NEOTW

Water-type mold temperature controller

Date：August 2017

Version：V1.2 (English)



Content

1. GENERAL DESCRIPTION 6
1.1 FEATURE 7
1.2 TECHNICAL SPECIFICATIONS 8
1.2.1 Specification 8
1.2.2 Technical Specifications (NEOTW-***) 9
1.2.3 Technical Specifications (NEOTW-***H/G) 10
1.3 SAFETY REGULATIONS 11
1.3.1 Safety Signs and Labels 11
1.3.2 Signs and Labels 12
1.3.3 Operation Regulations 12
2. STRUCTURE CHARACTERISTICS AND WORKING PRINCIPLE 13
2.1 MAIN FUNCTIONS 13
2.1.1 NEOTW Working Principle 13
2.1.2 NEOTW-H/G Working Principle 15
2.1.3 Pump 16
2.2 ELECTRICAL DIAGRAM 17
2.2.1 Main Circuit (NEOTW)(400V) 17
2.2.2 Main Circuit (NEOTW-H)(400V) 17
2.2.3 Control Circuit (NEOTW-50500) (400V) 18
2.2.4 Control Circuit (NEOTW-H-54301) (400V) 19
2.3 MAIN ELECTRICAL COMPONENTS DESCRIPTION 20
2.3.1 Overload Relay 20
3. INSTALLATION AND DEBUGGING 21
3.1 INSTALLATION SPACE 21
3.2 MOULD AND WATER COUPLING 22
3.3 POWER SUPPLY 23
4. OPERATION GUIDE 24
4.1 CONTROL PANEL (SF505000) 24
4.2 MACHINE STARTUP 25
4.3 STOP THE MACHINE 27
4.4 CONTROL CIRCUIT BOARD SETTING 27
4.5 CONTROL CIRCUIT BOARD SETTING(SF-505000) 28
4.6 CONTROL PANEL (SF54301) 30
4.7 MACHINE STARTUP 31
4.8 STOP THE MACHINE 31
4.9 FIRST POWER-ON 32
4.10 COMMON SCREENS 32

Main Screen 32
Alarm Screen 32
4.11 Common Operation 32
Quick Modification of Setting Temperature 32
Query/Reset Fault 32
4.12 User Menu 33
4.13 User Parameter Operation 35
4.14 User Parameters Table 36
4.15 Engineering Menu 36
4.16 11 Manufacturer Menu 43
4.17 11.1 Procedures of Entering Manufacturer Menu 43
4.18 11.2 Details of Manufacturer Menu 43
4.19 11.3 Manufacturer Debugging 44
4.20 11.4 Configuration Wizard 44
4.21 11.5 Manufacturer Parameters Table 45
5. TROUBLE-SHOOTING 49
5.1 Reasons and solutions 49
5.2 Error codes 50
6. MAINTENANCE AND REPAIR 51
6.1 Y-Type Strainer 51
6.2 Solenoid Valve 51
6.3 Maintenance Schedule 53
6.3.1 About the Machine 53
6.3.2 Checking after Installation 53
6.3.3 Daily Checking 54
6.3.4 Weekly Checking 56
6.3.5 Monthly Checking 57
6.3.6 Half-yearly Checking 58

Table Index

Table 1-1：Specification 8
Table 4-1：Control Panel 24
Table 4-2：Parameter Setting 27

Picture Index

Picture 1-1 : Technical Specifications (NEOTW-***)..... 9
Picture 1-2 : Pump Performance Curve (NEOTW-H/G)..... 10
Picture 1-3 : Technical Specifications (NEOTW-***H/G)..... 10
Picture 2- 1 : NEOTW Working Principle..... 13

Picture 2- 2 : NEOTW-H Working Principle..... 15
Picture 2-3 ： Pump 16
Picture 2-4 ： Overload Relay 20
Picture 3-1 ： Installation Space 21
Picture 3-2 ： Mould and Water Couplings 1 22
Picture 3-3 ： Mould and Water Couplings 2 22
Picture 3-4 ： Mould and Water Couplings 3 23
Picture 4-1 ： Control Panel 24
Picture 4-2 ： Machine Startup 1 25
Picture 4-1 ： Control Panel 30
Picture 4-2 ： Machine Startup 1 31

1. General Description

Read this manual carefully before operation to prevent damage of the machine or personal injuries.

NEOTW Water-type mold temperature controllers are used to heat up the mould and maintain temperature and are also used in other similar applications. High temperature water from the mould is returned to the cooling tank and cooled by either indirect cooling (For high temperature water and high temperature plus pressure models) or direct cooling (For standard models). It is then pressurized by the high-pressure pump, sent to the heating tank and finally to the mould with a constant temperature. Optimizational microcomputer controller is installed to ensure stable temperature control.



Model: NEOTW-910

1.1 Feature

1) P.I.D. multi-stage temperature control system can maintain a mould temperature with accuracy of ±0.5℃;
2) Adopt high efficient pump with great pressure and stable performance;
3) Multiple safety devices can automatically detect abnormal performance and indicate this via visible alarm;
4) Elegant in design, easy to remove, and maintenance;
5) Pump inside adopts stainless steel to avoid explosion;
6) The heating temperature of NEOTW-H can reach 160℃ with stable performance and accuracy within ±1℃.
7) The heating temperature of NEOTW-G can reach 180℃ with stable performance and accuracy within ±1℃.
8) ETM - H/G adopts indirect cooling method to maintain accurate temperature and quick heat transfer by means of steady cooling water flow;

All service work should be carried out by a person with technical training or corresponding professional experience.

Any modifications of the machine must be approved by NEOTEC in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local agency.

Service hotline: +33 4 50 27 29 00

1.2 Technical Specifications

1.2.1 Specification

Table 1-1：Specification

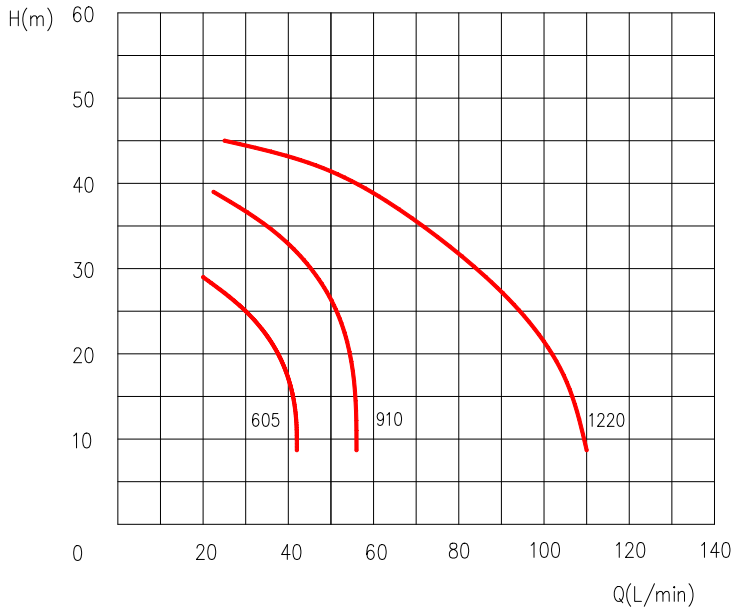
Model	Max. temp.	Heater Power (kW)	Pump Power (kW)	The Max Flow Rate (L/min)	The Max Pressure (bar)	Heater Quantity	Cooling	Mold Joint* (inch)	Inlet/Outlet (inch)	Dimensions (mm) (H×D×W)	Weight (kg)
NEOTW-610	120℃	6	0.75	50	4.5	1	Direct cooling	3/8" (2×2) or 3/8" (4×4) or other	1"/1" or other	260×720×600	60
NEOTW-910		9	0.75	50	4.5	1				260×720×600	60
NEOTW-1220		12	1.5	85	7.0	1				350×720×630	80
NEOTW-1830		18	2.2	120	6.0	1				370×900×790	100
NEOTW-2430		24	2.2	120	6.0	1				370×900×790	120
NEOTW-2440		24	3.0	130	7.0	1				370×900×790	120
NEOTW-605B	120℃	6	0.37	45	3.2	1				310×720×600	55
NEOTW-610B		6	0.75	60	4.2	1				310×720×600	60
NEOTW-910B		9	0.75	60	4.2	1				310×720×600	60
NEOTW-1220B		12	1.5	100	5.0	1				350×720×630	95
NEOTW-1830B		18	2.2	300	3.0	1				370×900×790	120
NEOTW-2430B		24	2.2	300	3.0	1				370×900×790	160
NEOTW-3650B		36	3.7	450	3.5	1				470*1000*1050	200
NEOTW-610H	160℃	6	0.75	50	4.5	1	Indirect cooling	3/8" (2×2) or 3/8" (4×4) or other	1"/1" or other	350×790x750	80
NEOTW-910H		9	0.75	50	4.5	1				350×790x750	80
NEOTW-1220H		12	1.5	85	7.0	1				350×790x750	90
NEOTW-1830H		12	2.2	120	6.0	1				420×850x850	120
NEOTW-2430H		24	2.2	120	6.0	1				420×850x850	120
NEOTW-2440H		24	3	130	7.0	1				420×850x850	130

Note: 1) "H" stands for water heaters with high temp., "G" stand for water heaters with high temperature and high pressure.
2) To ensure stable water temperature, cooling water pressure should not be less than 1.5kg / cm^2, but also no more than 4 kg / cm^2;
3) Pump testing standard: Power of 50Hz， purified water at 20℃.
(There is ±10% tolerance for either max. flow rate or max. pressure.)
5) Power supply: 3Φ, 400V, 50Hz.

We reserve the right to change specifications without prior notice.

1.2.2 Technical Specifications (NEOTW-***)

Pump performance curve

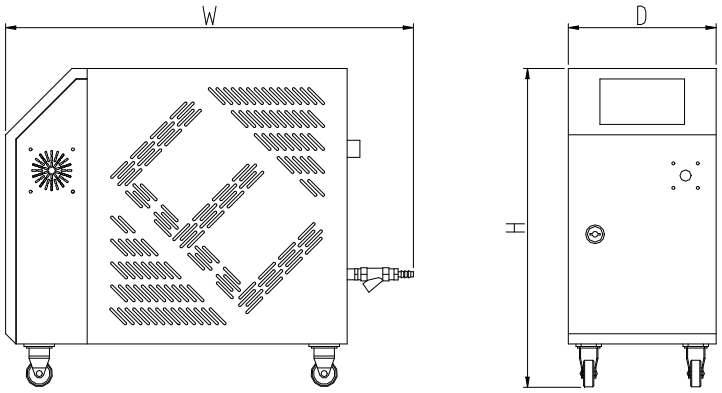


Heater Power: 6/9/12kW Pump power: 0.37/0.75/1.5kW

Max. pump flow: 42/56/110 L/min Max. pump pressure: 2.8/3.8/4.5Bar

Cooling method: direct Mould coupling (Optional): 3/8"(2×2) Max. temperature: 120℃

