

SERIES
TAR

SUBMERSIBLE
AIR MIXERS



Submersible Air Mixers

Tsurumi's TAR-series submersible air mixers combine aeration and mixing to promote wastewater treatment at public and industrial treatment plants. The powerful current discharged from the high-performance axial-flow impeller shears the air supplied by the blower into tiny bubbles, forming a furious flow of mixed air and water that efficiently delivers oxygen throughout the wastewater. Moreover, Tsurumi's original downward 4-directional discharge design spreads that mixed flow outward along the bottom of the tank toward the edges to ensure homogeneity.

When paired with a Tsurumi rotary air blower, the TAR air mixers not only offer effective aerobic agitation but they can also be used for both aerobic and anaerobic processing by simply switching the blower on and off.

Like Tsurumi's core product lines of submersible pumps, the TAR air mixers come loaded with numerous original technologies tested and proven over the years, including anti-wicking cable, motor protector, leakage sensor, dual inside mechanical seals with silicon carbide faces and Oil Lifter. These superior features underscore the high reliability, lasting durability and sound quality that enable continuous duty.

As an added convenience, the TAR-series can be installed on a guide rail fitting device that allows the air mixers to be easily lowered and raised into and out of tanks on guide rails. This has huge economic advantages compared to air diffusion systems that are typically anchored to the tank bed, as the tanks do not need to be drained when mixers require maintenance, which can greatly reduce downtime.

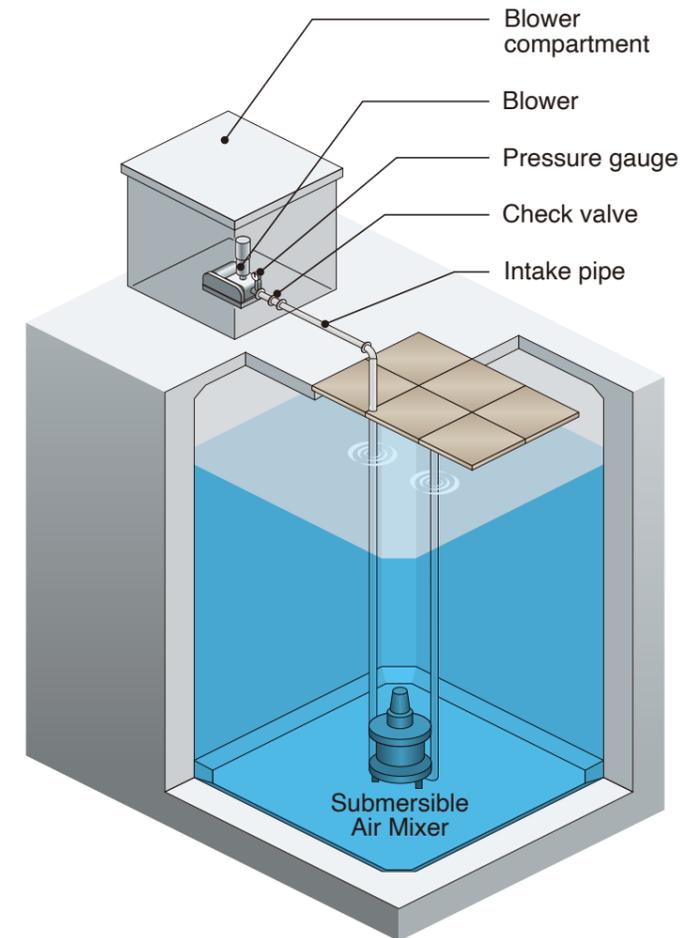
Besides its lineup of air mixers, Tsurumi offers a wide array of wastewater treatment equipment including submersible pumps, aerators and mixers, blowers, dehydrators, bar screens and more. Moreover, Tsurumi has a long track record of supplying total package solutions in the wastewater treatment field.

Because water environments are important to lives and livelihoods everywhere, Tsurumi proudly uses its wastewater treatment technology to support responsible and sustainable environmental protection activities.



In combination with a blower in aerobic agitation

▶ When paired with a general-purpose blower, TAR-series air mixers offer effective aerobic agitation.



