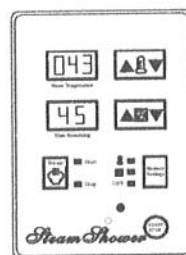
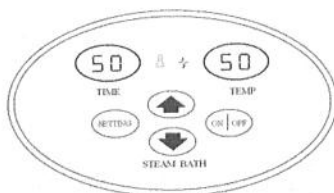
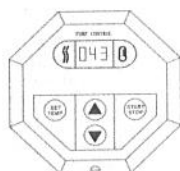
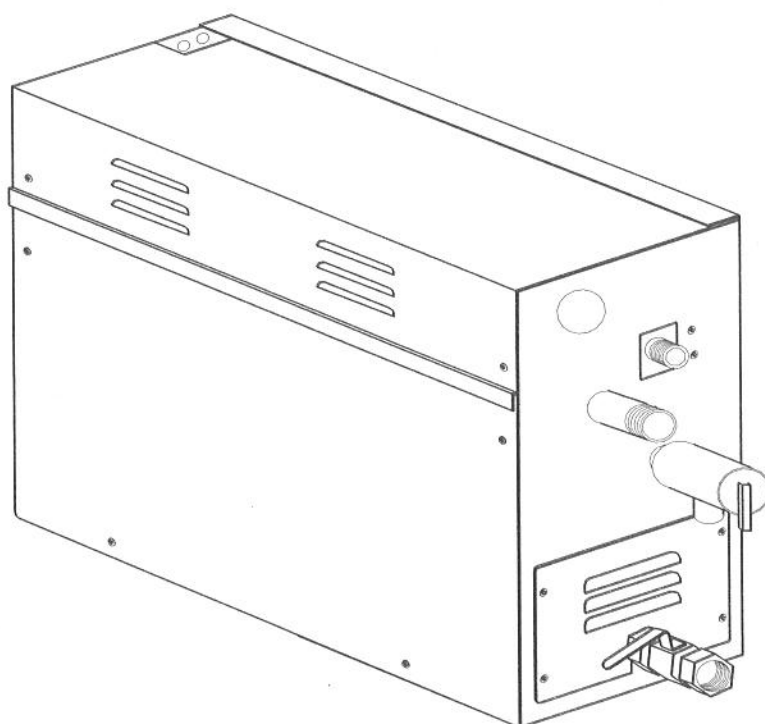


STEAM GENERATOR MANUAL

LT series
GT and AR series



**Please read the manual carefully before installation
and keep the manual for further reference.**

LT>&AR/160821

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INTRODUCTION

Thank you for choosing LT, AR and GT series steam generator with well-designed structure, steady performance and convenient installation. To form the whole set of steam bathing equipment, you need a personal steam bathing room as well. The steam generator is designed to remove tiredness, relax muscles and stimulate blood circulation.

For proper installation, operation, maintenance, and the safety of customer as well, please read all instructions carefully and keep this manual for further reference.

ATTENTION: This appliance is not intended for person with reduced physical, sensory or mental capabilities, or pregnant women, unless they get permission from doctor and under supervision.

ATTENTION: Children should be supervised to ensure that they do not play with the appliance.

ATTENTION: Check steam room before restart the controller.

ATTENTION: No smoking or alcohol is allowed inside the steam room

ATTENTION: Leave the steam room immediately when feels uncomfortable

ATTENTION: A ventilation fan is required outside the steam room.

CHAPTER 1 PARAMETERS

1. Models, parameters and dimension

Model	Power kW	Elements N*kW	Voltage/Current V/A	Power wire N*mm ²	Breaker A	Room volume m ³	Dimension (L * W * H) mm
LT-40 GT-40 AR4C	4.0	2*2.0	220—240/18.2	3*2.5	25	3~5	395*153*313
LT-50 GT-50 AR5C	5.0	2*2.5	220—240/22.7	3*2.5	32	4~6	
LT-60 GT-60 AR6C	6.0	2*3.0	220—240/27.3	3*4.0	40	5~7	
		3*2.0	380—415/9.1	5*1.5	16		
LT-70 GT-70 AR7C	7.0	2*2.5+1*2.0	220—240/31.8	3*6.0	40	5.5~8	445*182*313
			380—415/11.4	5*2.5	16		
LT-80 GT-80 AR8C	8.0	2*2.5+1*3.0	220—240/36.4	3*6.0	60	6.5~9	
			380—415/13.6	5*2.5	16		
LT-90 GT-90 AR9C	9.0	3*3.0	380—415/13.6	5*2.5	16	8~11	
LT-105 GT-105 AR10.5C	10.5	3*2.0+3*1.5	380—415/15.9	5*2.5	25	9~12	500*200*520
LT-120 GT-120 AR12C	12.0	6*2.0	380—415/18.2	5*2.5	25	11~14	
LT-150 GT-150 AR15C	15.0	6*2.5	380—415/22.7	5*2.5	32	13~18	

Table 1: Standard series

Model	Power kW	Elements N*kW	Voltage/Current V/A	Power wire N*mm ²	Breaker A	Room volume m ³	Dimension (L * W * H) mm
LT-40 GT-40 AR4C	4.0	2*2.0	220-240/18.2	3*2.5	25	3~5	395*153*393
LT-50 GT-50 AR5C	5.0	2*2.5	220-240/22.7	3*2.5	32	4~6	
LT-60 GT-60 AR6C	6.0	2*3.0	220-240/27.3	3*4.0	40	5~7	
		3*2.0	380-415/9.1	5*1.5	16		
LT-70 GT-70 AR7C	7.0	2*2.5+1*2.0	220-240/31.8	3*6.0	40	5.5~8	445*182*393
			380-415/10.6	5*2.5	16		
LT-80 GT-80 AR8C	8.0	2*2.5+1*3.0	220-240/36.4	3*6.0	60	6.5~9	
			380-415/12.1	5*2.5	16		
LT-90 GT-90 AR9C	9.0	3*3.0	220-240/40.9	3*10.0	60	8~11	
			380-415/13.6	5*2.5	16		

Table 2: High Frame series

Notice: The steam generator can have the automatic drainage function as requirement of customer. If the

customer requires the steam generator to use high Frame or Δ heating element, please specify your requirement when placing order.

