



上海川源机械工程有限公司  
Shanghai GSD Industrial Co.,Ltd



# AR

## 潜水式曝气机

**AR Submersible aerator**



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### 简介

由于工业之急速发展，人类生活已变得更物质文明化。相反地，大量的废水也由于工业发达而产生，同时，一般家用的废水也大量增加。所有这些已使生活品质深受影响，而生态环境也受到破坏。川源公司有鉴于此，经全力从事发展废水处理设备多年，除了污水泵、污物泵、污泥脱水机之外，并发展潜水曝气机及表面曝气机以更有效地进行废水处理，使废水达到BOD及COD标准值。这些曝气机已广泛地被国内及海外废水处理工程界采用。

### 特性(参照A图)

AR型潜水式曝气机利用马达直接传动叶轮之旋转来产生离心力，使附近的低压吸进水流，同时，叶轮进口处也制造真空以吸入空气，在混气室中，这些空气与水混合之后由离心力作用急速排出。由于水流喷射极强，形成有效的对流循环，而使空气分割成众多细小的气泡。并由于气泡上升缓慢而使大气中之氧气溶解于水中。因为气泡均为细小且不可计数，其表面积很大，这样使每单位马力之传氧率高于其它种类的曝气机。

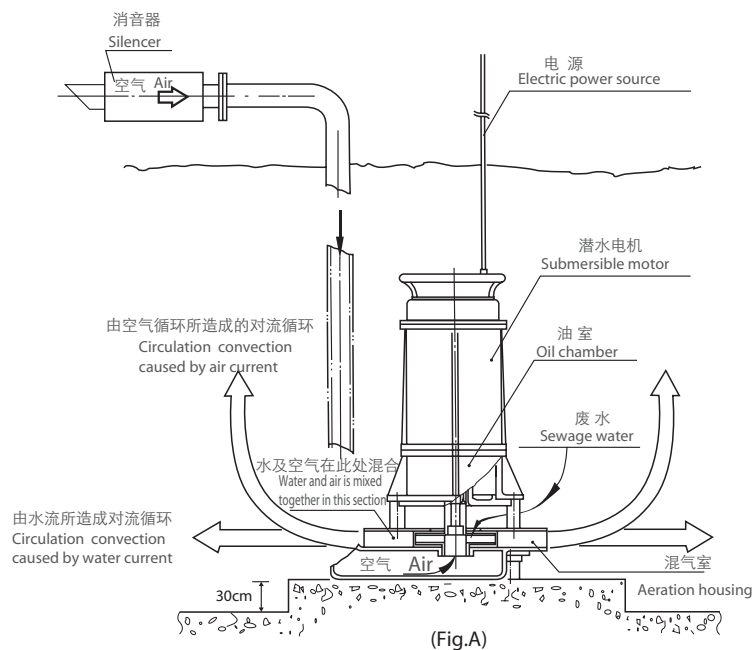
### General

With fast industrial developments, human life became more materially civilized. On the contrary, gigantic quantities of wastewater were brought by the industrial manufacturing. In the meantime, large quantities of household waste water were also resulted from our daily life. All these have affected the living quality and damaged the environmental ecology. GSD has been making every endeavour in developing the waste water processing equipment. In addition to waste water pumps, sewage pumps, sludge dehydration system, the company also developed submersible aerator and surface aerators for higher processing rate of BOD and COD in the processes of waste water. These aerators have been widely used in domestic and overseas waste water processing plants.

### Characteristics (refer to fig.A)

Submersible aerator-AR utilizes the rotation of the impeller coupled directly to the motor to create a centrifugal force, which make local low pressure suck in water. Meanwhile the entrance of the Impeller result in vacuum to draw air from atmosphere. Water and air mix in the channel of aeration housing. The air-water-mixture current is discharged speedily by the centrifugal force.

Due to the water spurting extremely strong, make the fluid create convection and circulation effectively. Moreover the air becomes tiny bubbles. On the one hand the bubbles rise slowly, on the other hand the atmosphere oxygen is dissolved in water. Because the bubbles are tiny and numberless, their surface area is large, it makes the oxygen transfer rate of unit BHP higher than other type of aerator.



