YANO BOILER

400-920-8955

Instruction of Electric Steam Boiler

(Suitable for boiler from 3 to120Kw)

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扬 | 诺 | 锅 | 炉

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Shanghai YANO Boiler

Safety illustration

- Carefully read this manual before starting and maintenance the boiler.
- Boiler operation should be with qualified worker.
- Cut off power before making a check or maintenance of boiler.
- It will cause very dangerous accident with not professional boiler operating.

Boiler using conditions

- Using suitable voltage (According to your local situations) and boiler should be safety ground connection.
- Boiler should be equipped with water softener to decrease the water hardness and length the boiler life span.
- Boiler suitable using temperature is 5 ℃ to 45℃; boiler can't be used in an open, moisture, too high or too low temperature condition.
- Safety value should in an validity period, and checked it's flexible and qualified. Besides, safety value should bring to inspection every year.
- According to laws and regulation, Some boilers need to apply an boiler using certificate from government, so please kindly apply for an boiler certificate before using according to local situation.

Below situations is not in our product maintain range

- Artificial damage.
- Voltage is not the same or power wire wrong connection.
- Electric circuit or component damage caused by boiler used in too moist, water, or high temperature.
- Pipe and boiler spares freeze damage because boiler used in cold temperature.
- Boiler Damages caused by heating tube scale is over 3mm since water hardness is too high.

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Product parameters

Spec（Kw）	Rated pressure（MPa）	Rated evaporation（kg/h）	Voltage（V）	Pump power（Kw）	Power（Kw）	Power wire（mm^2）
3	0.7/1.0	4.3	380/220	0.55/0.75	3	1.5/4
6	0.7/1.0	8.6	380/220	0.55/0.75	6	2.5/6
9	0.7/1.0	12.9	380/220	0.55/0.75	9	4/10
12	0.7/1.0	17.2	380	0.55/0.75	12	6
15	0.7/1.0	21.5	380	0.55/0.75	15	10
18	0.7/1.0	25.8	380	0.55/0.75	18	10
24	0.7/1.0	34.4	380	0.55/0.75	24	10
27	0.7/1.0	38.7	380	0.55/0.75	27	10
30	0.7/1.0	43.0	380	0.55/0.75	30	≥10
36	0.8/1.0	51.6	380	0.55/0.75	36	≥16
45	0.7/1.0	64.5	380	0.55/0.75	45	≥16
50	0.7/1.0	71.7	380	0.55/0.75	50	≥25
60	0.8/1.0	86.0	380	0.55/0.75	60	≥35
72	0.8/1.0	103	380	0.55/0.75	72	≥50
90	0.8/1.0	129	380	0.55/0.75	90	≥50
100	0.8/1.0	143	380	0.55/0.75	100	≥70
120	0.8/1.0	172	380	0.55/0.75	120	≥95
144	0.8/1.0	200	380	0.75	144	≥ 120

Notice:

The above are our common boiler's parameters, the specific parameter of each boiler refer to product rating plate. If custom-made boiler, the boiler's parameter refer to the custom-made parameters.

Boiler general view

Front photo

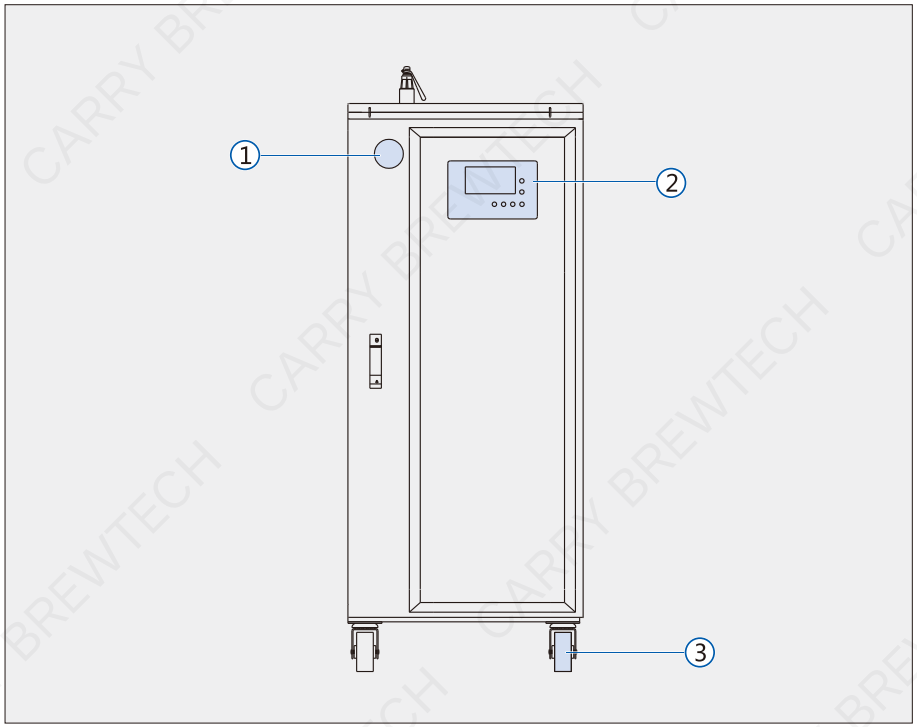


Photo 1: Boiler front part

① Pressure gage: Display the boiler pressure.

② System controller: Display boiler operating and working condition. Detailed using methods refer to page12-15.

③ Universal wheels with brake: when the boiler needs to be located, please pressure the brake block.