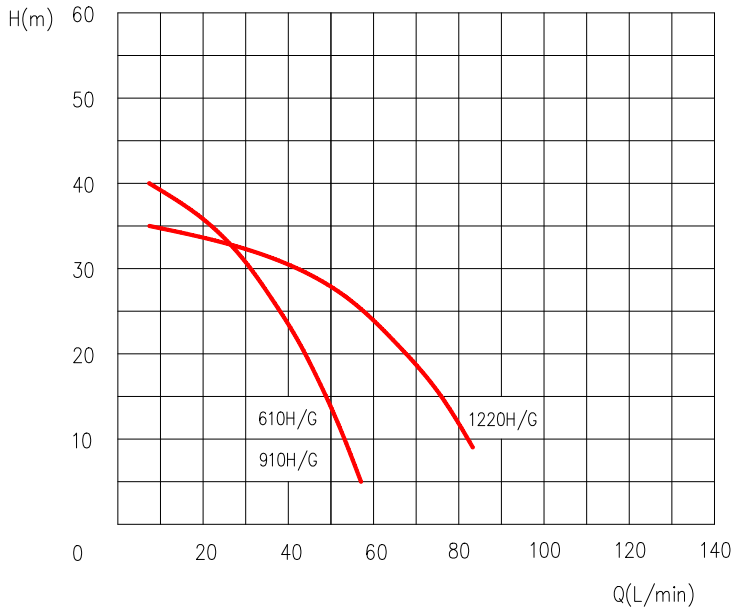
Picture 1 1：Pump Performance Curve



Picture 1- 1: Technical Specifications (NEOTW-***)

1.2.3 Technical Specifications (NEOTW-***H/G)

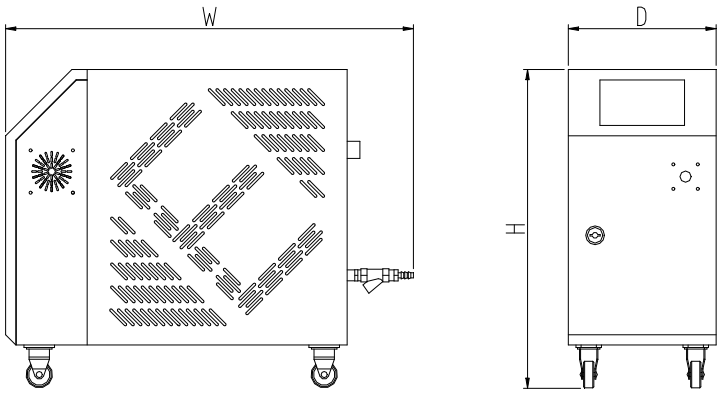
Pump performance curve



Pipe heater: 9/12kW Pump power: 0.75/1.5kW Max. Pump flow: 60L/min Max. Pump pressure: 4.0/3.5 Bar Cooling method: Indirect Mould coupling (Optional): 3/8"(2×2)

Max. Temp.: 160℃/180℃

Picture 1- 2: Pump Performance Curve (NEOTW-H/G)



Picture 1- 3: Technical Specifications (NEOTW-***H/G)

1.3 Safety Regulations

Strictly abide by the following safety regulations to prevent damage of the machine or personal injuries.

1.3.1 Safety Signs and Labels

 Danger!

The unit is designed to endure high temp, and high pressure. For safe operation, do not remove the covers or switches.

 Attention!

The unit should be operated by qualified personnel only.
During operation, avoid wearing gloves or clothes that may cause danger.
Turn off main switch when power supply is off.
Stop the unit when there may be power supply problems caused by static electricity.
Put on safety gloves and shoes during installation or relocation.
Components from our company can only be used for replacement.

 Warning!

Do not touch the switch with wet object or hands.
Do not use the machine before fully aware of its performance.
Be careful not to touch or hit the switch or sensor.
Please keep enough operation space, and keep away obstacles.
To avoid producing statics, clean the floor from oil or water to keep a dry environment.
Protect the machine against severe vibration or collision.
Do not remove safety signs or make it dirty.
Drunken, medicine-taking, or men without proper judgement should not operate the machine.

 Note!

All the screws used to install electrical components in the electric cabinet are locked tightly and don’t need regular inspection.

1.3.2 Signs and Labels

	Maintenance attention： Regularly clean the filter screen of cooling water inside the copper nipple to prevent the machine from being blocking.
	Attention: Applicable to oil- type machine. Set the max temperature in temp. controller.
	This is to indicate motor rotating direction. When phase reversal happens, the alarm sounds and indicator on control panel will indicate. Please exchange the place of two of the electrical wires to solve this problem.
	High voltage! Electrical shock may happen. Carefulness is required from the operator.
	Attentions! This is general warnings which operators should pay attention to.

1.3.3 Operation Regulations

1) Before operation, make sure that cooling water is clean soft water without pollutants.
   ※Low quality water brings lime scales, which may cause problems.
   ※Low quality water brings break line of heating pipe, wear of pump impeller, flow reduction, which leads to temperature can not rise.
2) If problems of drainage or bad temperature control are noted, please clean solenoid valve and cooling water inlet and outlet.
3) Do not move the unit when it is in operation.
4) When in need of repairing, wait until oil temperature falls below 30℃.
5) Motor overload may be caused by phase shortage, pipe obstruction, broken bearing, etc. Motor overload relay will trip off to stop the machine when this happens. Fixing the problems, press RESET on overload relay to clear the alarm.
6) Before turn off the pump, wait until oil temperature falls blow 50℃. Or the life of the unit would be affected.

7) to ensure the stability of heat temperature, the pressure of cooling water should be set as 2~5kg/cm^2.

8) If the setting temperature is below 100℃, then the pressure switch setting value should be 1.5-2 bar; If the setting temperature sets between 100℃ and 120℃, then the recommendable pressure switch setting value should be 2.8 bar. If the cooling water pressure is too low, then the pressure switch setting value can be adjusted properly to ensure normal running. However, it may affect the limitation of setting temperature or cause unstable temperature control.

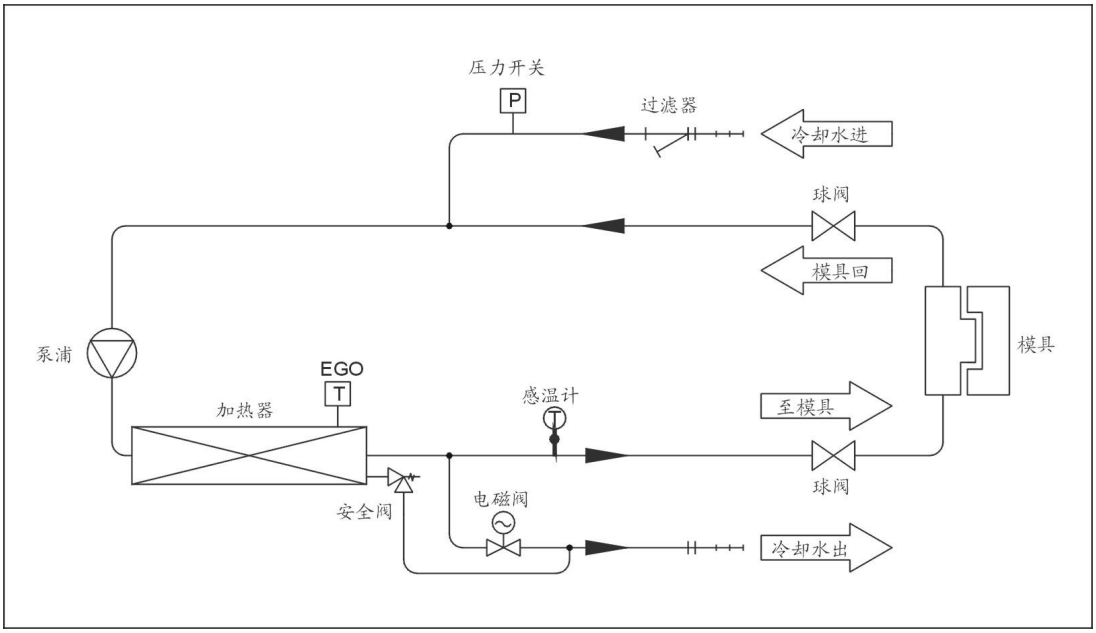
9) Please connect the cooling water outlet with high temperature resistant pipe when temperature is above 100℃.

2. Structure Characteristics and Working Principle

2.1 Main Functions

Water-type mold temperature controllers are mainly used to heat up the mould and keep its temp. at a certain level, and they are also found applications in other similar fields. Water returned from the mould will be cooled by indirect cooling and then it is sent to pipe heaters by a high pressure to be heated to keep a constant temp. of process water. Owning to optimizing design, maximum 180℃ of process water could be supplied. Optimizational microcomputer controller is installed to ensure stable temperature control within the accuracy of ±1℃.

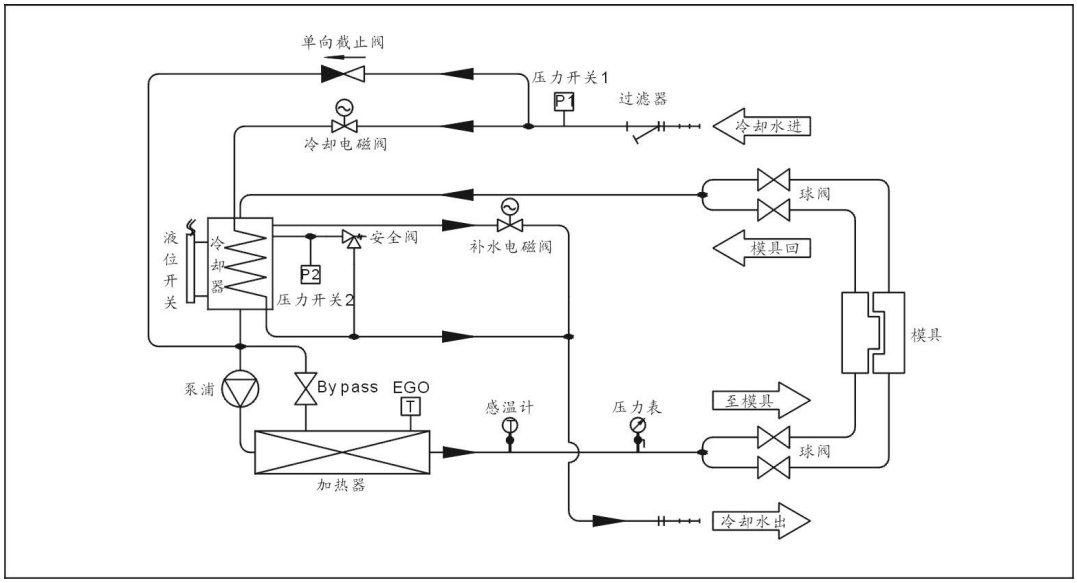
2.1.1 NEOTW Working Principle



Picture 2- 1: NEOTW Working Principle

High-temperature water returning from mould returns to cooler through pipes, which is conveyed to heater after being pressured through pumping and it is transmitted to mould after being heated in electric thermal pipe, so on and so forth. In this process, when liquid level switch detects that liquid level falls down to set value, the water replenishing electromagnetic valve is started, which replenishes water to ensure normal operation of the system; If the water temperature is too high, the system will start up cooling electromagnetic valve and cooled water will enter the system to cool water at high temperature indirectly and reduce its temperature, by which the purpose of maintaining constant temperature is achieved. If water is still at high temperature and maintains at the level of the set EGO temperature, system will start up high temperature alarm and stops working; when system pressure arrives at set value of safety valve, safety valve is started and starts releasing pressure.

