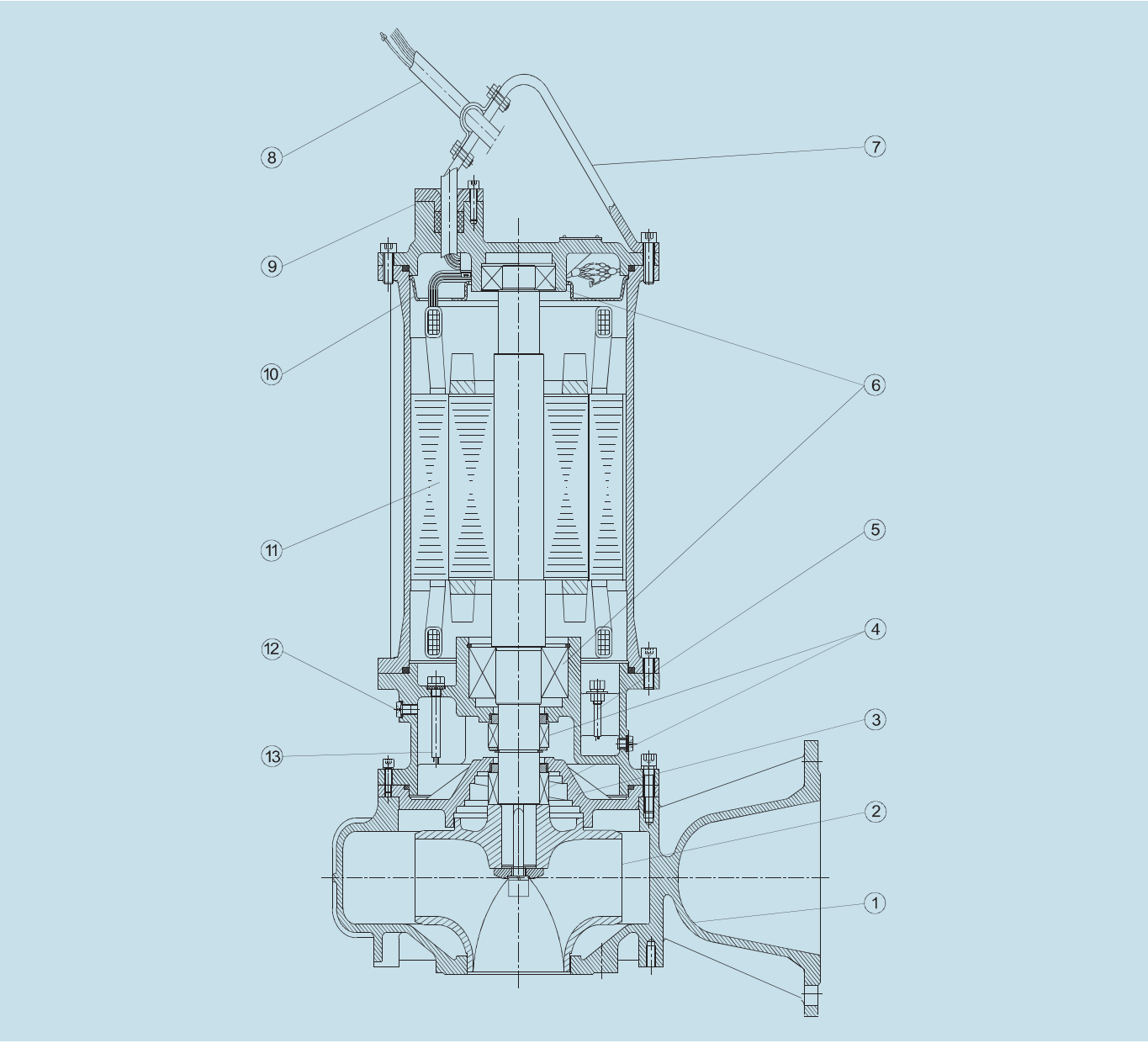
VII.Universal pump installation design

The installation mode is diversified, including automatic coupling type installation. The pump and the outlet pipe are connected through the outlet pipe seat of the coupling device. No conventional fasteners are used.

WQ(11-22kW)Series Submersible Pump

11kW-22kW Submersible Structural Diagram



1. Casing 2. Impeller 3. Pump Cover 4. Mechanical Seal 5. Leakage Detector
6. Bearing 7. Lifting Handle 8. Cable 9. Cable Seal 10. Wiring Cover
11. Submersible Motor 12. Screw and Filler 13. Leakage Detector

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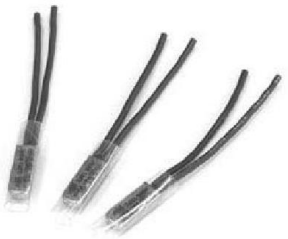
Protection Device: The pump is equipped with motor winding overheating protection components, motor cavity oil and water probe, oil chamber cavity leakage probe.In order to ensure the safe and reliable operation of your pump, especially to prevent the burning of the motor, it is recommended to use our special electric control cabinet for submersible sewage pump.When the user prepares the electric control cabinet, please contact the professional group of the electric control cabinet of our company for any electrical technical problems, especially for the electrical technical problems of the protective device.



Overheating protection: The overheating protection element is a temperature controlled electrical device embedded in the stator windings of the motor.Under abnormal operation condition, when the winding temperature reaches the set value of the overheat protection element, the overheat protection element will make the "overheat" indicator light on through the electric control cabinet and automatically stop the motor, remind the operator to check and find out the cause of the overheat of the motor.
After the winding temperature drops, the machine will return to the starting state.

Leakage detector: The oil-water probe is used for detecting water leakage or oil leakage.
The leakage probe in the oil chamber is called the oil probe for short.When the mechanical seal on the impeller side is damaged, When the water in the oil leakage chamber reaches a certain degree, the two electrodes of the water leakage probe will conduct an alarm signal (indicator light is on) through the electric control cabinet to remind the operator to timely check the mechanical seal or change the oil in the oil chamber.
The leakage probe in the motor cavity is called water probe for short.It is installed in the lower side of the motor cavity and the cavity next to the bearing. The cavity has holes and is communicated with the bearing chamber.When the mechanical seal on the motor side fails, the oil in the oil chamber enters the cavity through the bearing chamber, or the water entering the motor enters the cavity, the two electrodes of the leakage probe will be conducted, and the alarm signal (indicator light) will be sent out through the electric control cabinet and the pump will be stopped automatically to remind the operator to check the pump.

Hoist: The 304 SS lifting brackets are designed with sufficient space for the easy access of hooks, making the lifting easier and endurable

Materials Of Main Parts

NO.	Name		Material
1	Impeller、Pump Cover		Ductile iron
2	Casing,Terminal Box、Bracket		FC250
3	Shaft		SUS420
4	Motor insulatior		180˚C Insulation grade H
5	Bearing Brand		SKF
6	Mechanical Seal	Brand	Burgmann
		Motor side friction pairs	Graphite/SiC
		Pump side friction pairs	SiC/WC
7	O-ring		NRB 40
8	Cable seal ring		

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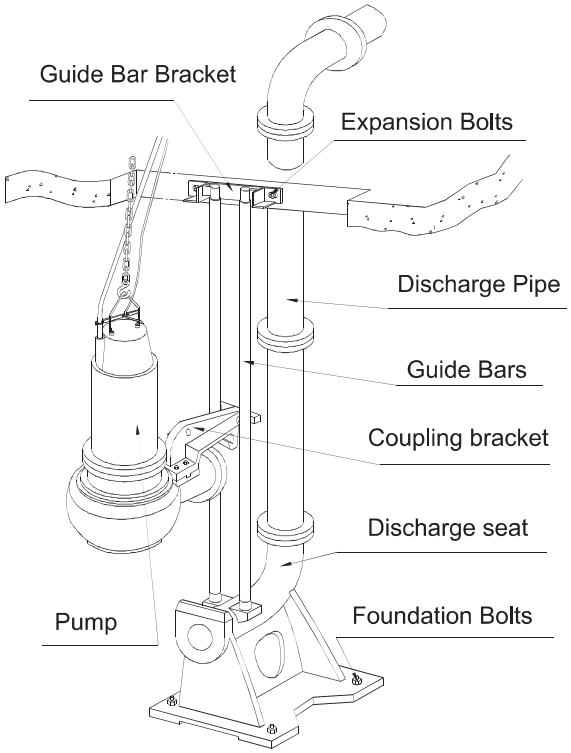
Installation Modes

WQ Submersible sewage pump can be installed through auto-coupling installation (Z), fixed base installation (P), fixed base installation (F), mobile hose installation (R) and mobile pipe installation(Y). All above-mentioned installation modes are simple, and they will be introduced respectively as below.

