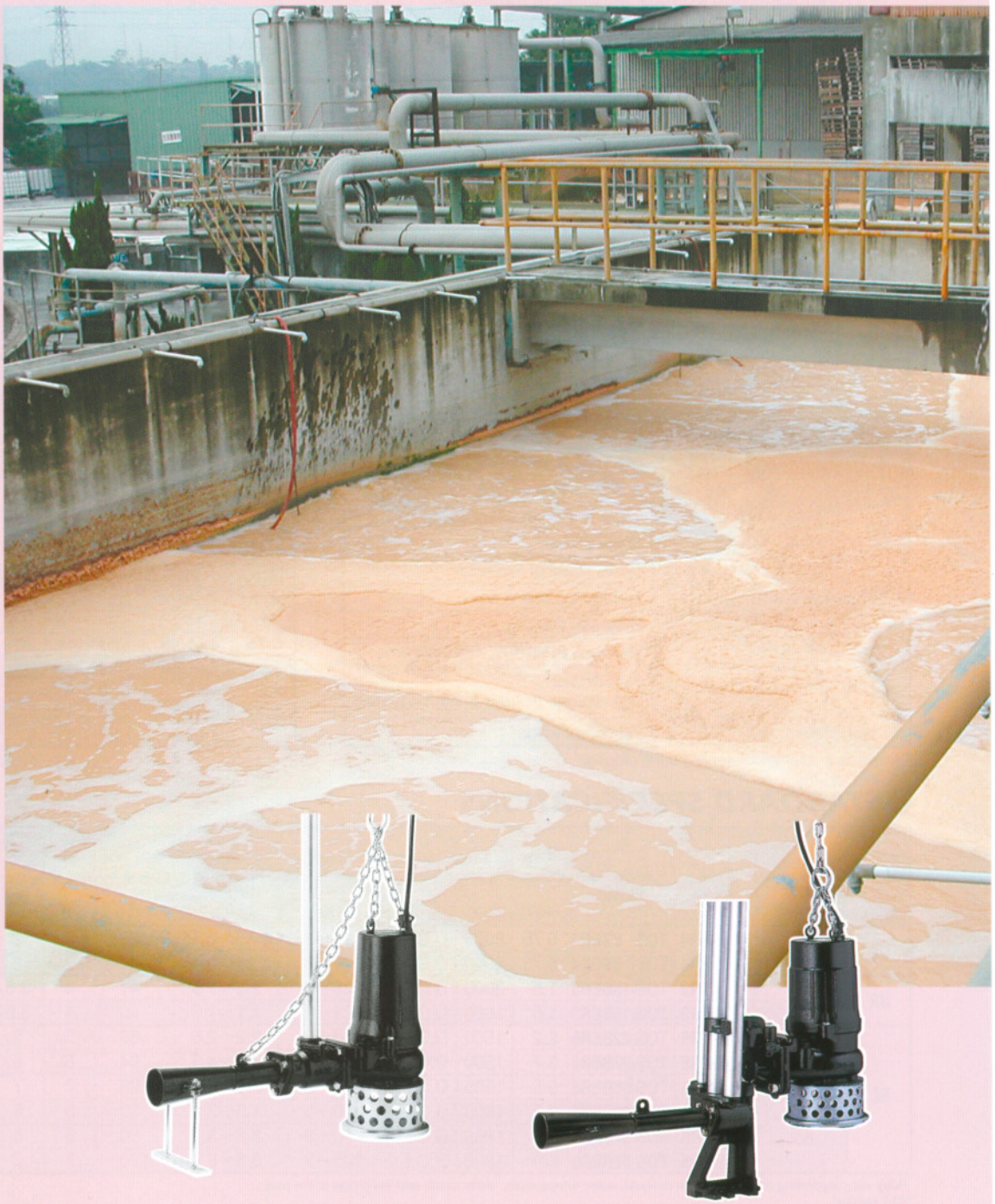
TSURUMI PUMP

Submersible Ejector

BER



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BER / TOS-BER SUBMERSIBLE EJECTOR

FEATURES

The powerful single direction jet current is unrivaled in vertical stirring convection. And its required shaft power is not so much changed when the depth changes.

