

SERIES
TRN/BER
PLS with Aeration Kit

SUBMERSIBLE AERATORS



Submersible Self-aspirating Aerators

Tsurumi's submersible aerators are used at wastewater treatment facilities to aerate and agitate industrial wastewater, livestock wastewater and other water that needs treating. More specifically, they provide the primary aeration in reactor tanks and aeration tanks at the heart of the water treatment process, and aeration and agitation in flow regulating tanks. These aerators produce tiny bubbles in the wastewater by furiously mixing in air they draw from above the wastewater's surface, and discharge the aerated wastewater to the outside. The mixed flow of air and water contains a high amount of dissolved oxygen and makes aeration and agitation very efficient.

Tsurumi offers two kinds of aerators in three series. The TRN-series features Tsurumi's baseline submersible aerators that produce a high amount of dissolved oxygen and enable efficient aeration and agitation, while the BER-series and the PLS-series with aeration kit are submersible jet aerators that generate a powerful unidirectional flow. All three series are built to draw air themselves while submerged in wastewater, so they can aerate and agitate wastewater without requiring a blower, which greatly reduces both installation space and noise.



The TRN-series is built to draw air on its own by generating negative pressure behind a special semi-open impeller with the flow the impeller creates. The air drawn from above the wastewater's surface is furiously mixed in with the wastewater under the mechanical force of the impeller and guide vanes, to form tiny bubbles. The aerated flow is equally discharged in all directions and the synergistic effect of the airlift and convection that this mechanism causes produces a high amount of dissolved oxygen and enables efficient aeration and agitation.

The BER and PLS (with aeration kit) series combine a submersible pump and venturi-jet based diffuser. They draw in air from above the wastewater by generating negative pressure around the nozzle with the flow from the pump. The air is mixed into the wastewater by this jet injector mechanism and sprayed underwater by the diffuser, to aerate and agitate the wastewater at the same time. In the process, tiny bubbles form inside the diffuser and increase the amount of dissolved oxygen in the wastewater. The powerful unidirectional jet that results can efficiently agitate long narrow tanks, as well as wider areas when multiple units are used.

Despite their simple structures, Tsurumi submersible aerators are packed with original technologies that have been tested and proven over many years of R&D and market use, such as an anti-wicking cable, dual inside mechanical seals with silicon carbide faces and Oil Lifter. Moreover, they are designed and built for the degree of reliability and durability required for 24 hour-a-day continuous operation. Plus, when it is time for maintenance, it suffices to raise just the pump from the tank; the tank does not need to be drained as is the case of a plate/tube diffuser, so these aerators are economically beneficial in terms of running costs.

TRN: Submersible aerators that generate tiny bubbles to produce a high amount of dissolved oxygen and enable efficient aeration and agitation

BER: Submersible jet aerators optimized for pre-aeration and prevention of bacterial spoilage

PLS with Aeration Kit: Lightweight, compact resin-made submersible jet aerators for shallow water application

Selection Table

| | | Submersible Aerators | Submersible Jet Aerators | |
|---------------------------|----|---|--|---|
| | | TRN | BER | PLS with Aeration Kit |
| Air-inlet Bore | mm | 32 - 150 | 25 - 50 | 25 |
| Motor Output | kW | 0.75 - 40 | 0.75 - 5.5 | 0.15 - 0.75 |
| Pole | | 2 • 4 | 2 • 4 | 2 |
| Impeller | m | Special Semi-open | Channel | Vortex |
| Max. Water Depth | | 3.5 - 6.0 (Capable of deeper water tank in combination with a blower) | 3.5 - 6.0 | 1.2 |
| No. of Outlets | | 6 • 8 (Multiple Directions) | 1 (One Direction) | |
| Guide Rail Fitting System | | | ● | |
| Features | | <ul style="list-style-type: none"> Built with a special semi-open impeller to draw in air on its own. Can aerate and agitate wastewater without requiring a blower. (Not capable of anaerobic agitation.) Discharges mixed flow of air and water radially in multiple directions and generates a powerful agitational force from the synergetic action of the airlift and convective flow. Obtains a high level of dissolved oxygen by furiously mixing air and water with the impeller and guide vanes to form tiny bubbles. Capable of deep-water aeration in combination with a general-purpose blower. Does not require a high-pressure blower. | <ul style="list-style-type: none"> Simple structure consisting of a submersible pump and venturi-jet based diffuser. Can aerate and agitate wastewater without requiring a blower. (Capable of anaerobic agitation.) Powerfully ejects a mixed flow of air and water in one direction. Obtains a high level of dissolved oxygen because tiny bubbles slowly rise as the air and water mix. The pump can be easily lowered and hoisted using guide rail fitting system, so maintenance and inspection can be performed without entering the sump. | <ul style="list-style-type: none"> Simple structure consisting of a submersible pump and aeration kit. Can aerate and agitate wastewater without requiring a blower. (Capable of anaerobic agitation.) Powerfully ejects a mixed flow of air and water in one direction. Made of special resin and stainless steel, thus tough against corrosion. Lightweight and compact, thus easy to install and maintain. Uses fish-friendly liquid paraffin as lubricating oil, so it can be safely used for fish farms and water features. Can be used in water as shallow as 310 mm. |
| Applications | | <ul style="list-style-type: none"> Aeration, pre-aeration and mixing at wastewater treatment plant Oxygen supply at aquariums and fish farms (Requires lubricant change to liquid paraffin.) | <ul style="list-style-type: none"> Pre-aeration and mixing at wastewater treatment plant Oxygen supply at aquariums and fish farms (Requires lubricant change to liquid paraffin.) | <ul style="list-style-type: none"> Pre-aeration and mixing at septic tank/Johkasou Oxygen supply at water features and fish pond |
| Page No. | | 9 - 10 | 11 - 12 | |

Guide Rail Fitting System (BER-series only)

The guide rail fitting system connects the pump to and from the piping easily just by lowering and hoisting the pump, allowing easy maintenance and inspection without the need to enter the sump.

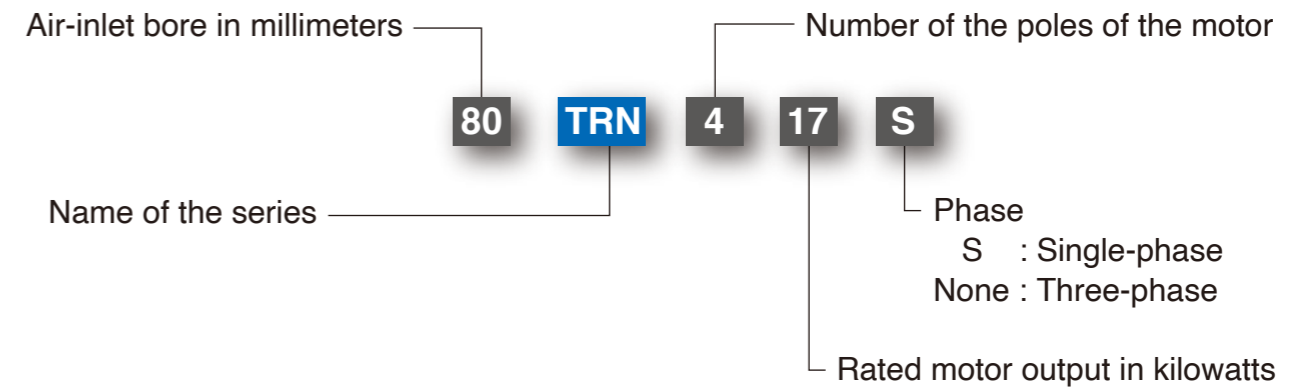
Accessories

- Silencer & Valve Set
- Lifting Chain 5m (with Shackles)
- Guide Support
- Guide Hook
- Suction Casing
- Threaded Oval Flange
- Diffuser

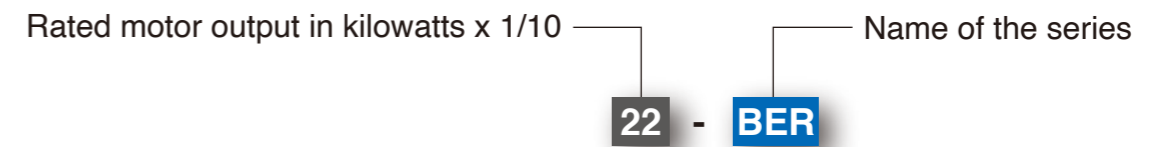


Model Number Designation

TRN / PLS (with Aeration Kit) series



BER series



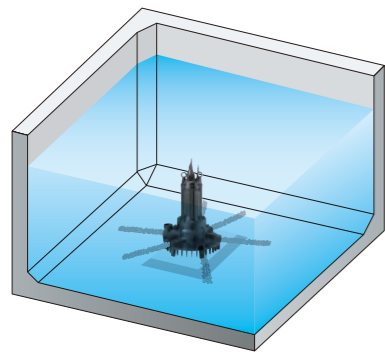
Mixed flow of air-water profile during operation



Submersible Aerators: TRN series

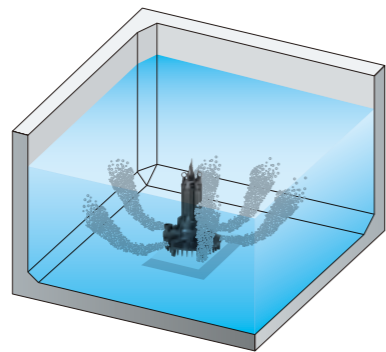
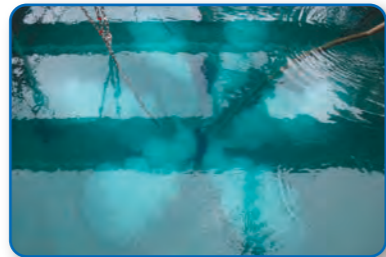
Start of operation

Mixed flow of air-water is discharged in multiple directions.



