



# PWDDFL 系列多吸头排污泵

## PWDDFL Series Multi-suction Sewage Pump



湖南立佳机械制造有限公司

**HUNAN PERFECT INDUSTRY CO., LTD.**

## 一、产品概述 General

PWDDFL 型多吸头排污泵叶轮采用单、双流道，双、多叶片，高效无堵塞水力设计，通过性能好。结构紧凑，占地面积小，运转平稳，振动小，可靠性高，安装简便，操作方便，配套本公司电控柜可实现自动控制功能。

Multi-suction Sewage Pumps of PWDDFL series adopt single (double) runner and single (double) impeller with no-clog design. It has the features of compact construction, small footprint, steady work performance, small vibration, high reliability, easy installation and operation. Together with our control cabinet, it could run with the auto control function.

### 主要特点 Main Features

多吸头立式防淤排污泵除具备离心泵的共性外，还有其它泵不具备的三大特点：

1、多吸头：每台泵有 3 或 4 个吸水头，分布在泵坑的中央和各个角落，因而吸头备用率高，吸水范围大，泵坑沉积少。

2、带搅拌：在主吸头下部装有搅拌器，可将泵坑内的沉淀物搅起，能有效的防止吸头堵塞和泵坑淤积。

3、免固定：其它类型的立式污水泵都设有托架，固定在泵坑内的预埋件上，不但安装麻烦，也给检修和泵坑清淤带来 极大的不便，而多吸头立式防淤排污泵，支吸头既是吸水头又是泵的支架，不需安装固定，只需将泵放于坑内联接出水管即可运行平稳，检修维护方便。

In addition to the commonalities of centrifugal pumps, the multi-suction pump of PWDDFL series

has the below three major characteristics that other pumps do not have:

a. Multiple suction heads: Each pump has 3 or 4 suction heads, which are distributed in the center and corners of the pump pit. Such special design allows large water absorption range and low deposition.

b. Stirring: A stirrer is installed at the bottom of the main suction head, which can stir up the sediment in the pump pit. Thus, it could effectively prevent suction plug and pump pit silting.

c. Non fixed: Other types of vertical sewage pumps are equipped with brackets that are fixed to the embedded parts in the pump pit. This not only makes installation difficult, but also brings great inconvenience to maintenance and pump pit dredging. While, the multi-suction heads of the pump of PWDDFL series can be used as both suction heads and pump supports. It would run without the installation and fixation. Instead, just place the pump in the pit and connect it to the outlet pipe. It could run steadily and be easy for maintenance.

## 二、性能范围 Performance range

流 量：5~800m<sup>3</sup> / h      Capacity Q: 5~800 m<sup>3</sup>/h

扬程：5~80m              Head H: 5~80m

电机功率：0.75~75kW      Power of motor: 0.75~75KW

排出口径：40~350mm      Diameter of discharge: 40~300mm

## 三、使用条件 Conditions of Use

1. 输送介质温度不超过+40℃；
2. 输送介质 PH 值为 4~10；
3. 介质密度 <1.2x10<sup>3</sup> kg / m<sup>3</sup>， >1.2x10<sup>3</sup> kg / m<sup>3</sup> 的需在订货时说明；

4. 污物通过能力：固体颗粒直径约为排出口径的 30%，纤维长度为出口口径 3 倍。

I The temperature is  $\leq 40^{\circ}\text{C}$

II The PH is in the range of 4~10

III The density of pumped fluid is less than  $1.2 \times 10^3 \text{ kg / m}^3$ ; When the density is above  $1.2 \times 10^3 \text{ kg/m}^3$ , please specify when ordering.

IV The ability of pumping: the diameter of the particle that could pass through is 30 percent of outlet discharge, and the length of fiber could be three times of outlet diameter.

#### 四、主要用途

PWDDFL 型多吸头排污泵主要适用电厂、钢厂、煤厂、矿山、化工、制药、市政工程、建筑、医院、宾馆饭店、海水抽排、农村沼气池、农田灌溉等行业用泵，用于输送带固体颗粒、长纤维的淤泥、废水、城市生活污水或雨水、清水。

##### Main application

The PWDDFL multi-suction series sewage pump is widely used in many industries, such as power plants, steel mills, coal plants, mines, chemicals, pharmaceuticals, municipal engineering, construction, hospitals, hotels and restaurants, seawater pumping, rural marsh gas digester, farmland irrigation, etc. It is used to transport the sludge with particles or long fibers, wastewater, urban domestic sewage, rainwater, and clean water.

#### 五、安装说明 Installation instructions

在安装和使用水泵之前，必须详细阅读说明书，避免使用不当而损坏设备。且水泵安装的好坏，对水泵的平稳运行和使用寿命有很重要的影响，所以安装校正工作必须仔细地进行，不应草率。

Before installing and using the water pump, it is necessary to carefully read the manual to avoid damaging the equipment due to improper use. The quality of water pump installation has a significant impact on the smooth operation and service life of the water pump, so the installation and calibration work must be carried out carefully.

##### 安装顺序

参照结构图所示装配水泵，装配顺序为自下而上。

根据订货设备及现场实际安装条件，主要可采用以下方法安装水泵。

##### 采用混凝土基础

将泵吊起，通过底板悬垂地脚螺栓，并用螺母及垫圈固定，确保地脚螺栓在预留孔内自由悬挂，然后把泵放入泵坑。在底板与基础中间，用成对的楔垫作校正作用（如果原混凝土基础已经校正，可不再采用楔垫校正）。

将水平仪放在底板上，通过调整楔垫，校正水泵底板水平（小于  $0.5\text{mm/m}$ ），适当拧紧地脚螺栓，以防走动。

用混凝土灌注地脚螺栓孔。

待混凝土干固后，检查底板和地脚螺栓是否松动，合适后拧紧地脚螺栓，并重新检查水平度。

##### 采用槽钢座基础

槽钢座用户应事先校平且预埋安装好。  
将泵吊起放入泵坑，用联接螺栓将泵与槽钢座联接紧固。  
如果泵设置有包裹滤网，包裹滤网应在泵入泵坑前放至泵坑内。至此泵本体就位。  
连接出液管路其及安装监测仪表。

### **Installation sequence**

Assemble the water pump according to the structural diagram, and the assembly sequence is from bottom to top.

Based on the ordered equipment and actual installation conditions on site, the following methods can be used to install the water pump.

#### **Using concrete foundation**

Lift the pump, hang the anchor bolts through the bottom plate, and fix them with nuts and washers to ensure that the anchor bolts hang freely in the reserved holes. Then, place the pump in the pump pit. Paired wedge pads are used as correction between the bottom plate and the foundation (if the original concrete foundation has been corrected, wedge pads are not needed for correction any more).