• Provide 1 blower for each submersible air mixer

Tsurumi Rotary Air Blowers

Tsurumi also makes rotary air blowers that can be paired with TAR-series air mixers to deliver aerobic agitation. These blowers are available with air-cooled type or water-cooled type, and 3-lobe spur rotors or helical rotors, therefore contact an authorized dealer for more information.

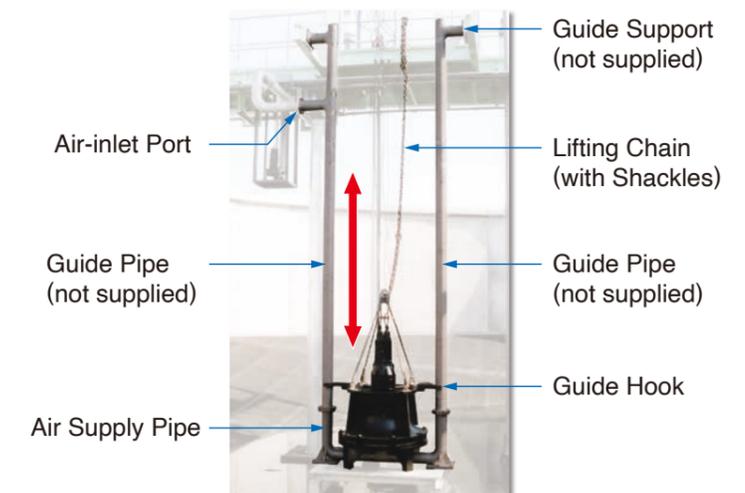


Guide Rail Fitting System

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

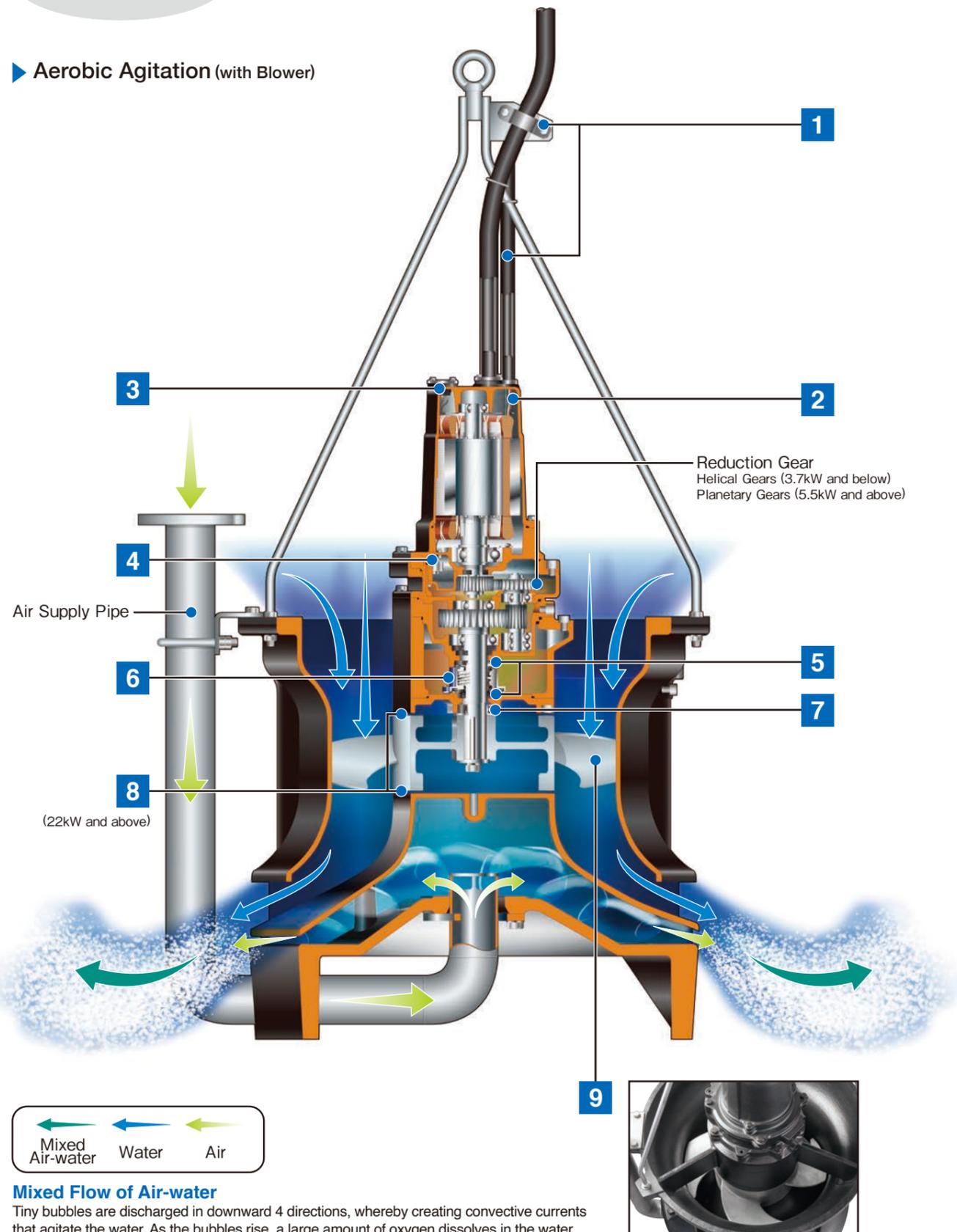
Accessories

- Lifting Chain 5m (with Shackles)
- Air Supply Pipe
- Guide Hook

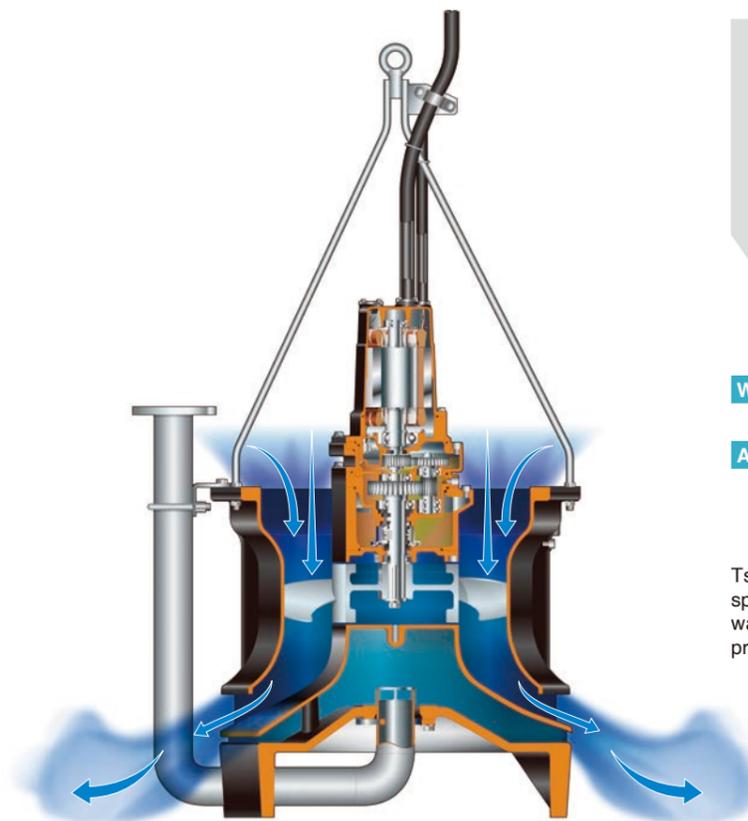


**Model
80TAR43.7**

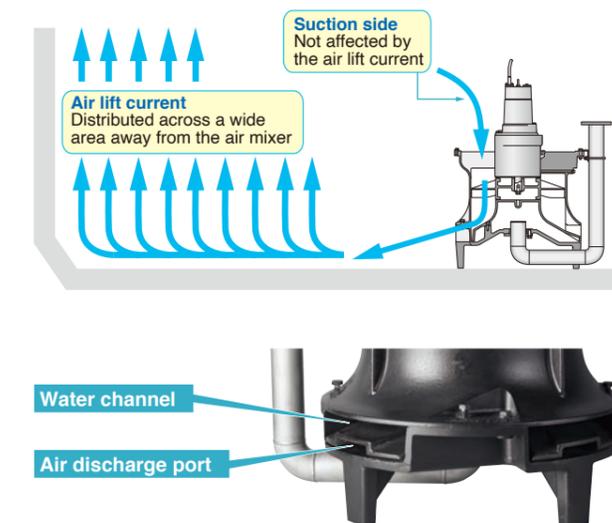
► **Aerobic Agitation (with Blower)**



► **Anaerobic Agitation (without Blower)**



Downward 4-Directional Discharge



Tsurumi's original downward 4-directional discharge design spreads flow across a wide area. It effectively homogenizes the wastewater by creating conditions that make it hard for sludge to precipitate and settle on the tank bed.

