

**User manual for CPD-SH series permanent-magnet
frequency-conversion electric pump**



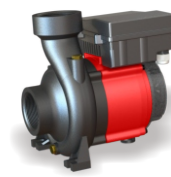
CPD-SH1-100



CPD-SH2-100



CPD-SH4-100



CPD-SH3-100

14. Failures and troubleshooting

Fault condition	Primal problem	Handling method
The motor runs, but not the water	<ol style="list-style-type: none"> 1. The pump is rotating in the wrong direction. 2. The pump was not filled with water. 3. damaged impeller. 4. The water level is below the valve. 5. Leakage of suction line. 6. The water level is too low, below the pump limit. 7. Water in the pipe or pump chamber causes icing. 	<ol style="list-style-type: none"> 1. The motor steering should be in line with the direction indicated by the pump body. 2. Refill the pump with water. 3. Replacement of impeller (maintenance repair). 4. Adjust the inlet pipe to get the pump bottom valve into the water. 5. Check for water inlet and joint sealing. 6. Adjust the pump installation height or select the appropriate water pump. 7. When the ice is melted, turn it on.
Underpressure	<ol style="list-style-type: none"> 1. The pump selection is incorrect. 2. Incoming water pipes pass long, or bend too many water pipe diameter is not chosen according to the regulation. 3. The foreign body plugs the pipe, the filter net or the pump chamber. 4. The motor is too low and the wire is too long. 	<ol style="list-style-type: none"> 1. Choose the right pump. 2. Select a pipe with specified pipe diameter and adjust the inlet pipe to be as short as possible. 3. Clean pipe, bottom valve, filter net or pump chamber, clear miscellaneous. 4. Check the end voltage of the motor and increase the cross section.
Pump vibrating	<ol style="list-style-type: none"> 1. The pump has no fixed base. 2. There is a foreign body in the pump channel or pump chamber. 3. Insufficient base stability. 	<ol style="list-style-type: none"> 1. Tighten the anchor bolts. 2. Inspect, clean pipes and pumps. 3. Install a more stable base.
The motor frequently starts or stator windings are burned	<ol style="list-style-type: none"> 1. The electric pump is overworked. 2. Impeller stuck or overworked for a long time. 3. The ground fault or cable is broken and the pump is struck by lightning. 4. Leakage of water leakage or outlet pipe of check valve. 	<ol style="list-style-type: none"> 1. Reset the operation parameters to make the pump work at the rated range. 2. Remove the internal clutter from the pump and make the pump as high as possible. 3. Find the cause and replace the winding coil. 4. Clean or replace the check valve, check the outlet line and the sealing condition of the joints, close all the taps and flush toilets.
Leaks in front cover	Defective wear mechanical seals or mechanical seal damage	Clean or replace mechanical seals
Motor failure starting	<ol style="list-style-type: none"> 1. Water pressure is higher than starting pressure. 2. Motor overheating is protected. 3. Motor damage. 4. Floppy driver error. 5. The pressure sensor is damaged. 	<ol style="list-style-type: none"> 1. When the water pressure drops to the starting pressure, the electric pump starts automatically. 2. After the motor is cooled, the pump starts on its own. 3. Consulting service provider or maintenance repair. 4. Replace the same sensor or maintenance repair.

Warning users: the sales unit of this voucher is not valid.

Note: All product descriptions and statistics in this User manual may be different from reality. As product is updated continuously, please take the actual product as the standard. Product descriptions and statistics are subject to change without notice.

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Thank you very much for using our products. In order to experience the excellent performance, energy-saving and full intelligent operation of our products, please read full details of the user manual before installing and using.

1. Product overview:

The CPD series intelligent constant-pressure high-efficiency self-priming booster pump is comprised of permanent-magnet brushless motor, water pump and intelligent control module. Equipped with high-speed high-efficiency permanent-magnet brushless motor, imported chip, high-precision pressure sensor, water-control switch accompanied by advanced electronic control technology, CPD series intelligent pump truly realizes intelligent frequency-conversion, speed-adjustment with permanent pressure and energy efficiency. Besides, it is featured with wide operation range, high delivery, large capacity, adaptation to multiple working conditions as well as compact size, light weight, attractive appearance, easy operation, no need for debugging. The CPD series intelligent pump gives you the enjoyment at star hotels.

