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As we are constantly endeavouring to improve the performance of our equipment.

The company reserves the right to make alteration from time to time and equipment differ from that detailed in this brochure.

WQH系列高扬程潜水排污泵

WQH SERIES HIGH HEAD SUBMERSIBLE SEWAGE PUMP



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产品简介 Introduction

WQH系列高扬程潜水排污泵是我公司潜水排污泵的研制基础上拓展形成的新产品。在水利部件设计和结构上突破了常规潜水排污泵的传统设计方法，填补了国内高扬程潜水排污泵的空白，处于国际先进水平，也使我国泵行业的水利设计提高到了一个新的水平。

WQH series high head submersible sewage pump is a new product formed by expanding the development basis of the submersible sewage pump. A breakthrough applied on its water conservancy parts and structure has been made to the traditional ways of design for the regular submersible sewage pumps, which fills up the gap of the domestic high head submersible sewage pump, stays at the worldwide leading position and makes the design of water conservancy of the national pump industry enhanced to a brand-new level.

型号说明 Model meaning



用途 Purpose

深水型高扬程潜水排污泵具有高扬程、深潜水、耐磨蚀、可靠性高、无堵塞、自动安装、自动控制、并且可全扬程工作等优点，在高扬程，潜水深度大，水位变幅大，排送含有一定磨蚀作用的固体颗粒的介质方面，具有独特功能。

使用条件：

- 1、最高介质温度+40℃；
- 2、PH值5-9
- 3、可通过最大固体颗粒直径 $\phi 25$ - $\phi 50$ mm；
- 4、最大潜没深度100m。

该系列泵流量范围为50-1200立方米/小时，扬程范围50-120米，功率500千瓦以内。额定电压为380v，6kv、10kv等视用户而定，频率50Hz。

The deep-water type high head submersible sewage pump features a high head, deep submersion, wear resistance, a high reliability, non-blocking, automatic installation and control, workable with full head etc. advantages and the unique functions presented in the high head, the deep submersion, the greatly variable water level amplitude and the delivery of the medium containing the solid grains of some abrasiveness.

Conditions for use:

1. Maximum temperature of medium: +40℃
2. PH value: 5-9
3. Maximum diameter of solid grains which can pass through: 25-50mm
4. Maximum submersible depth: 100m

