TRN/BER

SUBMERSIBLE AERATORS

TSURUMI PUMP™

BUILT FOR WORK®

Submersible Self-Aspirating Aerators

Tsurumi' s submersible aerators are used at water 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: 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** are submersible jet aerators that generate a powerful unidirectional flow. Both TRN and BER 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 proprietary 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 series** combines 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 proprietary 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

Selection Table

	Submersible Aerators	Submersible Jet Aerators
	TRN	BER
Air-inlet Bore in.	1 1/4 - 6	1 - 2
Motor Output HP	1 - 54	1 - 7.5
Pole	2 • 4	2 • 4
Impeller	Special Semi-open	Channel
Max. Water Depth ft.	11.5 - 19.7 (Capable of deeper water tank in combination with a blower)	11.5 - 19.7
No. of Outlets	6 • 8 (Multiple Directions)	1 (One Direction)
Guide Rail Fitting System	No	Yes
Features	• Built with a proprietary 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.	• 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.
Applications	• Aeration, pre-aeration and mixing at wastewater treatment plant • Oxygen supply at aquariums and fish farms (Requires lubricant change to liquid paraffin.)	• Pre-aeration and mixing at wastewater treatment plant • Oxygen supply at aquariums and fish farms (Requires lubricant change to liquid paraffin.)

Guide Rail Fitting System (BER Series)

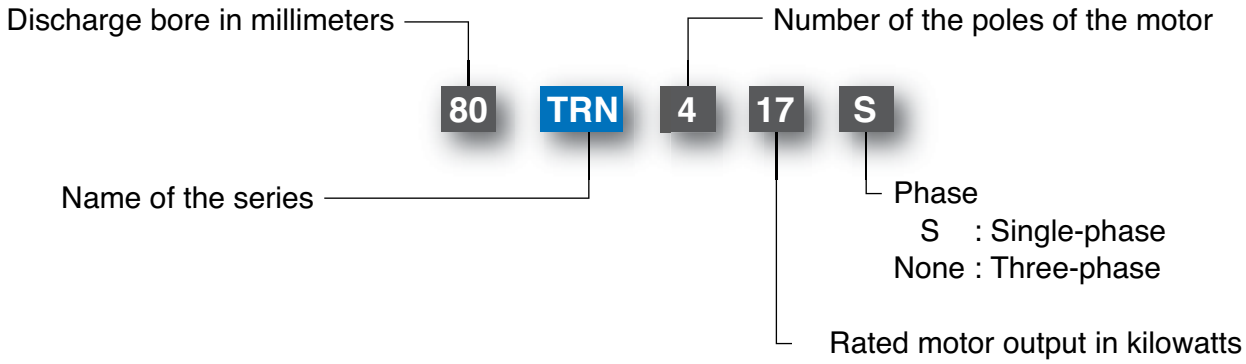
The guide rail fitting system connects the pump to and from the piping easily just by lowering and hoisting the pump, allowing easy maintenance and inspection without the need to enter the sump.

Accessories

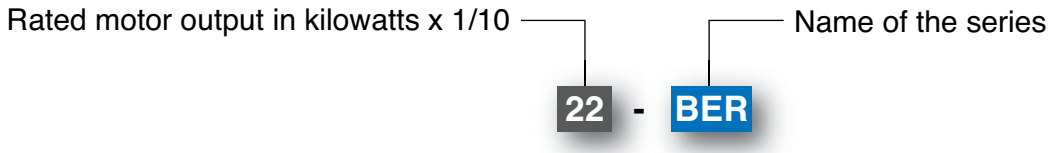
- Silencer & Valve Set
- Lifting Chain 5m (with Shackles)
- Guide Support
- Guide Hook
- Suction Casing
- Screwed Flange
- Diffuser

Model Number Designation

TRN Series



BER Series

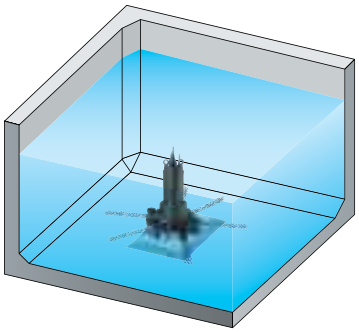


Mixed flow of air-water profile during operation

Submersible Aerators: TRN series

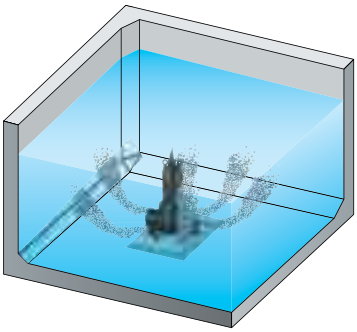
Start of operation

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



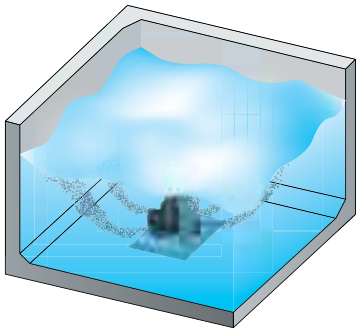
Rising by airlift

Tiny bubbles produce a high amount of dissolved oxygen.