Back photo

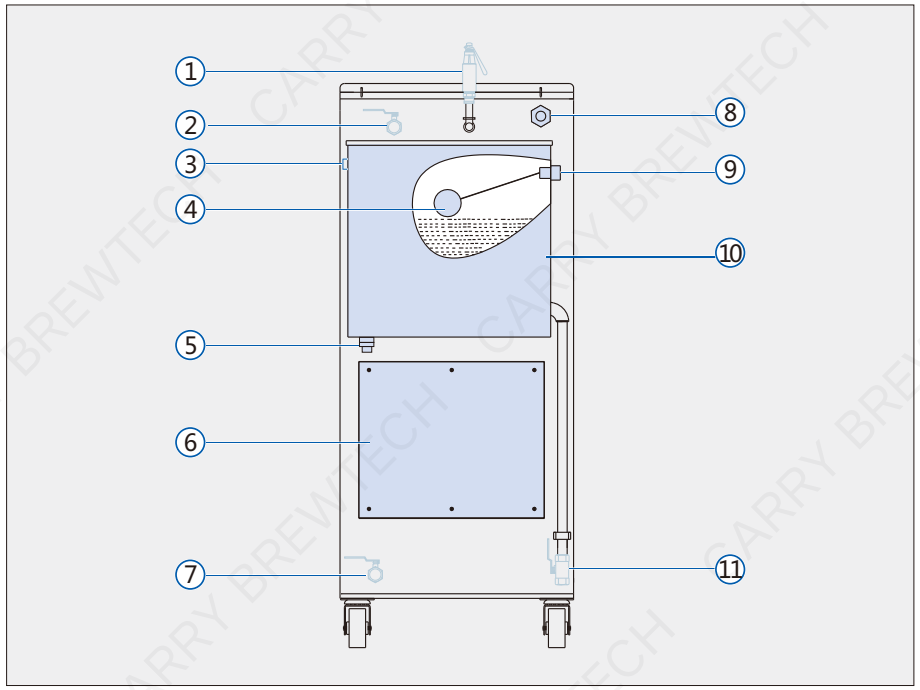


Photo 2: Boiler back part

① Safety value: Most important part in boiler with an protection function. When boiler's inner pressure exceeds it's rated pressure, the safety will relief pressure automatically.
② Steam value: Used to control steam output capacity.
③ Water tank overflow mouth: When water spill out from water tank, this mouth will drain off water automatically. And please connected drain pipe from mouth to flow into sewer.
④ Float ball value: Used for control water in water tank. The float ball value will on/off automatically according to water level line.
⑤ Water tank drain outlet mouth: Used for drain outlet when water tank have a washing.
⑥ Cover plate: some boilers are equipped with cover plate.
⑦ Drain outlet value: Used to drain boiler inner gall sewage.
⑧ Power wire inlet: Used for boiler's power wire inlet.
⑨ Water inlet mouth: Used for boiler water inlet.
⑩ Water tank: Used for saving water.
⑪ Water outlet value: Used to outlet water in water tank and pump. In colder place, it can avoid the water pipe and pump being frost crack when turn on water outlet value.

Front inner photo

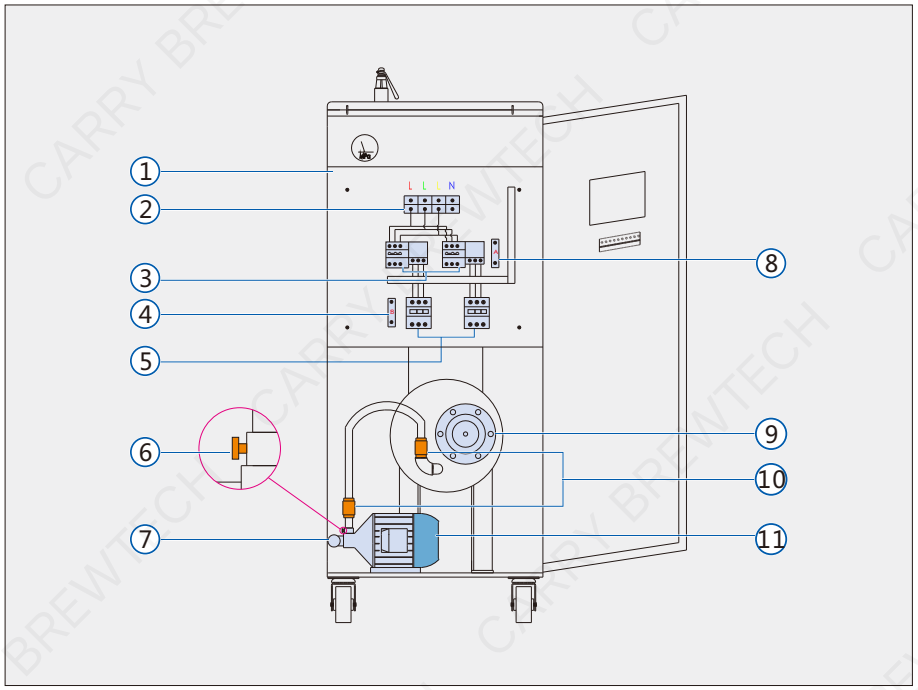


Photo 3: Front part inner photo

① Electric box: For controlling the electric box.
② Power wire terminal stud: "L" Part is for live wire connecting. "N" part is for Null wire connecting. On the top of the electric box, there is an Earth wire mark for connecting earth wire.
③ Electricity leakage protector: Please turn on the protector is in working condition all the time.
④ Protection wire B: To protect water pump wire.
⑤ AC contactor: To control the heating groups being on/off. When heating, the AC contactor actuation. When stop heating, the contactor will pop out.
⑥ Air bleed screw: For water pump air bleeding.
⑦ Water pump: For boiler water inlet. The pump will transfer water from water tank into boiler automatically according to water level single on/off.
⑧ Protection wire A: To protect the boiler wire.
⑨ Heating tube: For heating water to produce steam.
⑩ Check value: To prevent the water in boiler gall flowing back to water tank.
⑪ Fan Cover: For protect electric engine fan cover

Right part inner photo

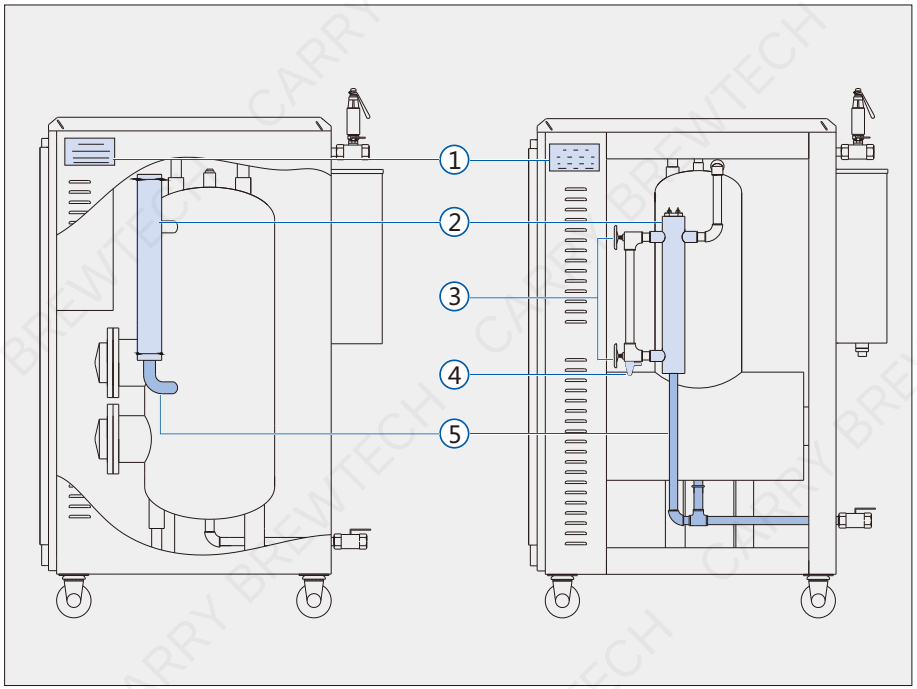


Photo 4:Right part inner photo

① Product rating plate: For checking product main parameters.
② Water level electrode container: For putting water level sensor.
③ Glass tube connecting value: If close this value, both ends of the glass tube will be closed with no water flowing inside.
④ Glass tube drain outlet value: For washing glass tube.
⑤ Water level connecting pipe: This is for connecting water level electrode container to boiler inner gall. Boiler inner gall water level is the same as electrode container water level.