2. Major characteristics:

2.1 Equipped with permanent-magnet brushless motor, featuring compact size, light weight, high efficiency, intelligent frequency conversion with constant pressure.

2.2 The normal contact-type pressure sensor is replaced with the water-control switch and high precision contactless pressure sensor, which boasts wear-free, low failure rate, long service life, reliable performance.

2.3 Totally intelligent control with no pressure tank, compact size, beautiful appearance, reliable operation.

2.4 Easy operation, applicable in various domain.

2.5 The pump motor is furnished with the function of soft start and stop, which can effectively reduce the starting current's shock to the insulation, thus protecting the motor and extending the pump's service life.

2.6 When power is on, open the tap, the pump will automatically work; off the tap, the pump will automatically stop working. Water tower or tank is no need any more. To ensure the sanitation of water, the pump helps supply water directly from the public water system to avoid water supply from household water tower or tank, in which water deposits over time, leading to contamination and parasites.

2.7 The interior of the pump is wholly treated with electrophoresis to ensure water sanitation.

2.8 The pump shaft is made up of stainless steel to prevent rust and the leakage of the mechanical seal.

2.9 High rotation speed, high efficiency, large capacity, operable in multiple working conditions.

13. Start-up and maintenance

3.1 No-load running of the pump for over 2 minutes is forbidden. No touching on the pump is allowed unless the power is cut off for at least 5 minutes. No dismounting the pump body unless water is emptied from the pump chamber.

3.2 Firstly start the pump for several minutes to check whether the rotation is flexible and the rotation direction is in conformity with that shown by the pump body. Secondly, unscrew the water injection pneumatic nail, fill the pump chamber with clean water through the water injection hole, start the pump. Screw up the water injection pneumatic nail after air is emptied from the pump and once again start the pump.

Attention:

1. If the pump doesn't pump out water after being filled with water and starting for more than 5 minutes, please shut down the pump, check whether there is leakage with the inlet pipe and then fill the pump with water again.

2. If the pump is in danger of damage by frost and freezing, please throttle down the valves of the inlet and outlet pipes, unscrew the water-releasing pneumatic nail and empty water from the pump chamber. If user wants to start the pump again, ensure to unscrew the water injection pneumatic nail, fill up with water, screw up the water injection pneumatic nail before using the pump. (Pumps with anti-freezing function are free from such way of processing)

3. If the pump has stopped working for long time and user wants to start up the pump again, please refer to the above processing steps.

4. If in summer or ambient temperature is too high, please ventilate the area for operation so that on the pump there is no dew, which causes pump failures.

5. If user finds the motor is with ultra-heat and abnormality, please cut off the power immediately and make trouble-shooting.

limit power,the motor operates with the mode of constant power.

(5)Protection for voltage abnormality: When the voltage of the power is $\leq 175v$ or $\geq 260v$, the electric pump stops operation.

(6)Water-cooling protection for power devices: decrease the wear-down of the fan and the operating noise of the electric pump.

(7)Temperature protection: The electric pump stops operation once the temperature of the controller exceeds $80^{\circ}C$.

(8)Fast self-suction: The height of self-suction is upto 7 meters.Self-suction is completed in about 3 minutes.

(9)Fast water supply: In the condition of pressure maintaining, the motor completely starts within 3 seconds to ensure water continuation from the taps.

(10)Intelligent judgment: In abnormal conditions, the electric pump can give alarm, perform self-inspection, failure predication,etc.

(11)Dual operating mode: The user can select the electric pump's operating mode through the human-machine interface.a: Mode of constant pressure b.Mode of constant power.

12.4. CPD-SH3-100

(1)Auto-adjustment within wide voltage range: have excellent performance within voltage range: $175v\sim 260v$;able to make auto-adjustment to different voltage; In different voltage, the variation of the electric pump's operating condition is within 5%.

(2)Protection for no-load: The electric pump will automatically shut down after working with no-load for 5 minutes. Press Reset button to restore operation.

