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# Mixer and Propeller Series

# 搅拌机、推进器系列

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


Lamsun Fluid

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**Lamsun Fluid Technology Pte.Ltd.**

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## 产品概述
## Products overview

蓝深作为国内第一台潜水搅拌机的诞生地，始终专注于潜水技术的研究与开发，发展至今已成为国内潜水行业的佼佼者。蓝深通过不断引进先进技术，大力推行科技创新。现已形成了混合搅拌和低速推流两大系列产品。1999年蓝深的QJB潜水搅拌机被国家经贸委确定为“城市污水处理关键设备技术开发项目”，从而使该产品的技术水平再上新台。2001年9月通过了部级鉴定，因其在型式、结构、试验方法和产品标准上的创新，叶轮通过CFD优化设计，使得总体性能超过国外同类产品同期先进水平。潜水电机采用长江三峡用潜水排污泵的密封技术，大大提高了潜水搅拌机的可靠性。在搅拌机的性能测试方法上，蓝深已获国家专利。该项目获得2001年度国家机械工业科学技术进步奖。

作为该系列设备行业标准的起草和制定单位，蓝深持续投入开发和改造潜水搅拌机，精益求精。在国家863计划研究课题——城市污水处理成套设备研究中，蓝深承担了潜水搅拌机这一研究课题。现在开发生产的QJB型多功能旋流式潜水搅拌机，是我公司采用先进的计算机辅助设计，在原有潜水搅拌机业已成熟的技术基础上，结合数万例实际工程的运行业绩和成果反馈，从优化潜水搅拌机的搅拌效果考虑，就潜水搅拌机的叶片设计、性能设计、可靠性设计、移动式安装等关键核心技术进行的有序组合。采用全新的设计理念，从水力部件的工作效率和工作方法考虑，以实现搅拌机对搅拌介质的全方位、多角度、旋流往复式搅拌，完成搅拌介质的活性流动，使得搅拌效果更均匀、彻底和开放。完全打破原有潜水搅拌机的维模式，提升了产品竞争力。

Lamsun, as the birthplace of China's first submerged mixer, has always focused on research and development in diving technology. Over time, it has grown into a leader in China's diving industry. By continuously introducing advanced technologies and vigorously promoting scientific innovation, Lamsun has now formed two major product series: hybrid mixing and low-speed circulation systems. In 1999, Lamsun's QJB submerged mixer was designated by the National Economic Commission as part of the "Key Equipment Technology Development Project for Urban Wastewater Treatment," thereby elevating the technical level of this product to new heights. In September 2001, it passed ministerial-level appraisal. Due to innovations in its type, structure, testing methods, and product standards, combined with CFD-optimized blade design, its overall performance surpassed the advanced level of foreign counterparts during the same period. The submerged motor adopted sealing technology from the Three Gorges Project's submerged sewage pump, significantly enhancing the reliability of the mixer. Lamsun holds national patents for its mixing machine performance testing methods, and this project was awarded the 2001 National Mechanical Industry Science and Technology Progress Award.

As the drafter and formulator of industry standards for this series of equipment, Lamsun continues to invest in development and improvement of submerged mixers with relentless pursuit of excellence. In the national 863 Program research project on "Complete Equipment for Urban Wastewater Treatment," Lamsun undertook the research task for submerged mixers. The currently developed QJB multifunctional vortex-type submerged mixer represents our company's application of advanced computer-aided design. Building upon the already mature technology of existing submerged mixers, this product integrates numerical performance from over 10,000 practical engineering operations and feedback. Focusing on optimizing mixing effects, it systematically combines key core technologies in blade design, performance design, reliability design, and mobile installation. Featuring a completely new design concept, this mixer considers working efficiency and methods of hydrodynamic components, achieving all-directional, multi-angle vortex reciprocating stirring of the medium. This creates active fluid movement, resulting in more uniform, thorough, and open mixing effects. It fundamentally breaks through traditional submerged mixer models and enhances product competitiveness.

## 用途
## use

高速混合系列QJB型多功能旋流式潜水搅拌机适用于污水处理厂平衡池、硝化/反硝化池、污泥处理和储存池，以及工业流程中搅拌含有悬浮物、固杂物的液体，防止沉淀。

低速推流系列QJB型多功能旋流式潜水搅拌机适用于工业和城市污水处理厂曝气池和厌氧池、大型硝化及反硝化池、圆盘式活性污泥处理池、消毒池及工业搅拌。其产生低切向开放式的强力水流，可轻易实现在大容积流体中产生水循环及硝化、脱氮和除磷阶段创建水流等。

QJB型多功能旋流式潜水搅拌机主要适用范围：
- ■污水、废水、污泥水的混合、均匀
- ■稠化过程
- ■污泥脱水过程
- ■传热优化
- ■污水池清洁
- ■防止颗粒在池壁和池底的凝结和沉淀
- ■去除悬浮物
- ■防止结冰
- ■创建水流
- ■循环水等

QJB type multi–functional swirling submersible mixer mainly suitable for:
- Wastewater, sewage and sludge water mixing & uniform thickening processes
- Sludge dewatering process
- Heat transfer optimization
- Sewage pond cleaning
- Prevent particle coagulation and sedimentation on pool walls/bottoms, removal of suspended solids
- Prevent freezing
- Circulating water etc.

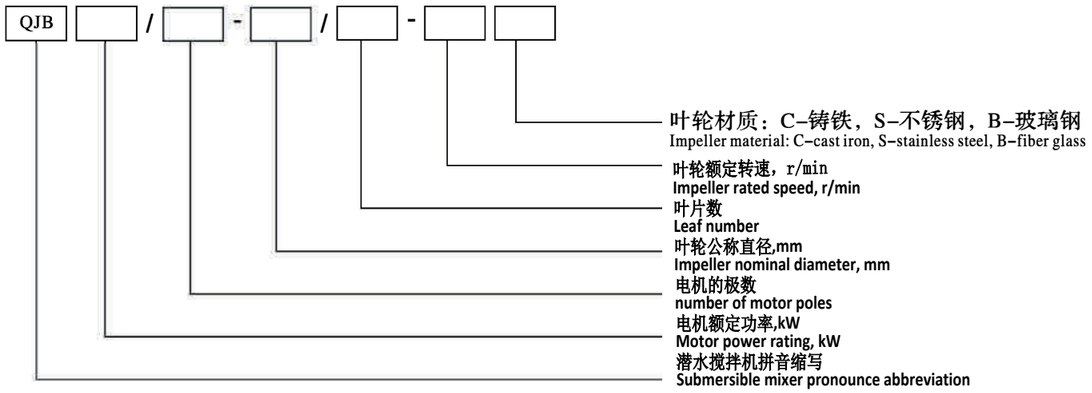
The high-speed mixing series QJB multi-functional swirl submersible agitator is suitable for balancing tanks, nitrification and denitrification tanks, sludge treatment and storage tanks in sewage treatment plants, as well as for industrial processes involving the mixing of liquids containing suspended solids and impurities to prevent sedimentation.

It is suitable for industrial and municipal wastewater treatment plants, including aeration tanks, anaerobic tanks, large-scale nitrification and denitrification tanks, disk-type activated sludge treatment tanks, disinfection tanks, and industrial mixing applications.

This equipment generates low-tangential open-style powerful water flows, easily achieving water circulation in large-volume fluids and creating water movement patterns for critical stages such as nitrification, denitrification , and phosphorus removal.



## 型号表示方法
## Model said method




## 使用条件
## Use conditions

QJB型多功能旋流式潜水搅拌机在下列条件下可正常连续运行：

1、最高介质温度不超过40℃；

2、介质的PH值在5~9之间；

3、介质密度不超过1150kg/m³；

**4、长期潜水运行，潜水深度一般不超过20m。**

**The QJB Multifunctional Cyclonic Submerged Mixer can operate continuously under 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;
4.Continuous submerged operation: The submerged depth is generally limited to 20 meters (65 feet).

## 特点
## characteristics

1、QJB型多功能旋流式潜水搅拌机结构紧凑，体积小，重量轻，操作维护简单、安装检修方便、使用寿命长。

2、叶轮具有最佳的水力设计结构、工作效率高，后掠式叶片具有自洁功能可防杂物缠绕、堵塞。

3、与曝气系统配合使用可使能耗大幅度降低，充氧量明显提高，有效防止沉淀。

4、独特的电缆密封设计，排除了电缆漏水的隐患。

5、电机绕组为F级绝缘，防护等级为IP68，选用一次润滑免维护优质轴承，具有油室泄漏检测和电机绕组过热保护功能，使电机的工作更加安全可靠。

6、两道独立的机械密封，机械密封的磨擦付材质为耐腐蚀的碳化钨，所有紧固件均为不锈钢材质。

7、标准部件采用电解分离技术，可以有效防止腐蚀。

**1. QJB-type multifunctional vortex submerged mixer features compact structure, small size, light weight, simple operation and maintenance, convenient installation and repair, and long service life.**

**2. The impeller adopts optimal hydrodynamic design with high working efficiency. The backward-curved blades possess self-cleaning functions to prevent debris entanglement and blockage.**

**3. When used in conjunction with aeration systems, it can significantly reduce energy consumption, markedly improve oxygenation levels, and effectively prevent sedimentation.**

**4. Unique cable sealing design eliminates the risk of cable leakage.**

**5. Motor windings use F-class insulation with IP68 protection rating. Equipped with single-lubrication, maintenance-free high-quality bearings, oil chamber leakage detection, and motor winding overheating protection functions, ensuring safe and reliable motor operation.**

**6. Two independent mechanical seals are adopted, with friction pair materials made of corrosion-resistant tungsten carbide.**

**7. Standard components utilize electrolytic separation technology to effectively prevent corrosion.**



## 结构简介
## Structure introduction

QJB型多功能旋流式潜水搅拌机主要由设备主机、安装系统及电控设备组成。

QJB型多功能旋流式潜水搅拌机按其作用形式可分为混合型潜水搅拌机和低速推流型潜水搅拌机。混合型潜水搅拌机为直联冲压式潜水搅拌机。低速推流型潜水搅拌机属于非直联式潜水搅拌机。

混合系列QJB型多功能旋流式潜水搅拌机按其叶片成形方式又分为铸件搅拌机和冲压搅拌机。铸件搅拌机叶片（叶轮）为铸造成形，机体外壳材料为铸铁。冲压搅拌机叶片为冲压成形，机体外壳材料为不锈钢。

直联冲压式结构的潜水搅拌机采用多极电机，水力部件经冲压成型，精度好、效率高，叶轮有不同的叶片角度。采用水力平衡的无堵塞的拽后设计，结构紧凑，体积小、重量轻，操作维护简单、安装方便快捷，使用寿命长。壳体全部采用不锈钢制造，外形美观流畅。经国家环保局认定，是国内外潜水搅拌机中的首选产品。

混合型潜水搅拌机可以配置导流罩以增加轴向流动并减少径向流动，减少叶轮振动，增加运转的平稳性。而低速推流型潜水搅拌机不配置导流罩。

如图1所示，直联式潜水搅拌机主要由叶轮、潜水电机两大部分组成，叶轮直接装在电机轴上。

The QJB-type multifunctional swirl submersible mixer primarily consists of the equipment host, installation system, and electrical control equipment.

