

Submersible Ejector **BER**



บริษัท ไฮ คอนโทรล จำกัด.



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

STANDARD SPECIFICATIONS

| Air-Inlet Bore mm | Frequency Hz | Model | | Motor Output kW | Speed (s.s.) min ⁻¹ | Starting Method | Air Quantity Water Depth m ³ /h-m | Oxygen Transfer Rate kg-O ₂ /h | Mixing Capacity m ³ /h | Max. Tank Dimension | | | Max. Water Depth m | Dry Weight ** | |
|----------------------|-----------------|---------------|--------------------|--------------------|--------------------------------------|-----------------|----------------------------------------------------|----------------------------------------------|--------------------------------------|---------------------|------------|------------|-----------------------|---------------------|--------------------------|
| | | Free Standing | Guide Rail Fitting | | | | | | | Length m | Width m | Depth m | | Free Standing kg | 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 |

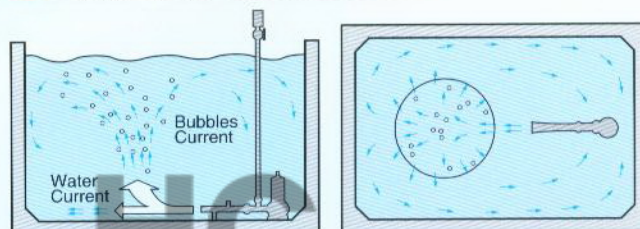
Guide Rail Fitting

| | |
|---------------------------------------------|-------|
| 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 |



CONVECTION PATTERN

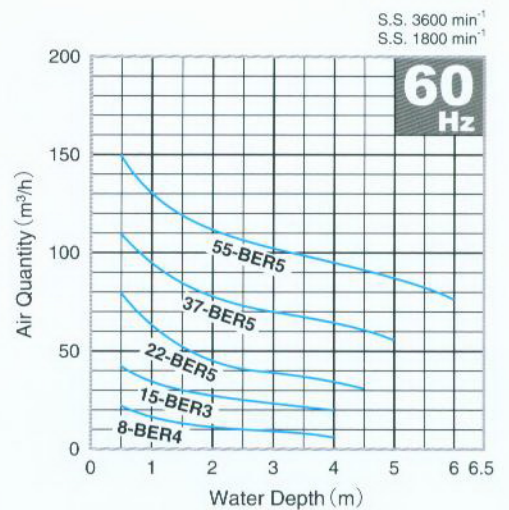
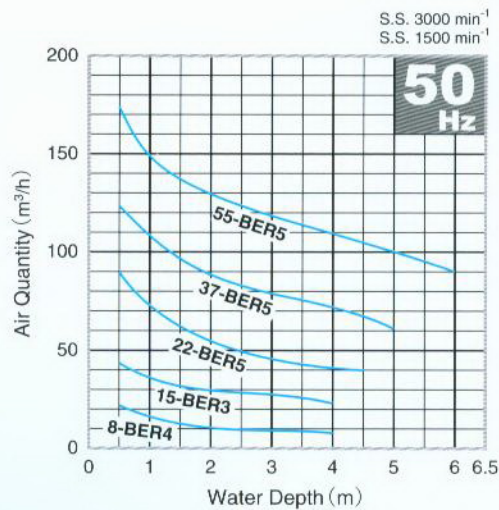


CABTYRE CABLES

| Motor Output kW | 200~240V | | 380~525V | | Material | Length m |
|--------------------|---------------------------|------------|---------------------------|------------|--------------------|-------------|
| | Cores× mm ² | Dia. mm | Cores× mm ² | Dia. mm | | |
| 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 | Chloroprene Sheath | 8 |
| 5.5 | 4×3.5 | 14.1 | 4×3.5 | 14.1 | | |

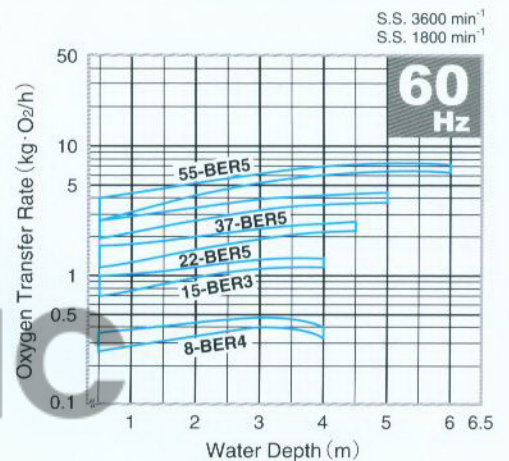
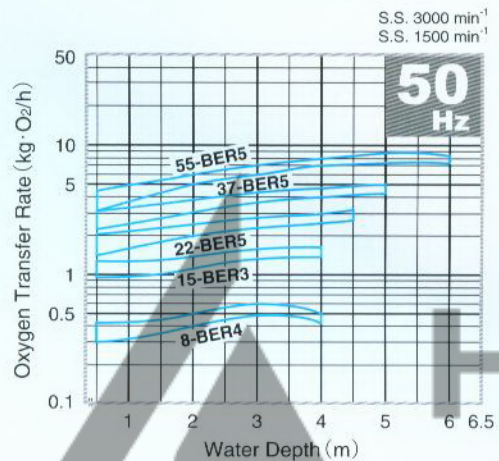
AIR QUANTITY -WATER DEPTH CURVES

(The air quantity
may vary $\pm 5\%$)