Top photo

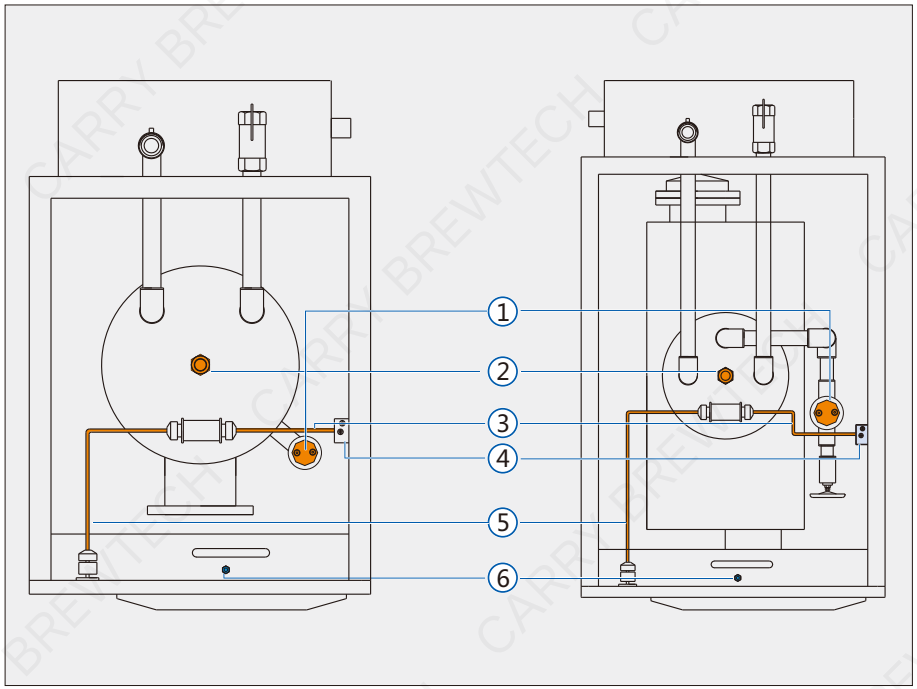
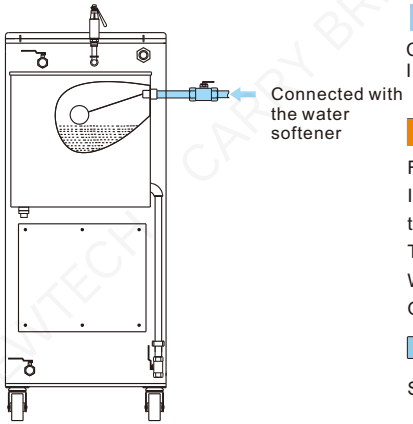


Photo 5:Top part inner photo

① High & Low level sensor: When water level is in high level, the pump will stop to add water. If water level is in low level, pump will start to add water automatically. High level sensor probe is short while low level sensor probe is longer. Usually High level sensor connected with red wire while low level sensor connected with green line.
② Extreme low level sensor: For protecting water leakage. When water is in low level. boiler will start heating. Otherwise, it will stop heating.
③ Pressure control connecting brass pipe.
④ Pressure gage: For controlling the boiler on/off.
⑤ Pressure gage connecting brass pipe.
⑥ Ground screw: Boiler needs to safety ground connection when in working.



step1

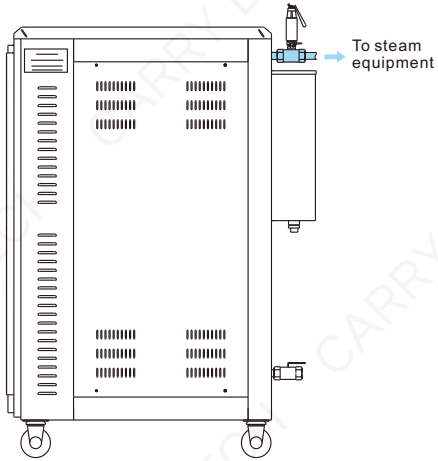
Connect water to water inlet mouth.
Install a water inlet value before water flowing to.

Warning:

For water inlet, needs to equip with a water softener.
If using unsoftened water, it will lead to the heating tube, water level sensor and other part being scaled.
Thus, this will reduce the thermal efficiency.
Water temperature should be lower than 50℃.
Otherwise, you need a high temperature water pump.

Notice:

System installation photo refer to Page 20.

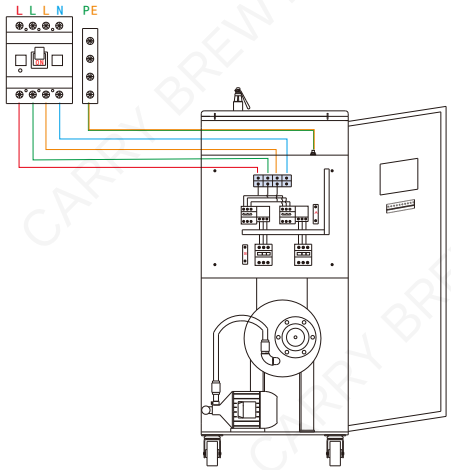


step 2

Connect steam value to the final use equipment or steam distribution cylinder.

Notice:

It needs to equip with standard steel steam pipe, outside of the steam pipe need to do heat insulation to prevent thermal loss and being burned.
If heating liquid by using the steam pipe touch the liquid directly, user needs to install an Check Value on steam pipe to avoid liquid flowing back to boiler thus make an damage to boiler.

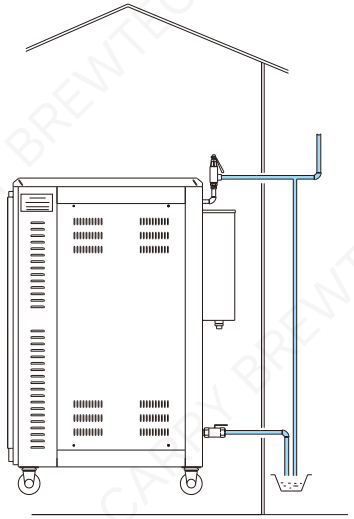


Step 3

Power wire installation
"L" is to connect live wire and there is no sequence requires for 3 live wires. "N"is to connected null wire and "PE" is to connect earth wire.

Warning

Boiler is required to safety ground connection, null wire and earth wire can't be share.
Seller need to use suitable electric cable to prevent too small cables will burn the boiler.



Step 4

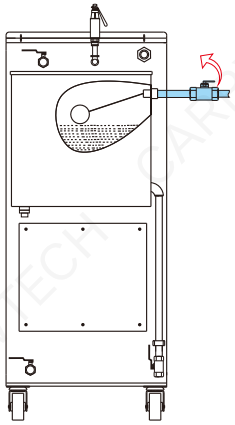
Install the drain outlet pipe and safety value drain pipe to sewer, steam mouth of safety value should be installed stretch outdoor to avoid when safety value is opened, it will burns people.