The QJB-type multifunctional swirling submersible mixers can be categorized based on their functional forms into mixed submersible mixers and low-speed push-flow pattern submersible mixers. Structurally, the mixed submersible mixers are further classified into straight league stamping type and straight association-like submersible mixers.

The low-speed push-flow pattern encompasses straight association-like submersible mixers.

The QJB series multi-functional swirling submersible mixer blades are categorized into cast and stamped varieties based on manufacturing process. The cast mixer blades, or impellers, are produced via casting, with a cast iron main body. In contrast, stamped mixer blades are made through stamping, featuring a stainless steel body shell.

The straight league stamped type submersible mixer incorporates a multi pole motor and stamped hydraulic components for high precision and efficiency. Its impeller blades are designed with varying angles, and the hydraulic balance ensures smooth flow post-disassembly. The mixer boasts a compact, lightweight design with ease of operation and maintenance. Installation is simple and quick, prolonging service life. All cases are made of stainless steel, providing an aesthetically pleasing appearance. Certified by the national environmental protection bureau, this mixer is a top choice domestically and internationally.

The mixed submersible mixer is designed to enhance axial flow by increasing the general diversion cover and reducing radial flow, reducing vibration and improving impeller smoothness. The low-speed push flow pattern mixer eliminates the need for a diversion hood.

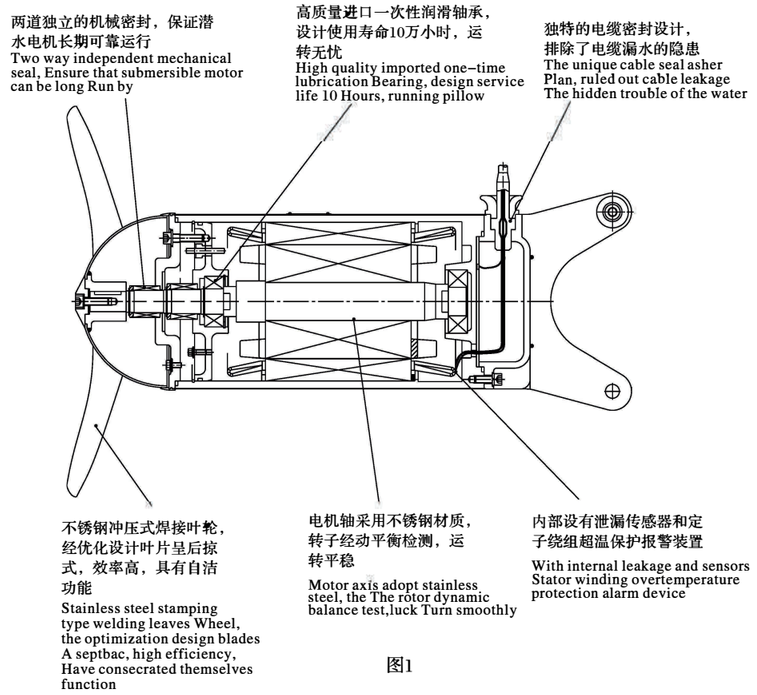



图1

通过不断的改革创新，蓝深集团生产的低速推流系列QJB型多功能旋流式潜水推进器在一次次升级改造中进行的优化组合，现在已形成由斜齿轮减速器的减速结构，和新一代玻璃钢整体叶轮相配合的广泛使用，其便捷的安装、稳定的运行、卓越的效能受到了用户的普遍好评和青睐，销量不断攀升。该戏速结构齿轮采用优质合金钢渗碳、猝火、磨齿等精加工而成，速比准确、精度高、接触性好;输出扭矩及承毂能力大、效率高、使用寿命长;便于安装、故障率低、运行稳定、维修方便;结构紧凑、体积小、重量轻;可靠性高、运行平稳、噪音低等特点。另外，采用的新一代整体式增强玻璃钢或聚氨酷叶轮均通过CFD软件优化设计，水力性能好，叶片宽而薄，重量轻、能耗低、效率高、推力大，能减小减速机的使用负荷，运行平稳，延长设备的使用寿命。可快速安装、拆卸，平衡性、匀质性好，可产生大体积流场，服务范围更广、其采用无堵察设计，表面光滑呈后掠式。叶片具有自洁功能和“柔性”并能够吸收发生改变的水力负载，从面有利于创建出柔和的水流。由于叶片采用高强度的玻璃钢或聚氨酌材料，在污水介质中性能稳定，耐脚蚀，耐磨性好。而且耐酸、耐破、抗氧化性好，韧性好、强度高、防水性能好，可以适应在各种类型的污水介质中使用。QJB型潜水推流器的问世一举打破了低速推流型潜水搅拌机应用领域由国外产品一统市场的局面。

如图2所示，QJB型潜水推流器主要由叶轮、潜水电机、该速装置等三大部分组成。叶轮装在减速袭置输出轴上。采用分体式叶浆的OJB型潜水推流器根据叶浆数量的配置可分为二叶型和三叶型。在保障主机可靠性的前提下，选配高效率的减速装置。增加机型配置，提高输出功率，并使运行更加平稳;安装时采用法兰式叶桨定位，更加准确可靠。其中改型后的三叶型潜水推流器，在同等转速及叶桨直径条件下，推流能力提高30%以上，同时具备可靠性高、稳定性强的特点，为工程应用提供了更加丰富的选择。L.QJB型填料流化推流器是采用特殊的三叶不锈铜叶轮与优化的转速和功率配置，能满足表面附着生物膜的填料在水体中保持良好的流化悬浮状态，并防止填料受叶片的钢性撞击面造成的破损。流线型的筒形整体式不锈钢外壳，可使填料对机壳的磨损最小，水力效率达到最优化。在流线型机内整合了新一代节能电机及整装式高扭距的高效齿轮减速机，整体动力方案节能、高效、长寿命。针对生物膜反应工艺专门设计的倾角(15°、20°、30°)可调式的安装动作机构，可满足现场推流器对生物反应池整体优良的流化运动效果，有效提高反应效率，为节能降耗，我公司生产的潜水搅拌机及流化推进器可配套由蓝深集团研制开发的永磁高效潜水电机，该系列电机效率高，功率因数高，其性能指标达到国家一级或二级能效值，采用的永磁电机功率因数全部大于0.95，永磁高效潜水搅拌机(流化推流器)比普通潜水搅拌机(流化推器)能耗节约15%-30%。

Through continuous reform and innovation, Lanshen Group's low-speed circulation series QJB-type multifunctional vortex submerged propeller mixer has undergone repeated upgrades and optimization combinations. It now features a widely adopted structure combining helical gear reducers with new-generation reinforced fiberglass integral impellers. Its convenient installation, stable operation, and superior efficiency have received widespread praise and favor from users, with sales continuously rising.

The high-speed reduction gear is made of premium alloy steel through carburizing, quenching, and tempering processes. It features precise speed ratios, high accuracy, good contact surfaces; high output torque and load-bearing capacity, high efficiency, and long service life; easy installation, low failure rates, stable operation, and convenient maintenance; compact structure, small size, and light weight; high reliability, smooth operation, and low noise characteristics.

Additionally, the new-generation integral reinforced fiberglass or polyurethane impellers are CFD-optimized for superior hydrodynamic performance. Their wide, thin blades ensure lightweight design, low energy consumption, high efficiency, and strong thrust, reducing the load on reducers while ensuring stable operation and extended equipment lifespan. They feature rapid installation and disassembly, balanced flow patterns, large-volume flow fields, broad applicability, non-blocking designs with smooth, backward-curved surfaces. The blades possess self-cleaning functions and "flexibility" to absorb varying hydraulic loads, creating gentle water flow.

Due to their high-strength fiberglass or polyurethane materials, these impellers exhibit stable performance in sewage media, with excellent corrosion resistance, wear resistance, acid resistance, alkali resistance, oxidation resistance, toughness, strength, and waterproof properties, making them suitable for various types of wastewater applications. The emergence of QJB-type submerged propeller mixers has broken the foreign monopoly in the application field of low-speed circulation submerged mixers.

As shown in Figure 2, the QJB-type submerged propeller mixer mainly consists of three components: the impeller, submerged motor, and reduction gear assembly. The impeller is mounted on the reducer's output shaft. The split-blade DJB-type submerged propeller mixer (configurable as 2-blade or 3-blade models based on impeller quantity) prioritizes host reliability while incorporating high-efficiency reducers for enhanced power output and stable operation. Flange-mounted blade positioning ensures precise installation.

The improved 3-blade model achieves over 30% higher propulsion capacity under identical rotational speed and blade diameter conditions, while maintaining high reliability and stability, offering engineers expanded application choices. The L.QJB-type filler fluidization propeller mixer employs special 3-blade stainless steel impellers and optimized speed/power configurations to maintain biofilm-covered fillers in stable suspension and prevent damage from rigid blade impacts. Its streamlined cylindrical all-stainless-steel housing minimizes filler wear, optimizing hydrodynamic efficiency.

Integrated with energy-saving motors and high-torque reducers, this system achieves energy efficiency, high performance, and long lifespan. For biological membrane reaction processes, it features adjustable installation angles (15°, 20°, 30°) to optimize bioreactor fluidization effects, improving reaction efficiency and energy conservation.

Lanshen's submerged mixers and fluidization propellers are compatible with our self-developed permanent magnet high-efficiency submerged motors. These motors exceed national first-class or second-class energy efficiency standards, with power factors >0.95. Compared to conventional mixers, they reduce energy consumption by 15%-30%.

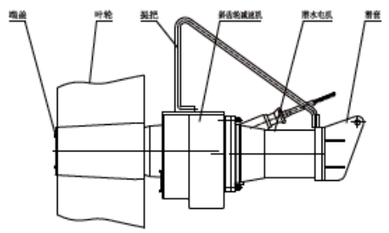


图2

图2

## 选型注意事项
## Lectotype attention items

为保证取得最佳效果，请使用方提供以下资料：

1、运用目的；

2、池形；

3、池尺寸，包括水深；

4、介质特性：包括粘度、密度、温度、固体含量等。

搅拌机所需要的配套功率是根据容积大小、池型尺寸、搅拌液体的密度、粘度而确定的，根据具体情况采用一台或多台搅拌机。

*由于技术不断进步，蓝深集团保留修改设计的权利，选型时，请与蓝深集团技术工程部保持联系。

⚠ QJB型多功能旋流式潜水搅拌机必须完全潜入水中工作，不能在易燃易爆的环境下或有强腐蚀性液体的环境中工作！若用户有特殊使用要求，可与我公司技术工程部保持，为其提供最佳解决方案。

To achieve optimal performance, the user must provide the following information:

1.Application Purpose;

2.Tank/Pool Shape;

3.Tank Dimensions (including water depth);

4.Medium Properties: Viscosity, density, temperature, solids content, etc.