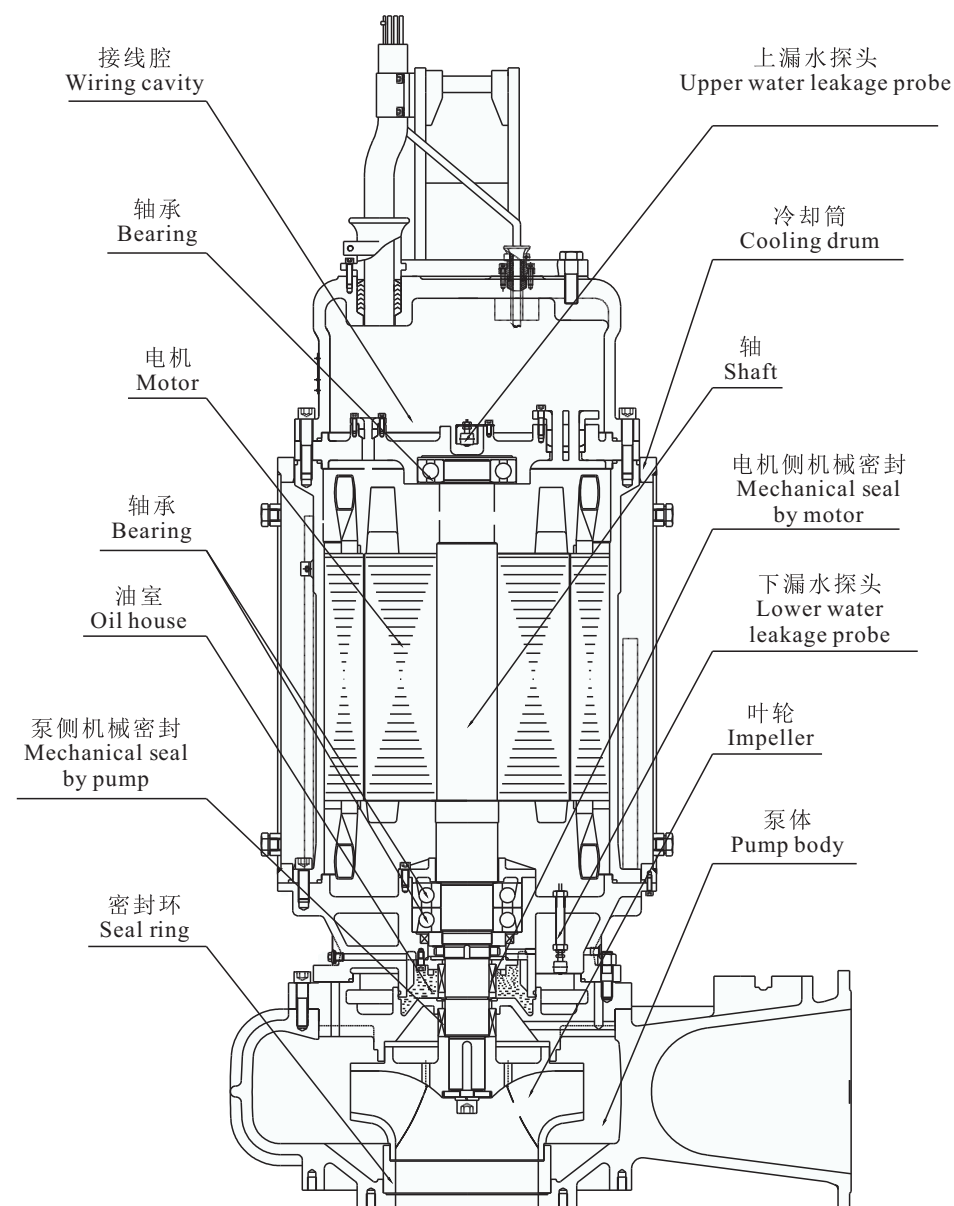
With this series pump, the flow range is 50-1200m³/h, the head range is 50-120m, the power is within 500KW, the rated voltage is 380V, 6KV or 10KV, depended upon the user, and the frequency is 50Hz.

产品特点 Characteristic

WQH系列深水型高扬程潜水排污泵是我公司研制的新产品。在水利部件设计和结构上突破了常规潜水排污泵的传统设计方法。在国内独树一帜。

WQH series deep-water type high head submersible sewage pump is a new product developed in this Co. and a breakthrough applied on its water conservancy parts and structure has been made to the traditional ways of design for the regular submersible sewage pumps, uniquely presented inside of the country.

WQH型结构图 Model WQH structural drawing



特别推荐场合使用：

★对于取水水位变动较大，也就是扬程变幅较大的场合，该型泵具备全扬程安全使用特性，在大、小流量区域均不过载。

★对于深度淹没场合，该型泵能够承受100m水压安全使用。

★用于高扬程排污场合，特别适合于对污水的远距离输送。

★适合于泥沙含量较高的场合，该泵兼具渣浆泵的特性。

★具备可靠性高，特别适用于重大、重点工程。

结构特点

高扬程潜水排污泵的设计处处体现着可靠性高的要求。

电动机：

特殊的绝缘设计确保电机在少量进水的环境下依然能正常使用。电机的优化设计保证了水泵能够在水力部件被污水部分淹没的环境下开机启动。

水力部件：

设计运用了先进的CFD和流场诊断技术，具备高扬程、全扬程、高效、无堵塞、耐磨损等优点，处于国际先进水平。

密封设计：

为了满足深度潜水的要求，在水泵密封上采用了多项改进措施，独有的密封技术，使得水泵能够潜入100m水下运行。

保护措施：

除常规电机保护外，还在接线盒腔、电机腔和油室内分别设置了泄漏检测器，电机定子绕组内设置了一用一备两组定子超温保护装置，电机内设置了电机除湿装置可确保电机绝缘稳定不下降。

Specially recommended cases of use

★For the case of a great change of the water intake level, e.g. a greatly changed amplitude of the head, this pump offers the characteristic of full-head safety use and will not be subjected to overload in either big or small flow area.

★For the deeply submerged case, this pump can bear 100m water pressure and be used safely.

★When used for the high head sewage removal case, this pump is particularly suitable for distance transportation of sewage.

★Suitable for the case of a high content of muddy sands, this pump will then show the characteristic as a slurry pump.