(3)Protection for lack of water in operation: The electric pump will shut down immediately once it finds its inlet lacks water in its operation.Press Reset button to restore operation.

(4)Protection for voltage abnormality: When the voltage of the power is $\leq 175v$ or $\geq 260v$, the electric pump stops operation.

(5)Water-cooling protection for power devices: decrease the wear-down of the fan and the operating noise of the electric pump.

(6)Temperature protection: The electric pump stops operation once the temperature of the controller exceeds $80^{\circ}C$.

(7)Fast water supply: In the condition of pressure maintaining, the motor completely starts within 3 seconds to ensure water continuation from the taps.

(8)Intelligent judgment: Automatically stops operation in abnormal conditions.

3. Range of application

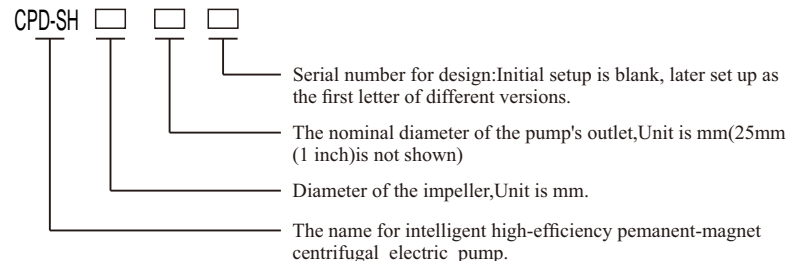
This series of product is mainly suitable for household pressurized water supply, transfer of industrial liquid, cycle and pressure boosting of demineralized water, purification systems as well as water lifting from well, garden irrigation, aquaculture, high-rise building water supply, etc.

- | | | |
|--|---------------------|------------------|
| ■ luxury residence | ■ duplex house | ■ villa |
| ■ small central-air conditioning cycle | ■ hotel | ■ cooling system |
| ■ educational institution | ■ bath center | ■ hospital |
| ■ water treatment (water purification) | ■ garden irrigation | ■ aquaculture |

4. Use condition

- Suitable for pumping thin, clean, noncondensing, non flammable and explosive liquid(the proportion of the volume of the solid impurities or fibers in the liquid shouldn't exceed 0.1%, the size of the single impurity or fiber shouldn't exceed 0.2mm)
- Liquid temperature: $0^{\circ}C\sim 40^{\circ}C$
- Ambient temperature $0^{\circ}C\sim 40^{\circ}C$
- PH range of liquid 6~8.5
- Relative humidity Max 85%(RH)

5. Model specification



1、Intelligent high-efficiency permanent-magnet centrifugal electric pump, impeller diameter:100mm,standard diameter of the outlet:25mm.The basic version is CPD-SH1-100.

2、Intelligent high-efficiency permanent-magnet centrifugal electric pump, impeller diameter: 100mm, standard diameter of the outlet: 25mm. The self-suction version is CPD-SH2-100.

3、Intelligent high-efficiency permanent-magnet centrifugal electric pump,impeller diameter:100mm,standard diameter of the outlet:25mm.The family version is CPD-SH4-100.

4、Intelligent high-efficiency permanent-magnet centrifugal electric pump,impeller diameter: 102mm, standard diameter of the outlet: 50mm. The basic version is CPD-SH3-100.

6. Technical parameter

6.1 Technical parameter chart of CPD-SH1-100 (Chart 1)

Model	Caliber	Power		Flow	Flow													
		kW	HP		m ³ /h	0	0.9	1.8	2.7	3.6	4.5	5.4	6.0					
CPD-SH1-100	1"	0.75	1.0	H.meter(m)	38	37	35	31.5	27	22	15	10						

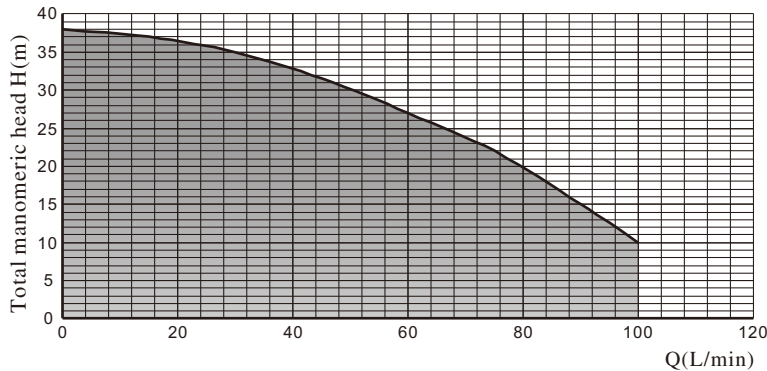


Chart 1(▲)

