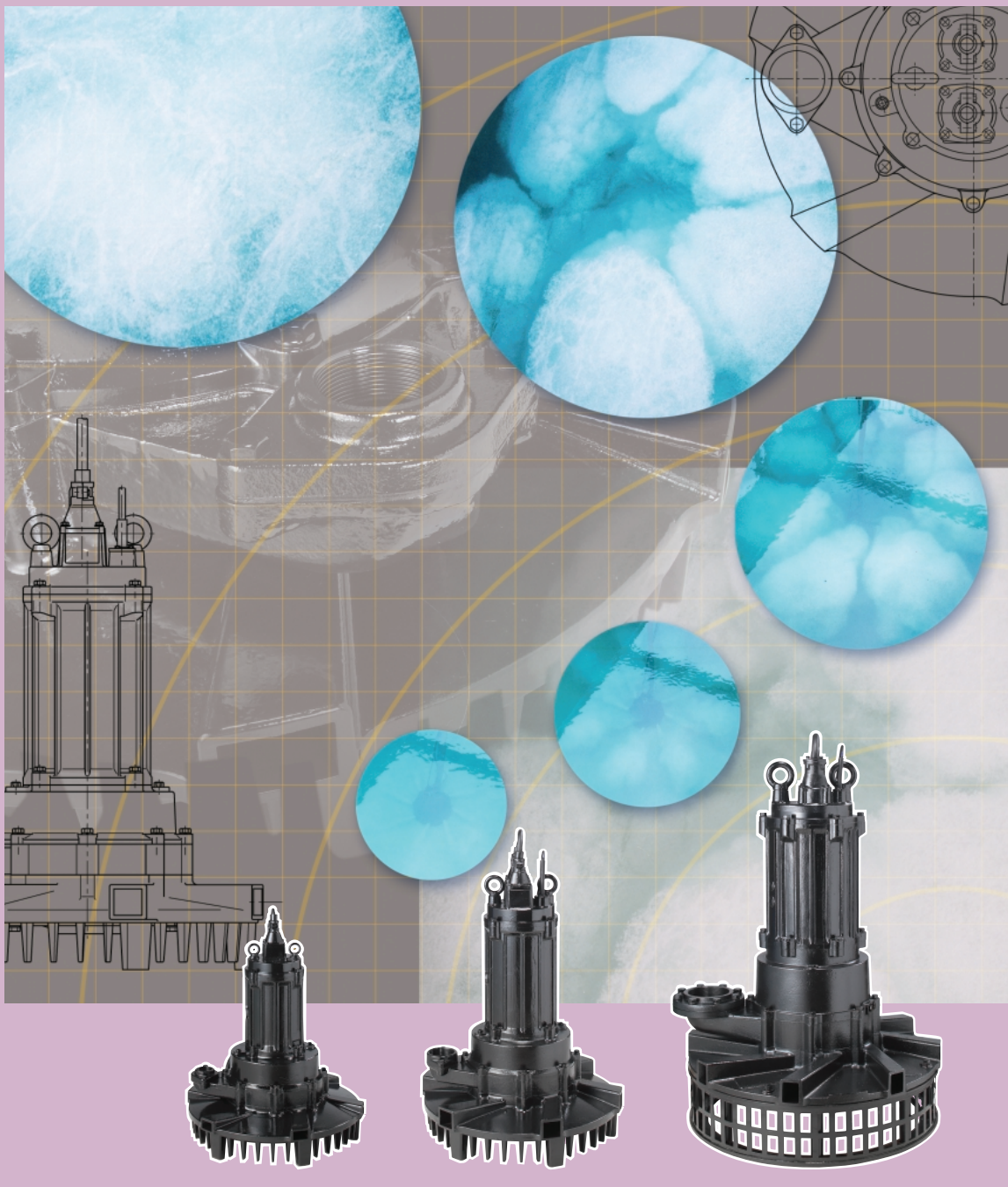
TSURUMI PUMP

Submersible Aerator

TRN



Amenics
Amenities from Technology
for People and the Earth

MODEL

TRN

SUBMERSIBLE AERATOR

Features of the TRN Series Submersible Aerator

Self-Aspirating Design

The specially designed impeller generates negative pressure around itself when rotating. This negative pressure draws in air from above the water surface. As a result, this equipment aerates without the need for a blower. (A blower is required for deep-water aeration.)
In addition, no diffuser piping is required; the aerator requires air intake piping only.