Place the level on the bottom plate and adjust the pad to check the level of the bottom plate of the pump (less than 0.5mm/m). Tighten the anchor bolts properly to prevent movement.

Pour concrete into the anchor bolt holes.

After the concrete has dried and solidified, check if the bottom plate and anchor bolts are loose, tighten the anchor bolts if needed, and recheck the levelness.

#### **Using channel steel seat foundation**

The user should level the channel steel seat and embed the channel steel in advance.

Lift the pump and place it in the pump pit. Use connecting bolts to secure the pump to the channel steel seat.

If the wrapped filter screen is going to be used, please put the the wrapped filter screen into the pit before the pump is put inside. At this point, the pump body is in place.

Connect the liquid outlet pipeline and install monitoring instruments.

### **注意事项**

- 吊运时，注意保护泵不受损伤。
- 泵坑尺寸满足最小泵坑安装尺寸。
- 上述两种安装基础均可外加减振垫，以减小泵的振动，提高泵组使用性能。
- 安装水泵的地点应足够宽敞，以方便检修工作。
- 当水泵处在泥地上或浮砂上，水泵由于震动，产生下陷，在这种情况下，建议将水泵放在一个较大的底板上。
- 水泵与出水管路之间一般需安装闸阀和止回阀。出水管路应另设支架，不允许将出水管路的重量加在泵上。
- 如果气温降至0℃以下而污水并未结冰时，水泵可以继续使用。
- 出水管道的内径应与水泵的出口内径配套（允许加大出水管道的内径，但不能缩小）。
- 在污水中使用的泵，如周围堆积了泥浆、杂物等，会降低传送的速度，缩短泵的使用寿命。
- 水池中杂物较多的情况下，为防止大的杂物进入水泵，建议在水泵的外围放置一个包裹滤

网将水泵包裹起来。包裹滤网的开孔大小和过流面积要恰当，以免影响水泵的性能。

· 未切断电源前，不得移动或提升水泵。

### Cautions

- When lifting the pump, please protect it from any damage.
- The size of the pump pit shall meet the minimum installation size of the pump.
- Both of the above installation foundation can be equipped with external vibration reducing pads to reduce pump vibration and improve pump performance.
- The work place for installation should be spacious enough to facilitate the maintenance work.
- When the water pump is located on muddy ground or floating sand, it will sink due to vibration. In this case, it is recommended to place the water pump on a larger bottom plate.
- Generally, gate valves and check valves need to be installed between the water pump and the out-let pipeline. The water outlet pipeline should be equipped with a separate bracket, and it is not allowed to add the weight of the water outlet pipeline to the pump.
- If the temperature drops to below 0 °C while the sewage does not freeze, the water pump can still be used.
- The inner diameter of the outlet pipeline should match the inner diameter of outlet of the water pump (it is allowed to increase the inner diameter of the outlet pipeline, but not smaller than it).
- If there is any accumulation of mud and debris in the sewage, the transmission speed of pump will be reduced and the service life will be shortened. In the case of a lot of debris in the pool, in order to prevent large debris from entering the pump, it is recommended to place a package filter on the periphery of the pump to wrap the pump. The opening size and flow area of the package filter screen should be appropriate so as not to affect the performance of the pump.
- Before cutting off the power, the water pump must not be moved or lifted.

## 六、使用说明 Instructions for use

### a. 启动前的检查与准备

- 启动前转动泵的转子，应能转动灵活，无卡滞现象。
- 检查启动设备接线是否正确，启动装置是否灵活，触头接触是否良好，启动设备的金属外壳是否可靠接地，仪表是否正常。
- 切勿用闸刀开关或直接挂电网来接通电源，可配备我公司全自动水泵控制柜，并严格按操作说明书操作，确保水泵正常运行。
- 检查电机的旋转方向，在泵初次安装启动前，或每次重新安装后，都应检查旋转方向。
- 检测方法是：弹性柱销部件暂时不安装，点动电动机，看电机联轴器的旋转方向是否与铭牌方向指示一致，如果旋转方向不一致，可以交换三相线中任意两相线的位置。
- 如果几台水泵连在一个控制器上，各台泵必须单独进行检查。
- 水泵标准转向为：从电机端看叶轮顺时针旋转，严禁反转运行。
- 启动液位满足外形图给定的最低启动液位。浮球开关（或液位仪）对泵进行自动控制时，应根据污水池的进水量与水泵的排水量，通过计算，按规定泵每小时最多启动次数确定浮球开关（或液位仪）的开、停泵的位置。
- 数台电动机由一台变压器供电时，不能同时启动，应由大到小逐台启动。

**a. Inspection and preparation before startup**

- . Before starting, please manually rotate the rotor of the pump to ensure it can rotate flexibly without any jamming.
- . Check whether the wiring of the starting equipment is correct or not, whether the starting device is flexible or not, whether the contact is good or not, whether the metal casing of the starting equipment is reliably grounded or not, and whether the instruments are normal or not. Please make sure that they are in good condition.
- . Do not use knife switches or directly connect it to the power grid to get the power supply. Our company's fully automatic water pump control cabinet can be equipped and operated strictly according to the operating manual to ensure the normal operation of the water pump.
- . Check the rotation direction of the motor. Before the initial installation and start-up of the pump, or after each re-installation, the rotation direction should be checked.
- . The detection method is to jog the motor without temporarily installing the elastic pin component, and to see if the rotation direction of the motor is consistent with the direction indicated on the nameplate. If the rotation is not consistent, please switch the positions of any two-phase lines in a three-phase line.
- . If several water pumps are connected to the same controller, each pump must be inspected separately.
- . The standard rotation direction of the water pump is: the impeller rotates clockwise when viewed from the motor end, and reverse operation is strictly prohibited.
- . The starting liquid level should meet the minimum starting liquid level given in the external drawing. When the float switch (or liquid level gauge) is used for automatic control of the pump, the starting and the stopping position of the float switch (or liquid level gauge) should be determined by times of startup based on the calculation of the amount of intake and displacement.
- . When several motors are powered by one transformer, they cannot be started simultaneously and should be started one by one from large to small.

**b. 启动**

- . 打开各种仪表的开关，关闭出水闸阀及压力表旋塞。
- . 合闸。若电机不转，应迅速果断地拉闸，以免烧毁电机。
- . 电机启动后，应注意观察电机及线路电压和电流表。若有异常现象，应立即停机。在查明故障并排除之后，方能重新合闸启动。
- . 限制电机连续启动的次数：相邻两次启动的时间间隔不少于10 分钟。
- . 当泵达到正常转速时，打开压力表旋塞。逐渐打开出水管上的闸阀，并调节到所需要的工况；在出液管路闸阀关闭的情况下，泵连续工作的时间不得超过 2 分钟。

**b. Start**

- . Turn on the switches of various instruments, close the outlet gate valve and pressure gauge plug.
- . Closing the brake. If the motor does not rotate, the gate should be quickly and decisively pulled to avoid burning the motor.
- . After the motor starts, pay attention to observe the motor and line voltage and ammeter. If there is any abnormal phenomenon, stop the machine immediately. After the fault is identified and eliminated, the switch can be restarted.
- . Limit the number of consecutive starts of the motor: the time interval between two adjacent starts



is not less than 10 minutes.