APPLICATIONS

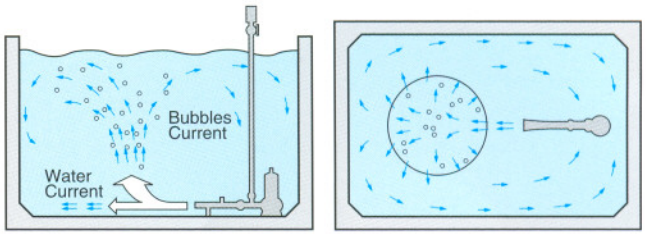
- Pre-aeration and primary aeration at industrial wastewater treatment facilities.
- Oxygen supply to water at aquafarms.

MAJOR STANDARD SPECIFICATIONS

Discharge Bore mm			25	32	50
Pumping Liquid	Type of Liquid		Sewage and Wastewater		
	Liquid Temperature		0 to 40°C		
Pump	Part	Impeller	Channel Impeller		
		Shaft Seal	Double Mechanical Seal (with Oil Lifter)		
		Bearing	Double-shielded Ball Bearing		
	Material	Diffuser *	Structure Steel & Nylon Coated		
		Impeller	Gray Iron Casting		
		Suction Cover	Gray Iron Casting		
		Casing	Gray Iron Casting		
		Shaft Seal	SiC		
Motor	Type, Pole		Dry Type Submersible Induction Motor		
			2, 4-pole (2.2kW and above)		
	Class of Insulation		Class E, F (1.5kW and 5.5kW only)		
	Phase		Three-phase		
	Motor Protector (Built-in)		Circle Thermal Protector		
	Lubricant		Turbine Oil (ISO VG32)		
	Material	Frame	Gray Iron Casting		
		Shaft	Stainless Steel 403, 420 (1.5kW and above)		
		Cable	PVC Sheath Chloroprene Rubber Sheath (5.5kW only)		
Air-inlet Connection			Screwed Flange		

*Available in stainless steel 304 upon request

CONVECTION PATTERN



CABTYRE CABLES

Motor Output kW	200~240V Cores× mm2	200~240V Dia. mm	380~525V Cores× mm2	380~525V Dia. mm	Material	Length m
0.75	4×1.25	11.1	4×1.25	11.1	P.V.C Sheath	6
1.5	4×1.25	11.1	4×1.25	11.1		
2.2	4×2	11.8	4×2	11.8		
3.7	4×3.5	13.9	4×2	11.8		
5.5	4×3.5	14.1	4×3.5	14.1	Chloroprene Sheath	8

STANDARD SPECIFICATIONS

Air-Inlet Bore mm	Frequency Hz	Model: Free Standing	Model: Guide Rail Fitting	Motor Output kW	Speed (s.s.) min-1	Starting Method	Air Quantity -Water Depth m3/h-m	Oxygen * Transfer Rate kg•O2/h	Mixing Capacity m3/h	Max. Tank Dimension: Length m	Max. Tank Dimension: Width m	Max. Tank Dimension: Depth m	Max. Water Depth m	Dry Weight **: Free Standing kg	Dry Weight **: Guide Rail Fitting kg
25	50	8-BER4	TOS- 8BER4	0.75	3000	D.O.L.	11—3	0.45~0.55	22	3	2	4	4	28	23
	60	8-BER4	TOS- 8BER4	0.75	3600	D.O.L.	9—3	0.35~0.45	21	3	2	4	4	28	23
32	50	15-BER3	TOS-15BER3	1.5	3000	D.O.L.	28—3	1.3~1.5	41	4	3.5	4	4	43	34
	60	15-BER3	TOS-15BER3	1.5	3600	D.O.L.	24—3	1.1~1.3	40	4	3.5	4	4	43	34
50	50	22-BER5	TOS-22BER5	2.2	1500	D.O.L.	45—3	2.2~2.6	63	5	5	4.5	4.5	75	61
		37-BER5	TOS-37BER5	3.7	1500	D.O.L.	80—3	3.6~4.3	94	6	6	5	5	91	77
		55-BER5	TOS-55BER5	5.5	1500	D.O.L.	120—3	6.0~7.0	126	7	7	6	6	149	132
	60	22-BER5	TOS-22BER5	2.2	1800	D.O.L.	38—3	1.9~2.2	60	5	5	4.5	4.5	75	61
		37-BER5	TOS-37BER5	3.7	1800	D.O.L.	70—3	3.2~3.7	90	6	6	5	5	91	77
		55-BER5	TOS-55BER5	5.5	1800	D.O.L.	105—3	5.3~6.1	120	7	7	6	6	149	132

