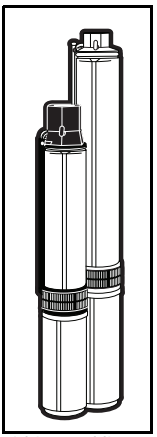
OWNER'S MANUAL

Franklin Electric

EN English

4" Environmental E-Series Pumps



These pumps are used for filtered effluent service, aeration, and ornamental fountains or waterfalls.

Please examine your item(s) carefully to ensure that no damage occurred during shipment. If damage has occurred, please contact the place of purchase. They will assist you in replacement or repair, if required.

This product is covered by a Limited Warranty for a period of 12 months from the date of original purchase by the consumer. For complete warranty information, refer to www.FranklinWater.com.

SAFETY INSTRUCTIONS

Before Getting Started

This equipment should be installed and serviced by technically qualified personnel who are familiar with the correct selection and use of appropriate tools, equipment, and procedures. Failure to comply with national and local electrical and plumbing codes and within Franklin Electric recommendations may result in electrical shock or fire hazard, unsatisfactory performance, or equipment failure.

Know the product's application, limitations, and potential hazards. Read and follow instructions carefully to avoid injury and property damage. Do not disassemble or repair unit unless described in this manual.

Failure to follow installation or operation procedures and all applicable codes may result in the following hazards:

⚠ WARNING

Risk of severe injury or death by electrical shock.

- Ground motor before connecting to power supply.
- To reduce risk of electrical shock, disconnect power before working on or around the system. More than one disconnect switch may be required to de-energize the equipment before servicing.
- Wire pump system for correct voltage. Follow wiring instructions in this manual when connecting motor to power lines.
- Check local electrical and building codes before installation. The installation must be in accordance with their regulations as well as the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
- Do not use motor in swimming areas.

⚠ CAUTION

Risk of bodily injury, electric shock, or equipment damage.

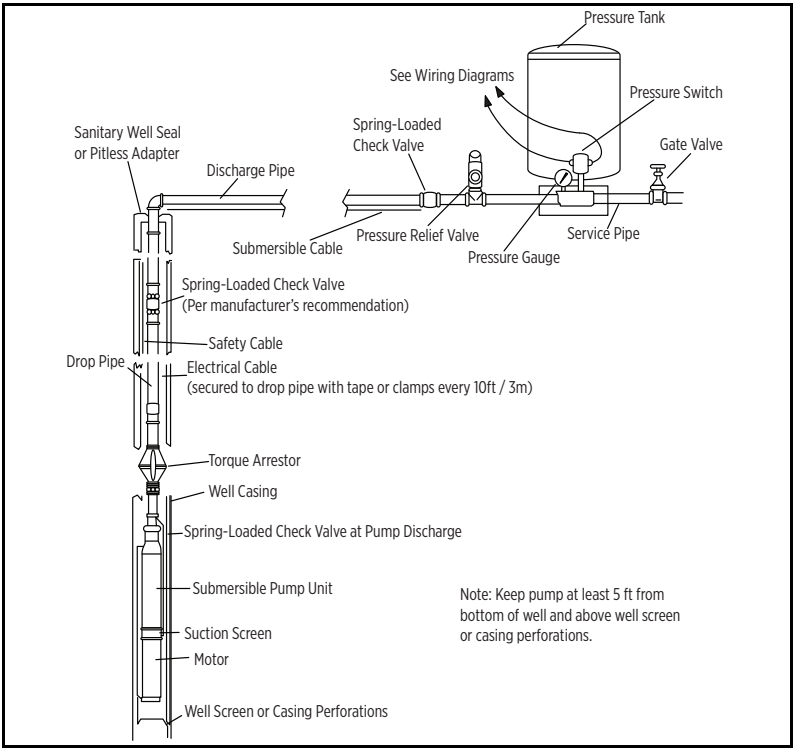
- This equipment must not be used by children or persons with reduced physical, sensory or mental abilities, or lacking in experience and expertise, unless supervised or instructed. Children may not use the equipment, nor may they play with the unit or in the immediate vicinity.
- Operation of this equipment requires detailed installation and operation instructions provided in this manual for use with this product. Read entire manual before starting installation and operation. End User should receive and retain manual for future use. Keep safety labels clean and in good condition. Keep work area clean, well-lit, and uncluttered.

NOTICE

Risk of damage to pump or other equipment.

- The motor on this pump is guaranteed by the manufacturer. In event of failure, it must be returned to an authorized product reseller for review and disposition. Product warranty is void if product is disassembled or reviewed by any other party.
- Install the pump in a properly developed well. Undeveloped well water often contains abrasives that can damage the pump.
- Check that the well is deep enough to allow the pump to be set at least 5 ft from the bottom.
- Do not set pump below the casing perforations or well screen unless there is an adequate flow of water over the motor for cooling purposes is ensured.
- Determine the correct pump setting from the driller's record, taking into account the static water level and the draw-down at the proposed pumping rate.