. When the pump reaches normal speed, open the gauge cock. Gradually open the gate valve on the outlet pipe and adjust it to the required working condition; With the outlet pipe gate valve closed, the continuous working time of the pump shall not exceed 2 minutes.

注意：在任何情况下，水泵均不允许在出水闸阀关闭时长时间运行，否则会导致水泵剧烈振动甚至输送液体汽化，可能会引起设备损坏和人身伤害。

**Attention: In any case, do not allow the water pump to run for a long time when the outlet gate valve is closed. Otherwise, the water pump may vibrate violently or even vaporize the liquid, which may cause equipment damage and personal injury pump and even vaporization of the conveyed liquid, which may cause equipment damage and personal injury.**

### c. 运行中的检查

- . 不得在水泵淹没深度不够的情况下运行，以免发生汽蚀损坏水泵。
- . 不允许在高于设计流量120%的情况下连续运行，以免产生汽蚀和电机超功率。
- . 不允许在低于设计流量30%的情况下连续运行，如果必须在该条件下连续运行，则应在出口处安装旁通管，将多余流量接入泵坑。
- . 在运行中，电机和泵轴承的温升不得超过35℃，且最高温度不应大于75℃。
- . 水泵运行中的电流监视：电机的电流不得超过铭牌的额定电流，三相电流不平衡度，空载时不超过10%，中载以上时不超过5%。
- . 电压监视：电源电压与额定电压的偏差不得超过±5%，三相电压不平衡度不超过1.5%。
- . 水泵工作时，应运转平稳，无异常的响声和振动，否则应立即停止水泵，检查原因，并加以消除。
- . 定期检查弹性联轴器。
- . 运行过程中进行周期性检查。

### c. Inspection during operation

- . Do not operate the water pump without sufficient submergence depth to avoid cavitation damage to the pump.
- . The continuous operation with the flow above 120% of the design rate is not allowed to avoid the cavitation and motor overpower operation.
- . Continuous operation with below 30% of the design flow rate is not allowed. If continuous operation is necessary under this condition, a by-pass pipe should be installed at the outlet to direct the excess flow to the pump pit.
- . During the operation, the temperature rise of the motor and pump bearings should not exceed 35°C, and the maximum temperature should not exceed 75 °C.
- . Current monitoring during water pump operation: The current of the motor shall not exceed the rated current on the nameplate, and the three-phase current imbalance shall not exceed 10% under no-load conditions and 5% under medium load or above.
- . The deviation between the power supply voltage and the rated voltage shall not exceed  $\pm 5\%$ , and the three-phase voltage imbalance shall not exceed 1.5%.

- . When the water pump is working, it should run smoothly without any abnormal sounds or vibrations. Otherwise, the water pump should be stopped immediately. And the fault should be identified and eliminated.
- . Regularly inspect the elastic coupling.
- . Conduct periodic checks during operation

**注意：严禁提高水泵转速运行。**

**Attention: It is strictly prohibited to increase the speed of the water pump for operation.**

**d. 停止**

- . 关闭压力表旋塞。
- . 逐渐关闭出水管上的闸阀。
- . 切断电源。

**d. Stop**

- . Close the pressure gauge plug.
- . Gradually close the gate valve on the outlet pipe.
- . Cut off the power supply.

## 七、维护、维修 Maintenance and repair

PWDDFL 系列产品可靠性能优良，每台泵在出厂前都认真地进行了最终检验。然而，为了保证水泵的使用寿命，建议进行定期的检查和保养。

The PWDDFL series products have excellent reliability and performance, and each pump undergoes a thorough final inspection before leaving the factory. However, in order to ensure the service life of the water pump, it is recommended to conduct regular inspections and maintenance.

**a. 维护**

正确的维护作业，对泵能否在最佳状态下运行，充分发挥其作用。提高泵的使用寿命，避免事故等具有重大意义。经常仔细地进行检查和维护，是避免使用过度，防事故于未然的最重要的手段之一。

- . 日常维护检查项目
- . 泵停机后，需关闭压力表旋塞。
- . 检查泵有无漏水现象，有漏水现象应立即修理。
- . 检查各种仪表等。
- . 定期测定振动值和经常注意噪声有无增加。
- . 保持机组的清洁并作好运行记录。
- . 每月一次检查项目
- . 测量振动和噪声。
- . 定期检查弹性联轴器。
- . 对长期不用的泵，有条件的话，启动一次跑合运转，时间不少于5 分钟。无条件的话可以用手动盘车。
- . 每一年的检查项目



- 检查转动部分的磨损情况。
- 检查叶轮与密封环的间隙。
- 检查叶轮及其流道零件的汽蚀、腐蚀、冲蚀情况。
- 检查轴承及机械密封的磨损情况。

a. Maintenance

Proper maintenance work is crucial for ensuring that the pump can operate at its optimal state and fully utilize its potential. Improving the service life of pumps and avoiding accidents are of great significance. Regular and careful inspection and maintenance are one of the most important means to avoid overuse and prevent accidents in advance.

Daily maintenance and inspection items

- After the pump stops, the pressure gauge plug needs to be closed.
- Check for any water leakage in the pump, and repair it immediately if there is any leakage.
- Check various instruments, etc.
- Regularly measure vibration values and pay attention to any increase in noise.
- Keep the unit clean and keep operating records.

Monthly inspection items

- Measure vibration and noise.
- Regularly inspect the elastic coupling.
- For pumps that are not used for a long time, if conditions permit, start a running in operation for no less than 5 minutes. If conditions permit, manual turning can be used.

