

# Submersible Pump



The SBE 5T pump module is a compact unit consisting of a centrifugal pump head and a long-life, brushless, DC ball bearing motor contained in a titanium pressure housing useable to 10,500 meters. The pump impeller and electric drive motor are coupled magnetically through the housing, providing high reliability by eliminating moving seals.

## APPLICATIONS

The SBE 5T is a primary component in Sea-Bird's SBE *9plus* CTD Underwater Unit and SBE 25 Sealogger CTD. It is also used as optional equipment on the Seacat product line. The pump flushes water through the conductivity cell at a constant rate, independent of the CTD's motion, improving dynamic performance. The pump may also be suitable for custom applications, where pressure heads are less than 300 cm of water and flow rates are less than 100 ml/sec.

## CONFIGURATION

The SBE 5T is configured for various applications by selecting either standard or low voltage options, and one of several motor speed options. Speed options of 1300, 2000, 3000 or 4500 rpm have been established to meet flow rate requirements for Sea-Bird applications. Other speeds can be set by adjusting a potentiometer.

## OPERATION

Motor speed and pumping rate remain nearly constant over the entire input voltage range (less than 1% change in speed for a 1 volt change in supply voltage). The unrestricted flow rate with no head is approximately 100 ml/second at 2000 rpm. Flow changes are nearly linear with changes in speed. With unlimited power supply current, turn-on surge is about 1.8 amperes (maximum), which drops to steady state in about 0.25 seconds. If power supply current is limited to approximately 200 milliamps, the motor will come up to speed in about 0.30 seconds. A series diode is installed in the input power line to prevent damage if the wires are accidentally reversed. Pumping rates and motor current for Sea-Bird's various applications are given on the next page.

## SPECIFICATIONS

Standard input range (#3 winding, 1300 - 3000 RPM): 10 - 18 VDC

Standard input range (#3 winding, 4500 RPM): 13 - 18 VDC

Low input range (#5 winding - 1300, 2000 RPM only): 6 - 16 VDC

Weight: 0.7 kilos (1.5 lbs.) in air, 0.3 kilos (.65 lbs.) in water