*May vary depending on the condition of liquid, water temperature, water depth and the shape of the tank
**Dry weight
All weights excluding cable
Weights of guide rail fitting excluding duckfoot bend

STANDARD ACCESSORIES

Discharge Bore

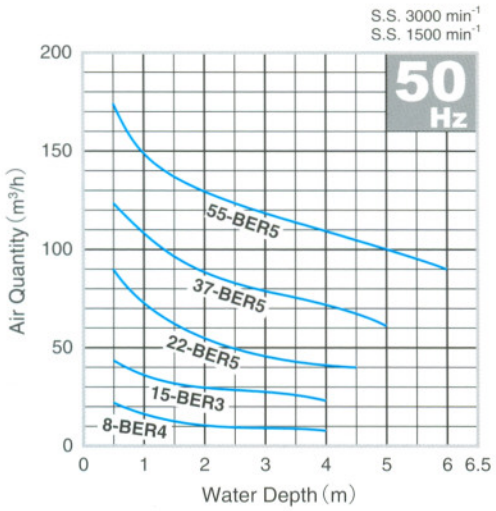
- Silencer & Valve Set ---------- 1 set
- Lifting Chain (5m / with Shackles) ---------- 1 set
- Suction Casing (with Nozzle Ring, Packing & Bolts) ---------- 1 set
- Screwed Flange (with Packing & Bolts) ---------- 1 set
- Diffuser (with Packing & Bolts) ---------- 1 set
- Diffuser Base (with Nuts) ---------- 1 set

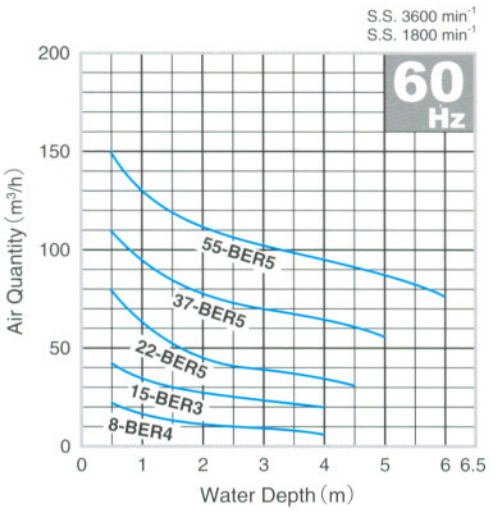
Guide Rail Fitting

- Silencer & Valve Set ---------- 1 set
- Lifting Chain (5m / with Shackles) ---------- 1 set
- Guide Support (with Bolts & Nuts) ---------- 1 set
- Air-inlet Pipe Support (with U-bolt & Nuts) ---------- 1 set
- Guide Hook (with Bolts) ---------- 1 set
- Nozzle (with Nozzle Ring, Packing & Bolts) ---------- 1 set
- Suction Casing ---------- 1 set
- Guide Connector (with Bolts) ---------- 1 set
- Screwed Flange (with Packing & Bolts) ---------- 1 set
- Diffuser (with Packing & Bolts) ---------- 1 set
- Foundation Bolts (with Nuts) ---------- 1 set

AIR QUANTITY -WATER DEPTH CURVES

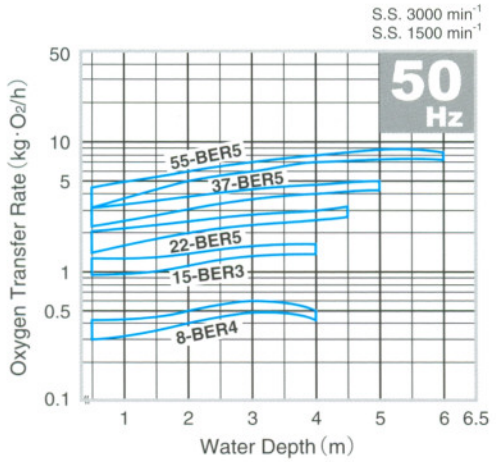
(The air quantity may vary ±5%)