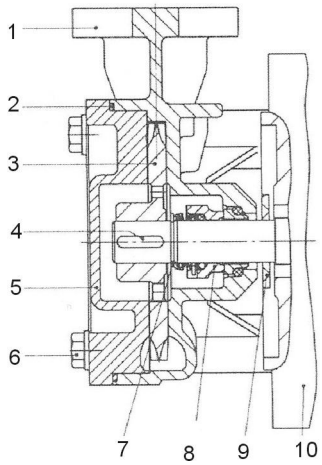
2.1.2 NEOTW-H/G Working Principle



Picture 2- 2: NEOTW-H Working Principle

High-temperature water returning from mould returns to cooler through pipes, which is conveyed to heater after being pressured through pumping and it is transmitted to mould after being heated in electric thermal pipe, so on and so forth. In this process, when liquid level switch detects that liquid level falls down to set value, the water replenishing electromagnetic valve is started, and the water replenishing pump is started, which replenishes water to ensure normal operation of the system; if the water temperature is too high, the system will start up cooling electromagnetic valve and cooled water will enter the system to cool water at high temperature indirectly and reduce its temperature, by which the purpose of maintaining constant temperature is achieved. If water is still at high temperature and maintains at the level of the set EGO temperature, system will start up high temperature alarm and stops working; When system pressure arrives at set value of safety valve, safety valve is started and starts releasing pressure; If system pressure keeps rising, which is higher than the set value of pressure switch 2, system will start up water replenishing electromagnetic valve to release valve; if the pressure of cooled water fails to reach the preset requirements, pressure switch 1 will emit signal, system starts up low-pressure alarm and stops working.

2.1.3 Pump



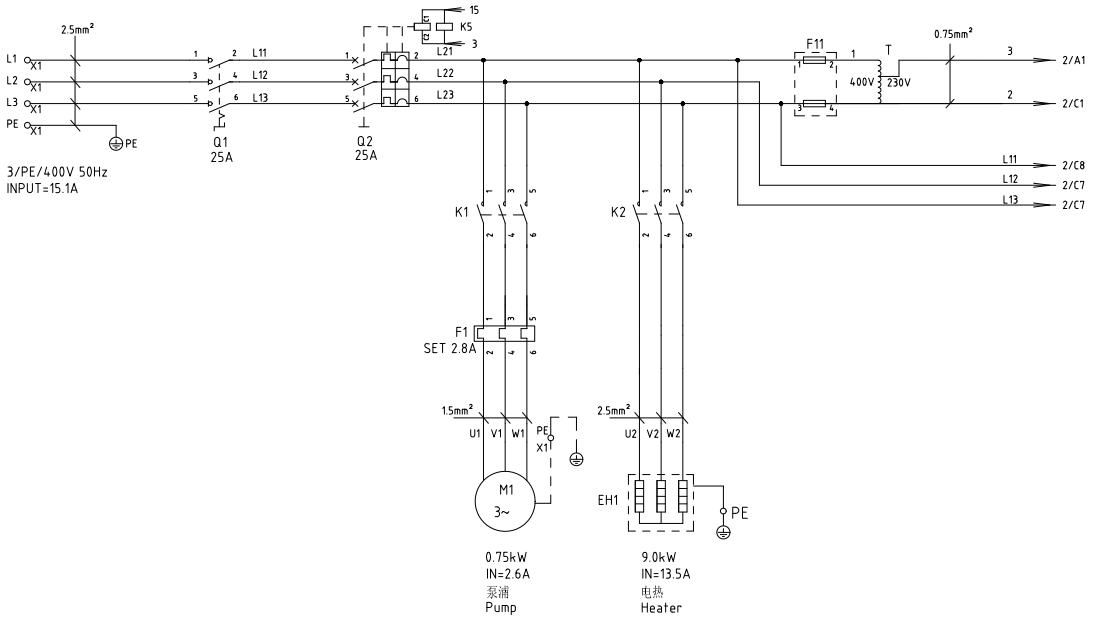
Names of Parts：

1. barrel of pump 2. sleeve 3. O-type ring 4. bolt 5. pump cover
6. hexagonal head screw 7.neck ring 8. shaft seal 9. rotary ring
10. motor

Picture 2-3：Pump

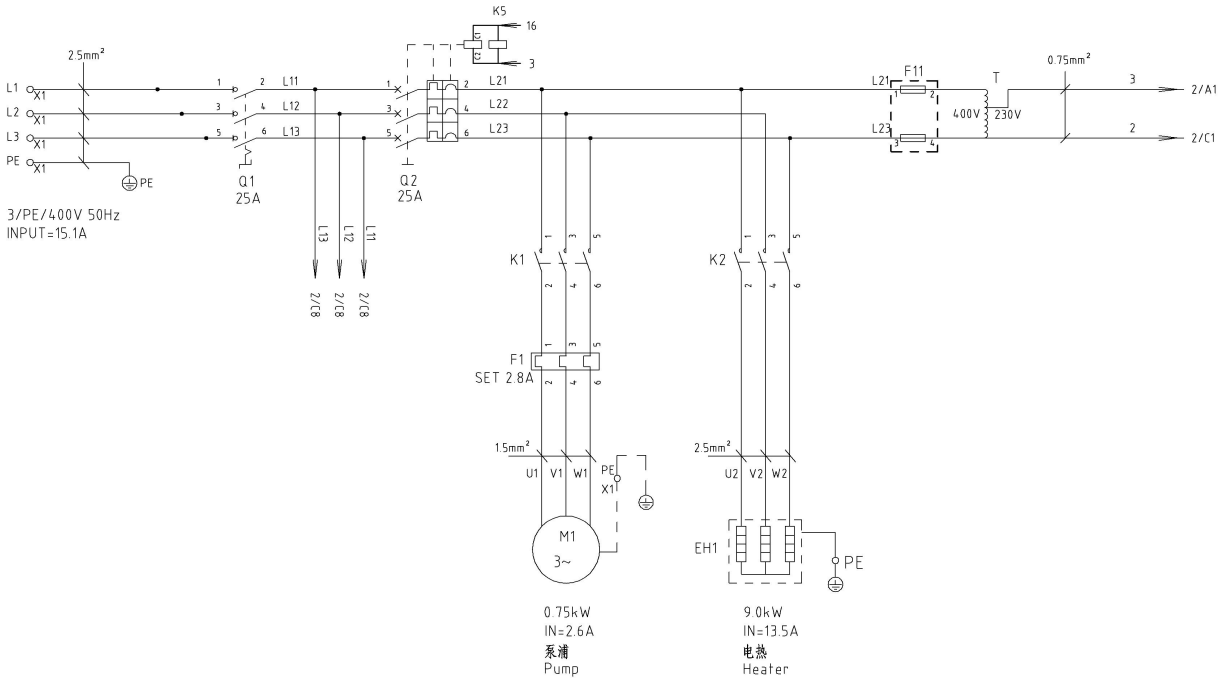
2.2 Electrical Diagram

2.2.1 Main Circuit (NEOTW)(400V)



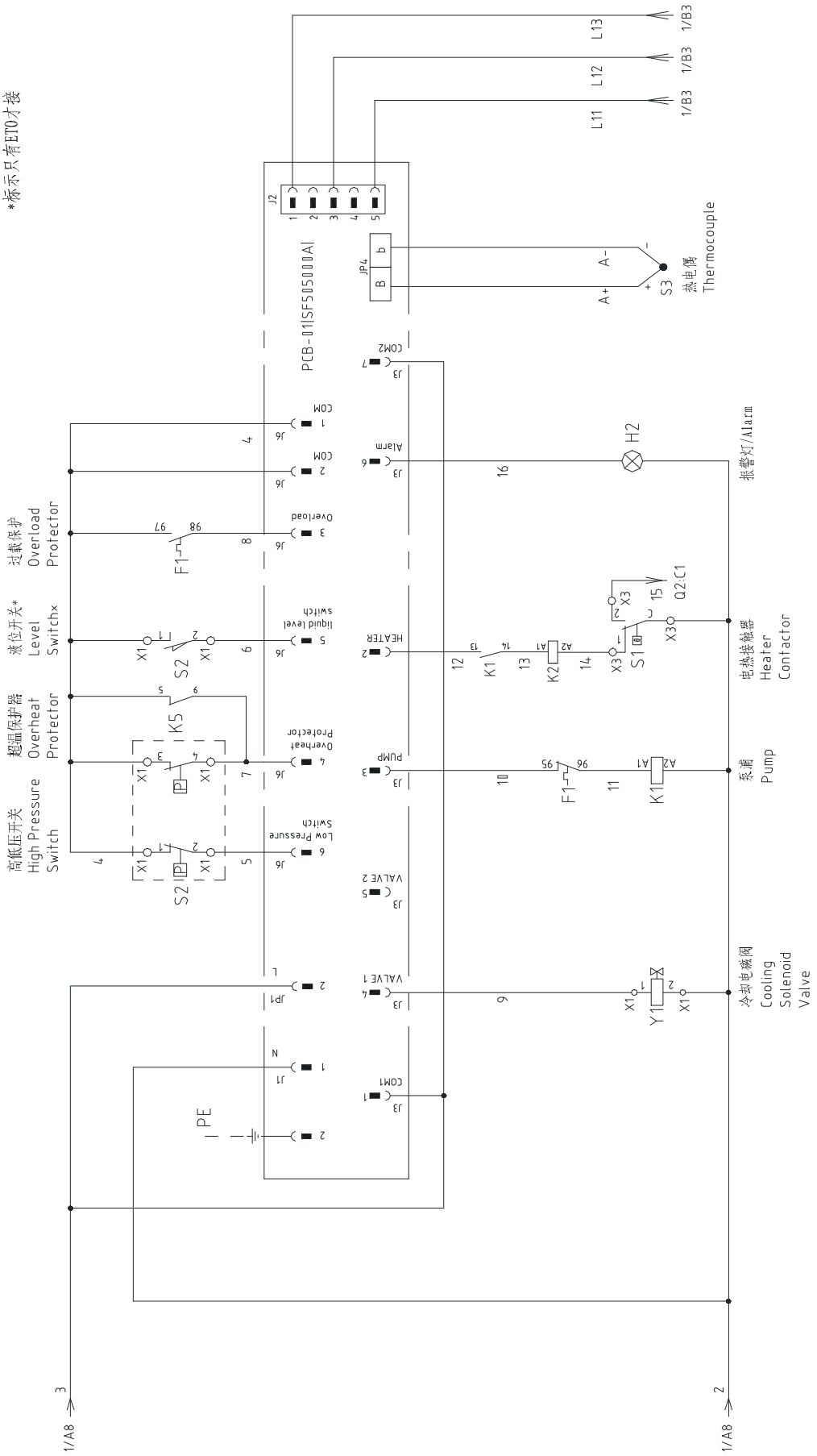
Picture 2-4: Main Circuit (NEOTW) (400V)

