



## The submersible pump is especially suited to deepwell and booster service for industrial, commercial, mining and municipal water systems.

### Applications

The submersible pump utilizes a submersible motor coupled directly to the bowl assembly and is designed to operate completely submerged in the fluid being pumped. Power is supplied to the motor by waterproof electrical cable. In deepwell applications the pump motor and cable are suspended in the well by the riser pipe. Booster applications involve installing the unit in a steel suction barrel or horizontally in a pipeline. Since the entire unit is either enclosed or below the surface of the ground, there are several applications where the submersible pump has many advantages:

- Extremely deep wells where problems with shafting are likely to be encountered (such as crooked walls).
- In installations where flooding would damage standard above ground motors.
- Applications such as booster pumps which require quiet operations.
- Installations where there is little or no floor space.
- Horizontal pipeline booster pumps placed directly in the pipeline where conditions required a minimum amount of excavation or use of land surface.
- Dewatering applications.

### Typical operation

Submersible pumps may be operated and controlled in the same manner as any other type of turbine pump in similar applications. No special consideration peculiar to the submersible is generally necessary, with the exception of the motor starting equipment. The motor, being installed in the pumped fluid, may not be subjected to the same ambient temperature as the overload relays in the starter. It is usually best to use current sensing type overload relays under this condition rather than the thermal type.

### Construction details

The **surface mounting plate** holds the weight of the suspended unit and incorporates an elbow or fitting connected to the discharge piping. The surface plate also provides a junction box for terminating the electrical cable from the pump motor.

The **riser pipe** connects the submersible pump to the surface plate. The pump discharges through this pipe to the surface. It may be several hundred feet long in a deep well application or a short connection piece in a booster pump.

The waterproof **electrical cable** extends from the top of the unit to the surface.

The **pump bowl assembly** consists of single or multiple stages to meet exact system head requirements. A wide range of bowl sizes is available to meet system compacity requirements. Standard construction includes cast iron bowls with bronze impellers on a stainless steel pump shaft. The bowl assembly is also available in many high alloy materials such as Super Duplex SS-2507.

The submersible **electric motor** is attached to the lower end of the bowl assembly becoming an integral part of the submersible unit. The motor thrust bearing carries the thrust load of the pump.

For booster service a **suction barrel** may be utilized. Its size will depend on a specific installation requirements. For high-pressure applications the suction barrel is extended to accommodate additional bowls.

When designing a submersible installation, consideration should be given to the manner in which the fluid will enter the pump and flow around the motor. The motor must have sufficient flow around its exterior for proper cooling. Other installation requirements are generally similar to other types of vertical turbine installations.

### Submersible pump settings

#### Flow

up to 7000 GPM  
(1590 m<sup>3</sup>/hr)

#### Pressure

up to 750 psi (52 Bars)