Notice:

It needs to equip with thermostability and voltage resistance standard steel drain outlet pipe. And caution being burned.
There is condensate water on safety value, user need to installed condensate water pipe to sewer.
Otherwise, if in winter, the condensate water will freeze and the safety value is not protective.

Warning:

It is forbidden to install a value at the mouth of the safety value.

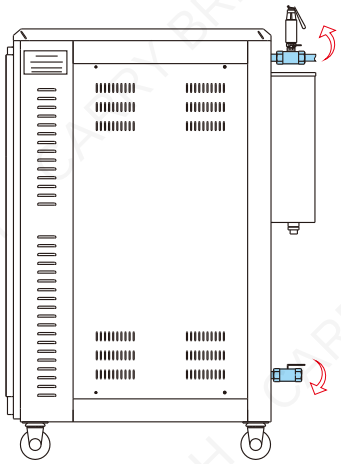


Step 1

Open water inlet value to make water flow into water tank. The float ball value will rise automatically when water is full. When water flow into boiler, the water level will come down, this time the float ball value will fall and at the same time water will flow into water tank automatically.

Notice:

Please make water tank clean to avoid water pump and check value being jammed by sundry.
If water in water tank spill outside, kindly check whether the float ball value is being jammed.
If this is the reason, please open water tank cover and wave the float ball value up and down to make it working.



Step 2

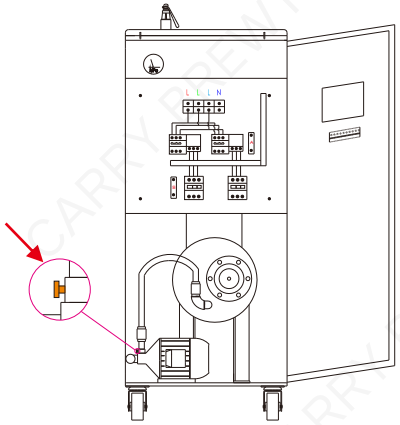
Open the steam value and close the drain outlet value.

Warning

When water flowing into boiler gall, if we close the Steam Value, the boiler gall is in closed condition, the gall inner space will produce pressure, this time the pressure on pressure gage is the air pressure not steam pressure.
If there is air pressure in boiler gall, this will have an effect on the water flowing speed.
If the air pressure exceed the safety value rated pressure, this will result in safety value being open automatically.

Notice:

When boiler is in operating condition, Drain Outlet Value required being in closed condition. If the Value handle and steam pipe is in vertical condition, the drain outlet value is closed. Otherwise, it is opened.

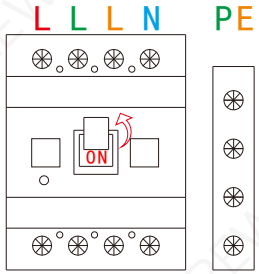


Step 3

Screw off the bleed screw at the water pump inlet part. If there is water ran out, it means the air is fully exhausted, then tighten the screw.

Notice:

After boiler starting and water pump starting, please check whether water level in water tank is falling. If this, it means water pump is in good working condition, and water flowing into the boiler gall. If water level is still not falling, kindly check whether the water pump is jammed. If water pump works smoothly but water level is not falling, probably reason is there is still air inside of the pump, so please re-operate step 3 until air is exhausted out.



Step4

Turn on the main power switch, this time the LCD controller shines.

Notice:

After long time transportation, boiler wire terminals is easily loosen. kindly check all the power wire terminals, it is better to tighten the power terminals by using an screwdriver.
If boiler is in electricity state, the LCD controller will shines.

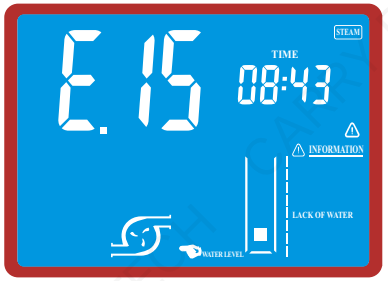


Photo A

Step 5

Press the "POWER" button on controller, this time the LCD screen shows everything is in working condition. This time the boiler is in"LACK OFF WATER" condition. (See photo A)

Notice:

This system controller is applied to many control modles. In 3-120KW boiler, "SET" button is not necessary.

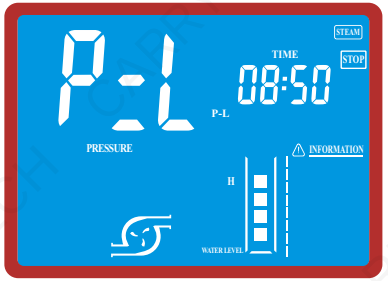


Photo B

Step 6

Press " ON/OFF" button on boiler, this time the water pump will adding water automatically. When water level is in high water level line, warning voice disappear, water pump will stop working and "☜" will disappear. This time boiler is in an " STOP " condition,This means everything of the boiler is ok.
(See photo B)

Notice:

If the water pump didn't rotate and in an locked condition, pleaes press "+"for more than 5 seconds until water pump rotate;
When water pump rotate, it present an regular voice, this time please check whether the water level in water tank is falling , if water level is falling, it means water is flowing into the boiler gall.
If water level is not falling, pls kindly check whether water pump is jammed. If water pump is working smoothly but water pump is not falling, it means there is air in the water pump and water pump is still working, then please chose the boiler and repeat operating Step 3.

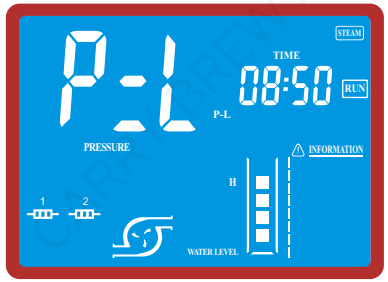


Photo C

Step 7

Press"ON/OFF"button on boiler, this time boiler is in "RUN"condition, and heating groups will start to heating automatically.(See photo C)
When pressure display "P-L", boiler will turn on heating automatically. If boiler is in"LACK 0FF WATER"condition, the boiler will not do an heating.
When pressure up to"P-L" this means boiler pressure arrives at boiler's adjusted stop pressure, this time the heating groups turn off automatically and stop to heating.（see photo D）
Turn on steam value, after using steam, boiler pressure is falling, after pressure is in "low pressure"heating group will restart and continue heating.