High Efficiency Dissolution of Oxygen

The air drawn into the aerator is pressurized by the liquid impelled by the impeller. Both the liquid and the pressurized air are pushed toward the discharge port by the guide vane. As part of this process, the air and liquid are mixed at a pressure higher than that produced by the depth of the water. This innovation contributes to highly efficient dissolution of oxygen.

Excellent Stirring Performance

The air contained in the air/liquid mixture discharged from the aerator gives buoyancy to the mixture, and the upward flow of the buoyant liquid generates convection current in the tank.
The current stirs the liquid so that it may even out the oxygen translation throughout the tank.

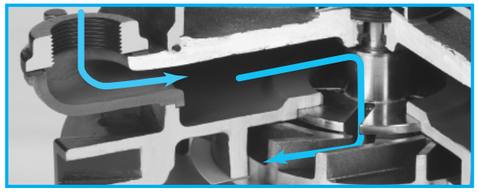
Outstanding Durability

This aerator incorporates a double mechanical seal, Tsurumi's field-proven shaft seal mechanism. An Oil Lifter is also provided to extend the service life of the mechanical seal.
In addition, this aerator includes Tsurumi's proprietary air seal mechanism, which significantly extends the service life of the shaft seal mechanism.

• Additional Features

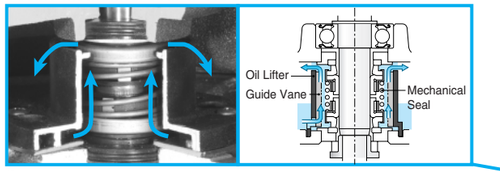
This aerator features the same unique technologies adopted in Tsurumi's submersible pumps. These include the anti-wicking cable entry, which protects the motor from water intrusion through the cable conductors; motor protection device, which protects motor from overload; and an oil seal that protects the mechanical seal from abrasive particles.

Air Seal Mechanism



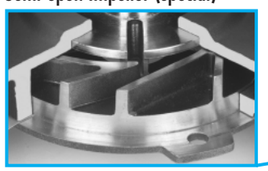
The air seal mechanism prevents pressure on the shaft seal during its operation.

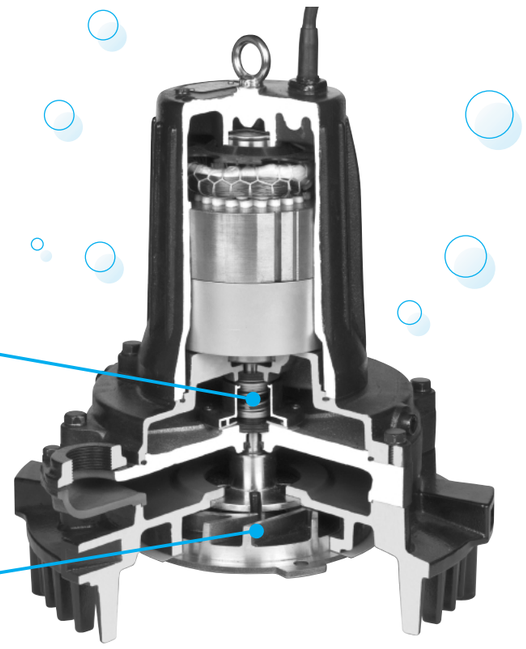
Double Mechanical Seal & OIL LIFTER



Being located in a clean environment, the mechanical seal assures reliable sealing. The OIL LIFTER stabilizes and enhances mechanical seal lubrication and cooling effect.

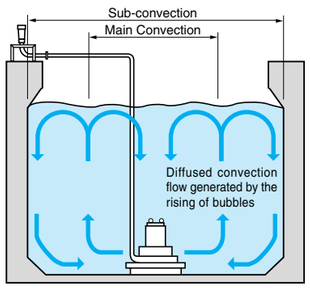
Semi-open Impeller (special)





CONVECTION PATTERN

- **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 suspended to prevent sedimentation of solids.