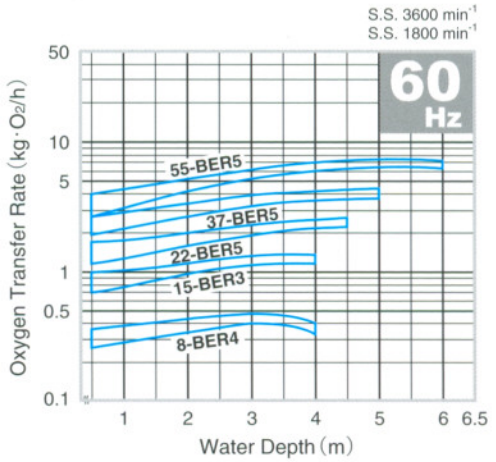




OXYGEN TRANSFER RATE -WATER DEPTH CURVES

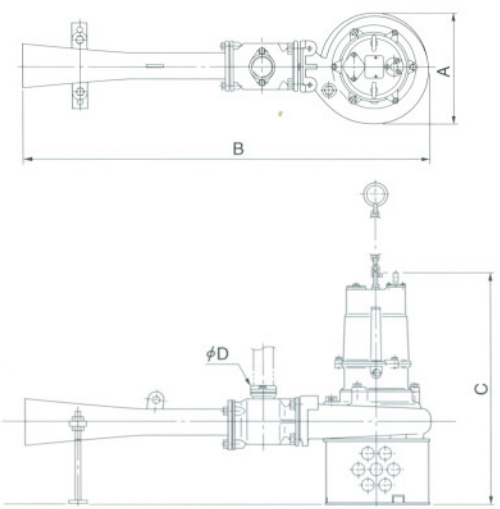
(at 20℃, fresh water)



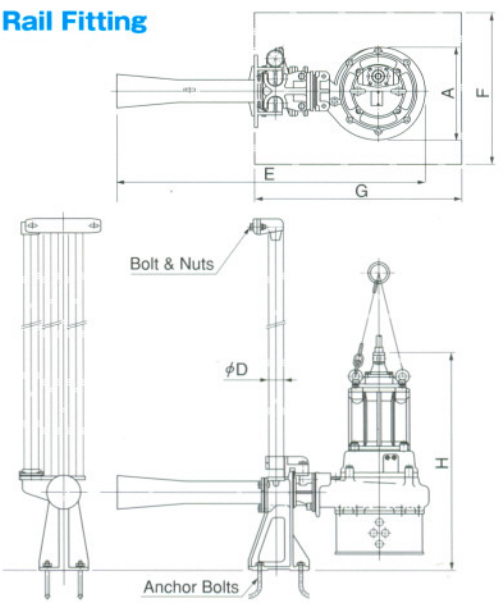


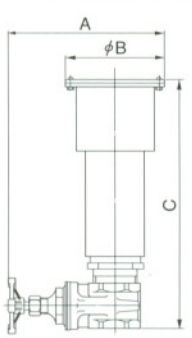
DIMENSIONS

Free Standing



Guide Rail Fitting





Silencer & Valve Set

Pipe Bore	A	ϕB	C
ϕ25	147	91	210
ϕ32	180	116	275
ϕ50	230	154	370

Material of silencer : PVC

(Units: mm)

Free Standing	8-BER4	15-BER3	37-BER5	22-BER5	55-BER5
Guide Rail Fitting	TOS-8BER4	TOS-15BER3	TOS-37BER5	TOS-22BER5	TOS-55BER5
A	194	222	325	317	391
B	674	895	1164	1158	1415
C	464	562	753	679	942
ϕD*	25	32	50	50	50
E	674	910	1168	1162	1422
F	350	450	450	450	500
G	550	650	700	700	750
H	514	603	837	768	1006

*Nominal size

BER / TOS-BER SUBMERSIBLE EJECTOR

The Tsurumi Submersible Ejector, as shown in the figure, draws air in from the vicinity of jet nozzle by means of the water power discharged from the submersible pump. A mixture of air and water is then produced inside the diffuser. This mixture is pressurized just to the point where the pressure exceeds the water pressure around the ejection outlet, and then it forcibly jets into the surrounding water.