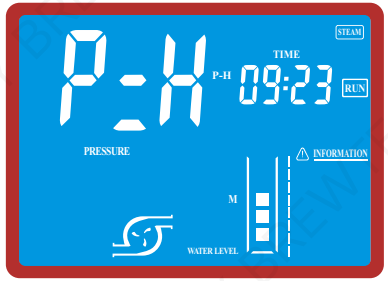
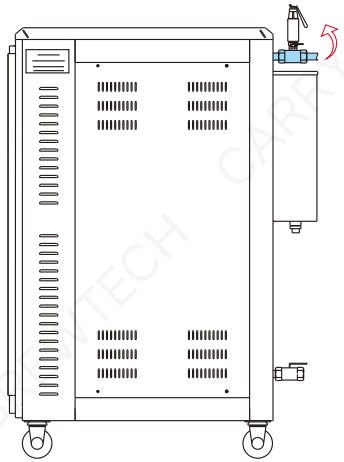


Photo D

Notice :

Boiler less than 15 KW (3-15KW) only with 1 group heating tube.For boiler first time use, turn on heating group 1 first then turn on heating group 2 later.
For boiler second time use, turn on heating group 2 first then turn on heating group 1. For third time, please do as circle.
If heating groups displays, it means heating tube is in heating condition, this time please guarantee the electricity leakage switches is in ON state.If water level is between "H"and "L", it shows "M" (see photo D).
When water level shows "L",water pump will start adding water. Water pump will stop until water level up to "H" level.



Step 8

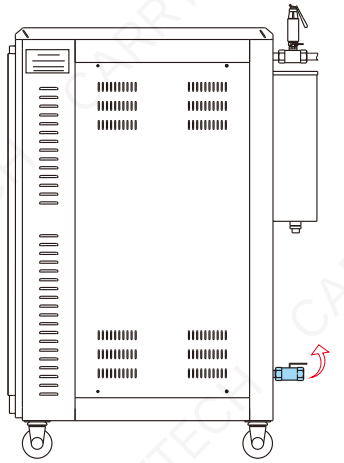
Open the steam value slowly.

Warning

Please open the steam value slowly, if open too fast, the steam will produce an pressure that will bring boiler water out, this will lead to the output steam with large water.

Notice:

If required steam is bigger than boiler output steam, the pressure gage directs 0 or very low pressure (the steam value is fully open). If needed an stable pressure for steam output, pls open the steam value slowly and kindly check the pressure gage. When pressure up to the required value, user need to guarantee the steam value opening size. This is a coarse regulation method, if needed an accurate and stable pressure, extra stable pressure accessories should be installed.



Step9

Stop using boiler.

Press button "power", the controller displays disappear. Then turn off the main switch.

After boiler be turned off for 15 seconds and pressure falls to 0.1MPA, Please open the drain outlet value to have drain outlet.

Warning:

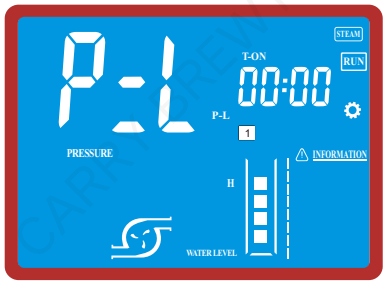
It is forbidden to have an drain outlet immediately after boiler stop working. Because this time boiler is still in high temperature and boiler inner gall will cooling very fast, this will damage the boiler.

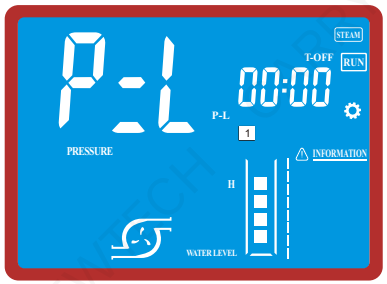
Besides, It is forbidden to have an drain outlet when boiler is still in high pressure, because waste water will backlash and burned people

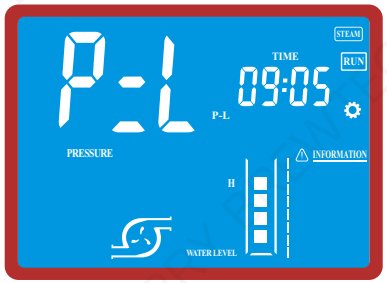
In cold temperature, after boiler turned off, please open the water outlet value to have a water tank and pipe water outlet to avoid water freeze since this will damage the water pump, pipe and water tank.

Notice:

Drain can be better drained out with some pressure, at about 0.1Mpa.







Warning

Steam boiler should be operated by professional worker, "Timing setting" is an assistant function under condition of professional worker operating. If there is nobody operating the boiler, this is very dangerous to use "Timing setting" function.

Step 1

Press button "F" for 5 seconds under the "STOP" condition so that we can set the time period and time.

Notice:

It is forbidden to have "timing setting" operation when boiler is in "RUN".

Time can be set from 0.00-23.59. Time period setting should strictly follow the sequence 0.00-23.59. It is not allowed time overlapping and reversal. For example: If we set the 1st period time "T-ON"as 8:00, then all the starting and closed time should be bigger than 8:00.Controller parameter should be checked and revised automatically according to this limits. The starting and closed time can be the same in one time period. So the time period is 0 and it is an invalid time. So in this way, we can set the starting and closed time the same to delete some unnecessary time period.

Step 2

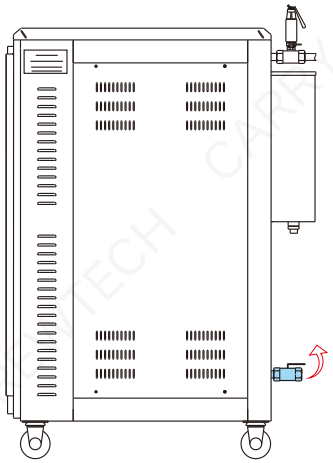
Time Period Setting and Timing Setting.

At the upper left part of the clock, it displays "T-ON" and "1" display at down part. Then press "+" and "-" to set 1st period closed time; Then Press button "F", this time it displays "T-OFF" at the upper right part, and "1" displays at the down part, Then press "+" and "-" to set 2nd closed time. Continue press "F" for next period time setting. Totally 4 period times can be setted.

After the 4th period time is set, press button "F", the "TIME" is shine on the top of the o' clock. This time press "+" and "-" setting time, then press "F" button to save.

How to close "Timing control"?

Set the 4 times "T-ON" equal to "T-OFF", then Controller will present an non-timing condition, so the boiler is in "T-ON" condition all day.

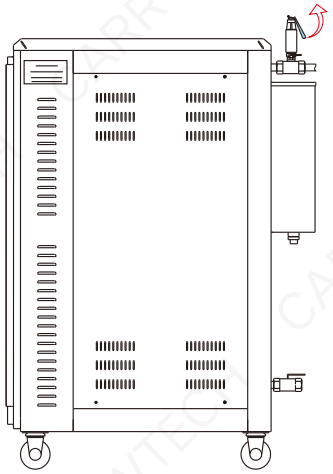


Regular drain outlet

Please open the drain outlet value to have an boiler drain outlet each time after boiler is stop working and closed about 15 minutes and steam pressure fall to 0.1Mpa.

⚠ Warning

It is forbidden to have a drain outlet immediately after boiler stop working. Because this time boiler is still in high temperature and boiler inner gall will cooling very fast, this will damage the boiler. Besides, It is forbidden to have an drain outlet when boiler is still in high pressure, because waste water will backlash and burned people.