The steam generator construction:

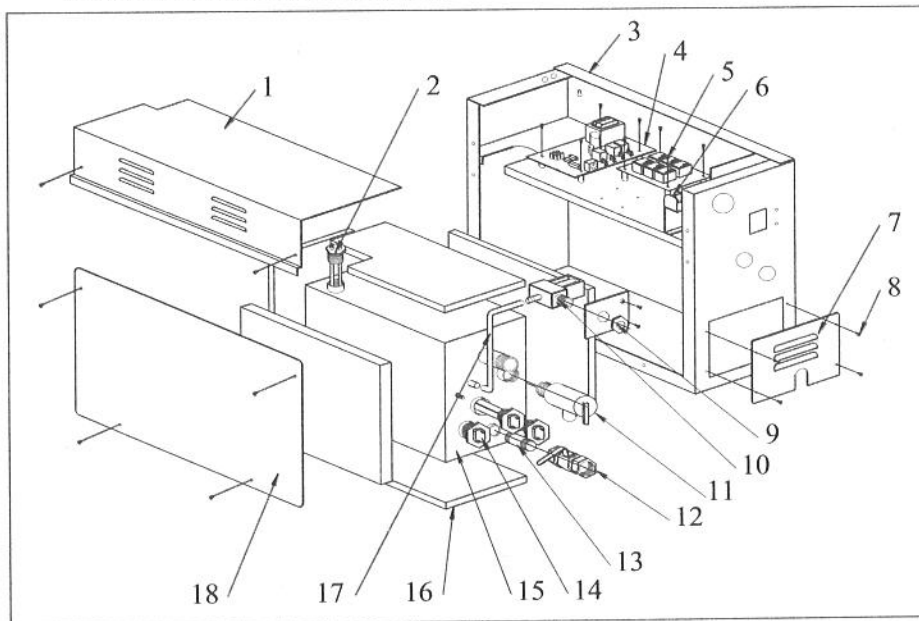


Figure 1

1.Cover 2.Water level sensor 3.Frame 4.Main board 5.Sub board 6.Wire terminal 7.Element access cover
8.Screw 9.Solenoid valve clamp 10.Inlet solenoid valve 11.Safety valve 12.Drainage valve(Or auto drain
solenoid valve for auto drain model) 13.Draining pipe 14.Heating elements 15.Water tank
16.Insulation 17.Water inlet hose 18.Panel

The steam generator construction to use Δ heating element

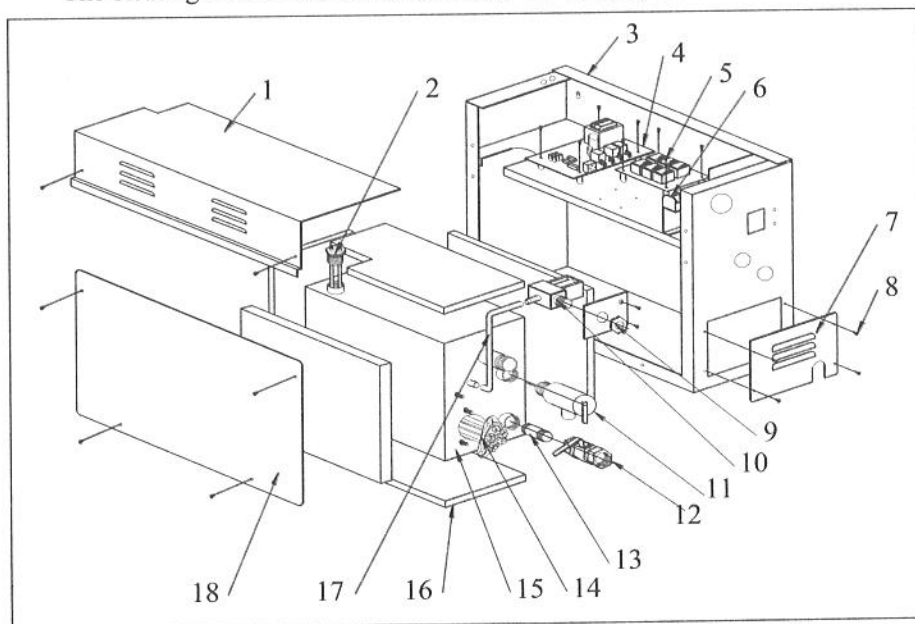
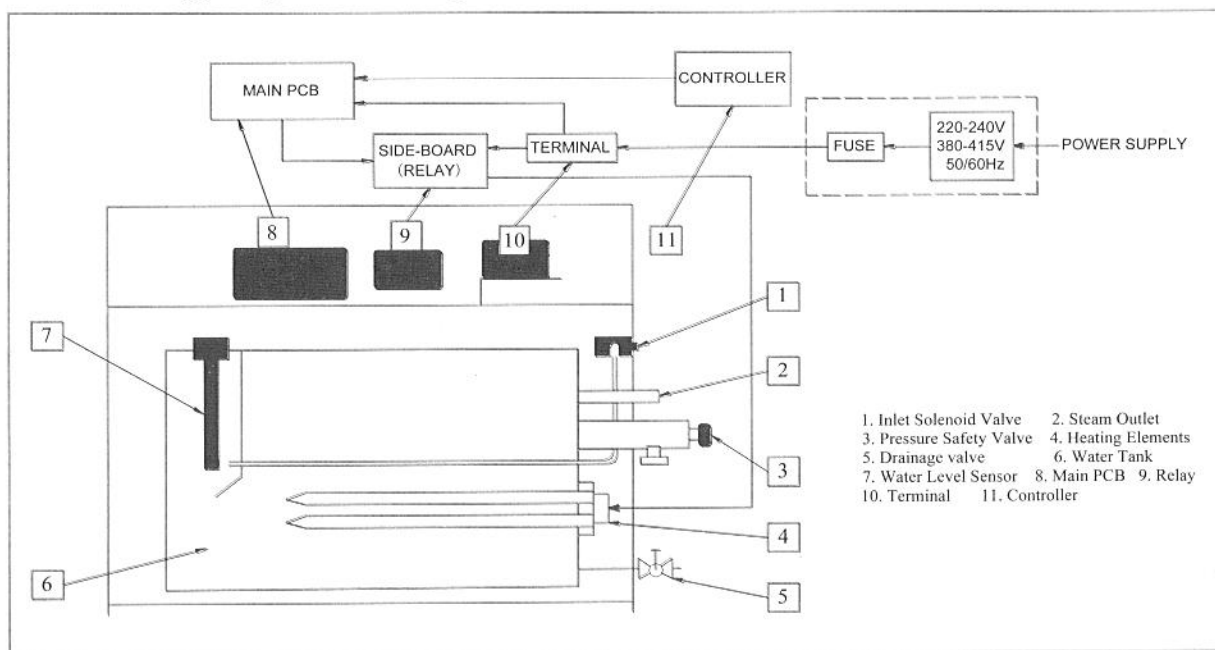