6.2 Technical parameter chart of CPD-SH2-100 and CPD-SH4-100(Chart 2)

Model	Caliber	Power		Flow	Flow													
		kW	HP		m ³ /h	0	0.8	1.3	2.0	2.8	3.6	4.5	5.2					
CPD-SH2-100	1"	0.75	1.0	H.meter(m)	38	36	34	32	29	24	18	10						
CPD-SH4-100	1"	0.75	1.0		38	36	34	32	29	24	18	10						

12.2. CPD-SH2-100

(1)Auto-adjustment within wide voltage range: have excellent performance within voltage range:175v~260v;able to make auto-adjustment to different voltage; In different voltage, the variation of the electric pump's operating condition is within 5%.

(2)Protection for no-load: The electric pump will automatically shut down after working with no-load for 5 minutes.Press Reset button to restore operation.

(3)Protection for lack of water in operation: The electric pump will shut down immediately once it finds its inlet lacks water in its operation. Press Reset button to restore operation.

(4)Pump outlet with constant pressure: User can adjust the constant pressure in the assistance of aftersales service team.

(5)Protection for voltage abnormality: When the voltage of the power is $\leq 175v$ or $\geq 260v$, the electric pump stops operation.

(6)Water-cooling protection for power devices: decrease the wear-down of the fan and the operating noise of the electric pump.

(7)Temperature protection: The electric pump stops operation once the temperature of the controller exceeds 80 °C.

(8)Fast self-suction: The height of self-suction is upto 7 meters. Self-suction is completed in about 3 minutes.

(9)Fast water supply: In the condition of pressure maintaining, the motor completely starts within 3 seconds to ensure water continuation from the taps.

(10)Intelligent judgment: Automatically stops operation in abnormal conditions.

12.3. CPD-SH4-100

(1)Auto-adjustment within wide voltage range: have excellent performance within voltage range:175v~260v;able to make auto-adjustment to different voltage; In different voltage, the variation of the electric pump's operating condition is within 5%.

(2)Protection for no-load: The electric pump will automatically shut down after working with no-load for 5 minutes.Press Reset button to restore operation.

(3)Protection for lack of water in operation: The electric pump will shut down immediately once it finds its inlet lacks water in its operation.Press Reset button to restore operation.

(4)Pump outlet with constant pressure: User can set the constant pressure for the pump outlet through the control panel. When water consumption amount does not exceed the pump's limit power, the pressure on the tap remains at the set value with no obvious fluctuation. When water consumption amount exceeds the pump's

11.5 User can view the operating pump's status such as RPM, constant pressure value, etc. Through button "Mode".

11.6 In case of malfunction of , the indicator light for "Malfunction" is on. The interface will display the corresponding code for malfunction predication. The pump stops working. User can restart the pump through button "On/Off" after trouble is cleared. (Please refer to Fault code comparison table for understanding of the meaning of the fault codes)

11.7 In automatic mode of the pump, when user views the pump status for 5 seconds with no other processing, the interface returns to default state, displaying the current pressure (kg/cm²) with no indicator light turned on.

11.8 If user presses button "Pressure+" and button "Pressure-" simultaneously for 3 seconds, the system will automatically lock the pressure adjusting function to prevent touch by mistake. If user simultaneously presses the two buttons again for 3 seconds, the system will unlock.

11.9 The product's pressure adjusting range is from 1.0kg(kg/cm²)~2.5kg(kg/cm²).

12. Briefing on pumps' functions

12.1 CPD-SH1-100

(1) Auto-adjustment within wide voltage range: have excellent performance within voltage range: 175v~260v; able to make auto-adjustment to different voltage; In different voltage, the variation of the electric pump's operating condition is within 5%.

