



JAR surface aerator



# JAR Surface Aerator

## Applications

The JMI surface aerator (JAR) uses the motor to drive axial flow type impeller directly in order to pump waste water for creating the spray pattern (or water drop) through the water guide panel. When water contacts air, it will become water drops, which fall to the water surface and form the turbulence and bubbles. These bubbles will improve oxygen dispersion and increase oxygen in water. The JMI JAR device pumps water from the bottom to the top and creates circulation flows and stir processes. It is suitable for domestic waste water treatment, agriculture and aquaculture oxygen supply and other industrial waste water aeration.

## Introduction

The high speed aerator line is designed to maximize the two most important functions of any aeration device—oxygen transfer and mixing of waste. The waste liquid is pumped through the unit in a manner which creates the most advantageous spray pattern for introducing oxygen into the liquid. At the same time, this pumping action creates a tank velocity pattern which insures the mixing of contents and thus the oxygen dispersion. Years of experience in the design and application of mechanical aeration equipment have been combined with the full capabilities of our extensive research test facility to provide a line of high speed aerators which not only maximize oxygen transfer and tank mixing characteristics but perform these functions in the most economical and reliable manner.

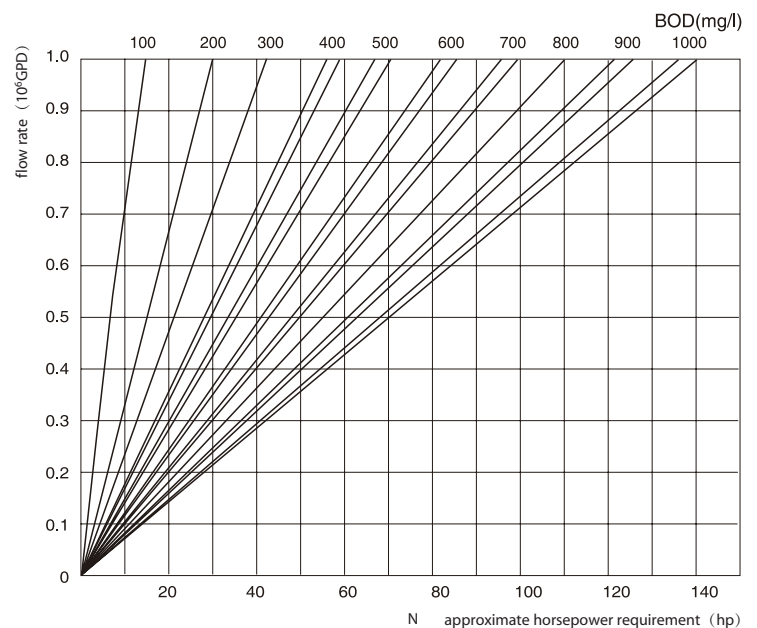
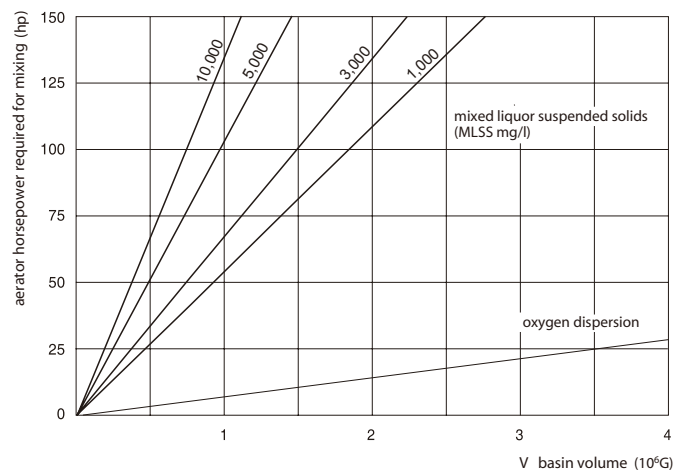
## Selection of aerators for O<sub>2</sub> transfer

This chart will help to select the required horsepower of aeration if the BOD (mg/l) and daily flow rate of wastewater are known. First, select the appropriate daily waste flow on the left side of the chart. Then extend a horizontal line to the right until you intersect the appropriate BOD curve. Drop a line vertically from the intersection to the bottom and read the horsepower required for aeration.

