is used, a di-electric union or bushing is recommended where the piping is connected to the pump body. The pipe used should be cleaned and free of scale. Ream ends of pipe to remove burrs. Check threads to see that they are clean and not damaged. Horizontal runs of suction pipe must slope upwards from the well to the pump to avoid air pockets in the line which will make it difficult, if not impossible, to prime the pump. The recommended slope is one inch in ten feet.

If pump must be offset an appreciable distance from the well, the size of horizontal pipe should be increased to reduce friction losses.

If using di-electric bushing, hand start bushing into female end of pump housing (or other female connection) first. Use a six-sided socket to tighten the bushing. The bushing should be fully inserted into the female connection. After the male end of the bushing is fully installed, hand start pipe (or other male connection) into the female end of the bushing. Failure to follow these guidelines may damage the bushing. Caution should be taken to not cross-thread the bushing.

3. FLUSHING

If the pump discharge line is connected to pressure tank or house service, disconnect it and flush and clean the system by temporarily wasting the water outdoors or to drain. The pump should be operated until the water runs clear, without sand, mud or rust.

This procedure will eliminate the danger of pumping dirty water into the pressure tank and home appliances. When water runs clear, re-connect discharge line to tank and service.

4. WIRING (Use copper conductors only)

Be certain that wire and fuses of correct size are installed. Be certain the phase, voltage, and frequency of the supply circuit are the same as that shown on the motor name plate.

It is strongly recommended that a separate electric line, well protected against fire, be run from electrical service to the pump, with a fused switch box at the pump. In the event of fire, this precaution will permit continuous operation of your pumping system. For added safety, the pump and motor should be properly grounded to the well casing or to a separate ground rod driven eight feet into the ground.

NOTE: For proper fuse, circuit breaker and wire sizes in your area, follow local codes. Otherwise:

Wire Gage and Standard Fuse Sizes

MODEL NUMBER	MOTOR SIZE	WIRE SIZE 115V	WIRE SIZE 230V	*FUSETRON 115V	*FUSETRON 230V	*CIRCUIT BRKR. 115V	*CIRCUIT BRKR. 230V	ON PRESSURE	OFF PRESSURE
8050	1/2 HP	12	12	20 amp	15 amp	20 amp	15 amp	20	40
8070	3/4 HP	10	12	25 amp	15 amp	30 amp	15 amp	30	50
8010	1 HP	8	12	30 amp	20 amp	35 amp	20 amp	30	50
8015	1 1/2 HP	6	10	35 amp	25 amp	40 amp	20 amp	30	50

* Time delay fuses and circuit breakers (Single Phase).

For distances of 100 feet and over from meter to motor, larger wire than shown may be required.

5. MOTORS

Motors are equipped with sealed ball bearings and require little attention.

If motor repeatedly stops, cools off, and starts again, the cause or trouble must be located and corrected. Do not cover motor with canvas or other material that may interfere with proper air circulation and cause over-heating.

6. PRESSURE SWITCH

The pressure switch is set at the factory to start and stop the pump at certain pressures (see table above). In the event a change is necessary, remove the switch cover and adjust either the operating pressure or differential between start and stop (if available) by turning screws, marked on switch, in the direction required.

Wiring directions are given on the pressure switch.

ATTENTION! Important information for installers of this equipment!

This equipment is intended for installation by technically qualified personnel. Failure to install it in compliance with national and local electrical codes, and with motor suppliers recommendations, may result in electrical shock or fire hazard, unsatisfactory performance, and equipment failure. Installation information is available from pump manufacturers and directly from motor suppliers. Retain this information sheet with the equipment for future reference.

WARNING

Serious or fatal electrical shock may result from failure to connect the motor, control enclosures, metal plumbing, and all other metal near the motor or cable, to the power supply ground terminal using wire no smaller than motor cable wires. To reduce risk of electrical shock, disconnect power before working on or around the water system.