Automatic Coupling Installation(Z)

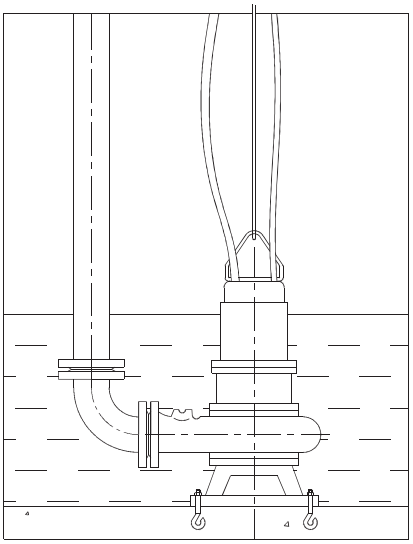


Automatic coupling installation actually USES coupling device to connect pump and pipeline.With the coupling device, the pump and the outlet line is independent of each other, without the need for conventional fasteners connection, so pump and outlet line connection and disconnection is very easy.Coupling device is very simple in fact, only out of the water pipe seat, guide rod, guide rod frame, coupling the four things, guide rod only play a guiding role, do not force, with ordinary water pipe or steel pipe can be, users can be self-provided, and can be very convenient according to the depth of the pool cut into the required length.When installation, the outlet pipe, guide rod, guide frame installed, the coupling loaded on the pump body, lift pump, wear the coupling frame of semicircle orifice into the guide rod and the pump to slide along the guide bar, coupling will put the pump body and outlet pipe fasten, at the same time, the pump body outlet and outlet pipe entrance automatic alignment, automatic tiejin flange end face.When you need to repair the pump, just put the pump up, the pump body and the outlet pipe seat off.This way of installation, really save worry, effort, trouble.

Since the coupling device and the pump are relatively independent, you can still use the original coupling device if your pump station needs to change to the same caliber pump with low head or high head due to the change of circumstances.

Fixed Installation(P)

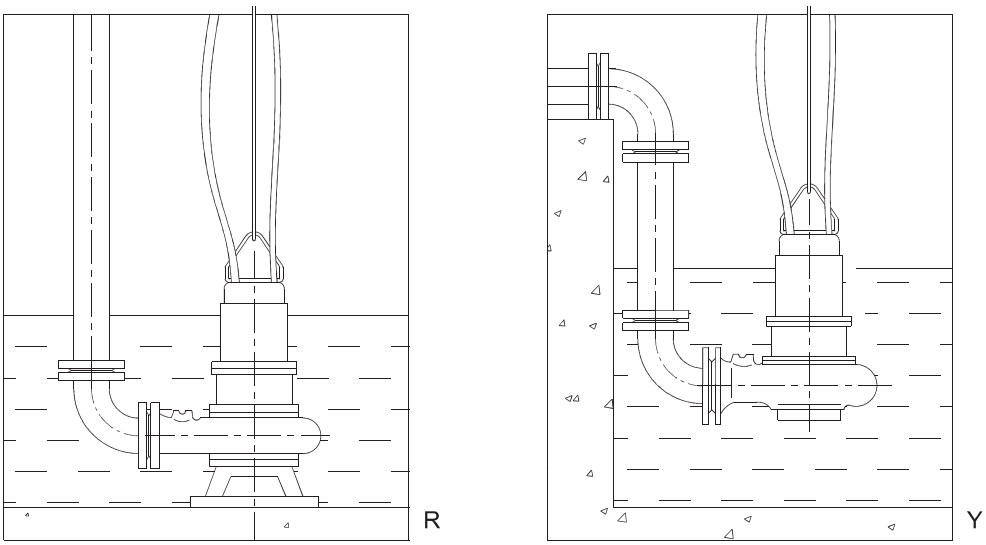
Fix the supporting base on the foundation and connect the outlet pipe to operate.The base needs to be bolted.



P

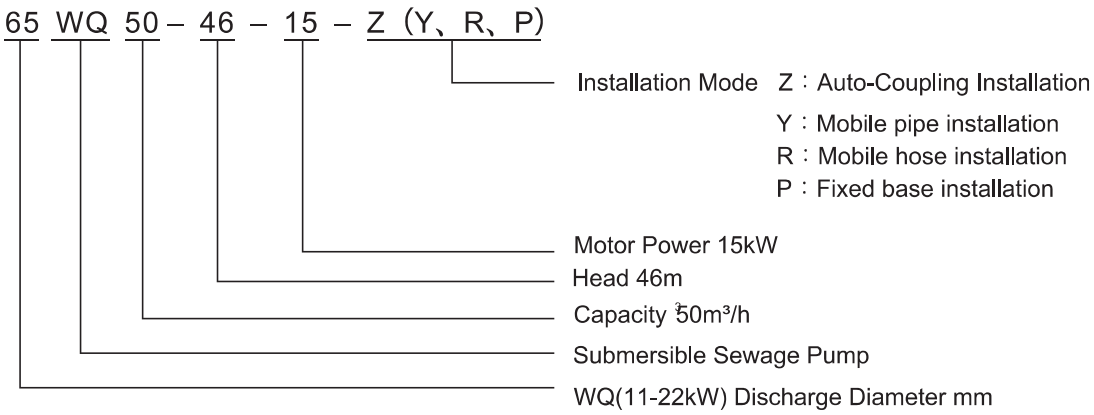
Moblie Installation (R、Y)

Support the pump by its base and connect the discharge hose or pipe to run the pump. This mode is mainly used for emergency use or repair or construction. If the pipeline for mobile pipe installation has enough stiffness, it is acceptable to hang the pump by pipeline for use.



Technical Description

Model Description



Rated Voltage, Rated Frequency:
The rated voltage of the motor is 380V and rated frequency is 50Hz

Connection Method Of Lead Wire Of Motor Winding:
Pump delta (delta) connection, pump factory, connection line cavity has been connected by this.It can be started by direct start, auto - drop start or external soft starter.

Direction of rotation:
The impeller rotates counterclockwise from the suction inlet of the pump.

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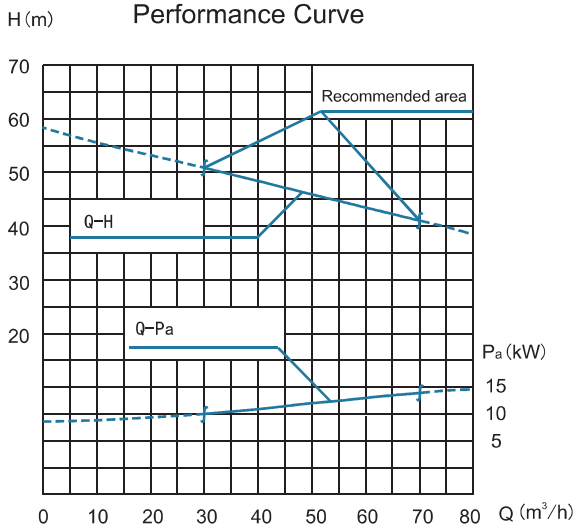
Descriptions of performance curve and main parameters