2.2.2 Main Circuit (NEOTW-H)(400V)



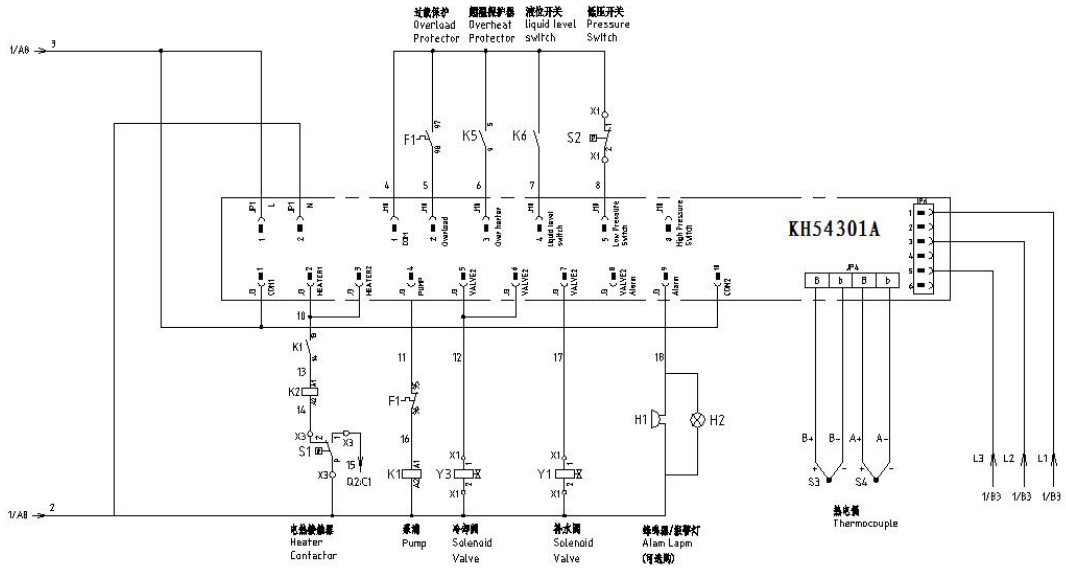
Picture 2-5: Main Circuit (NEOTW-H) (400V)

2.2.3 Control Circuit (NEOTW-50500) (400V)



Picture 2-6: Control Circuit (NEOTW) (400V)

2.2.4 Control Circuit (NEOTW-H-54301) (400V)

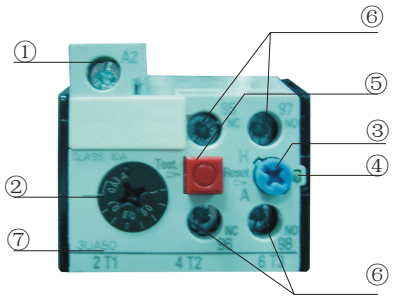


Picture 2-7: Control Circuit (NEOTW-H) (400V)

2.3 Main Electrical Components Description

2.3.1 Overload Relay

At delivery, the overload relay is set for manual reset. When motor overload occurs, stop the machine, then check and solve the problem. After that open the door of control box, press down the reset button of overload relay (if you can not press down the reset button, wait for one minute).



Picture 2-4：Overload Relay

1) Terminal for contact coil A2.
2) Setting current adjusting scale.
3) Reset (blue).
H: manual reset
A: automatic reset
4) Switch position indication (green).
Tripping of a manual-resetting is indicated by a pin projecting from the front plate.
5) Test button (red).
6) Auxiliary contact terminals shown in 95, 96, 97, 98, NC and NO contacts are shown in position 95, 96 and 97,98 respectively.
7) Main circuit connection No. must be corresponding with terminal Number of contactor.

3. Installation and Debugging

3.1 Installation Space

During installation of the machine, keep at least 500mm installation space around the machine as shown by the following picture. Do not install the machine in a position crowded with other objects. This would cause inconvenience to operation, maintenance and repair.

Do not sit on the machine.

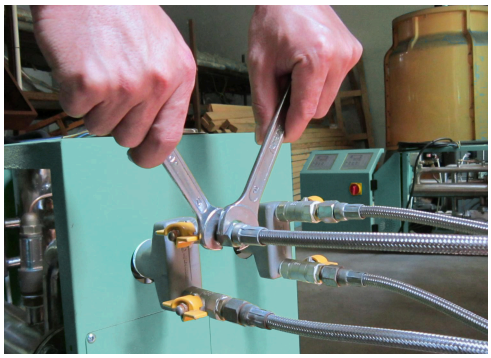
Keep away flammable and explosive goods.



Picture 3-1：Installation Space

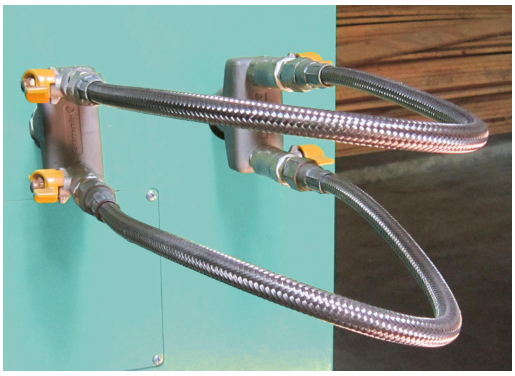
3.2 Mould and Water Coupling

1) It is necessary, while connecting from the access to mould, to use two spanners to fix the switching connection and ball valve before screw tightly the horn nut of the connection pipe, otherwise water might leaks from the machine.



Picture 3-2：Mould and Water Couplings 1

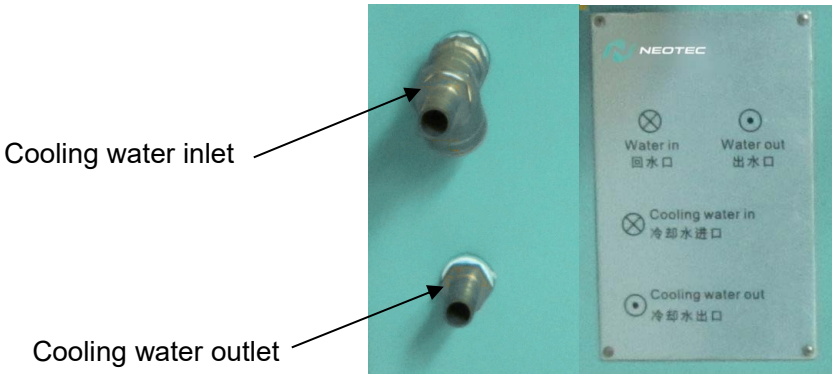
2) Unused mould couplings can be connected with each other by a teflon pipe, shown as below.



Picture 3-3：Mould and Water Couplings 2

Note!

Cooling water inlet and outlet are shown as the Figure. Please do not connect reversely. Y-type filter is installed in water inlet.



Picture 3-4：Mould and Water Couplings 3

3) Connect cooling water inlet with water supply and cooling water outlet with a drainage pipe. After that, turn on water supply.

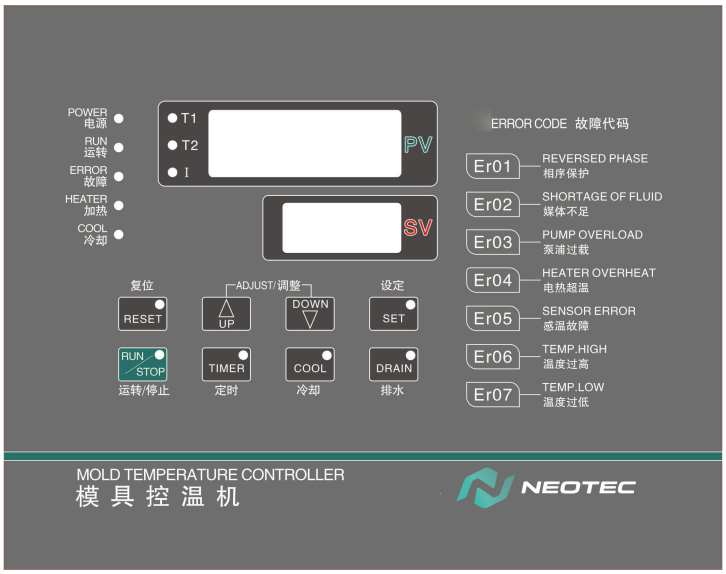
3.3 Power Supply

Make sure that power supply is the same as required before installation.

Mould heaters are generally set to be used with 3Φ400V power supply or other specifications according to customers' requirement.

4. Operation Guide

4.1 Control Panel (SF505000)



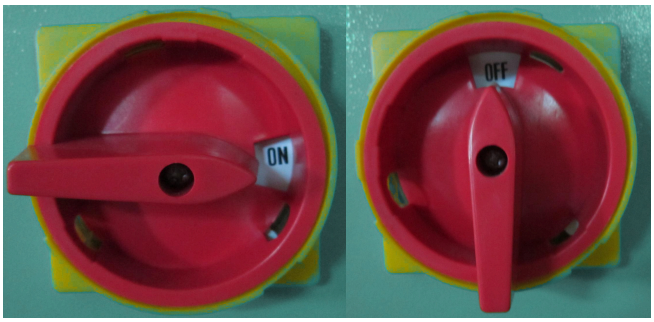
Picture 4-1：Control Panel

Table 4-1：Control Panel

No.	Name	Functions	Remarks
1	RUN/STOP	Turn on/off the machine	Press it for 2s.
2	△key （UP） ▽key （DOWN）	△ increase the number; ▽ decrease the number.	
3	SET	Set and confirm the temperature and parameters.	
4	RESET	When reset fails, the alarm sounds to remand of removing the dismal.	
5	TIMER	Turning on/off of the timer.(after start up the timer, the key lights on.)	
6	COOL	Manual cool when in operation.	Press it for 2s.
7	DRAIN	When staying or halting, start up media removing.(when starting up, the key lights on.)	

4.2 Machine Startup

1) Pipe connect the inlet and outlet of the standard water heater to the pipe of mould (refer to chapter 3.2 for details).
2) Connect the cooling water inlet /backup water inlet (refer chapter 3.2 for details).
3) Turn all the ball valves on.
4) Turn on the main power switch.



Switch on Switch off

Picture 4-2：Machine Startup 1

5) Turn on the pump switch to start the pump.
6) Set mould temperature (if it is already set, neglect this step.) Press ▲ ▼ to set the temperature. For NEOTW series, maximum temperature setting value is 120℃.

Temperature setup steps:

Show the mould temperature

When the mould temperature is 30.0℃ and the machine is turned off, the operation panel will show as below:



Set the temperature

Press DOWN key. If you need to set the temperature as 85.0℃, then the mould temperature will be showed in PV bar, and the setting temperature will be showed in SV bar. Press the SET key, then it will start twinkling.



Twinkling bar switch

Press FUN/STOP key, Twinkling bar switches to the second position, showing on the panel as below:



Input a new setting number

Press UP key and input “5”, showing on the panel as below:



Confirm the new number

Press SET key and UP key to return so as to confirm the new number, showing on the panel as below:



7) Over temperature setup for system cooling: set as +1℃ before delivery, which means that whenever actual temperature exceeds setting value by 1℃, cooling system will be automatically activated.

4.3 Stop the Machine

1) Set the mould temperature beyond 60℃, press the Startup/Stop key RUN/STOP for 2s, it will enter the Quick Chilling mode automatically. The SV bar will show OFF. The machine will automatically stop working after the temperature falling down below 60℃.



2) Turn off main switch.

Warning!

When main switch is turned on, be careful of electrical shock.

Note!

Note! Pump motor rotating direction should be the same as indicated.

Note!

In order to prolong machine life, please do as above steps to turn on and off the machine.