Figure 2

1.Cover 2.Water level sensor 3.Frame 4.Main board 5.Sub board 6.Wire terminal 7.Element access cover
8.Screw 9.Solenoid valve clamp 10.Inlet solenoid valve 11.Safety valve 12.Drainage valve(Or auto drain

solenoid valve for auto drain model) 13.Draining pipe 14. Heating elements(Δ cover) 15.Water tank
16.Insulation 17.Water inlet hose 18.Panel



2. Controller parameters and dimension

Table 3

Notice: the temperature sensor should be installed separately and connected to the controller with wire. We recommend you to install the controller outside the steam room.

TC-135, GT-135 controllers

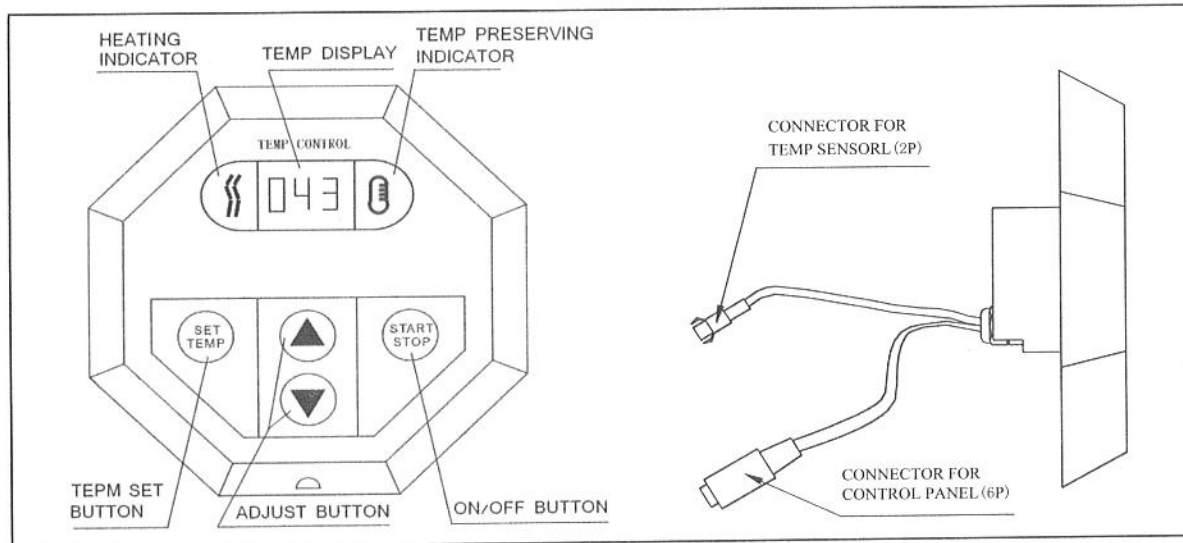


Figure 4

TC-135A controller

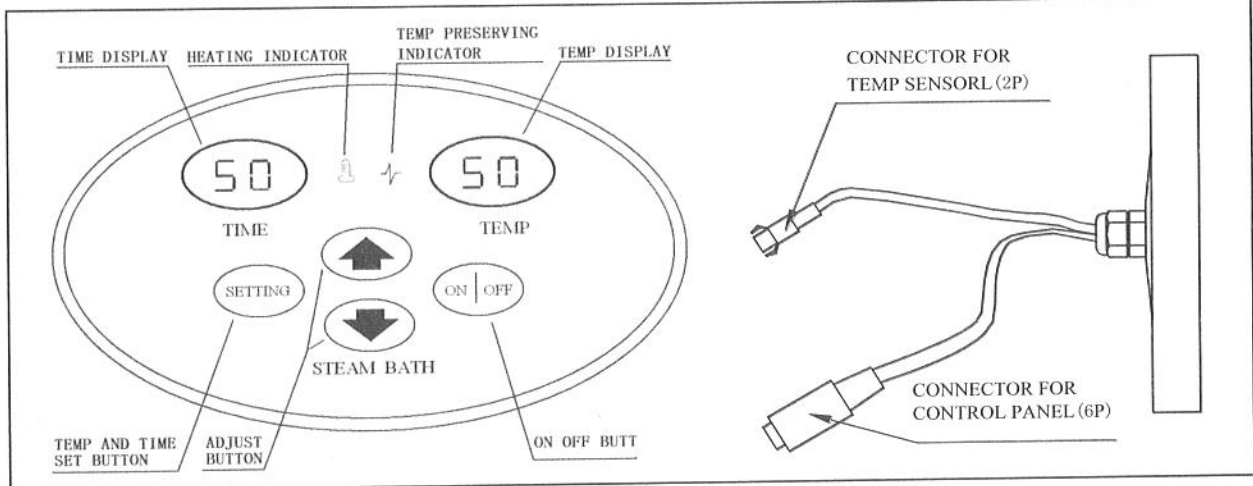


Figure 5

TM60A controller

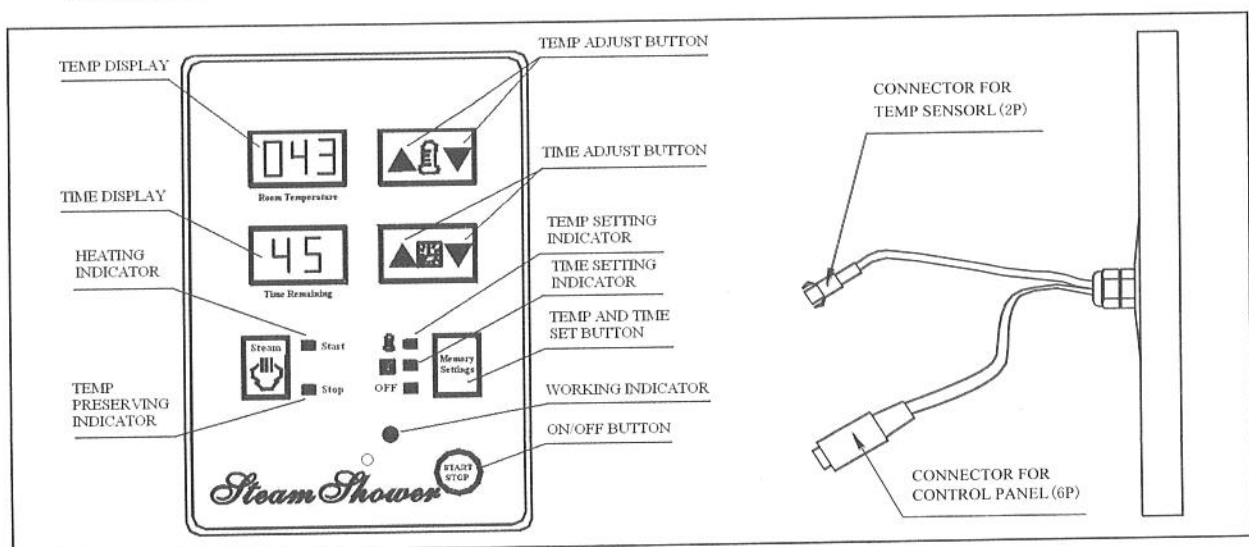


Figure 6

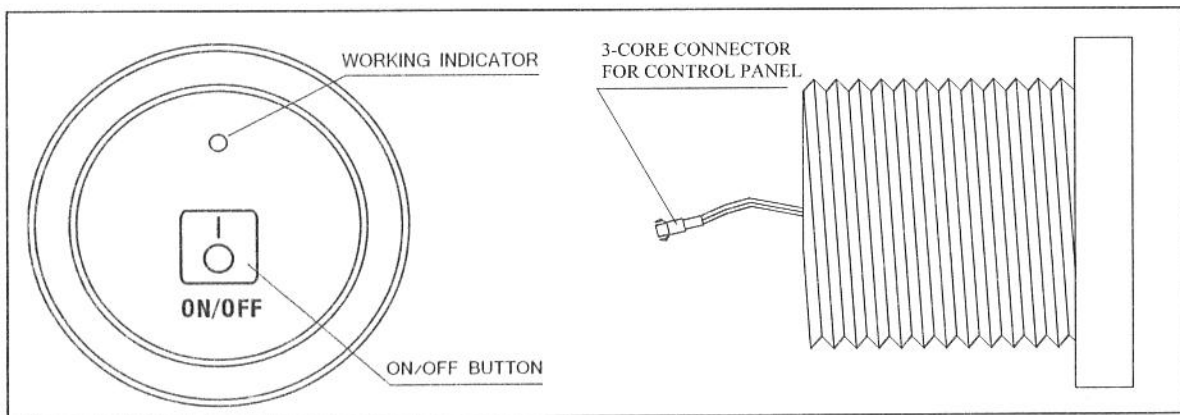


Figure 7

CHAPTER 2 INSTALLATION AND CAUTIONS

Cautions:

- If the generator is installed at a place where difficult for customer access, the water supply valve must be easy to access for emergencies.
- The solenoid valve can endure 0.06-0.55Mpa (0.6-5.5kgf/cm²) water pressure. To protect the solenoid valve from extremely high water pressure, please turn down the inlet slightly or install water pressure relieving valve.
- Do not install saddle-backed or needle valves on the inlet. Please drain and clean the pipe before installation.
- No block valve should be installed in the steam pipelines. Strictly no blocked or blended pipe, otherwise have negative effect on the flow of steam and condensate. The steam pipelines should be installed with a slight angle so that the condensate can flow back to the generator or the steam head.
- Steam generator should be installed indoor to avoid frozen. The generator should be installed and leveled with the arrow pointing upward at an easy-access place, otherwise do not switch on.
- The steam pipeline must be copper pipes, all other material such as plastic, acrylic should not be used since they cannot endure 150°C or higher. temperature
- All inlet and apertures should be sealed to prevent any leakage of steam and to protect the generator and customers.
- Draining water to the steam room from the water tank may cause serious scald and damage the steam room.

1. Selecting the proper steam generator

In order to achieve comfort and relaxation, as well as energy efficiency, the selection of the correct steam generator model and size are as critical as design of the steam room itself. The power supply and circuit protector should be carefully checked to match the parameters of the generator. Please refer to the table 1, table 2 and *Chapter 1 Parameters* to select the suitable generator and controller for your specification.