Performance Curve



Main Parameters

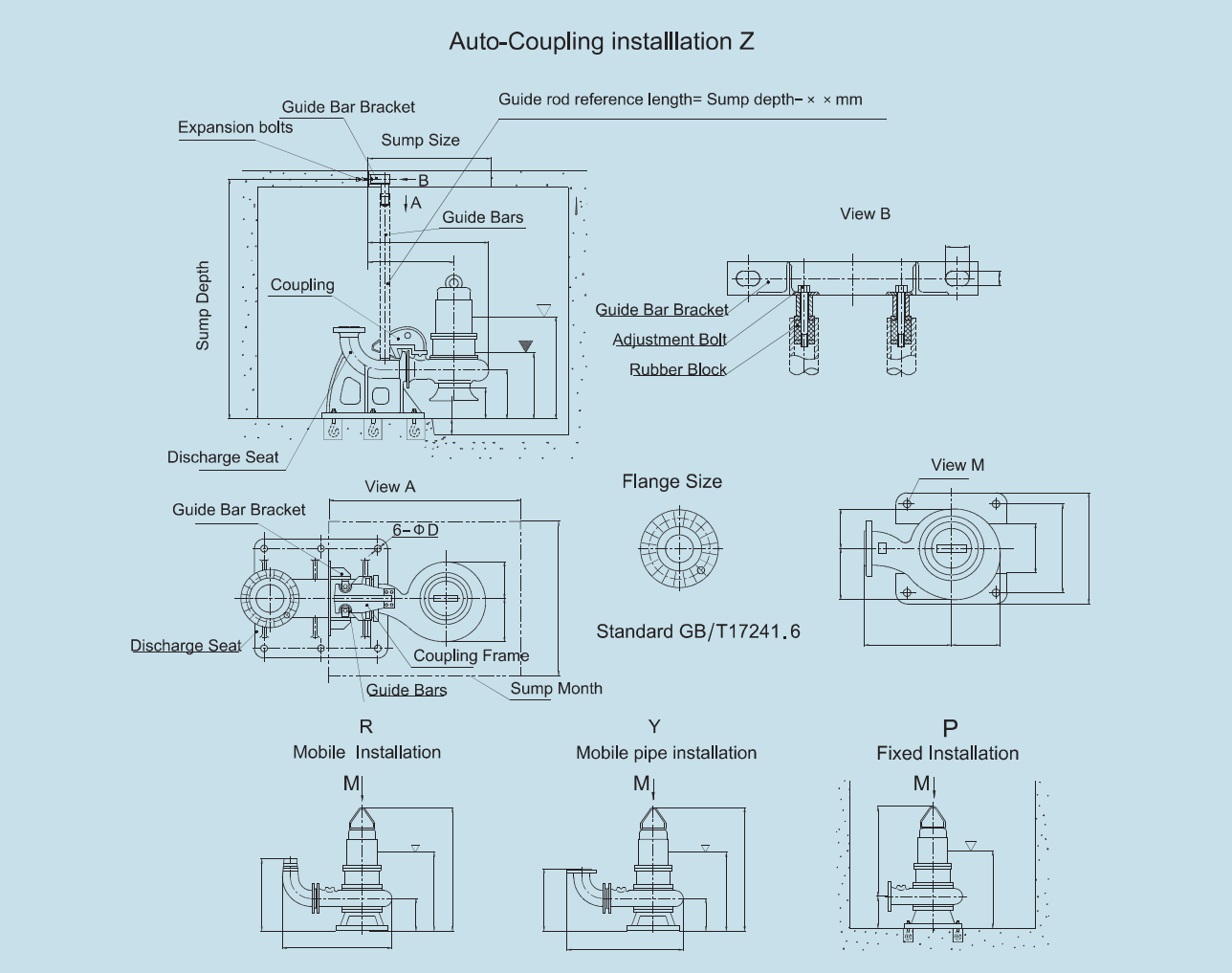
Discharge:65mm

New Model	Old Model	Channel (mm)	Speed (r/min)	Weight (kg)
65WQ50-46-15	WQ2210-2112	38x38	2940	136
Motor Power (kW)	Rated Current (A)	Factor cos ϕ	M-Effici. (%)	Lock/Rated Torque
15	29	0. 9	88. 8	2. 4

The solid parts of the curve in the above diagram denote the recommended operation range of the pump. The shaft power will rise no further after reaching a certain value. Generally, the overloading-proof pump poses no risk of overloading, and even the occasional minor overload is limited in nature. Therefore, the motor is safe under all flow conditions of the pump. However, it's best to use the pump within the recommended scope, as the pump can realize highest efficiency and sustainability within the recommended scope. However, when the flow is less than the left boundary, the pump efficiency will be really low causing high radial force and a broken key or shaft. When the flow is higher than the right boundary, the pump will create vibration and noise problems.

Please refer to "Performance Specification of WQ Series Submersible Sewage Pump" for the maximum sizes of solid contents. For the WQ2368-4149 pump shown in the figure, the diameter of the solid contents shall not exceed 100mm. The pump weight excludes accessories (such as coupling device, suction elbow, base, elbow connector, and hose elbow connector) required for diversified installation modes.

Introduction of Installation Sketches



1. All guide rod brackets can be fixed by M16×150 type I steel expansion bolts. The expansion bolts are easily available and can be prepared by clients or procured from our company. Function the rubber block on guide rod bracket: Tighten the adjustment screw on the rubber block to expand the rubber block tightly in the bore of guide rod and stabilize the guide rod.
2. Calculate the length of the guide rod as per the “sump depth” indicated on the diagram. Refer to attached Table 1 for the related information conaraing the guide rod.
3. For the coupling installation of pump without flared water inlet pipe, fabricate the bottom of the sump to a flat plane so that the height of the water discharge pipe seat can guarantee enough height between the suction the pump and the sump bottom to provide good suction conditions for the pump. Therefore, it s unnecessary to fabricate a boss for the discharge pipe seat, which can avoid construction troubles.
4. “▽” denotes the minimum liquid level required for the running of pump. The water level shall be higher than the minimum level during running the pump. If possible, completely immerse the pump to sufficiently cooling the motor. The minimum water level can be controlled by the float switch. Our special electric cabinets of submersible sewage pumps, a type of level control. If the level is high, the pemp will stop.
5. For pumps of mobile installation mode, we can provide the hose elbow connectors or the elbow connectors For mobile hose please refer to the attached Table 2 for the inside diameters of hoses applicable for diversified diameters of pumps.
6. For pumps of the same mode, the base is the same for fixed base installation and mobile installation, the shape and size of the base is shown in view M.
7. GB/T17241.6-2008/XG1-2011standard The flange size indicates the discharge and suction size of pump. The flange dimensions follow standard requirements: GB/T17241.6-2008/XG1-2011.

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Appendix 1 Pump guide-bar configuration and dimensions

Pump Discharge (mm)	Guide-bar Stainless steel pipe/ water pipe	Guide Bar Length= (Sump-L) ±15mm The following is the size L
50	1″ /32×3.5	300
65		305
80		425
100		410
150	2″ /60×5	435
200		540
250		630
300	3″ /89×5	655
350		900

Appendix 2 Pump sofe pipe

Pump discharge diameter(mm)	50		65	80	100	150
Equipped sofe pipe bent joint	50-6	50×65-6	65-6	80-6	100-6	150-6
Equipped sofe pipe inner diameter(mm)	64	76	76	89	102	152

Appendix 3 The anchor bolts of automatic coupling installation discharge base.

Pump Discharge DN (mm)	Anchor Bolt (GB/T799-1988)		
	Model	Quantity	Anchor Bolt Hole L×W×H (mm)
50	M16×220	4	80×80×270
65			
80	M20×300		100×100×350
100			
150			
200	M24×300		
250	M30×400		160×160×450
300			
350		6	

Appendix 4 anchor bolts of fixed base mounting installation

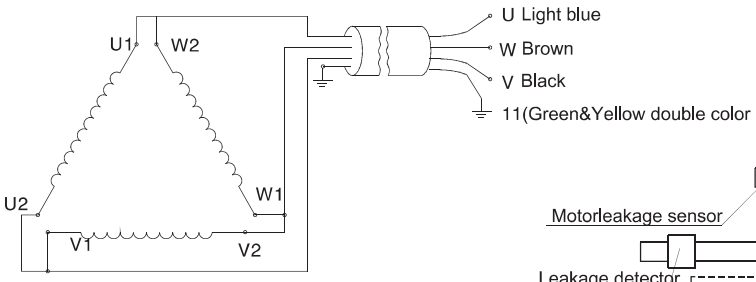
Base Hole	Anchor (GB/T799—1988)	
	Model	Anchor Bolt Hole L×W×H (mm)
Φ18、Φ20	M16×220	80×80×270
Φ25、Φ26	M20×300	100×100×350
Φ30	M24×300	

Appendix 5 Weight sheet of coupling parts

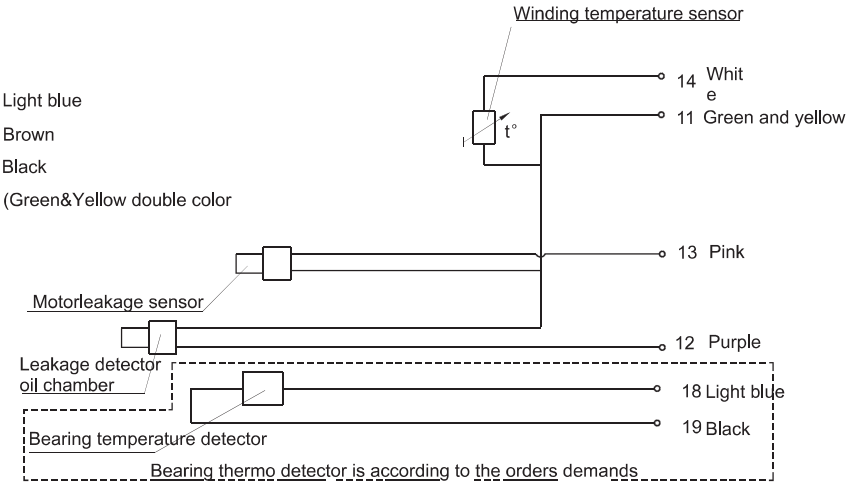
Pump Discharge (mm)	Coupling Parts		
	Discharge Base (kg)	Coupling Frame (kg)	Guide-bar
50	21.5	6	2.45kg/m
65	27.5	7.1	
80	41.3	8.1	
100	37	9.3	
150	74.3	20	6.78kg/m
200	119	24	
250	232	46	
300	334	64	10.36kg/m
350	428	106	

WQ (11-22kW)Submersible sewage pump control cable wiring diagram

Wiring diagram of power wiring
(Inner Delta Connection)



Wiring diagram of control wiring



The monitor elements of motor protection system performance comparison sheet

Protection element	Winding themal element (120℃)	Motor chamber Leakage detector	Oil chamber Leakage detector	Bearing temperature pt100
Control cable code	11-14	11-13	11-12	18-19
Normal(Ω)	0	≥30KΩ	≥15KΩ	at 0℃, a bout100Ω
Fault(Ω)	∝	<30KΩ	<15KΩ	at 95℃, a bout136Ω

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WQ(11-22kW) Submersible pump leakage and thermal protection

KQ510 Leakage and thermal protector

KQ510 leakage above-thermal protector can monitor oil chamber leakage, motor chamber leakage, joint box leakage and winding above-thermal and express fault signs.

