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## AS、AV型潜水排污泵

AS、AV TYPE SUBMERSIBLE SEWAGE PUMP



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## 概 述 Outline

AS、AV型潜水式排污泵是在吸取包括德国ABS公司在内的先进潜污泵技术的基础上，根据国家标准进行设计生产的新型排污设备。

本系列水泵具有结构简单、排污力强及高效节能的优点，同时可配备自动控制及自动安装装置，使泵的组合更为优良，而泵的运行则更为安全可靠。

Model AS, AV submersible sewage pump is designed and made on the basis of the advanced know-how of this kind of pump including that of German ABS Co. and according to the national standards and is a brand-new style sewage pump.

This series sewage pump features simple structure, strong sewage drainage, high efficiency and energy saving and can be fitted with auto-control and auto-erection devoces to make the pump combination more excellent and the pump running safer and more reliable.

## 产品特点 Characteristics

1、采用独特的大通道开式叶轮结构，大大提高了污物通过能力，能有效的通过直径为泵口径约50%的固体颗粒。

2、本系列水泵特别设计了一种特殊的撕裂机构，能够把纤维物质撕裂、切断，然后顺利排放，无需在泵上加装滤网，因此本系列水泵特别适用于输送含有长纤维物质的污水。

3、设计合理，配套电机功率小，节能效果显著。

4、采用最新材料精制而成的机械密封处于油室内运行，可使泵安全运行8000小时以上。

5、能够在全扬程范围内使用，且保证电机不会过载。

6、对产品的漏电、漏水以及过载等进行了保证控制，提高了产品的安全性与可靠性。

7、可根据用户需要配备液位自动控制柜，根据所需液位变化，自动控制泵的启动与停止，不需专人看管，使用极为方便，且易于实现自动化管理。

8、双导轨自动耦合装置（自耦）系统给安装、维修带来极大的方便，人可不必为此而进出污水坑。

1. Use of the unique great-path open-type impeller's structure greatly enhances the sewage passing-through ability and can have the solid grains of a diameter about 50% that of the pump effectively pass through.

2. A special tear-off mechanism is designed specially for this series pump, it can tear off the fibre substances, cut them down and then let them successfully drained, without need to mount a filter screen on the pump, so specially suitable for transporting the sewage containing long fibre substances.

3. Reasonably designed, small power of the fitted motor and a notable energy saving effect.

4. Running of the mechanical seal inside of the oil chamber which is made of the latest material can have the pump safely run over 8000h.

5. Can be used within the full head and can ensure the motor not to be overloaded.

6. Guaranteed control is carried out for its electricity, water leaks and overload, enhancing the product safety and reliability.

7. Can be fitted with liquid-level auto-control cabinet upon the requirment of users to, upon the necessary liquid-level variation, automatically control both start and stop of the pump, without need to have a person specially to look after, can be used extremely convenient and easy to get the automatic control.

8. A dual-guide machine auto-coupler (self-coupling) brings installation and repair with great convenience, no people are required to go into or put of the sewage pit.

## 主要用途 Main purpose

本系列泵适用于制药、造纸、化工、煤加工工业及城市污水排放系统等行业输送含有固体颗粒、长纤维物的液体，以及特别脏、粘和滑的污水污物，也可用于抽送清水及带腐蚀性介质。

This series pump is suitable for the pharmacy, paper-making, chemical industry, coal processing industry, city sewage drainage system etc. trades to transport the liquids containing solid grains and long fibre substance, specially dirty, adhesive and smooth sewage water and matters and to extract pure water and corrosive media.

## 工作条件 Working conditions

1、介质温度不超过60℃，介质密度为1.0~1.3×10<sup>3</sup>kg/m<sup>3</sup>，PH值在5~9范围内；

2、电机部分露出水面不宜超过1/2。

3、本型泵主要零件材料为铸铁，所以不能用于抽送高度腐蚀性液体。

注：用户如有特殊要求(如介质腐蚀性高)，可于订货时提出，以便提供更为可靠材料的产品。

1. Medium temperature not over 60℃, medium density 1.0-1.3×10<sup>3</sup>kg/m<sup>3</sup>, PH value within 5-9.

2. The part of the motor out of water surface has not to be over 1/2.

3. The main parts of the pump are made of cast-iron, so it can not be used to extract high corrosive liquids.

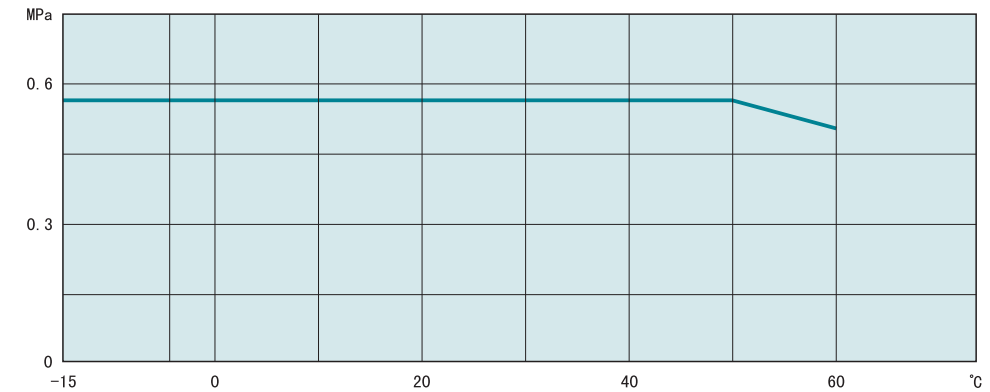
Note: it may be submitted at order in case of some special requirements with users so as for us to provide the products made of more reliable materials.