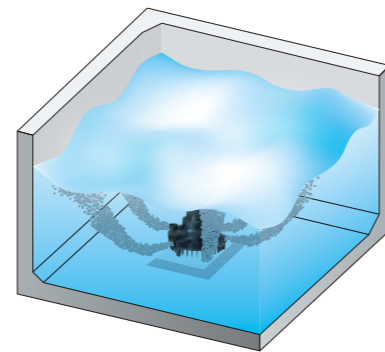
Rising by airlift

Tiny bubbles produce a high amount of dissolved oxygen.



Agitation by convection

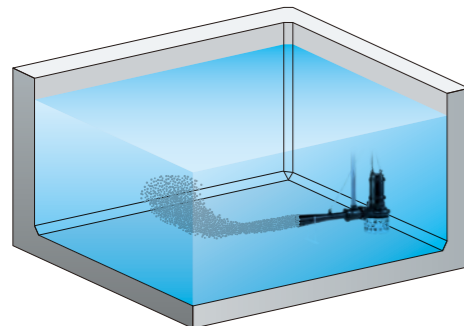
The rising bubbles enable efficient aeration and agitation.



Submersible Jet Aerators: BER / PLS (with Aeration Kit) series

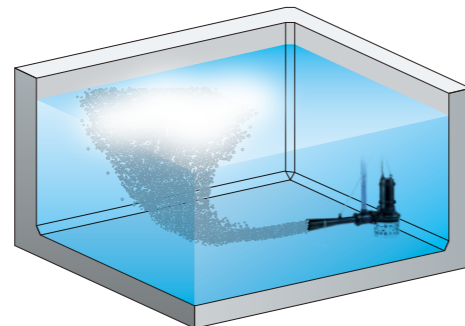
Rising by airlift

Mixed flow of air-water is jetted in one direction. Tiny bubbles produce a high amount of dissolved oxygen.



Agitation by convection

The rising bubbles enable efficient aeration and agitation.

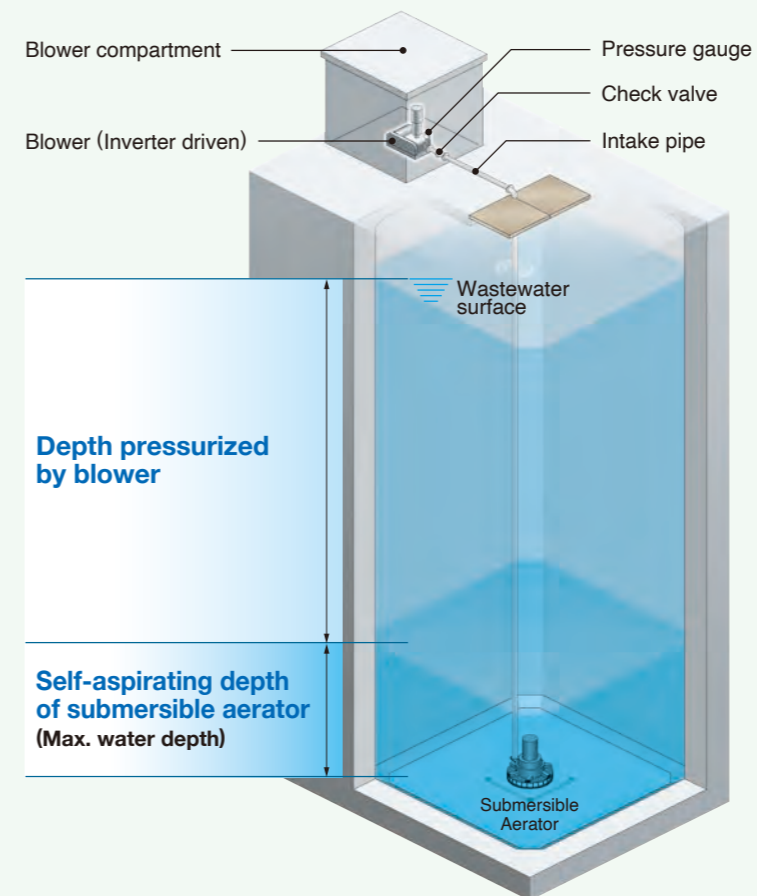


Special Offer for TRN series

How to aerate in tank deeper than max. water depth

In combination with a blower (Example of installation in a 10 m-deep tank)

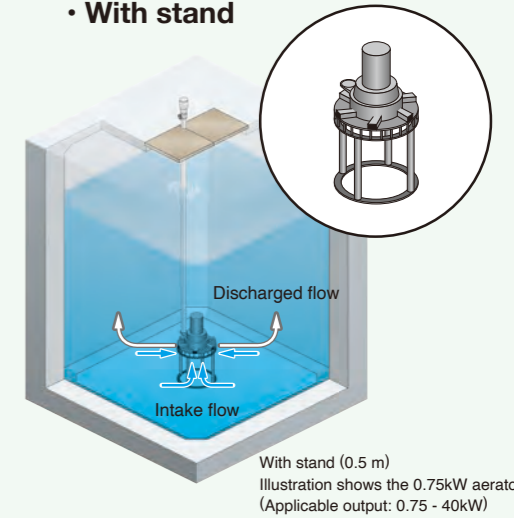
Applicable for deep tank aeration below max. water depth. Because it draws air on its own, the aerator works with a general-purpose blower instead of a high-pressure blower.



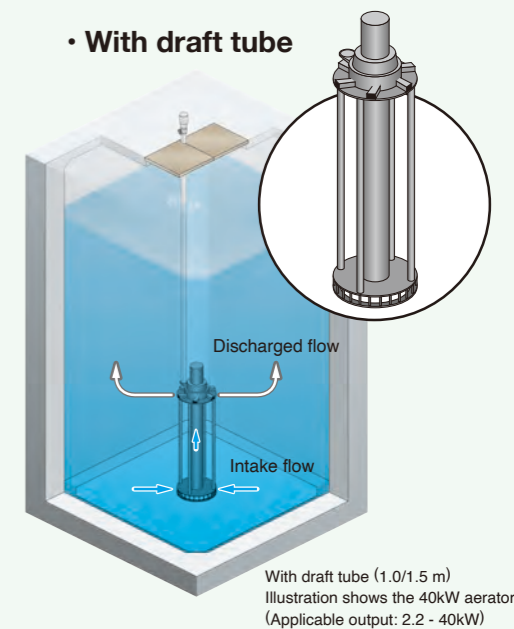
- Blowers must be inverter-driven.
- Provide 1 blower for each submersible aerator.