Supplied Power：AC220V，50Hz，Input Power 5W。

Work Environment ：Temperature-20ºC~ +50ºC，Relative Humidity≤8 5%RH。Contactor Capacity：5 A 250VAC

The protector outside shown as below：

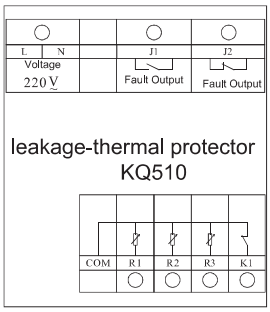
Sign input

COM&R1 are input of oil chamber leakage sensor

COM&R2 are input of motor chamber leakage sensor

COM&R3 are input of wire box leakage sensor

COM&K1 are input of winding thermal sensor



Fault output

J1 is a fault output sign. It is open if there is no fault and it is closed if there is any fault.

J2 is a fault output sign. It is closed if there is no fault and it is open if there is any fault

Fault check

When the resistance ,detected the oil chamber leakage probe, is less than 15K , the indicator light turn on and the fault sign is output ,then the relay work. When the resistance is more than 20K, the fault is removed and the protector turn normal. There is 1s ~5s delay for the input sign and less resiatance is for less delay time.

When the resistance ,detected the motor chamber leakage probe, is less than 30K , the indicator light turn on and the fault sign is output ,then the relay work. When the resistance is more than 35K, the fault is removed and the protector turn normal. There is 1s ~5s delay for the input signand less resiatance is for less delay time.

When the resistance ,detected the joint box leakage probe, is less than 30K , the indicator light turn on and the fault sign is output ,then the relay work. When the resistance is more than 35K, the fault is removed and the protector turn normal. There is 1s ~5s delay for the input sign and less resiatance is for less delay time.

When the winding above-thermal probe detects that the temperature exceed the normal value, the indicator light turn on and the output relay work. When the temperature get down and normal, the probe turn closed and the fault is removed. The protector reverts to the initial state。

KQ1010 leakage above-thermal protector

KQ1010 type leakage above-thermal protector can detect oil chamber leakage, motor chamber leakage, joint box leakage and winding above-thermal state and output the fault signs. And it canmake the two PT100 temperature sensors show temperature value and set specific alarm temperature.

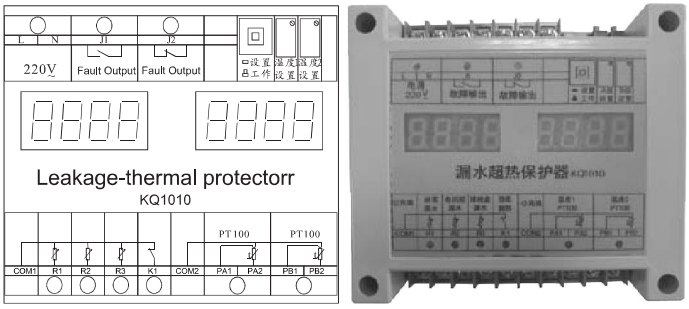
Power: AC220V, 50HZ, input power 5W

Work environment: temperature: -20~+50 RH<85%

Relay contactor capacity: 5A 250VAC

PT100 temperature value shown range:-199~+199

The protectoe outside below:



Sign input

COM1&R1 are input of oil chamber leakage sensor
COM1&R2 are input of Motor chamber leakage sensor
COM1&R3 are input of wire box leakage sensor
COM1&K1 are input of winding thermal sensor
COM2、PA1&PA2 are temperature PT100 input

COM2, PA1 and PA2 are input signs of temparature 1 PT100. It is three-wire system joint.(Two lines with the same color in PT100 is joint with COM2 and PA1. The other line is joint with PA2)
COM2, PB1 and PB2 are input signs of temparature 2 PT100. It is three-wire system joint.(Two lines with the same color in PT100 is joint with COM2 and PB1. The other line is joint with PB2)

Fault output

J1 is the fault output,turn off when there is not fault, turn on when there is any fault;
J2 is the fault output,turn on when there is not fault, turn off when there is any fault.

Release the button and the display shows the temperature detected by the two PT100s
Press the button and the display shows the alarm temperature
T1 inductor can change the line 1 PT100 alarm temperature value.
T2 inductor can change the line 2 PT100 alarm temperature value.

Fault check

When the resistance ,detected the oil chamber leakage probe, is less than 15K , the indicator light turn on and the fault sign is output ,then the relay work. When the resistance is more than 20K, the fault is removed and the protector turn normal. There is 1s ~5s delay for the input sign and less resiatance is for less delay time
When the resistance ,detected the motor chamber leakage probe, is less than 30K , the indicator light turn on and the fault sign is output ,then the relay work. When the resistance is more than 35K, the fault is removed and the protector turn normal. There is 1s ~5s delay for the input sign and less resiatance is for less delay time
When the resistance ,detected the joint box leakage probe, is less than 30K , the indicator light turn on and the fault sign is output ,then the relay work. When the resistance is more than 35K, the fault is removed and the protector turn normal. There is 1s ~5s delay for the input sign and less resiatance is for less delay time.
When the winding above-thermal probe detects that the temperature exceed the normal value, the indicator light turn on and the output relay work. When the temperature get down and normal, the probe turn closed and the fault is removed. The protector reverts to the initial state. There is time delay of 1s~2s.

PT100 temperature detection

There are double PT100 input for the protector design. And three-wire system is adopted to remove the influence to temperature caused by too long PT100 line. Temperature detection range is -199~+199, which is shown on the display. When temperature exceeds alarm temperature value, the indicator light turn on and the relay works. When temperature detected is less than the value set, the fault goes waay and the protectoe reverts to the initial state.

Set PT100 alarm temperature

Two PT100 alarm temperature can be set. Press the setting alarm temperature button, the window shows the page of setting alarm temperature. Adjust the two alarm temperature setting inductor and change alarm value. After that, press the setting button again and the window shows the temperature detected by PT100.

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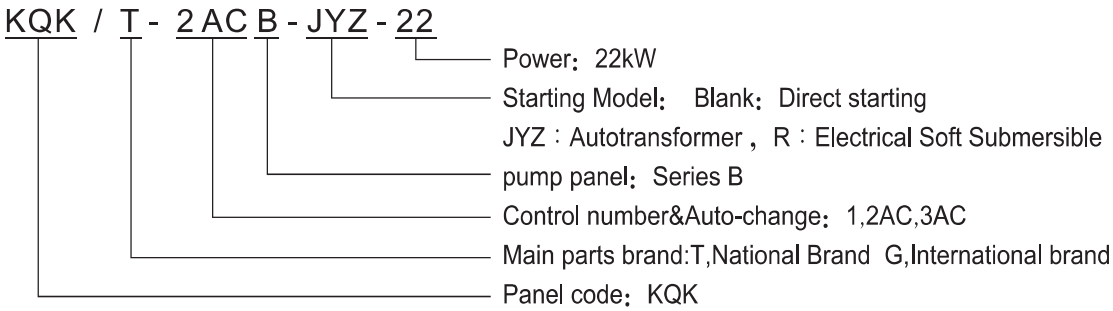
WQ(11-22kW) submersible pump special control cabinet for introduction

Submersible pump control panel

KQK-B type control cabinet is an economical, safe and reliable automatic control system.The control cabinet is equipped with low voltage electrical appliances and liquid level sensors of well-known brands at home and abroad, with protection functions such as short circuit, missing phase, overload, leakage in motor cavity, leakage in oil chamber and over-heat of windings.The control cabinet can be equipped with various level sensors such as float level switch, input type or ultrasonic wave, etc. It can automatically control the start and stop of the water pump according to the level of the level when no one is on duty.In addition to the single control products, all the products with the control of the main and standby pumps have the function of self-closing the faulty pump and automatic input of the standby pump.Two and three pump control cabinet can achieve automatic alternating or cycle operation, to achieve the running time of each pump is equal.

General configuration of the control cabinet components are mainly tianzheng, zhengtai, delixi and other well known domestic brands;The high-end control cabinet components are famous international brands such as schneider, Siemens and ABB.