★Of a high reliability, so specially suitable for major and key projects.

Characteristic of structure

The requirement of a high reliability is presented in every detail of the design of the high head submersible sewage pump.

Motor

The special insulation design makes the motor capable of normal use even with less incoming water and the optimized design of the motor guarantees the ability for the pump to be started with the hydraulic parts partially submerged by sewage.

Hydraulic parts

For the design, the advanced techniques of CFD and flow-field diagnosis are applied, available with high head, full-head, high efficiency, non-blocking, wear resistance etc. advantages and ranking at the worldwide leading level.

Design of the seal

To meet with the required deep submersion, multiple improvements have been adopted for the seals of the pump and the unique sealing technique makes the pump able to work under the water by 100m.

Protective measures

In addition to the regular motor protection, a leakage detector is set inside of the wiring cavity, the motor cavity and the oil house, two groups of the stator over-temperature protector (one used one standby) are set inside of the stator winding of the motor and a motor dehumidifier is set inside of the motor to make its insulation steady without lowering.

WQH型泵安装方式 Installation mode of model WQH pump

1、自动耦合式安装

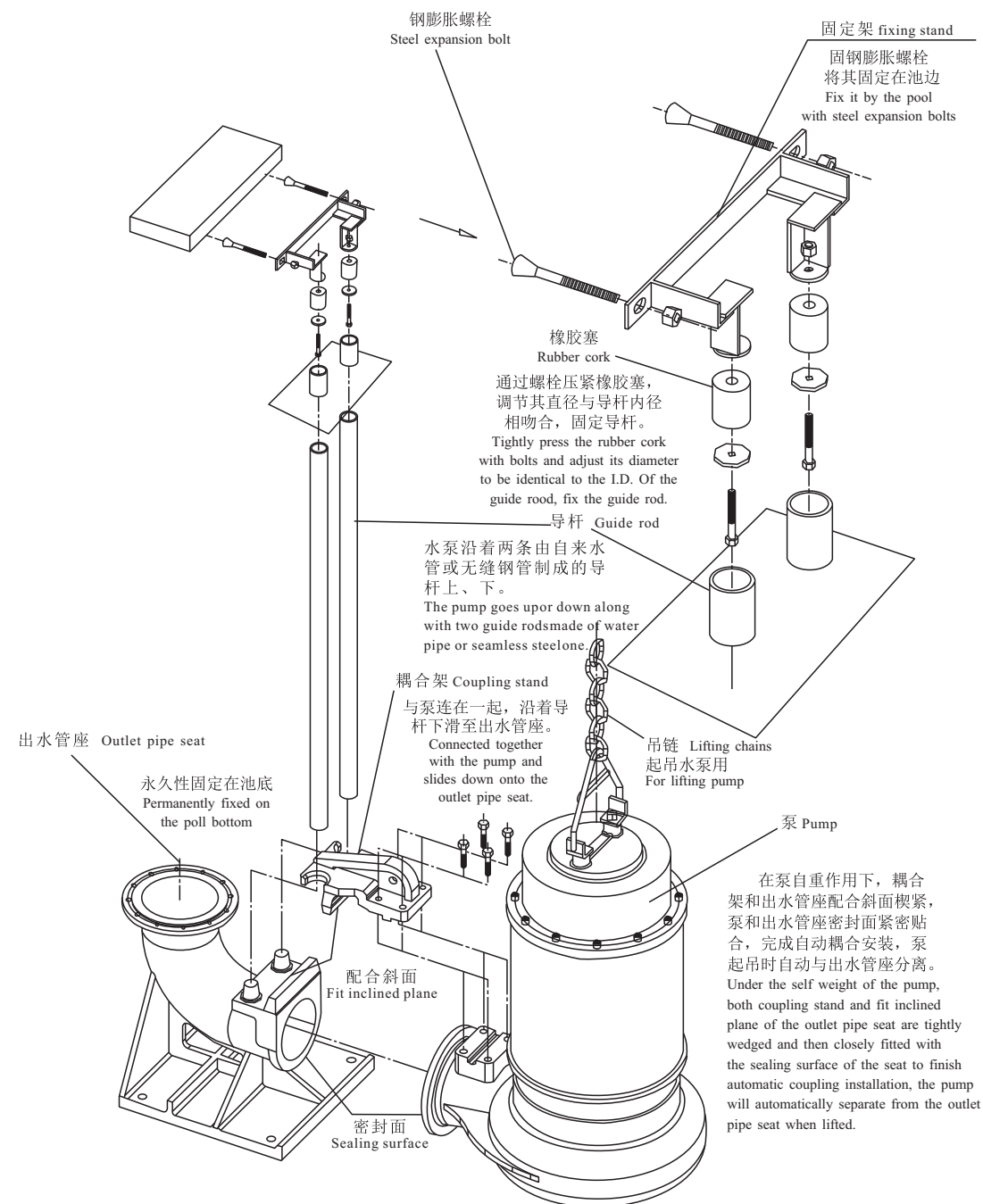
Auto-coupled installation

泵沿导杆放下, 自动连接至排出管道系统。安装建筑费用极少, 维修费用降低。

The pump is placed down along with the guide rod and automatically connected to the drainage pipeline system.

Less cost for mounting and lowering the cost for repair.

耦合装置安装原理图
SCHEMATIC DRAWING OF COUPLING DEVICE INSTALLATION



2、固定式干式安装

