

Aerator series 曝气系列



❖ Due to constantly progressive technology, Lamsun has the right to amend the design, without prior notice.



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用途

Applications

QXB型离心式潜水曝气机用于污水处理厂曝气池、曝气沉砂池中，对污水的混合液进行充氧及混合，以及对污水进行生化处理或养殖塘增氧。进气量为10~320m³/h，增氧能力为0.37~24KgO₂/h，电机功率为0.75~22Kw。

The OXB-type centrifugal submerged aeration machine is used in sewage treatment plants' aeration tanks and aeration grit chambers to oxygenate and mix sewage slurry, as well as for biochemical treatment of sewage or oxygenation in aquaculture ponds. Its air intake volume ranges from 10 to 320 m³/h, oxygenation capacity from 0.37 to 24 kg O₂/h, and motor power from 0.75 to 22 kW.

型号表示方法

Type and Its Indication



特点

Features

- 1、结构紧凑、占地面积小、安装方便；

2、除吸气口外，其余部分潜入水中运行，噪声小；

3、吸入空气多，产生气泡多而细，容氧率高；

4、无需提供气源，省去鼓风机，工程投资少；

5、采用引进德国ABS潜污泵技术，叶轮流道采用无堵塞式，运行安全、可靠。
- 1.Compact structure, small footprint, and easy installation.

2. Except for the air intake port, the entire unit operates submerged underwater with low noise.

3. High air intake capacity generates a large number of fine bubbles, ensuring high oxygenation efficiency.

4. No external air supply required; eliminates the need for blowers, reducing engineering investment.

5. Adopts German ABS submersible sewage pump technology with non-clogging impeller design for safe and reliable operation.

构造及工作过程

Structure and Working Process

潜水曝气机由潜污泵、混合室、底座、进气管和消音器等组成。

进气管上端为空气吸入位于水面之上，下端与混合室联通，接通电源后由于叶轮旋转，高速水流从叶轮出口流出经混合室使之形成负压，因而空气被吸入并与液体混合，混合液从周边出口流出，完成对液体的充氧。

The submerged aerator consists of a submersible sewage pump, mixing chamber, base frame, air intake pipe, and silencer group.

The upper end of the air intake pipe is positioned above the water surface for air intake, while the lower end is connected to the mixing chamber. After power is connected, the impeller rotates, causing high-speed water flow from the impeller outlet into the mixing chamber, thereby forming negative pressure. As a result, air is drawn in and mixed with the liquid, and the oxygenated mixture flows out from the peripheral outlets to complete the oxygenation of the body.

型号 Model	QXB0.75	QXB1.5	QXB2.2	QXB3	QXB4	QXB5.5	QXB7.5	QXB11	QXB15	QXB18.5	QXB22
功率Kw Power	0.75	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22
电流 A Electric current	2.4	4	5.8	7.8	9.8	12	17	24	32	39	45
电压 V Voltage	380										
转速 r/min Speed	1470										
频率 Hz Frequency	50										
绝缘等级 Insulation grade	F										
最大潜水深度 m Max.diving depth	2	2	3	3	3	3	3	4	5	5.5	6
进气量 m³/h Air input	10	22	35	50	75	85	100	160	200	260	320
标准状态下清水的 充气量kgO₂/h The aeration quantity of fresh water is kgO₂/h in the standard state.	0.37	1	1.8	2.75	3.8	5.3	8.2	13	17	19	24

电气控制

Electrical Control

按手动配置控制箱，可带PLC接口，亦可按用户要求配置。

D-QXB-I 控制箱适用于电源为三相380V、频率50Hz，控制潜水曝气机的起停，可以通过PLC接口实现自动控制。

并具有过载、短路、缺相等保护功能。

The control box can be manually configured, equipped with a PLC interface, and can also be customized according to user requirements.

The D-OXB-I control box is suitable for three-phase 380V power supply at 50Hz, controlling the start and stop of the submerged aeration machine, and can achieve automatic control through the PLC interface.

It features overload, short circuit, and phase loss protection functions.