Optional specifications

• With stand



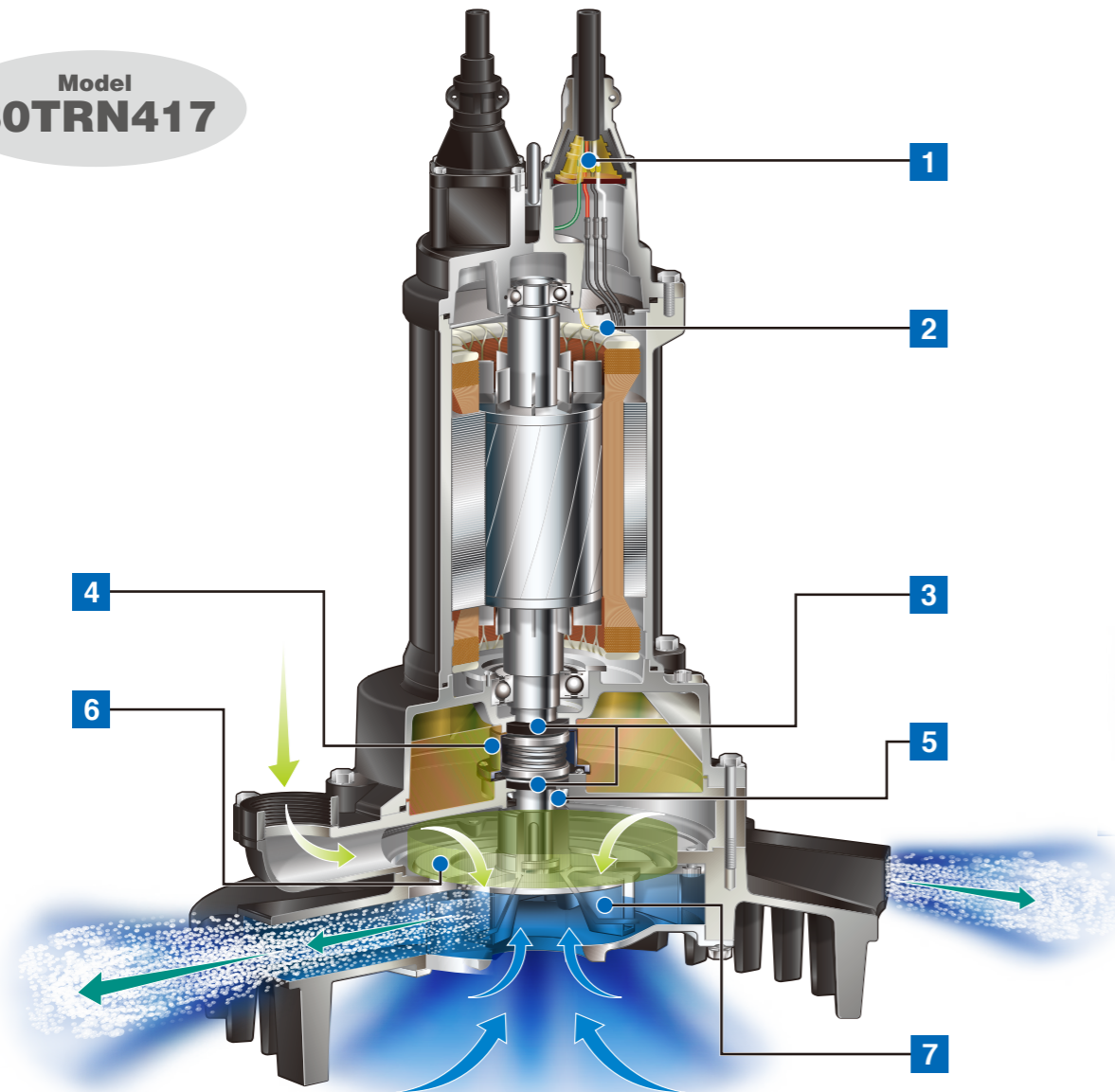
• With draft tube



Submersible Self-aspirating Aerators: TRN series

The aspirated air, mixed with water viciously by mechanical forces inside the impeller and guide vane, transforms into tiny bubbles. Moreover, the mixed flow of air and water is evenly discharged in multiple directions along the circumference.

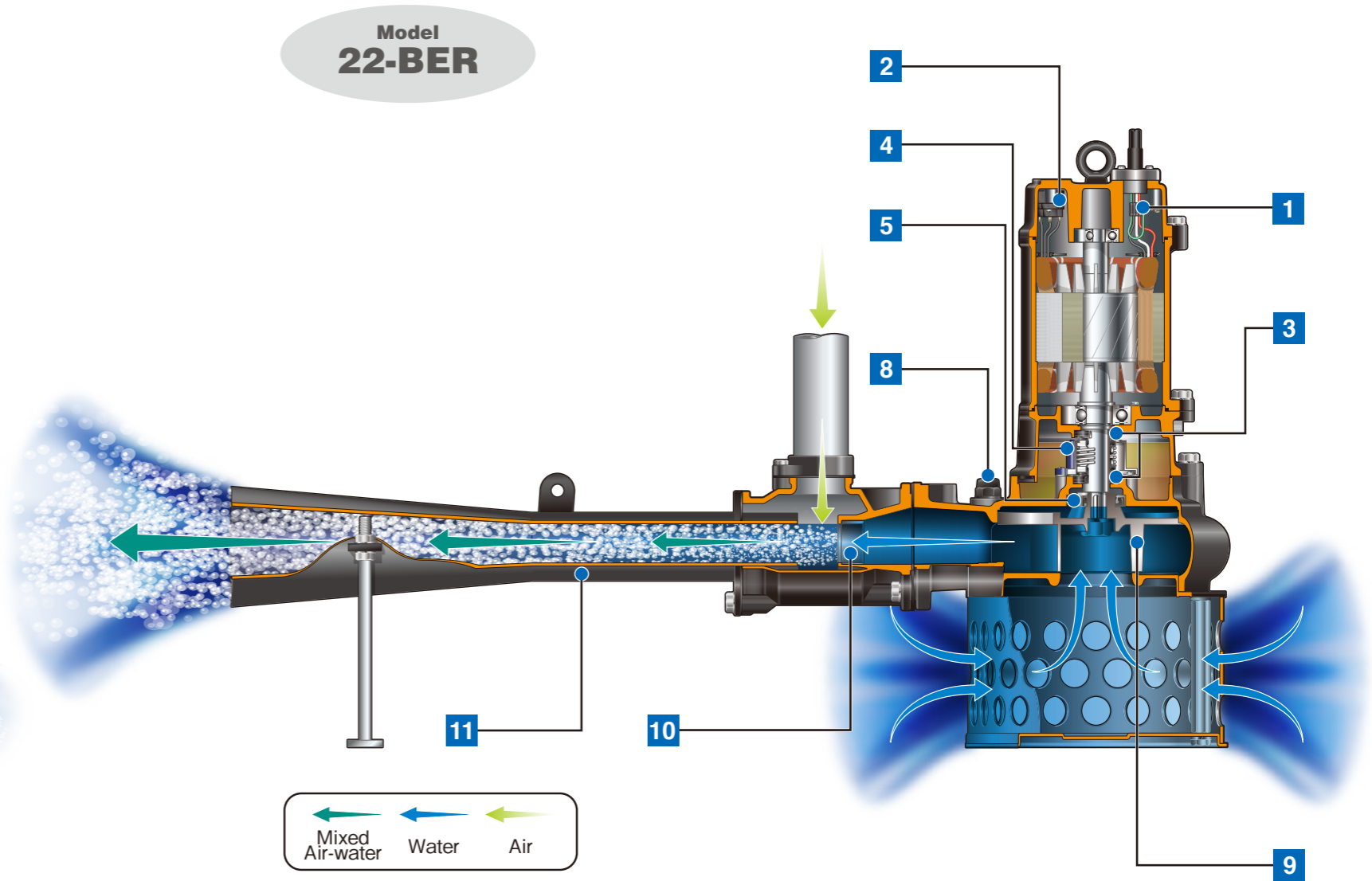
Model 80TRN417



Submersible Self-aspirating Jet Aerators: BER & PLS (with Aeration Kit) series

With the jet injector mechanism, the aspirated air mixes with water and is ejected through the diffuser, simultaneously agitating and aerating the ponded water. The mixed air-water is ejected powerfully in one direction, which effectively agitates the water across a wide area.

Model 22-BER



Mixed Air-water Water Air

Mixed Flow of Air-water

Tiny bubbles are discharged in multiple/one direction, whereby creating convective currents that agitate the water. As the bubbles rise, a large amount of oxygen dissolves in the water.

1 Anti-wicking Cable Entry

Prevents water incursion due to capillary action should the cable sheath be damaged or the end of cable submerged. Also prevents moist air from infiltrating the motor housing and condensation from forming inside the housing due to temperature differences between the housing and outside air.

2 Motor Protector

Miniature Thermal Protector

Single-phase:

Detects excess heat, therefore, protecting the pump against overheating and dry-running.

Three-phase:

React to excessive heat caused by dry-running. The bimetal strip opens to cause the control panel to shut the power supply.

Circle Thermal Protector

Directly cuts the motor circuit if excessive heat builds up or overcurrent occurs in the motor.

3 Dual Inside Mechanical Seals with Silicon Carbide Face

Isolated in the oil chamber where a clean, non-corrosive and abrasion-free lubricating environment is maintained. Compared with the water-cooled outside mechanical seal, it reduces the risk of failure caused by dry-heating and adhering matter. The silicon carbide provides 5 times higher corrosion, wear and heat resistance than the tungsten carbide. Rubber parts are made of NBR or FPM (FKM) which provides higher resistance to heat and chemicals.

4 Oil Lifter

Provides lubrication and cooling of the seal faces down to 1/3 of normal oil level, thus maintaining a stable shaft sealing effect and prolonging seal life longer. The Oil Lifter is Tsurumi original design.

5 Oil Seal (excluding PLS)

Used as a "Dust Seal," it protects the mechanical seal from abrasive particles.

6 Air Seal Mechanism (TRN)

Protects the mechanical seals by flooding the air passage with an "air seal" that prevents water from contacting the mechanical seals during operation. This proprietary technology helps to prolong the service-life of the mechanical seals.

7 Special Semi-open Impeller & Suction Cover (TRN)

Generates a liquid flow that causes negative pressure to form on the backside of the impeller vanes and draw in air from above the water's surface. Both the impeller and suction cover are highly wear-resistant 410 stainless steel casting.

8 Air Release Valve (BER)

Fitted on the pump casing to prevent the air lock. When air flows through the valve, the ball stays at the bottom, but when the pumped water starts to flow, the ball closes the outlet because of its buoyancy.