(2) Protection for no-load: The electric pump will automatically shut down after working with no-load for 5 minutes. Press Reset button to restore operation.

(3) Protection for lack of water in operation: The electric pump will shut down immediately once it finds its inlet lacks water in its operation. Press Reset button to restore operation.

(4) Protection for voltage abnormality: When the voltage of the power is $\leq 175v$ or $\geq 260v$, the electric pump stops operation.

(5) Water-cooling protection for power devices: decrease the wear-down of the fan and the operating noise of the electric pump.

(6) Temperature protection: The electric pump stops operation once the temperature of the controller exceeds 80 °C.

(7) Fast water supply: In the condition of pressure maintaining, the motor completely starts within 3 seconds to ensure water continuation from the taps.

(8) Intelligent judgment: Automatically stops operation in abnormal conditions.

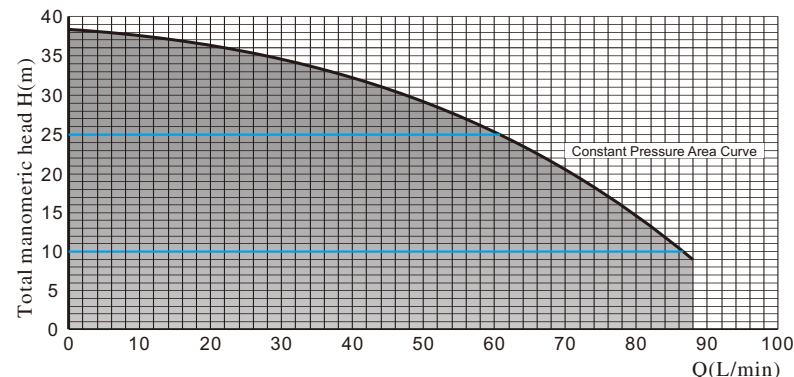


Chart 2(▲)

Remark: Pressure maintaining can be set from 10 to 25m

6.3 Technical parameter chart of CPD-SH3-100(Chart 3)

Model	Caliber	Power		Flow														
		kW	HP		m ³ /h	0	3	7	10	14	21	25	30					
CPD-SH3-100	2"	1.5	2.0	L/min	0	50	116	167	234	350	416	500						
				H.meter(m)	30	28	26	25	23	18	16	10						

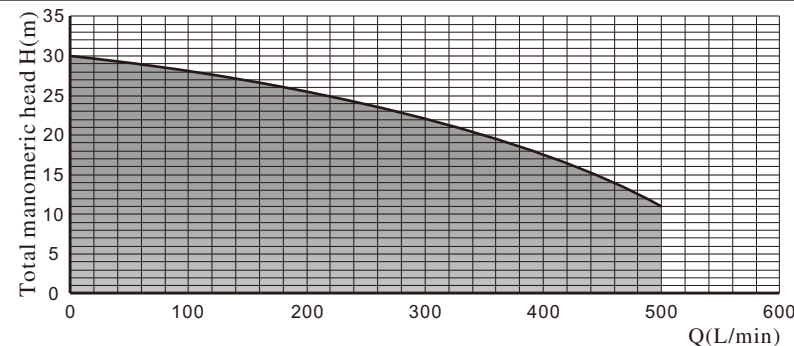


Chart 3(▲)

7. Warning

Please operate the pump strictly according to the User manual. Prior to power connection, user should carefully check the insulation resistance to prevent leakage of electricity. The electric pump must be earthed reliably and installed with earth

leakage protective device. Power must be shut off before troubleshooting in case of pump failures.

7.1 While installing and maintaining the pump, power must be shutoff. The pump should be reliably earthed. Leak-protective switch must be installed to prevent electric shock. Please pay careful attention that water on the plug can cause electric shock.

7.2 Only suitable for pumping thin, clean, noncondensing, non flammable and explosive liquid (the proportion of the volume of the solid impurities or fibers in the liquid shouldn't exceed 0.1%, the size of the single impurity or fiber shouldn't exceed 0.2mm). If the electric pump is used to pump lyotrope such as benzoic acid, inflammable such as gasoline and high-viscosity liquid, the failure rate of the pump will increase and service life will be shortened.