4.4 Control Circuit Board Setting

Table 4-2：Parameter Setting

Code	Function	Factory Settings	Remarks
SV	To set temperature	80	Unit: ℃
ONT	Startup timer	0	display form: **hours, **minutes; Max setting number: 99 hours, 59minutes.
OFT	Off timer	0	
Press 「SET」key for 5s to enter			
LoC	Parameters lock	oFF	On: no modification of the parameters; oFF: modification of the parameters is allowed.
P	Heat proportional band	8	
PC	Relative cooling proportional band	3	
Ti	Integral time	100	Unit: S
Td	Derivative time	12	Unit: S
T	Heat circle	20	Unit: S
TC	Cooling circle	20	Unit: S
ST	Halt temperature	60	Unit: ℃
SPT	Moisturizing temperature	45	Unit: ℃

4.5 Control Circuit Board Setting(SF-505000)

Indication	Item	Default value	Setting Range	unit	Remark
Setting temperature parameters（Open）：**Press「SET」to enter** **（After modification，press「SET」to exit and save the parameters.）**					
	Setting temperature	80.0	0.0 ~ 400.0	℃	The setting range is limited by the minimum and maximum setting temperature of manufacturer parameters 【F-13】and 【F-14】.
		176.0	32.0~800.0	℉	
User parameters（Open）：**Press「▽」to enter** **（After modification, inquiry to the boundary of the parameters , then exit and save the parameters）**					
U-01	Star up timing	00.00	00.00~99.59	hour. minute	The displayed format is ：hour．minute； The maximal value is：99 hour 59 minute.
U-02	Shut down timing	00.00	00.00~99.59		
Engineering parameters（Open）：**Press「SET」 for 3 seconds to enter** **（After modification，press「SET」for 3 seconds to exit and save the parameters.）**					
P-00	Lock	on	oFF/on		on： the parameters can not be modified； oFF ： the parameters can be modified.
P-01	Start AT	oFF	oFF/on		on：Enable auto-tuning OFF：Disable auto-tuning
P-02	Auto-tuning temperature	80.0	0.0~350.0	℃	
		176.0	32.0~662.0	℉	
P-03	Control Ar	15	1~30		Regulate PID control response
P-04	Heat Scale P	8.0	0.1~200.0	℃	
		46.4	32.2~392.0	℉	
P-05	Cool Scale PC	3.0	0.1~20.0		Multiples of heating proportional band
P-06	Integral Ti	100	1~3600	second	
P-07	Differential Td	12	0~3600	second	
P-08	Heat cycle T	20	1~300	second	Cycle of electric heating output function
P-09	Cool cycle TC	20	1~300	second	Cycle of cooling valve output

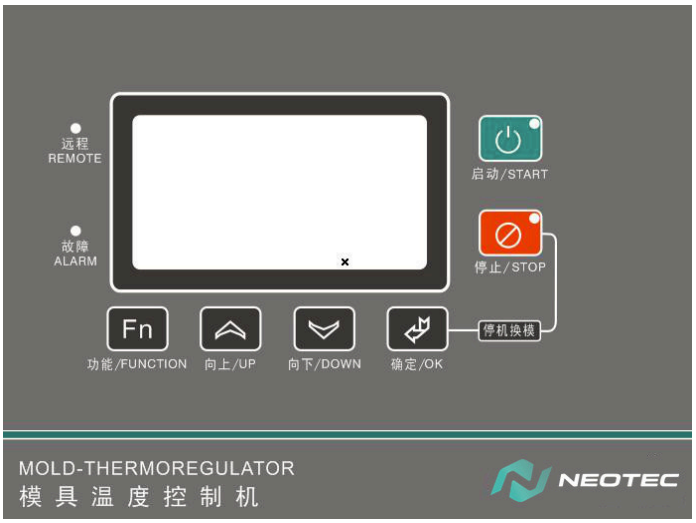
					function
P-10	Overlap db	0.0	-30.0~30.0	℃	For hot water machines, db is generally set as a positive (for example, 0.5 ℃)
		0.0	-54.0~54.0	℉	
P-11	Heat Output Max	100	0~100	%	Maximum electric heating output
P-12	Cool Output Max	100	0~100	%	Maximum electric cooling output
P-13	PV temperature filter	10	0~100	s	Use to smooth the change of temperature.
P-14	Outlet Temp. Repair	0.0	-30.0~30.0	℃	Compensation for the measurement error of medium output temperature
		0.0	-54.0~54.0	℉	
P-15	Inlet Temp. Repair	0.0	-30.0~30.0	℃	Compensation for the measurement error of medium backflow temperature
		0.0	-54.0~54.0	℉	
P-16	Pump current repair	0.0	-10.0~10.0	A	Current repair value.
P-17	Temperature Over Alarm	10.0	0.0~100.0	℃	PV — [SV]> [P-17], it is delayed [F-27] seconds and reported as Er06. PV — [SV]< [[P-17]], the fault is automatically reset.
		18.0	0.0~180.0	℉	
P-18	Temperature Low Alarm	10.0	0.0~100.0	℃	[SV] — PV >[P-18] , it is delayed [F-27] seconds and reported as Er07. [SV] — PV <[P-18] , the fault is automatically reset.
		18.0	0.0~180.0	℉	
P-19	Shut down Temperature	60.0	0.0~350.0	℃	When the unit is shut down, open the cooling valve. With the timing of 5 seconds, close the cooling valve and the pump, and then shut down until the media temperature < [**P-19**]. [**P-19**] = 0, the shutdown is not subject to temperature limits.
		140.0	32.0~662.0	℉	
P-20	Forced supply water temperature max	45.0	0.0~350.0	℃	The unit will be forced to supply water when power on if PV < 【P-20】. If【P-20】= 0， this function is not valid.
		113.0	32.0~662.0	℉	

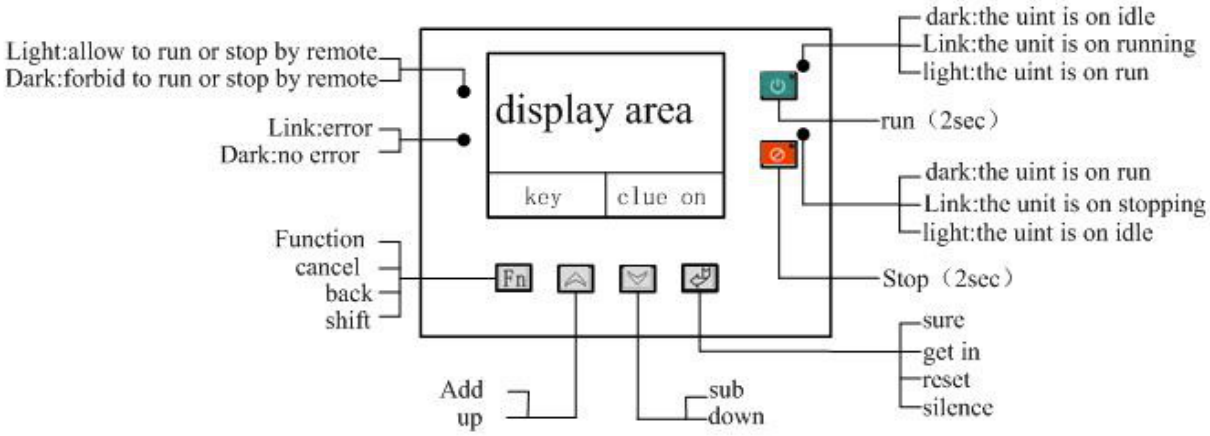
P-21	Temperature different alarm	0	0~50.0	℃	If |outlet temperature – inlet temperature| > [**P-21**], it is delayed [**P-22**] seconds and reported as Er09 If【P-21】= 0， this function is not valid.
		0	0~90.0	℉	
P-22	Temperature different alarm Delay	60	0~250	s	
P-23	Quantity of output	----	-100~100	%	heat%+cool%（can not be modified）

Attention!

Before delivery, the parameters of temp. Controller are set already. Do not reset the parameters unless it is necessary

4.6 Control Panel (SF54301)

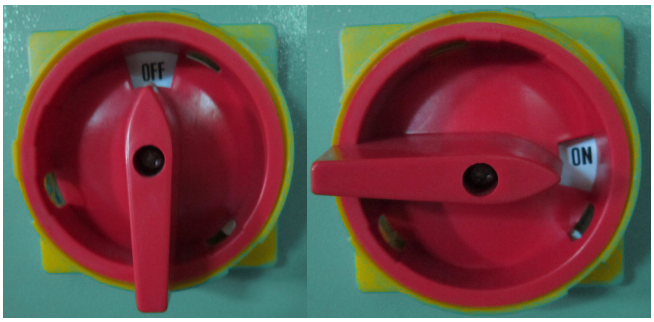




Picture 4- 1：Control Panel

4.7 Machine Startup

1) Pipe connect the inlet and outlet of the standard water heater to the pipe of mould (refer to chapter 3.2 for details).
2) Connect the cooling water inlet /backup water inlet (refer chapter 3.2 for details).
3) Turn all the ball valves on.
4) Turn on main power switch.



Picture 4-2：Machine Startup 1

5) Press ON in 3s, machine will automatically do water supplement(when choose water type), start pump.
Machine standard is water type, if need use oil type need adjust machine inner parameters.

4.8 Stop the Machine

1) Switch off heater power.
2) Wait until the temperature falls below 60, turn off pump switch.
3) Turn off main switch.

Warning!
When main switch is turned on, be careful of electrical shock.

Note!
Pump motor rotating direction should be the same as indicated.

Note!
In order to prolong machine life, please do as above steps to turn on and off the machine.

4.9 First Power-on

When the controller is powered on for the first time, the configuration wizard screen will pop up, which can be used normally when configured.

4.10 Common Screens

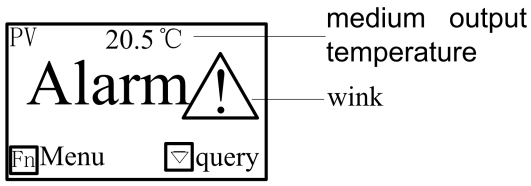
Main Screen

The system will enter the main screen after countdown, which displays as follows:



Alarm Screen

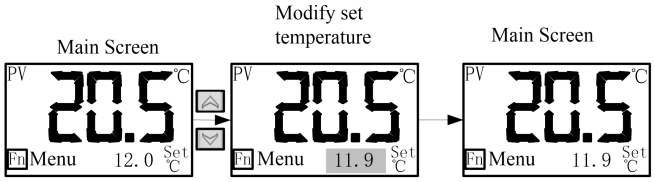
In case of unit failure, the alarm screen is as follows:



4.11 Common Operation

Quick Modification of Setting Temperature

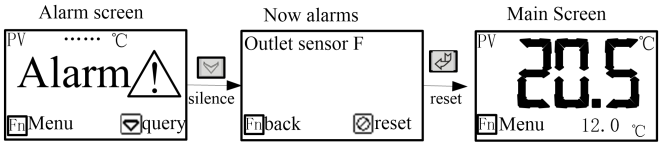
If theuser parameter [locked temperature] is set to "No", the setting temperature can be modified directly in the main screen, with operation details as follows:



Note: the setting temperature can also be modified in the user parameters.