能经受水淹, 供湿/干井或管线连接的泵系统。吸水口和排水口以法兰与管道连接, 立式安装。选用此种安装, 须配冷却系统。

3、固定式湿式安装

泵由底座支承, 固定于污水井底, 排水口与管道连接, 立式安装。

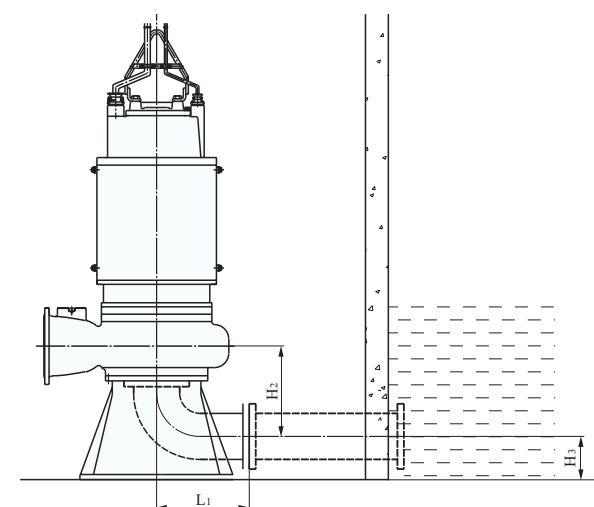
2.Fixed Dry Installation

Suitable for the pump systems able to be subjected to water flood and used for connecting to wet/dry wells or pipelines, with both water suction and drainage ports connected to the pipelines with flanges, in vertical installation. A cooling system is required therewith.

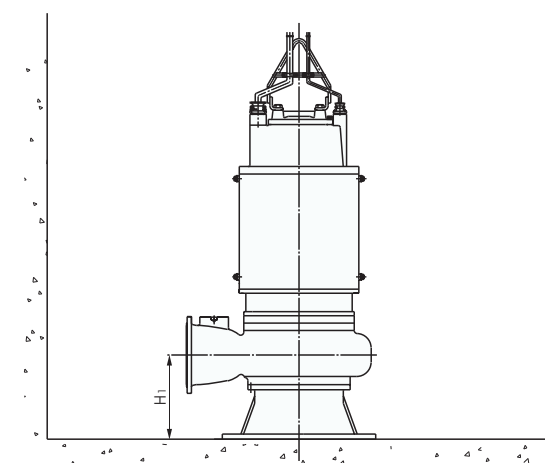
3.Fixed Wet Installation

The pump is supported by its foundation and fixed on the bottom of a sewage well with the outlet connected to the pipeline, vertically mounted.

固定式干式安装
Fixed dry installation



固定式湿式安装
Fixed wet installation



安装方法和安装系统 Installation method and installation system

深水型高扬程潜水排污泵机泵同轴, 结构紧凑。采用固定式安装方式和自动耦合安装。自动耦合式安装精度高, 可在100米高度内方便安装和提升电泵, 无需安装或维修人员进入水坑, 快捷方便, 安全! 该系统使用特制的底座, 固定在水池的底部, 与出水管连接好, 在池顶安装好配套的支撑块, 用导轨使两者相连, 水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。

The deep-water type high head submersible sewage pump is coaxial with both pump and motor and compact in structure and adopts fixed and auto-coupled modes of installation. The auto-coupled mode features a high precision and can easily install and lift the pump within an 100m height, without need of the installers or repairmen to get in the puddle, quick, easy and safe! This system uses a specially made foundation, which is fixed on the bottom of the pond and connected to the outlet pipe. After setting the matched support block on the top of the pond, use a guide rail to connect both foundation and support block and connect the pump to a specific stand to let it slide downward to the exit position of the foundation and then, by means of the weight of itself, automatically coupled and sealed.