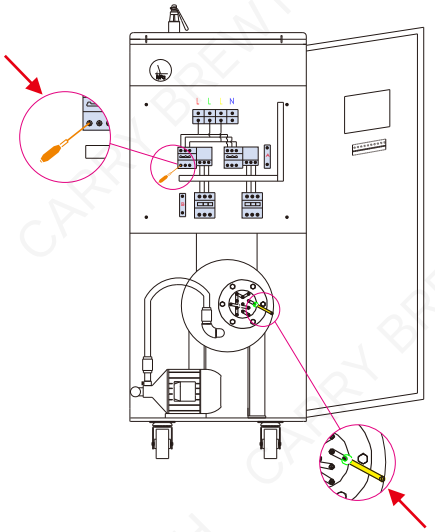


Safety value should be tested every month and be inspected every year.

Under the steam pressure condition, turn on quickly the safety value handle to check if there is steam blow out, if there is, it means the safety value is ok. Safety value should be bring to inspection every year, only the qualified Safety Value can be used in boiler.

⚠ Warning:

If there is no steam blow out, stop using boiler. Then bring the safety value to have an inspection, after inspected, the steam value can be used. It is forbidden to use an non-inspected steam value.

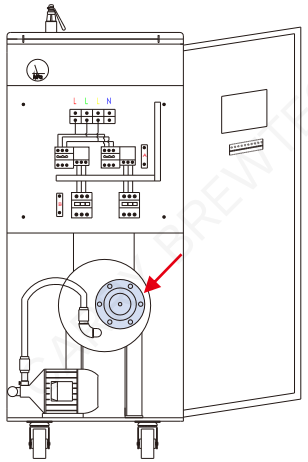


Tighten the power terminals and the heating tube connection wire.

Boilers need to be tightened the power terminals and heating tube connection wire every half year. After long time transportation, boiler wire terminals is easily loosen. Kindly check all the power wire terminals, it is better to tighten the power terminals by using an screwdriver

⚠ Warning

Before doing this maintenance, please keep off the mainpower. Pleasw use the test pencil to check power is cut off.



Heating tube scale cleaning

Heating tube need to be unloaded and cleaned every half year, the same time, users need to clean the boiler gall water scale.

ℹ Notice:

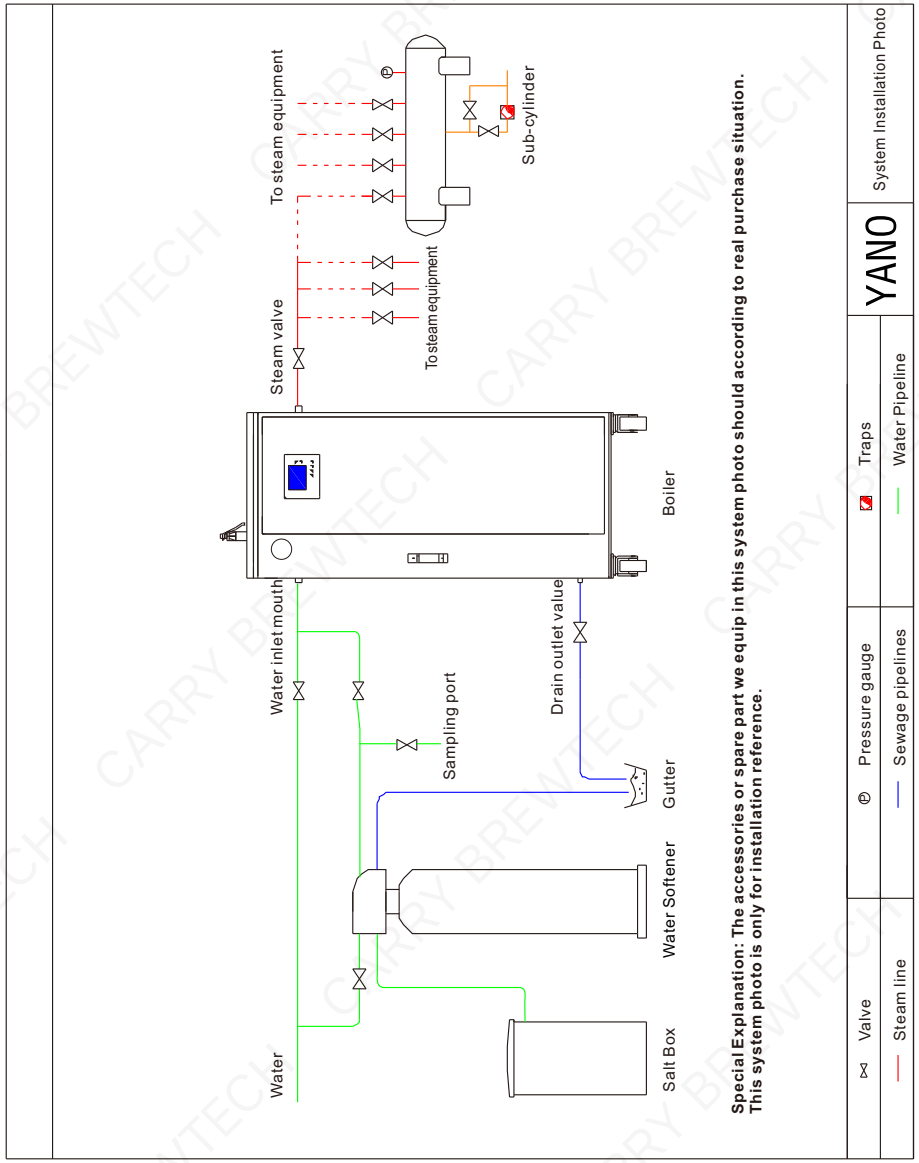
After the first time boiler'soperating, kindly check the heating tube scale. If heating tube is with little scale, next time (after second time boiler operating), heating tube can be cleaned for a longer time. If with much scale, heating tube needs to be cleaned in a short time.

Situations	Possible reasons or others	Possible solving ways
LCD controller doesn't display	Fuse A burnout	Change with another fuse
	Voltage is too low	Check voltage
	Circuit is loosen or fall off	Check the circuit
	LCD panel is burnout	Change another LCD panel or return back to seller for repairing
LCD controller shines, but button is not working	Voltage is over-low or over-high	Check voltage
	Button is damage or not flexible	Change another LCD panel or return back to seller for repairing
Water pump doesn't rotate under water low level condition	The water pump is locked , so need to water replenishment by hand	Press "+"until water pump rotate
	LCD controller didn't send out the water pump single	Change with another one or return back to seller for repair
	Fuse A burnout	Change with another fuse
	Water pump circuit is loosen or fall off	Check the circuit
	Water pump is burnout	Change with another water pump
Pump sound and rotating voice but didn't have water inlet	Air in the water pump	Exhaust the air
	Check value is jammed	Dismantle the check value have an clean or replacement
	Water pump is jammed	Turn off boiler, dismantle fan cover, and rotate the water pump
	Water pump wears and the head is not big enough	Change with another water pump
Water boiler is full but water pump is working to have an water inlet	High water level probe is scale	Clean the high water level sensor
	High water level probe power wire is falling off	Check the high water level circuit
	water level Shell line is falling off	Check the water level shell line
Contactor actuation but don't heating or heating very slow	Leakage circuit breaker is not open	Open the Leakage circuit breaker
	Leakage circuit breaker is broken	Change with another Leakage circuit breaker
	AC contactor is broken	Change with another AC contactor
	Heating tube is burnout	Change with another heating tube
	Power wire is burnout	Change with another power wire
Water level sensor breakdown丿E18丿	Water level sensor is scale	Clean or change another water level sensor
	Water level sensor power wire is loosen or falling off	Check the circuit
	Water Level electrode container is scale and blocked up	Clean the water level electrode container