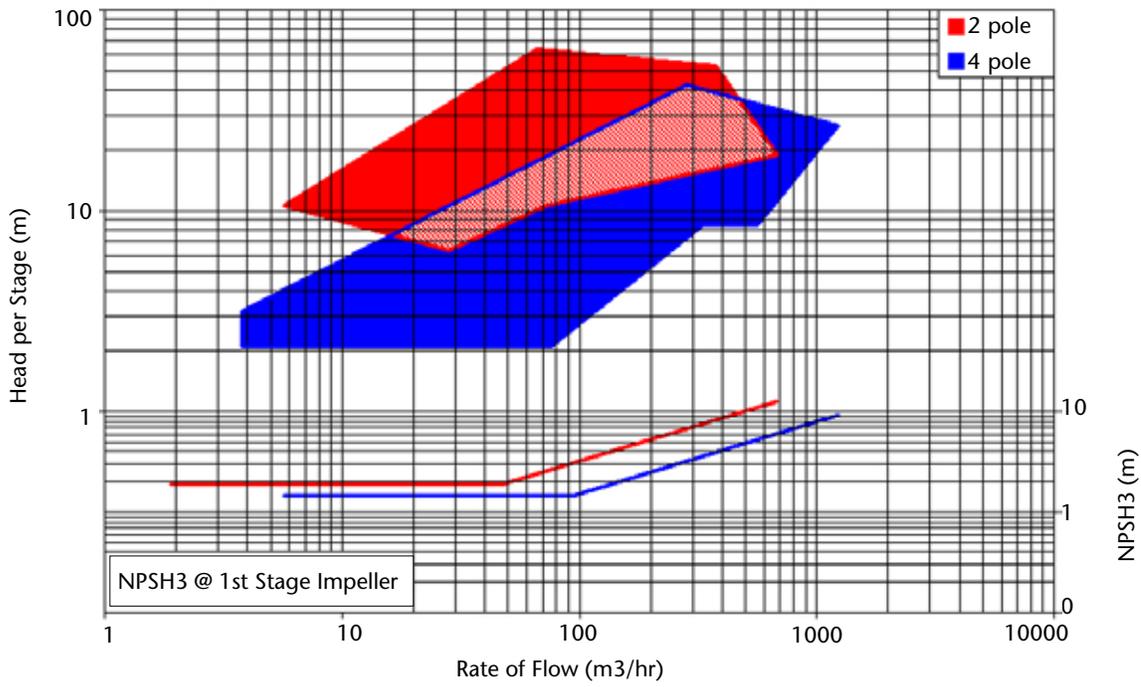
#### Settings

up to 1500 ft (457 m)

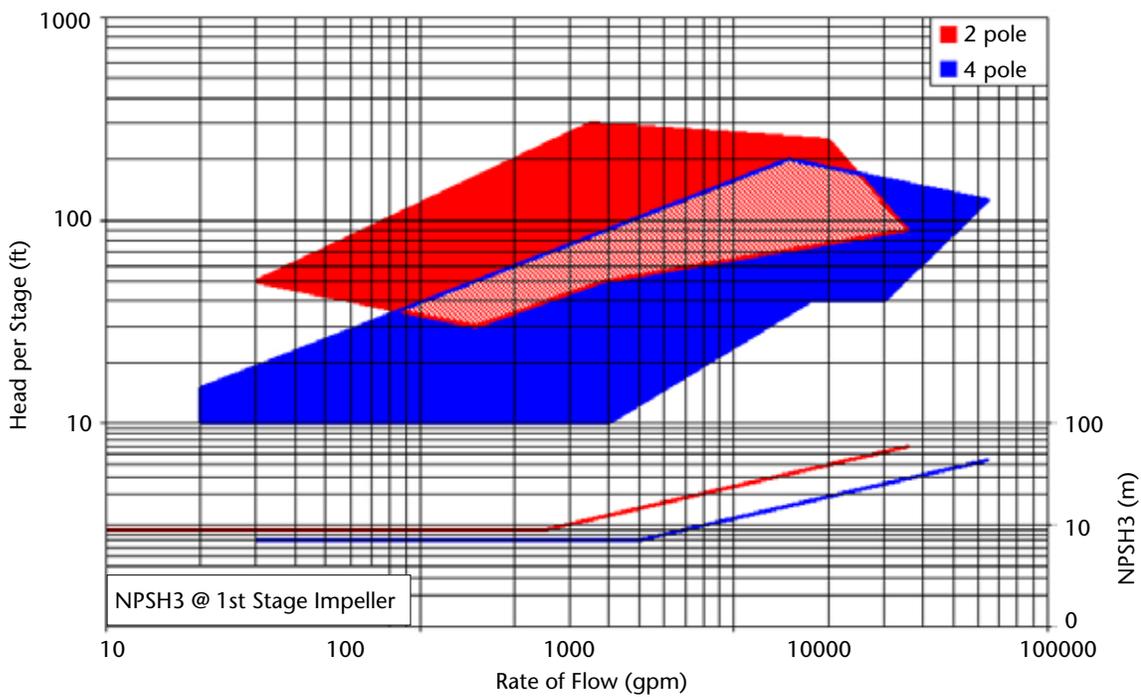
#### Liquid

fluid with a specific gravity from .99 to 1.07

**Floway Coverage Chart 50Hz**



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