WARNING: It is unlawful in **CALIFORNIA & VERMONT (effective 1/1/2010); MARYLAND (effective 1/1/2012); LOUISIANA (effective 1/1/2013) and the UNITED STATES OF AMERICA (effective 1/4/2014)** to use any product in the installation or repair of any public water system or any plumbing in a facility or system that provides water for human consumption if the wetted surface area of the product has a weighted average lead content greater than 0.25%. This prohibition does not extend to service saddles used in California, Louisiana or under USA Public Law 111-380.

IMPORTANT NOTICE - READ CAREFULLY

Convertible Jet Pumps - Shallow Well

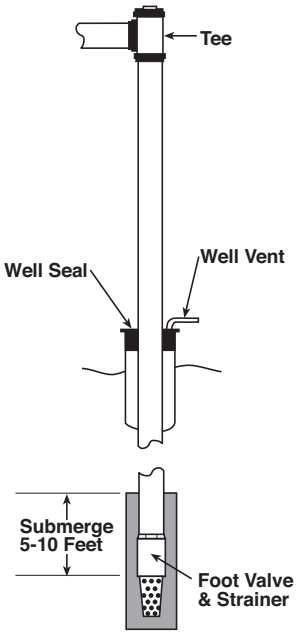


Figure 1

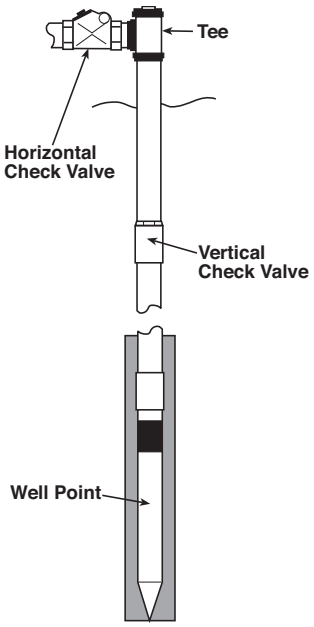


Figure 2

A shallow well system should not be installed where total suction lift exceeds 25 feet at sea level. Suction lift must be reduced at the rate of approximately 1 foot per 1000 feet at elevation. Total suction lift consists of the vertical distance from the water level when pumping to the pump plus losses due to friction in the pipe line. The volume of water delivered decreases with an increased suction lift.

Drilled, bored or dug wells may employ an arrangement as in **Figure 1**. Driven wells and sandpoints employ the configuration in **Figure 2**.

1. a) Install a foot valve on the bottom of the suction line and place it 5 to 10 feet below the draw down level, that is, the level of the water when the unit is pumping its rated capacity. It should be far enough from the bottom of the well to avoid pumping sand and mud. (Figure 1)

   b) On driven well installation, install a spring dog- check valve on the vertical pipe at least five feet above the well point, or install a horizontal check valve in the suction line near the pump.(Figure 2)

2. Check the foot valve, see that it seats properly and that no obstruction prevents its opening or closing. A leaky foot valve may cause excessive cycling (motor starts and stops).

3. Lower first length of suction pipe, with attached foot valve into the well, fill pipe with clean water. If water recedes a leak is indicated. If no leaks occurs assemble the remaining section(s) of pipe and check again for leaks.

4. Install the well seal at the top of the well casing and tighten well seal bolts. (Figure 1)

5. Install a tee at top of suction pipe, with a plug in the top opening, and connect through a union to the female thread in the pump ejector.

6. Connect pump discharge to pressure tank, and pressure tank to house plumbing.

7. After piping is completed and motor is properly wired, remove the priming plug on top of pump and fill pump with clean water. Allow time for air in the system to escape, and refill pump if necessary before replacing the priming plug. Start motor and the unit should operate. If it does not, it may be necessary to reprime.

8. When unit has built up to maximum pressure, and has automatically stopped, check all piping both suction and discharge lines for leaks, as they will be under pressure.