Query/Reset Fault

In case of fault, the alarm screen will automatically pop up. The operation details of query and reset faults are as follows:



4.12 User Menu

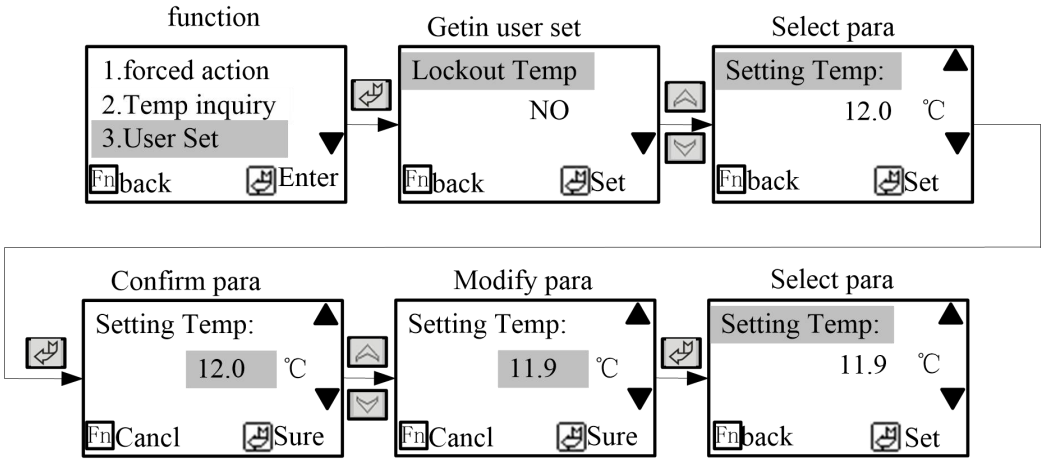
Press **<Function>** inn the main screen to enter the user menu, which has parameters as follows:

No.	Parameter Item	Parameter Function	Remark
1	Forced Action	Forced cooling, forced mold cleaning	Forced cooling: manually forced cooling of the unit can be achieved in the running state Forced mold cleaning: manually force mold cleaning can be achieved in shutdown mode
2	Temp inquiry	To query medium output temperature and medium backflow temperature, circulation pump current , output state ,input state .	The medium backflow temperature is not displayed when there is no medium backflow probe and the pump current is not displayed when there is no current detection.
3	User Set	To set the parameters commonly used by the user	Refer to 9 User Parameters Table for the number of user parameters.
4	Alarm History	To query the last 10 faults occurred	Press <Confirm> button for 2s to clear the fault history.
5	Time function	Current time Programmed on/off Programmed 1 …… Programmed 6	Current time: to query/modify the current time. Programmed on/off: to enable or stop the programmed function Programmed 1: programmed setting 1 …… Programmed 6: programmed setting 6
6	Maintenance	To query the total running time of the unit The total number of electric heating output	The oil time is not displayed in non-oil machine.

		The total number of cooling output Oil time	
7	utiliza rate	Equipment utilization rate Total power-on time Actual operation time Accumulative fault time	To display the time recording of the unit
8	Version	To query the current software version	

4.13 User Parameter Operation

For the modification operation of parameter value, the user's modification of setting temperature will be described as an example. (Select "No" for [locked temperature]).



4.14 User Parameters Table

User-set parameters and their meanings are listed in the following table:

No.	Parameter Name	Factory Default	Setting Range	Remark
1	Lockout Temp	No	Yes ~ No	Yes: the setting temperature can be quickly changed in the main screen. No: the setting temperature cannot be quickly changed in the main screen.
2	Setting Temp	80.0℃	0.0~400.0℃	The setting range is limited by the minimum and maximum setting temperature of manufacturer parameters.
		176.0 °F	32.0~752.0°F	
3	Start-Stop Mode	Local	Local / Local + Remote / Remote	Local: the start and stop of the unit can only be controlled locally. Local + Remote: the start and stop of the unit can be controlled both locally and remotely. Remote: the start and stop of the unit can only be controlled remotely.
4	Backlight Off	0 minute	0~255 minute(s)	The backlight is normally on when set as 0; when set as non-zero, the controller backlight is off if the controller is not operated after the set value is reached.
5	Multi-Language		中文~english	Simplified-CH:show the simplified Chinese interface. English: show the english interface. Traditional-CH: show the traditional Chinese interface.
6	Adjust Contrast	32	20~44	Adjust the LCD contrast.

4.15 Engineering Menu

In the main screen, press the  button for 3 seconds to enter the password entry screen and enter the correct engineering password (The default value is 4561, which is recommended to change. Refer to the password entry method in the manufacturer menu screen for password entry method.). Then enter the engineering function menu, which contains two items.

Engineering Parameters Table

	Parameter Name	Initial Value	Setting Range	Unit	Remark
PID info	Start AT	Disabled	Disabled/Use		Enable or disable auto-tuning
	Control Ar	15	1~30		Regulate PID control response
	Heat Scale P	8.0	0.1~200.0 ℃	℃	
		46.4	321~329.0	℉	
	Cool Scale PC	3.0	0.1~20.0		Multiples of heating proportional band
	Integral Ti	100	1~3600	Sec	
	Differential Td	12	0~3600	Sec	
	Heat cycle T	20	1~300	Sec	Cycle of electric heating output function
	Cool cycle TC	20	1~300	Sec	Cycle of cooling valve output function
	Overlap db	0.0	-30.0~30.0	℃	For hot water machines, db is generally set as a positive (for example, 0.5 ℃)
		0.0	-540.0~540.0	℉	
Operat Info	Remove Air Time	30	0~250	Second	In the preparation stage of operation, the time of opening the pump to discharge the air in the unit. Water shortage is not detected during this period.
	A Temp L Limit	0.0	0~250.0	℃	Used for HatWater Mach(I) If [A Temp L Limit] is set as 0, it is disabled. 1、if the [medium output temperature] <【A Temp L Limit】 the pressure relief valve will always
		32.0	32.0~482.0	℉	

					open.
	Pressure Open	0.2	0~99.9	Sec	For performing the following logic when the hot water machine (indirect cooling) and hot water machine (direct cooling) are short of water. Hot water machine (direct cooling): perform the logic "If you define the pressure relief valve, then open the pressure relief valve once for [open pressure relief valve for water shortage] seconds, while if you do not define the pressure relief valve, open the cooling valve once for [open pressure relief valve for water shortage] seconds". Hot water machine (indirect cooling): perform the logic "If you define the pressure relief valve, then open the pressure relief valve once for [pressure relief valve open time] seconds, while if you do not define the pressure relief valve, there is no operation". (If the [open pressure relief valve for water shortage] = 0, keep it closed).
	Up Press Cycle	30	0~250	Second	If [Up Press Cycle] is set as 0, it is disabled. For pressure relief of water temperature machine in warming period.
	Hold Pres Cycle	0	0~100	Minute	[Hold Pres Cycle] is set as 0, it is disabled. For pressure relief of water temperature machine in warming period.
	Auto Pres Temp	10.0	1.0~400.0	℃	For hot water machine, when PV - SV> [Auto Pres Temp], if you define the pressure relief valve, and [Auto pres valve] is set to use, open the press valve for quick depressurization. If the pressure relief valve is not defined, open the cooling valve for hot water machine (direct cooling).
		18.0	1.8~720.0	℉	
	Shutdown Temp	60.0	0.0~350.0	℃	When the unit is shut down, open the cooling valve. With the timing of 5 seconds, close the cooling valve and the pump, and then shut down until the media temperature < [Shutdown Temp]. [Shutdown Temp] = 0, the shutdown is not subject to temperature limits.
		140.0	32.0~662.0	℉	

	Cooling limit	10	0~60	Minute	1: forced cooling operation time. When set to 0, the unit forces cooling and stops until the media temperature < [cooling temperature in shutdown].
	Clean media TM	300	60~600	Second	Mold cleaning time, which will not be displayed until the mold cleaning valve is defined.
	Pump Rev Time	10	1~600	Second	Displayed after inversion output of the defined pump. And pump reversion function is only available when the temperature probe is 2. In shutdown delay stage, open the pump and cool down the cooling valve. When the back media temperature is lower than the set [inversion temperature], the pump rotates forward and the cooling valve stops. Start pump reversion, and the unit shuts down after the [inversion time] of pump inversion operation is set.
	Pump Rev Temp	60.0	0~350.0	℃	
		140.0	32.0~662.0	℉	
	Bpump Open Time	10	1~300	second	Oil temperature machine has no such parameter. When adding water, the booster will open 【Bpump Open Time】 second and then close 【Bpump close Time】second. If 【Bpump close Time】is set as 0, the booster will open during the period of adding water.
	Bpump CloseTime	0	0~300	second	
	Auto press valve	Use	Use/Disable		For hot water machine, when PV - SV> [Auto Pres Temp], if you define the pressure relief valve, and [Auto pres valve] is set to use, open the press valve for quick depressurization.
	Cool Temp	0	0.0~350.0	℃	If【Cool Temp】is set as 0, it is disabled. In the shutdown stage, if medium temperature > 【Cool Temp】,open the cooling valve intermittently.
		32	32.0~662.0	℉	
	Cool Open Time	32	32.0~662.0	℉	If【Cool Temp】is set as 0, it cannot be displayed. In the shutdown stage, the cooling valve will open 【Cool Open Time】 second and then close 【Cool close Time】second.
	Cool close Time	10	1~300	second	
Alarm Info	Pump rated cur	0.1	0~25.0	A	Pump rated current value.
	Pump Cur Repair	0.0	-10.0~10.0	A	Current repair value.
	Power On CLWD	120	1~255	Second	When you first turn on the unit, begin to detect the low water level failure after that delay time. Oil temperature machine has no such parameter.

	Add Water Freq	0	0~999	Minu	If [Add Water Freq] is set as 0, it is disabled. Oil temperature machine has no such parameter. Only work on When the PV is higher than the set [A Temp L Limit],
	Heat Time Limit	10	0~999	minu	= 0, the heating time limit detection is not used. Please set according to the actual heating efficiency of the unit.
	Cool Time Limit	10	0~999	minu	= 0, the cooling time limit detection is not used. Please set according to the actual cooling efficiency of the unit.
	Temp Over Alarm	30.0	0.0~100.0	℃	PV — [SV]> [Temp Over Alarm], it is delayed 10seconds and reported as Temp High PV — [SV]< [Temp Over Alarm], the fault is automatically reset.
		54.0	0.0~180.0	℉	
	Temp Low Alarm	30.0	0.0~100.0	℃	[SV]—PV >[Temp Low Alarm] , it is delayed 10 seconds and reported as Temp Low [SV] — PV <[Temp Low Alarm] , the fault is automatically reset.
		54.0	0.0~180.0	℉	
	Temp Diff Alarm	10	0~10.0	℃	|medium output temperature – medium backflow temperature| > [Temp Diff Alarm], and it is delayed [Temp Delay] seconds, the alarm of too large medium output and backflow is given. The function is disabled when [Temp Diff Alarm]= 0.
		18.0	0.0~18.0	℉	
	Temp Delay	60	0~250	Sec	
	phase detection	Use	Disabled/Use		Whether to use on-board three-phase power detection
	Boost Rated Cur	0.1	0~25.0	A	Rated current of booster pump.
	Boost Cur Rpair	0.0	-10.0~10.0	A	Current compensation of booster pump
	Media Less Dly	120	1~255	Second	During operation, if the lack of media [Media Less Dly]+[PumpStop For LW] continues, it will give an alarm of Media Lack.
	PressH Dly	10	0~300	Second	The parameter is only available in oil temperature machine. If the effective signal of system press high input lasts for【PressH Dly】seconds,the machine would shut dowm and reported as Sys Press High.