2. Installation of steam generator

- Switch off all power supply before installation, and check whether you have the correct model for your steam room according to table 1 and table 2.
- Do not install the generator outdoors, in wet/moist place, freezing, or corrosive place. Do not install the generator near to inflammables such oil paint, diluents and fuel. Be alert to the steam pipeline and safety valve since the high temperature of steam is dangerous to customers.
- Generator must be level installed.
- The generator should be installed in a dry and well-ventilated place. It can be installed either on the wall or on the ground, but must be well fixed. Install the generator as close to steam room as possible, such as in the closet, under the washing basin or in the basement. (Refer to figure 8).
 - i. Install the generator on the wall: drill two small holes with diameter of 8 mm on the wall, insert the expansion screws and then hang the generator on those screws.
 - ii. Install the generator on the ground or deck: Install the frame on the site and then screw the generator into the frame.
 - iii. For better service and maintenance, please install the generator with the nameplate face to front and leave more than 250 mm space around the generator.

3. Installation of controller and temperature sensor

The controller should be installed with height of 1.2 m outside the steam room but nearby or other place where easy to operate. Firstly drill a hole on the installation site. Pull the control wire and temperature sensor wire through the hole, then connect the control wire to the black connector(6P) while connect the temperature sensor wire to the black connector(2P) of the controller. Finally the controller panel can be glued to wall by the attached double sided adhesive or apply silicon glue at the back of panel if needed (Refer to figure 10 and 11); Controller R30 and GT30 installs reference figure 9.

The temperature sensor is used to measure the temperature inside the steam room, so that the generator can work automatically according to the pre-set temperature and maintain the room temperature constant. The installation height of the sensor should be about 1.2 –1.5 m from ground. Please drill a hole (diameter 10mm), and then nail down the sensor in the steam room (Refer to figure12), pull the sensor wire through the conduit then connect to the black connector(2P) of the controller.

Caution: The control wire and temperature wire should not be parallel to or intersect with the power wire. The temperature sensor should not be installed on the side of the wall which is behind the door when the door is opened and the controller should not be installed in any moist place.