7.3 If abnormal conditions such as abnormal sound, small water volume pumped out, intermittent water flow, etc. occur during the working of the pump, immediately shut off the power to troubleshoot the pump. If the pump is in damp condition and is connected to power, touching of the pump is forbidden to prevent accident. Prevent the spray of pressured water onto the pump and prevent the submerge of pump into water.

7.4 Please prevent operating the pump with no pre-filled water, which will shorten the service life of the pump and cause motor failures due to heat-up of the motor. Do not operate the pump in direct sunlight, which will interfere with the service life of the pump.

7.5 Before starting up the pump, firstly unscrew the water injection pneumatic nail, secondly fill the pump body with clean water by injecting water from the injection hole and then screw up the pneumatic nail when air is completely emptied.

7.6 While installing and maintaining the pump, please make sure to shut down power and throttle down the valves of the pipes connected to the inlet and outlet of the pump.

7.6.1 The liquid may be scorching and under high pressure. Before removing and dismantling the pump, throttle down the valves of the inlet and outlet pipes first and then empty the liquid from the pump body and the pipes.

7.6.2 Power supply to the pump must be in conformity with the description on the nameplate. Keep the pump in dry, ventilated and cool conditions at room temperature if the pump will not be used for a long time.

7.7 If the pump is installed indoors, the drainage system must be set up close to the pump to prevent excess water and the submerge of motor in water, which may cause burnout of the motor and danger of electric shock. If the pump is installed outdoors, protective measures must be taken to make sure that the pump is

11. Control panel instructions

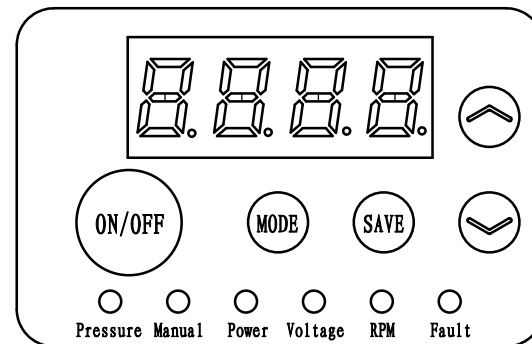


Chart 13(▲):Control panel instructions

Remark: For part of the pump versions

Fault code comparison table:

	E1(Failure of pressure transmitter)		E5(Water pump resistance to protection)
	E2(Water protection)		E6(Overcurrent protection)
	E3(Voltage protection)		
	E4(Temperature protection)		

11.1 After the pump is connected to power, press button "On/Off" to start the pump and the pump enters into normal working condition.

11.2 The pump enters into the working mode of automatic constant pressure after start-up. The constant pressure value of factory setting is 1.5KG. User can make adjustment according to actual water using condition.

11.3 Press button "Mode", the bellow indicator light is on correspondingly. Press button "Confirm" to select the item indicated. If "Manual" is selected, the pump will perform as the traditional electric pump and user switches on and off the external power source manually.

11.4 While the pump is operating, user can adjust constant pressure value for the outlet through button "Pressure+" and "Pressure-". When the constant pressure value is decided, press the button "Confirm" to save the pressure value.

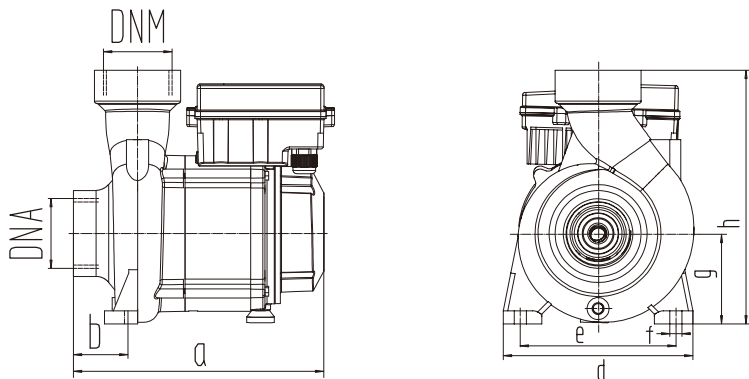


Chart 11(▲)

10. Electric connection

Please don't make wire connection to the terminal box unless the power is shut down. The electric pump should be reliably earthed and equipped with leakage protection switch to prevent electric leakage. Electrical connection and protection should be handled as per requirements. Refer to the working voltage on the nameplate and make sure the motor works with suitable power. If the working site of the pump is far from the power source, the power line should be thickened appropriately otherwise too much voltage drop will affect the normal operation of the pump. If the electric pump is used outdoors, make sure to use the outdoor rubber cable as the extension cord and inspect whether the pump operates normally.