					The function is disabled when【PressH Dly】= 0.
	First Temp High	40.0	0.0~100.0	℃	PV－【SV】>【First Temp High】, it is delayed 2seconds and reported as “First Temp High” PV－【SV】<【First Temp High】, the fault is automatically reset.。
		72.0	0.0~180.0	℉	
	First Temp Low	40.0	0.0~100.0	℃	【SV】－PV >【First Temp Low】, it is delayed 2seconds and reported as “First Temp Low”, 【SV】－PV <【First Temp Low】, the fault is automatically reset.。
		72.0	0.0~180.0	℉	
Assist Info	Mailing add	0	0~32		commun address The function is disabled when [Press TimeLimit]= 0.
	Temp Unit	℃	℃~℉		℃：The temperature unit is ℃。 ℉：The temperature unit is ℉。
	Display temp	0.1	0.1 ℃ /1 ℃		The main screen displays the smallest unit of temperature.
	Heat Output Max	100	0~100	%	Maximum electric heating output
	Media Full Dly	5	1~250	Sec	Media Full Delay
	Outlet Repair	0.0	-30.0~30.0	℃	Compensation for the measurement error of medium output temperature
		0.0	-54.0~54.0	℉	
	Inlet Repair	0.0	-30.0~30.0	℃	Compensation for the measurement error of medium backflow temperature
		0.0	-54.0~54.0	℉	
	Heat Output Opt:	J32+J33output	Three options in total, see the Remarks		J32 output: electric heating is J32 output. J33 output: electric heating is J33 output. J32 + J33 output: electric heating output is J32 and J33 polling output. the parameter is hidden in case of 2 electric heaters

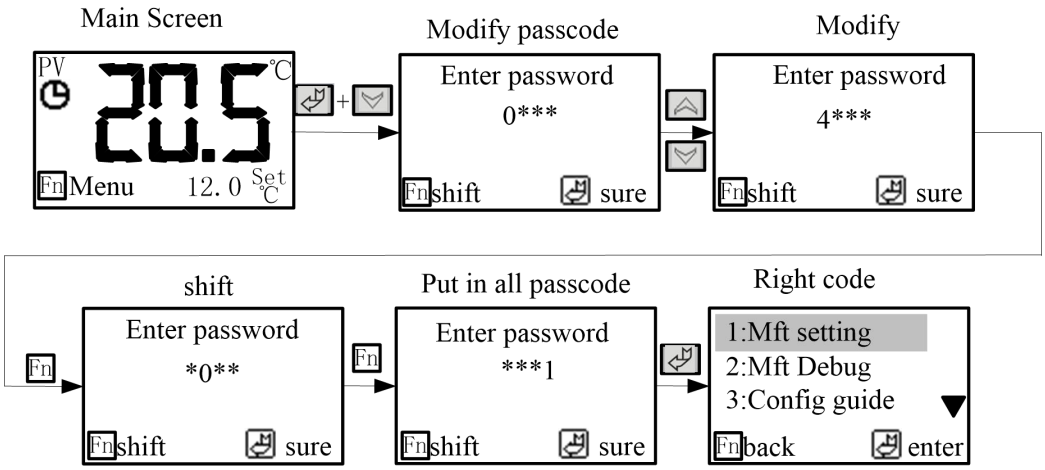
	Cool Output Opt:	J35+J36output	Three options in total, see the Remarks		J35 output: cooling valve is J35 output. J36output: cooling valve is J36 output. J35 + J36 output: cooling valve output is J35 and J36 polling output. J36 output is defined as non-cooling valve, the parameter is hidden
	Baud Rate	19200	4800 、9600 、19200		Commun baud Rate the parameter is hidden in case of 【Mailing add】=0.
	Parity Bit	None	None 、Even、Odd		Commun parity bit.
	Stop Bit	1 Bit	1 Bit、2 Bit		Commun stop bit.
	Commun Type	Normal	Normal~HAITIAN		Plese use Normal
Maint Info	Oil Time Limit	~	0~9999	Hour	=0 disabled, replace the oil use prompt. The maximum oil time (the parameter is only available in oil temperature machine).
	Oil Total Time	0	0~9999	Hour	Actual oil time(the parameter is only available in oil temperature machine).
	Oil Total Time	0	0~9999	Minute	
	Heater Maint(H)	0	0~9999	hundred	=0 disabled, replace the heating contactor prompt. The maximum electric heating output frequency(hundred)
	Heat Output(TT)	~	0~9999	Ten thousand	Accumulative actual output frequency of electric heating
	Heat Output	~	0~9999	One	
	Cooler Maint(H)	0	0~9999	hundred	=0 disabled, replace the cooling contactor prompt. The maximum cooling valve output frequency
	Cool Output(TT)	~	0~9999	Ten thousand	Accumulative actual output frequency of cooling valve
	Cool Output	~	0~9999	One	
	Power On Hours	~	0~9999	Hour	Total powered-on time of the unit
	Power On Hours	~	0~60	Minute	

	Actual run time	~	0~9999	Hour	Accumulative operation time of the unit
	Actual run time	~	0~60	Minute	
	Failure Time	~	0~9999	Hour	Accumulative fault time of the unit
	Failure Time	~	0~60	Minute	

4.16 11 Manufacturer Menu

Press + in the main screen and enter the Password Entry screen to enter the correct manufacturer password (default 4561, which is recommended to change). Then enter the Manufacturer Function Menu, which includes five items.

4.17 11.1 Procedures of Entering Manufacturer Menu



4.18 11.2 Details of Manufacturer Menu

The details and function of manufacturer menu are shown in the following table:

No.	Parameter Item	Parameter Function	Remark s
1	Mft setting	To set the parameters commonly used by the manufacturer	Refer to 10.5 Manufacture Parameters for specific parameters.
2	Mft Debug	To debug the abnormal operation of each electrical part of the unit	Not available during the unit operation.
3	Config guide	For configuration of commonly used parameters of the machine	Not available during the unit operation. The screen will pop up when

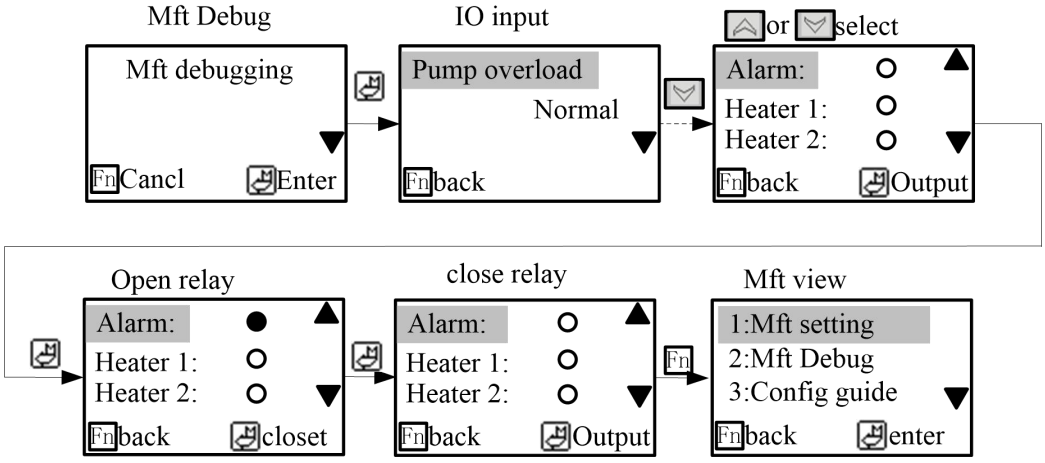
			powered on for the first time.
4	Initialize	To restore user parameters to the factory default values	Refer to 10.5 Manufacture Parameters for the initial values of the parameters.
5	Mft password	To set the password of entering manufacturer menu	The default value is 4561, which is recommended to change.

4.19 11.3 Manufacturer Debugging

Manufacturer debugging is mainly used to test whether the operation of each electrical part of the unit is normal, which is not available when the unit is under operation.

Method: to determine whether the unit is normal by testing three-phase power input, switch input and relay output.

For alarm input, it only displays the test result. If the result is normal the wiring is good and parameter settings are correct; if it alarms, with flashing display of alarm characters, then make sure whether the external wiring is good and the parameter settings are consistent.

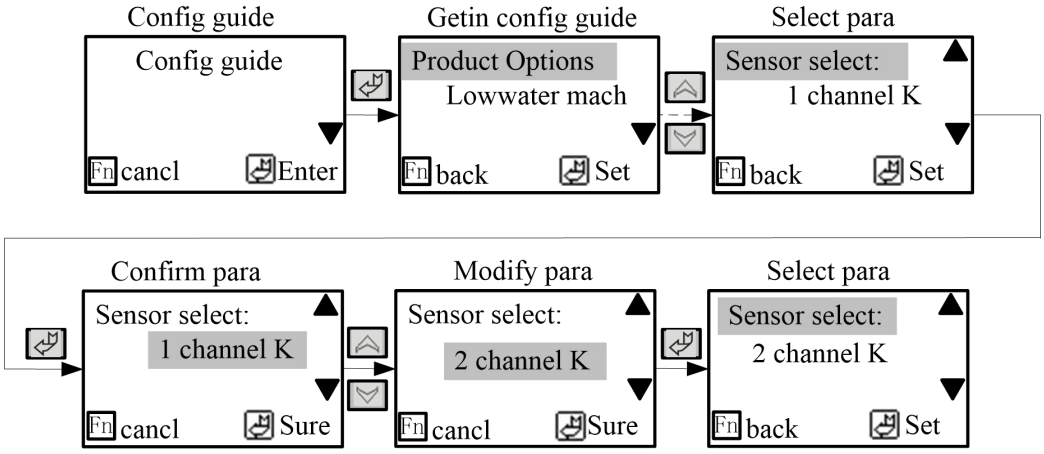


4.20 11.4 Configuration Wizard

Configuration Wizard completes the configuration of the commonly used parameters by the machine, which is not available when the unit is under operation.

For the number and implication of parameters of the Configuration Wizard, please refer to the Manufacturer Parameters Table and to Parameter Operation for specific configuration method.

The Configuration Wizard screen will pop up when powered on for the first time. And if you click “Cancel” operation without configuring at this point, the Configuration Wizard screen will still pop up when powered on next time. Once you have entered the Configuration Wizard, the Configuration Wizard screen will not pop up when powered on and you can only enter the Configuration Wizard through the Manufacturer Menu.



4.21 11.5 Manufacturer Parameters Table

The parameters set by the manufacturer and their implications are listed in the following table: (The items with “*” are configuration wizard parameters.)

Parameter	Factory Value	Setting Range	Unit	Remarks
Product Options	LowWater Mach	See the Remarks		LowWater Mach HotWater Mach(D) HotWater Mach(I) Oil Mach
Sensor select	1-way K	1~3 way of K 1~3 way of pt100		Select the number of temperature probes.
Stability	0.0	0.0~1.0	℃	This parameter is generally not changed.
	0.0	0.0~1.8	℉	
JP36 Output Def	Cooling valve 2	Pressure valve/cooling valve 2/disabled		Hot water machine only. Non hot water machine is cooling valve 2 output.