## 型号意义 Model meaning

AS(AV) 10 - 2 W / CB - A

- 叶轮更新 Impeller renewal
- 抗堵塞撕裂机构 Block-up resisting tear-off mechanism
- 电压为220V Voltage to be 220V
- 电机的极对数 No.of motor's pole pair
- 电机功率P<sub>2</sub>×10(加以调整) Motor's power P<sub>2</sub>×10(to adjust)
- AS单叶片叶轮 AS single-blade impeller
- Av旋流式叶轮 AV swirl-type impeller

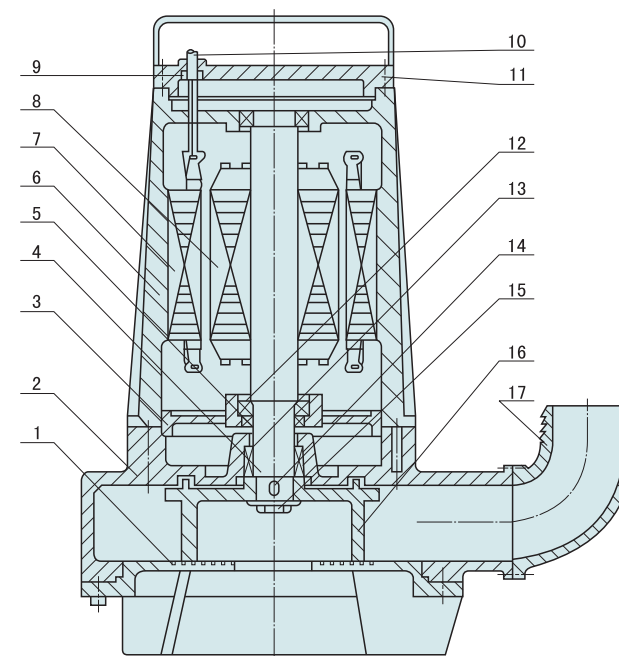
## 压力-温度图 Pressure-temperature graph



## 结构材料表 List of structural materials

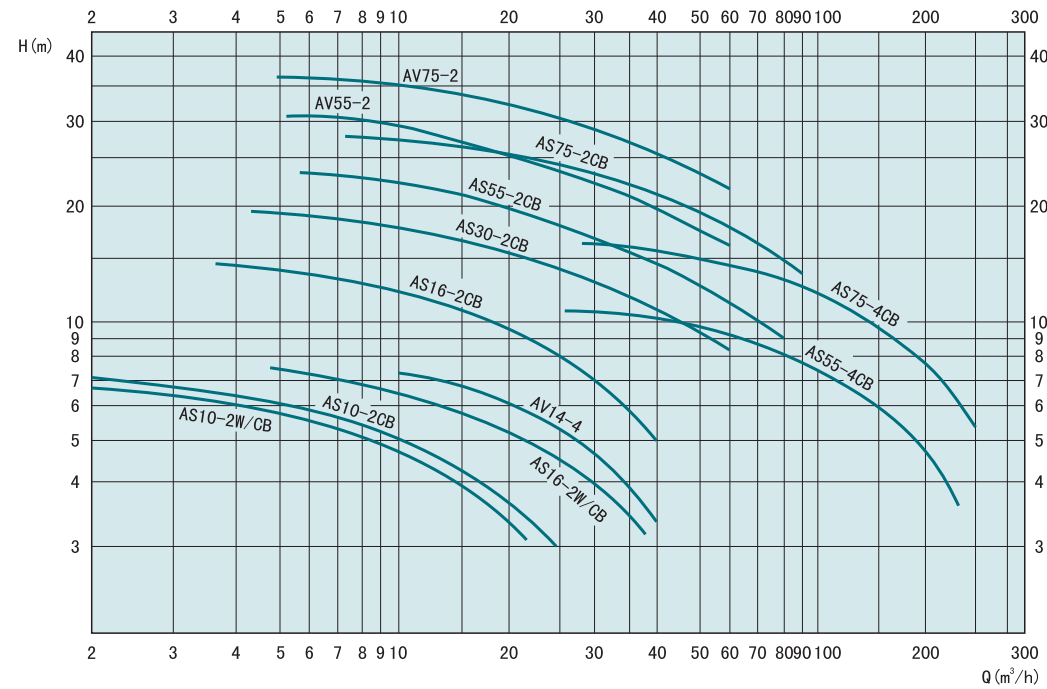
名称 Item	泵体 Pump casing	叶轮 Impeller	电机壳 Motor housing	底座 Foundation	轴 Shaft	平键 Flat key	上盖 Upper cover	轴承体 Bearing body	机械密封 Mechanical seal	叶轮螺母 Impeller's nut
材料 Material	HT200	HT200	HT200	HT200	45	45	HT200	HT200	碳化钨 Tungsten carbide 硬质合金 Carbide alloy	45

## 结构简图 Brief drawing of structure



1	底座 Foundation	10	电缆 Cable
2	泵体 Pump casing	11	上盖 Upper cover
3	轴承体 Bearing body	12	轴承 Bearing
4	轴 Shaft	13	机械密封 Mechanical seal
5	唇形密封 Lip seal	14	平键 Flat key
6	电机壳 Motor housing	15	叶轮螺母 Impeller nut
7	定子铁芯 Stator core	16	叶轮 Impeller
8	转子铁芯 Rotor core	17	弯管 Elbow
9	进线密封 Incoming-line seal		

型谱图 Atlas of style



性能参数表(1-3kW) Performance table

型号 Type	扬程 Head											转速 Speed (r/min)	叶轮直径 Impeller diameter (mm)	配用电动机功率 Matching motor power (kw)	泵口径 Pump cailber (mm)	配用控制柜 Matchng cabinet	通过颗粒 Grain of passing (φ mm)	
	流量 Capacity	2	4	6	8	10	12	14	16	18	20							22
AS10-2W/CB	28.6	16.5	5.2										2850	110	1.1	80	DFK-1.1	30
AS10-2CB	29.4	17.3	6										2850	105	1.1	80	DFK-1.1	30
AS10-2CB-A	32.8	26.6	17	8	1.5								2850	118	1.1	80	DFK-1.1	30
AS16-2CB	52	44	35.5	26.5	17.5	9.6	4	0.6					2850	129	1.5	80	DFK-1.5	30
AS30-2CB	83.5	79	72.2	62.7	49.8	33.7	22.9	15.8	10.2	5.5	1		2850	145	3.0	80	DFK-3.0	40
AV14-4	54	35	17.5	5									1450	170	1.5	80	DFK-1.5	30