The required power for the mixer is determined based on factors such as tank volume, tank dimensions, liquid density, and viscosity. Dne or multiple mixers may be used depending on specific requirements.

* Lamsun reserves the right to modify designs due to technological advancements. For model selection, please consult Lamsun Technical Engineering Department.

⚠ The QJB Multifunctional Cyclonic Submerged Mixer must be fully submerged in water and shall not be operated in flammable/explosive environments or with highly corrosive liquids!
For special requirements, contact our Technical Engineering Department to obtain customized solutions.



## 性能参数
## Performance parameters

（电压：380伏，频率：50赫兹）：

表1 混合型多功能旋流式潜水搅拌机主要性能参数Table 1 the main performance parameters of the hybrid multi function Hydrocyclone

| 房号 | 型号 Model | | 电机功率 (kW) Motor power | 额定电流 (A) Rated current | 叶片转速 (r/min) Blade rotation speed | 叶片直径 (mm) Blade diameter | 轴向推力 (N) Axial thrust | 重量 (kg) weight |
|---|---|---|---|---|---|---|---|---|
| 1 | QJB0.37/6-220/3-980 | | 0.37 | 1.4 | 980 | 220 | 115 | 20 |
| 2 | QJB0.55/6-220/3-980 | | 0.55 | 1.7 | 980 | 220 | 140 | 20 |
| 3 | QJB0.75/8-260/3-740 | | 0.75 | 3.2 | 740 | 260 | 228 | 35 |
| 4 | QJB1.5/6-260/3-980 | | 1.5 | 3.9 | 980 | 260 | 406 | 35 |
| 5 | QJB2.2/8-320/3-740 | C/S* | 2.2 | 5.9 | 740 | 320 | 815 | 110 |
| 6 | QJB4/6-320/3-980 | C/S* | 4.0 | 9.6 | 980 | 320 | 853 | 115 |

## 性能参数
## Performance parameters

（电压：380伏，频率：50赫兹）：

表1 混合型多功能旋流式潜水搅拌机主要性能参数Table 1 the main performance parameters of the hybrid multi function Hydrocyclone

| 序号 N0. | 型号 Model | 电机功率（kW） Motor power | 额定电流 (A) Rated current | 叶片转速 (r/min) Blade rotation speed | 叶片直径 (mm) Blade diameter | 轴向推力 (N) Axial thrust | 重量 (kg) weight |
|---|---|---|---|---|---|---|---|
| 7 | QJB1.5/8–400/3–740/S | 1.5 | 4.5 | 740 | 400 | 1120 | 70 |
| 8 | QJB2.5/8–400/3–740/S | 2.5 | 7.3 | 740 | 400 | 1276 | 70 |
| 9 | QJB3/8–400/3–740/S | 3.0 | 8.0 | 740 | 400 | 1310 | 70 |
| 10 | QJB4/6–400/3–980/S | 4.0 | 9.3 | 980 | 400 | 1540 | 73 |
| 11 | QJB4/12–620/3–480/S | 4.0 | 14.5 | 480 | 620 | 1680 | 184 |
| 12 | QJB5/12–620/3–480/S | 5.0 | 18.0 | 480 | 620 | 2520 | 184 |
| 13 | QJB7.5/12–620/3–480/S | 7.5 | 26.7 | 480 | 620 | 3640 | 229 |
| 14 | QJB10/12–620/3–480/S | 10.0 | 29.3 | 480 | 620 | 4060 | 229 |
| 15 | QJB12/12–700/3–480/S | 12.0 | 32.0 | 480 | 620 | 4340 | 250 |
| 16 | QJB15/12–620/3–480/S | 15.0 | 42.8 | 480 | 620 | 5880 | 305 |
| 17 | QJB18.5/12–620/3–480/S | 18.5 | 55.0 | 480 | 620 | 7420 | 315 |
| 18 | QJB22/12–620/3–480/S | 22.0 | 65.0 | 480 | 620 | 8540 | 335 |

注：型号后加*号的为铸件搅拌机，其余为冲压搅拌机

（电压：380伏，频率：50赫兹）：

表2 QJB二叶型推流型多功能旋流式潜水搅拌机主要性能参数Table 2 the main performance parameters of the QJB two vane type multi flow Hydrocyclone

| 序号 N0. | 型号 Model | 电机功率（kW） Motor power | 额定电流 (A) Rated current | 叶片数量 (set) Leaf number | 叶片转速 (r/min) Blade rotation speed | 叶片直径 (mm) Blade diameter | 轴向推力 (N) Axial thrust | 重量 (kg) weight |
|---|---|---|---|---|---|---|---|---|
| 1 | QJB1.5/4–1100/2–60 | 1.5 | 3.65 | 2 | 60 | 1100 | 950 | 150 |
| 2 | QJB2.2/4–1100/2–80 | 2.2 | 5.05 | 2 | 80 | 1100 | 1220 | 160 |
| 3 | QJB3/4–1100/2–100 | 3.0 | 6.64 | 2 | 100 | 1100 | 1650 | 160 |
| 4 | QJB4/4–1100/2–130 | 4.0 | 8.62 | 2 | 130 | 1100 | 2010 | 165 |
| 5 | QJB1.5/4–1400/2–43 | 1.5 | 3.65 | 2 | 43 | 1400 | 1300 | 150 |
| 6 | QJB2.2/4–1400/2–50 | 2.2 | 5.05 | 2 | 50 | 1400 | 1580 | 160 |
| 7 | QJB3/4–1400/2–65 | 3.0 | 6.64 | 2 | 65 | 1400 | 2100 | 160 |
| 8 | QJB4/4–1400/2–75 | 4.0 | 8.62 | 2 | 75 | 1400 | 2380 | 172 |
| 9 | QJB1.5/4–1600/2–39 | 1.5 | 3.65 | 2 | 39 | 1600 | 1510 | 155 |
| 10 | QJB2.2/4–1600/2–43 | 2.2 | 5.05 | 2 | 43 | 1600 | 1670 | 165 |
| 11 | QJB3/4–1600/2–51 | 3.0 | 6.64 | 2 | 51 | 1600 | 2230 | 165 |
| 12 | QJB4/4–1600/2–62 | 4.0 | 8.62 | 2 | 62 | 1600 | 2540 | 170 |
| 13 | QJB1.5/4–1800/2–34 | 1.5 | 3.65 | 2 | 34 | 1800 | 1620 | 190 |
| 14 | QJB2.2/4–1800/2–39 | 2.2 | 5.05 | 2 | 39 | 1800 | 1850 | 200 |
| 15 | QJB3/4–1800/2–44 | 3.0 | 6.64 | 2 | 44 | 1800 | 2310 | 200 |
| 16 | QJB4/4–1800/2–52 | 4.0 | 8.62 | 2 | 52 | 1800 | 2760 | 280 |
| 17 | QJB5.5/4–1800/2–62 | 5.5 | 11.7 | 2 | 62 | 1800 | 2920 | 280 |



## 性能参数
## Performance parameters

（电压：380伏，频率：50赫兹）：

表2 QJB二叶型推流型多功能旋流式潜水搅拌机主要性能参数Table 2 the main performance parameters of the QJB two vane type multi flow Hydrocyclone

| 序号 N0. | 型号 Model | 电机功率（kW） Motor power | 额定电流 (A) Rated current | 叶片数量 (set) Leaf number | 叶片转速 (r/min) Blade rotation speed | 叶片直径 (mm) Blade diameter | 轴向推力 (N) Axial thrust | 重量 (kg) weight |
|---|---|---|---|---|---|---|---|---|
| 18 | QJB7.5/4–1800/2–70 | 7.5 | 15.9 | 2 | 70 | 1800 | 3010 | 280 |
| 19 | QJB2.2/4–2200/2–30 | 2.2 | 5.05 | 2 | 30 | 2200 | 2050 | 210 |
| 20 | QJB3/4–2200/2–34 | 3.0 | 6.64 | 2 | 34 | 2200 | 2534 | 210 |
| 21 | QJB4/4–2200/2–38 | 4.0 | 8.62 | 2 | 38 | 2200 | 3250 | 280 |
| 22 | QJB5.5/4–2200/2–43 | 5.5 | 11.7 | 2 | 43 | 2200 | 3840 | 290 |
| 23 | QJB7.5/4–2200/2–52 | 7.5 | 15.9 | 2 | 52 | 2200 | 4010 | 295 |
| 24 | QJB3/4–2500/2–29 | 3.0 | 6.64 | 2 | 29 | 2500 | 2680 | 220 |
| 25 | QJB4/4–2500/2–33 | 4.0 | 8.62 | 2 | 33 | 2500 | 3670 | 290 |
| 26 | QJB5.5/4–2500/2–39 | 5.5 | 11.7 | 2 | 39 | 2500 | 4080 | 290 |
| 27 | QJB7.5/4–2500/2–43 | 7.5 | 15.9 | 2 | 43 | 2500 | 4520 | 300 |