1 Cable Clip & Protection Tube

Protect the cable and cable connection. The protection tube guards the cable against wear caused by contact with the tank wall, while the clip ensures the cable stays connected under the tension caused by tugging and pulling.

2 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.

3 Motor Protector

Circle Thermal Protector (7.5kW and below)

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

Miniature Thermal Protectors (11kW and above)

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

4 Leakage Sensor

Float Type (7.5kW and below)

Electrode Type (11kW and above)

Detects flooding into the incursion water storage chamber and oil chamber that may occur in a worst case scenario. When flooding is detected, signals are sent to operate the indicator lamps through the external control panel.

5 Dual Inside Mechanical Seals with Silicon Carbide Faces

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 of the upper and lower fixing rings are made of NBR or FPM (FKM), which provides higher resistance to heat and chemicals.

6 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.

7 Oil Seal

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

8 Mouth Ring & Wear Ring (200TAR422 and 250TAR430 only)

Prevent wear in the casing, resulting in reduced maintenance costs.

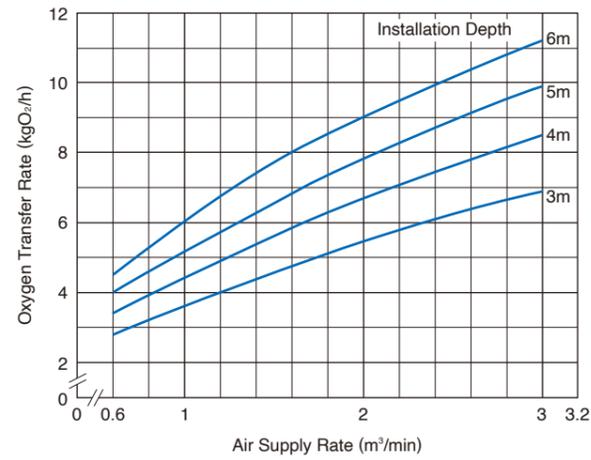
9 Propeller (Axial Flow Impeller)

Produces a powerful current that keeps solid matter from clogging. The propeller is cast from corrosion-resistant 304 stainless steel and features an original design that generates an axial flow.

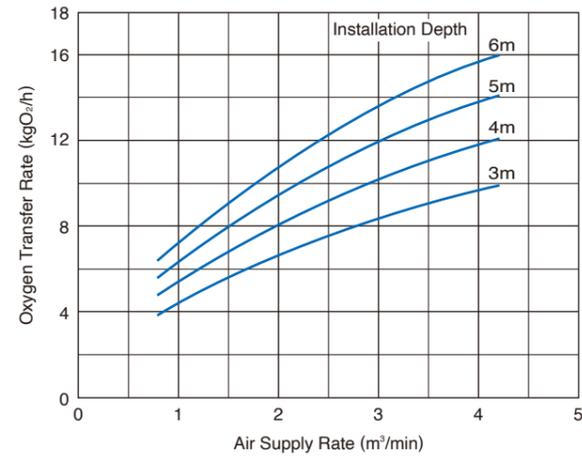
Oxygen Transfer Rate - Air Supply Rate Curves

- Conditions: Clean water, 20°C, 0 mg/l DO
- Oxygen Transfer Rate may fluctuate about 10% due to water temperature, tank shape, water quality and other factors. Select a model that ensures an ample air supply rate for your application.
- The max. water depth of installation is 10 m, but please contact an authorized dealer for the performance at depths of 6m or more.