Annual inspection items

- Check the wear of the rotating parts.
- Check the clearance between the impeller and the sealing ring.
- Check the cavitation, corrosion, and erosion of the impeller and its flow channel components.
- Check the wear of bearings and mechanical seals.

b. 维修

泵在必要时（振动、噪声、轴承温度等超过允许值，流量、扬程明显下降等）应进行拆卸维修。对于连续运行的泵，每年应进行一次定期检查。

- 进行维修工作时，详细记录维修经历，供下次进行维修时参考。
- 事先准备好备件，购买时，应写明备件名称、材料、数量，同时还要写明泵型号、名称、出厂日期、出厂编号等。
- 结合结构图所示拆卸水泵。拆卸后，要将零件上的锈斑除去，然后再重新加以涂装。
- 检查叶轮与密封环的间隙。参考更换标准见下表：

公 称 直 径 (mm)	~120	~160	~200	~250	~315	~400
最 大 允 许 直 径 间 隙 (mm)	1.0~1.8	1.2~2.0	1.3~2.2	1.5~2.5	1.7~2.8	1.9~3.1

- 检查轴套磨损情况，一般磨出沟槽，直径磨损1~2mm 应更换。
- 检查叶轮、轴承及机械密封等零件的磨损情况。
- 更换密封件（如O 形密封圈、纸垫等）。
- 参照结构图所示，装配水泵。装配后转子应能转动灵活，无卡滞现象。

#### b. Maintenance

The pump should be disassembled and repaired when necessary (such as vibration, noise, bearing temperature exceeding allowable values, significant decrease in flow rate and head, etc.). For continuously running pumps, regular inspections should be conducted once a year.

- When carrying out maintenance work, record the maintenance experience in detail for reference in the next maintenance.
- Prepare spare parts in advance. When purchasing, the name, material, quantity of the spare parts should be clearly stated, as well as the pump model, name, date of manufacture, and serial number.
- Disassemble the water pump according to the structural diagram. After disassembly, the rust spots on the parts should be removed and then repainted.
- Check the clearance between the impeller and the sealing ring. The reference replacement standards are shown in the table below:

Nominal diameter (mm)	~120	~160	~200	~250	~315	~400
Maximum allowable diameter gap(mm)	1.0~1.8	1.2~2.0	1.3~2.2	1.5~2.5	1.7~2.8	1.9~3.1

- Check the wear of the shaft sleeve. Generally, grooves are worn out, and if the diameter is worn by 1-2mm, it should be replaced.
- Check the wear of components such as impellers, bearings, and mechanical seals.
- Replace seals (such as O-ring seals, paper pads, etc.).
- Assemble the water pump as shown in the structural diagram. After assembly, the rotor should be able to rotate flexibly without any jamming phenomenon.

#### c. 注意事项

维修时必须自始至终遵设备安全规程及管理条例，在开始任何一种维修作业前，必须按下列步骤隔离水泵。

- 切断电机电源及所有仪表的电源。
- 关闭出口闸阀。

#### c. Matters Needs Attention

During maintenance, equipment safety regulations and management regulations must be followed from beginning to end. Before starting any maintenance operation, the water pump must be isolated according to the following steps.

- Cut off the power supply to the motor and all instruments.

- Close the outlet gate valve.

## 八、故障、原因及解决办法 **Faults, Causes, and Solution**

### a. 泵的流量或扬程达不到要求

序号	原因分析	解决方法
1	泵反转	关掉控制箱的总电源，调换任何二相电源线
2	扬程太高	检查： a、选择的泵型号是否正确 b、出水管尺寸是否正确
3	输送介质走旁路	检查旁路阀门是否被关死，然后满负载测试泵
4	出水管路泄漏	找出泄漏处，进行解决
5	出水管路局部可能被沉积的氧化物堵死	检查管路，清理并更换新的
6	泵局部堵塞	吊起泵清理，如果泵放在包裹滤网内，同样也需检查和清理
7	叶轮、密封环磨损太多	更换叶轮、密封环

### a. The flow or head of the pump does not meet the requirements

No.	Causes	Solution
1	Pump reversal	Turn off the main power supply of the control box and replace any two-phase power lines.
2	Head too high	Inspection: a. Is the selected pump model correct. b. Is the size of the water outlet pipe correct.
3	Transport medium through bypass	Check if the bypass valve is tightly closed, and then test the pump at full load.
4	Leakage of water outlet pipeline	Identify the leak and resolve it.
5	The outlet pipeline may be partially blocked by deposited oxides	Check the pipeline, clean and replace with a new one.
6	Local blockage of pump	Lift the pump for cleaning. If the pump is placed inside the wrapped filter screen, it should also be inspected and cleaned.
7	Excessive wear on impeller and sealing ring	Replace the impeller and sealing ring.

### b. 泵运转后无流量

序号	原因分析	解决方法
1	气塞	a、连续地打开和关闭阀门几次； b、启动/停止泵几次，每次重新启动之间间隔为不少于10 分钟；
2	检查出水排放阀门	根据不同的安装方法：

		a、检查是否需装一个空气释放阀 b、如果阀门处于关闭状态应打开
3	泵反转	关掉控制箱的总电源，调换任何二相电源线

## b. There is no flow out after operation

No.	Causes	Solution
1	Air lock	a. Continuously open and close the valve several times; b. Start/stop the pump several times, with an interval of no less than 10 minutes between each restart.
2	Check the water discharge valve	According to different installation methods: a. Check if an air release valve needs to be installed. b. If the valve is in the closed state, it should be opened.
3	Pump reversal	Turn off the main power supply of the control box and replace any two-phase power lines.

## c. 启动和停止太频繁

序号	原因分析	解决方法
1	浮球开关（或液位仪）定的时间太短	重调浮球开关（或液位仪），延长运行时间
2	逆止阀故障，逆止阀不能止回，使液体倒流入污水池	检查并维修

## c. starting and stop too frequently

No.	Causes	Solution
1	The float switch (or liquid level gauge) is set for too short a time.	Readjust the float switch (or liquid level gauge) to extend the operating time.
2	Check valve malfunction, check-valve cannot check, causing liquid to flow back into the sewage tank.	Inspect and repair it.

## d. 泵不能启动、熔丝熔断或断路器跳开

序号	原因分析	解决方法
1	继电器失灵修	修理或更换
2	浮球开关（或液位仪）故障	检查浮球开关（或液位仪）是否能启动泵，如不能，应检查浮球开关（或液位仪）。
3	绕组、接头或电缆断路	用欧母表检查。如果证明是断路，检查绕组，接线头及电缆
4	泵被堵塞	切断电源，将泵移出污水池，清除障碍物
5	漏电或漏水闭锁	找出原因并排除故障

d. Pump cannot start, fuse blown or circuit breaker tripped

NO.	Causes	Solution
1	Relay malfunction	Repair or replace it
2	Float switch (or liquid level gauge) malfunction	Float switch (or liquid level gauge) malfunction
3	Open circuit in winding, joint or cable	Check with a Euro meter. If it is proven to be an open circuit, check the winding, terminals, and cables.
4	Pump blocked	Cut off the power, remove the pump from the sewage tank, and remove any obstacles.
5	Leakage or water blocking	Identify the cause and troubleshoot the issue.

e. 泵不能启动、但熔丝没断或过载保护器不跳开

序号	原因分析	解决方法
1	没电	a、检查控制箱是否有电 b、仔细检查控制箱有无故障
2	绕组、电缆、接线头或控制箱断路	检查电缆、电机的接头和绕组

e. The pump cannot get started, but the fuse is not broken or the overload protector does not trip.