结构及工作原理

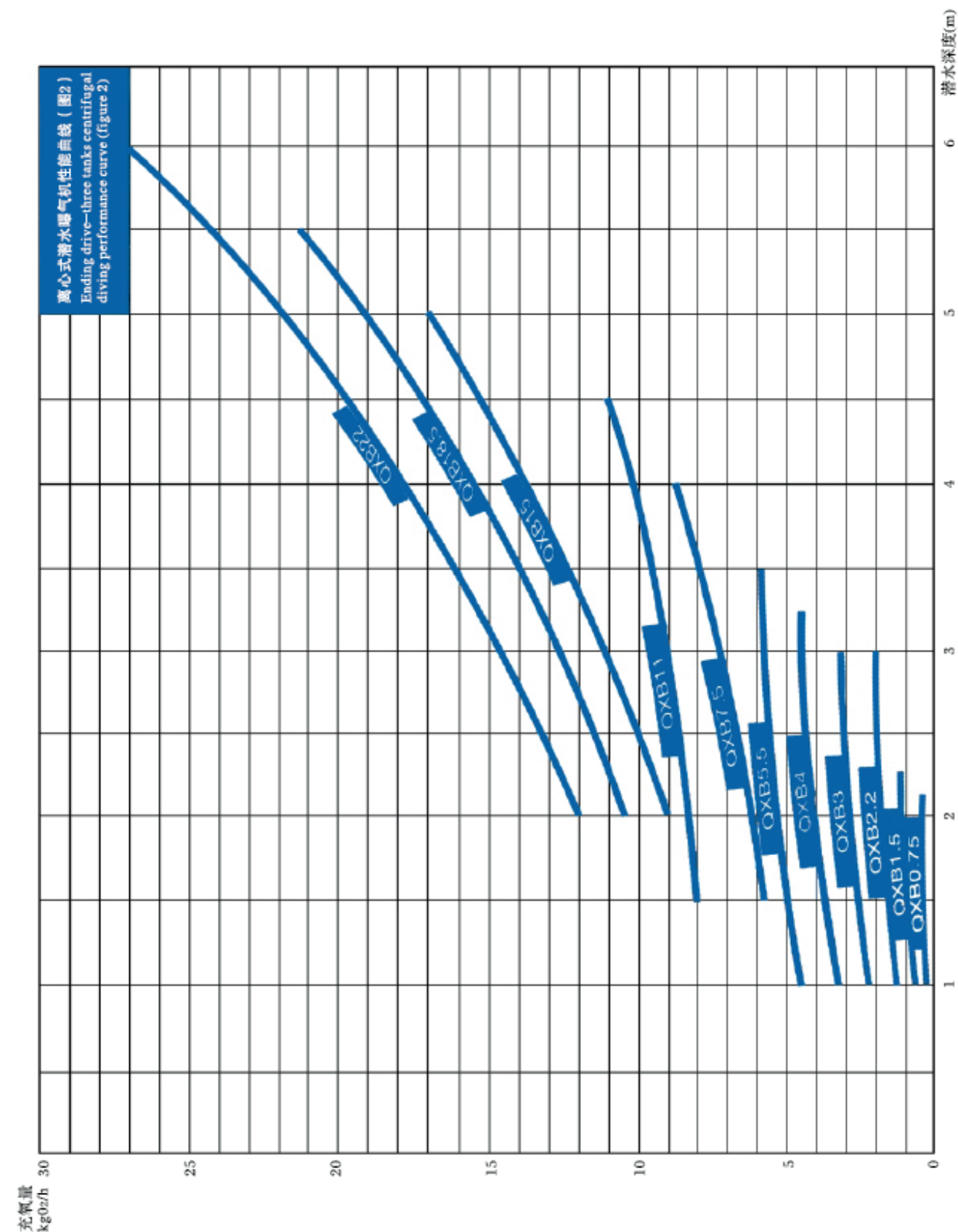
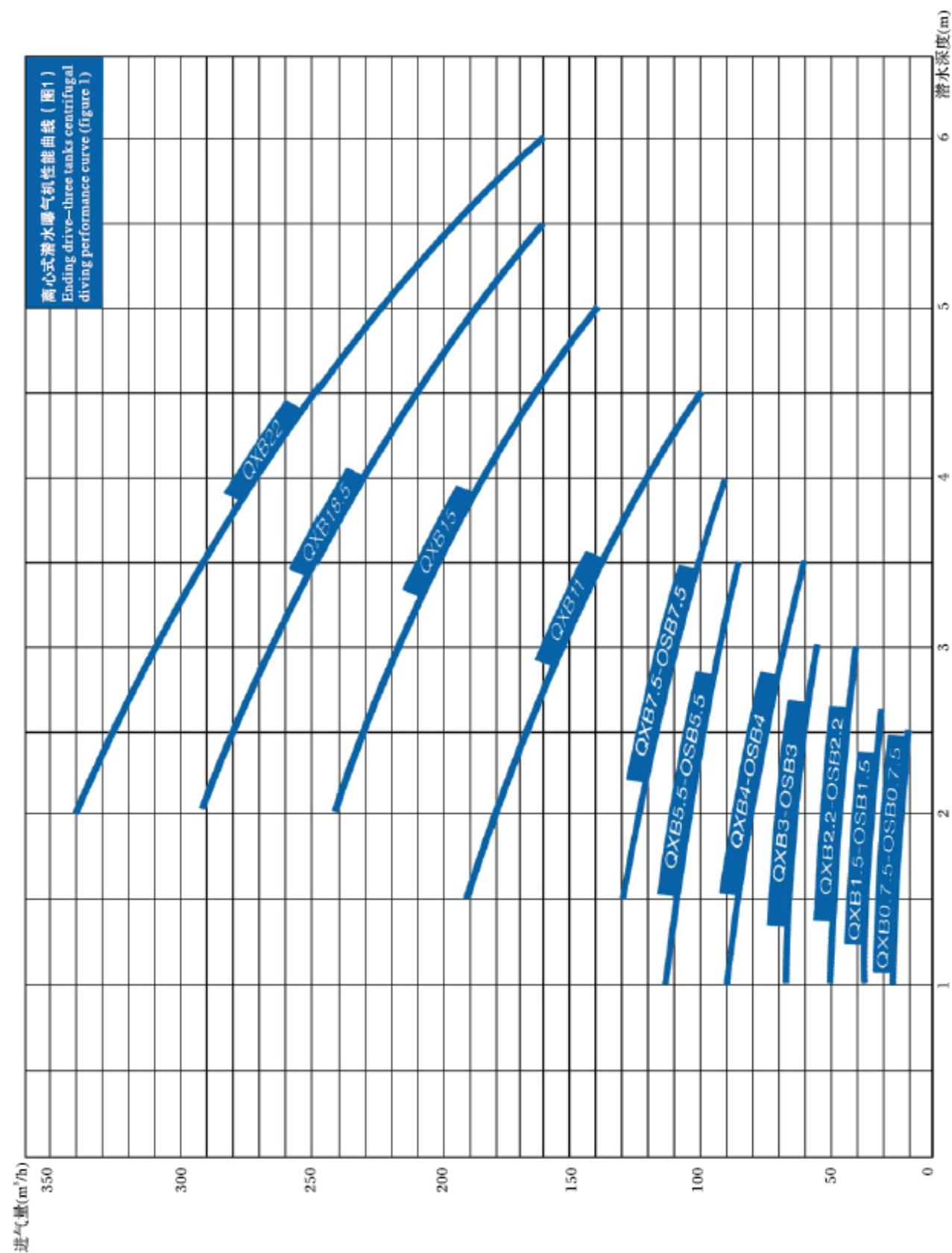
Structure and Working Principle