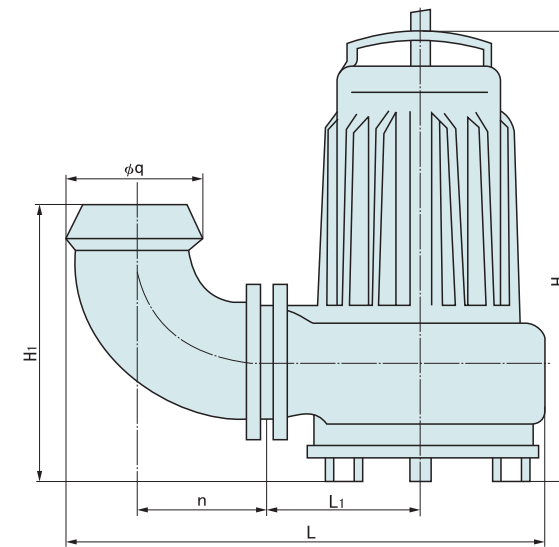
注：1、扬程单位为m，流量单位为m<sup>3</sup>/h；  
2、只有安装时所配软管内径为76mm；  
3、电压380V（AS10-2W/CB电压为220V）；  
4、自动安装时配用自耦装置GAK-80。

Note: 1. mm as the unit of the head, m<sup>3</sup>/h as the unit of the flow;  
2. The I.D. of the flexible tube assembled in the free installation is 76mm;  
3. Voltage is 380V(220V for AS10-2W/CB);  
4. Fit the self-coupler GAK-80 in the auto-installation.

性能参数表(5.5-7.5kW) Performance table

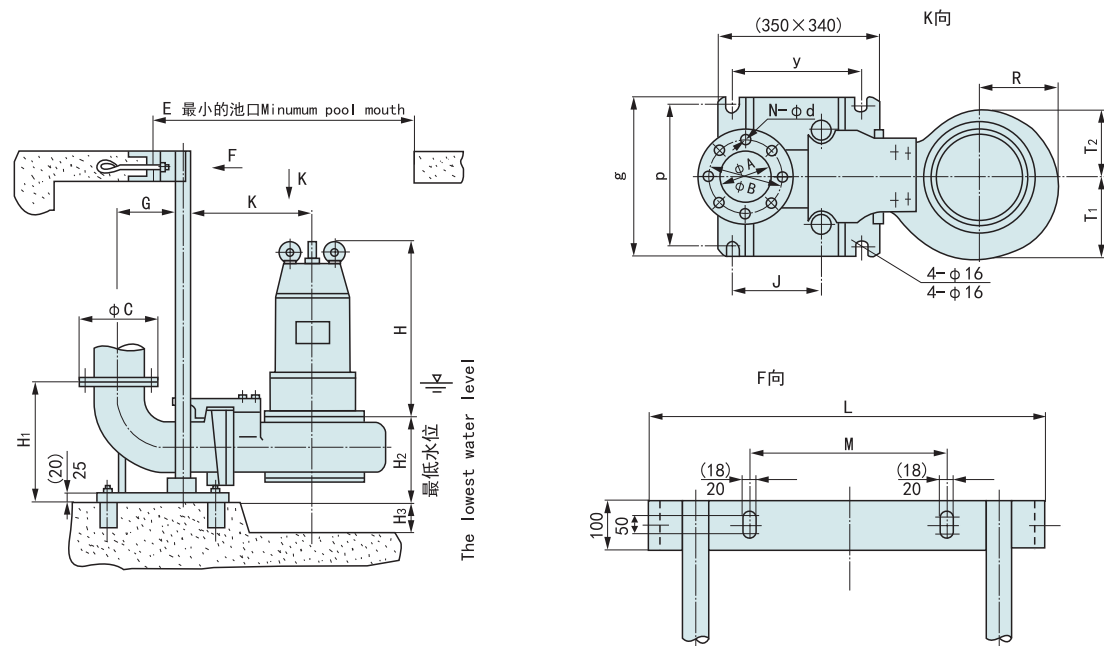
型号 Type	流量 Capacity (m <sup>3</sup> /h)	扬程 Head (m)	效率 Eff. (%)	电机功率 Motor power (kw)	轴功率 Shaft power (kw)	口径 cailber (mm)	转速 Speed (r/min)	通过颗粒 Grain of passing (φ mm)	重量 Weight (kg)	配用控制柜 Matchng cabinet	自耦装置 型号 Auto-coupled type	电压 Voltage (V)
AS55-2CB	40 65 80	14.4 12 10.6	38 45 43	5.5	4.13 4.72 5.37	100	2900	60	165	DFK-5.5	GAK-100	380
AS75-2CB	50 85 100	16.5 13 11	41 50 48	7.5	5.48 6.02 6.24	100	2900	60	185	DFK-7.5	GAK-100	380
AS55-4CB	60 100 120	9.2 7.5 6.8	42 50.5 49	5.5	3.58 4.04 4.53	150	1450	70	180	DFK-5.5	GAK-150	380
AS75-4CB	87 145 174	12.2 10 8.4	43 52 51	7.5	6.72 7.4 7.3	150	1450	70	200	DFK-7.5	GAK-150	380
AV55-2	30 60 90	20 14 10	40 47 45	5.5	4.14 4.73 5.39	100	2900	60	165	DFK-5.5	GAK-100	380
AV75-2	30 60 120	26 20 10	41.3 50.4 48.5	7.5	5.49 6.03 6.25	100	2900	60	185	DFK-7.5	GAK-100	380