9 Semi-open Channel Impeller (BER)

Vortex Impeller (PLS)

Minimizes the possibility of trouble due to clogging by solid matters.

10 Nozzle Ring (BER)

Nozzle Flange (PLS)

Channels the water discharged from the pump into a jet, as part of the jet injector mechanism.

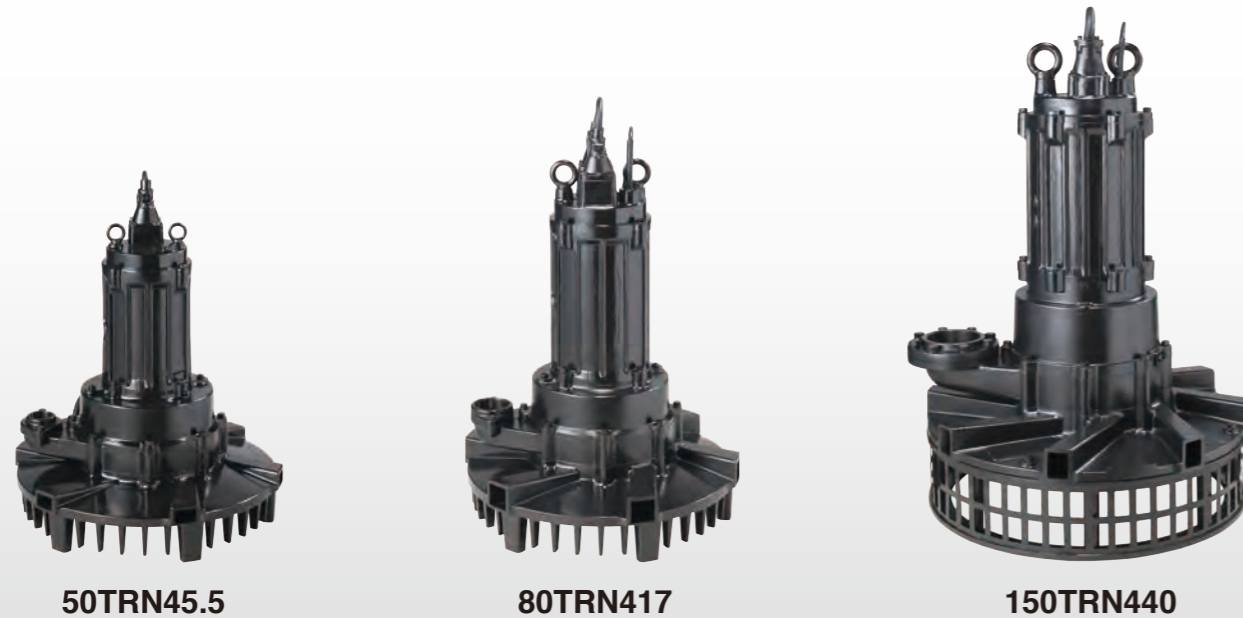
11 Diffuser (BER & PLS)

Creates a mixed flow of air and water by injecting the aspirated air into the water.

TRN –Submersible Self-aspirating Aerators–

Submersible aerators that generate tiny bubbles to produce a high amount of dissolved oxygen and enable efficient aeration and agitation

The TRN-series is a submersible self-aspirating aerator designed for aeration and mixing of wastewater. The liquid flow generated by Tsurumi's special semi-open impeller causes negative pressure to form on the backside of the impeller vanes and draw in air from above the water's surface. The aspirated air, mixed with water viciously by mechanical forces inside the impeller and guide vane, transforms into tiny bubbles. Moreover, the mixed flow of air and water is evenly discharged in multiple directions along the circumference. The compounded action of the air lift and convective currents that are generated in the process makes aeration and agitation very efficient and increases the amount of oxygen dissolved in the water.



| Model | Air-inlet Bore mm | Motor Output kW | Phase | Starting Method | Solids Passage mm | Max. Water Depth ^{*2} m | No. of Outlets | Dimensions L x H mm | Dry Weight ^{*3} kg | Cable Length m |
|-----------|----------------------|--------------------|-------|------------------------|----------------------|-------------------------------------|----------------|---------------------------|--------------------------------|-------------------|
| 32TRN2.75 | 32 | 0.75 | Three | D. O. L. | 10 | 3.5 | 6 | 420 x 473 | 55 | 6 |
| 32TRN21.5 | 32 | 1.5 | | D. O. L. | 12 | 3.5 | 6 | 420 x 473 | 55 | 6 |
| 50TRN42.2 | 50 | 2.2 | | D. O. L. | 12 | 3.6 | 6 | 700 x 689 | 140 | 6 |
| 50TRN43.7 | 50 | 3.7 | | D. O. L. | 12 | 4 | 6 | 700 x 694 | 150 | 6 |
| 50TRN45.5 | 50 | 5.5 | | D. O. L. ^{*1} | 15 | 4 | 6 | 700 x 835 | 150 | 8 |
| 80TRN47.5 | 80 | 7.5 | | D. O. L. ^{*1} | 15 | 4.5 | 6 | 700 x 868 | 175 | 8 |
| 80TRN412 | 80 | 12 | | Star-Delta | 15 | 6 | 6 | 700 x 898 | 192 | 8 |
| 80TRN417 | 80 | 17 | | Star-Delta | 15 | 6 | 6 | 700 x 958 | 213 | 8 |
| 100TRN424 | 100 | 24 | | Star-Delta | 22 | 6 | 8 | 1000 x 1225 | 435 | 10 |
| 150TRN440 | 150 | 40 | | Star-Delta | 25 | 6 | 8 | 1050 x 1459 | 583 | 10 |

*1 Star-Delta available upon request

*2 Max. water depth is the load limit of the motor. The load placed on the motor increase the deeper the submersible aerator is installed, therefore if the aerator is operated below the max. water depth, the overload will trip the motor protection device and stop the aerator from running continuously.

*3 Weights excluding cable

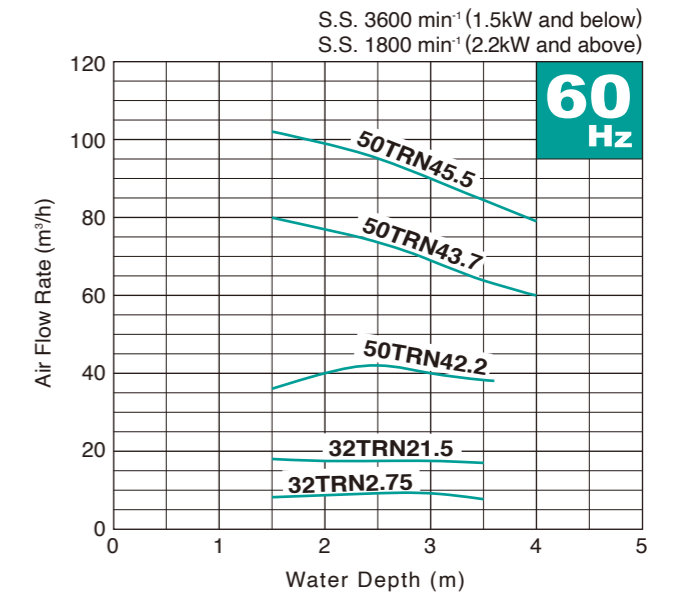
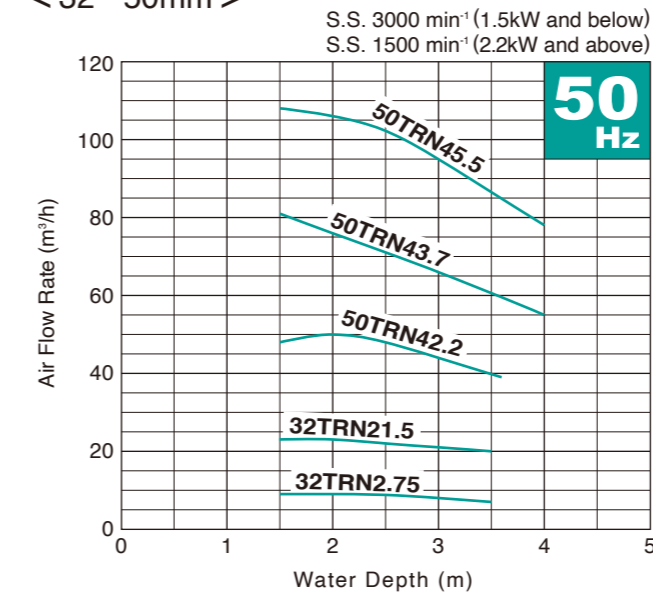
Accessory