控制箱由断路器、交流接触器、热继电器组成。

有“手动”和“自动”两种工作方式。并有运行，过载等信号远传至PLC。

The control box consists of a circuit breaker, AC contactor, and thermal relay.

It features two operating modes: "Manual" and "Automatic." Signals such as running status and overload are transmitted remotely to the PLC.





产品介绍
Presentation of Productions

蓝深通过不断引进先进技术，大力推行科技创新，在所开发的第一代潜水射流曝气机的基础上研制成功了新型深水自吸式潜水射流曝气机。蓝深制泵集团通过系统的研究，总结出全新的设计和试验方法，使产品的总体性能达到了国外同类产品的先进水平，可直接与国外厂家在市场上竞争。新型深水自吸式潜水射流曝气机结构紧凑，操作维护简单、安装方便快捷，在保持低成本特点的同时，性能得到了大幅度的提高,在无需压缩空气的条件下，潜水曝气深度可以达到10m，气泡更细密，提高了空气与曝气介质的接触面积，有效提高了氧的转移率。配套的无堵塞潜水电泵采用长江三峡用潜水排污泵的密封技术，大大提高了潜水射流曝气机的可靠性。

Lamsun continuously introduces advanced technology and vigorously promotes technological innovation. Based on its first-generation submerged jet aeration machine, the company has successfully developed a new type of deep-water self-aspirating submerged jet aeration machine. Through systematic research, Lamsun Pump Group has formulated a new design and testing methodology, enabling its products to achieve the advanced level of foreign counterparts in overall performance, directly competing with international "home" markets. The new deep-water self-aspirating submerged jet aeration machine features a compact structure, simple operation and maintenance, and convenient and rapid installation. While maintaining low-cost characteristics, its performance has been significantly enhanced. It achieves a submerged aeration depth of 10 meters without requiring compressed air, producing finer and denser bubbles, thereby increasing the contact area between air and the aeration medium and effectively improving oxygen transfer efficiency. The matched non-blocking submersible water pump employs the sealing technology of the submerged sewage pump used in the Three Gorges Project, substantially enhancing the reliability of the submerged jet aeration machine.