WQH型泵性能参数 Model WQH pump performance

| 序 号 No. | 型 号 Model | 排出口径 Outlet diameter (mm) | 流量 Capacity (m³/h) | 扬 程 Head (m) | 转 速 Speed (r/min) | 功 率 Power (kW) | 效 率 Efficiency (%) |
|------------|----------------|---------------------------------|--------------------------|--------------------|-------------------------|----------------------|--------------------------|
| 1 | 50WQH10-40-4 | 50 | 10 | 40 | 2880 | 4 | 39.4 |
| 2 | 50WQH10-42-4 | 50 | 10 | 42 | 2880 | 4 | 39.4 |
| 3 | 50WQH10-45-4 | 50 | 10 | 45 | 2880 | 4 | 39.4 |
| 4 | 50WQH10-50-5.5 | 50 | 10 | 50 | 2900 | 5.5 | 40 |
| 5 | 50WQH10-60-11 | 50 | 10 | 60 | 2930 | 11 | 30 |
| 6 | 50WQH10-70-11 | 50 | 10 | 70 | 2930 | 11 | 30.9 |
| 7 | 50WQH15-35-5.5 | 50 | 15 | 35 | 2900 | 5.5 | 39.4 |
| 8 | 50WQH15-38-5.5 | 50 | 15 | 38 | 2900 | 5.5 | 39.4 |
| 9 | 50WQH15-40-5.5 | 50 | 15 | 40 | 2900 | 5.5 | 39.4 |
| 10 | 50WQH15-43-5.5 | 50 | 15 | 43 | 2900 | 5.5 | 40 |
| 11 | 50WQH15-45-5.5 | 50 | 15 | 45 | 2900 | 5.5 | 40 |
| 12 | 50WQH15-50-11 | 50 | 15 | 50 | 2930 | 11 | 30 |
| 13 | 50WQH15-55-11 | 50 | 15 | 55 | 2930 | 11 | 30 |
| 14 | 50WQH15-60-11 | 50 | 15 | 60 | 2930 | 11 | 30.9 |
| 15 | 50WQH15-65-11 | 50 | 15 | 65 | 2930 | 11 | 30.9 |
| 16 | 65WQH20-36-7.5 | 65 | 20 | 36 | 2900 | 7.5 | 49.5 |
| 17 | 65WQH20-60-11 | 65 | 20 | 60 | 2930 | 11 | 43.2 |
| 18 | 65WQH20-70-15 | 65 | 20 | 70 | 2930 | 15 | 44.1 |
| 19 | 65WQH30-45-11 | 65 | 30 | 45 | 2930 | 11 | 51.4 |
| 20 | 65WQH30-50-11 | 65 | 30 | 50 | 2930 | 11 | 55.9 |
| 21 | 65WQH30-55-15 | 65 | 30 | 55 | 2930 | 15 | 43.2 |
| 22 | 80WQH50-50-15 | 80 | 50 | 50 | 2930 | 15 | 60.8 |
| 23 | 80WQH50-65-22 | 80 | 50 | 65 | 2940 | 22 | 54.2 |
| 24 | 80WQH50-70-30 | 80 | 50 | 70 | 2950 | 30 | 55.1 |