Agitation by convection

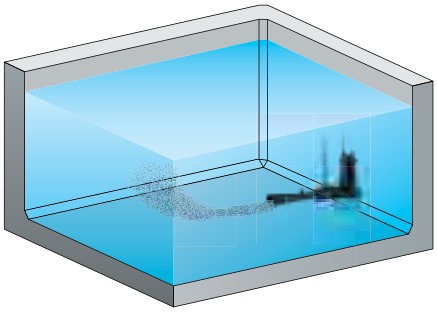
The rising bubbles enable efficient aeration and agitation.



Submersible Jet Aerators: BER Series

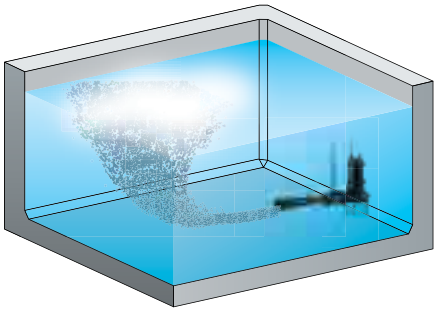
Rising by airlift

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.

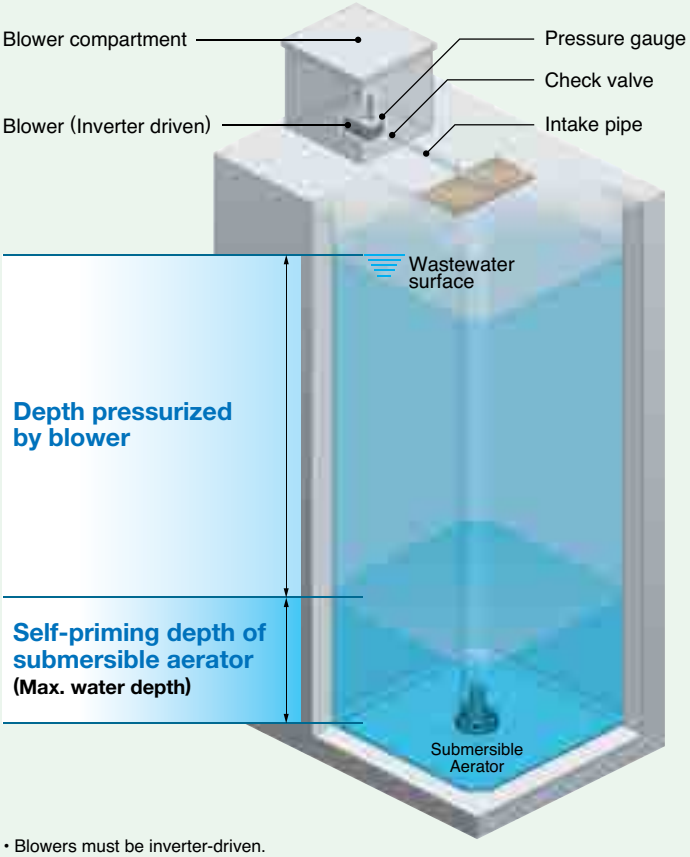


Special Offer for TRN series

How to aerate in tank deeper than max. water depth

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

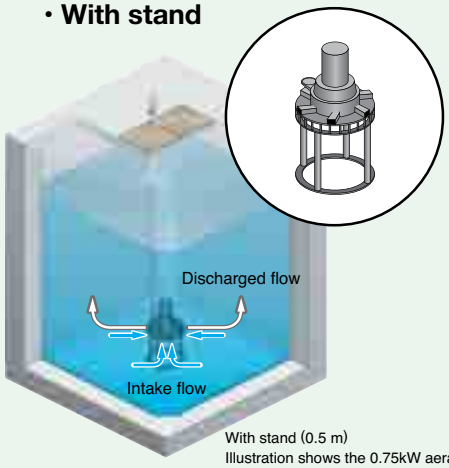
Applicable for deep tank aeration below max. water depth. Because it draws air on its own, the aerator works with a general-purpose blower instead of a high-pressure blower.



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

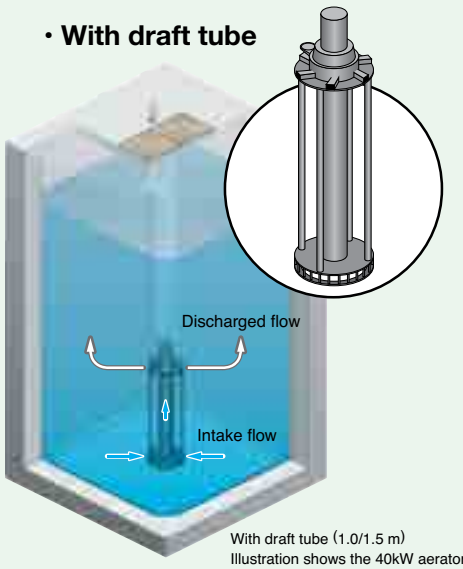
Optional specifications

• With stand



With stand (0.5 m)
Illustration shows the 0.75kW aerator.
(Applicable output: 0.75 - 40kW)

• With draft tube



With draft tube (1.0/1.5 m)
Illustration shows the 40kW aerator.
(Applicable output: 2.2 - 40kW)