自由安装外形尺寸图及尺寸表 Freedom installation drawing and dimension table



型号 Type	L1	L	H	H1	φq	n
AS10-2W/CB	132	343	455	180	φ78	66
AS10-2CB	132	343	455	228	φ78	66
AS10-2CB-A	132	343	455	180	φ78	66
AS16-2CB	132	343	455	228	φ78	66
AS30-2CB	160	390	548	228	φ78	66
AS55-2CB	240	620	705	526	φ127	160
AS75-2CB	240	620	705	526	φ127	160
AS55-4CB	248	745	760	572	φ152	190
AS75-4CB	248	745	760	572	φ152	190
AV14-4	132	343	455	228	φ78	66
AV55-2	240	620	705	526	φ127	160
AV75-2	240	620	705	526	φ127	160

固定式安装外形图及安装尺寸表 Fixed installation drawing and dimension table



型号 Type	φA	φB	φC	K	G	H1	H2	H3	M	g	p	y	N-φd	J	R	T1	T2	L	E
AS10-2W/CB	80	150	190	330	140	350	360	150	400	340	305	255	4-φ18	180	107	107	107	470	500×500
AS10-2CB	80	150	190	330	140	350	360	150	400	340	255	260	4-φ18	180	107	107	107	470	500×500
AS10-2CB-A	80	150	190	330	140	350	360	150	400	340	305	255	4-φ18	180	107	107	107	470	500×500
AS16-2CB	80	150	190	350	140	350	360	150	400	340	255	260	4-φ18	180	107	107	107	470	500×500
AS30-2CB	80	150	190	350	140	350	400	150	400	340	255	260	4-φ18	180	126	126	126	470	500×500
AS55-2CB	100	170	210	460	182	410	560	200	440	340	305	310	4-φ18	250	155	200	230	510	700×700
AS75-2CB	100	170	210	460	182	410	560	200	440	340	305	310	4-φ18	250	155	200	230	510	700×700
AS55-4CB	150	225	265	480	275	590	570	250	525	400	360	300	8-φ18	265	205	155	180	600	700×700
AS75-4CB	150	225	265	480	275	590	570	250	525	400	360	300	8-φ18	265	205	155	180	600	700×700
AV14-4	80	150	190	350	140	350	400	150	400	340	305	255	4-φ18	180	126	126	126	470	500×500
AV55-2	100	170	210	460	182	410	560	200	440	340	305	310	4-φ18	250	155	200	230	510	700×700
AV75-2	100	170	210	460	182	410	560	200	440	340	305	310	4-φ18	250	155	200	230	510	700×700

注：图里括号内尺寸适用于AS10-2W/CB、AS10-2CB、AS10-2CB-A、AS16-2CB、AS30-2CB型号。

Note: the dimension in the bracket in the drawing are suitable for model AS10-2W/CB, AS10-2CB, AS10-2CB-A, AS16-2CB, AS30-2CB.

安装方式 Installation mode

移动式安装

在这种安装形式中，用泵底座支承，出口弯管直接与软管连接，既简单又方便，泵很容易移至不同工地使用。提泵时只需用铁索链穿进起吊把手中，链索放在泵坑(或污水源)上部并系好，起吊简单方便。此方式可配置水位控制浮球开关，全自动水泵控制器。

自动耦合式安装

此安装方式是借用自动耦合装置，使其与泵相连而耦合。底座固定于泵坑底部(在建造污水坑时，应预先埋好地脚螺柱，使用时将耦合底座固定即可)，泵可以在导轨中上下自由移动。当泵放下时，耦合装置自动地与耦合底座耦合；而提升时泵则与耦合底座自动脱落，这种方式可根据用户要求配备水位控制器、中间端子箱及全自动水泵控制器。

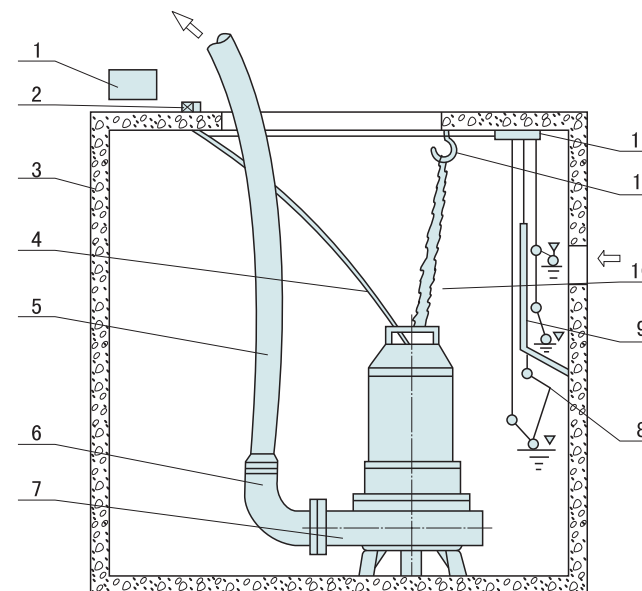
Movable installation

In this mode of installation, the pump foundation is used for support, the elbow at the outlet is directly jointed with the flexible tube, the pump is easy to be moved to other sites, simple and convenient. To lift it, have iron chains through the lifting handle and tied on the upper of the pump pit(or sewage source). With this mode, a water level control float switch and a fully automatic water pump controller can be equipped.

Auto-coupled type installation

This mode of installation is to use the auto-coupler to have it connected with the pump. The foundation is fixed on the bottom of the pump pit(the foot bolts must be built in advance when to build the sewage pit, fix the couple foundation when to use), the pump can freely move in the guide rail. When the pump is placed down, the coupler will automatically couple with the coupled foundation and be apart from it while the pump is lifted. A water level controller, an intermittent terminal box and a fully automatic water pump controller can be equipped with this mode.