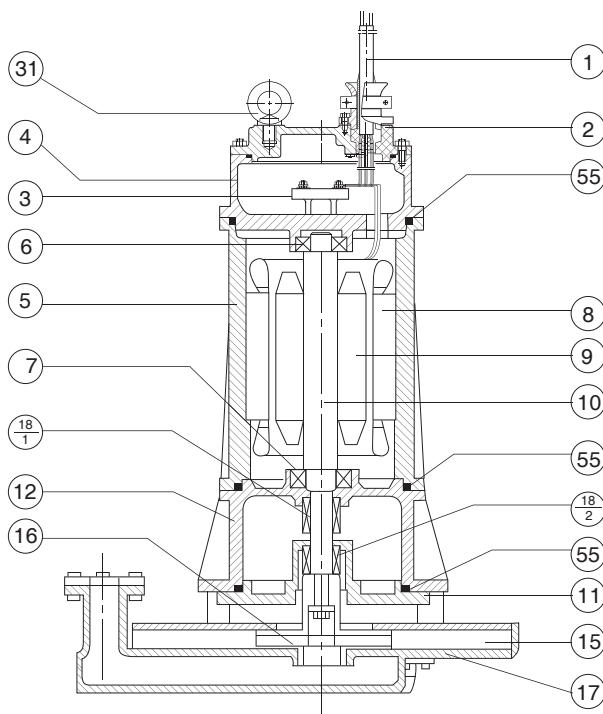
## 型号说明 Type description

AR 3 20 -100

|    |   |    |      |           |                          |
|----|---|----|------|-----------|--------------------------|
| AR | 3 | 20 | -100 | 进气管直径(mm) | Inlet pipe diameters(mm) |
|    |   |    |      | 电机功率(hp)  | Motor power(hp)          |
|    |   |    |      | 电机相数      | Motor phase              |
|    |   |    |      | 潜水曝气机     | Submersible aerator      |

## 结构简图 Construction

| NO.  | 名称    | Name                             | 材质                        | Material |
|------|-------|----------------------------------|---------------------------|----------|
| 1    | 电缆    | Cable                            | 2RNCT                     |          |
| 2    | 电缆套   | Cable hood                       | NBR                       |          |
| 3    | 接线板   | Patch panel                      | Electrotechnical bakelite |          |
| 4    | 电机盖   | Motor cover                      | FC 200                    |          |
| 5    | 电机壳   | Motor casing                     | FC 200                    |          |
| 6    | 轴承    | Ball bearing                     | -                         |          |
| 7    | 轴承    | Ball bearing                     | -                         |          |
| 8    | 定子    | Stator                           | -                         |          |
| 9    | 转子    | Rotor                            | -                         |          |
| 10   | 主轴    | Shaft                            | SUS 410                   |          |
| 11   | 油箱盖   | Oil cover                        | FC 200                    |          |
| 12   | 中承座   | Bracket                          | FC 200                    |          |
| 15   | 混气室   | Aeration housing                 | FC 200                    |          |
| 16   | 叶轮    | Impeller                         | SUS 304                   |          |
| 17   | 混气室底盖 | Bottom cover of aeration housing | FC 200                    |          |
| 18-1 | 机械密封  | Mechanical seal                  | -                         |          |
| 18-2 | 机械密封  | Mechanical seal                  | -                         |          |
| 31   | 吊环    | Lifting ring                     | SUS 304                   |          |
| 55   | O型密封圈 | O-ring                           | NBR                       |          |



## 特点

- 沉水式电机直接驱动，噪音小，效率高。
- 独特的混气室设计，使吸入空气量多，混合效果好，在曝气的同时兼有搅拌作用。
- 采用双层机械轴封，延长电机寿命。
- 十二道放射形之出水口(较大功率采用十四道出口)，可产生大量气泡。
- 网状进水口，避免叶轮卡到异物。
- 可使用导轨，使安装维护方便。