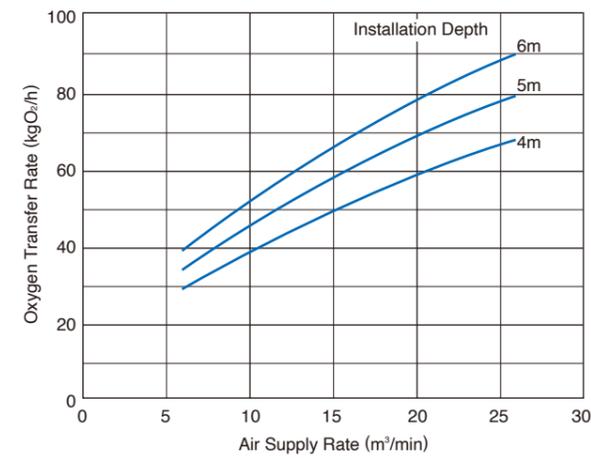
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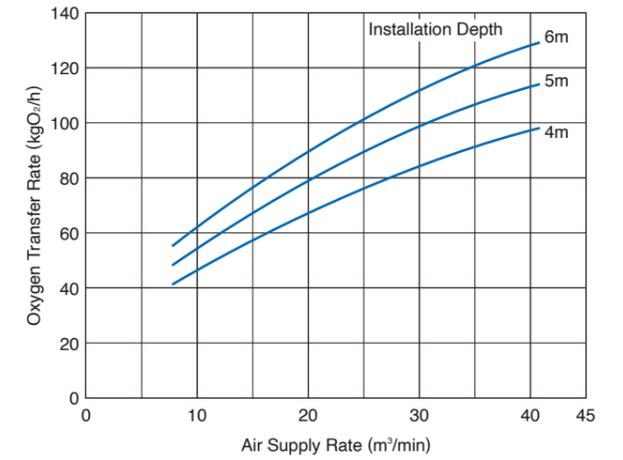
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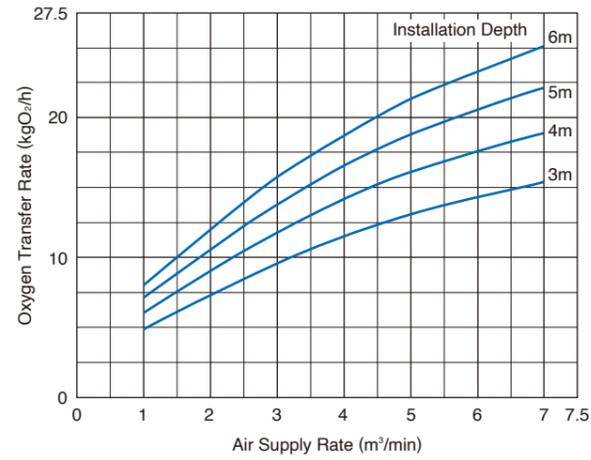
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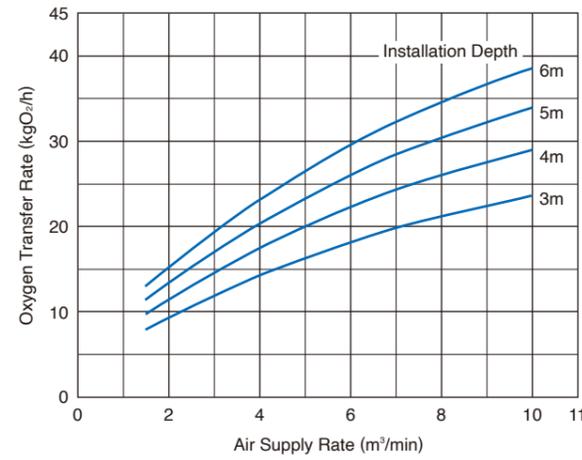
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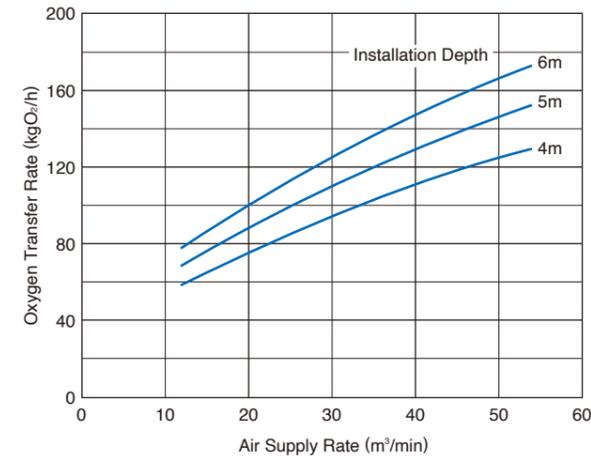
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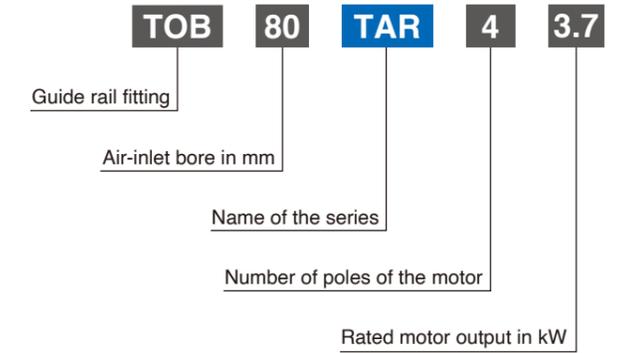
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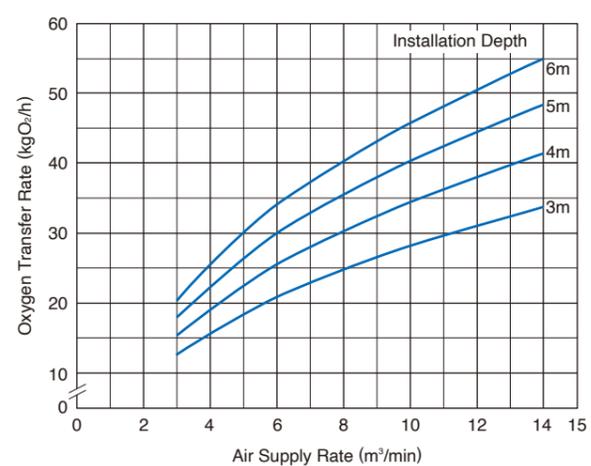
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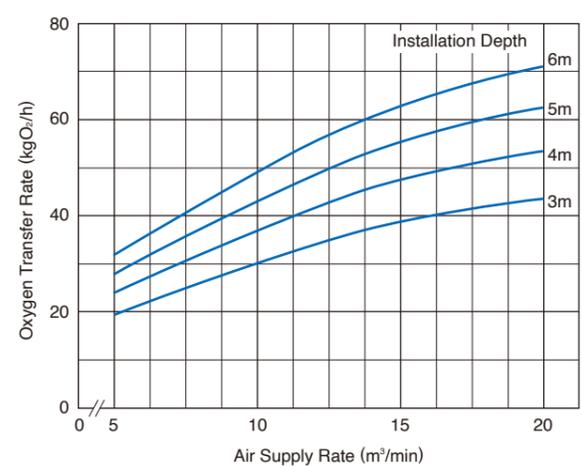
Model Number Designation