- Silencer & Valve Set

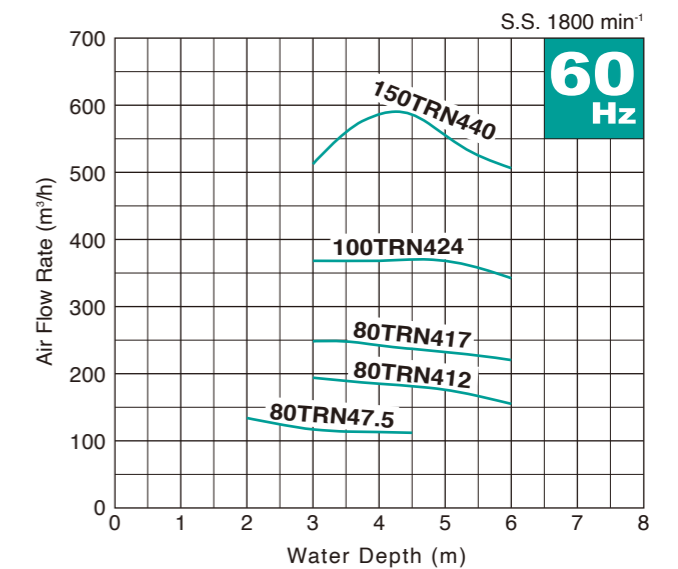
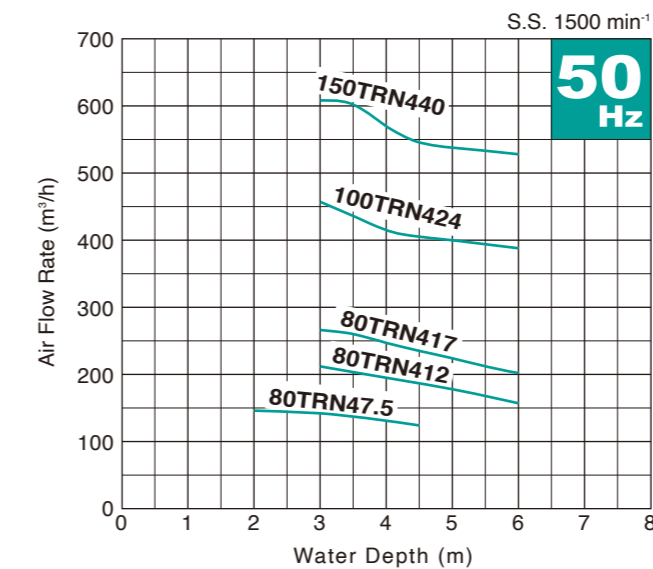
Air Flow Rate - Water Depth Curves

The air flow rates are expressed at the standard condition, i.e. temperature of 20°C, 1 atm and may vary by up to approximately 5%.

< 32 • 50mm >



< 80 - 150mm >



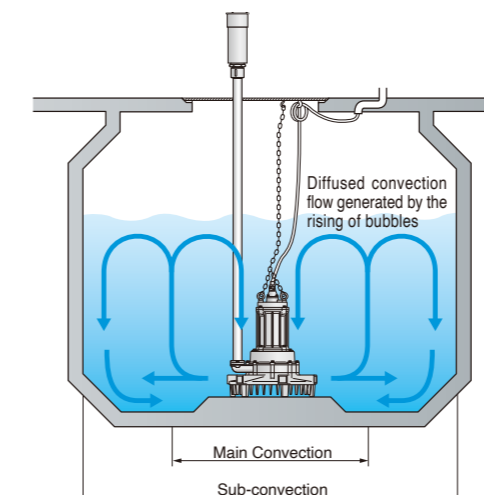
Convection Pattern & Recommended Tank Dimensions

Main Convection

Convection made by rising bubbles. (The minimum distance that must be provided between each aerator)

Sub-convection

The maximum convection that can keep solids sus-pended to prevent sedi-mentation of solids.



| Model | Motor Output kW | Max. Water Depth m | Main Convection φm | Sub-convection | |
|-----------|--------------------|-----------------------|-----------------------|---------------------|------------------|
| | | | | Circular Tank φm | Square Tank m |
| 32TRN2.75 | 0.75 | 3.5 | 1.4 | 3.5 | 3 |
| 32TRN21.5 | 1.5 | 3.5 | 1.8 | 4.5 | 4 |
| 50TRN42.2 | 2.2 | 3.6 | 2.4 | 6 | 5.5 |
| 50TRN43.7 | 3.7 | 4 | 3 | 7 | 6.5 |
| 50TRN45.5 | 5.5 | 4 | 3.8 | 9 | 8 |
| 80TRN47.5 | 7.5 | 4.5 | 4.4 | 10 | 9 |
| 80TRN412 | 12 | 6 | 5.2 | 12 | 11 |
| 80TRN417 | 17 | 6 | 5.6 | 13 | 11.5 |
| 100TRN424 | 24 | 6 | 6.3 | 14.5 | 13 |
| 150TRN440 | 40 | 6 | 7.3 | 17 | 15 |

• Tank dimensions are given at max. water depth. Dimensions will vary according to equipment depth.

• For good quality aeration and agitation, it is recommended to install a haunch on the bottom of the tank.

BER PLS with Aeration Kit

-Submersible Self- aspirating Jet Aerators-

BER: Submersible jet aerators optimized for pre-aeration and prevention of bacterial spoilage
PLS with Aeration Kit: Lightweight, compact resin-made submersible jet aerators for shallow water application

The BER-series and PLS with aeration kit series are a submersible self-aspirating jet aerators combined a submersible pump with a venturi-jet based diffuser. The liquid flow generated by the submerged pump causes negative pressure to form around the nozzle, whereby drawing in air from above the water's surface. With this jet injector mechanism, the aspirated air mixes with water and is ejected through the diffuser, simultaneously agitating and aerating the ponded water. The mixed air-water is ejected powerfully in one direction, which effectively agitates the water across a wide area. Because the PLS-series uses food-grade liquid paraffin for lubricating oil, this jet aerator is safe and fish-friendly if used for water circulation and aquarium, aquaculture/fish farms.



| | Model | | Air-inlet Bore mm | Motor Output kW | Phase | Starting Method | Solids Passage mm | Max. ^{*2} Water Depth 50/60Hz m | Dimensions L x H mm | | Dry Weight ^{*3} kg | | Cable Length m |
|-----------------------|---------------|--------------------|----------------------|--------------------|--------|-----------------|-----------------------|---|------------------------|--------------------|--------------------------------|--------------------|-------------------|
| | Free Standing | Guide Rail Fitting | | | | | | | Free Standing | Guide Rail Fitting | Free Standing | Guide Rail Fitting | |
| BER | 8-BER | TOS-8BER | 25 | 0.75 | Three | D. O. L. | 20 | 4 / 3.5 | 674 x 464 | 674 x 514 | 28 | 23 | 6 |
| | 15-BER | TOS-15BER | 32 | 1.5 | Three | D. O. L. | 20 | 4 | 895 x 562 | 910 x 603 | 43 | 34 | 6 |
| | 22-BER | TOS-22BER | 50 | 2.2 | Three | D. O. L. | 35 | 4.5 | 1158 x 705 | 1162 x 793 | 73 | 73 | 6 |
| | 37-BER | TOS-37BER | 50 | 3.7 | Three | D. O. L. | 35 | 5 | 1163 x 779 | 1167 x 862 | 87 | 87 | 6 |
| | 55-BER | TOS-55BER | 50 | 5.5 | Three | D. O. L. | 35 | 6 | 1415 x 942 | 1422 x 1006 | 142 | 126 | 8 |
| PLS with Aeration Kit | 50PLS2.15S | - | 25 | 0.15 | Single | Capacitor Run | 38 (10) ^{*1} | 1.2 | 390 x 316 | - | 7.6 | - | 5 |
| | 50PLS2.4S | - | 25 | 0.4 | Single | Capacitor Run | 24 (10) ^{*1} | 1.2 | 396 x 321 | - | 8.5 | - | 5 |
| | 50PLS2.75S | - | 25 | 0.75 | Single | Capacitor Run | 24 (10) ^{*1} | 1.2 | 396 x 321 | - | 10.4 | - | 5 |

^{*1} Figure in () shows the solids passage of the pump with a strainer.
^{*2} Max. water depth is the load limit of the motor. The load placed on the motor increase the deeper the submersible aerator is installed, therefore if the aerator is operated below the max. water depth, the overload will trip the motor protection device and stop the aerator from running continuously.
^{*3} Weights excluding cable
 Weights of guide rail fitting excluding duckfoot bend