Calculations are based on a desired BOD reduction of 90%,  $\alpha$  factor of 0.8, 1.25LB O<sub>2</sub>/LB.BOD and a standard condition transfer of 3.5LB O<sub>2</sub>/HP-HR. Accuracy is usually within 10%.

## Aerator selection

The chart below may be used to make quick estimate of the horsepower required.



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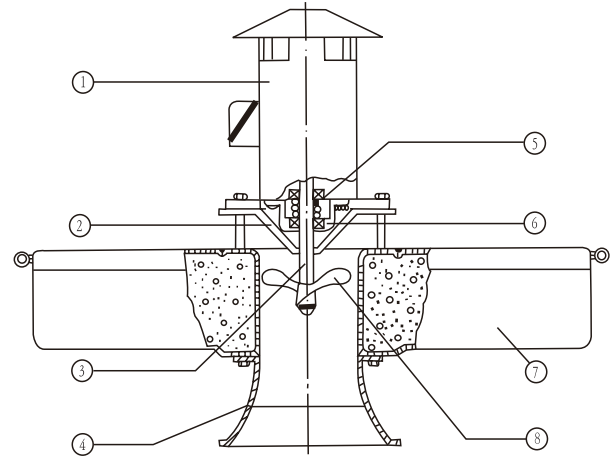
## Construction Summarization

Each aerator shall consist essentially of a motor, drive shaft, impeller directly driven at constant speed, and an integral floatation unit, which shall support the weight of certain accessories that may be added. All wetted metal parts shall be of corrosion resistant materials, and shall not require painting.

**MOTOR AND SHAFT:** The electric power unit is the heart of the machine, and is located above the high-density spray-diffusion zone to minimize its exposure to the nature and contents of the pumped liquid. The motors are Weatherproof Chemical Service, TEFC (Totally Enclosed Fan Cooled) 3 phase. These motors utilize a highly refined non-hygroscopic class B insulation system, in addition to which motor housing drains are provided to drain off internal condensation. Shaft is one piece from the upper bearing through the impeller.

**IMPELLER:** The impeller is constructed of stainless steel and is manufactured using the machined-pitch process which assures perfect impeller accuracy and top performance. The impeller pitch is designed for maximum hydraulic delivery without overloading the motor.

**FLOATATION ASSEMBLY:** The floatation hull is constructed of reinforced fibre-glass. The hull is completely filled with high-density closed cell polyurethane foam. The mooring eyes transfer tension from one mooring cable to another.



NO.	Name	Material	
		GB	JIS
1	Motor	-	-
2	Water guide panel	FRP	FRP
3	Shaft	1Cr13	SUS410
4	Water inlet pipe	HT200	FC200
5	Mechanical seal	-	-
6	Seal cover	HT250	FC250
7	Floating	FRP	FRP
8	Impeller	0Cr18Ni9	SUS304

## Performance Parameters

Type	Motor		Aerator				
	(hp)	(r/min)	OC-HR (kg/h)	MD (m)	MZ (m)	D (m)	PR (m <sup>3</sup> /min)
JAR-32	2	1450	3.0	6	12	2~3	5
JAR-33	3	1450	4.2	9	18	3~4	7
JAR-35	5	1450	6.6	12	24	3~4	9
JAR-37	7 1/2	1450	9.6	16	32	3~4	11
JAR-310	10	1450	11.5	19	38	3~4	19
JAR-315	15	1450	16.5	27	54	3~4	24
JAR-320	20	1450	21.0	32	64	3~4	29
JAR-325	25	1450	27.5	36	72	3~4	33
JAR-330	30	1450	31.0	40	80	3~4	37
JAR-340	40	1450	38.0	45	90	5~6	46
JAR-350	50	1450	50	50	100	5~6	55
JAR-360	60	1450	61	56	112	5~6	65
JAR-375	75	1450	73	62.5	125	5~6	80
JAR-3100	100	1450	95	70	140	5~6	120

MZ: Diameter of Mixing Zone. (m)

OC-HR: Kgs Oxygenation Capacity per Hour. (kg/h)