INSTALLATION
Typical Installation

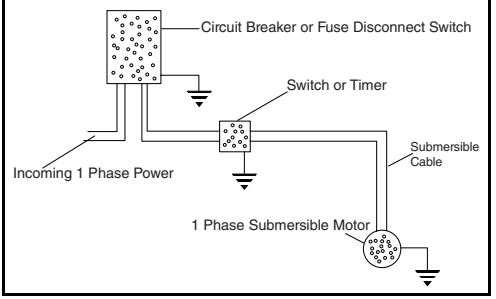


Electrical Connections

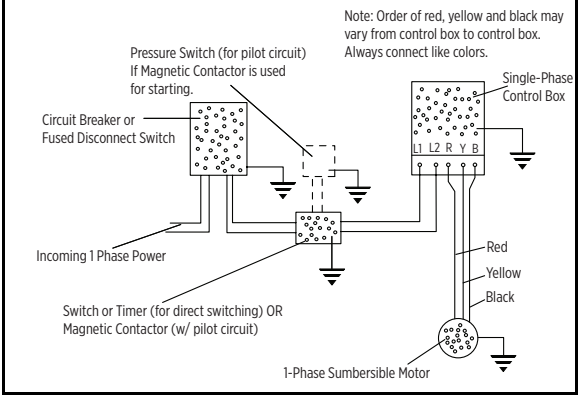
Employ a licensed electrician or water systems contractor to ensure installation is done properly. All wiring must be done in accordance with national and local electrical codes. Follow the cable splicing kit instructions.

1. Make sure the power supply corresponds with the electrical rating of the motor.
   - For 3-wire, single phase pumps, check electrical rating of the control box.
2. Install a fused disconnect switch or circuit breaker.
3. Ground the pump and the distribution panel with the motor's green conductor.
4. For two-wire pumps, make wiring connections.
5. For three-wire, single-phase pumps, make wiring connections and install the control box.
   - Mount in an area protected from rain, snow, high temperatures, and temperatures below 14 °F (-10 °C).
   - Refer to the control box's wiring diagram.
   - Install a magnetic contactor if the pressure switch is not sufficient to handle the motor's electrical rating. The pressure switch is then used as a pilot circuit to control the contactor.
6. Install a separate lightning arrestor close to the wellhead.
7. Test the unit. Brace pump shell and apply power momentarily.
8. Ensure pump rotation is clockwise when viewed from pump discharge.
9. Place the motor and pump labels in the circuit breaker box for future reference.

2 WIRE, Single Phase Wiring Diagram



3-WIRE, Single Phase Wiring Diagram



Physical Installation

Refer to "Typical Installation" on page 2.

1. Confirm that the motor's lead wires are secure under the pump's lead guard.
2. Install a pressure tank per manufacturer's recommendations.
3. Attach a 3/16" diameter to 1/4" diameter steel safety cable to pump.

   IMPORTANT: If using a different type of cable, confirm the system weight does not exceed the limit.

4. Attach schedule 40 galvanized pipes to pump for installations up to 600 ft (180m).
   - For deeper settings, use schedule 40 pipe for the bottom 600 feet (180m) and schedule 80 for the remainder.

- If using plastic pipe, refer to manufacturer's recommendations for depth and pressure.
- Keep pipes clean and free from debris and use pipe sealant on all fittings.

5. Install system check valves.

   IMPORTANT: Install only positive sealing check valves. Never use swing type check valves.

   - For installations more than 100 ft (60m), install check valves in the drop pipe at intervals of 100 ft (60m) or as specified by the manufacturer.
   - Install an inline check valve in the discharge line within 25 ft of the pump and below the draw-down level of the water supply.
   - If permitted by local codes, install a relief valve between the wellhead and the pressure tank.
   - 4" submersible pumps with a 1-1/4" or 2"discharge contain a spring-loaded removable poppet style check valve assembly. Refer to "Maintenance" on page 5 to remove valve for drain back.
6. Install a torque arrestor just above the pump.
7. Fasten the electrical cable to the drop pipe with clamps or appropriate tape every 10 ft (3m).
   - Take care not to scrape or pinch the cable against the well casing.
   - Keep the cable slack when using plastic drop pipe to allow for stretching.
   - Use an ohmmeter or megger to make insulation and continuity checks.
8. Lower pump at least 5 ft (1.5m) from bottom of well and above well screen or casing perforations.
9. Test the well. Refer to "Well Test" on page 4.
10. Place a sanitary well seal or pit-less adapter over top of well per manufacturer's recommendations.