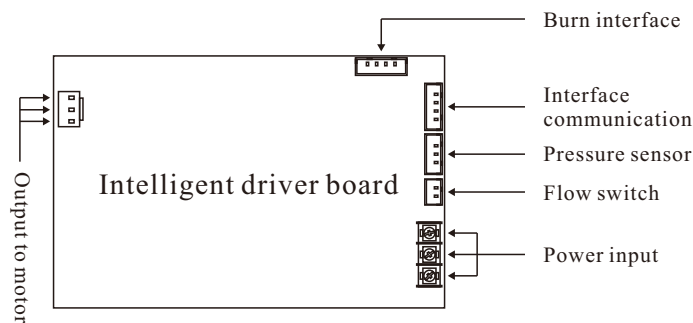


Chart 12(▲):Intelligent pump electric schematic diagram

not in direct sunlight or free from rain. Mindong takes no responsibility for any property loss of the user if the user does not install the pump properly.

8、When ambient temperature is bellow 4℃, please take anti-freezing measures to prevent pump body from frost crack.

8. Piping installation

Diagram for installation of inlet and outlet pipes: CPD-SH1-100(Diagram 4) CPD-SH2-100(Diagram 5); CPD-SH4-100(Diagram 6); CPD-SH3-100(Diagram 7)

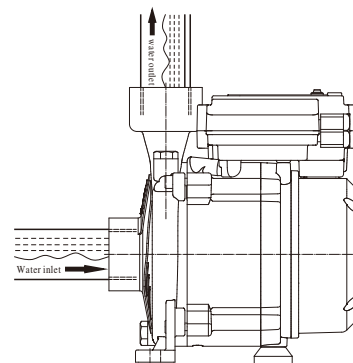


Diagram 4(▲)

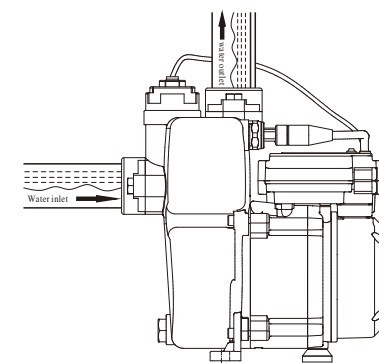


Diagram 5(▲)

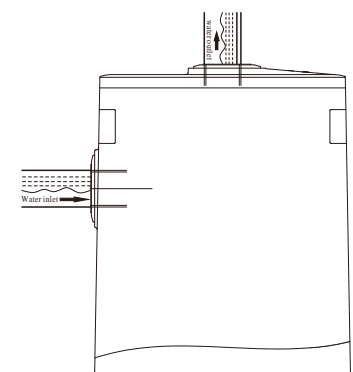


Diagram 6(▲)

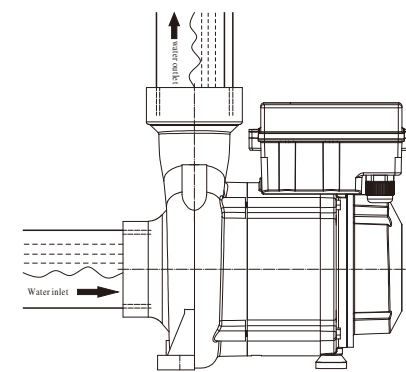


Diagram 7(▲)

Precautions for installation of the inlet pipe

- 1、 In order to prevent hydraulic loss and maintain good performance of water pumping, the diameter of the inlet pipe should be no less than that of the pump inlet.
- 2、 During installation of the electric pump, over-soft rubber pipe is forbidden to be used for the pump inlet to prevent suction deviation of the pump.
- 3、 The joints of the inlet pipe must be airtight. Minimize the use of elbows, otherwise the pump cannot pump water.
- 4、 When installing the pipes, make sure that the pump will not be affected by the pressure the pipes bring.
- 5、 To prevent impurities entering the pump, the inlet pipe must be equipped with filter.