## Features

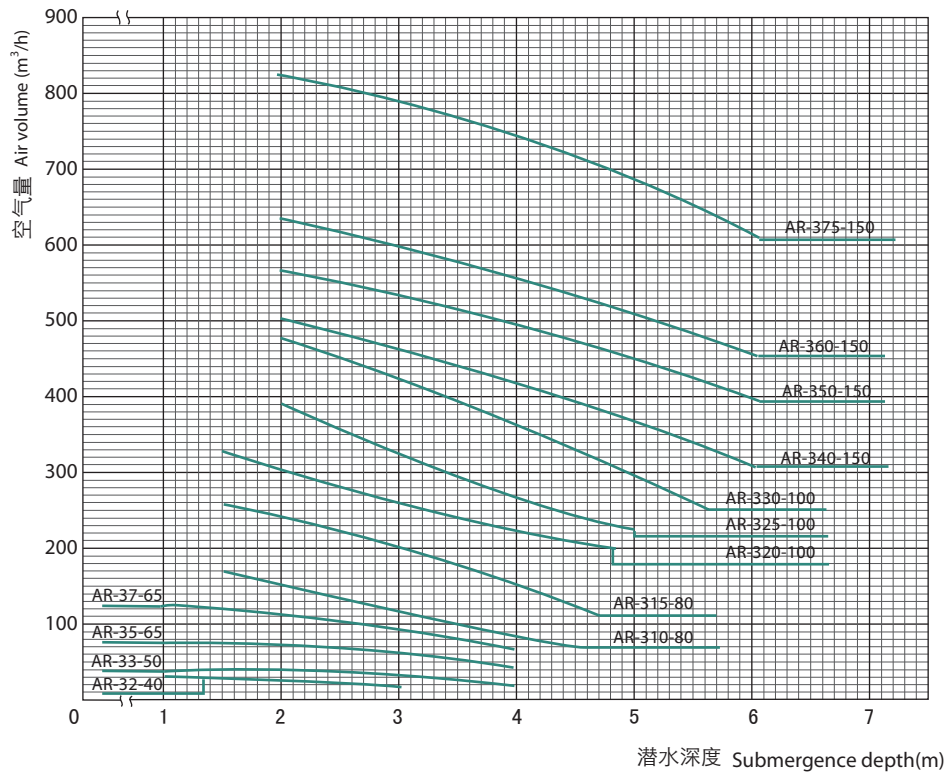
- Submersible motor direct drive, low noise, high efficiency.
- It has unique design for gas mixture chamber whose intake quantity is big. It can be mixed well with water.
- Adopt double mechanical seal, can extend useful life of motor.
- Twelve radiated outlets (high power aerator have fourteen outlets), can bring a mass of bubbles.
- Netty inlet, can avoid impeller not to be blocked by foreign material.
- Use guide rail to allow pump for easy installation, maintenance & repairation.