No.	Causes	Solution
1	No electricity	a. Check if the control box has power. b. Carefully inspect the control box for any malfunctions.
2	Open circuit in winding, cable, terminal or control box	Check the joints and windings of cables and motors.

f. 停止失灵

序号	原因分析	解决方法
1	浮球开关(或液位仪“停止”功能失灵	检查浮球开关(或液位仪)是否能停止泵,如不能,应检查浮球开关(或液位仪)。
2	浮球开关(或液位仪)始终在“工作”状态	检查并维修

f. Stop failure

NO.	Causes	Solution
1	The "stop" function of the float switch (or liquid level gauge) is malfunctioning	Check if the float switch (or level gauge) can stop the pump. If not, check the float switch (or level gauge).
2	The float switch (or liquid level gauge) is always in the "working" state	Inspect and repair it.

g. 泵启动后, 断路器/过载器跳开

序号	原因分析	解决方法
1	电压低	a、检查控制箱的电压。如电压过低暂时不能使用 b、电缆线过长，引起压降过大，应尽量缩短电缆，并适当选择粗些的电缆
2	电压过高	装变压器将电压调至规定的范围
3	电机接线不对或接头混淆	检查在控制箱中的电缆彩色编号和接线头标号，检查接线。
4	短路	找出原因并排除故障
5	控制盒或电容器故障	a、仔细检查控制盒，禁止用超过推荐数值的元件来更换断路器 b、若控制箱有故障，应进行修理或更换
6	在污水池堆积了泥浆或其它沉积物	清理泵的污水池，参见安装说明中的有关部分

g. After the pump starts, the circuit breaker/overload breaker trips

NO.	Causes	Solution
1	Low voltage	a. Check the voltage of the control box. If the voltage is too low, it cannot be used temporarily. b. If the cable is too long and causes excessive voltage drop, the cable should be shortened as much as possible and thicker cables should be selected appropriately.
2	Voltage too high	Install a transformer to adjust the voltage to the specified range.
3	Motor wiring incorrect or connector confusion	Check the cable color code and terminal label in the control box, and check the wiring.
4	short circuit	Identify the cause and troubleshoot the issue.
5	Control box or capacitor malfunction	a. Carefully inspect the control box and do not replace the circuit breaker with components that exceed the recommended values. b. If there is a malfunction in the control box, it should be repaired or replaced.
6	Mud or other sediment has been accumulated in the sewage tank	Clean the sewage tank of the pump refer to the relevant sections in the installation instructions.

h. 机组振动，运行时有杂音、不正常

序号	原因分析	解决方法
1	轴承磨损	更换轴承
2	转子不平衡	检查原因，平衡，固定各部分螺栓
3	安装系统基础强度不够或泵安装不平	将基础加固，并将水泵调平
4	转轴弯曲	送厂校正或更换



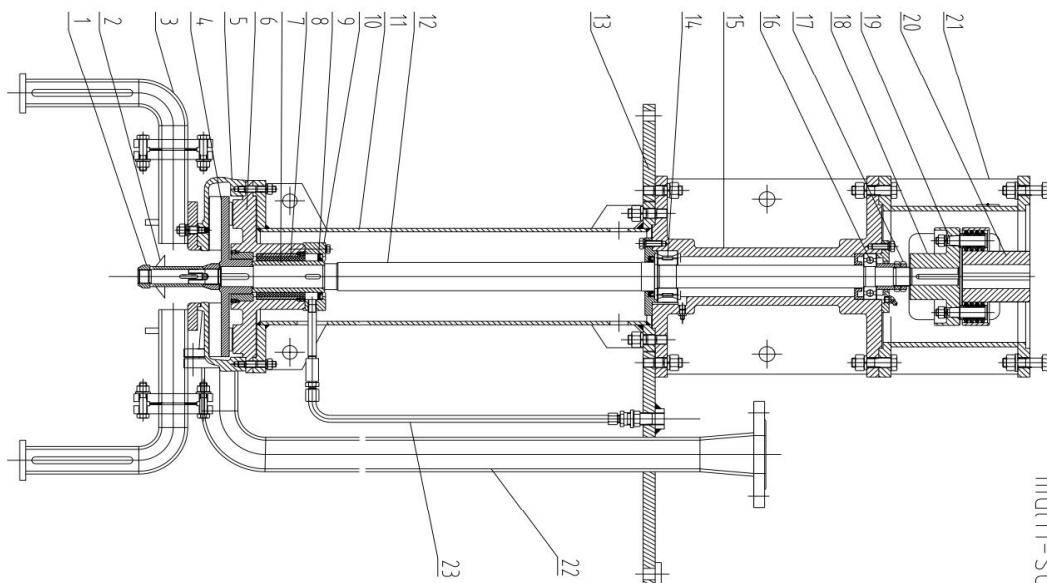
h. Unit vibration, noise and abnormality during operation

No.	Causes	Solution
1	The worn of the bearing	Replacing the bearing
2	rotor imbalance	Check the cause, balance, and fix the bolts of each part.
3	Installation Insufficient basic strength of the installation system or uneven pump	Strengthen the foundation and level the water pump.
4	Bending of the shaft	Send to the factory for calibration or replacement.

万一运转发生故障，不能确定原因，按以上给出的排除故障方法仍不能解决，建议不可采取临时凑合的方法，也不要私自乱修乱拆，而应立即与我公司维修部联系。

If there is a malfunction during operation, the cause could not be determined and the problem could not be solved after following the troubleshooting methods provided above. It is **not** recommended to use any temporary methods to repair or dismantle the pump without authorization. Instead, please contact our company's maintenance department immediately.