构造及工作原理
Structure and Working Principle

深水自吸式潜水射流曝气机主要由WQ型潜水排污泵、文丘里管、扩散管、进气管及消音器等组成。工作原理为：潜水电泵产生的水流经过喷嘴形成高速水流,在喷嘴周围形成负压由进气管吸入空气,形成液气混合流高速喷射而出,夹带许多气泡的水流在较大面积和深度的水域里涡旋搅拌，完成曝气。

The deep-water self-aspirating submerged jet aeration machine mainly consists of components including the WO-type submersible sewage pump, Venturi tube, diffuser pipe, air intake pipe, and silencer. Its working principle is as follows: The water flow generated by the submersible electric pump passes through the nozzle to form a high-speed jet, creating a negative pressure around the nozzle to draw air through the air intake pipe, forming a liquid-gas mixed flow that is ejected at high speed. The bubble-laden water stream undergoes vortex mixing over a large area and depth in the water body, completing the aeration process.

特点与用途
Parameters and Purpose

深水自吸式潜水射流曝气机使水体搅动与充氧同时进行，气泡细密，既可获得较高的氧转移率，又具有叶轮无堵塞优点。强有力的单向液流，造成有效的对流循环，且电机负载随水位的变化很小，因此，更适合在水位变化较大的池中应用。在无需压缩空气的条件下，最大潜水曝气深度可以达到10m。成本低，安装、维护简便便利。主要适用范围有：

- 1、深水曝气；
- 2、生化池的曝气兼搅拌；
- 3、污泥曝气兼搅拌；
- 4、高浓度有机废水处理工艺。

The deep-water self-aspirating submerged jet aeration machine simultaneously enables water body agitation and oxygenation, producing fine bubbles that achieve both high oxygen transfer efficiency and impeller clogging prevention. The powerful unidirectional liquid flow creates effective convection circulation, while the motor load remains stable with minimal variation in water level, making it suitable for pools with significant water level fluctuations. Without compressed air, the maximum submerged aeration depth can reach 10 meters. It features low cost, simple and convenient installation and maintenance. Main applicable ranges include:

- 1. Deepwater aeration;
- 2. Aeration and agitation in biological ponds;
- 3. Sludge aeration and agitation;
- 4. High-concentration organic wastewater treatment processes.

主要性能参数
Main Performance Parameters

深水自吸式潜水射流曝气机可在下列条件下正常连续运行：

- 1、最高介质温度不超过40℃；
- 2、介质的PH值在5~9；
- 3、介质密度不超过1150kg/m³；

The deepwater automatic inhale submerged jet aerator functions continuous at the following conditions:

- 1. Maximum medium temperature: Not exceeding 40°C (104°F);
- 2. Medium pH value: Between 5 and 9;
- 3. Medium density: Not exceeding 1150 kg/m³.