WQ(11-22kW) Submersible pump control panel selection

Direct starting

The following table lists the type and size of the control cabinet used for the direct starting

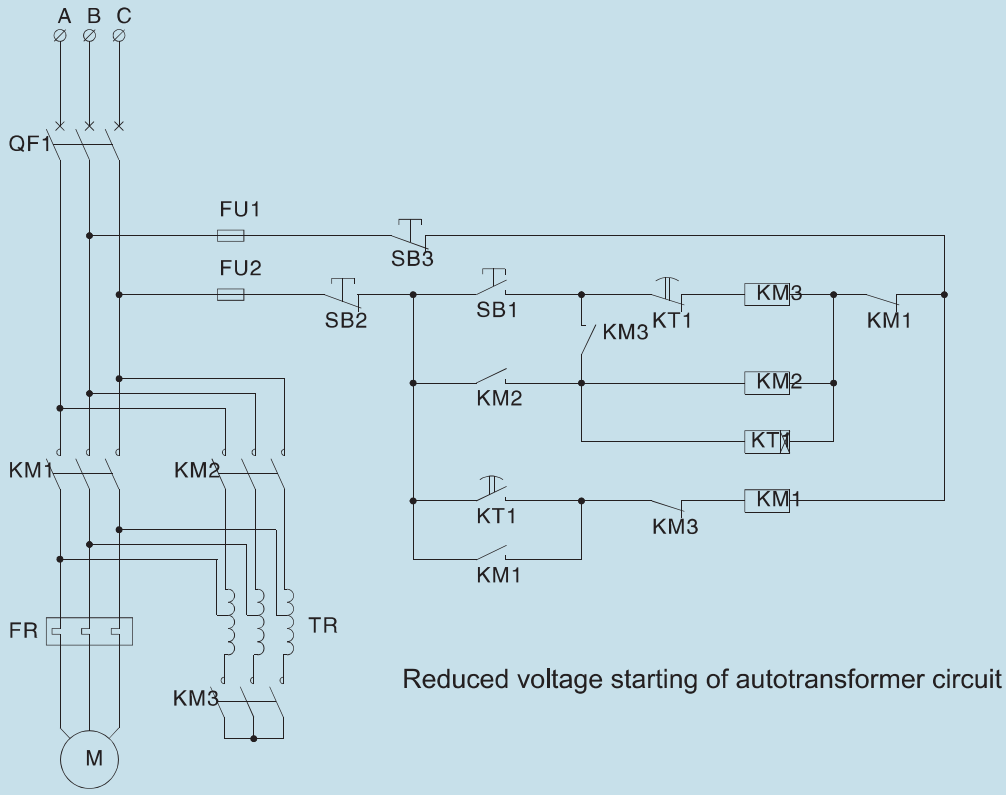
WQ(11-22kW) One control one - Direct starting							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × B)	Weight (kg)
				National Brand	International brand		
1	11	2p	22	KQK/T–1B–11	KQK/G–1B–11	500 × 400 × 200	15
2		4p	23				
3	15	2p	29	KQK/T–1B–15	KQK/G–1B–15	500 × 400 × 200	20
4		4p	30				
5		6p	31				
6		8p	35	KQK/T–1B–18.5	KQK/G–1B–18.5	500 × 400 × 200	20

WQ(11-22kW) One control two - Direct							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × B)	Weight (kg)
				National Brand	International brand		
1	11	2P	22	KQK/T–2ACB–11	KQK/G–2ACB–11	600 × 400 × 200	20
2		4P	23				
3	15	2P	29	KQK/T–2ACB–15	KQK/G–2ACB–15	600 × 400 × 200	25
4		4P	30				
5		6P	31				
6		8P	35	KQK/T–2ACB–18.5	KQK/G–2ACB–18.5	600 × 400 × 200	25

WQ(11-22kW) One control three - Direct starting							
No.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International brand		
1	11	2p	22	KQK/T–3ACB–11	KQK/G–3ACB–11	800 × 600 × 250	27
2		4p	23				
3	15	2p	29	KQK/T–3ACB–15	KQK/G–3ACB–15	800 × 600 × 250	35
4		4p	30				
5		6p	31				
6		8p	35	KQK/T–3ACB–18.5	KQK/G–3ACB–18.5	800 × 600 × 250	35

Reduced voltage starting of autotransformer

Autotransformer is used to reduce the starting voltage of motor stator winding.After the motor is started, the motor can be separated from the auto-transformer, so as to operate normally under full voltage.



Reduced voltage starting of autotransformer circuit

Can according to allow the starting current and starting torque required for different tap to choose autotransformer achieve step-down start, and regardless of the stator winding of the motor Y or Δ connection can be used.

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The following table lists the type and size of the control cabinet selected for Reduced voltage starting of autotransformer circuit of the auxiliary submersible sewage pump

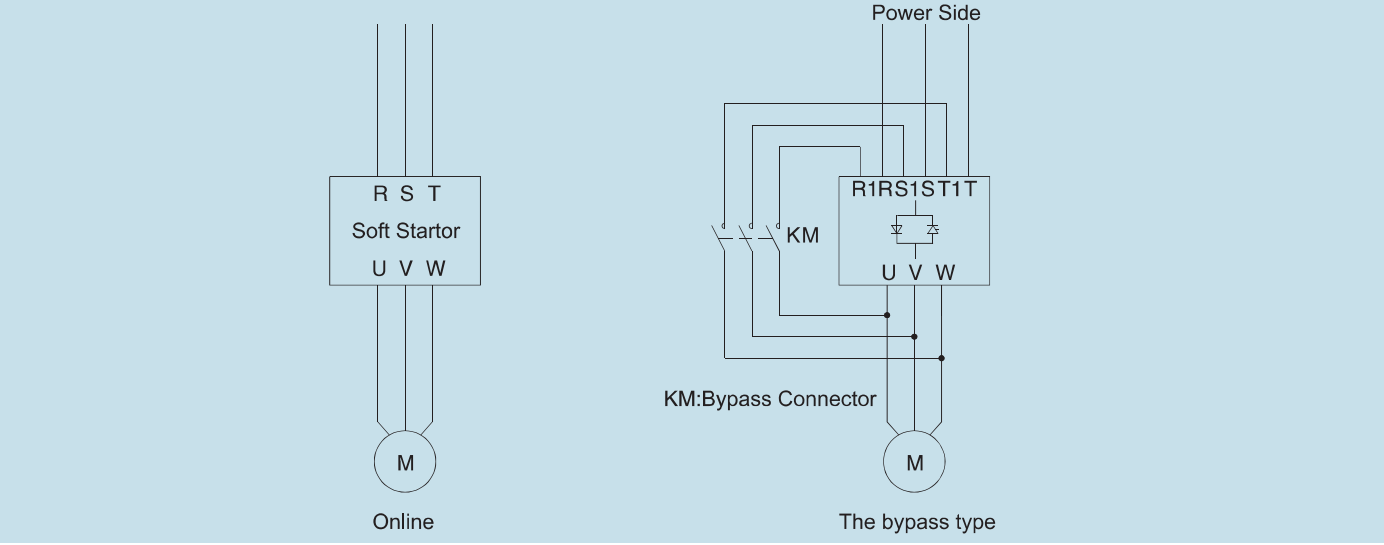
WQ(11-22kW)One control one —Reduced voltage starting of autotransformer circuit							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International Brand		
1	15	2p	29	KQK/T–1B–JYZ–15	KQK/G–1B–JYZ–15	1200 × 600 × 400	100
2		4p	30				
3		6p	31				
4		8p	35	KQK/T–1B–JYZ–18.5	KQK/G–1B–JYZ–18.5	1200 × 600 × 400	110
5	18.5	2p	35	KQK/T–1B–JYZ–18.5	KQK/G–1B–JYZ–18.5	1200 × 600 × 400	110
6		4p	36				
7		6p	38				
8		8p	40				
9	22	2p	41	KQK/T–1B–JYZ–22	KQK/G–1B–JYZ–22	1200 × 600 × 400	120
10		4p	40				
11		6p	45				
12		8p	47				

(11-22kW)One control two —Reduced voltage starting of autotransformer circuit							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International Brand		
1	15	2p	29	KQK/T–2ACB–JYZ–15	KQK/G–2ACB–JYZ–15	1400 × 600 × 400	130
2		4p	30				
3		6p	31				
4		8p	35	KQK/T–2ACB–JYZ–18.5	KQK/G–2ACB–JYZ–18.5	1400 × 600 × 400	145
5	18.5	2p	35	KQK/T–2ACB–JYZ–18.5	KQK/G–2ACB–JYZ–18.5	1400 × 600 × 400	145
6		4p	36				
7		6p	38				
8		8p	40				
9	22	2p	41	KQK/T–2ACB–JYZ–22	KQK/G–2ACB–JYZ–22	1400 × 600 × 400	155
10		4p	40				
11		6p	45				
12		8p	47				

(11-22kW)One control three —Reduced voltage starting of autotransformer circuit							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International Brand		
1	15	2p	29	KQK/T–3ACB–JYZ–15	KQK/G–3ACB–JYZ–15	1700 × 700 × 500	175
2		4p	30				
3		6p	31				
4		8p	35	KQK/T–3ACB–JYZ–18.5	KQK/G–3ACB–JYZ–18.5	1700 × 700 × 500	195
5	18.5	2p	35	KQK/T–3ACB–JYZ–18.5	KQK/G–3ACB–JYZ–18.5	1700 × 700 × 500	195
6		4p	36				
7		6p	38				
8		8p	40				
9	22	2p	41	KQK/T–3ACB–JYZ–22	KQK/G–3ACB–JYZ–22	1700 × 700 × 500	210
10		4p	40				
11		6p	45				
12		8p	47				

Electronic soft starting

The soft starter connected in series between the power supply and the controlled motor controls the conduction Angle of the internal semiconductor (thyristor), so that the motor input voltage gradually rises from zero to the preset function relationship until the end of the start, giving the motor full voltage.The voltage is gradually increased from zero to the rated voltage, so that the starting current of the motor in the starting process is changed from the past uncontrollable overload impulse current to controllable and the starting current can be adjusted as needed.