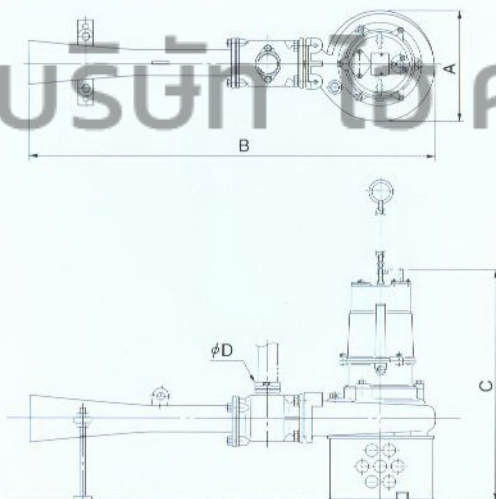
OXYGEN TRANSFER RATE -WATER DEPTH CURVES

(at 20°C, fresh water)

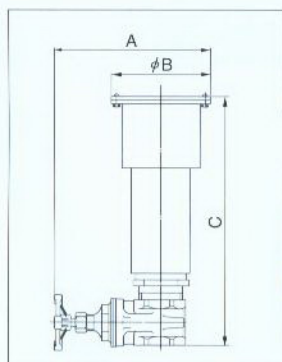
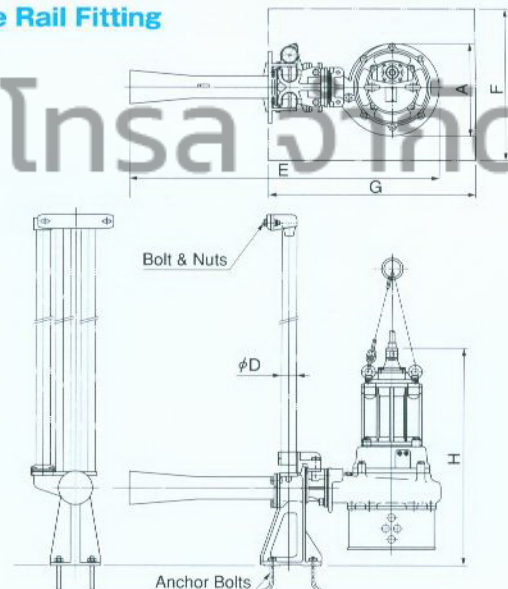


DIMENSIONS

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.

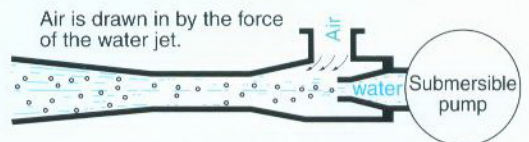
As a result, the ejected current is jetted in a single direction for a comparatively long range, enabling the generation of an extremely large churning effect.

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-induced air is in a minutely particulated, pressurized state, the oxygen dissolution efficiency is remarkably high.

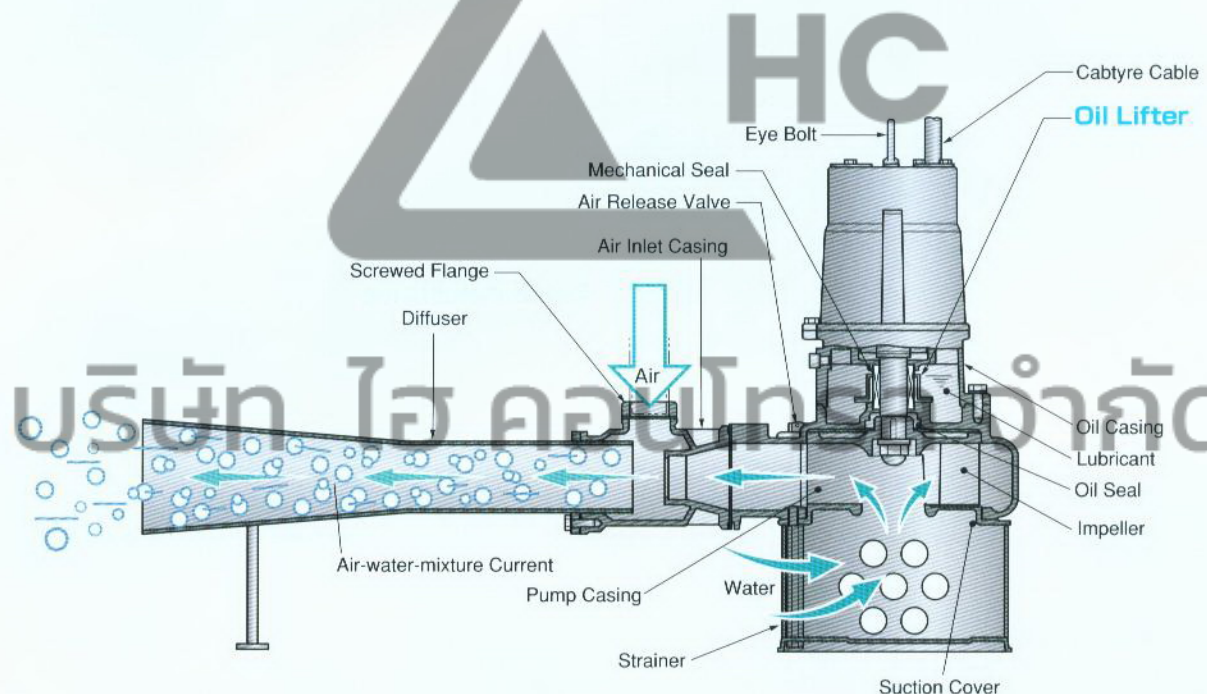
The principle of the ejector system

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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