移动式安装示意图 Schematic drawing of movable installation



1	电机保护器 Motor protector	7	泵 Pump
2	电缆线出管 Cable outlet pipe	8	浮球开关 Float switch
3	水池 Water pool	9	隔板 Baffle
4	电缆线 Cable	10	小链 Chains
5	出水软管 Water-out flexible tube	11	吊钩 Hanging hook
6	软管接头 Flexible tube union	12	浮球固定架 Float fixed stand

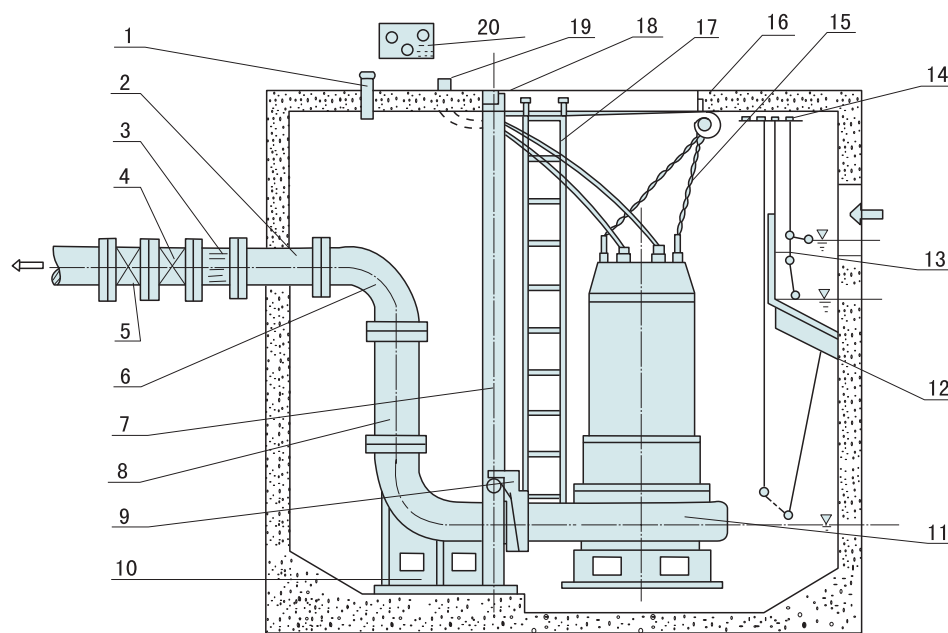
固定式安装示意图 Schematic drawing of fixed installation

注：订货必须提供下列尺寸

- (1)池深：池的下底至上底的高度。
- (2)出水口高：出水口中心线至池的下底的高度。

Note: following dimensions have to be provided at order:

- (1) Depth of pool: the height between lower bottom and upper bottom of the pool.
- (2) Height of water outlet: the height from the central line of the outlet to the lower bottom of the pool.



1	通风节 Venting node	6	弯管 Elbow	11	潜污泵 Submersible sewage pump	16	挂钩 Hanging hook
2	预埋管 Built-in pipe	7	导轨 Guide rail	12	浮球开关(水位开关) Float switch (water level switch)	17	人梯 Ladder
3	膨胀节 Expansion node	8	出水管 Water outlet pipe	13	隔板 Baffle	18	支撑架 Support stand
4	逆止阀 Inverse-stop valve	9	支架 Stand	14	浮球固定架 Float fixed stand	19	电缆出线管 Cable outlet pipe
5	闸阀 Gate valve	10	底座 Foundation	15	小链 Little chains	20	电机保护器 Motor protector

控制器的使用 Use of controller

1、用途

水泵专用保护控制器采用当今世界先进水平的高新技术生产而成，可对本系列水泵进行全自动保护(过载、缺相、短路、渗漏等保护)，实行泵的无人看管，自运行及信号输出，且具有手动和自动两种控制方式可供选择。

2、使用条件

- a. 周围最高气温 $\leq +40^{\circ}\text{C}$ ， $\geq -5^{\circ}\text{C}$ ，且24h平均温度不超过 $+35^{\circ}\text{C}$ ；
- b. 安装地点海拔高度不超过2000m；
- c. 空气月平均最大湿度 $\leq 90\%$ (平均气温在 $25^{\circ}\text{C}$ 时)；
- d. 周围空气中无爆炸危险的介质，且介质中无足以腐蚀金属和破坏绝缘的气体及导尘埃(污染等级为3级)。

3、种类

本型控制器有一控一，一控二(一用一备)，一控三(二用一备)三种。

注：控制器规格见说明书。

1. Purpose

The protective controller specially for water pump is made with the high-tech of the advanced level in the world today, can take fully automatic protection for this series water pump (overload, lack of phase, short-circuit, leakage etc.), look after the pump without any labour power, have the pump automatically run and outpout signals and has manual and automatic two control modes for choice.

2. Condition of use

- a. Maximum ambient temperature  $\leq +40^{\circ}\text{C}$ ， $\geq -5^{\circ}\text{C}$ ，the average temperature in 24h not over  $+35^{\circ}\text{C}$ ；
- b. The elevation at the place of installation not over 2000m；
- c. Maximum humidity of air averaged per month  $\leq 90\%$  (at  $25^{\circ}\text{C}$  average temperature)；
- d. No explosive media in the air around it and no gases and conductive ducts able enough to have metal corroded and insulations damaged in the media(pollution grade to be Grade 3).

3. Varieties

Three varieties with this controller: one controls one, one controls two(one in use one in spare), one controls three(two in use one in spare).

Note: see the operation instructions for the controller specifacitons.