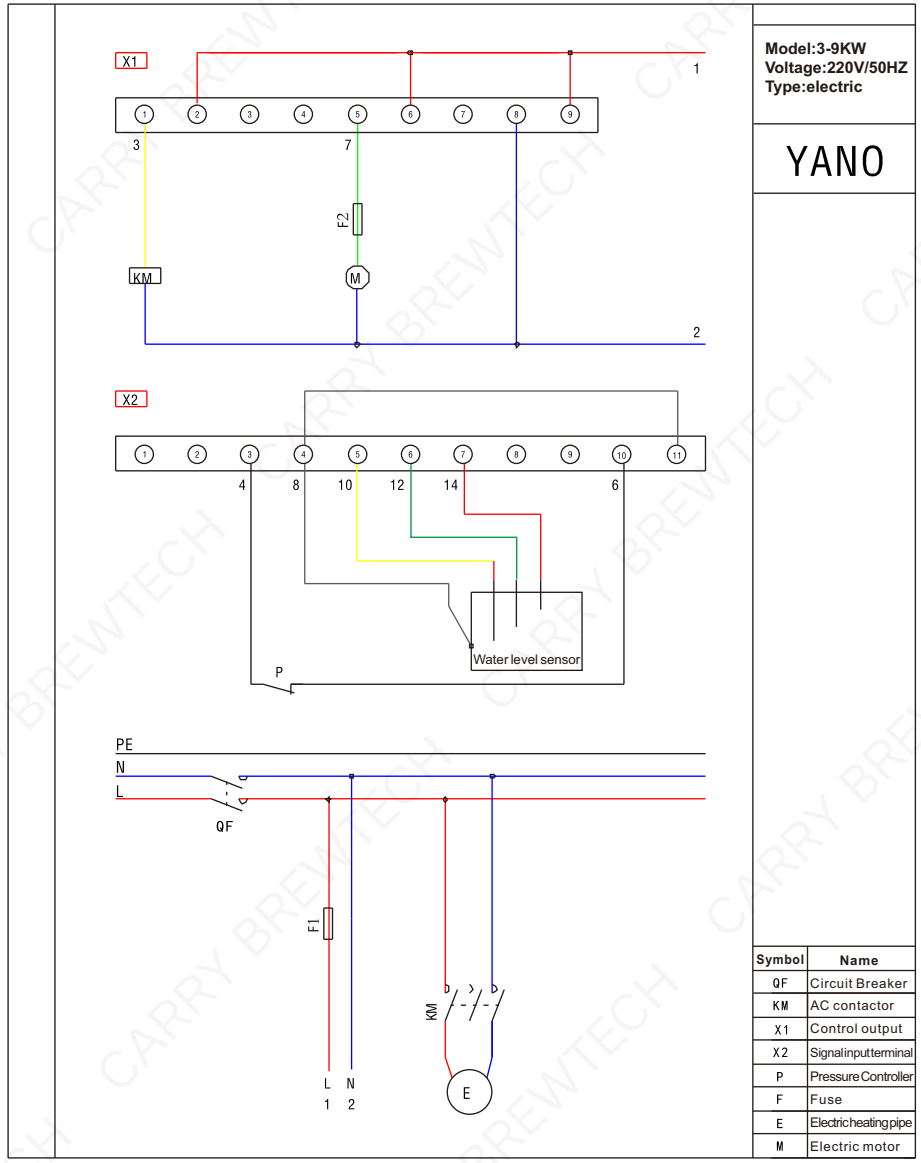
Boiler breakdown and repair

Situations	Possible reasons or others	Possible solving ways
Boiler output high pressure steam but with pressure gage is with no pressure	Pressure gage is broken	Change with another pressure gage
	Brass tube connection pressure gage is blocked up	Clean or change with another brass tube
Water in water tank spill out	Float ball value is jammed	0pen the water tank cover and wave the Float Ball Value up and down
	Float ball value is Broken	Change with another Float Ball Value
Water in water tank is very hot or with some steam	Check Value is jammed or broken, so steam return back	Clean or change with another Check Value
Leakage circuit breaker turned off and can't be turn on	The reset button of leakage circuit breaker pops up	Press the reset button
	Heating tube is broken	Change with another heating tube
	Leakage circuit breaker is broken	Change with another Leakage circuit breaker
	Control circuit is leakage	Check the circuit
Boiler up to the setted pressure but didn't stop heating	Pressure controller is not flexible or broken	Change with another pressure controller
	Controller power wire is fall off or loosen	Check the circuit
Safety value can't be open while pressure is higher than 0.3MPA	Safety Value is not flexible	Bring the safety value to have an inspection
	Safety Value is broken	Change another qualified safety value
Safety value spray out much water	Water pump is still working and boiler is full of wate	Drain out the boiler water, then restart the boiler
	Water level sensor lead to the water pump rotating all the time	Wash the water level sensor
Safety value dropping water or flowing out steam	Safety value is not flexible	Bring the safety value to have an inspection
	Safety value is broken	Change with an qualified safety value
Heating group displays but AC contactor doesn't actuation	Controller is broken	Please change with a new controller or return back the controller for repairing
	AC contactor is broken	Change with another AC Contactor
	Circuit is loosen or fall off	Check the circuit
AC Contractor is actuation or flick frequently	There is dust inside of the contractor	Clean or change with another contractor
	Voltage is not stable	Check voltage
Two sides of Glass tube is air leak	Lock ring is aging or damage	Change with another lock ring