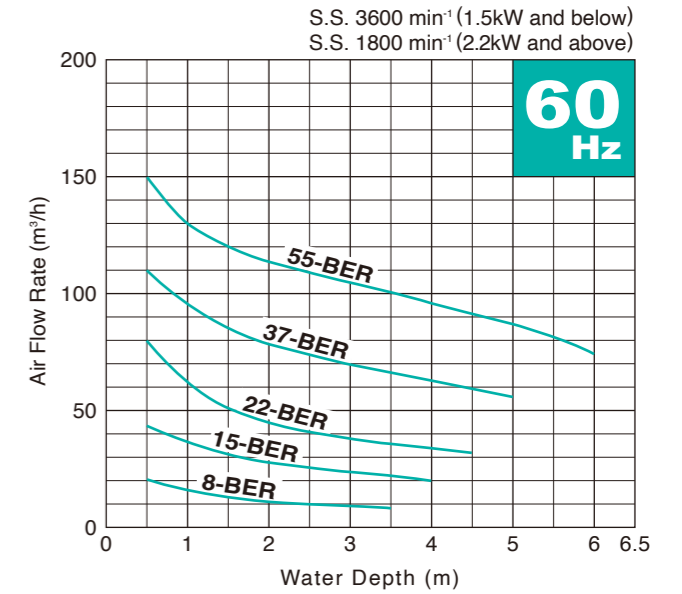
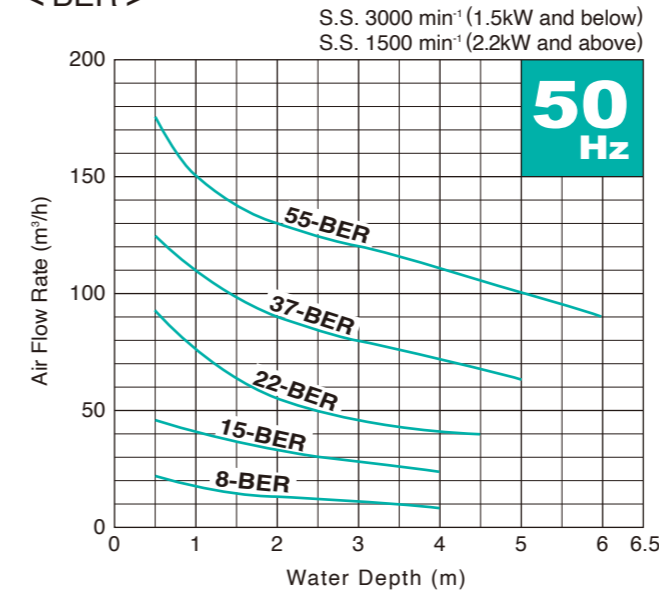
Accessories (BER-series only)

- | | |
|------------------------------------|---------------------------|
| Free Standing | Guide Rail Fitting |
| • Silencer & Valve Set | • Diffuser |
| • Lifting Chain 5m (with Shackles) | • Diffuser Base |
| • Suction Casing | • Guide Support |
| • Threaded Oval Flange | • Guide Hook |
| | • Suction Casing |
| | • Threaded Oval Flange |
| | • Diffuser |

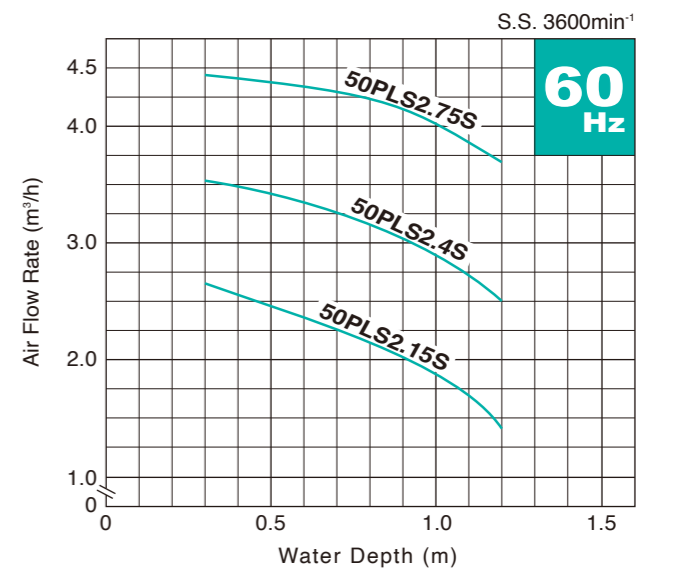
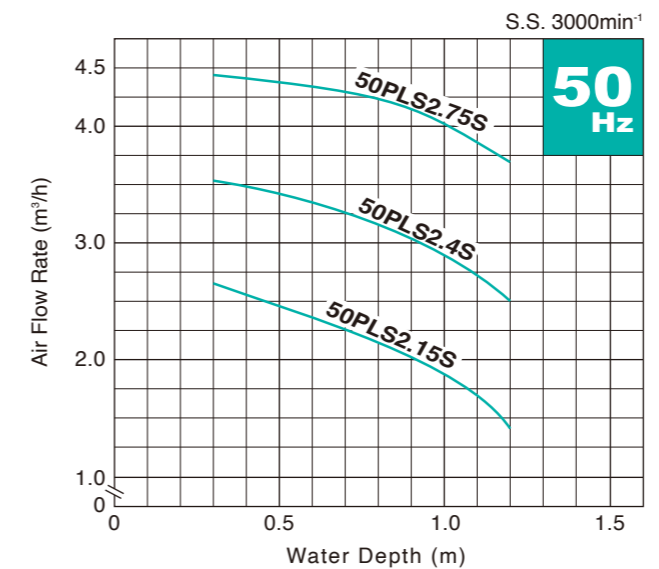
Air Flow Rate - Water Depth Curves

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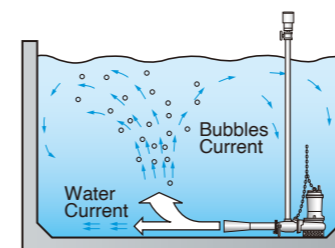
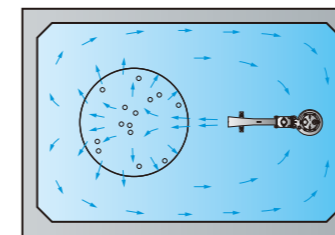
< BER >



< PLS with Aeration Kit >



Convection Pattern & Recommended Tank Dimensions (BER-series)



| Model | Motor Output kW | Max. Water Depth 50/60Hz m | Max. Tank Dimensions 50/60Hz | | |
|--------|--------------------|----------------------------------|------------------------------|------------|------------|
| | | | Length m | Width m | Depth m |
| 8-BER | 0.75 | 4 / 3.5 | 3 | 2 | 4 / 3.5 |
| 15-BER | 1.5 | 4 | 4 | 3.5 | 4 |
| 22-BER | 2.2 | 4.5 | 5 | 4.5 | 4.5 |
| 37-BER | 3.7 | 5 | 6 | 5 | 5 |
| 55-BER | 5.5 | 6 | 7 | 7 | 6 |

Specifications

| | | TRN | | | | | | | | | | BER | | | | | PLS with Aeration Kit | | | | |
|------------------------------|--|---|-----------------------------|-----------|-----------|----------------------|-----------|-----------------------------|-------------------------|---------------------------------|-------------------|----------------------|--------|--------|--------|--------|---------------------------------------|-----------|---------------|--------------------|-----|
| | | 32TRN2.75 | 32TRN21.5 | 50TRN42.2 | 50TRN43.7 | 50TRN45.5 | 80TRN47.5 | 80TRN412 | 80TRN417 | 100TRN424 | 150TRN440 | 8-BER | 15-BER | 22-BER | 37-BER | 55-BER | 50PLS2.15S | 50PLS2.4S | 50PLS2.75S | | |
| PUMP | Air-inlet Bore mm | 32 | | 50 | | | 80 | | | 100 | 150 | 25 | 32 | 50 | | | 25 | | | | |
| | Air-inlet Connection | Threaded Oval Flange | | | | | | | | JIS 10kg/cm ² Flange | | Threaded Oval Flange | | | | | Threaded Flange | | | | |
| | Diffuser | — | | | | | | | | | | | | | | | | | | | |
| | Solids Passage mm | 10 | 12 | | 15 | | | 22 | | 25 | | 20 | | 35 | | | 38 (10)** | 24 (10)** | 24 (10)** | | |
| | Impeller | Special Semi-open | | | | | | | | | | | | | | | | | | | |
| | | 304 Stainless Steel Casting | 410 Stainless Steel Casting | | | | | | | | | | | | | | | | | | |
| | Suction Cover | 410 Stainless Steel Casting | | | | | | | | | | | | | | | | | | | |
| | Middle Plate | — | 410 Stainless Steel | | | | | 410 Stainless Steel Casting | | | | | — | | | | | | | | |
| | Oil Seal | Nitrile Butadiene Rubber | | | | | | | | | | | | | | | — | | | | |
| | Air Passage & Guide Vane / Casing | Gray Cast Iron | | | | | | | | | | | | | | | Glass-fiver Reinforced Resin (ABS-GF) | | | | |
| Shaft Seal | Dual Inside Mechanical Seals (with Oil Lifter) | | | | | | | | | | | | | | | | | | | | |
| | Silicon Carbide | | | | | | | | | | | | | | | | | | | | |
| MOTOR | Type | Continuous-duty Rated, Dry-type Induction Motor | | | | | | | | | | | | | | | | | | | |
| | Output kW | 0.75 | 1.5 | 2.2 | 3.7 | 5.5 | 7.5 | 12 | 17 | 24 | 40 | 0.75 | 1.5 | 2.2 | 3.7 | 5.5 | 0.15 | 0.4 | 0.75 | | |
| | Phase | Three | | | | | | | | | | | | | | | | | | | |
| | Pole | 2 | | 4 | | | | | | | | | | | | | | | | | |
| | Speed (S.S.) 50/60Hz min ⁻¹ | 3000/3600 | | | 1500/1800 | | | | | | | | | | | | | | | | |
| | Insulation | F | | | | | | | | | | | | | | | | | | | |
| | Starting Method | D.O.L. | | | | D.O.L.* ³ | | | Star-Delta | | | | | D.O.L. | | | | | Capacitor Run | | |
| | Motor Protector (built-in) | CTP | | | | | | MTP | | | | | | CTP | | | | | MTP | CTP | |
| | Lubricant ml | 1400 | 5100 | 6000 | | | 10000 | 16000 | 440 | 900 | 1350 | | 4300 | 150 | 240 | | | | | | |
| | | Turbine Oil (ISO VG32) | | | | | | | | | | | | | | | | | | | |
| | Frame | Gray Cast Iron | | | | | | | | | | | | | | | | | | | |
| | Shaft | 420 Stainless Steel | | | | | | | | | | | | | | | 304 Stainless Steel | | | | |
| | Power Cable m | 6 | | | 8 | | | 10 | | | 6 | | | 8 | 5 | | | | | | |
| PVC | | | Chloroprene Rubber | | | | | | | | | | | | | | | PVC | | Chloroprene Rubber | PVC |
| Max. Water Depth** 50/60Hz m | 3.5 | 3.6 | 4.0 | 4.5 | 6.0 | | | | | 4.0 / 3.5 | 4.0 | 4.5 | 5.0 | 6.0 | 1.2 | | | | | | |
| No. of Outlets m | 6 (Multiple Directions) | | | | | | | | 8 (Multiple Directions) | | 1 (One Direction) | | | | | | | | | | |
| Dry Weight* ² | Free Standing kg | 55 | 140 | 150 | 175 | 192 | 213 | 435 | 583 | 28 | 43 | 73 | 87 | 142 | 7.6 | 8.5 | 10.4 | | | | |
| | Guide Rail Fitting kg | — | | | | | | | | | | | | | | | | | | | |