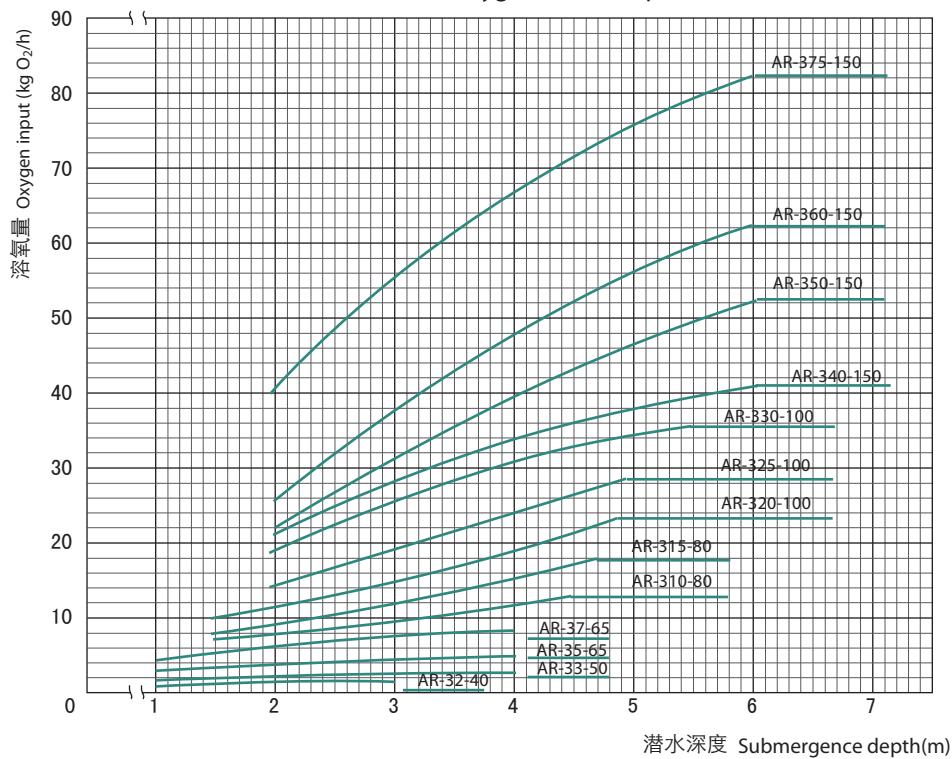
## 性能曲线及性能参数

### Performance curves and performance parameter

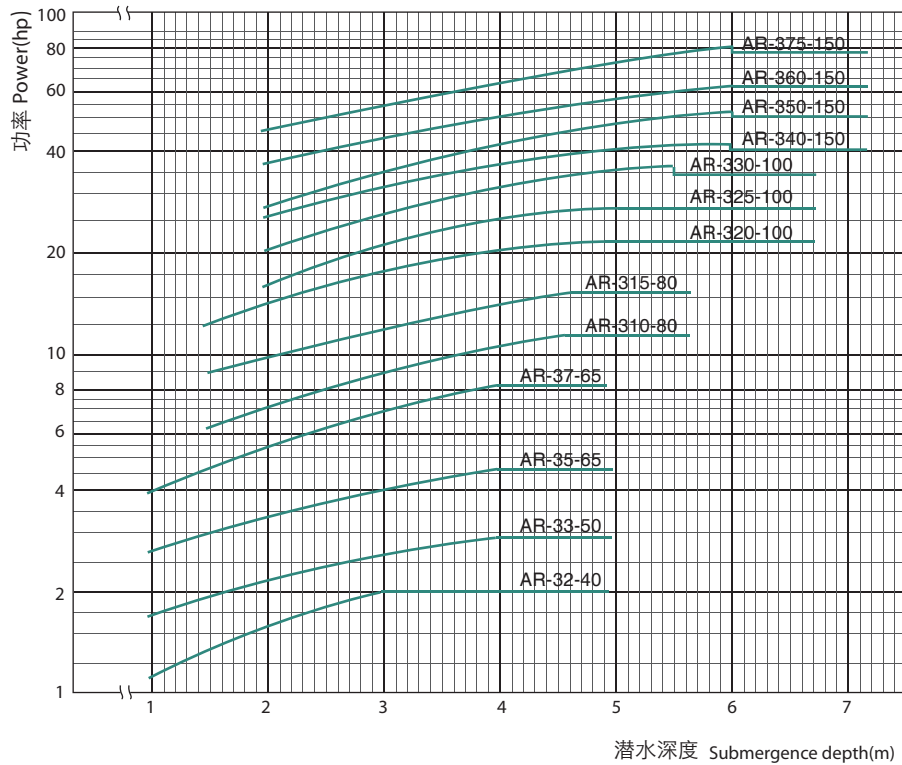
溶气特性曲线 Air transfer specific curve



溶氧特性曲线 Oxygen transfer specific curve



功率特性曲线 Power specific curve

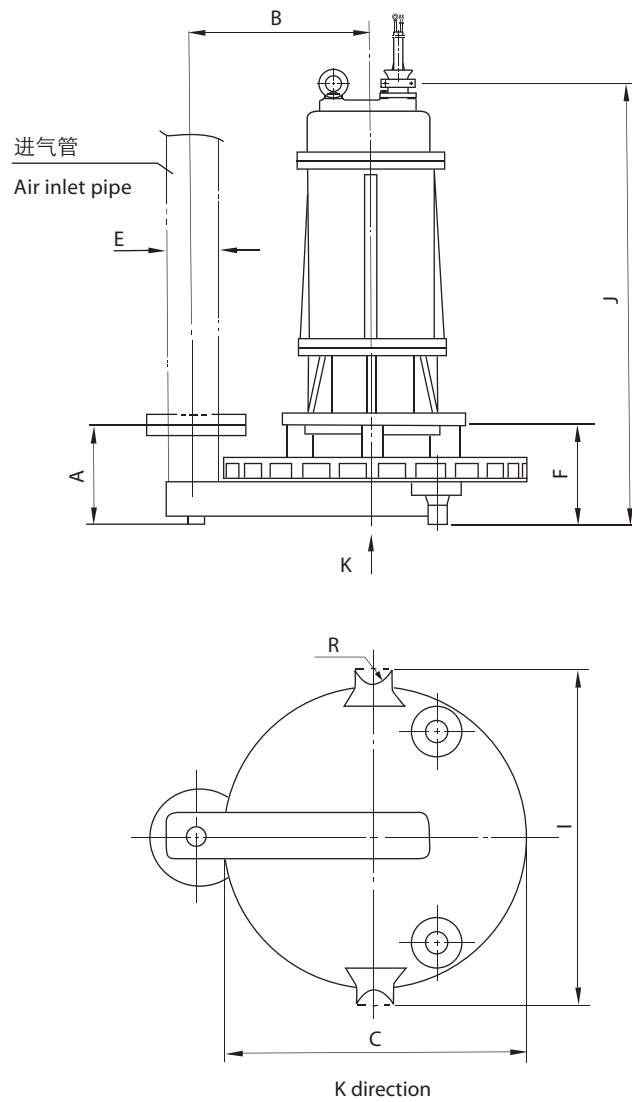


性能参数 Performance parameters

| 型号<br>Type | 功率<br>Power |      | 作用范围<br>Operation<br>range<br>(m) | 水深<br>Min-max<br>water depth<br>(m) | 空气吸入管径<br>Inlet pipe<br>diameter<br>(mm) | 最大吸入空气量<br>The maximum<br>intake of air<br>(m <sup>3</sup> /h) | 溶氧量<br>Air transfer<br>capacity<br>(kgO <sub>2</sub> /h) | 重量<br>Weight<br>(kg) |
|------------|-------------|------|-----------------------------------|-------------------------------------|--|--|--|----------------------|
|            | hp          | kW   |                                   |                                     |  |  |  |                      |
| AR-32-40   | 2           | 1.5  | 1.0-2.0                           | 1-3.0                               | 40                                       | 30   | 2-1  | 104                  |
| AR-33-50   | 3           | 2.2  | 2.5-5.0                           | 1-4.0                               | 50                                       | 40   | 3-2  | 117                  |
| AR-35-65   | 5           | 3.7  | 3.0-6.0                           | 1-4.0                               | 65                                       | 80   | 5-3  | 132                  |
| AR-37-65   | 7.5         | 5.5  | 3.5-7.0                           | 1-4.0                               | 65                                       | 128  | 9-5  | 279                  |