< 125TAR47.5 >



< 150TAR411 >



Air-inlet Bore mm	Model		Motor Output kW	Phase	Starting Method	Flow Rate m³/min	Air Supply Rate m³/min	Oxygen Transfer Rate kgO ₂ /h	Mixing Capacity* ² m³	Dry Weight* ³ kg		Cable Length m
	Free Standing	Guide Rail Fitting								Free Standing	Guide Rail Fitting	
65	65TAR41.5	TOB65TAR41.5	1.5	Three	D. O. L.	9	0.6 - 3	4 - 9.9	273	345	325	10
65	65TAR42.2	TOB65TAR42.2	2.2		D. O. L.	12.5	0.8 - 4.2	5.8 - 14	400	345	325	10
80	80TAR43.7	TOB80TAR43.7	3.7		D. O. L.	20	1 - 7	7 - 22	670	420	400	10
100	100TAR45.5	TOB100TAR45.5	5.5		D. O. L.* ¹	31	1.5 - 10	12 - 34	1000	588	573	10
125	125TAR47.5	TOB125TAR47.5	7.5		D. O. L.* ¹	46	3 - 14	18 - 48	1360	1135	1100	10
150	150TAR411	TOB150TAR411	11		Star-Delta	65	5 - 20	28 - 63	2000	1475	1385	10
150	150TAR415	TOB150TAR415	15		Star-Delta	100	6 - 26	34.5 - 79	2700	1580	1530	10
200	200TAR422	TOB200TAR422	22		Star-Delta	150	8 - 41	49 - 113.5	4000	2530	2430	10
250	250TAR430	TOB250TAR430	30		Star-Delta	200	12 - 54	68.5 - 151	5500	3360	3260	10