NOTE: If the unit is to be used with a vacuum type air volume control where the source of supply is level with the pump or above the pump (artesian well, pond, cistern or shallow well with less than five feet lift) a valve should be installed in the suction line that may be partially closed to cause the pump to operate under a moderate suction lift of 8-10 ft. to insure correct operation of the air volume control which is operated by vacuum.

IMPORTANT NOTICE - READ CAREFULLY

Convertible Jet Pumps - Deep Well

The McDonald 8000 Series may be installed in wells of as small as two inch diameter. This single pipe system is illustrated in **Figure 4**.

The most common and efficient type of installation, however, is the two pipe system which requires a minimum well diameter of four inches (**Figure 3**). Instructions vary slightly for each (See below).

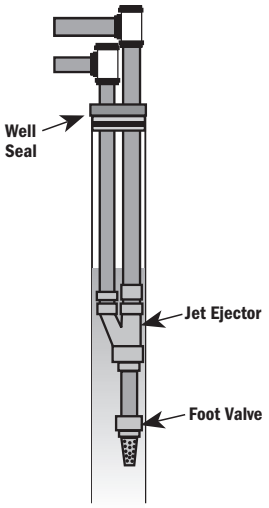


Figure 3 - Two-Pipe System

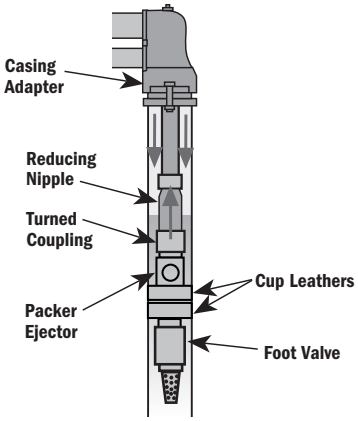


Figure 4 - Single Pipe System

1. Check foot valve to see that it seats properly. Be sure Venturi is wrench-tight in the ejector body.
2. After foot valve has been attached to ejector body and first lengths of drive and suction pipe are attached, lower assembly into well. Before adding additional pipe, fill assembly with water. If water recedes, a leak is indicated. If no leak occurs, continue this procedure, i.e. add next pipe length, test for leaks, until ejector assembly is lowered to its final position, 10 feet below the drawdown level of the well.
3. Install a well seal at the top of the well casing and tighten well seal bolts.
4. Install tees with plugs instead of elbows at the top of the well, when attaching horizontal offset pipes between well and pump.

1. Check foot valve to see that it seats properly. Be sure Venturi is wrench-tight in the ejector body.
2. After foot valve has been attached to the ejector assembly and is being lowered into the well on the first section of suction pipe, it may be necessary to turn it. It should only be turned in clockwise direction to avoid loosening of the packer leathers and foot valves.
3. Fill pipe and well casing with water. If water recedes, a leak is indicated. If no leak occurs, continue the procedure with each length of pipe until ejector-packer assembly is lowered to its final position, 10 feet below the drawdown level of the well. If pump is being installed in a 2" well, use only special turned couplings on the suction pipe (steel pipe only) to provide for better flow.
4. Connect suction pipe to well seal and well seal to well casing and draw up gland bolts tightly.

5. Connect drive pipe to lower opening in pump. Connect suction pipe to upper opening of pump.
6. After piping is completed, and motor is properly wired to electric service, it is now ready to operate. Remove priming plug on top of pump and fill with clean water. Allow time for air to escape and refill if necessary before replacing priming plug.
7. An external regulating valve is recommended with deep well installations. Follow the instructions included with the regulating valve in order to correctly set the regulating valve for your installation.
8. When unit has built up to maximum pressure, and has automatically stopped, check all piping for leaks, as they will be under pressure.

IMPORTANT NOTICE - READ CAREFULLY

Troubleshooting Information

A. If Motor Will Not Start:

1. Main line switch or pump switch may be shut off.
2. Power may have failed or may be temporarily discontinued.
3. Fuse may be blown or breaker may be tripped.
4. Be sure motor shaft turns freely.
5. Check for defective wiring or loose connections.
6. Check for possible defective motor or pressure switch.
7. If motor does not operate properly, remove and take it to nearest authorized motor service station.