| AR-310-80  | 10          | 7.5  | 4.5-9.0                           | 1.5-4.5                             | 80                                       | 170  | 13-7   | 286                  |
| AR-315-80  | 15          | 11   | 5.0-10.0                          | 1.5-4.6                             | 80                                       | 265  | 18-8   | 340                  |
| AR-320-100 | 20          | 15   | 5.8-11.5                          | 1.5-4.8                             | 100                                      | 330  | 23-10  | 355                  |
| AR-325-100 | 25          | 18.5 | 5.9-11.8                          | 2.0-5.0                             | 100                                      | 385  | 29-14  | 405                  |
| AR-330-100 | 30          | 22   | 6.0-12.0                          | 2.0-5.5                             | 100                                      | 470  | 36-19  | 420                  |
| AR-340-150 | 40          | 30   | 7.3-14.5                          | 2.0-6.0                             | 150                                      | 510  | 41-21  | 1000                 |
| AR-350-150 | 50          | 37   | 7.5-15.0                          | 2.0-6.0                             | 150                                      | 570  | 52-22  | 1080                 |
| AR-360-150 | 60          | 45   | 7.8-15.5                          | 2.0-6.0                             | 150                                      | 630  | 62-25  | 1150                 |
| AR-375-150 | 75          | 55   | 8.0-16.0                          | 2.0-6.0                             | 150                                      | 825  | 82-40  | 1200                 |