（电压：380伏，频率：50赫兹）：

表3 QJB三叶型推流型多功能旋流式潜水搅拌机主要性能参数Table 3 the main performance parameters of the QJB three – phase flow – type multi – function Hydrocyclone

| 序号 N0. | 型号 Model | 电机功率（kW） Motor power | 额定电流 (A) Rated current | 叶片数量 (set) Leaf number | 叶片转速 (r/min) Blade rotation speed | 叶片直径 (mm) Blade diameter | 轴向推力 (N) Axial thrust | 重量 (kg) weight |
|---|---|---|---|---|---|---|---|---|
| 1 | QJB3/4–1100/3–52 | 3.0 | 6.64 | 3 | 52 | 1100 | 1585 | 205 |
| 2 | QJB4/4–1100/3–62 | 4.0 | 8.62 | 3 | 62 | 1100 | 2240 | 210 |
| 3 | QJB5.5/4–1100/3–80 | 5.5 | 11.7 | 3 | 80 | 1100 | 2640 | 220 |
| 4 | QJB3/4–1400/3–43 | 3.0 | 6.64 | 3 | 43 | 1400 | 1930 | 210 |
| 5 | QJB4/4–1400/3–52 | 4.0 | 8.62 | 3 | 52 | 1400 | 2390 | 215 |
| 6 | QJB5.5/4–1400/3–62 | 5.5 | 11.7 | 3 | 62 | 1400 | 2850 | 225 |
| 7 | QJB3/4–1600/3–38 | 3.0 | 6.64 | 3 | 38 | 1600 | 2180 | 215 |
| 8 | QJB4/4–1600/3–43 | 4.0 | 8.62 | 3 | 43 | 1600 | 2690 | 220 |
| 9 | QJB5.5/4–1600/3–52 | 5.5 | 11.7 | 3 | 52 | 1600 | 3080 | 230 |
| 10 | QJB3/4–1800/3–34 | 3.0 | 6.64 | 3 | 34 | 1800 | 2360 | 220 |
| 11 | QJB4/4–1800/3–38 | 4.0 | 8.62 | 3 | 38 | 1800 | 2670 | 225 |
| 12 | QJB5.5/4–1800/3–43 | 5.5 | 11.7 | 3 | 43 | 1800 | 3360 | 235 |
| 13 | QJB7.5/4–1800/3–52 | 7.5 | 15.9 | 3 | 52 | 1800 | 4050 | 240 |
| 14 | QJB4/4–2200/3–33 | 4.0 | 8.62 | 3 | 33 | 2200 | 3440 | 320 |
| 15 | QJB5.5/4–2200/3–38 | 5.5 | 11.7 | 3 | 38 | 2200 | 4350 | 330 |
| 16 | QJB7.5/4–2200/3–43 | 7.5 | 15.9 | 3 | 43 | 2200 | 4860 | 350 |
| 17 | QJB5.5/4–2500/3–33 | 5.5 | 11.7 | 3 | 33 | 2500 | 5400 | 350 |
| 18 | QJB7.5/4–2500/3–38 | 7.5 | 15.9 | 3 | 38 | 2500 | 6200 | 360 |

## 性能参数
## Performance parameters

（电压：380伏，频率：50赫兹）

表4 LQJB型填料流化推流器主要性能参数Table 4 the main performance parameters of the LQJB type packing flow pusher

| 序号 NO. | 型号 Model | 电机功率（kW） Motor power | 额定电流 (A) Rated current | 叶片数量 (set) Leaf number | 叶片转速 (r/min) Blade rotation speed | 叶片直径 (mm) Blade diameter | 轴向推力 (N) Axial thrust | 重量 (kg) weight |
|---|---|---|---|---|---|---|---|---|
| 1 | LQJB1.5–1080/3–100 | 1.5 | 4.5 | 3 | 100 | 1080 | 1860 | 140 |
| 2 | LQJB2.5–1080/3–100 | 2.5 | 7.8 | 3 | 100 | 1080 | 2240 | 160 |
| 3 | LQJB4.0–1080/3–100 | 4 | 10.2 | 3 | 100 | 1080 | 2870 | 175 |
| 4 | LQJB5.5–1080/3–120 | 5.5 | 13.2 | 3 | 120 | 1080 | 3690 | 215 |
| 5 | LQJB7.5–1080/3–120 | 7.5 | 17.9 | 3 | 120 | 1080 | 4850 | 220 |

## 安装系统说明
## Installation system that

安装潜水搅拌机可采用的安装方式多种多样。下面提供了其中最常用、最方便、最快捷的安装方式，该专用安装系统可在无需排出池中污水的情况下，能快速安装和拆卸潜水搅拌机。并且使用安全可靠。我们还可以提供其它安装方法的指导。

潜水搅拌机的潜水深度可以根据需要进行垂直方向的调节。吊架座、支撑架和下托架与池的联结均采用与预埋件焊接固定。客户订货时，请提供池深H，以便我公司加工时确定导杆尺寸及支撑架的数量。安装系统的材质采用不锈钢（或碳钢）制造。起吊装置除吊架座外，数台搅拌机可共用一套。为方便搅拌机安装及起吊，应在起吊位置的护栏上开活动门。

一般地每个规格搅拌机对应一种型式安装系统（见表5、表6），如用户有特殊需要，可另配其它型式安装系统。各型式安装系统其结构有所不同。

The installation of submerged mixers can be implemented through various methods. The most widely adopted, user-friendly, and efficient approach involves a specialized installation system enabling rapid deployment and retrieval without requiring pool drainage, ensuring operational safety and reliability. Additional installation methodologies can be provided upon client request.

The submerged depth of the mixer is adjustable vertically according to project requirements. The lifting frame, support brackets, and lower mounts are welded to the pool's embedded anchoring points. Customers must specify the pool depth (H) during ordering to determine the guide rod dimensions and quantity of support frames required for customization.

The installation system utilizes stainless steel (or carbon steel) construction. Excluding the lifting frames, multiple mixers can share a common hoisting apparatus. For streamlined installation and maintenance, swing doors integrated into the pool's guardrails at lifting positions are recommended.

Typically, each mixer specification corresponds to a dedicated installation system type (refer to Tables 5 and 6). Custom installation configurations are available for specialized applications. Different system types exhibit structural variations in design.

## 安装注意事项
## Installation note

1、导杆应与水平面垂直，可采用铅垂校正；

2、起吊潜水搅拌机时，叶轮端较水平面应上仰2~5°

3、起吊中心和潜水搅拌机的起吊重心处于同一垂直线上；

4、导杆与支撑架应与池底预埋件焊接牢固。

1. The guide rod should be perpendicular to the horizontal plane and can be calibrated using a plumb bob.
2. During lifting of the submerged mixer, the impeller end should be angled upward by 2°–5° relative to the horizontal plane.
3. The lifting center and the submerged mixer's center of gravity must align vertically:
4. The guide rod and support frame should be welded securely to the pool's embedded components.

## 安装系统及尺寸
## Installation system and size

安装系统根据搅拌机主机结构特点及设备安装运行需要分为安装系统Ⅰ、Ⅱ、Ⅲ、Ⅳ共四种型式。而安装系统Ⅰ又分为Ⅰ–1、Ⅰ–2和Ⅰ–3三种型式。一般地每个规格搅拌机对应一种形式的安装系统，如用户有特殊需要，可另配其它型式安装系统。

安装系统Ⅰ–1(本系统适用于QJB0.37/6–220/3–980、QJB0.55/6–220/3–980、QJB0.75/8–260/3–740、QJB1.5/6–260/3–980型潜水搅拌机

如图3所示，安装系统Ⅰ–1主要由导杆、支撑架、支撑板等组成。潜水搅拌机与导杆联接，悬挂于导杆下部，导杆则固定在上支撑架上。潜水搅拌机在铅垂面上与水平面成一定的倾角安装；潜水搅拌机也可通过导杆改变绕上转盘轴线作120° 旋转，以适应不同方向搅拌或推流，消除水池中的死区，使水流处于最佳运行状态，该型安装系统常规安装为膨胀螺栓固定即可。建议在池深小于3米的场合使用。

**The installation system is divided into four types (I, II, III) based on the structural characteristics of the mixer host and operational requirements. Type I further comprises three subtypes (I-1, I-2, I-3). Generally, each mixer specification corresponds to one type of installation system, though alternative configurations may be provided upon request.**

**Installation System I-1 (applicable to QJB0.37/6-220/3-980, QJB0.55/6-220/3-980, QJB0.75/8-260/3-740, QJB1.5/6-26013-980 submerged mixers) .**

**Is shown in Figure 3. It consists of a guide rod, support frame, and support plate. The mixer is suspended below the guide rod, which is fixed to the upper support frame. The mixer is installed at an inclined angle relative to the horizontal plane in the vertical plane; it can also rotate 120° around the pivot axis via the guide rod to adapt to different mixing or propulsion directions, eliminating dead zones in the pool and optimizing water flow performance. This system is conventionally fixed with expansion bolts and is recommended for pools with depths less than 3 meters.**