9. Outline size

9.1 Outline size chart for ICP100A(Chart 8):

Model	DNA	DNM	a	b	d	e	f	g	h	weight (KG)
CPD-SH1-100	1"	1"	165	27	126	93	7	71	180	4.5

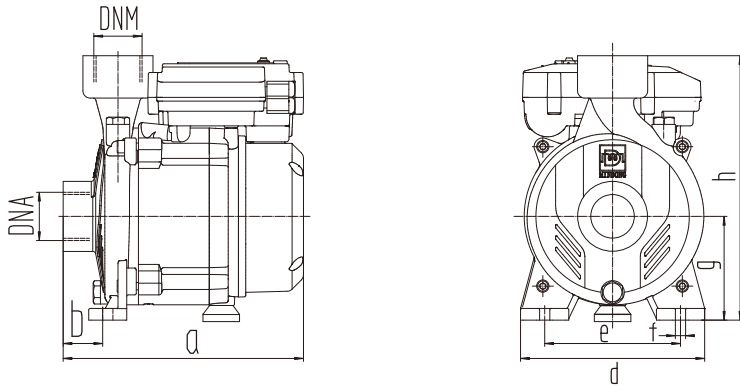


Chart 8(▲)

9.2 Outline size chart for ICP100S(Chart 9):

Model	DNA	DNM	a	b	d	e	f	g	h	weight (KG)
CPD-SH2-100	1"	1"	222	85	126	93	7	71	231	6.5

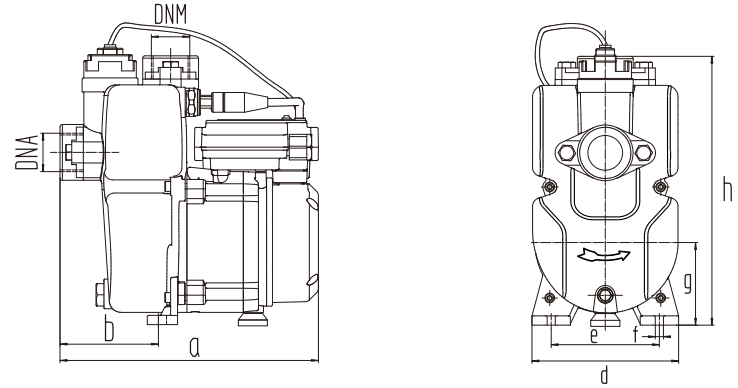


Chart 9(▲)

9.3 Outline size chart for ICP100F(Chart 10)

Model	DNA	DNM	a	d	g	h	weight (KG)
CPD-SH4-100	1"	1"	230	144	166	278	8.0

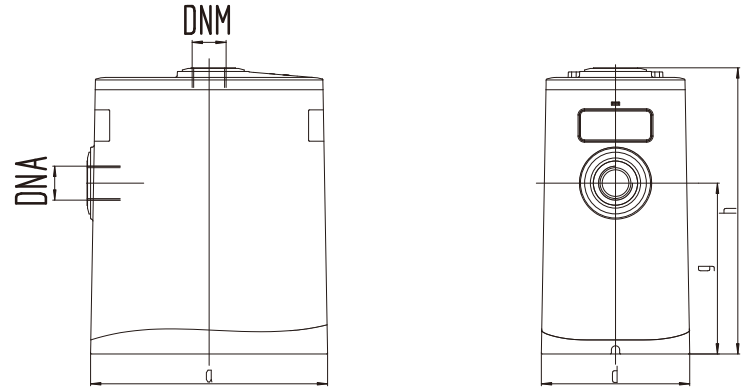


Chart 10(▲)

9.4 Outline size chart for ICP102-50(Chart 11)

Model	DNA	DNM	a	b	d	e	f	g	h	weight (KG)
CPD-SH3-100	2"	2"	237	41	172	141	11	82	230	13