Well Test

NOTICE

Risk of damage to pump or other equipment.

- Never run pump unless it is completely submerged in water to avoid pump and motor damage
- Air drawn into the pump can cause an airlock under certain conditions.

1. Install a partially opened gate valve on the end of the pipe.
2. Start the pump and slowly open valve to full flow.
3. If the discharge water is not clear within 30 minutes, stop pump and take necessary steps to correct.
4. Close valve until maximum required system flow rate is obtained.
5. Ensure the pump output is not greater than the yield of the well (low-yielding) by monitoring the well draw-down level at the maximum system flow rate.
   - Refer to "Low-Yielding Well" on page 4 to correct issue.

Low-Yielding Well

1. Install a smaller pump. Consult licensed water systems professional contractor for sizing.
2. Install additional length of drop pipe to place pump lower in well.
3. Install a Franklin Pumptec or similar electronic run dry sensor.
4. Install a floatless liquid level control to work with the pressure switch.
5. Install a flow control valve in the discharge line upstream from the pressure switch to restrict output.
   - A pressure tank with a bonded diaphragm, air cell, or water bag is recommended.
6. Install a low-pressure cut-off switch.

MAINTENANCE

Poppet Check Valve

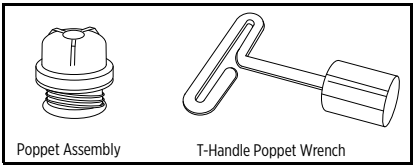
NOTICE

Risk of damage to pump or other equipment.

- Fluid draining back through the pump can cause the pump to rotate backwards. If pump/motor starts during this time, damage to the pump can occur.

Use a T-Handle Poppet Wrench (part no. 106964101), ordered separately, or standard needle nose pliers to remove the poppet assembly by turning clockwise.

If reinstalling, tighten to 15 inch-pounds.



Troubleshooting

Problem	Probable Causes	Corrective Action
Pump fails to start	Electrical trouble	Call dealer or electrician
	Draw-down protection device has pump turned off	Make sure system check valves are correctly installed or uninstall draw-down protection device. Reset low pressure cutoff switch (if installed).
	Overload tripped	Reset overloads and low pressure cutoff switch (if installed).
Pump fails to deliver water or reduced output	Clogged intake screen	Clean intake screen.
	Insufficient well yield	Shut off system. Refer to "Low-Yielding Well" on page 4.
	Worn pump	Replace pump.
	Low voltage	Make sure the power supply corresponds with the electrical rating of the motor. For 3-wire, single phase pumps, check the control box.
	Incorrect rotation (3-phase)	Interchange any two leads at the magnetic starter.
Pump cycles too frequently	Pressure drop between pressure switch and tank.	Check system for a plumbing leak and correct as necessary.
	"Cut-in" or "Cut out" pressure too high.	Follow manufacture's instructions to properly set the on/off cycle of the pressure switch.
	Waterlogged pressure tank	Follow manufacturer's instructions on resetting/establishing proper air pressure setting for the tank.
	Electrodes of floatless liquid level control too close together.	Follow manufacture's recommendation for installation of the electrodes on the level control.
	Tank too small.	Install pressure tank with bonded diaphragm, air cell, or water bag.
Overloads trip	Electrical trouble	Call dealer or electrician.
Pressure switch cycles rapidly	Pressure switch too far from pressure tank	Adjust air charge of tank to manufacturer's recommendations.
Backspin	Failed or no check valve	Install new, non-swing type check valve(s).
Upthust	Check valve drilled	Install positive sealing check valves only.
Water Hammer	Lowest check valve leaks or is more than 30 ft above water	Shut system down and contact pump installer to correct issue.
	Check valve drilled	Install positive sealing check valves only.

INSTALLATION RECORDS

Purchased From	
Date of Installation:	
Pump Model Number:	
Well Inside Dia. (in/mm):	
Depth of Well (ft/mm):	
Depth of Water (ft/m):	
Pump Setting (ft/m):	
Drop Pipe Size:	
Wire Size (pump to control box):	
Wire Size (control box to power source):	
Horizontal Offset (between well & house):	
Materials of Construction	
3-Phase Panel Info: (Standard, Soft Start, or VFD)	
Power Supply Options: (Utility, Generator, or Alternative Energy Source)	
Make of Pump	
Amps	
HP	
Volts	
Ph	
Make of Control Box	
HP	
Volts	
Power Supply	
Volts	
HZ	
Pressure Switch (PSI)	
Cut-in	
Cut-out	

NOTES

For technical assistance, parts, or repair, please contact:

800.348.2420 | franklinwater.com

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