

FRANKLIN AID



Franklin Electric



Franklin Application/Installation Data (AID) ... For The Professional Driller-Installer

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Cold Weather & Submersibles

As we begin our 18th year of Franklin Aid, we would like to ask for your help. In some publishing circles, it is said that every year 10% of a readership either changes addresses or employment status. Franklin Electric has not formally updated our mailing list since 1989. If the publishers are correct, we should have had 100% turnover of our readership! Now we know that hasn't happened, but if you are receiving duplicate mailings, copies for someone no longer in need, or envelopes with misspelled or incorrect addresses please call us on the Hotline and let us know.

Submersible Motors

Franklin Electric submersible motors for use in standard water well applications are filled with a water-based mixture. This mixture is used to lubricate the motor's internal bearing system. Franklin's 4-inch motor line is filled with a combination of 90% de-ionized water and 10% food-grade antifreeze called Propylene Glycol. Franklin's 6-inch and 8-inch motors are filled with a 50/50 mixture.

Propylene Glycol is and has been used in pharmaceuticals, ice cream, make-up, and soft drinks. **Propylene Glycol is not car antifreeze. Car antifreeze is Ethylene Glycol, which is highly poisonous and must never be used in a well with potable water.**

Using the water/Propylene Glycol mixture does two things for the motor. First it keeps the motor from freezing during storage. Second, it increases the lubricating properties of the water. The increased lubricity helps maintain longer bearing life.

With the factory-installed fill solution, our submersible motors are kept from freeze damage in temperatures as low as -40°F (-40°C). However, as the temperature drops below 27°F (-3°C) the fill solution will begin to turn to slush and the shaft may no longer turn. But remember, no damage to the motor should occur with the factory-installed, undiluted fill solution.

Franklin Electric submersible motors designed for use in fresh water are also designed with the ability to pull water from the well into the motor should the level inside the motor drop. This is done through a filter and check valve assembly located in the top of the motor. On 4-inch motors, this assembly is located under the top stainless steel cover. On 6- & 8-inch motors, this assembly is located on the side of the top end bell or casting. The filter portion is inside the white plastic plug seen on the side of our larger motors.

During operation of the motor, the normal heating that takes place causes the fill solution to expand. The diaphragm in the motor will accept most of this expansion, although some of the fill solution may pass out of the motor around the seal. After the motor is turned off and has cooled, the check valve can open to allow any necessary filtered water back into the motor. How fast this exchange occurs and how often it occurs depends on run times, frequency of starts, and other factors surrounding the operation of the pumping system.

The filter/check valve assembly is only seen on fresh water or water well motors. On corrosion resistant Ni-Resist and 316 Stainless Steel motors, the filter is replaced with a sealed pipe plug. This is done because the typical environment for a corrosion

resistant motor is in water you do not want inside the motor. That is, this water is normally very aggressive and could cause internal damage.

Based on normal operation of a check valve, keep in mind that a water well motor that has been in service for any amount of time may not have proper freeze protection. If you have to pull one and are working outside in freezing temperatures, store the motor indoors or in the cab of your truck until it is installed again. Also remember new motors stored in cold

temperatures or transported to job sites in the back of a truck may have shafts which are hard to turn. Once installed, the 50°F (10°C) water typically found in the well will thaw the motor, but remember it won't happen immediately. The best solution is to store motors in areas where they won't freeze.

If you are working with fountains, another option for winter storage is to sink or weight the motor to the bottom of the pond. If you do this, just be sure to place the motor below the freeze level.

Control Boxes

Franklin single-phase control boxes are designed to operate in outdoor installations. However, when the control box is mounted in an extremely cold location, you may experience a reduction in motor starting torque. This is due to the effect cold temperature has on an electrolytic starting capacitor. As the outside temperature drops below 14°F (-10°C) the capacitor begins to lose the ability to start the motor. If the outside temperature drops to -25°F (-32°C), the motor's starting torque drops about 20%. At -40°F (-40°C), the starting torque drops approximately 65% and at -80°F (-62°C), the starting torque drops almost 100%.

If the control box is to be mounted where the temperature may fall below 14°F (-10°C), it is recommended an

enclosure be built around the control box. In addition, we recommend using a small light bulb or heat tape to warm the enclosure. Without proper starting torque--because of cold weather or otherwise--motor overloads may trip and you may not get water to the surface.

QD Control Box



Standard Control Box



Deluxe Control Box



TOLL-FREE HELP FROM A FRIEND

Phone Franklin's toll-free SERVICE HOTLINE for answers to your installation questions on submersible pump motors. When you call, a Franklin expert will offer assistance in troubleshooting submersible systems and provide immediate answers to your motor application questions.

Franklin Electric SERVICE HOTLINE 800-348-2420 FAX 219-827-5102
www.franklinelect.com



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