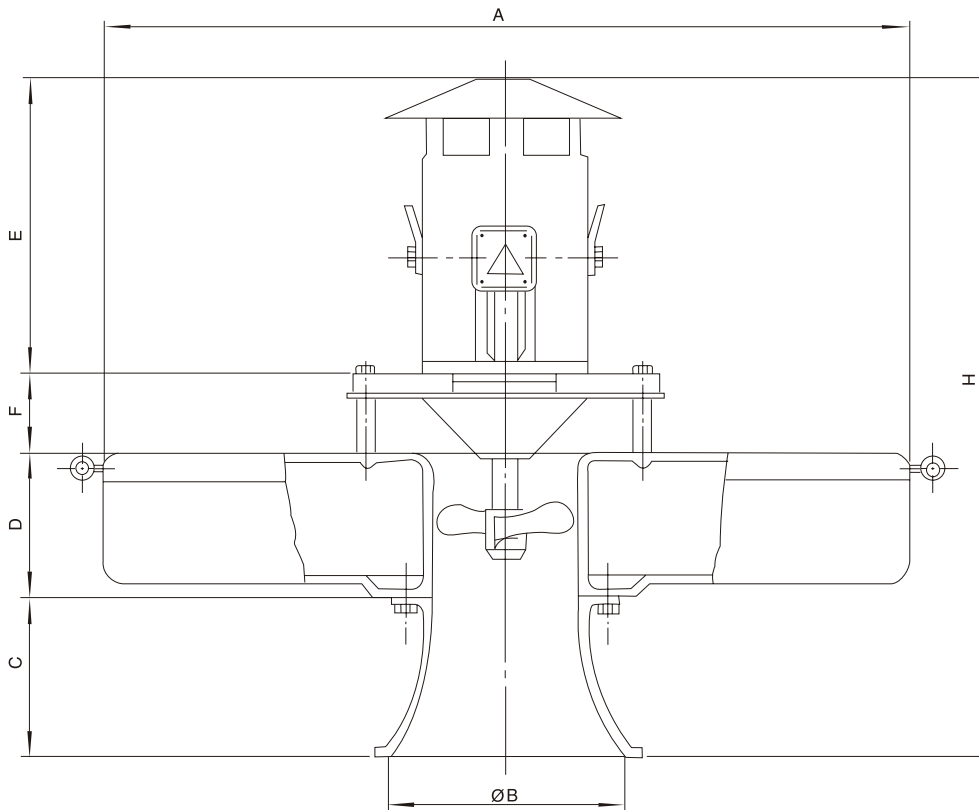
MD: Diameter of Complete Mixing in Meter at minimum average velocity of 1.2 meter per second (approx). (m)

D: Depth in Meter of Complete Mixing, related to MD.

PR: Pumping Rate, m<sup>3</sup> per Minute.

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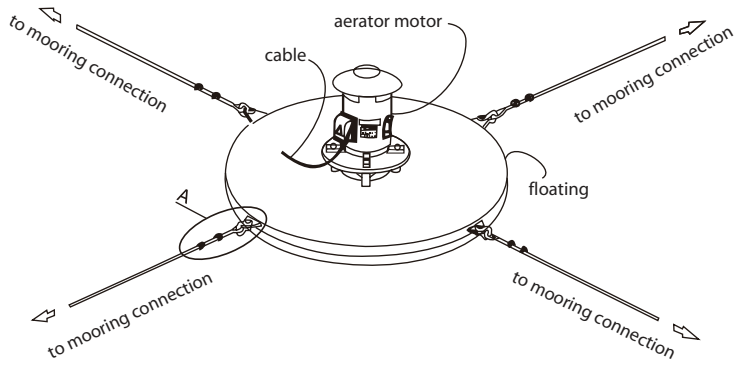
## Installation Dimensions



Type	Dimensions(mm)							
	A	B	C	D	E	F	H	W(kg)
JAR-32	1200	250	200	120	360	100	900	85
JAR-33	1200	250	200	120	360	100	900	90
JAR-35	1500	300	320	140	420	100	1120	130
JAR-37	1500	360	320	280	430	110	1140	160
JAR-310	1500	360	320	280	480	110	1190	180
JAR-315	1800	500	600	300	580	120	1600	250
JAR-320	1800	500	600	300	630	120	1650	290
JAR-325	1800	500	600	300	650	120	1670	350
JAR-330	1800	500	600	300	700	120	1720	390
JAR-340	1800	650	800	340	730	150	2020	430
JAR-350	1800	650	800	340	750	150	2040	430
JAR-360	2200	800	800	340	820	200	2160	720
JAR-375	2200	800	800	370	860	200	2230	795
JAR-3100	2200	800	800	400	950	200	2350	1075

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## Installation Method



## Mooring Accessories