*¹ Star-Delta available upon request

*² Mixing capacity is based on a maximum vertical to horizontal ratio of 1:1.1. For other applications, contact an authorized dealer.

*³ All weights excluding cable

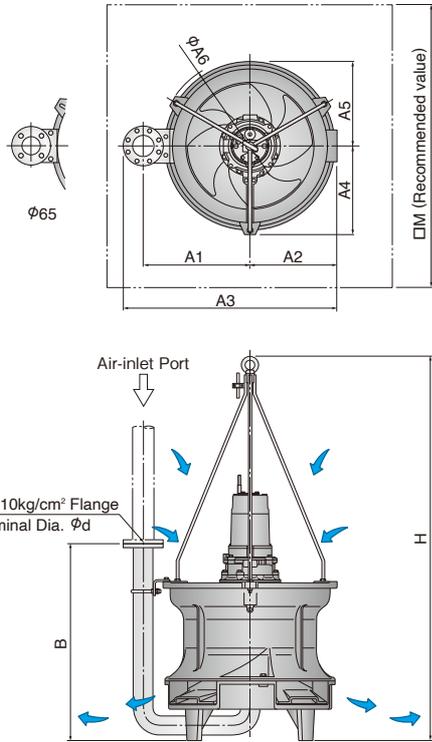
• Oxygen transfer rate is given for an equipment depth of 5 m. Actual results may vary due to water quality, temperature and depth, and tank shape.

• Air supply rate is given for standard conditions. Standard conditions are an air temperature of 20°C and barometric pressure of 1 atm.

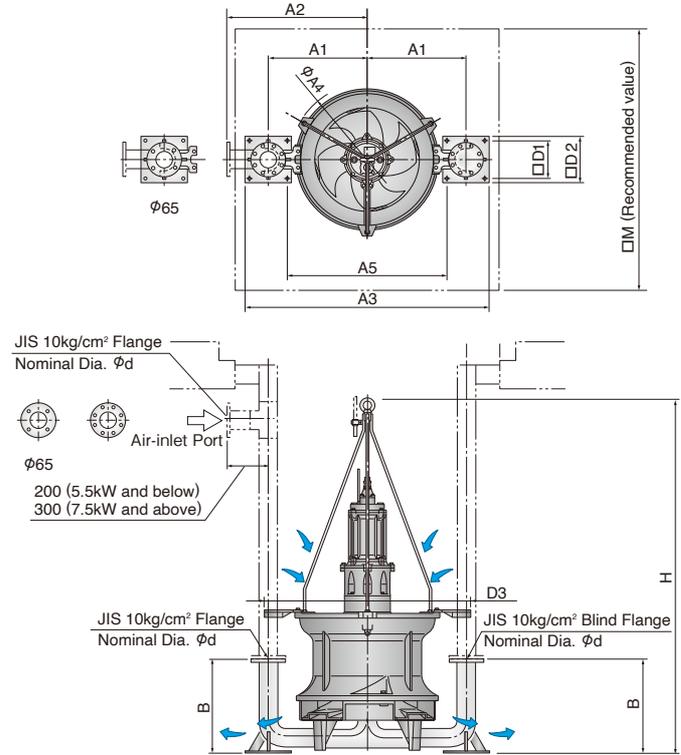
Dimensions

• Unless otherwise stated, the nominal diameter in drawings is $\phi 80$ mm.