B. If Motor Runs But Water Is Not Delivered:

1. Be sure foot valve is sufficiently submerged but is not in sand or mud at the bottom of the well, also be sure screen on foot valve is clear.
2. Be sure pump is sufficiently primed.
3. Check for possible leaks in suction piping, foot valve or air volume control connection.
4. If a drive point is used, check for clogged point.
5. Impeller, jet fitting, or foot valve may be clogged with sand or other obstruction.
6. Regulating valve may be improperly adjusted.
7. Check possibility of gas in the well.
8. Total suction lift may be beyond that recommended for jet fitting.
9. Be sure motor is wired for proper rotation. Also check for lower voltage or inadequate wire size.

C. If Pump Operates But Loses Prime:

1. Check for possible leaks in suction piping, foot valve, or air volume control connections.
2. Water may be drawing down below foot valve, causing pump to take excessive air.
3. If deep well installation, regulating valve may be set for insufficient pressure to operate the jet.
4. If single pipe installation, water may be leaking between packer assembly and well casing. Water may be leaking back to the soil through worn out or defective well casing.

D. If Pump Delivers Water But Volume Is Considerably Below Rating:

1. Check for possible leak in suction piping or air volume control connection.
2. Strainer on foot valve may be partially clogged.
3. Impeller or jet fitting may be clogged with sand or other obstruction.
4. Well may not yield sufficient water for pump to deliver rated capacity.
5. Total suction lift may be beyond that recommended for jet fitting.
6. Due to low voltage condition, motor may not be operating at full speed.
7. Be sure regulating valve is properly adjusted.
8. Pipe sizes may be smaller than recommended, causing excessive friction losses.
9. Be certain nozzle and venturi are tight in pump body.
10. Check to insure O-ring (on Venturi) is in place.

E. If Pump Starts and Stops Too Frequently:

1. Be sure pressure tank has a sufficient amount of air. Check for faulty air volume control or air leak in tank above water level.
2. Air may be escaping around plug in top of tank
3. Pressure switch may be faulty or may not be adjusted for proper differential between cut-in and cut-out pressure.
4. Insufficient suction lift to operate air volume control (If used.)
   (a) Pump may be used as a booster with pressure supplied to the suction side.
   (b) Shallow well pump may be used at lifts less than 7 feet. If so, a valve must be placed in the suction piping to restrict the flow of water and create additional suction lift, thus assuring proper operation of the automatic air volume control.
   (c) Deep well jet may be used in shallow well range.

F. If Pump Is Noisy:

1. Be sure pump and tank are mounted on substantial foundation. Pipe should be rigid and all connections tight.
2. Motor bearings may be worn.
3. On shallow well installations total suction lift may be greater than 25 feet.
4. Impeller and motor shaft may be running out of alignment, causing impeller to rub against the diffuser.
5. Foot valve, jet or impeller may be partially clogged.
6. On deep well installation, regulating valve may be set below minimum recommended operating pressure.

G. If Thermal Overload Protector Stops Pump:

1. Check for improper voltage and be sure motor is wired properly.
2. Check for low voltage condition or inadequate wire size.
3. Be sure motor is properly ventilated and not subject to high temperatures.
4. Due to faulty switch or a waterlogged tank, pump may be starting and stopping too often, causing the motor to overheat.
5. Impeller may be rubbing on the diffuser, causing the motor to become overloaded.
6. Overload protector on motor may be defective.

WARNING: It is unlawful in **CALIFORNIA & VERMONT (effective 1/1/2010); MARYLAND (effective 1/1/2012); LOUISIANA (effective 1/1/2013) and the UNITED STATES OF AMERICA (effective 1/4/2014)** to use any product in the installation or repair of any public water system or any plumbing in a facility or system that provides water for human consumption if the wetted surface area of the product has a weighted average lead content greater than 0.25%. This prohibition does not extend to service saddles used in California, Louisiana or under USA Public Law 111-380.