## 安装系统Ⅰ
## Installation system Ⅰ

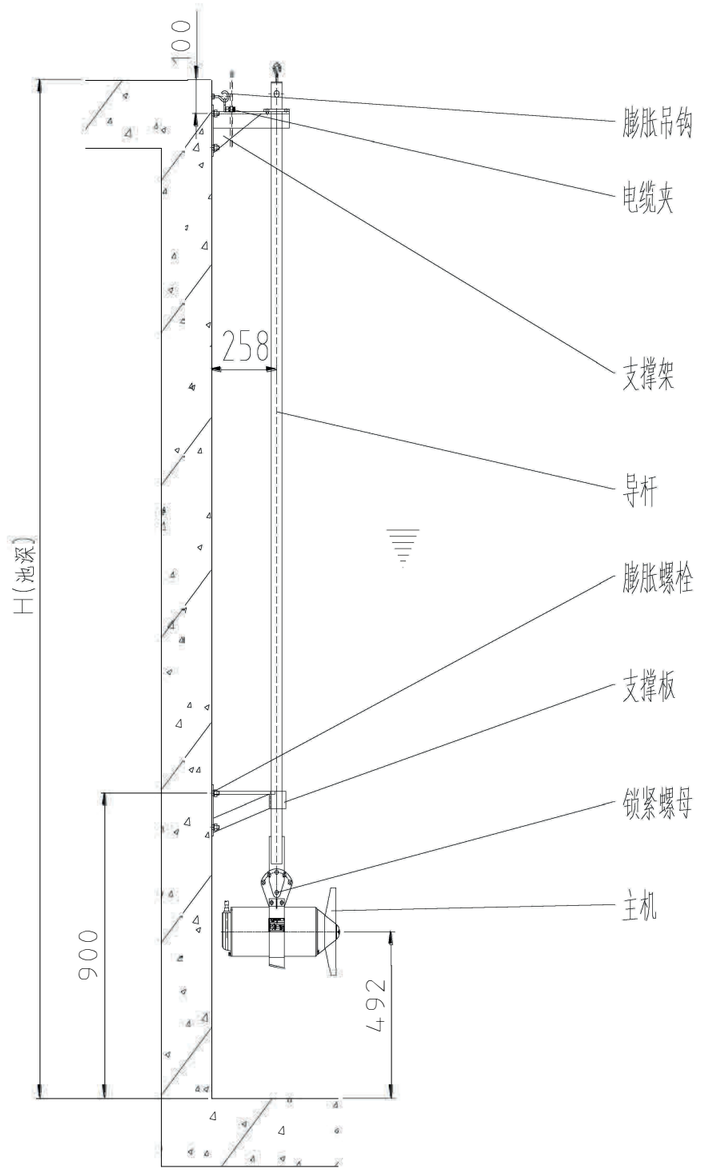



图3 Ⅰ-1型安装系统示意图
Figure 3 Ⅰ-type 1 installation system schemes

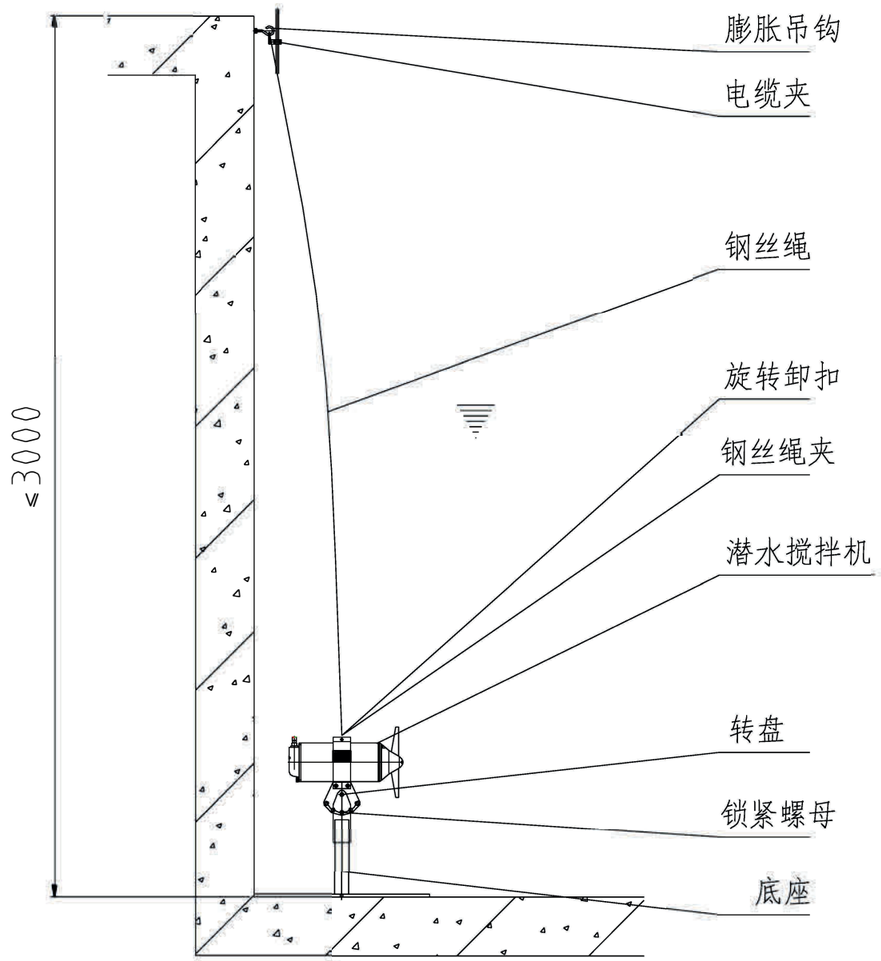



图4 Ⅰ-2型安装系统示意图
Figure 4 Ⅰ-type 2 installation system schemes

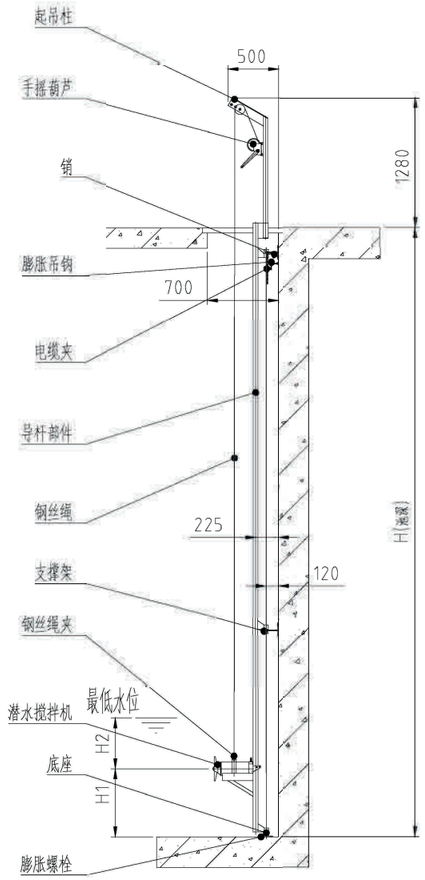
安装系统I-2（本系统适用于QJB0.37/6-220/3-980. QJB0.5.5/6-220/3-980. QJB0.75/8-260/3-740. QJB1.5/6-260/3-980型潜水搅拌机）

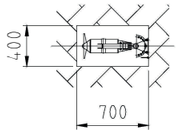
如图4所示，安装系统I-2，属移动式安装，主要由主机、钢丝绳、底座等组成。底座与池底接触较好并紧靠池壁，可以在平面方向调整角度。

Install system I-2 (this system is applicable to QJB0.37/6-220/3-980,QJB0.5.5/6-220 / 3-980. QJB0.75/8-260 / 3-740,QJB1. 5 / 6-260 / 3-980 submersible mixer)

As shown in Figure 4, the installation system I-2 is a mobile installation, mainly composed of main engine, steel wire rope, base, etc. The base is in good contact with the pool bottom and close to the pool wall, and the angle can be adjusted in the plane direction.

## 安装系统Ⅰ
## Installation system Ⅰ



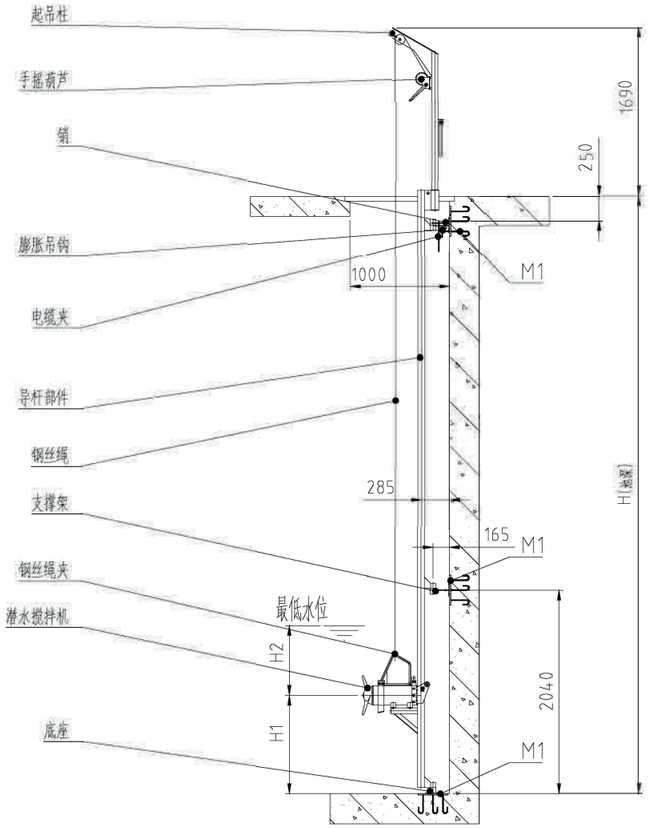

Φ220、Φ260潜水搅拌机安装孔口尺寸

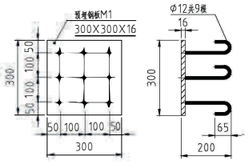
图5 I–3型安装系统示意图
Figure 5 Schematic diagram of the I–3 mounting system

如图5所示，安装系统I—3主要由手摇葫芦、起吊柱、钢丝绳、钢丝绳夹、支撑架、导杆、底座等组成。导杆通过焊接在本体上的铰轴定位于支座、中间支撑架、底座同心轴线上，并可在水平面内转动±60°，以适应不同方I句搅拌或推流，消除水池中的死区，使水流处于最佳运行状态。潜水搅拌机通过导轮沿导杆上下移动；起吊架可安装在支座上并可绕其定位轴线旋转360°，以方便安装及维护。为增加潜水搅拌机运行时的可靠性，减缓潜水搅拌机运行中的振动，一般直接焊在导杆上。限位架焊接在导杆上可在出厂前焊接，也可在现场安装时焊接。如用户无特殊要求，一般在出厂前焊接。

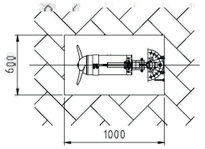
As shown in Figure 5, Installation System I-3 mainly consists of a hand-operated hoist, lifting column, wire rope, wire rope clamp, support frame, guide rod, and base. The guide rod is positioned on the concentric axis of the support seat, intermediate support frame, and base via welding to the hinge axis on the main body, allowing ±60° rotation within the horizontal plane to adapt to different mixing or propulsion directions, eliminating dead zones in the pool and optimizing water flow performance.
The submerged mixer moves vertically along the guide rod via guide wheels; the lifting frame can be installed on the support seat and rotated 360° around its positioning axis for convenient installation and maintenance. To enhance operational reliability and reduce vibration during mixer operation, it is generally directly welded to the guide rod. The limit frame is welded to the guide rod either before factory shipment or during on-site installation. If no special requirements are specified by the customer, welding is typically performed prior to shipment.

## 安装系统Ⅱ
## Installation system Ⅱ




M1埋件大样图1:10




Φ320、Φ400潜水搅拌机安装孔口尺寸

图6 Ⅱ型安装系统示意图
Fig. 6 schematic diagram of type

如图6所示，安装系统Ⅱ主要由手摇葫芦、起吊柱、钢丝绳、钢丝绳夹、支座、导杆、支撑架（池深≤4 5米时无）、限位架、底座等组成.，导杆通过焊接在本体上的铰轴定位于底座同心轴线上，并可在水平面内转动±60°，以适应不同方向搅拌或推流，消除水池中的死区，使水流处于最佳运行状态.，潜水搅拌机通过导轮沿导杆上下移动；起吊架可安装在支座上并可绕其定位轴线旋转360°，以方便安装及维护。为增加潜水搅拌机运行时的可靠性，减缓潜水搅拌机运行中的振动，一般限位架直接焊在导杆上，并在潜水搅拌机与限位架间加没减震块。限位架焊接在导杆上可在出厂前焊接，也可在现场安装时焊接。如用户无特殊要求，一般在出厂前焊接。

该型安装系统常规安装为膨胀螺栓固定即可，也可采用预埋件安装形式，预埋件尺寸及位置按图布置。

As shown in Figure 6, Installation System II mainly consists of a hand-operated hoist, lifting column, wire rope, wire rope clamp, support seat, guide rod, support frame (not required for pools with depth <45 meters), limit frame, and base. The guide rod is positioned on the concentric axis of the base via welding to the hinge axis on the main body, allowing ±60° rotation within the horizontal plane to adapt to different mixing or propulsion directions, eliminating dead zones in the pool and optimizing water flow performance.