WQH型泵性能参数 Model WQH pump performance

| 序 号 No. | 型 号 Model | 排出口径 Outlet diameter (mm) | 流量 Capacity (m³/h) | 扬 程 Head (m) | 转 速 Speed (r/min) | 功 率 Power (kW) | 效 率 Efficiency (%) |
|------------|-------------------|---------------------------------|--------------------------|--------------------|-------------------------|----------------------|--------------------------|
| 25 | 100WQH80-60-30 | 100 | 80 | 60 | 2900 | 30 | 73 |
| 26 | 100WQH100-80-45 | 100 | 100 | 80 | 2900 | 45 | 72 |
| 27 | 100WQH120-100-55 | 100 | 120 | 100 | 2900 | 55 | 72.3 |
| 28 | 150WQH150-60-45 | 150 | 150 | 60 | 2900 | 45 | 78 |
| 29 | 150WQH150-80-55 | 150 | 150 | 80 | 2900 | 55 | 76.3 |
| 30 | 150WQH150-100-75 | 150 | 150 | 100 | 2900 | 75 | 73.8 |
| 31 | 150WQH200-60-55 | 150 | 200 | 60 | 2900 | 55 | 80.5 |
| 32 | 150WQH200-80-75 | 150 | 200 | 80 | 2900 | 75 | 78.8 |
| 33 | 150WQH200-100-90 | 150 | 200 | 100 | 1480 | 90 | 77.5 |
| 34 | 150WQH200-120-110 | 150 | 200 | 120 | 1480 | 110 | 74.8 |
| 35 | 150WQH250-60-75 | 150 | 250 | 60 | 1480 | 75 | 81.5 |
| 36 | 150WQH250-80-90 | 150 | 250 | 80 | 1480 | 90 | 80.5 |
| 37 | 150WQH250-100-110 | 150 | 250 | 100 | 1480 | 110 | 78 |
| 38 | 150WQH250-120-132 | 150 | 250 | 120 | 1480 | 132 | 75 |
| 39 | 200WQH300-60-90 | 200 | 300 | 60 | 1480 | 90 | 82 |
| 40 | 200WQH300-80-110 | 200 | 300 | 80 | 1480 | 110 | 81.5 |
| 41 | 200WQH300-100-132 | 200 | 300 | 100 | 1480 | 132 | 81 |
| 42 | 200WQH300-120-160 | 200 | 300 | 120 | 1480 | 160 | 80.5 |
| 43 | 200WQH400-60-110 | 200 | 400 | 60 | 1480 | 110 | 83 |
| 44 | 200WQH400-80-132 | 200 | 400 | 80 | 1480 | 132 | 83 |
| 45 | 200WQH400-100-160 | 200 | 400 | 100 | 1480 | 160 | 83 |
| 46 | 200WQH400-120-220 | 200 | 400 | 120 | 1480 | 220 | 82 |
| 47 | 250WQH500-60-132 | 250 | 500 | 60 | 1480 | 132 | 82 |

WQH型泵性能参数 Model WQH pump performance

| 序 号 No. | 型 号 Model | 排出口径 Outlet diameter (mm) | 流量 Capacity (m³/h) | 扬 程 Head (m) | 转 速 Speed (r/min) | 功 率 Power (kW) | 效 率 Efficiency (%) |
|------------|--------------------|---------------------------------|--------------------------|--------------------|-------------------------|----------------------|--------------------------|
| 48 | 250WQH500-80-185 | 250 | 500 | 80 | 1480 | 185 | 79.7 |
| 49 | 250WQH500-100-220 | 250 | 500 | 100 | 1480 | 220 | 77.7 |
| 50 | 250WQH500-120-250 | 250 | 500 | 120 | 1480 | 250 | 82.7 |
| 51 | 250WQH600-60-160 | 250 | 600 | 60 | 1480 | 160 | 83.2 |
| 52 | 250WQH600-80-220 | 250 | 600 | 80 | 1480 | 220 | 81 |
| 53 | 250WQH600-100-250 | 250 | 600 | 100 | 1480 | 250 | 79 |
| 54 | 250WQH600-120-315 | 250 | 600 | 120 | 1480 | 315 | 76.2 |
| 55 | 250WQH700-60-185 | 250 | 700 | 60 | 1480 | 185 | 84.2 |
| 56 | 250WQH700-80-250 | 250 | 700 | 80 | 1480 | 250 | 82.7 |
| 57 | 250WQH700-100-315 | 250 | 700 | 100 | 1480 | 315 | 80.7 |
| 58 | 250WQH700-120-355 | 250 | 700 | 120 | 1480 | 355 | 78.7 |
| 59 | 300WQH800-60-220 | 300 | 800 | 60 | 1480 | 220 | 85 |
| 60 | 300WQH800-80-280 | 300 | 800 | 80 | 1480 | 280 | 83.5 |
| 61 | 300WQH800-100-355 | 300 | 800 | 100 | 1480 | 355 | 82.5 |
| 62 | 300WQH800-120-400 | 300 | 800 | 120 | 1480 | 400 | 79 |
| 63 | 300WQH900-60-220 | 300 | 900 | 60 | 1480 | 220 | 85.3 |
| 64 | 300WQH900-80-280 | 300 | 900 | 80 | 1480 | 280 | 84.3 |
| 65 | 300WQH900-100-400 | 300 | 900 | 100 | 1480 | 400 | 82.8 |
| 66 | 300WQH900-120-450 | 300 | 900 | 120 | 1480 | 450 | 81.3 |
| 67 | 300WQH1000-60-250 | 300 | 1000 | 60 | 1480 | 250 | 85.7 |
| 68 | 300WQH1000-80-355 | 300 | 1000 | 80 | 1480 | 355 | 84.7 |
| 69 | 300WQH1000-100-400 | 300 | 1000 | 100 | 1480 | 400 | 83.7 |
| 70 | 300WQH1000-120-500 | 300 | 1000 | 120 | 1480 | 500 | 81.7 |