JP37 Output Def	Booster	cleanvalve/makup/booster/air-out /disabled		Please set according to the unit conditions.
JP38 Output Def	Mold cleaning valve	Pump reverse/over-heatalarm/makeup/ cleanvalve/disabled		Please set according to the unit conditions.
Heater Numbers	1	1~2		The use conditions of electric heater: 1. [number of electric heater] = 2; 2. When the unit is under operation, and not in self-tuning, if the SV-PV> = [operating temperature of electric heater 2], open the electric heater 2.
Heater 2 temp	5.0	0.5~100.0	℃	
	9.0	0.9~180.0	°F	
Pump Overload	Normally open	normal open ~ normal closed		Switch normal open ~ normal closed settings
Overheat	NC			
Low Level	Normally open			
Pressure low	NC			
Phase Switch	Normally open			
System Press hi	Normally open			
Press low deal	Manual reset	manual reset ~ automatic reset		If [processing of low inlet water pressure]= manual reset, the fault of low inlet water pressure needs to be manually reset. If [processing of low inlet water pressure]= automatic reset, there is fault memory in case of fault of low inlet water pressure. When the unit is under operation, it is automatically reset. After the fault is reset, the unit operates in the state before fault.

Set Temp Max	120.0	0.0~400	℃	The maximum setting temperature. Low-temperature water machine: max 150.0℃ Hot water machine: max 250.0℃ oil machine: max 400.0℃
	248.0	32.0~752.0	℉	
Set Temp Min	10.0	0.0~400	℃	The minimum setting temperature.
	50.0	32.0~752.0	℉	
Auto Run	Disabled	Disabled~Use		The machine can run automatically if the parameter is set to “Use”
* Alarm Type	Normal open	normal open ~ NC		Alarm output type
Control temp:	Outlet sensor	Outlet sensor~die sensor		Seclect control sensor Outlet sensor:the outlet sensor is control sensor inlet sensor:the inlet sensor is control sensor die sensor:the die sensor is control sensor the parameter is displayed in case of 3 way K or 3 way pt100.
J10-6 Input:	Phase	Phase / Fulx Err /Low Press		J10-6 Input Define
Fulx AfterPump:	10 sec	1~300sec	sec	Check the Flux Err after pump start the【Fulx AfterPum】time。 J10-6 Input is defined as Phase valve, the parameter is hidden
Alarm Output:	Keep when mute	Keep when mute ~ Stop when mute		Keep when mute： Stop output when silence Stop when mute： keep output when

				silence
J10_5 define	Low press	Low press ~ system press		Please set according to the unit conditions.

5. Trouble-shooting

5.1 Reasons and solutions

Failures	Possible reasons	Solutions
Main power indicator does not become bright after main switch is turned on.	Did not connect through power supply. Main switch broken. Power supply wires problems. Control circuit fuse melt. Transformer broken.	Connect through power supply. Replace main switch. Check electrical wires. Fix the fuse. Replace the transformer.
Both power and phase reverse indicator are bright after the main switch is turned on. The buzzer sounds to raise alarm.	Power supply low voltage. Phase shortage. Phase reversal. PCB problems.	Check power supply. Check power supply. Exchange two of the wires of power supply. Replace the PCB.
Motor overload relay is bright. The buzzer sounds and system stops working.	Abnormal fluctuations of power supply. Pump blocked. Pump motor problems. Overload relay (F1) setting value error.	Check power supply. Check the pump. Check pump motor. Set the setting current of overload relay to equal to 1.1 times of motor rated current. Please refer to page for detailed description of overload relay. Reset overload relay: wait for one minute, then press the blue button to reset.
Overheat indicator is bright. The buzzer sounds and system stops working.	EGO temperature setting mistakes. EGO poor temperature detecting. Heater contactor K1 and K2 problems.	Correctly set EGO temperature. (EGO temperature setting value= temperature setting value+10℃) Replace EGO. Replace the contactor.
Low level indicator is bright. The buzzer sounds and system stops working.	Low pressure of water supply. Pressure switch problems.	Increase the pressure of water supply. Replace pressure switch.
Main switch indicator won't become bright after turning on main switch. Pump can not start when turning on pump switch.	PCB output relay problems. Pump switch problems. Time relay (K5) problems. Electrical circuit problems.	Check or replace the PCB. Replace the switch. Replace time relay. Check electrical circuit.
No display of temperature controller after turning on pump and heater switch.	Heater switch problems. Temperature controller problems. Electrical circuit problems.	Replace the switch. Replace temperature controller. Check electrical circuit.
Differences between setting temperature and actual temperature is too big.	Too short time after machine startup. Temperature parameter setting error. Cooling water valve problems.	Wait for a while. Check temperature parameters. Please refer to the standard manual of setting parameters. Replace solenoid valve.
Temperature can't rise up.	Heater contactor problems. Heater problems. Thermocouple problems. Temperature controller operation mode set to STOP. Temperature output problems.	Replace the contactor. Replace pipe heater. Replace thermocouple. Set temperature controller to working mode. Replace or repair temperature parameters.

Circuit breaker tripping off at turning on main switch.	Short circuit of main circuit. Transformer short circuit or connected with earth wire. Problems of circuit breaker.	Check electrical wire. Replace circuit breaker.
Circuit breaker tripping off at turning on pump switch.	Pump motor coil short circuit. Problems of circuit breaker.	Check pump motor. Replace circuit breaker.
Circuit breaker tripping off at turning on pipe heater switch.	Pipe heater short circuit or contact with heating tank. Problems of circuit breaker.	Check electrical circuit. Replace circuit breaker.

5.2 Error codes

When dismal happens to the machine, error code in SV bar will light on and the buzz sounds as the same time of protecting the machine. Press 

key to stop the buzz from sounding and remove the alarm, as reference as below:

Error codes	Name	Solutions
Er01	Power anti-phase	Arbitrarily change the connection of two power cords.
Er02	Low-pressure or low-liquid positions	1. Check if the moisturizing pressure exceeds the setting number. 2. Check if inflow/outflow pipeline is correct. 3. Check if the setting number of low-voltage switch is proper. 4. Check if full tank of oil is ready.
Er03	Pump overload	1. Check if pump current exceeds rated value. 2. Check if thermal overload relay is proper. 3. Check if pump is blocked to run. 4. Check if pump is damaged. 5. Check if three-phase supply is normal.
Er04	electric heat overtemperature	1. Contactor is bonded tightly. 2. Parameter setting is unreasonable. 3. Material is insufficient. 4. Electro thermal pipe damaged. 5. Failure in high-voltage switch adjustment or no reset.
Er05	temperature sensor bug.	1. Thermo element damaged. 2. Wrong connection of thermo element 3. Circuit board damaged.
Er06	Overtemperature	1. Contactor is bonded tightly. 2. Parameter setting is unreasonable. 3. Abrupt power cut.

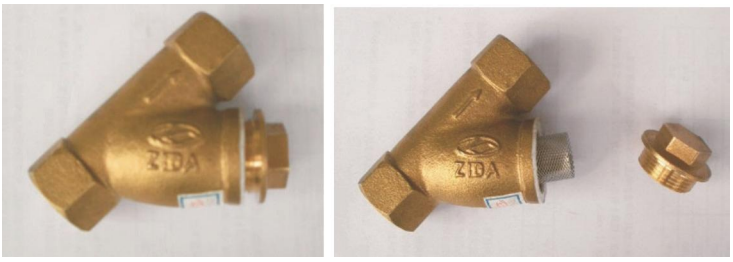
6. Maintenance and Repair

Pay attention to the following rules during maintenance:

1) More than two persons are required when checking the machine. Cut off power supply and drain oil and water first while inspecting the machine; carry out operations after complete confirmation of spaces for inspection and maintenance.
2) the machine is dangerous in using which is on the condition of high temperature; cut off power supply and put on safety gloves first to carry out inspection and maintenance.
3) It is necessary to carry out periodic inspections in order to prolong service life of the system and prevent from safety accidents.
4)please wait until the temperature reduces below 50℃ after stopping running. (Please note that it is dangerous to check or tear down the machine during operation.)

6.1 Y-Type Strainer

1) Clean soft water should be used as cooling water. Filter screen is used in the strainer to stop impurities and pollutants to enter into water pipe.
2) Impurities or pollutants may cause errors and bad temperature control. Clean filter screen of the strainer periodically.
3) Cleaning steps: turn off power and cooling water supply. Open the top cover of filter screen to clean the filter.

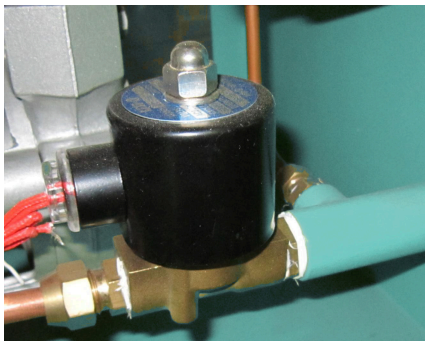


Picture 6-1：Y Type Strainer

6.2 Solenoid Valve

Replace steps of solenoid valve:

1) Open machine top cover.
2) Take down right side cover.
3) Unfix the solenoid valve for replacement.
4) Install the covers in a reverse order.



Picture 6-2：Solenoid Valve

6.3 Maintenance Schedule

6.3.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage _____Φ_____ V Frequency_____ Hz Power _____kW

6.3.2 Checking after Installation

☐ Check the installation space is enough as required.

☐ Check the pipes are correctly connected.

Electrical installation

☐ Voltage: _____V _____Hz

☐ Fuse melting current: 1 Phase _____ A 3 Phase _____ A

☐ Check phase sequence of power supply.

6.3.3 Daily Checking

___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires
___/___/___	___/___/___
☐ Check machine startup function ☐ Check all the electrical wires	☐ Check machine startup function ☐ Check all the electrical wires

___/___/___	___/___/___
☐ Check machine startup function	☐ Check machine startup function
☐ Check all the electrical wires	☐ Check all the electrical wires

6.3.4 Weekly Checking

__/__/__

- ☐ Check machine startup function
- ☐ Check all the electrical wires
- ☐ Check loose electrical connections
- ☐ Check and clean Y type strainer
- ☐ Check solenoid valve
- ☐ Check motor overload and phase reversal alarm function

__/__/__

- ☐ Check machine startup function
- ☐ Check all the electrical wires
- ☐ Check loose electrical connections
- ☐ Check and clean Y type strainer
- ☐ Check solenoid valve
- ☐ Check motor overload and phase reversal alarm function

__/__/__

- ☐ Check machine startup function
- ☐ Check all the electrical wires
- ☐ Check loose electrical connections
- ☐ Check and clean Y type strainer
- ☐ Check solenoid valve
- ☐ Check motor overload and phase reversal alarm function

__/__/__

- ☐ Check machine startup function
- ☐ Check all the electrical wires
- ☐ Check loose electrical connections
- ☐ Check and clean Y type strainer
- ☐ Check solenoid valve
- ☐ Check motor overload and phase reversal alarm function

__/__/__

- ☐ Check machine startup function
- ☐ Check all the electrical wires
- ☐ Check loose electrical connections
- ☐ Check and clean Y type strainer
- ☐ Check solenoid valve
- ☐ Check motor overload and phase reversal alarm function\

__/__/__

- ☐ Check machine startup function
- ☐ Check all the electrical wires
- ☐ Check loose electrical connections
- ☐ Check and clean Y type strainer
- ☐ Check solenoid valve
- ☐ Check motor overload and phase reversal alarm function

6.3.5 Monthly Checking

___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve
___/___/___	___/___/___
☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve	☐ Check loose electrical connections ☐ Check and clean Y type strainer ☐ Check solenoid valve

6.3.6 Half-yearly Checking

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve

__/__/__

- ☐ Check damaged pipes
- ☐ Check and clean Y type strainer
- ☐ Clean solenoid valve