General
Submersible pumps are widely used for deep wells, construction projects and factory applications, because of their ability to be used under water.

The merits of submersible pumps have been recognized and they are now being used at public waterworks, sewerage and agriculture projects. Torishima manufactures its first large submersible pump and the first of its kind in Japan in 1963 after many years' research. We have supplied hundreds of submersible pumps to various users throughout the world. Submersible pumps provide at great a reliability factor as ordinary pumps installed on the surface, and they have established a solid reputation for superior service under all conditions.

Operating Range
Sizes I.D. 150 ~ 1500 mm
Total heads H 2 ~ 70 m
Capacities Q 1.5 ~ 350 m³/min

Applications
Public waterworks, sewerage . . . Water intake, water distribution, water supply, booster, drainage
Agriculture . . . . . . . . . . . . . Irrigation, drainage
Thermal or unclear power plants . Water intake, water circulation, water supply for miscellaneous uses.
Construction . . . . . . . . . . . Water supply and drainage
Industry . . . . . . . . . . . . . . . . . Water supply, cooling water, drainage
Buildings . . . . . . . . . . . . . . Drainage, waste water drainage

FEATURES:
1. Since both the pump and motor are submerged, and only delivery bend is above ground, no pump house is required. Cranes are not required for installing medium and small capacity types.
2. Compact and lightweight. Use of heavy duty bearings allows vertical, horizontal or inclined installation. Surface installation is also possible.
3. Minimum installation space required, reducing construction cost substantially.
4. Since both pump and motor are submerged, noise almost totally eliminated.
5. Simple construction and the elimination of an intermediate shaft simplifies assembly and disassembly, and allows unskilled personnel to service the unit.
6. Starting is easy since the pump is submerged.
7. Unattended operation, e.g. automated operation and remote control operation are possible.
8. Various combinations of mixed flow or axial flow pumps with perfect water sealed or oil sealed motors by mechanical seals are available to allow you to select the type most suitable for your particular requirements.
9. Due to complete sealing, there is no fear of water entry into the motor.

SMV type Submersible Pump

Construction (water-sealed)
Bearing
Mitchell type axial thrust bearings of solid lubricant and stainless steel are used to support axial thrust forces while radial thrust is supported by special bronze cylinder bearings.
Both bearings are lubricated and cooled using the water used for motor sealing.

Insulation:
Special waterproof insulated wire is used for voltages up to 3,300V.

Antirust treatment
Anticorrosion material and special waterproof paint are applied on the pump.

Shaft seal
The double shaft sealing system consists of two chambers. Motor chamber and two buffer chambers are sealed from pumping water with a sand guard, oil seal and two mechanical seals respectively. Water can be fed into the upper buffer chamber from a head tank installed on the ground.

Protection devices
For added safety under special conditions, the following protective devices can be attached to the pump. Overcurrent preventive device, insulation-resistance detector, vibration detector, thrust bearing wear detector, sealing water leakage detector, coil burn preventive device and antifreeze system for sealing water.

Respiration of sealing water
To compensate for sealing water expansion or contraction due to temperature changes in the motor, the bottom buffer chamber is connected with the outside air via a pipe, to adjust sealing water respiration.

Construction (oil-sealed type)
Bearing
No bearings come into contact with water. Strong angular contact ball bearings (thrust bearings), ball bearings or roller bearings are used. Compared to water-sealed types, it has a simple construction.
Pumps of this type can endure high speed operation and high loads, and can be installed horizontally, vertically or inclined.

Insulation method
Terminal box has double casing for positive insulation, and easy disconnection of cable. Heavy-duty underwater cable is used for more positive, long time insulation.

Shaft seal
In addition to our exclusive mechanical seals, slingers, and dust seals are used to remove sand and mud from the sealing area.