使用说明 Operation instructions

在水泵启动之前，应由一名合格的电工对该系统进行检查，以确保下列下述各项所要求的电器保护措施：

1、泵在运转前，应用0~500兆欧表检查电机相间及相对地绝缘电阻，最低值应大于50MΩ；

2、电源装置应安全、可靠、正常。电源电压、频率应符合规定(电压为380V±5%，频率为50Hz±1%)。且电压的瞬时超差不应超过10%。如果电源离水泵使用的距离较远时，电缆的截面积应加粗，接头应尽可能少些，否则会使电压下降太多，且应在电缆接头处作密封防水处理，以防漏电；

3、在四芯电缆中，带有符号“≡”者为接地线(一般为绿黄双色线或黑色线)为了保证安全使用，必须牢固接地，并比其它线长出50mm；

4、条件许可时，电器保护装置可包括：接地保护器，地面漏电断流器等，但是，在任何情况下，都必须装有和电泵额定电流值相符的慢熔保险熔断丝；

5、电器控制装置应防潮，并安装在防潮的区域，电缆的安放应注意不要使其堵在泵的吸入口处；

6、检查转子转动方向。

在电泵初次启动或重新安装后都应检查转动方向，转动方向不正确运转会造成水泵效率降低，或造成叶轮脱落等损坏水泵事项。

为测定转子转动方向，在水泵最终安装之前，应举高并作点动运行，符合下列情况即转动方向正确，否则，应交换控制器上三相线中任意两根线的位置以改变转动方向。

a. 从泵的顶部向下看，转子顺时针方向转动；

b. 从底部向上看(即吸入口方向)可见叶片按逆时针方向转动。

注：如果几台泵连到同一个控制器上，则应单独检查。

Before starting the pump, have a qualified electrician check the pump system so as to make sure of the electric protection measures required in each of the followings:

1.Before the pump works, use a 0-500Mohm meter to measure the dielectric resistance between the phases and between the phase and the ground, the minimum value of which should be over 50Mohm.

2.The power supply should be safe, reliable and normal, both voltage and frequency of it should comply with the set ones (voltage: 380V±5%, frequency: 50Hz±1%) and the instantaneous difference of the voltage should not be over 10%. In case of a longer distance between the pump and the power supply, select a cable with a bigger sectional area and have the joints as less as possible, or the voltage would be dropped too much, and the cable joint sealed and water-proof to avoid an electric leak.

3.In a four-core cable, the one marked with “≡” is the ground-wire (as a green-yellow bi-colored or a black wire, in general). In order to make sure of safe use, it must be securely grounded and longer than others by 50mm.

4.The electric protectors may include, if permitted by the conditions, a grounding protector, a ground leak interrupter etc., however at any circumstances, a slowly-blown fuse meeting with the rated current value of the pump must be fitted.

5.Pay attention to being wet-proof for the electric controllers and place them in a wet-proof site. The placement of the cable should not cause the suck-in port of the pump to be blocked.

6.Check the rotating direction of the rotor.

The said direction needs to be checked at the initial start or reinstallation of the pump and, in case of a wrong one, it would make the pump efficiency lowered or the impeller fall off etc. damages with the pump.