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

MAJOR STANDARD SPECIFICATIONS

Air-inlet Bore mm			32	50	80	100	150
Treating Fluid	Type of Fluid		Wastewater and Sewage				
	Fluid Temperature		0 to 40˚C				
Aerator	Structure	Impeller	Semi-open Impeller (special)				
		Shaft Seal	Double Mechanical Seal (with Oil Lifter)				
		Bearing	Double-shielded Ball Bearing				
	Materials	Impeller	410 Stainless Steel Casting				
		Air Passage	Gray Cast Iron				
		Guide Vane	Gray Cast Iron				
		Suction Cover	410 Stainless Steel Casting				
		Shaft Seal	Silicon Carbide				
Motor	Type, Pole		Dry Type Submersible Induction Motor				
			2, 4-pole				
	Insulation		Class F				
	Phase		Three-phase				
	Starting Method		Direct on Line (7.5kW and below) Star-Delta (12kW and above)				
	Protection Device (built-in)		Circle Thermal Protector (7.5kW and below) Miniature Thermal Protector (12kW and above)				
	Lubricant		Turbine Oil (ISO VG32)				
	Materials	Frame	Gray Cast Iron				
		Shaft	420 Stainless Steel				
		Cable	PVC (3.7kW and below) Chloroprene Rubber (5.5kW and above)				
No. of Outlets			6 (17kW and below) 8 (24kW and 40kW)				

APPLICATIONS

- Pre-aeration and aeration at wastewater treatment plant
- Supplying oxygen to water in aquafarm

STANDARD ACCESSORIES

Silencer & Valve Set ---------- 1 set
Screwed Flange
(with Packing & Bolts / 17kW and below) ---------- 1 set
JIS 10kg/cm^2 Flange
(with Packing & Bolts / 24kW and above) ---------- 1 set

CABTYRE CABLES

Motor Output kW	200~240V Cores× mm2	200~240V Dia. mm	380~600V Cores× mm2	380~600V Dia. mm	Material	Length m
0.75	4×1.25	11.1	4×1.25	11.1	PVC	6
1.5	4×1.25	11.1	4×1.25	11.1	PVC	6
2.2	4×2	11.8	4×2	11.8	PVC	6
3.7	4×3.5	13.9	4×2	11.8	PVC	6
5.5	4×3.5	14.1	4×3.5	14.1	Chloroprene Rubber	8
7.5	4×5.5	16.8	4×5.5	16.8	Chloroprene Rubber	8
12	4×3.5 3×3.5 2×1.25	14.1 12.9 9.8	4×3.5 3×3.5 2×1.25	14.1 12.9 9.8	Chloroprene Rubber	8
17	4×5.5 3×5.5 2×1.25	16.8 15.2 9.8	4×5.5 3×5.5 2×1.25	16.8 15.2 9.8	Chloroprene Rubber	8
24	4×14 3×14 2×1.25	21.7 19.7 9.8	4×14 3×14 2×1.25	21.7 19.7 9.8	Chloroprene Rubber	10
40	4×22 3×22 2×1.25	28.8 26.1 9.8	4×14 3×14 2×1.25	21.7 19.7 9.8	Chloroprene Rubber	10

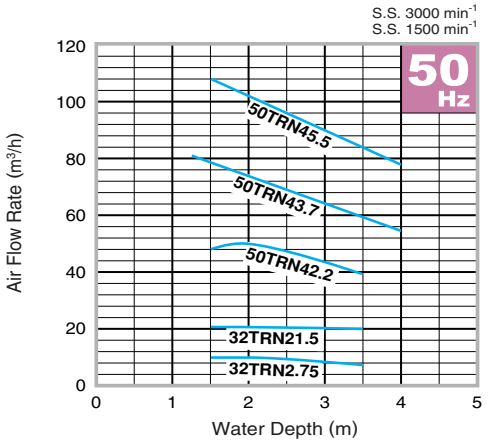
MODEL SELECTION

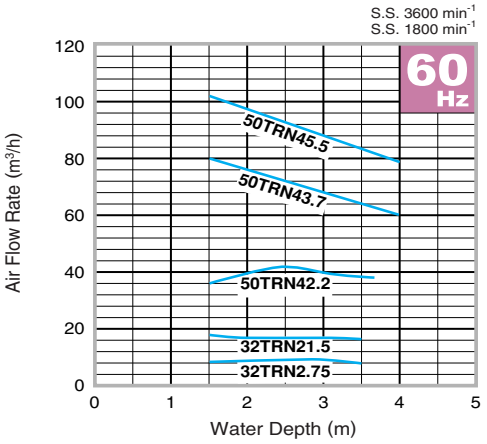
Air-inlet Bore mm	Model	Motor Output kW	Speed (S.S.) min^{-1}	Starting Method	Max. Water Depth m	Air Flow Rate* - Max.Water Depth m^3/h	No. of Outlets	Solids Passage mm	Dry Weight** kg
32	32TRN2.75	0.75	3000/3600	D.O.L.	3.5	7/8	6	10	55
	32TRN21.5	1.5	3000/3600	D.O.L.	3.5	20/17	6	12	55
50	50TRN42.2	2.2	1500/1800	D.O.L.	3.6	39/38	6	12	140
	50TRN43.7	3.7	1500/1800	D.O.L.	4.0	55/60	6	12	150
	50TRN45.5	5.5	1500/1800	D.O.L.	4.0	78/79	6	15	170
80	80TRN47.5	7.5	1500/1800	D.O.L.	4.5	124/112	6	15	190
	80TRN412	12	1500/1800	Star-Delta	6.0	157/155	6	15	200
	80TRN417	17	1500/1800	Star-Delta	6.0	202/220	6	15	220
100	100TRN424	24	1500/1800	Star-Delta	6.0	388/342	8	22	435
150	150TRN440	40	1500/1800	Star-Delta	6.0	528/506	8	25	583