The submerged mixer moves vertically along the guide rod via guide wheels; the lifting frame can be installed on the support seat and rotated 360° around its positioning axis for convenient installation and maintenance. To enhance operational reliability and reduce vibration during mixer operation, the limit frame is generally directly welded to the guide rod, with shock absorbers installed between the mixer and the limit frame. The limit frame can be welded to the guide rod either before factory shipment or during on-site installation. If no special requirements are specified by the customer, welding is typically performed prior to shipment. This system is conventionally fixed with expansion bolts or pre-embedded components, with dimensions and positions of the embedded parts as per the drawing layout.

## 安装系统Ⅲ
## Installation system Ⅲ

如图7所示，安装系统Ⅲ主要由手拉葫芦、起吊架、吊架座、起吊环链、旋转卸扣、上支撑架、导杆、中间支撑架（池深≤4.5米时无）、限位架、底座等组成。导杆通过焊接在本体上的铰轴定位于上支撑架、中间支撑架、底座同心轴线上，并可在水平面内转动±60°，以适应不同方向搅拌或推流，消除水池中的死区，使水流处于最佳运行状态。潜水搅拌机通过导轮沿导杆上下移动；起吊架安装在吊架座上并可绕其定位轴线旋转360°，以方便安装及维护。为增加潜水搅拌机运行时的可靠性，减缓潜水搅拌机运行中的振动，一般限位架直接焊在导杆上，并在潜水搅拌机与限位架间加设减震块。限位架焊接在导杆上可在出厂前焊接，也可在现场安装时焊接。如用户无特殊要求，一般在出厂前焊接。

该型安装系统常规为与基础采用预埋钢板焊固的联接方式，预埋件尺寸及位置按图布置。

As shown in Figure 7, Installation System III mainly consists of a hand-pulled hoist, lifting frame, lifting bracket, lifting chain, swivel coupling, upper support frame, guide rod, intermediate support frame (not required for pools with depth <4.5 meters), limit frame, and base. The guide rod is positioned on the concentric axis of the upper support frame, intermediate support frame, and base via welding to the hinge axis on the main body, allowing ±60° rotation within the horizontal plane to adapt to different mixing or propulsion directions, eliminating dead zones in the pool and optimizing water flow performance.

The submerged mixer moves vertically along the guide rod via guide wheels; the lifting frame is installed on the lifting bracket and can be rotated 360° around its positioning axis for convenient installation and maintenance. To enhance operational reliability and reduce vibration during mixer operation, the limit frame is generally directly welded to the guide rod, with shock absorbers installed between the mixer and the limit frame. The limit frame can be welded to the guide rod either before factory shipment or during on-site installation. If no special requirements are specified by the customer, welding is typically performed prior to shipment. This system is conventionally connected to the foundation via pre-embedded steel plates welded in place, with dimensions and positions of the embedded parts as per the drawing layout.

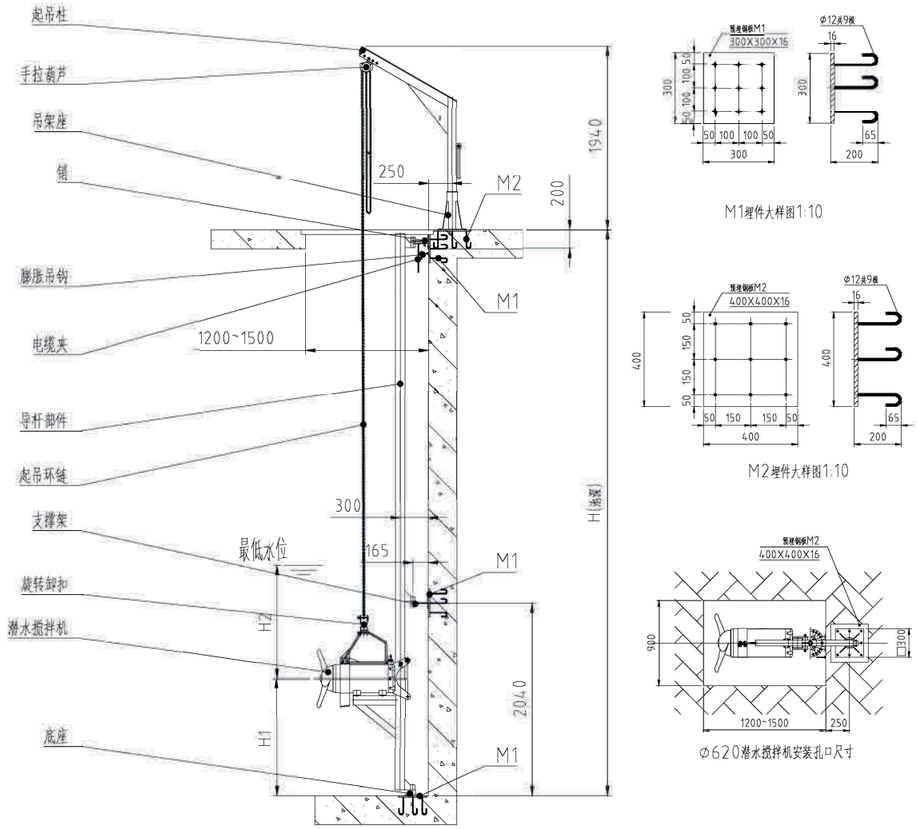



图7 Ⅲ型安装系统示意图
Figure 7 Ⅲ type installation system schemes

## 主要安装尺寸
## Main installation size

表5 混合型多功能旋流式潜水搅拌机主要安装尺寸 Table 5 Main installation dimensions of hybrid multi-function submersible mixers

| 序号 NO. | 型号 Model | H1 (mm) | H2 (mm) | L1 (mm) | L2 (mm) | L3 (mm) | 配套安装系统 Supporting installation system |
|---|---|---|---|---|---|---|---|
| 1 | QJB0.37/6–220/3–980 | 280 | 400 | / | / | / | Ⅰ–3 |
| 2 | QJB0.55/6–220/3–980 | 280 | 400 | / | / | / | Ⅰ–3 |
| 3 | QJB0.75/8–260/3–740 | 480 | 500 | / | / | / | Ⅰ–3 |
| 4 | QJB1.5/6–260/3–980 | 480 | 500 | / | / | / | Ⅰ–3 |
| 5 | QJB2.2/8–320/3–740 | 700 | 600 | 317 | 900 | 550 | Ⅱ |
| 6 | QJB4/6–320/3–980 | 700 | 600 | 317 | 900 | 550 | Ⅱ |
| 7 | QJB1.5/8–400/3–740 | 700 | 700 | 317 | 940 | 550 | Ⅱ |
| 8 | QJB2.5/8–400/3–740 | 700 | 700 | 317 | 940 | 550 | Ⅱ |
| 9 | QJB3/8–400/3–740 | 700 | 700 | 317 | 940 | 550 | Ⅱ |
| 10 | QJB4/6–400/3–980 | 700 | 700 | 317 | 940 | 550 | Ⅱ |
| 11 | QJB4/12–620/3–480 | 800 | 1000 | 317 | 1175 | 1050 | Ⅲ–1 |
| 12 | QJB5/12–620/3–480 | 800 | 1000 | 317 | 1175 | 1050 | Ⅲ–1 |
| 13 | QJB7.5/12–620/3–480 | 800 | 1200 | 317 | 1250 | 1050 | Ⅲ–2 |
| 14 | QJB10/12–620/3–480 | 800 | 1200 | 317 | 1250 | 1050 | Ⅲ–2 |
| 15 | QJB12/12–700/3–480 | 800 | 1200 | 317 | 1250 | 1050 | Ⅲ–2 |
| 16 | QJB15/12–620/3–480 | 800 | 1500 | 317 | 1650 | 1350 | Ⅲ–3 |
| 17 | QJB18.5/12–620/3–480 | 800 | 1500 | 317 | 1650 | 1350 | Ⅲ–3 |
| 18 | QJB22/12–620/3–480 | 800 | 1500 | 317 | 1650 | 1350 | Ⅲ–3 |

表6推流型多功能旋流式潜水搅拌机主要安装尺寸Table 6 Main installation dimensions of low-speed push-flow submersible mixers

| 序号 NO. | 型号 Model | H1 (mm) | H2 (mm) | L1 (mm) | L2 (mm) | 配套安装系统 Supporting installation system |
|---|---|---|---|---|---|---|
| 1 | QJB1.5 ~ 4/4–1100/2 ~ 3 | 750 | 1000 | 840 | 1130 | Ⅳ–1 |
| 2 | QJB1.5 ~ 4/4–1400/2 ~ 3 | 900 | 900 | 940 | 1130 | Ⅳ–2 |
| 3 | QJB1.5 ~ 4/4–1600/2 ~ 3 | 1100 | 850 | 940 | 1130 | Ⅳ–2 |
| 4 | QJB1.5 ~ 5.5/4–1800/2–34 | 1100 | 850 | 940 | 1350 | Ⅳ–3 |
| 5 | QJB2.2 ~ 7.5/4–2200/2 ~ 3 | 1450 | 800 | 940 | 1350 | Ⅳ–4 |
| 6 | QJB3 ~ 7.5/4–2500/2 ~ 3 | 1450 | 800 | 940 | 1350 | Ⅳ–4 |

表7推流型多功能旋流式潜水搅拌机Ⅳ型安装系统预埋件布置位置尺寸

Table 7 Installation system size and embedded part location for low-speed push-flow multi-function submersible mixers

| 序号 NO. | 型号 Model | X (mm) | Y (mm) | Z (mm)桥架式 |
|---|---|---|---|---|
| 1 | QJB1.5/4–1100/2 ~ 3 | 440 | 500 | — |
| 2 | QJB2.2 ~ 4/4–1100/2 ~ 3 | 440 | 530 | — |
| 3 | QJB1.5/4–1400/2 ~ 3 | 640 | 500 | — |
| 4 | QJB2.2 ~ 4/4–1400/2 ~ 3 | 640 | 530 | — |
| 5 | QJB1.5/4–1600/2 ~ 3 | 640 | 500 | — |
| 6 | QJB2.2 ~ 4/4–1600/2 ~ 3 | 640 | 530 | — |
| 7 | QJB1.5/4–1800/2 ~ 3 | 840 | 500 | 500 |
| 8 | QJB2.2 ~ 5.5/4–1800/2 ~ 3 | 840 | 530 | 500 |
| 9 | QJB2.2 ~ 7.5/4–2200/2 ~ 3 | 1190 | 670 | 700 |
| 10 | QJB3 ~ 7.5/4–2500/2 ~ 3 | 1190 | 670 | 700 |