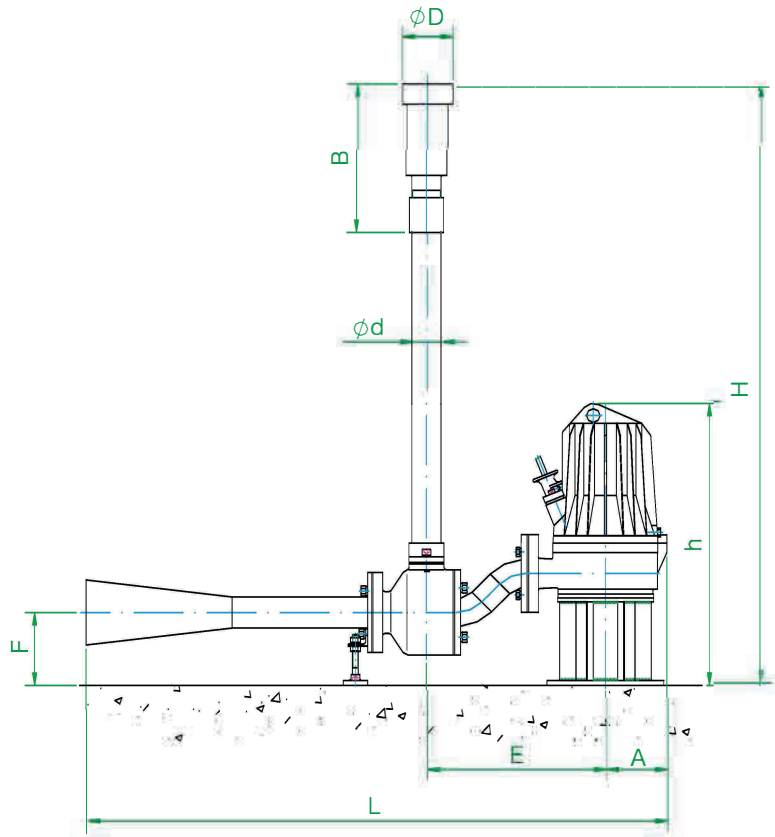
型 号 Model	QSB0.75	QSB1.5	QSB2.2	QSB3	QSB4	QSB5.5	QSB7.5
功率 Power(KW)	0.75	1.5	2.2	3	4	5.5	7.5
额定电流 ectric current(A)	2.9	3.7	5	6.4	8.2	12.4	16.3
额定电压 Voltage(V)	380						
转速 Speed(r/min)	2900	2900	2900	2900	2900	1470	1450
频率 Frequency(Hz)	50						
绝缘等级 Insulation grade	F						
进气量(m³/h) Air input	10	22	35	50	75	85	100
增氧能力(kgO2/h) Oxygenation able	0.50	1.26	2.30	2.80	3.75	6.00	7.90
进气管口径(mm) Inlet branch caliber	32	32	50	50	50	50	50
表中进气量及增氧能力是在标准试验条件下(20℃水温，气压101.325KPa)，曝气机潜水深度3m，试验介质为清水时的试验值。如潜水深度或进气量大于表中的数值，需用户提供潜水深度和进气量，以便本公司设计和提供优化的设备。 在中度污水中，增氧能力应乘以0.85后作为设计依据。 The air input and oxygenation capacity are the tested values that are got under the following conditions: standard testing conditions (20℃ of water temperature, 101.325KPa of air pressure), 3m of aerator submersible depth and fresh water as the test medium. If the submersible depth or air input is larger than the value shown in the table, user shall provide them separately, so that we can design and provide the optimal equipment. In medium-polluted water, the oxygenation capacity multiplied by 0.85 is used as the design consideration.							

选型与安装
Selection of Model and Installation

需本公司协助选型时，用户应提供池型及尺寸、介质特性、所需进气量、潜水深度等相关数据，以便于本公司设计和提供优化的设备，更好地满足用户的需求。

深水自吸式潜水射流曝气机的安装形式有自耦式安装和移动式安装两种。自耦式安装方式是将曝气装置和专用的底座固定在水池的底部，在池顶安装好配套的支撑块，用导轨使两者相连，电泵与一特定支架连接好，沿导轨下滑到达底座出口位置，通过泵自重，自动耦合密封。自耦式安装无需安装或维修人员进入水坑即可提升和安装电泵，从而维护方便、快捷、安全！移动式安装方式是将深水自吸式潜水射流曝气机安装于池底，依靠自重定位，具有安装位置变动灵活、成本较低等特点。