水泵专用控制器外形图  
External drawing of the controller specially for water pump

## 中间端子箱的使用 Use of intermittent terminal box

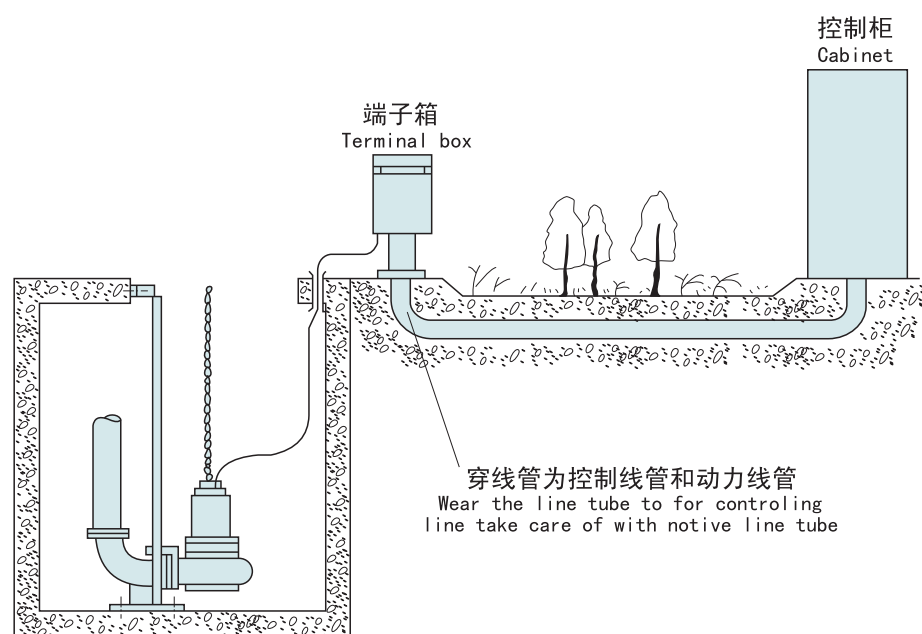
每套水泵应配中间端子箱一只，用于泵与控制器的中间连接，详见下图说明：

- 1、所有信号线可埋一根穿线管；
- 2、动力线按提供的电缆线直径、数量自行确定预埋管的大小；
- 3、动力线和信号线必须分别埋设管道，不可混穿；
- 4、端子箱与控制器之间采用直流电流信号，可长距离输送、无衰减。

One intermittent terminal box has to be fitted with each set of water pump and used for connecting both pump and controller, see the following figure for the details.

1. One wire-through tube is built in for all signal wires;
2. The size of the built-in tube for the power wires can be decided upon the diameter and number of the cable provided;
3. Tubes for the power wires and for the signal ones must be separately built in, not allowed to be mixed;
4. DC current signal is used between the terminal box and the controller, which is required for long distance transmission without attenuation.

## 泵房布置简图 Brief drawing of pump room arrangement



## 运输与使用注意事项 Precautions at transportation and use

1、决不允许用泵的电缆线起吊或悬挂水泵，在搬运或悬挂水泵时，可用带钩的链条钩在把手上或上盖的吊环上；

2、在移动使用时，出水软管可用前面表格规定标准软管接头，接在水泵的出水弯管上，固定使用时，可根据自耦装置在法兰标准设置管路；

3、水泵不能放在污水的出口处，当水泵座放在泥地上或浮沙上时，水泵由于震动，产生下陷，这时建议用户将水泵悬置起来或放在一个较大的底板上；

4、如果泵仍在继续运转，在0℃以下气温时，可以继续使用，但如果停止不用时，则应将泵吊起清洗保管；

5、出水管内径应符合规定的要求，但在输送距离较远时，也可适当减小内径但易引起堵塞，降低输送效率，不经济；

6、在污水中使用的泵，经过长时间运转之后，在机壳的周围可能堆集泥浆等杂物，降低了传热的速度，使泵的内部温度上升，缩短电机的使用寿命，或造成无缘无故的跳闸，因此，每运转一定时段之后(比如降至最低水位)应用软管对泵进行冲洗，保持其清洁；

7、泵密封使用10#~30#机械油进行润滑冷却，由于密封磨损，润滑油会漏出，而输送介质也可能经过密封进入电机，这时请赶快将泵送至本厂修理部门或委托维修点更换密封，以免将水泵电机烧坏；

8、未切断电源时，不得移动水泵，不得在泵工作时接触四周的水源，以防泵万一漏电，而又无地面漏电断流装置时，造成触电事故；

9、潜水电泵安装以后，不宜长期浸泡在水中不用，从而增加电机受潮的机会，同时建议每周至少运转4小时以检查其功能及适应性，否则，应提起放在干燥处备用。

1. It is prohibited to use the pump cable for lifting or hanging the pump, for which, chains with a hook can be used to have them through the handle or the erection ring on the upper cover;

2. In the movable use, use the standard flexible tube union set in the previous table and connect it on the water outlet elbow of the pump; in the fixed use, set up the pipeline upon the flange standard with the self-coupler;

3. Do not place the pump at the sewage outlet and it is recommended for users to suspend the pump or place it on a larger baseplate in case of the pump to sink down due to vibration when it is seated on a mud ground or on floating sand;

4. At a temperature below 0℃, the pump can be continually used if it is going on running, otherwise it has to be lifted and cleaned, then stored;

5. The I.D. of the outlet pipe should the inline with the set requirement, however, it can be properly reduced for a distance transportation, but in this way, block-up is easy to occur to lower the transportation effect, so not economical;

6. Slurry etc, foreign matters piled up around the pump used in sewage after a long time running will lower the heat transmission speed to have the inside temperature of the pump rise and shorten the motor's duration or result in a trip without reason, therefore after every certain period of running(for instance when lowering to the lowest water level), use a flexible pipe to clean the pump to keep it clean;

7. Use 10#~30# engine oil to lubricate and cool the pump's seal. Please send the pump to this Co. or the service point for replacing the seal as soon as possible in order not to have both pump and motor burnt at the time the lubricating oil leaks and the medium being transported goes into the motor through the seal due to worn-out of it;

8. Do not move the pump in case of the power not cut off and do not touch the water source around the pump when it works to prevent electric shock in case of electric leak occurring with it while there is no ground-leak current interrupter;

9. After the pump being mounted, do not let it unused and submerged in water for a long time to result in a chance for the motor to get wet and it is recommended run the pump at least 4h every week so as to check its functions and suitability, otherwise, it must be lifted and placed in a dry place for spare use.