During the whole starting process, the motor can be started smoothly without impact torque, and various parameters in the starting process, such as current limiting value and starting time, can be adjusted according to the characteristics of motor load.Soft parking can also be achieved.Due to the use of semiconductor converter technology, there will be high harmonic generation, causing pollution to the power grid.

The following table lists the type and size of the control cabinet selected for supporting electronic soft starting

WQ(11-22kW) One control one —Electrical soft starting							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International Brand		
1	15	2p	29	KQK/T–1B–R1-15	KQK/G–1B–R1-15	800 × 600 × 250	35
2		4p	30				
3		6p	31				
4		8p	35	KQK/T–1B–R1-18.5	KQK/G–1B–R1-18.5	800 × 600 × 250	40
5	18.5	2p	35	KQK/T–1B–R1-18.5	KQK/G–1B–R1-18.5	800 × 600 × 250	40
6		4p	36				
7		6p	38				
8		8p	40				
9	22	2p	41	KQK/T–1B–R1-22	KQK/G–1B–R1-22	800 × 600 × 250	40
10		4p	40				
11		6p	45				
12		8p	47				

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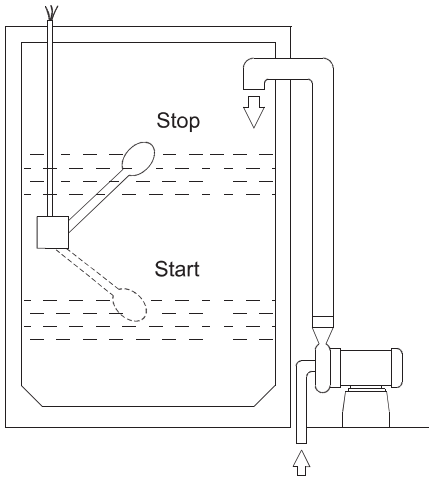
WQ(11-22kW) One control two —Electrical soft starting							
NO.	Power (kW)	Motor	Current (kW)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International Brand		
1	15	2P	29	KQK/T–2ACB–R2–15	KQK/G–2ACB–R2–15	1600 × 600 × 400	50
2		4P	30				
3		6P	31				
4		8P	35	KQK/T–2ACB–R2–18.5	KQK/G–2ACB–R2–18.5	1600 × 600 × 400	55
5	18.5	2P	35	KQK/T–2ACB–R2–18.5	KQK/G–2ACB–R2–18.5	1600 × 600 × 400	55
6		4P	36				
7		6P	38				
8		8P	40				
9	22	2P	41	KQK/T–2ACB–R2–22	KQK/G–2ACB–R2–22	1600 × 600 × 400	55
10		4P	40				
11		6P	45				
12		8P	47				

WQ(11-22kW) One control three —Electrical soft starting							
NO.	Power (kW)	Motor	Current (A)	Panel Model		Panel Size (H × W × D)	Weight (kg)
				National Brand	International Brand		
1	15	2p	29	KQK/T–3ACB–R3–15	KQK/G–3ACB–R3–15	1700 × 700 × 500	70
2		4p	30				
3		6p	31				
4		8p	35	KQK/T–3ACB–R3–18.5	KQK/G–3ACB–R3–18.5	1700 × 700 × 500	80
5	18.5	2p	35	KQK/T–3ACB–R3–18.5	KQK/G–3ACB–R3–18.5	1700 × 700 × 500	80
6		4p	36				
7		6p	38				
8		8p	40				
9	22	2p	41	KQK/T–3ACB–R3–22	KQK/G–3ACB–R3–22	1700 × 700 × 500	80
10		4p	40				
11		6p	45				
12		8p	47				

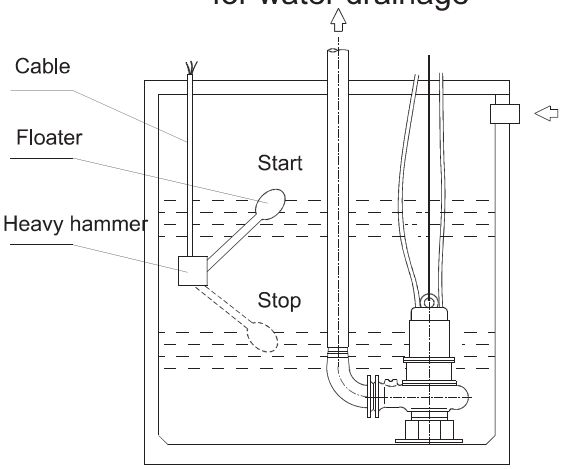
Floating switch、terminal box and wiring pipe

Floating switch

Floating switch schematic for water supply



Floating switch schematic for water drainage



The lowest level is indicated in the submersible sump pump sample and instructions. "▽" That is, the stator part of the motor is submerged in half of the liquid level.The float switch is used when the electric control cabinet is placed in automatic gear.

Connect the black and brown cores, and disconnect the black and blue cores;When the float ball is droopy, on the contrary, the internal contact will connect the black and blue wire cores and disconnect the black and brown wire cores.When the float ball is in the middle position, the internal switch stays in the original position. Only when the float ball is in the floating and drooping position shown in the figure, the internal switch will change its action.For drainage occasions, connect the black and brown wire cores into the electric control cabinet, and the blue wire cores must be wrapped and insulated;In case of water supply, connect the black and blue wire core into the electric control cabinet, and the brown wire core must be wrapped and insulated.If a float ball switch is used to control the opening and stopping of two liquid levels, the position of the weight hammer on the cable can be adjusted, and the difference of the liquid level between the opening and closing of the pump can be determined. Therefore, in principle, a float ball switch can realize the starting and stopping control of a group of upper and lower liquid levels.However, if the liquid level difference is large, the swing arm length of the float ball will increase accordingly, and the weight of the cable from the weight hammer to the float ball will affect the precision of liquid level control. Therefore, our company's special electronic control cabinet for submersible sewage pump sets the float switch as follows: for the main pump or the large pump, two float switches are used to control the starting and stopping liquid levels respectively;For small pumps or extra high water level spare pump, a float switch to control the opening and stopping of the pump two levels.If the user needs more than the specified number of float switches or does not order our special electric control cabinet for submersible pump, he can also order float switches from us.