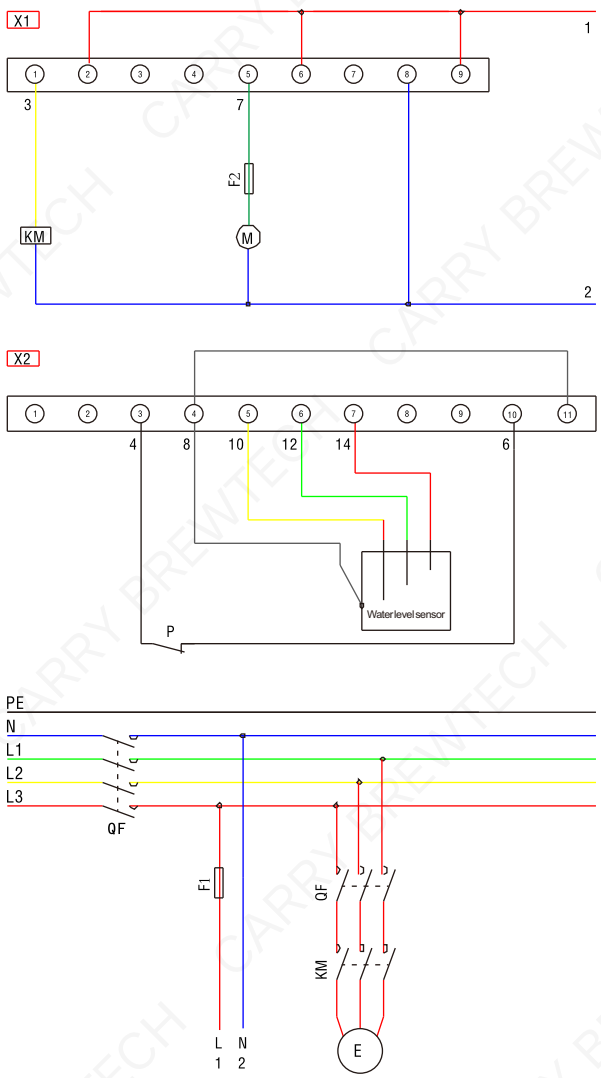
System installation photo



Electric photo



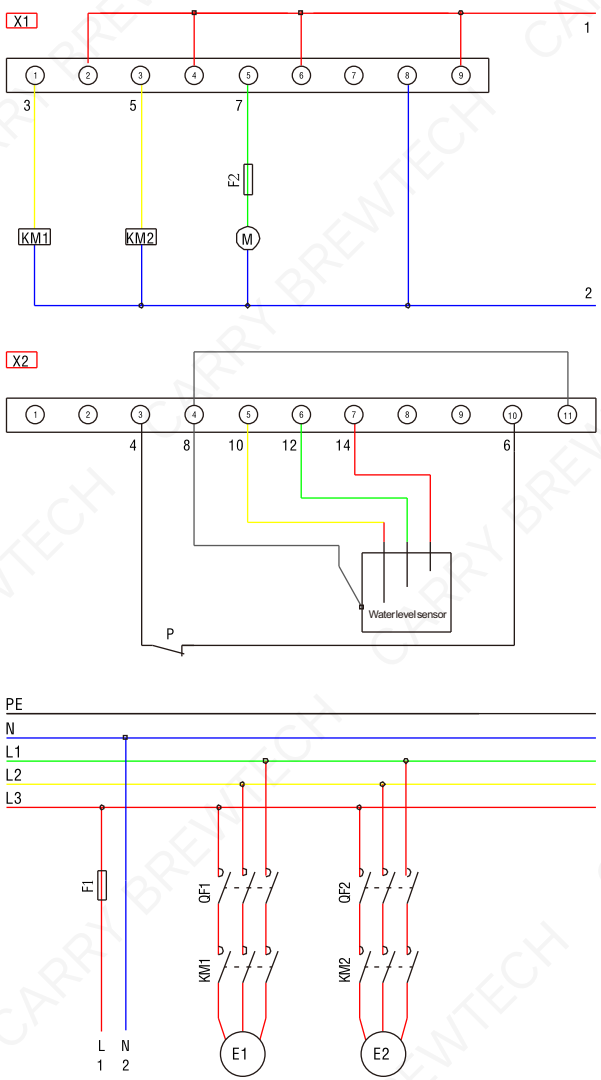
Symbol	Name
QF	Circuit Breaker
KM	AC contactor
X1	Control output
X2	Signalinputterminal
P	Pressure Controller
F	Fuse
E	Electricheatingpipe
M	Electric motor



Model:3-15KW
Voltage:380V/50HZ
Type:electric

YANO

Symbol	Name
QF	Circuit Breaker
KM	AC contactor
X1	Control output
X2	Signal input terminal
P	Pressure Controller
F	Fuse
E	Electric heating pipe
M	Electric motor

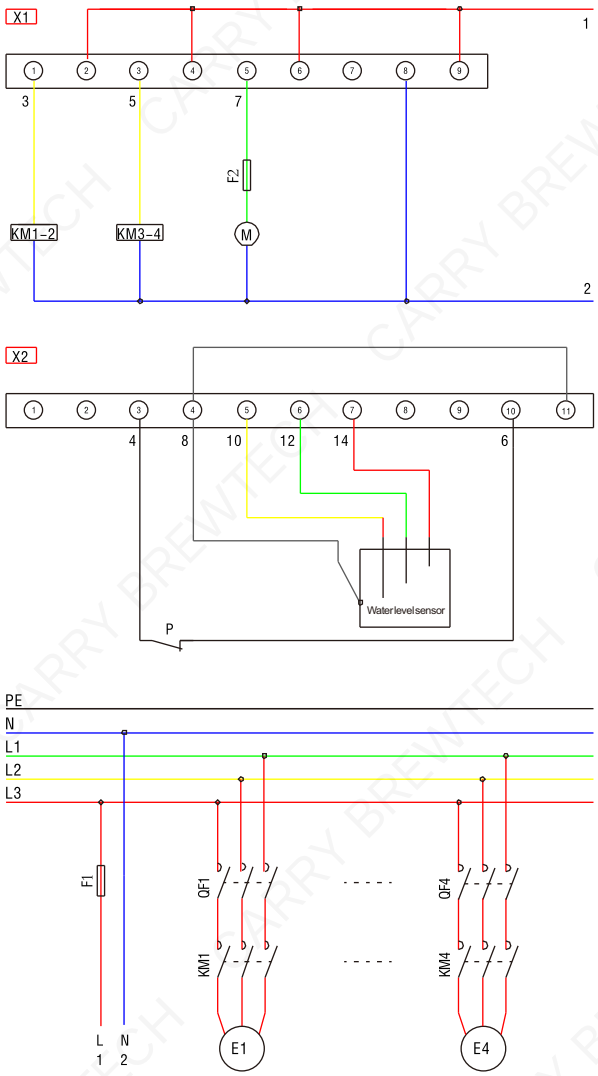


Model:18-50KW
Voltage:380V/50HZ
Type:electric

YANO

Symbol	Name
QF	Circuit Breaker
KM	AC contactor
X1	Control output
X2	Signal input terminal
P	Pressure Controller
F	Fuse
E	Electric heating pipe
M	Electric motor

Electric photo



Model:60-120KW
Voltage:380V/50HZ
Type:electric

YANO

Symbol	Name
QF	Circuit Breaker
KM	AC contactor
X1	Control output
X2	Signal input terminal
P	Pressure Controller
F	Fuse
E	Electric heating pipe
M	Electric motor

This manual final explanation right belongs to: Shanghai Yano Boiler Manufacturing Co.,Ltd.

Since boiler is still improved, please refer to real situation if something is different from the manual.