

FRANKLIN AID



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

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LST or Submersible? Go for the Sub!

Line shaft turbines (LSTs) use an above-ground motor to turn a drive shaft that reaches down the well casing to the submerged pump. A submersible, of course, uses a combined motor and pump assembly completely submerged underwater. Although LSTs have their applications, in most cases a submersible motor makes more sense. Here's why:

Submersible pumps are easier to install.

Complete Unit - Since a submersible motor and pump is installed as a complete unit, it's easier to handle than an LST pumping system.

Smaller - To compensate for its lower RPM, an LST requires more stages, larger turbine bowls, and larger casing.

Less Complex - An LST has many more moving parts than a submersible. The *shaft* extends the length of the well, and must be stabilized throughout, with *bearings* at specified intervals. If it is oil-lubricated, the shaft must rotate within a *bearing tube* stabilized by *retainers*, with the bearing tube itself mounted inside the water delivery pipe.

An *anti-reverse coupling* is required in an LST to prevent back-spin of the shaft (which can damage bearings and cause bowls and shaft to unthread). To prevent water from flowing back down the well where it can disturb sand and other debris, the system should have *check valves*, although many LSTs do not.

Well Casing - To accommodate the larger diameter of an LST, along with the associated drive shaft hardware, the size of the well casing must be larger than with a submersible. In addition, a submersible may be installed in a well that isn't completely straight.

This leads to the equipment required for a submersible installation being smaller and lighter. In many cases, the installation time for a submersible is less than half that necessary for a line shaft pump.

No Pump House - In many cases, an LST will require a pump house, and this can be one of the largest installation considerations. Since no pump house is required for a submersible, this saves noise and construction costs, and dramatically reduces the future risk of damage from weather, vandalism or accidents. Having no pump house means having a cosmetically-clean installation.

Check Valves - Many submersible pumps already have check valves built in, to prevent water from flowing back down the pipe and causing the motor to backspin.

Submersible pumps are easier to maintain.

Routine Maintenance - Over time, nothing will be cheaper to maintain than the hassle-free submersible pump. Whether it has a vertical hollow shaft or a standard horizontal motor with a right-angle gear head, a **line shaft turbine** routinely requires *oil lube*, *packing*, and *impeller adjustments*. On the other hand, because **Franklin submersible motors** are designed to spend their entire lives underwater, they have a constant source of lubrication and require zero routine maintenance.

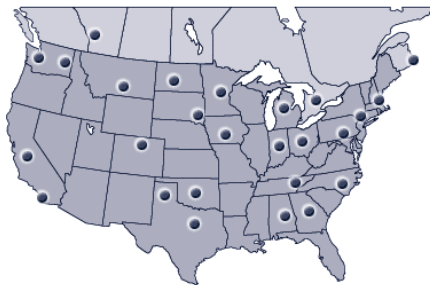
No Spare Parts - No routine maintenance for submersible motors means not having to keep an expensive inventory of spare parts.

Submersible pumps are efficient.

You may have heard that the LST motor is more efficient than the submersible motor. As a general rule, above-ground motors are slightly more efficient

2001 Seminar Schedule Now Available!

Franklin Electric is pleased to announce its annual fall seminar schedule. This year, 28 seminars will be held across the United States, Canada, and Mexico. Each seminar will cover both single- and three-phase motors, and will address topics from basic electricity to installation to troubleshooting. You may even qualify for continuing education credit.



If you have not yet received your schedule in the mail, call our **Submersible Service Hotline** at 1-800-348-2420 to order your free copy. Or better yet, visit us online at www.franklin-electric.com for dates, locations, and instant registration. Remember, these sessions are available at no cost to you, and lunch and refreshments are even included. We hope you will be able to join us this fall for a day *well* spent!

than submersible motors. However, in actual LST applications, this motor efficiency is lost to losses in the line shaft. These losses are typically 1 to 2 horsepower per 100 feet of depth, which generally exceed the losses in the submersible's drop cable. Even though there will be some losses in the submersible drop cable, these are minimal if the cable is properly sized.

Lower Thrust Loads – With no shaft to support, submersible installations have lower thrust loads than LSTs.

Fast Starting – Submersible motors have a low moment of inertia for rotors, which means faster and easier starting.

No Noise – Because they reside underground, submersibles do not generate the noise of an LST and can thus be placed almost anywhere.

Submersible pumps are economical.

Pump – Although the LST motor is usually less expensive than a submersible motor, the pump itself costs more due to the required larger diameter and number of stages.

Drop Pipe – The cost of the hollow tube and drive shaft may be up to *seven times* that of the drop pipe and cable of a submersible. The deeper the well, the longer and costlier the shaft.

Installation and Maintenance – Installation and maintenance contribute heavily to the overall cost of the LST. The longer, straighter bore hole is more expensive to drill, and its extended installation time adds to labor costs. When it is necessary to pull an LST from the well, the difficulty in doing so inflates maintenance expenses that are, as mentioned earlier, already high.

Thus, in nearly every installation where electricity is available, submersible pumping systems are less expensive to purchase, install, operate, and maintain than their line shaft turbine counterparts.

Subs just make more sense.

All of these factors contribute to the logic of making a submersible pumping system your first choice. For more information on the advantages of a submersible, contact your pump manufacturer or call our Submersible Service Hotline at **1-800-348-2420**.

Introducing...



Dewey Randall
Headquarters
Service Engineer

In our last issue, we told you about Bob McClain's move from the Hotline to Field Service. That left us with a vacancy on the Hotline that we needed to fill with the right person and quickly! Lucky for us, we found that person right here at home. **Dewey Randall** comes to us from within Franklin Electric, where he has spent the last 12½ years in the Marketing Department of our Engineered Motor Products Division. Dewey's technical knowledge of electric motors is excellent, and we look forward to the fresh insight he will bring to the Hotline. You can reach Dewey by calling the Submersible Service Hotline (800-348-2420) or by e-mail (drandall@fele.com). Please join us in welcoming him to our Submersible Field Service team.

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
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