## 九 结构图 Structural Drawing



多吸头液下泵结构图

### Structural drawing of vertical multi-suction sewage pump

- 1、螺母 Nut
- 2、搅拌机 Mixer
- 3、吸头 Suction head
- 4、叶轮 Impeller
- 5、泵体 Pump casing
- 6、泵盖 Pump cover
- 7、轴套 Shaft sleeve
- 8、导轴承 Guide bearing
- 9、密封 Oil seal
- 10、压盖 Gland
- 11、直管 Straight pipe
- 12、泵轴 Pump shaft
- 13、底板 Baseplate
- 14、上轴承 Upper bearing
- 15、轴承体 Bearing body
- 16、下轴承 Lower bearing
- 17、圆螺母 Nut
- 18、泵联轴器 Pump coupling
- 19、弹性柱销弹性 Elastic column-pin coupling
- 20、电机联轴器 Motor coupling
- 21、电机支座 Motor support
- 22、出水管 Discharge pipe
- 23、润滑水管附件 Lubricating water pipe components

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十、性能参数表 Performance parameter table

泵型号 Pump model	排出口径 Discharge caliber	流量 Flow	扬程 Lift	转速 Speed	功率 Power
	(mm)	(m³/h)	(m)	(r/min)	(kW)
50PWDDFL8-22	25	8	22	1480	5.5
50PWDDFL12-15	32	12	15	1480	5.5
50PWDDFL15-15	40	15	15	1480	5.5
50PWDDFL15-30	40	15	30	1480	7.5
50PWDDFL20-7	50	20	7	1480	2.2
50PWDDFL10-10	50	10	10	1480	2.2
50PWDDFL20-15	50	20	15	1480	5.5
50PWDDFL15-25	50	15	25	1480	7.5
50PWDDFL18-30	50	18	30	1480	7.5
50PWDDFL25-32	50	25	32	1480	7.5
50PWDDFL20-40	50	20	40	1480	18.5
65PWDDFL25-15	65	25	15	1480	5.5
65PWDDFL37-13	65	37	13	1480	7.5
65PWDDFL25-30	65	25	30	1480	11
65PWDDFL30-40	65	30	40	1480	18.5
80PWDDFL40-7	80	40	7	1480	5.5
80PWDDFL43-13	80	43	13	1480	7.5
80PWDDFL40-15	80	40	15	1480	7.5
80PWDDFL65-25	80	65	25	1480	15
80PWDDFL50-50	80	50	50	1480	22
100PWDDFL80-10	100	80	10	1480	15
100PWDDFL110-10	100	110	10	1480	15
100PWDDFL100-15	100	100	15	1480	18.5
100PWDDFL85-20	100	85	20	1480	22
100PWDDFL100-25	100	100	25	1480	18.5
100PWDDFL100-30	100	100	30	1480	22
100PWDDFL100-35	100	100	35	1480	30
125PWDDFL130-15	125	130	15	1480	18.5
125PWDDFL130-25	125	130	20	1480	22
150PWDDFL145-6	150	145	6	1480	11
150PWDDFL180-15	150	180	15	1480	22
150PWDDFL180-20	150	180	20	1480	30
150PWDDFL180-25	150	180	25	1480	30
150PWDDFL130-30	150	130	30	1480	30

150PWDDFL180-30	150	180	30	1480	37
150PWDDFL200-30	150	200	30	1480	37
200PWDDFL300-7	200	300	7	980	15
200PWDDFL250-11	200	250	11	980	15
200PWDDFL250-15	200	250	15	1480	18.5
200PWDDFL400-10	200	400	10	1480	22
200PWDDFL300-15	200	300	15	1480	22
200PWDDFL400-13	200	400	13	1480	30
200PWDDFL250-22	200	250	22	1480	30
200PWDDFL350-25	200	350	25	1480	45
200PWDDFL400-30	200	400	30	1480	55
250PWDDFL600-9	250	600	9	980	37
250PWDDFL600-12	250	600	12	1480	45
250PWDDFL600-15	250	600	15	1480	45
250PWDDFL600-20	250	600	20	1480	55
250PWDDFL600-25	250	600	25	1480	75
300PWDDFL800-12	300	800	12	980	45
300PWDDFL500-15	300	500	15	980	45
300PWDDFL800-15	300	800	15	980	55
300PWDDFL600-20	300	600	20	980	55
300PWDDFL800-20	300	800	20	980	75
300PWDDFL950-20	300	950	20	980	90
300PWDDFL1000-25	300	1000	25	980	110
350PWDDFL1100-10	350	1100	10	980	55
350PWDDFL1500-15	350	1500	15	980	90
350PWDDFL1200-18	350	1200	18	980	90
350PWDDFL1100-28	350	1100	28	740	132
350PWDDFL1000-36	350	1000	36	740	160

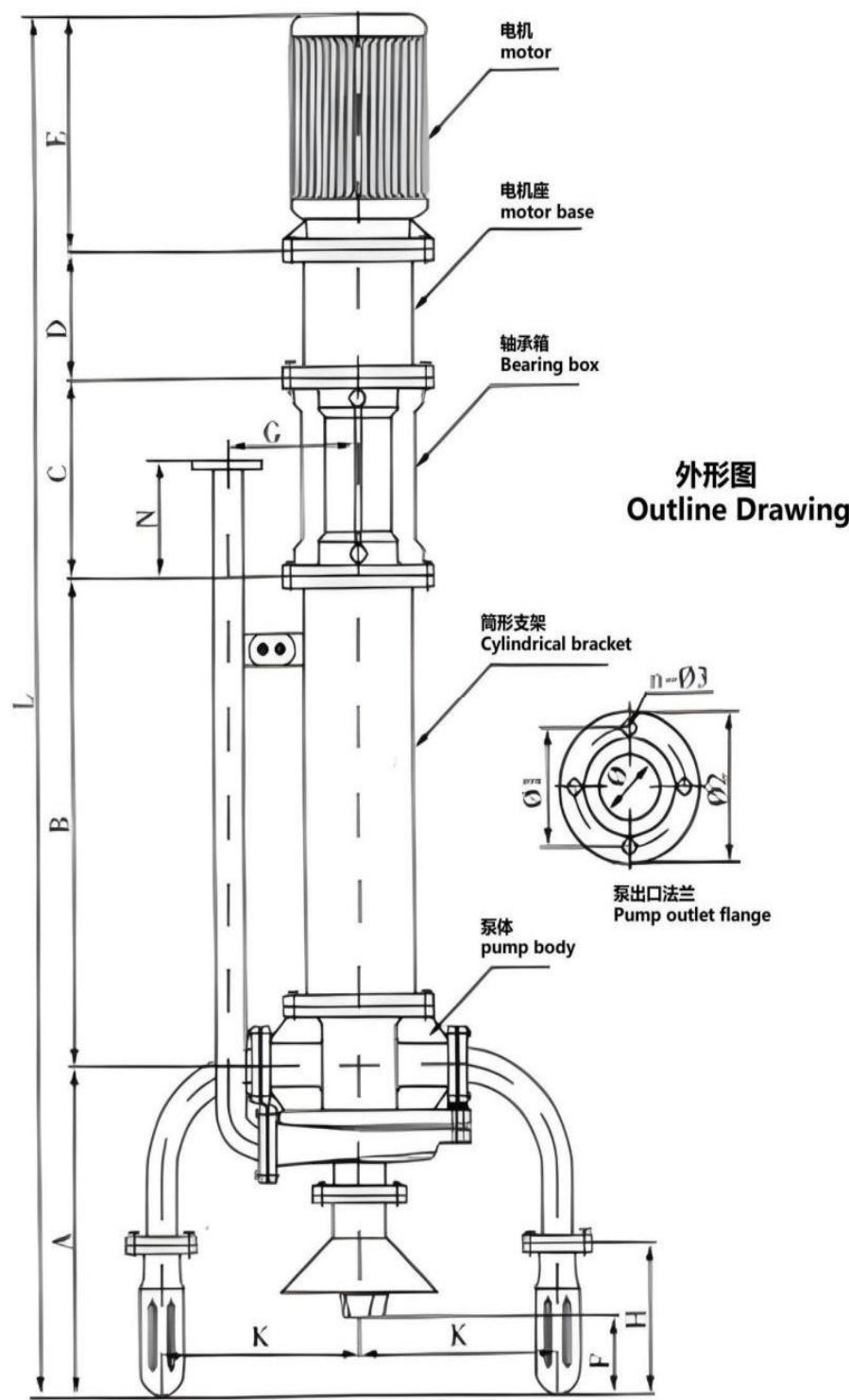
注：1. 表中电机功率仅供参考，实际根据介质比重和液下深度确定，选型时请咨询我公司技术部。