### 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2MΩ；
- 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，地面漏电断路器，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 system to make sure the following electric appliances' protective measures required in each point:

1. Before running the pump, use a 0~500 megohmmeter to check the dielectric resistance between the phases and between the phase and the ground, the lowest value of which should be over 2Megohms;
2. The power device should be safe, reliable and normal and the power's voltage and frequency have to be the set ones (voltage 380V±5%, frequency 50Hz±1%), and the instantaneous ultra-difference should not be over 10%. The sectional area of the cable should be enlarged and connector number should be as less as possible in case of the power used far from the place where the pump is used, otherwise too much voltage lower-down may be produced, and take a sealing and water-preventing treatment at the cable connectors to prevent electric leak;
3. In a four-core cable, the one with a mark "≡" is the grounding wire (green-yellow dual color wire or black wire), and it must be securely grounded and 50mm longer than others so as to guarantee safe use;
4. The electric appliances' protective device can include if conditions permitted: ground protector, ground-leak current interrupter etc., however, in any cases, the slow-melt fuse conforming with the rated current value of the pump must be fitted;
5. The electric appliances' protective device should be prevented from being wet and mounted in a wet-preventing area, the cable should not be placed at the inlet and outlet of the pump;

6. Check the direction in which the rotor moves. The direction check has to be taken at the initial starting of the pump or after it is remounted, it may lower the efficiency of the pump or make the impeller fall off etc. pump damages if the direction is not correct.

To determine the direction, lift the pump before its final installation and let it spot-moving, the direction is correct in case of conforming with the following conditions, or change any two wire's positions within the three wires of the controller to change the direction.

- a. The rotor moves CW viewing from the top of the pump;
- b. The impeller moves CCW viewing from the bottom to upward (i.e. the direction of the inlet).

Note: check each pump separately if a few of pumps are connected to one controller.

### 安装注意事项 Precautions at installation

正确安装使用是该泵长久、正常运转的基本保证，特别提醒用户千万不可大意：

- 1、水泵电源线必须与配套电控装置或匹配热继电器保护器相连接，不得直接与总电源相接；
- 2、无论是移动安装还是自动固定式安装，提泵链索及电缆线均不应垂直落太长以免被泵吸进切断；
- 3、积水池底部泥浆过稠或硬石过多时，应将泵置于该物质之上30cm或将泵放置于一块大的铁板之上；
- 4、水泵排水管应按说明选用，不宜随便改变；
- 5、单台水泵安装在水无可能回流情况下，尽可能不装止回阀；
- 6、双台水泵并联时，不得将闸阀及止回阀安置在主管处，以致泥沙反冲至备用泵上端造成止回阀不能启动，如有可能应在横管处设干井，安装装置防止回阀及闸阀；
- 7、确保电泵转向正确后，方可投入连续运转；
- 8、本系列水泵长期使用过程中，无论自动、手动、不得频繁启动，一般每小时不宜超过六次；
- 9、维修水泵时，必须切断电源。

Special attention must be paid to pump installation so as to basically guarantee it has a long and normal run:

1. The power cable of the pump should be first connected to the equipped electric control device or the matching thermal relay protector and then to the main power;
2. Both chains for lifting the pump and cable should not be too long fall so as to avoid being sucked in and cut down by the pump, whether in movable or auto-fixed mode of installation;
3. In case of too thick slurry or too many hard stones on the bottom of the water storing pool, place the pump 30cm above them or on a big iron-plate;
4. The drainage pipe of the pump has to be selected according to the related instruction and can not be changed at will;
5. Do not mount a check valve as can as possible for the single pump mounted under the condition the water can not flow back;
6. When two pumps are in parallel, do not mount both gate and check valves on the main pipe so as to prevent the check valve from being unable to start due to the silt's reversed rushing onto the spare pump, set up a dry well at the horizontal pipe to place both gate and check valves if possible;
7. Do not let the pump continually run until the movement direction is checked surely correct;
8. During a long time use of the pump, do not start it frequently whether manual or automatic starting, not over 6 times per hour in general;
9. The power must cut off when to repair the pump.



## 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 $2M\Omega$ ，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 $0.3\sim 0.5mm$ ，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 $0.5kg/cm^2$ )。

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 has a good performance and reliable movement, each of them gets a strict test before ex-works, the permanently lubricated ball bearing and the quality mechanical seal moving in the oil chamber makes the pump with maximum durability, however, peridical check and maintenance are still required to make sure of its duration of use.

1. Periodically check the dielectric resistance between the phases and between the phase and the ground of the motor, the value of which should be over 2 megohms, otherwise, the motor has to be removed for exhaul(drying treatment) and check if the grounding is secure;

2. The space between the impeller and the tear-off mechanism(the foundation's cover) is  $0.3\sim 0.5mm$ , it may be enlarged due to worn-out when used in the medium for a long time, then adjustment of it should be taken, the way of which comes as: cut off the power, loosen the fixing screw, then rotate the cover in a proper angle to reset the original space;

3. Put the pump into pure water and let it run for a few minutes after being used for many times to prevent the deposits from staying inside of the pump to keep it clean;

4. After half-year running of the pump in the set medium, check the oil chamber's sealing status, replace  $10\# \sim 30\#$  engine oil and, if necessary, replace the mechanical seal. For the pump used in an odious condition, overhaul should be taken often;

The way to change the oil: properly place the pump to have the spiral cork of the oil chamber(located on the inner side of the outlet) downward to drain out the lubricating oil, then use a detergent oil to clean the chamber, inject oil of proper amount(about  $70\% \sim 80\%$ ), replace the O-ring with a new one and tighten the cork;

Rinse the oil chamber and inject oil into it again according to the provision if water is found existing in the oil(milky emulsified liquid). Check it again in three months and, if the oil becomes the emulsified liquid again, check the mechanical seal and, if necessary, change it(contact with the service dept of this Co.), air tightness test should be done(with air pressure  $0.5kg/cm^2$ ) if changing it by users.