To check the said direction, hold the pump up and make it spot-moved before its final installation. The said direction can be regarded correct when meeting with the following conditions, or change any two of the three phases of the controller to correct it.

a.Viewing downward from the top of the pump, the rotor moves clockwise.

b.Viewing upward from the bottom (e.g. the direction at the suck-in port), the blade is visible to move CCW.

Note: check them individually if several pumps are connected to one controller.

检查与维修 Check and repair

本系列泵产品性能优良，运行可靠，每台泵在出厂都进行了严格的出厂检测，永久润滑的球轴承以及处于油室内运行的优质机械密封使水泵具有最大的耐用性，然而，为了确保水泵的使用寿命，建议进行定期的检查和保养。

1、定期检查电泵电动机相间及相对地间绝缘电阻，其值应大于 $50\text{M}\Omega$ ，否则应拆机检修(进行干燥处理)同时检查接地是否牢固；

2、叶轮和撕裂机构(底座盖板)之间的间隙为 $0.3\sim 0.5\text{mm}$ ，在介质中长期使用之后，此间隙可能由于磨损而增大，此时应予以调整，其方法如下：断开电源，松开固定螺钉，将盖板旋转一个适当的角度即可恢复原间隙；

3、电泵多次使用后必须把电泵放入清水中运行数分钟，防止泵内留下沉积物，以保证电泵的清洁；

4、电泵在规定的介质中正常运行半年后应检查油室密封状况，更换 $10\#\sim 30\#$ 机油，必要时更换机械密封件，对于在恶劣工作条件下使用的电泵，应经常检修；

换油方法如下：把泵放置好，使油室螺塞(位于出水口内侧)朝下，放出润滑油，然后用洗涤油清洗油室，再注入适量的油(约 $70\%\sim 80\%$)，再换一个新的O形圈并将螺塞旋紧；

如油中发现有水(奶状乳化液)按规定冲洗油室并重新装油，三个星期后必须重新检查一次，如果油又变成乳状液，机械密封件应进行检查，必要时应予以更换(与本单位维修部接洽)，如自己更换密封件，须做气密试验(空气压力为 $0.5\text{kg}/\text{cm}^2$)。

5、万一发生故障，在不能确定原因，并且按后面提供的排除方法仍不能解决时，请不要采取临时凑的办法，更不要私自乱拆乱修，而应与本单位维修部门联系。

This series pump is of a good performance and reliable movement and each pump has been strictly tested before ex-works. The permanently lubricated ball-bearing and the quality mechanical seal working inside of the oil room makes the pump a maximum durability. However, to make sure of its duration, periodic check and maintenance is recommended to carry out.

1. Carry out a periodic check on the dielectric resistance between the phases and between the phase and the ground of the motor, the value of which should be bigger than 50Mohm , otherwise, disassemble and overhaul it (drying treatment) and check if the grounding is secure.

2. The interval between the impeller and the tearing mechanism (the foundation's cover-plate) is $0.3\sim 0.5\text{mm}$ and will need adjusting when getting enlarged because of worn-out after being used in a medium for a long time, with the way: cut off the power, loosen the fixing screw and turn the cover-plate by a proper angle, the original one can thus be reset.

3. Put the pump in pure water and let it move there for several minutes, after being used for many times, to prevent any deposits from staying inside of it and ensure it to be clean.

4. Check the seal of the oil room after the pump has worked in the set medium for six months and replace $10\#\sim 30\#$ engine oil and, if necessary, the mechanical seal as well. Often check the pump which is used in a severe condition.

The way to replace the oil: place the pump such as letting the cork of the oil room (located in the internal side of the water outlet) downward to drain out the lubricating oil and then use a detergent oil to clean the oil room, inject oil properly (about $70\%\sim 80\%$), place a new O-seal ring and screw the cork in tightly.

In case of water (milky emulsified liquid) to be found in the oil, rinse the oil room, upon so required, and put new oil in. Check it again in three weeks and, in case of the same, check the mechanical seal and replace it if necessary (contacting with the repair dept of this Co.). An air-tightness test must be done (with the air pressure as $0.5\text{kg}/\text{cm}^2$) when a user replaces it himself.

5. In case of a failure, when unable to make sure of the cause and to settle it with the way of settlement supplied thereafter, please contact with the repair dept of this Co. first instead of using any temporary measure and, furthermore, doing disassembly or repair at will.