2. 如果实际要求参数与性能表不符，我公司可根据要求设计制造。

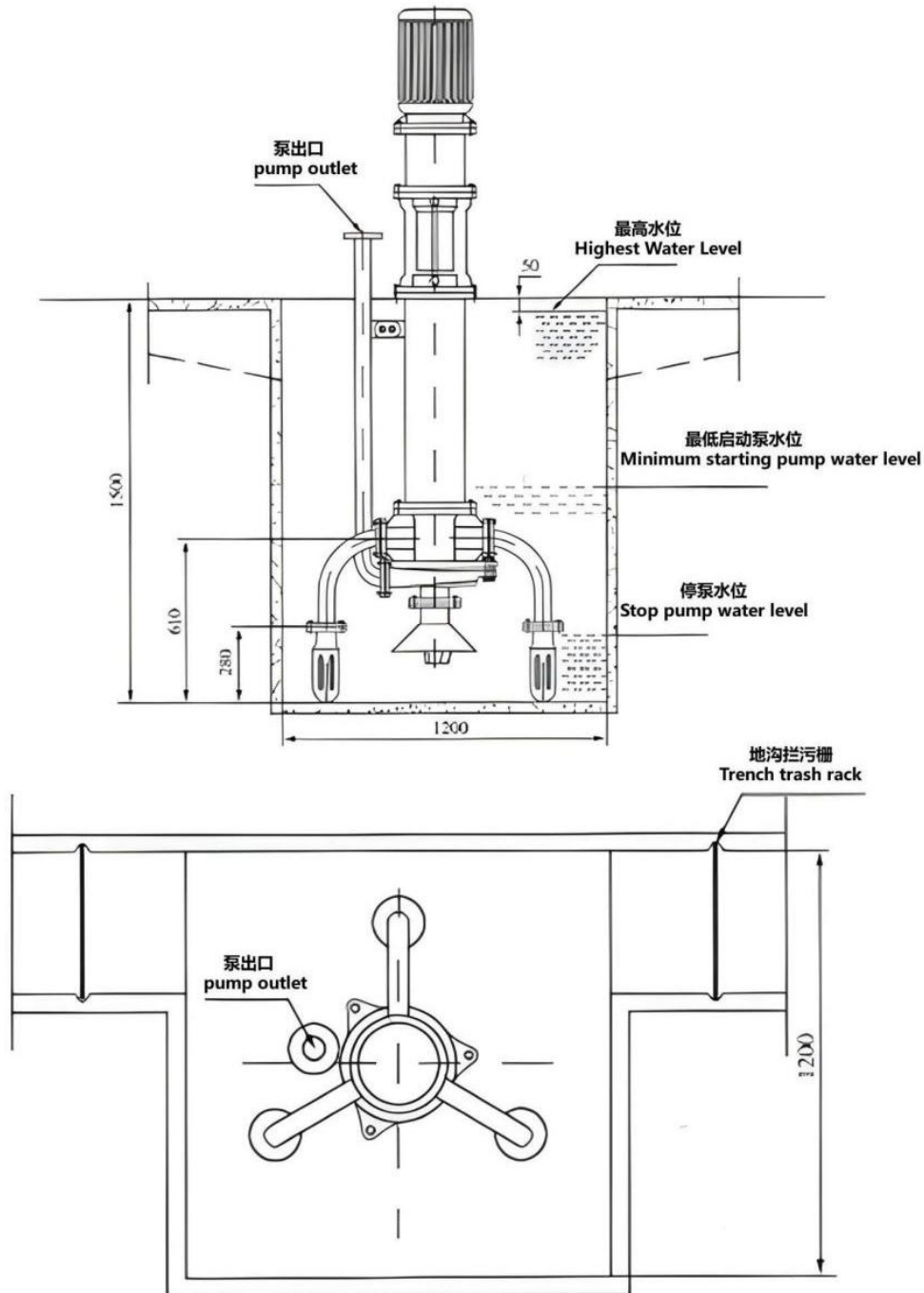
Note: 1. The motor power in the table is for reference only, and it is determined based on the specific gravity of the medium and the depth under the liquid. Please consult our company's technical department for selection.

2.If the actual required parameters do not match the performance table, our company can design and manufacture the pump according to the requirements.