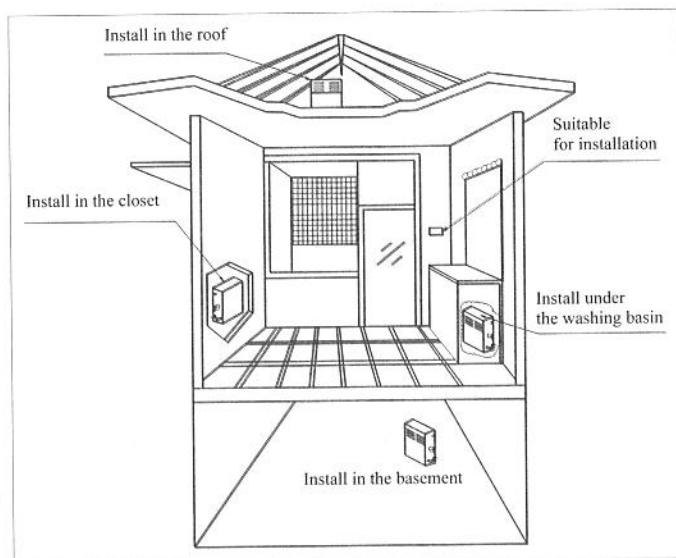


Figure 8

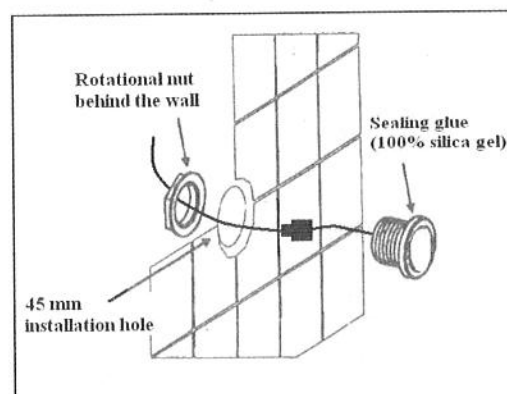


Figure 9

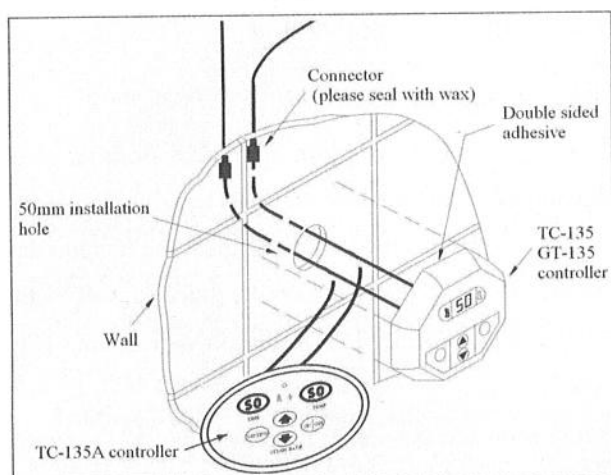


Figure 10

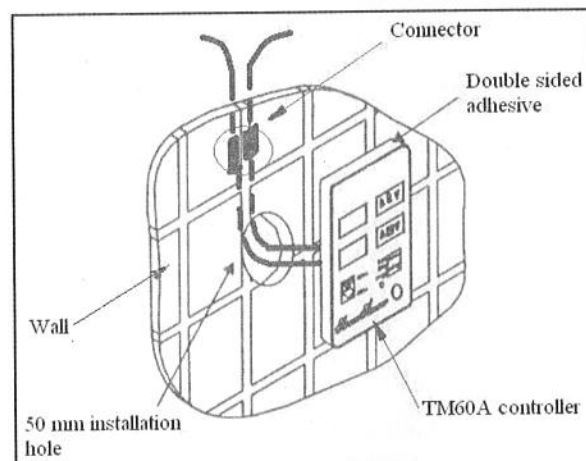


Figure 11

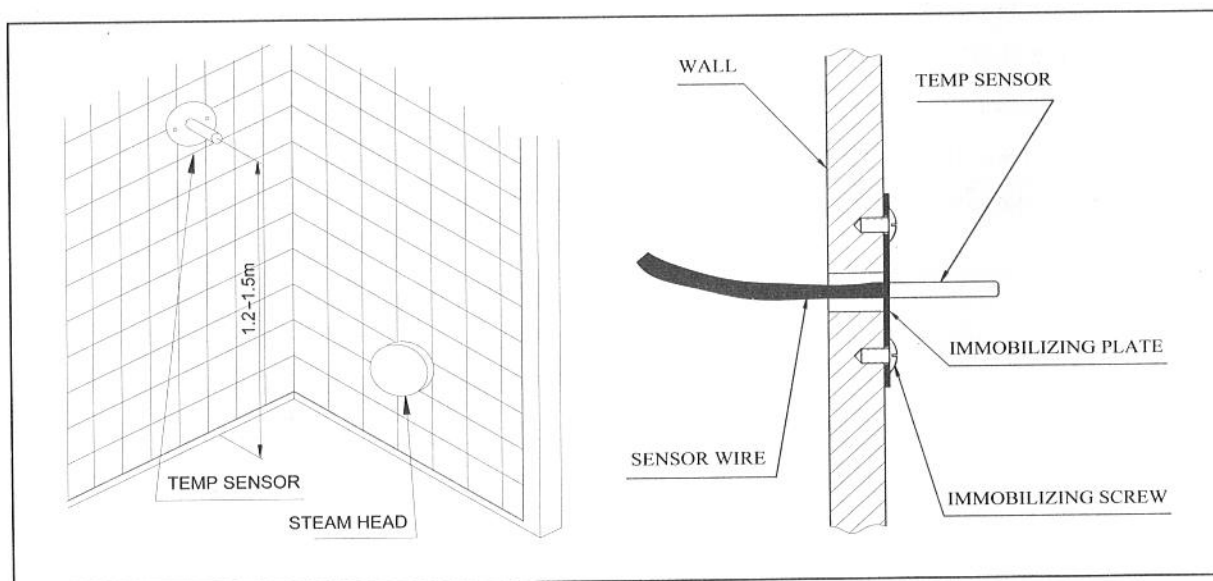


Figure 12

4. Installation of pipeline

Caution:

- If the generator is installed at a place where difficult for customer access, the water inlet valve must be easy to access for emergencies.
- The solenoid valve can endure 0.06-0.55Mpa (0.6-5.5kgf/cm²) water pressure. To protect the solenoid valve from extremely high water pressure, please turn down the inlet slightly or install water pressure reducer valve.
- Do not install saddle-backed or needle valves on the inlet. Please dredge and clean the pipe before installation.
- No block valve should be installed in the steam pipelines. Strictly no blocked or blended pipe, otherwise have negative effect on the flow of steam and condensate. The steam pipelines should be installed with a slight angle so that the condensate can flow back to the generator or the steam head.
- Steam generator should be installed outdoors to prevent icing. The generator should be installed and leveled with the arrow pointing upward at an easy-access place, otherwise do not switch on.
- The steam pipeline must be copper pipes, all other material such as plastic, acrylic should not be used since they cannot endure 150°C or higher temperature.
- All inlet and apertures should be sealed to prevent any leakage of steam and protect the generator and customers.
- Draining water to the steam room from the water tank may cause serious scald and damage the steam room. A separate draining pipe is required to drain water to the drainage.

All inlet water pipes and steam pipelines should be built according to the National Standard (refer to Figure 13) and this should be done before sealing the wall.

Water inlet: First connect the water magnetizer (if applicable) to the water inlet solenoid valve. Then please use a 1/2" flexible stainless steel hose to connect the other side of the water magnetizer and the water supply pipeline. Do not connect to metal water supply pipeline directly which may damage the water inlet valve. Only use cold water supply.

Steam outlet: Use no less than 1/2" copper pipe to connect the steam head and the steam outlet pipe of the generator. The pipe should be less than 3 meters long and minimize the number of elbows, otherwise heat isolating methods should be implemented.

Drain pipe: Please use 1/2" copper pipe to connect the drain valve (or drain solenoid valve for Auto drain model) and the drain pipeline of the house. Similarly, use 1/2" copper pipe to connect the safety valve and the drain pipeline of the house. The drain pipeline should be installed with small angle so as to help residual water in the steam generator flow to the drain pipe.

Steam head: The steam head should be about 300mm from the ground and at least 150mm from customer seats. Outlet of the steam head should face downwards. Put the decorating cover onto the outlet pipe and firmly seal with glue then screw on the steam head. Do not screw too hard and break the cover and steam head.

Auto drain solenoid valve (Only with Auto drain model): Please apply seal glue to the drain pipe (Part 13 in Figure 1), then screw in the auto drain solenoid valve and plug in the power wire provided (Please refer to part A in figure 13).