## 外形及安装尺寸 Installation dimensions



| 型号<br>Type | 尺寸 Dimensions(mm) |     |     |     |     |      |      |    |
|------------|-------------------|-----|-----|-----|-----|------|------|----|
|            | A                 | B   | C   | E   | F   | I    | J    | R  |
| AR-32-40   | 155               | 300 | 505 | 40  | 152 | 565  | 597  | 30 |
| AR-33-50   | 155               | 300 | 505 | 50  | 154 | 565  | 677  | 30 |
| AR-35-65   | 155               | 300 | 505 | 65  | 156 | 565  | 694  | 30 |
| AR-37-65   | 203               | 410 | 685 | 65  | 218 | 745  | 871  | 30 |
| AR-310-80  | 203               | 410 | 685 | 80  | 221 | 745  | 874  | 30 |
| AR-315-80  | 203               | 410 | 685 | 80  | 223 | 745  | 931  | 30 |
| AR-320-100 | 203               | 410 | 685 | 100 | 225 | 745  | 973  | 30 |
| AR-325-100 | 203               | 410 | 685 | 100 | 228 | 745  | 1097 | 30 |
| AR-330-100 | 203               | 410 | 685 | 100 | 228 | 745  | 1097 | 30 |
| AR-340-150 | 338               | 600 | 950 | 150 | 384 | 1028 | 1474 | 39 |
| AR-350-150 | 338               | 600 | 950 | 150 | 384 | 1028 | 1474 | 39 |
| AR-360-150 | 338               | 600 | 950 | 150 | 384 | 1028 | 1474 | 39 |
| AR-375-150 | 338               | 600 | 950 | 150 | 384 | 1028 | 1474 | 39 |



## 水池尺寸 Basin dimensions

| 型号<br>Type | 最大水深(m)<br>Max water depth | 形状和尺寸<br>Shape and dimensions(m) |               |                    |
|------------|----------------------------|----------------------------------|---------------|--------------------|
|            |                            | 圆(直径)<br>Round(Diameter)         | 正方形<br>Square | 长方形<br>Rectangular |
| AR-32-40   | 3                          | 3.5                              | 3.1x3.1       | 2.5x3.8            |
| AR-33-50   | 4                          | 4.8                              | 4.2x4.2       | 3.4x5.2            |
| AR-35-65   | 4                          | 6.6                              | 5.8x5.8       | 4.8x7.1            |
| AR-37-65   | 4                          | 8.0                              | 7.1x7.1       | 5.8x8.7            |
| AR-310-80  | 4.5                        | 9.8                              | 8.7x8.7       | 7.1x10.6           |
| AR-315-80  | 4.6                        | 12.5                             | 11.1x 11.1    | 9.1x13.6           |
| AR-320-100 | 4.8                        | 12.5                             | 11.5x 11.5    | 9.1x13.6           |
| AR-325-100 | 5                          | 12.5                             | 11.8x 11.8    | 9.7x 14.5          |
| AR-330-100 | 5.5                        | 12.5                             | 12.0x 12.0    | 9.7x 14.5          |
| AR-340-150 | 6                          | 16                               | 14.5x 14.5    | 12.5x 17.0         |
| AR-350-150 | 6                          | 16                               | 15x 15        | 13.0x 17.5         |
| AR-360-150 | 6                          | 16                               | 15.5x 15.5    | 13.0x 17.5         |
| AR-375-150 | 6                          | 16                               | 16x 16        | 13.5x 18.0         |