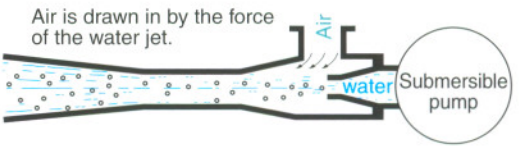
As a result, the ejected current is jetted in a single direction for a comparatively long range, enabling the generation of an extremely large churning effect.

Furthermore, even if the water depth fluctuates, the required shaft power hardly changes. The air quantity is freely adjusted as well. Because of this, the submersible ejector is also ideal as a aerator in equalizing tanks where the fluctuation in the water level is comparatively great.

A particularly large sales point is the fact that due to the air/water collision that occurs while the suction-inducted air is in a minutely particulated, pressurized state, the oxygen dissolution efficiency is remarkably high.

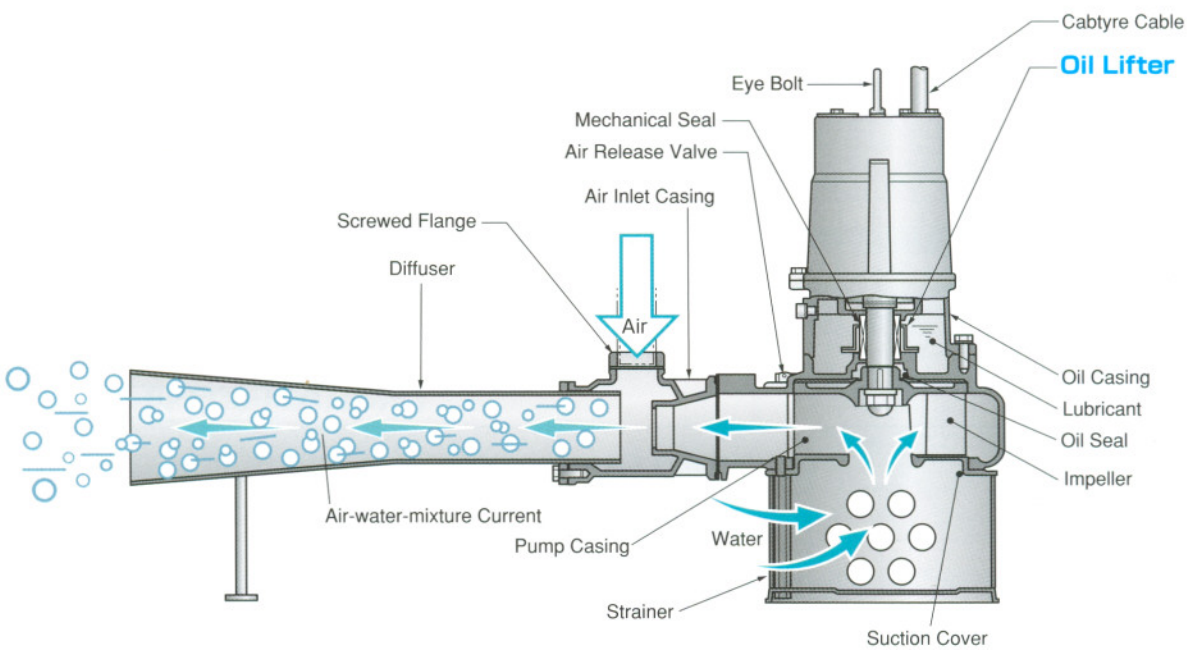
The principle of the ejector system

This system is a combination of a submersible pump and a jet pump. By the action of the ejection current of the submersible pump, a self-feeding force is generated, which draws air from the surface of the water through a air-inlet pipe. This air is mixed with the water and the mixture is ejected. The churning force caused by this ejection current is remarkably strong, with the result that exceptionally efficient oxygen dissolution is produced.



The mixture is pressurized to the point (exceeding the water pressure), where it can be ejected.

As a result, minute air bubbles and water are ejected in a pressurized state, enabling a large amount of oxygen to be dissolved in the water.



The specifications and designs herein may be changed for improvement without notice.

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