*1 Max. water depth is the load limit of the motor. The load placed on the motor increase the deeper the submersible aerator is installed, therefore if the aerator is operated below the max. water depth, the overload will trip the motor protection device and stop the aerator from running continuously.

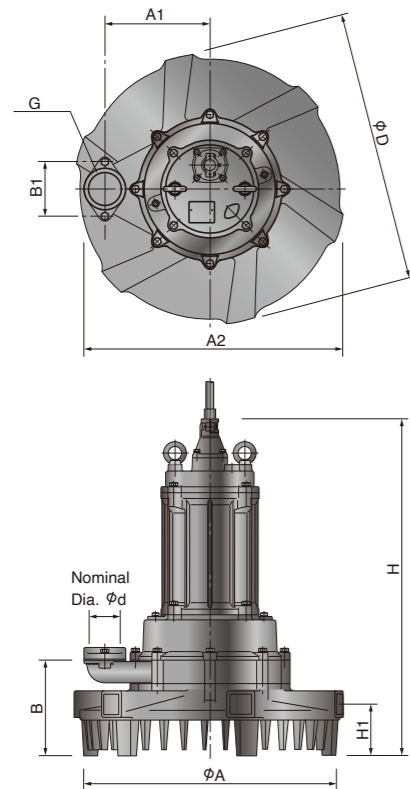
*2 All weights excluding cable

*3 Star-Delta available upon request

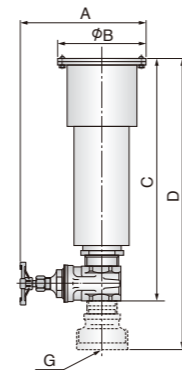
*4 Figure in () shows the solids passage of the pump with a strainer.

Dimensions

TRN



< Silencer & Valve Set >



| Pipe Bore | A | B | C | D | G |
|-----------|-----|-----|-----|-----|----------|
| ϕ 32 | 180 | 116 | 275 | — | Rc 1-1/4 |
| ϕ 50 | 230 | 154 | 370 | — | Rc 2 |
| ϕ 80 | 245 | 180 | — | 585 | Rc 3 |
| ϕ 100 | 345 | 256 | — | 760 | Rc 4 |
| ϕ 150 | 448 | 370 | — | 930 | Rc 6 |

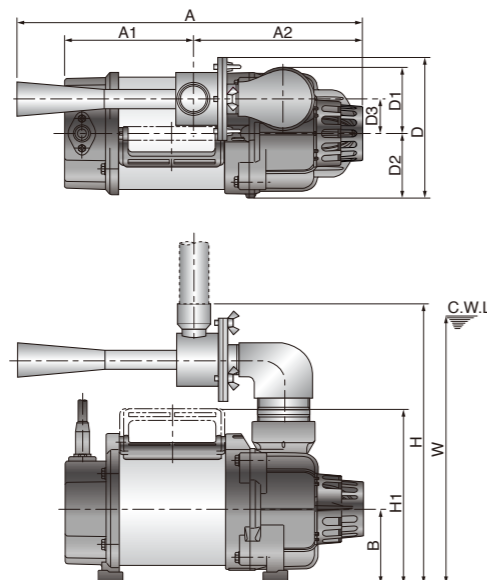
Unit: mm

Material of Silencer : PVC (24kW and below)
Rolled Steel (40kW only)

| Model | d | G | A | A1 | A2 | B | B1 | D | H | H1 |
|-----------|-----|----------|-----|-----|------|-----|-----|------|------|-----|
| 32TRN2.75 | 32 | Rp 1-1/4 | 371 | 184 | 420 | 146 | 90 | 400 | 473 | 81 |
| 32TRN21.5 | 32 | Rp 1-1/4 | 371 | 184 | 420 | 146 | 90 | 400 | 473 | 81 |
| 50TRN42.2 | 50 | Rp 2 | 660 | 271 | — | 226 | 140 | 700 | 689 | 123 |
| 50TRN43.7 | 50 | Rp 2 | 660 | 271 | — | 226 | 140 | 700 | 694 | 123 |
| 50TRN45.5 | 50 | Rp 2 | 660 | 271 | — | 226 | 140 | 700 | 835 | 123 |
| 80TRN47.5 | 80 | Rp 3 | 660 | 271 | — | 226 | 140 | 700 | 868 | 133 |
| 80TRN412 | 80 | Rp 3 | 660 | 271 | — | 226 | 140 | 700 | 898 | 133 |
| 80TRN417 | 80 | Rp 3 | 660 | 271 | — | 226 | 140 | 700 | 958 | 133 |
| 100TRN424 | 100 | Rp 4 | 980 | 385 | — | 417 | — | 1000 | 1225 | 272 |
| 150TRN440 | 150 | Rp 6 | 980 | 410 | 1050 | 452 | — | 1000 | 1459 | 269 |

Unit: mm

PLS with Aeration Kit



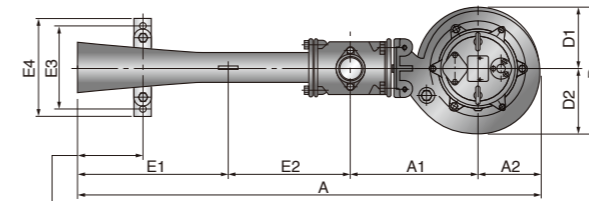
| Model | A | A1 | A2 | B | D | D1 | D2 | D3 | W | H | H1 |
|------------|-----|-----|-----|----|-----|----|----|----|-----|-----|-----|
| 50PLS2.15S | 390 | 152 | 188 | 85 | 146 | 64 | 71 | 28 | 310 | 316 | 185 |
| 50PLS2.4S | 396 | 148 | 194 | 85 | 161 | 76 | 74 | 40 | 310 | 321 | 200 |
| 50PLS2.75S | 396 | 168 | 194 | 85 | 161 | 76 | 74 | 40 | 310 | 321 | 201 |

Unit: mm

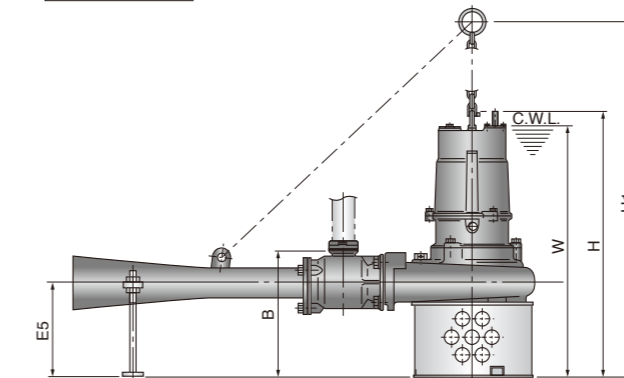
BER

C.W.L.: Continuous Running Water Level

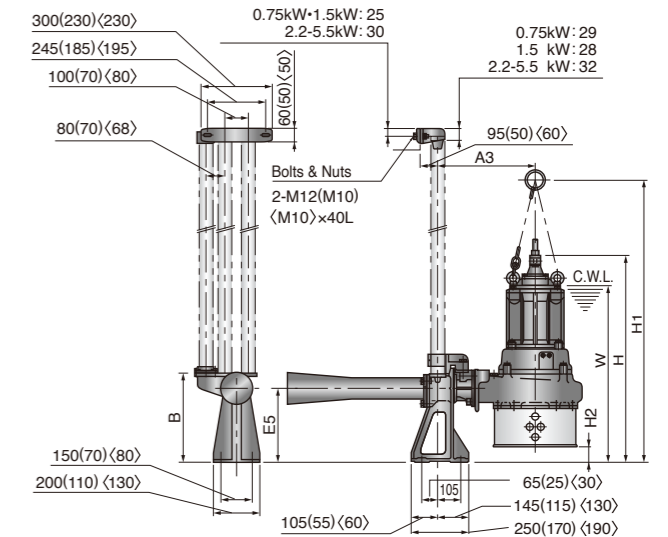
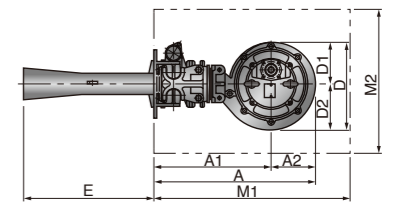
< Free Standing >



| | |
|-------------|-----|
| 0.75kW: | 58 |
| 1.5 kW: | 120 |
| 2.2-3.7 kW: | 155 |
| 5.5 kW: | 316 |



< Guide Rail Fitting >



* Figure in () shows the dimensions of model TOS-8BER.
Figure in < > shows the dimensions of model TOS-15BER.