## 选型
## selection

多功能旋流式潜水搅拌机的选型是非常重要的，选型方案的正确与否直接影响到设备的运行效果以及未来的运营成本。不同的池（罐）体或容器以及不同操作目的的搅拌过程需要什么样的流动场，需要提供给多大的能量以及不同规格的搅拌机能提供什么样的流动场、供给多大的能量。这些需要用户给予配合，为了选择恰当型号的潜水搅拌机，以达到最佳的效果，请用户提供如下资料，以便为您正确选型：

1、使用场合及目的； 2、池型； 3、池子尺寸：平面尺寸、池深、水深；

4、介质参数：密度、粘度、含固率、温度、PH值等； 5、是否配导流罩 6、其它要求。

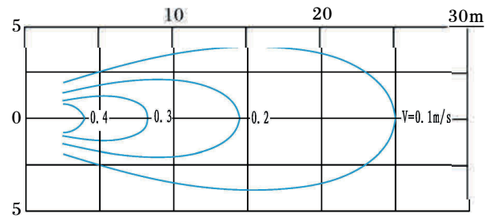
为了满足在不同环境下都能达到最佳的搅拌效果，我公司提供了两个系列近四十种不同型号的多功能旋流式潜水搅拌机，并对各个规格的潜水搅拌机进行了推力和流场测定。我公司可为用户提供选型，用户也可自行参考我公司出具的流场图进行选型。

The selection of multifunctional vortex-type submerged mixers is crucial, as the correctness of the selection directly impacts equipment performance and future operational costs. Different tanks/pools or containers, as well as distinct mixing objectives, require specific flow fields, energy inputs, and mixer specifications. To achieve optimal results, users must collaborate by providing the following information for proper model selection:

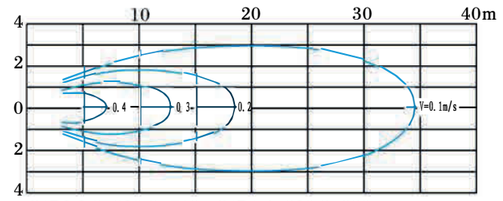
1. Application scope and purpose
2. Tank/pool type
3. Tank/pool dimensions (planar dimensions, depth, water level)
4. Medium parameters (density, viscosity, solids content, temperature, pH value, etc.)
5. Whether a flow guide cover is required
6. Other requirements

To ensure optimal mixing performance across diverse environments, our company offers two series of nearly forty different models of multifunctional vortex-type submerged mixers, with detailed thrust and flow field measurements for each specification. We can assist users in model selection or provide reference flow field diagrams for self-selection.

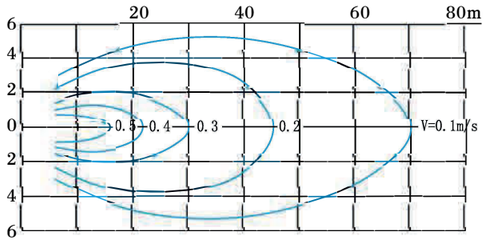
## 潜水搅拌机流场图
## Submersible mixer flow field figure



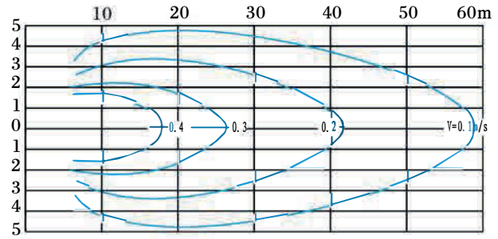

QJB0.75/8–260/3–740、QJB1.5/6–260/3–980、
QJB1.5/8–400/3–740




QJB2.2/8–320/3–740、QJB4/6–320/3–980、
QJB2.5/8–400/3–740、QJB3/8–400/3–740、
QJB4/6–400/3–980

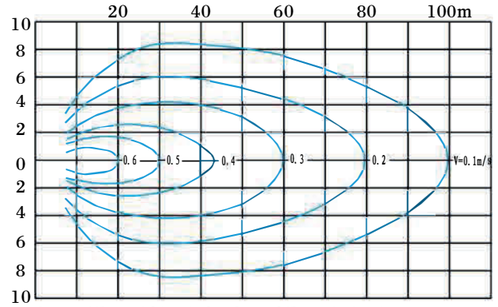



QJB4/12–620/3–480、QJB5/12–620/3–480

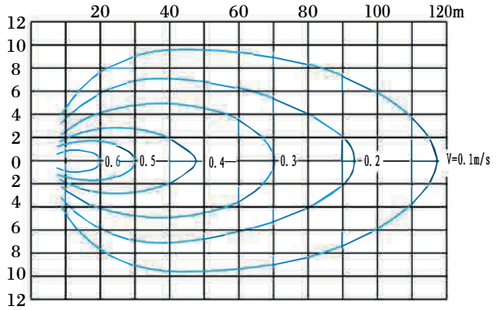



QJB1.5/4–1100/2–60、QJB2.2/4–1100/2–80、
QJB3/4–1100/2–100、 QJB4/4–1100/2–130、
QJB1.5/4–1400/2–43、QJB2.2/4–1400/2–50、
QJB3/4–1400/2–65、 QJB4/4–1400/2–75、
QJB1.5/4–1600/2–39、QJB2.2/4–1600/2–43、
QJB1.5/4–1800/2–34、 QJB2.2/4–1800/2–39

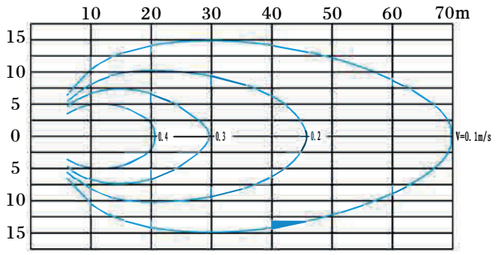
## 潜水搅拌机流场图
## Submersible mixer flow field figure



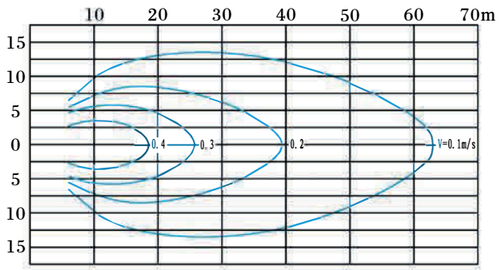

QJB7.5/12–620/3–480、QJB10/12–620/3–480、
QJB12/12–620/3–480、



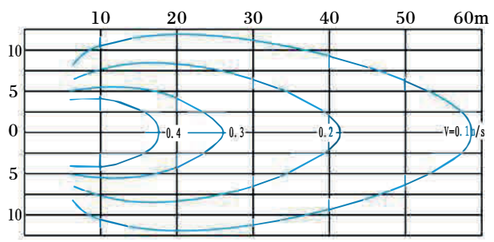

QJB15/12–620/3–480、QJB18.5/12–620/3–480、
QJB22/12–620/3–480



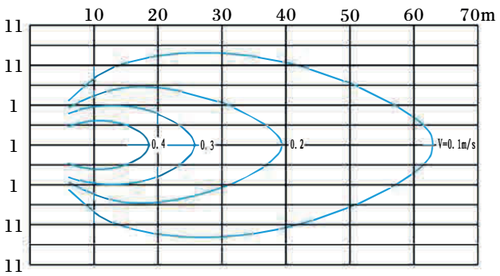

QJB5.5/4–1800/2–62、QJB3/4–2200/2–34、
QJB4/4–2200/2–38、QJB5.5/4–2200/2–43、
QJB3/4–2500/2–29、 QJB4/4–2500/2–33、
QJB5.5/4–2500/2–39、QJB7.5/4–2500/2–43



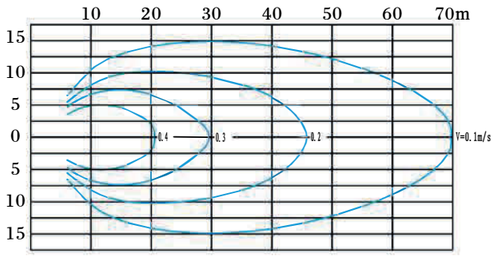

QJB3/4–1600/2–51、QJB4/4–1600/2–62、
QJB3/4–1800/2–44、QJB4/4–1800/2–52、
QJB2.2/4–2200/2–30



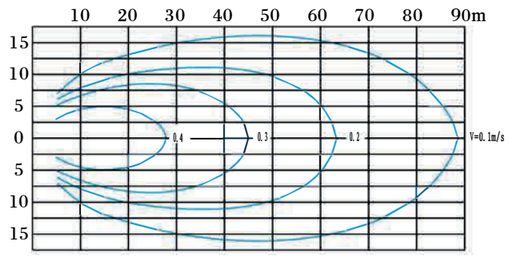

QJBM3/6–1080/3–100




QJBM4/6–1080/3–100

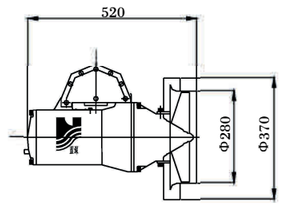



QJBM5.5/6–1008/3–122

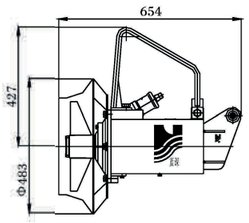



QJBM7.5/6–1080/3–122

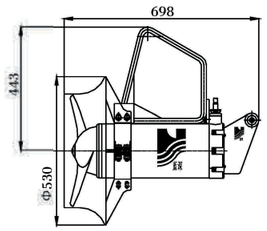
## 潜水搅拌机外形尺寸图
## Submersible mixer shape dimension drawing