< Free Standing >



< Guide Rail Fitting >



Free Standing

Unit: mm

Model	d	A1	A2	A3	A4	A5	A6	B	H	M
65TAR41.5	65	440	365	893	380	355	760	870	1600	1200
65TAR42.2	65	440	365	893	380	355	760	870	1600	1200
80TAR43.7	80	490	400	983	410	390	820	913	1720	1300
100TAR45.5	100	560	440	1105	465	430	930	960	2140	1450
125TAR47.5	125	700	575	1400	—	—	1150	1180	2270	1750
150TAR411	150	820	675	1635	—	—	1350	1430	2620	2050
150TAR415	150	870	740	1750	—	—	1480	1500	2722	2150
200TAR422	200	920	800	1885	—	—	1600	1650	3131	2300
250TAR430	250	1100	950	2250	—	—	1900	1740	3351	2700

• $\phi A6$ is the maximum diameter excluding the air supply pipe.

Guide Rail Fitting

Unit: mm

Model	d	A1	A2	A3	A4	A5	D1	D2	D3	B	H	M
TOB65TAR41.5	65	470	670	1140	760	780	160	200	980	350	1600	1200
TOB65TAR42.2	65	470	670	1140	760	780	160	200	980	350	1600	1200
TOB80TAR43.7	80	520	720	1290	820	830	210	250	1080	350	1720	1300
TOB100TAR45.5	100	600	800	1480	930	970	230	280	1250	550	2140	1500
TOB125TAR47.5	125	760	1060	1860	1150	1280	240	340	1580	700	2270	2000
TOB150TAR411	150	870	1170	2090	1350	1490	250	350	1800	800	2620	2300
TOB150TAR415	150	945	1245	2270	1480	1610	280	380	1950	800	2722	2450
TOB200TAR422	200	1100	1400	2600	1600	1900	300	400	2300	900	3131	3000
TOB250TAR430	250	1250	1550	2960	1900	2140	360	460	2640	1000	3351	3400

• $\phi A4$ is the maximum diameter excluding the guide hook.

Specifications

		TAR										
		65TAR41.5	65TAR42.2	80TAR43.7	100TAR45.5	125TAR47.5	150TAR411	150TAR415	200TAR422	250TAR430		
PUMP	Air-inlet Bore	mm	65		80	100	125	150		200	250	
	Air-inlet Connection		JIS 10kg/cm ² Flange									
	Air Supply Pipe		304 Stainless Steel									
	Impeller		Propeller (Axial Flow)									
			304 Stainless Steel Casting									
	Mouth Ring & Wear Ring		—						304 Stainless Steel			
	Oil Seal		Nitrile Butadiene Rubber									
	Casing		Gray Cast Iron									
	Shaft Seal		Dual Inside Mechanical Seals (with Oil Lifter)									
			Silicon Carbide									
Shaft Sleeve		403 Stainless Steel				304 Stainless Steel						
MOTOR	Type		Continuous-duty Rated, Dry-type Induction Motor									
	Output	kW	1.5	2.2	3.7	5.5	7.5	11	15	22	30	
	Phase		Three									
	Pole		4									
	Speed (S.S.) 50/60Hz	min ⁻¹	1500/1800									
	Insulation		E				F					
	Starting Method		D.O.L.			D.O.L.* ²			Star-Delta			
	Reduction Gear		Helical Gears			Planetary Gears						
	Motor Protector (built-in)		CTP					MTP				
	Leakage sensor (built-in)		Float					Electrode				
	Lubricant	Oil Casng	ml	3300		3200	5500	6000		12000		
				Turbine Oil (ISO VG32)								
		Reduction Gear	ml	2500		3000	6000	8000		17500	18000	
			Gear Oil (ISO VG150)									
	Frame		Gray Cast Iron									
	Shaft		420 Stainless Steel									
	Power Cable	m	10									
Chloroprene Rubber												
Cable Protection Tube		Polyurethane Tube										
Max. Water Depth	m	10										
Dry Weight* ¹	Free Standing	kg	345	420	588	1135	1475	1580	2530	3360		
	Guide Rail Fitting	kg	325	400	573	1100	1385	1530	2430	3260		

*¹ All weights excluding cable

*² Star-Delta available upon request



Product images and specifications may differ from actual products due to improvements. The OO series and model OO are indicated with our series/model codes in this catalog.

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