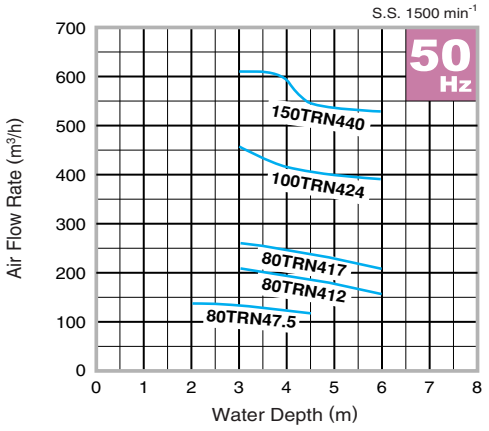
* The air flow rates are expressed at the standard condition. : Temperature 20˚C, 1 atm
** Weights excluding cable

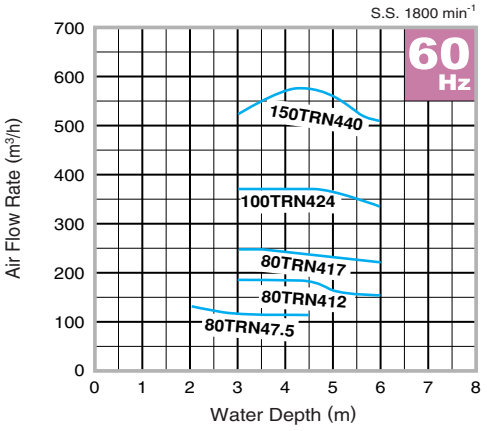
AIR FLOW RATE - WATER DEPTH CURVES

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%.

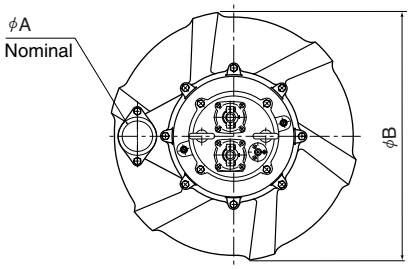


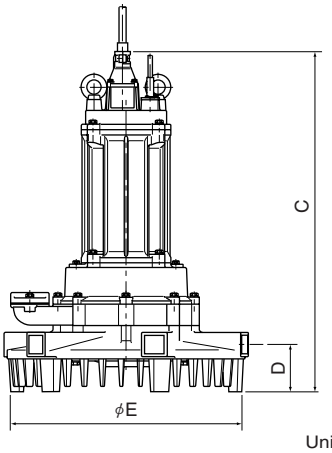






DIMENSIONS

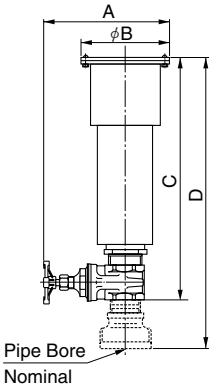




Unit: mm

MODEL	A	B	C	D	E
32TRN2.75	32	400	473	81	371
32TRN21.5	32	400	473	81	371
50TRN42.2	50	700	689	123	660
50TRN43.7	50	700	694	123	660
50TRN45.5	50	700	835	123	660
80TRN47.5	80	700	868	133	660
80TRN412	80	700	898	133	660
80TRN417	80	700	958	133	660
100TRN424	100	1000	1254	272	980
150TRN440	150	1000	1459	269	980

Silencer & Valve Set



Unit: mm

Pipe Bore	A	B	C	D
ϕ32	180	116	275	—
ϕ50	230	154	370	—
ϕ80	245	180	—	585
ϕ100	345	256	—	760
ϕ150	448	370	—	930

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

We reserve the right to change the specifications and designs for improvement without prior notice.

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