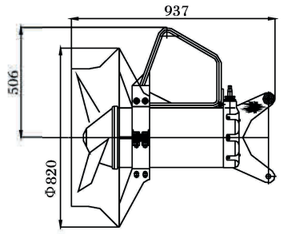

QJB0.75/8–260/3–740
QJB1.5/6–260/3–980



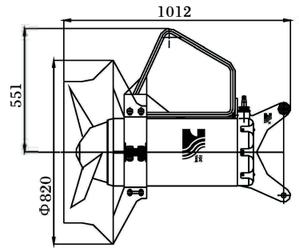

QJB2.2/8–320/3–740
QJB4/6–320/3–980



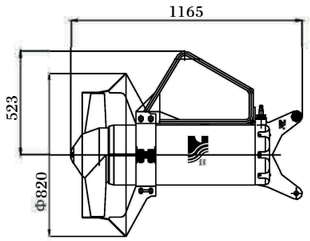

QJB1.5/8–400/3–740 QJB2.5/8–400/3–740
QJB3/8–400/3–740 QJB4/6–400/3–980



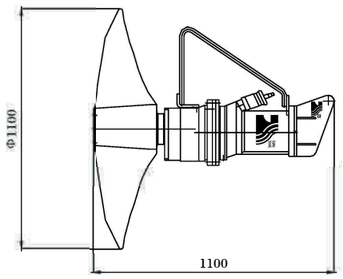

QJB4/12–620/3–480 QJB5/12–620/3–480



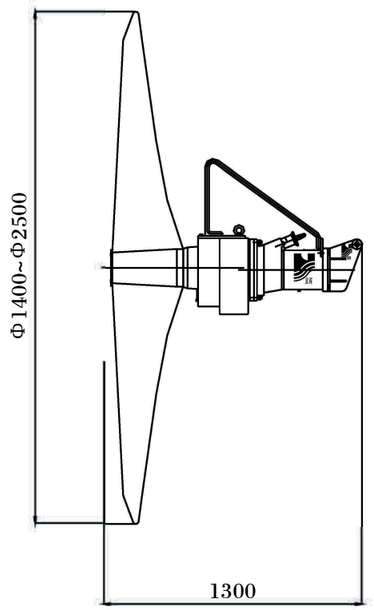

QJB7.5/12–620/3–480 QJB10/12–620/3–480
QJB12/12–700/3–480




QJB15/12–620/3–480
QJB18.5/12–620/3–480
QJB22/12–620/3–480




ш1100潜水推进器外形图




ш1400、Φ1600、1800、Φ2200、
ш2500潜水推进器外形图

## 应用实例
### Example of application

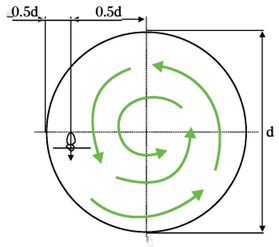
和传统长轴搅拌相比，QJB型潜水搅拌机的优点在于可产生不同的流向。由搅拌机的不同安装位置，可得到不同效果的多种流动模式。从而在池中创造更好的流动模式，消除搅拌死角。搅拌机所需的配套功率是按池容积大小，介质的密度、粘度和池型尺寸等确定，根据具体情况，应选用一台或多台搅拌机。

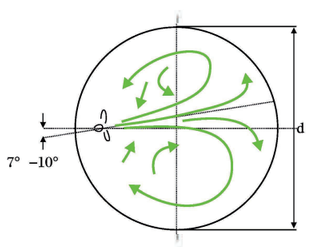
Compared with traditional long-shaft mixers, the QJB-type submerged mixer excels in generating diverse flow patterns. By adjusting the installation position, various flow modes can be achieved to create optimized circulation in the pool and eliminate dead zones. The required auxiliary power for the mixer is determined by factors including pool volume, medium density, viscosity, and tank dimensions. Depending on specific conditions, one or multiple mixers should be selected to ensure efficiency.

To guarantee high-efficiency and energy-saving operation in different tank configurations, refer to the following typical installation forms:

## 混合搅拌系列
### Mixed agitating series

☐ 圆形池 Round pool




该旋转流动模式是最简单的一种，在相对较短的运行时间内就可创造高的流速，在非溶性固体物含量高的介质中，这是一种高效的搅拌方式。然而必须注意，较重的物质可能沉积在池底中央。

This rotating flowing mode is the simplest one, it is able to createhigh flow velocity in a shorter time, it is a high efficient agitating methodin medium that has high non-dissolving solid content. Notice, the heaviermatter may deposit in center of pool.

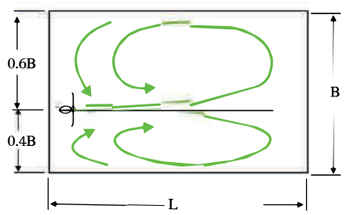
如果搅拌机轴线与池中线7–10° 安装，可形成全池搅拌而不会产生旋转。池中液体的深度应在池的直径的0.3~1倍之间。

When the agitator is installed with 7–10° between axis and pool center line, it is able to form a full–pool agitation without producing rotation. The liquid depth in the pool should be 0.3~1 times of pool diameter.

☐ 方形池 Square pool

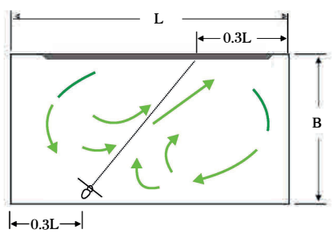
如按下图方式安装搅拌机可在方形池形成高效的搅拌效果，当使用一台搅拌机时，池长宽比大于5，否则应安装多台搅拌机。若长宽比不大于2.5可得到最佳运行效果。

Install the agitator in square pool according to the following diagram, it is able to obtain high efficient agitating effect. When using only one agitator, aspect ratio of pool should be more than 5, otherwise, please use more agitators. If the aspect ratio not exceeds 2.5, it is able to get optimum running effect.



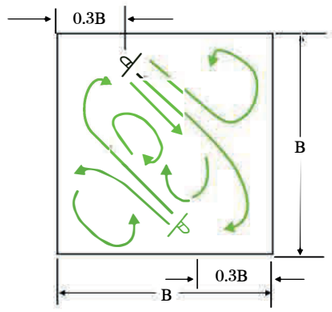

在池宽小于5~8倍的叶轮的情况下，可按上图安装方式

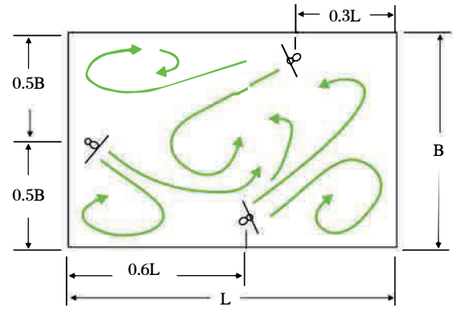
When the pool width is smaller than 5~8 times of impeller, the installation method as shown in above diagram can be adopted




在较大池中，搅拌要可按上图安装

In larger pool, agitator can be installed according to the above diagram



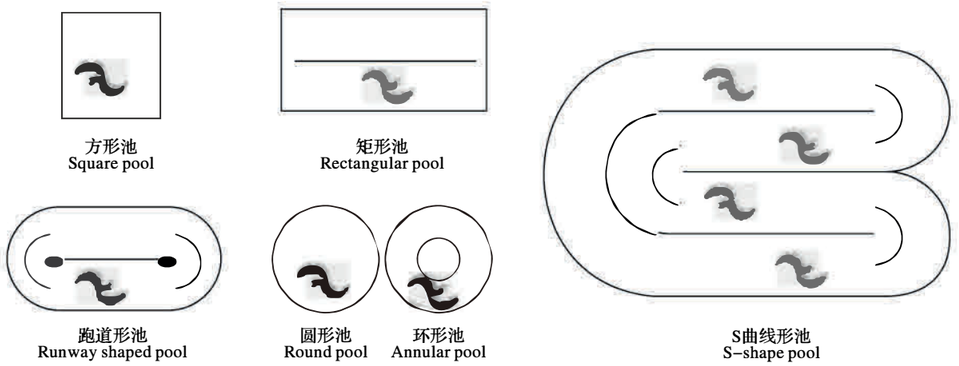




当使用多个搅拌机时，推荐用上图的安装方式

When using many agitators, the installation method as shown in above diagram is recommended

## 低速推流系列
### Low–velocity plug–flow series

☐ 池形 pool form



# 搅拌器，水下推进器电控
Blender and submersible propeller electric control

## 产品特色
**Product features**

搅拌器，水下推进器控制柜是公司长期实验与实践结合的成熟产品，已成为公司搅拌器和水下推进器的必备配套产品，她具有以下特色：
1.根据客户选型产品，配套设计，确保搅拌器或水下推进器安全可靠使用。
2.控制柜不但具有常规的电保护功能：短路、缺相、断相、过载，还具有公司专用保护功能：漏水保护和电机绕组过热保护。
3.具有自动，手动功能，特殊需求可定制。

Controller Cabinet for Mixers and Underwater PropellerThe controller cabinet for mixers and underwater proeller is a mature product refined through long-termexperimentation and practical application, It has become an essential complementary component for our mixersand underwater propellers, ensuring seamless integration and operational reliability.

1.Customized Design:
Tailored to customer-selected models, ensuring safe and reliable operation of mixers or underwaterthrusters.
2.Comprehensive Protection Functions:Standard Electrical Protections: Short circuit, phase loss, open phase, and overload protection.Proprietary Protections: Leakage protection and motor winding overheating protection.
3. Flexible Operation Modes:Equipped with both automatic and manual functions. Customizable for special requirements.

## 使用条件
**Service conditions**

1.周围空气温度-5~40℃
2.空气相对湿度不大于90%（在25℃以下）
3.无剧烈震动和颠簸冲击及垂直倾斜度不超过5℃的场所
4.无爆炸危险且介质中无腐蚀金属和破坏结绝缘的气体及导电尘埃的场所
5.无雨雪及水蒸气侵袭的场所

1.Ambient air temperature: -5° to 40°
2. Air relative humidity: ≤ 90% at 25°C or below
3. Locations free from severe vibration, shock, or vertical inclination > 5°, and without abrupt mechanical impacts.
4. No explosive hazards, and the environment must not contain:Corrosive gases that attack metals;
Gases or conductive dusts that compromise electrical insulation.
5. Areas protected from rain, snow, and water vapor intrusion.

## 产品选型
**Product model selection**

LSK-1-[A] - [B] / [C]

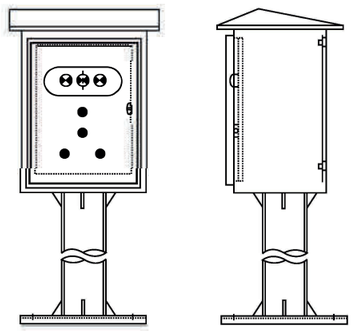
代号意义：
Code meaning:

★LSK-1-----蓝深品牌-设计序号1
Lanshen brand – design No.1

★A-----起动方式。（见表1）
Starting mode (see table 1)

★B-----搅拌器电机功率（KW）
Blender motor power (KW)

★C-----系统控制的搅拌器台数
Blender quantity controlled by the system



注：特殊控制方式和元器件请在订货时注明。
Note: Please indicate the special control modes and components when ordering goods.

表1 起动方式特征字含义　　Table 1: Meaning of letters in the start mode

| 起动方式特征字<br>Featured words for starting mode | 特征字含义<br>Meaning of featured words | 对应老型号<br>Corresponding old model | 备 注<br>Remark |
|---|---|---|---|
| QC | 直接起动<br>Direct starting | QC40 | |
| JB | 变频起动<br>Starting through frequency conversion | JKB | |
| TQ | 特殊起动方式<br>Special starting mode | | 订货时注明<br>Give indications when ordering goods |