

RIVER INSTALLATIONS

Franklin Electric submersible electric motors can be successfully installed into rivers and creeks providing the following additional recommendations are taken into consideration during the system design and installation of the pump-set.

- Protect pump and motor assembly from passing river debris and accumulating around motor base.
- Position to allow for the rise and fall of water.
- Pump suction not to create vortexing/cavitation conditions - NPSHA
- Do not place motor on the river bottom, allow 2-3 metres above river bed.
- Shroud must be always fitted and proper screening.
- Silicon Carbide seals for sand/grit resistance.
- Motor lead and splice must be fully submerged.
- Correct overload protection, Class 10 or better.
- Decrease starts per 24 hour period to 10 or less.
- Subtrol Plus motor protection. (*extended warranty not available for rivers and creek applications*)

River and creek installations are invariably shallow and can be set at an angle close to the horizontal, with the motor very close to the river bed with very little water coverage over the pump. The pump and motor are at the mercy of the shifting river bed, floating debris and tend to pump more silt, sand and clay than bore installations.

The motor should always be installed with a flow sleeve/shroud to ensure adequate cooling flow across the length of the motor. Centering bolts should be used to ensure the motor is centralised within the sleeve ensuring clearance around the circumference of the motor. Laying the motor on the side of the sleeve can create disproportional heating of the motor and lead to failure.

The installation should be set ideally 2-3 metres above the river bed. This allows for the shifting river bed and build up of debris below the motor without interfering with the cooling flow over the motor. Motors set very close to the river bed tend to clog up with sand/silt around the diaphragm and thrust housing, leading to thrust bearing damage. Larger accumulations of river sand/silt/debris will bury the motor/shroud causing choking of the pump suction with increased current draw allowing the stator and windings to overheat resulting in motor failure.

The shroud should be screened to prevent/minimise the ingress of any debris, sand and silt as well as being regularly inspected and cleaned to ensure foreign matter is not allowed to build up. However, too close to the surface may cause a vortex to form when pumping, resulting in aeration of the water and cavitation, again leading to thrust bearing and upthrust damage.

The excess pumping of sand and silt can also cause abrasion of motor parts, such as shaft seals, radial bearings and thrust bearings from solid particles in the water, and can lead to rapid wear, loss of performance and early motor failure. Sand settling into the pump running clearances can wedge tight and prevent the motor from starting the pump. For this reason we recommend the use of Silicon Carbide mechanical seals or the Sand Fighter Sealing System.

As the mounting position becomes further from the vertical and closer to horizontal, the probability of shortened up-thrust bearing life increases. For normal thrust bearing life expectancy with motor positions other than shaft-up, the frequency of starts should be reduced to fewer than 10 per 24 hour period and systems that can run even for short periods at full speed without thrust towards the motor should be avoided.

The motor lead must under all conditions be fully submerged and never be placed out of the water without Franklin Electric's authorisation. All three phase motor installations must also be protected by class 10 or better overloads, which are ambient compensated, protect against single phasing and will trip at 120% of the setting. **Incorrect or no overloads voids the motor warranty.** The installation of lightning arrestors on three phase installations is also highly recommended.