## 装置

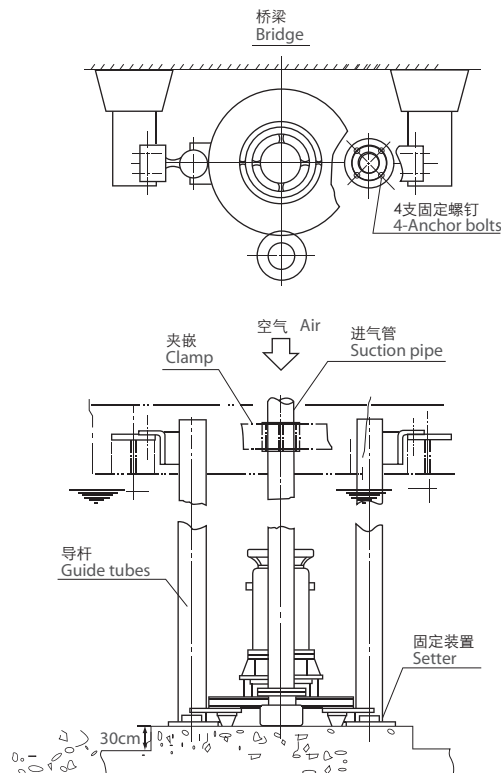
为使曝气机有较好的维护，请注意下列：

- 固定装置应在曝气机底部水泥基础上装置(在未注入废水前)。
- 当设计下图桥梁之结构强度时，应考虑绞动及扬起设备。
- 导轨应事先预备并建议使用不锈钢管。
- 进气管应依实际情形予以固定安装。

## Installation

For better and easier maintenance of the aerator, following instructions shall be noticed:

- The setter should be fixed on concrete base of the aeration basin (Before the aeration basin was filled with waste water.)
- When designing the strength of the bridge (As show in below Fig.) construction, the warping and the lifting equipment should be considered.
- The guide tubes should be prepared in advance and it is advisable to use the stainless steel tubes.
- The air pipes should be fixed if necessary depending upon the actual condition.



如蒙洽询请指示下列各项：

For further details, please fulfill the chart below.

客户：  
Customer \_\_\_\_\_

承办人员：  
Undertaker \_\_\_\_\_

工程名称：  
Name of project \_\_\_\_\_

工程地点：  
Address of project \_\_\_\_\_

电话：  
Telephone \_\_\_\_\_

传真：  
Fax \_\_\_\_\_

|                                     |  |  |   |  |
|-------------------------------------|--|--|---|--|
| 当地状况<br>Local condition             | 海拔(m)<br>Elevation                         |  | 最高相对湿度(%)<br>Max relative humidity                  |  |
|                                     | 当地大气压力 (MPa)<br>Local atmospheric pressure |  | 最高气温(°C)<br>Max air temperature                     |  |
| 污水情况<br>Water quality               | 污水类型<br>Wastewater type                    |  | 处理工艺<br>Treatment processes                         |  |
|                                     | * 曝气时间 (H/day)<br>Aeration time            |  | 日处理量(m <sup>3</sup> /d)<br>Waste water daily volume |  |
|                                     | 进水 Inlet                                   |  | 出水 Effluent   |  |
|                                     | COD (mg/l)                                 |  | COD (mg/l)  |  |
|                                     | BOD (mg/l)                                 |  | BOD (mg/l)  |  |
|                                     | NH <sub>3</sub> -N (mg/l)                  |  | NH <sub>3</sub> -N (mg/l)                           |  |
|                                     | pH   |  | pH  |  |
|                                     | 温度(°C) Temperature                         |  |   |  |
| 其他 Others                           |  |  |   |  |
| *曝气机参数<br>AR's parameters           | 使用场所<br>Use location                       | <input type="checkbox"/> 调节池<br>Regulating reservoir <input type="checkbox"/> 曝气池<br>Aeration tank <input type="checkbox"/> 其他<br>Others |   |  |
|                                     | 空气量 (m <sup>3</sup> /min)<br>Air capacity  |  | 溶氧量 (kgO <sub>2</sub> /h)<br>Dissolved oxygen       |  |
|                                     | 水深 (m)<br>Water depth                      |  | 其他<br>Others  |  |
| *水池参数<br>Aeration tank's parameters | 方形<br>Rectangle or square (m)              | 长 Length   |   |  |
|                                     |  | 宽 Width  |   |  |
|                                     |  | 高 Height   |   |  |
|                                     | 圆形 Circle (m)                              | 直径 Diameter  |   |  |
|                                     |  | 高 Height   |   |  |
| 其他 Others                           |  |  |   |  |
| 其它要求<br>Other requirements          |  |  |   |  |

备注：1.以上资料请尽可能完整填写。  
2.项目前加注“\*”者，请务必填写。

Notes: 1. Please fill in the parameter lists as complete as possible.  
2. The item with "\*" must be filled.