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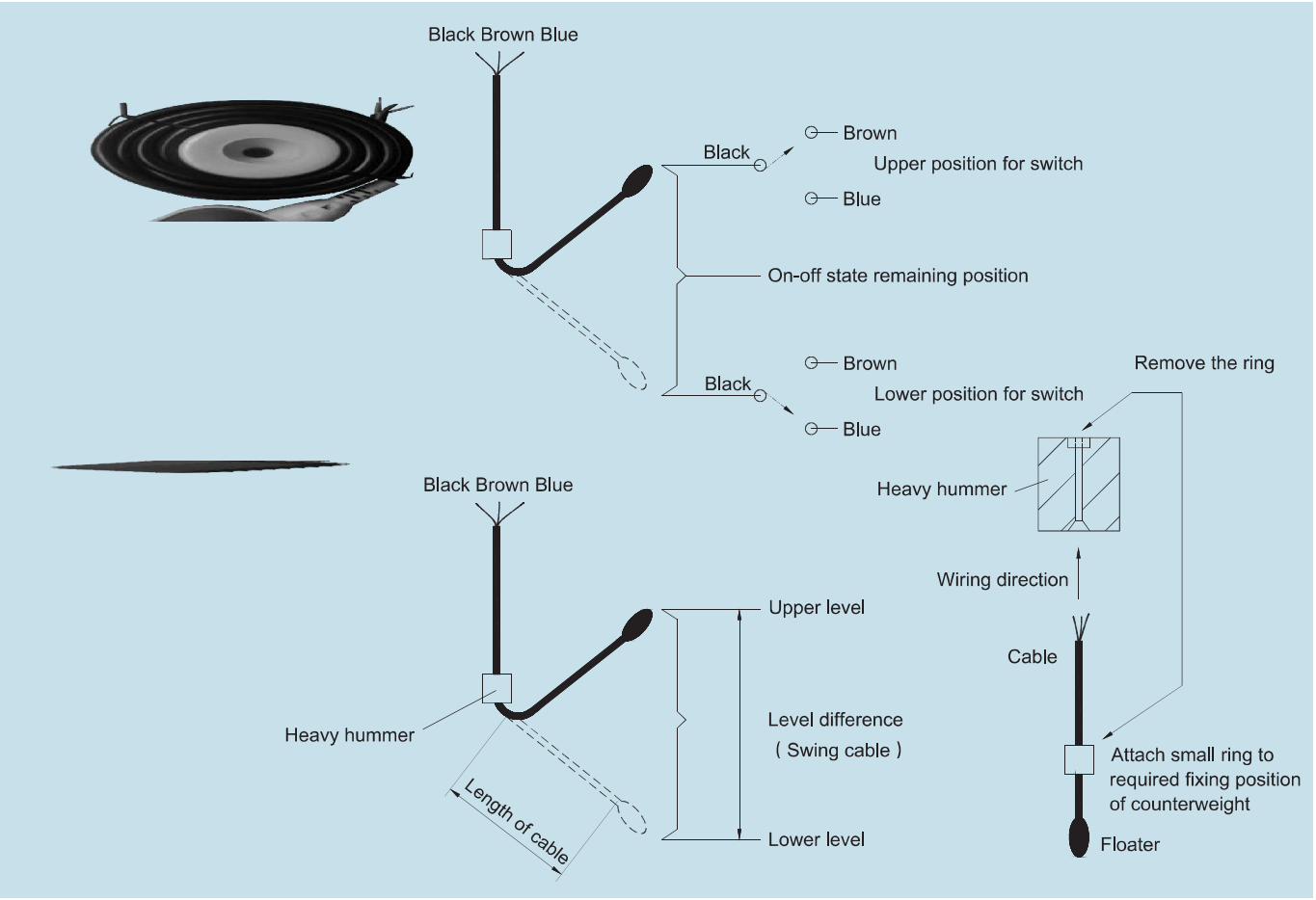
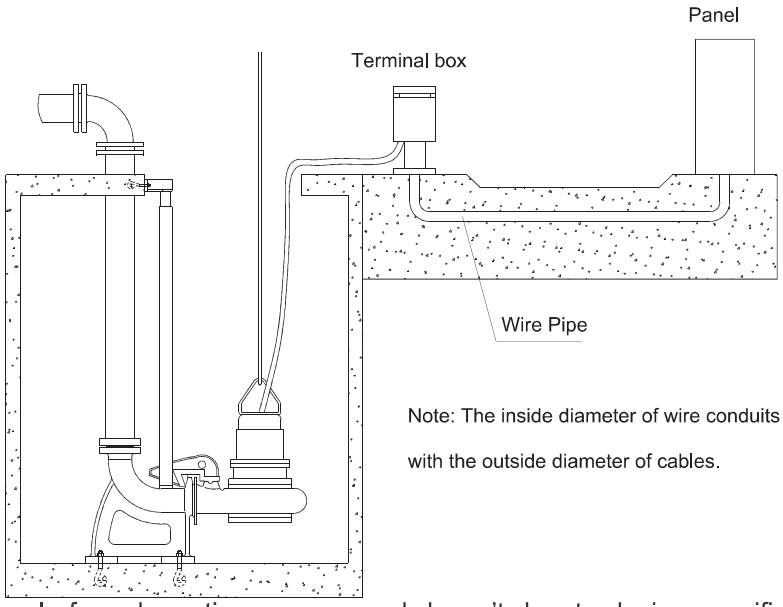


Terminal box and wiring conduit

The terminal box can be set if the electric cabinet is far from the pump house. The terminal box is one optional part.



Note: The inside diameter of wire conduits shall be consistent with the outside diameter of cables.

This diagram is only for schematic purposes and doesn't denote design specification. The issues regarding the design and safety of the pump house shall be handled as per relevant standards and specifications.

When the setup of wire conduits (to be prepared by the user) is required, determine the inside diameter of wire conduits as per the outside diameter of cables. If our special cables for submersible sewage pump are used between the terminal box and electric cabinet, please contact the Technical Department of Shanghai Kaiquan (Hefei) Plant to determine the outside diameters of cables.

WQ(11-22kW) Submersible Pump Cable Data Sheet						
NO.	Frame	Motor model	Power cable	Control cable	Power cable diameter mm	Control cable diameter mm
1	Y210	WQ/E11–2P	1 YVC3 × 4+1 × 2.5+4 × 1		18	/
2		WQ/E15–2P	1 YVC3 × 6+1 × 4+4 × 1		19	
3	Y260	WQ/E11–4P	1 YVC3 × 4+1 × 2.5+4 × 1		18	
4		WQ/E15–4P	1 YVC3 × 6+1 × 4+4 × 1		19	
5		WQ/E18.5–2P	1 YCW3 × 10+1 × 6+4 × 1.5		28	
6		WQ/E22–2P				
7		WQ/E18.5–4P				
8		WQ/E22–4P				
9	Y290	WQ/E15–6P	1 YCW3 × 10+1 × 6	YVC5X1.5 cast joint cable (YVC7X1 cast joint cable is for below bearing detevtion)	25	13.5
10		WQ/E18.5–6P				
11		WQ/E22–6P				
12	Y368	WQ/E15–8P				
13		WQ/E18.5–8P				
14		WQ/E22–8P				
Note: for Y210 and Y260 motors, if the lower bearing temperature measurement is added, a separate control cable YVC7x1 with outer diameter of 13.5mm is required.						

Ordering Description

To make your procured pump more suitable, customers are welcome to consult technical issues with our technical department. Please indicate the series number, impeller number, flow passage part material, installation mode, and discharge diameter at the time of ordering. If the star-delta (Y-△) start or internally connected electric soft starter is adopted, please add “-K” to the end of pump model and indicate “with K motor” on the pump order. If the auto-coupling voltage-reduction start or externally connected electric soft starter is adopted and the pump is fitted with motor of “internal delta wiring mode” (namely the motor winding is connected as per delta wiring mode in the wiring chamber), do not add “K” to the pump model.

The installation mode of water pump shall follow the installation dimension diagram on the brochure. Because of the excellent design of the guide rod bracket in the coupling device, it is necessary to use a common running water tube or steel tube as the guide rod. The specification and length calculation method for the tap water pipe or steel tube used as guide rod is provided on the brochure. The user only needs to procure a tap water pipe or steel tube and cut it to the required length. Therefore, guide rod is not included in the coupling device.

No motor cooling system is fitted for this series pump. Therefore, the cooling sleeve can not be additionally installed.

The standard configuration includes 10m motor cables. The user shall specify at the time of ordering if cables of other lengths are required.

The supply part package is supplied as per the users selected installation mode.

Optional parts and spare parts are ordered separately by the user.

For mobile pipe installation mode (Y), an elbow connector is supplied for every pump package. For mobile hose installation mode (R), ahose elbow connector is supplied for every pump package. If more than one elbow connector or hose elbow connector is required for the pump of mobile installation mode, please order separately.

The elbow connectors have a bore diameter of 50, 65, 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, and 600.

The hose elbow connectors are in bore diameter of 50 (For 64 hose), 50×65 (For 76 hose), 65 (For 76 hose), 80 (For 89 hose), 100 (For 102 hose), and 150 (For 152 hose).

The optional taper pipes have two-sided bore diameters of 50×65, 50×80, 65×80, 80×100, 100×150, 150×200, 200×250, 250×300, 300×350, 350×400, 400×450, 450×500, and 500×600. The taper pipe installed on the discharge pipeline shall be only used for expanded application, instead of contracted application.

While connecting the taper pipe and elbow connector on the discharge pipeline, the bore diameter of the elbow connector shall be consistent with that of the large end of the taper pipe, namely the principle of “expanding before turning” shall be followed, in which case the pipe loss is less than that of the “turning before expanding” .

For the pump of coupling installation mode, if the bore diameter of the discharge is larger than that of the pump, a taper pipe can be additionally installed on the water discharge pipe seat and the small end bore diameter of the taper pipe shall be consistent with the bore diameter of the water discharge pipe seat (namely the bore diameter of pump).

Refer to the “Descriptions of Accessories” at the end of brochure for the specifications, nominal pressures, and dimensions of elbow connectors; hose elbow connectors, and taper pipes.