5. In case of a failure, please contact with the service dept of this Co.instead of making do for the moment, still more, blindly removing and repairing when the cause can not be determined and it can not be settled even with the trouble-shootings provided later.

## 故障原因及排除方法 Failures causes and troubleshooting

故障 Failure	原因 Cause	解决方法 Troubleshooting
泵的流量或扬程下降 Pump's flow or head lowers	<ol style="list-style-type: none"> <li>泵反转 Pump reversedly runs</li> <li>输送扬程太高 Too high transporting head</li> <li>抽吸的介质走旁路 The extracted medium is from by-pass</li> <li>出水管泄漏 Outlet pipe leaks</li> <li>出水管局部可能被沉积物堵死 Partial outlet pipe may be blocked up by deposits</li> <li>泵局部堵塞 Partial pump blocked up</li> <li>叶轮/底座磨损 Impeller/foundation worn out</li> </ol>	<ol style="list-style-type: none"> <li>关掉控制箱的总电源，调换任何二相电源线 Turn off the main power of control box and change any two phase wires of the power</li> <li>检查：a.选择的泵型号是否正确； B.出水管尺寸是否正确 Check: a.if the model of the pump correctly selected; b.if the dimension of outlet pipe correct</li> <li>检查阀门是否被关死，然后满负载测试泵 Check if valve deadly closed, then test the pump with full load</li> <li>找出泄漏，并进行修正 Find the leak point and correct it</li> <li>检查管线，清理或更换新的 Check the pipeline, clean it up or replace it</li> <li>吊起泵清理，如果泵放在滤网内，同样也需检查和清理 Lift the pump to clean it, it is also necessary to check and clean up if the pump is placed in a filter screen</li> <li>吊起泵调整间隙或更换零件 Lift the pump and adjust the space or replace parts</li> </ol>
泵运转后无流量 No flow after the pump starts running	<ol style="list-style-type: none"> <li>气塞 Air blocked up</li> <li>检查出水排放阀门 Check outlet drainage valve</li> <li>泵反转 Pump reversedly runs</li> </ol>	<ol style="list-style-type: none"> <li>a.接二连三地打开和关闭阀门几次 a.Successively open and close valve several times b.启动/停止泵几次，每次重新启动之间间隔为2~3分钟 b.Start/stop pump several times with an interval between startings 2~3min c.根据不同的安装方法，检查是否需装一个空气释放阀 c.Check if need to mount an air-release valve upon different ways of installation</li> <li>a.如果阀门处于关闭状态应打开 a.Open the valve if it is in closed status b.如果装反了，应重新倒过来 B.Upset it if up-side-down mounted</li> <li>关掉控制箱的总电源，调换任何二相电源线 Turn off the main power of control box and change any two wires of the power</li> </ol>
泵起动和停止太频繁 Too frequent start and stop of the pump	<ol style="list-style-type: none"> <li>浮球开关定的距离太短 Distance set for the float switch too short</li> <li>逆止阀故障，逆止阀不能止回，使液体倒入污水池 Inverse-stop valve failed, it can not stop back to have liquid flow back to the sewage pool</li> </ol>	<ol style="list-style-type: none"> <li>重调浮球开关，延长运行时间 Readjust the switch to extend running time</li> <li>检查并维修 Check and repair</li> </ol>

故障原因及排除方法 Failures causes and troubleshooting

故障 Failure	原因 Cause	解决方法 Troubleshooting
停止失灵 Stop function out of work	1、浮球开关“停止”功能失灵 “STOP” function of float switch out of work 2、浮球上浮子卡在“工作”的位置 The float is jammed at “WORKING” position	1、检查，如需要应予以更换 Check, replace it if necessary 2、松开，如需要的话，可改变位置 Loosen it, change the position if necessary
泵启动后，断路器/过载器跳开 After the pump is started, interrupter/overload trips	1、电压低 Low voltage 2、电压过高 Too high voltage 3、电机接线不对 Wrong wiring of the motor 4、在蜗壳底部堆积了泥浆或其它沉积物 Slurry or other deposits piled up on the bottom of the spiral casing	1、a.检查控制盒电压，如果电压过低，暂时不能使用 a.Check the voltage of control box, do not use if for the moment in case of a low voltage 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 b.Too big voltage step-down due to too long cable, shorten it as can as possible and properly select a thicker one 2、装变压器，将电压调到规定的范围 Mount a transformer to adjust the voltage within the set range 3、检查在控制盒中的电缆彩色编号和接头标号并检查接线 Check the color and connector codes of the cable in the control box and the wiring 4、清理泵的污水池，参见安装说明中的有关部分 Refer to the related part in the installation instructions to make up the sewage pool of the pump
泵不能启动，熔丝熔断或断路器跳开 Pump can not be started, fuse melted or interrupter trips	1、浮球故障 Float failed 2、绕组、接头或电缆断路 Winding, connector or cable interrupted 3、泵被堵塞 Pump blocked up	1、检查使用旁路浮球开关是否能启动泵，如是，应检查浮球开关 Check if pump can be started by means of the bypass float switch and check the float switch if can 2、用欧姆表检查，如果证明是断路，检查绕组、接头及电缆 Check with an ohm gauge and check winding, connector and cable if proved interrupted 3、切断电源，将泵移出污水池，清除障碍物复位前试用一下 Cut off the power, move the pump out of the sewage pool to get rid of the obstacles and take atrial before resetting it
泵启动不了，但熔丝没断或过载保护器不跳开 Pump can not be started, but fuse not melted or overload protector not trip	1、没电 No electricity 2、绕阻、电缆、接头或控制盒断路 Winding, cable, connector or control box interrupted	1、检查控制盒是否有电 Check if the control box powered 2、检查电缆、电机的接头和绕阻 Check cable and motor's connector and winding