十一 外形及安装尺寸图纸 Outline Drawing and Installation Dimension Diagram

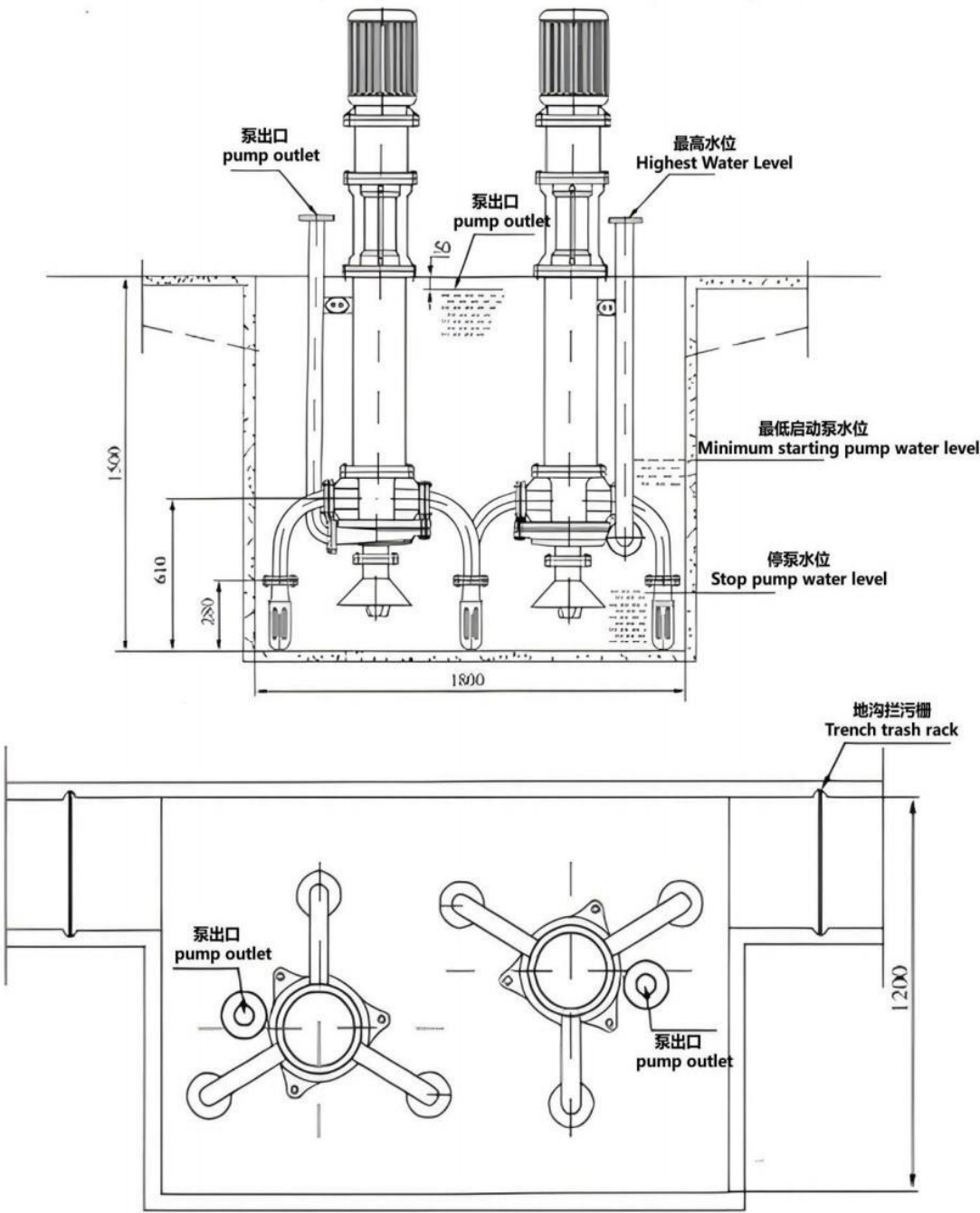


单泵安装尺寸图  
Single pump installation dimension diagram

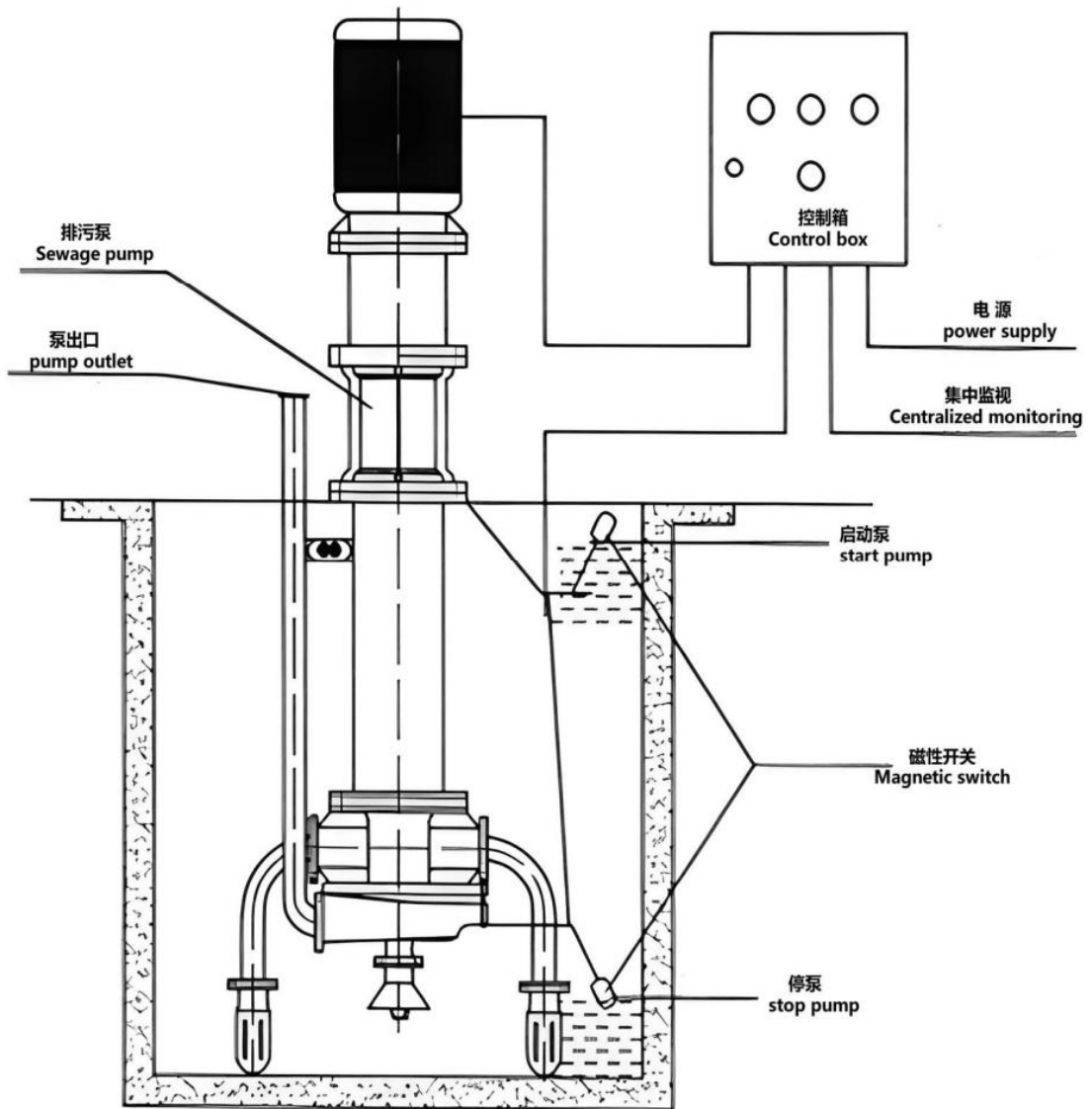




双泵安装尺寸图  
Double pump installation dimension diagram



带控制箱连接示意图  
Diagram of Connection with Control Box



# PWDDFL系列多吸头排污泵

PWDDFL Series Multi-suction Sewage Pump

**湖南立佳机械制造有限公司**  
**Hunan Perfect Industry Co.,ltd**

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