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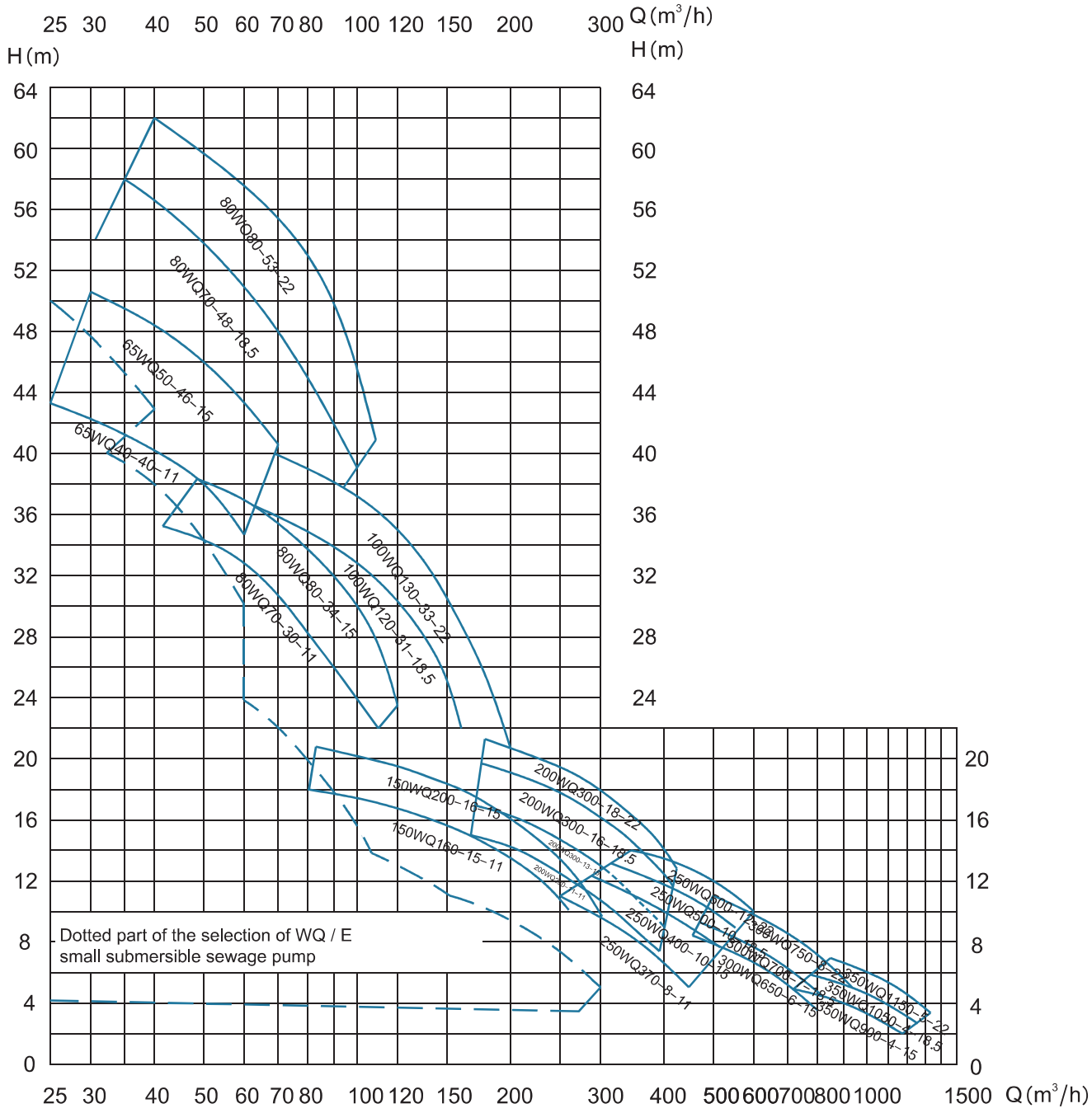
WQ(11-22kW) Submersible pump supply check list

Supply scope / Installation type / Supply Model			Submersible installation mode				
			Auto-coupling Installation Z	Fixed base Installation P	Mobile hose Installation R	Mobile pipe Installation Y	Single Pump
Complete package	Pump (10m Cable)		✔	✔	✔	✔	✔
	Auo-coupling	DQC	✔				
		Bracket	✔				
		Fixed plate	✔				
	Base			✔	✔	✔	
	Elbow+Connector					✔	
	Hose+Connector				✔		
Necessary	Guide Bar		✔				
	Expansion Blot		✔				
	Anchor Bolt		✔	✔			
Choose and buy parts	Elbow+Connector			✔			
	Hose+Connector			✔			
	SS Lifting Chain		✔	✔	✔	✔	✔
	Carbon Lifting Chain		✔	✔	✔	✔	✔
	Taper Pipe		✔	✔		✔	✔
	Match Flange		✔	✔		✔	✔
Spare Parts	Impeller		✔	✔	✔	✔	✔
	Pump Cover		✔	✔	✔	✔	✔
	Bearing		✔	✔	✔	✔	✔
	Mechanical Seal		✔	✔	✔	✔	✔
	O-ring		✔	✔	✔	✔	✔
	Wear Ring		✔	✔	✔	✔	✔

WQ(11-22kW) Spectrum Diagram and Description



Description of spectrum diagram:

1. The spectrum diagram lists the basic range for most models, based on which model can be preliminarily selected. Please refer to the Performance Curve Diagram and Main Parameters below for detailed parameters of the water pump.
2. In the diagram, the rated power of pump motor is indicated behind the pump model.
3. For the WQ/E series in the diagram, please refer to the brochure “WQ/E Series Small-Sized Submersible Sewage Pump” for details.

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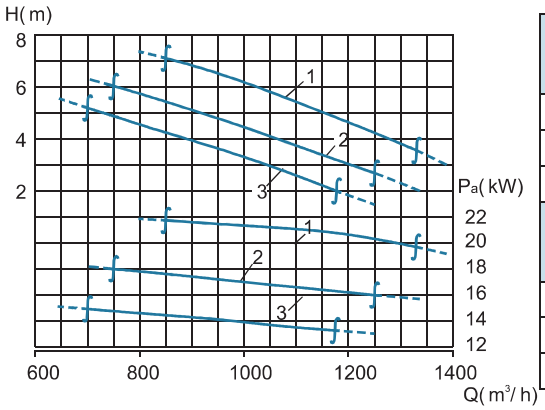
Performance Curve



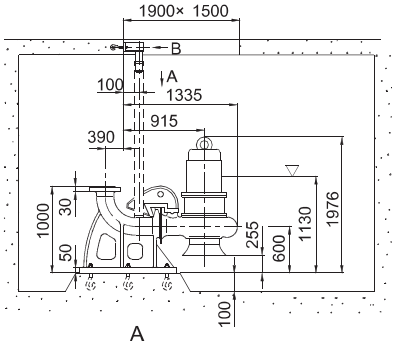
Main parameter

DN 350mm

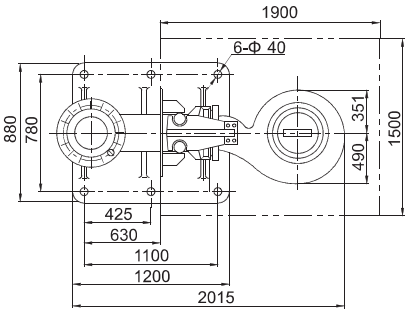
No.	New Model	Old Model	Channel (mm)	Speed (r/min)	Weight (kg)
1	350WQ1150-5-22	WQ2368-8154	91	730	800
2	350WQ1050-4-18.5	WQ2368-8153	91	730	780
3	350WQ900-4-15	WQ2368-8152	91	730	760

No.	Motor Power (kW)	Rated Current (A)	Factor Cos φ	M-Eff. (%)	Lock/Rated Torque
1	22	47	0.8	90.7	2.0
2	18.5	40	0.77	90.1	2.0
3	15	35	0.76	88.5	2.0

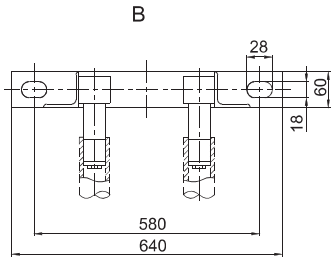
Installation diagram



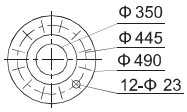
A



Z Automatic Coupling Installation

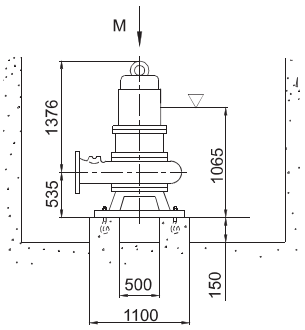


Discharge Flange

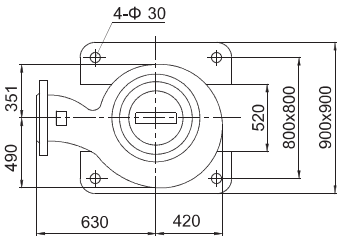


GB/T17241.6 PN6

P Fixed Base



M



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