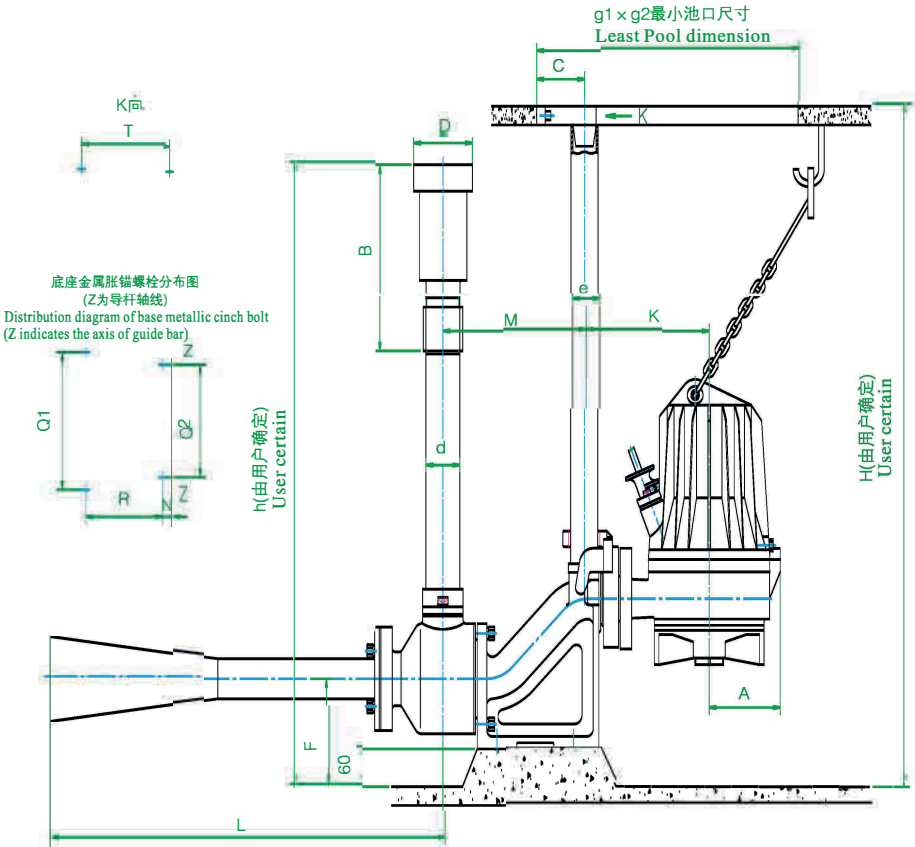
When our company needs to assist with selection, users shall provide data such as tank type and dimensions, medium characteristics, required air intake volume, and submerged depth to facilitate our design and delivery of optimized equipment. This ensures better satisfaction of user needs. The deep-water self-aspirating submerged jet aeration machine is available in two installation modes: self-coupled and mobile. Self-coupled installation involves fixing the aeration device and dedicated base at the bottom of the pool. Supporting blocks are installed on the pool top and connected to the base via guide rails. The electric pump is attached to a specific bracket and slides along the rails to the base outlet position, where it automatically couples and seals under its own weight. Self-coupled installation eliminates the need for personnel to enter the pit during pump lifting and installation, ensuring maintenance is convenient, quick, and safe! Mobile installation involves installing the aeration machine directly on the pool bottom, relying on its own weight for positioning. It features flexible adjustment of installation positions and lower costs.



深水自吸式潜水射流曝气机移动式安装示意图
The sketch map of deepwater automatic inhale submerged jet aerator mobile installation

深水自吸式潜水射流曝气机移动式安装尺寸
The measures of deepwater automatic inhale submerged jet aerator mobile installation

(mm)									
型号 Model	H	h	L	D	F	d	B	E	A
QSB0.75	用户根据实际情况确定 User should determine it according to the actual operating conditions.	438	1136	Φ100	85	DN32	260	494	107
QSB1.5		438	1136	Φ100	85	DN32	260	494	107
QSB2.2		438	1249	Φ104	141	DN50	280	369	126
QSB3		435	1325	Φ104	141	DN50	280	369	126
QSB4		580	1502	Φ104	149	DN50	280	414	203
QSB5.5		915	1958	Φ104	137	DN50	280	689	252
QSB7.5		915	2069	Φ104	137	DN50	280	689	252



深水自吸式潜水射流曝气机自耦式安装示意图
The sketch map of deepwater automatic inhale submerged jet aerator automatic coupling installation

深水自吸式潜水射流曝气机自耦式安装尺寸
The measures of deepwater automatic inhale submerged jet aerator coupling installation

(mm)							
型号	QSB0.75	QSB1.5	QSB2.2	QSB3	QSB4	QSB5.5	QSB7.5
A	107	107	126	126	203	252	252
B	260	260	280	280	280	280	280
C	85	85	85	85	105	105	105
D	Φ100	Φ100	Φ104	Φ104	Φ104	Φ104	Φ104
d	DN32	DN32	DN50	DN50	DN50	DN50	DN50
e	Φ48	Φ48	Φ48	Φ48	Φ60	Φ60	Φ60
F	172	172	172	172	175	200	200
glxg2	800x600	800x600	800x600	800x600	900x600	1100x800	1100x800
H	用户根据实际情况条件确定 User should determine it according to the actual operating conditions.						
h	用户根据实际情况条件确定 User should determine it according to the actual operating conditions.						
K	180	180	191	191	359	433	433
L	535	535	754	830	885	1017	1128
M	271	271	280	280	411	490	490
N	19	19	19	19	26	13	13
Q1	220	220	220	220	300	300	300
Q2	180	180	180	180	220	220	220
R	136	136	136	136	255	250	250
T	160	160	210	210	210	210	210