Free Standing

| Model | A | A1 | A2 | B | D | D1 | D2 | W | H | H1 | E1 | E2 | E3 | E4 | E5 |
|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|
| 8-BER | 674 | 200 | 97 | 195 | 194 | 97 | 97 | 435 | 464 | 595 | 208 | 169 | 150 | 180 | 150 |
| 15-BER | 895 | 244 | 114 | 225 | 222 | 111 | 111 | 490 | 562 | — | 270 | 267 | 150 | 180 | 160 |
| 22-BER | 1158 | 317 | 154 | 312 | 316 | 150 | 166 | 665 | 705 | 1102 | 380 | 307 | 220 | 260 | 232 |
| 37-BER | 1163 | 317 | 159 | 317 | 325 | 150 | 175 | 740 | 779 | 1147 | 380 | 307 | 220 | 260 | 237 |
| 55-BER | 1415 | 360 | 194 | 341 | 391 | 188 | 203 | 820 | 942 | 1169 | 460 | 401 | 220 | 260 | 256 |

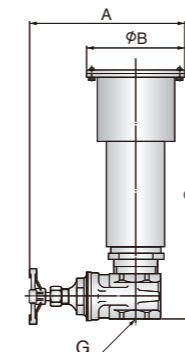
Unit: mm

Guide Rail Fitting

| Model | A | A1 | A2 | A3 | B | D | D1 | D2 | W | H | H1 | H2 | M1 | M2 | E | E5 |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|----|-----|-----|-----|-----|
| TOS-8BER | 385 | 288 | 97 | 238 | 238 | 194 | 97 | 97 | 485 | 514 | 645 | 50 | 550 | 350 | 289 | 200 |
| TOS-15BER | 467 | 353 | 114 | 293 | 250 | 222 | 111 | 111 | 530 | 603 | — | 41 | 650 | 450 | 443 | 200 |
| TOS-22BER | 616 | 462 | 154 | 367 | 385 | 316 | 150 | 166 | 750 | 793 | 972 | 88 | 700 | 450 | 546 | 320 |
| TOS-37BER | 621 | 462 | 159 | 367 | 385 | 325 | 150 | 175 | 820 | 862 | 1048 | 83 | 700 | 450 | 546 | 320 |
| TOS-55BER | 711 | 517 | 194 | 422 | 385 | 391 | 188 | 203 | 885 | 1006 | 1368 | 65 | 750 | 500 | 711 | 320 |

Unit: mm

< Silencer & Valve Set >



| Pipe Bore | A | B | C | G |
|-----------|-----|-----|-----|----------|
| ϕ 25 | 147 | 91 | 150 | Rc 1 |
| ϕ 32 | 180 | 116 | 208 | Rc 1-1/4 |
| ϕ 50 | 230 | 154 | 285 | Rc 2 |

Unit: mm

Material of Silencer : PVC

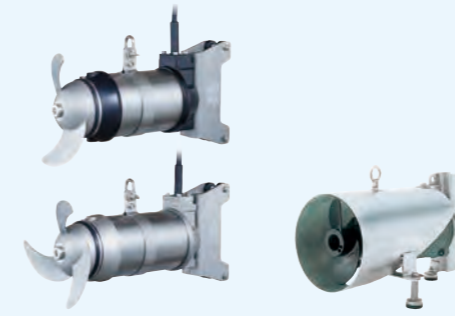


B / BZ

Submersible Sewage Pumps / Channel Impeller

- Tsurumi basic sewage pumps, wide range lineup
- Wide solids passage of over 3 inches (76.2 mm) in diameter [BZ]
- Available in guide rail fitting system

Discharge Bore: 50 - 350 mm
 Motor Output: 0.4 - 75 kW
 Total Head: 4.4 - 70 m
 Max. Capacity: 18 m³/min



MR

MRL

Submersible Mixers

- Generate powerful jet of water using a propeller
- Low water level type designed to operate in water as shallow as 500 mm [MRL]
- Available in wide variations, including cast iron or stainless steel casting construction

Flow Rate: 1.32 - 42 m³/min
 Motor Output: 0.25 - 7.5 kW



C

Submersible Cutter Pumps / Cutter Impeller

- Incorporated cutting mechanism
- Impeller and suction cover of the "CR" type made of high-chromium cast iron
- Available in guide rail fitting system

Discharge Bore: 50 - 200 mm
 Motor Output: 0.75 - 37 kW
 Total Head: 11.4 - 70 m
 Max. Capacity: 7.1 m³/min



FSP

Floating Scum Skimmers

- Collection of floating scum in the wastewater treatment
- Water, air and scum are drawn simultaneously by jet-injector mechanism
- Keep suction mouth relative position with the water surface

Discharge Bore: 50 mm
 Motor Output: 0.4 - 0.75 kW

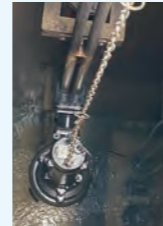


CZ

Submersible Smashing Cutter Pumps / Heart Shaped Suction

- Smashing cutter pumps incorporated crushing and shredding mechanism
- Innovative scissor-like mechanism combining original heart-shaped suction cover and unique impeller
- Prevents clogging of the pump by crushing and shredding solids more finely
- Available in guide rail fitting system

Discharge Bore: 100 mm Total Head: 13.5 - 33 m
 Motor Output: 2.2 - 15 kW Max. Capacity: 4 m³/min



MDQ / MDC

JD

Multi-disc Dehydrators

- Wide product lineup; treating capacity in a range of 3 to 216 kgDS/h
- Utilize both gravity filtration and screw displacement compression systems [MDQ / MDC]
- Utilize both gravity filtration and compression dehydration systems [JD]
- Major parts made of stainless steel

Treating Capacity: 3 - 216 kgDS/h
 Total Motor Output: 0.6 - 3.15 kW



PU / PN / PSF / TM / OM

PLS

Submersible Resin Made Pumps

- "VANCS"; corrosion-resistant pumps made of special resin
- Fish friendly lubricating oil suitable for water feature, fish farm
- Wide variation; large solids type, high head type, horizontal type
- Available in seawater pumps made of titanium & special resin [TM]
- Available in automatic model and guide rail fitting system

Discharge Bore: 32 - 80 mm
 Motor Output: 0.15 - 3.7 kW
 Total Head: 3.8 - 34 m
 Max. Capacity: 0.95 m³/min



RSR-KS / TSR

Rotary Air Blowers

- 3-lobe spur rotor designed for corrosion resistance, heat resistance and durability
- Low noise, low vibration, ease of maintenance and high efficiency
- Available in air-cooled type or water-cooled type, optional helical rotor

Discharge Bore: 50 - 350 mm
 Air Volume: 0.72 - 246.8 m³/min

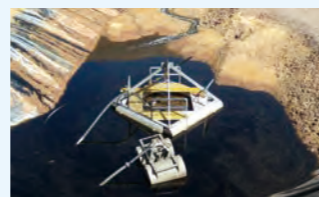


SFQ

Submersible Stainless Steel Casting Pumps

- Corrosion-resistant pumps made of 316 stainless steel casting
- Suitable for acidic, chemical fluids of low pH value
- Available in guide rail fitting system

Discharge Bore: 50 - 80 mm
 Motor Output: 0.4 - 11 kW
 Total Head: 11.1 - 44 m
 Max. Capacity: 2.08 m³/min



KE / KS / KM / KW

Bar Screens

- Screening wastewater
- Available in front screen type or rear screen type
- Major parts made of stainless steel

Bar Spacing: 1 - 50 mm
 Motor Output: 0.09 - 0.1 kW
 Max. Capacity: 223 m³/h





We reserve the right to change the specifications and designs without prior notice. The OO series and model OO are indicated with our series/model codes in this catalog.

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