Protective device
The head tank for oil lubrication, installed on the ground is located higher than the water level, to assure that no outside water can enter into the motor.
If any mechanical seal malfunction or other failure occurs in any chamber, the nature of the failure and its location can be quickly determined by checking the oil level of the relevant head tank. If a liquid level relay is attached to the head tank, the pump can be controlled remotely.
PERFORMANCE CHART

SMV type (Water-sealed type, oil-sealed type)

50Hz

60Hz

Total head H/m

Capacity Q m³/min

Pumps other than those listed in the chart are also available. Please contact us for details.

Example of denotation of pump bore, type.

60–15–8
- Motor poles
- Motor capacity (kW)
- Pump bore (x 10mm)

Water-sealed type

Oil-sealed type
SMRV type submersible pump

Features
1. With its oil-sealed motor, this type is suitable for low-to-medium heads with pumps of 200-800mm or for high heads with pumps of less than 200mm.
2. Simple construction. The suction mouth is placed between motor and pump.
3. This type is designed so that the penetrating parts of the motor shaft and sealing is at the low pressure side of the pump. This provides a higher degree of safety and allows it to be used as multi-stage pump.
4. No motor outer casing is required, so gross weight is lighter and the cost is lower.
5. When a high head is required, this pump can be executed as multi-stage pump.
6. This pump is for underwater operation only.

7. Installation examples

TORISHIMA PUMP MFG.CO.,LTD.
Head Office & Works: 1-1-8, Miyata-cho, Takatsuki City, Osaka, Japan. Phone: 072-695-0551 Fax: 072-693-1286

TORISHIMA SINGAPORE
SINGAPORE BRANCH 30 Ubi Crescent #01-02 Ubi Techpark Singapore 408566 Phone: (65)6779-0123 Fax: (65)6779-6900

TORISHIMA HONG KONG
TORISHIMA (HONG KONG) LIMITED Unit 603, 6/F., Tower III, Enterprise Square, 9 Sheung Yuet Road, Kowloon Bay, Kowloon, Hong Kong Phone: (852)2795-1838 Fax: (852)2754-3293

TORISHIMA MALAYSIA
TORISHIMA MALAYSIA SDN.BHD Suite 1906, 19th Floor Kenanga International Jalan Sultan Ismail 50250 Kuala Lumpur, Malaysia Phone: (603)2715-0068 Fax: (603)2715-0019

TORISHIMA INDONESIA
P.T. TORISHIMA GUNA INDONESIA JL Rawu Sumur Timur No.1, Pulogadung Industrial Estate, P.O. Box:1160 JAT., Jakarta 13390, Indonesia Phone: (62)21-460-3963,(62)21-460-3964,(62)21-480-0205 Fax:(62)21-460-3937

P.T. TORISHIMA GUNA ENGINEERING JL Rawu Sumur Timur No.1, Pulogadung Industrial Estate, P.O. Box:1160 JAT., Jakarta 13390, Indonesia Phone: (62)21-460-3963,(62)21-460-3964,(62)21-480-0205 Fax:(62)21-460-3937

P.T. GETEKA FOUNINDO JL Rawu Sumur Timur No.1, Pulogadung Industrial Estate, P.O. Box:1160 JAT., Jakarta 13390, Indonesia Phone: (62)21-460-3963,(62)21-460-3964,(62)21-480-0205 Fax:(62)21-460-3937

TORISHIMA U.A.E
MIDDLE EAST OFFICE 5th Floor, office No.503, Al Salmeen Golden Tower, P.O. Box:72179, Electra Street, Abu Dhabi. U.A.E Phone: (971)2-6743880 Fax:(971)2-6743881

TORISHIMA U.K.
EUROPE OFFICE 20/23 Woodside place Glasgow G3 7QF Scotland United Kingdom Phone: (44)141-304 4546 Fax:(44)141-332 4927

TORISHIMA U.S.A.
U.S.A. OFFICE 828 Daniels Road, Charlton, MA01507, United States of America. Phone: (1)866-374-1130 Fax:(1)508-248-9321

Recycled paper