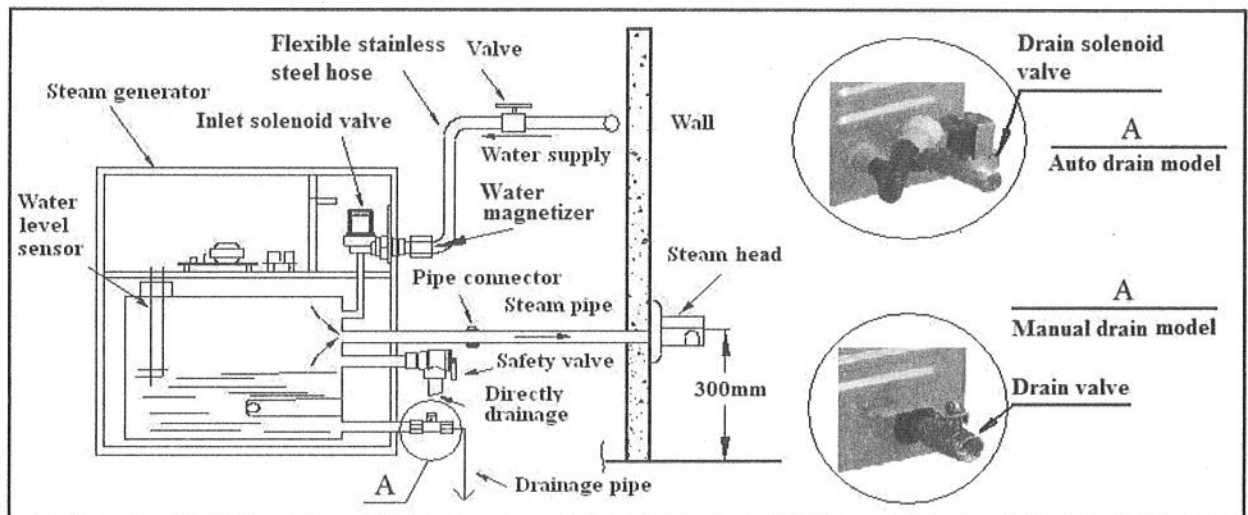


Figure 13

5. Electrical installation

Caution:

- All circuits should be installed by licensed electricians and conform to local and national codes.
- Power supply must be cut off before installation, maintenance and repair. Press the on/off button on the generator cannot cut power from the supply.
- No additional power supply or wire is allowed to connect to the generator. Do not connect the ground wire to the neutral wire.
- Only the original parts and elements from our factory are allowed to be used in installation, operation, maintenance and repair.
- After the installation of the pipeline and electrical circuits, careful checking must be performed before switch on the generator.
- The generator has been carefully installed, checked and tested in factory, thus customer only need to install the power wire and control wire.

Connecting the controller to main board:

Open the installation hole on the cover of the generator, lead the wire on the back of controller through the installation hole, plug the wire into the socket on the main board.(refer to Figure 14,15,16).

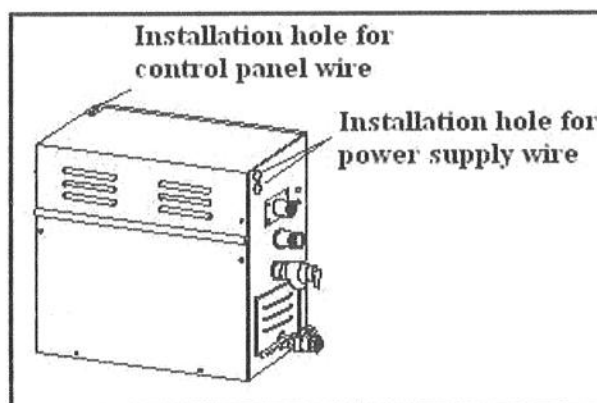


Figure 14

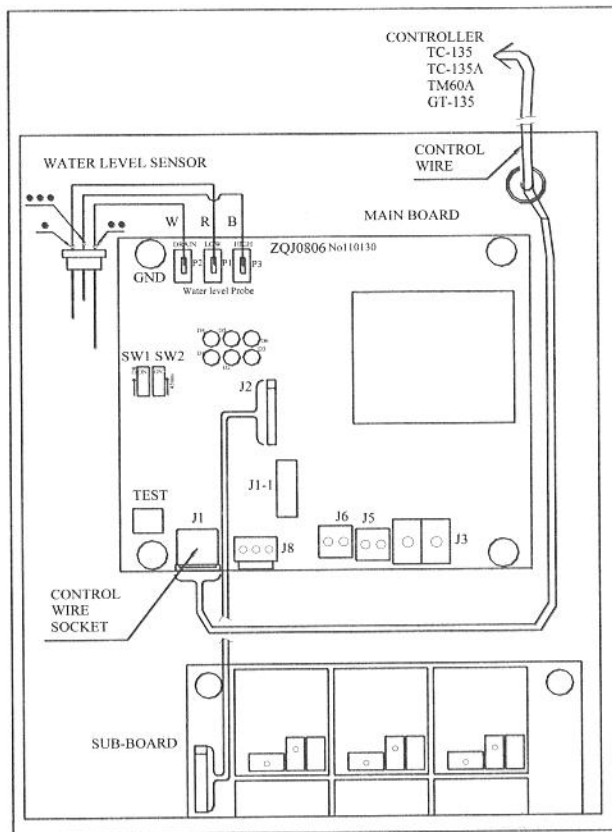


Figure 15

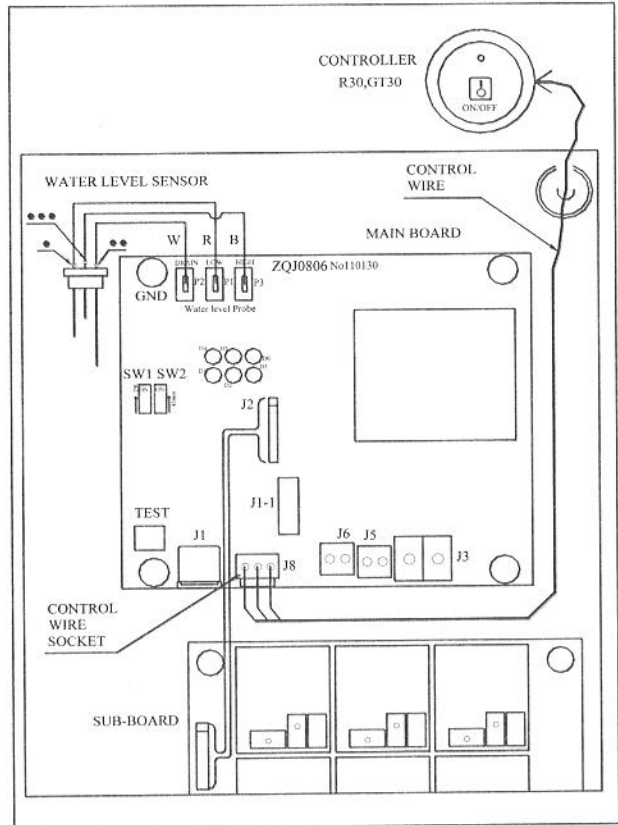


Figure 16


INSTALLATION OF POWER WIRE


Caution:

- The power supply should be 220-240V or 380-415V, 50/60Hz, please refer to the nameplate of the generator or table 1, 2 of this manual.
- The selection of fuse and breaker must strictly follow the data in table 1, 2.
- Choose the suitable power wire according to table 1, 2 and local codes.

Power wire connection:

- 1) Open the installation hole on the front cover of the generator (refer to Figure 14).
- 2) Lead the three-core power wire(Single phase, 220-240V, 50/60Hz) or five-core power wire (three phases, 380-415V, 50/60Hz) through the installation hole;
- 3) Plug the wire into the corresponding terminals (refer to Figure 17-22) .

Single phase, 220-240V, 50/60Hz power supply: connect the live wire to the terminal labeled as “L” ; connect the neutral wire to the terminal labeled as “N” ; and connect the ground wire to the terminal labeled as “”.

Three phases, 380-415V, 50/60Hz power supply : connect the L1, L2, L3 wire to the terminal labeled as “L1”, “L2” and “L3” respectively; connect the neutral wire to the terminal labeled as “N”; and connect the ground wire to the terminal labeled as “”.

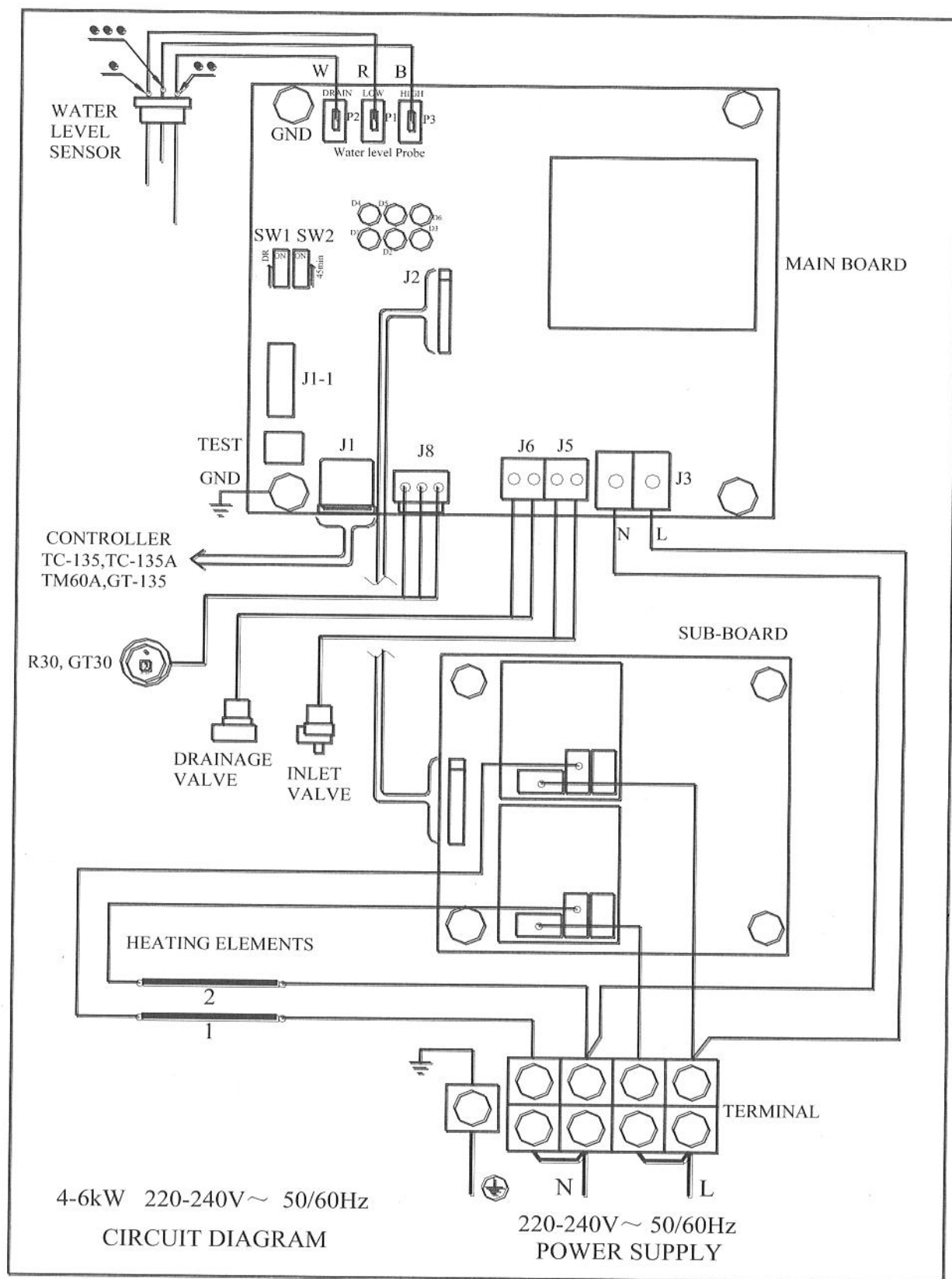


Figure 17

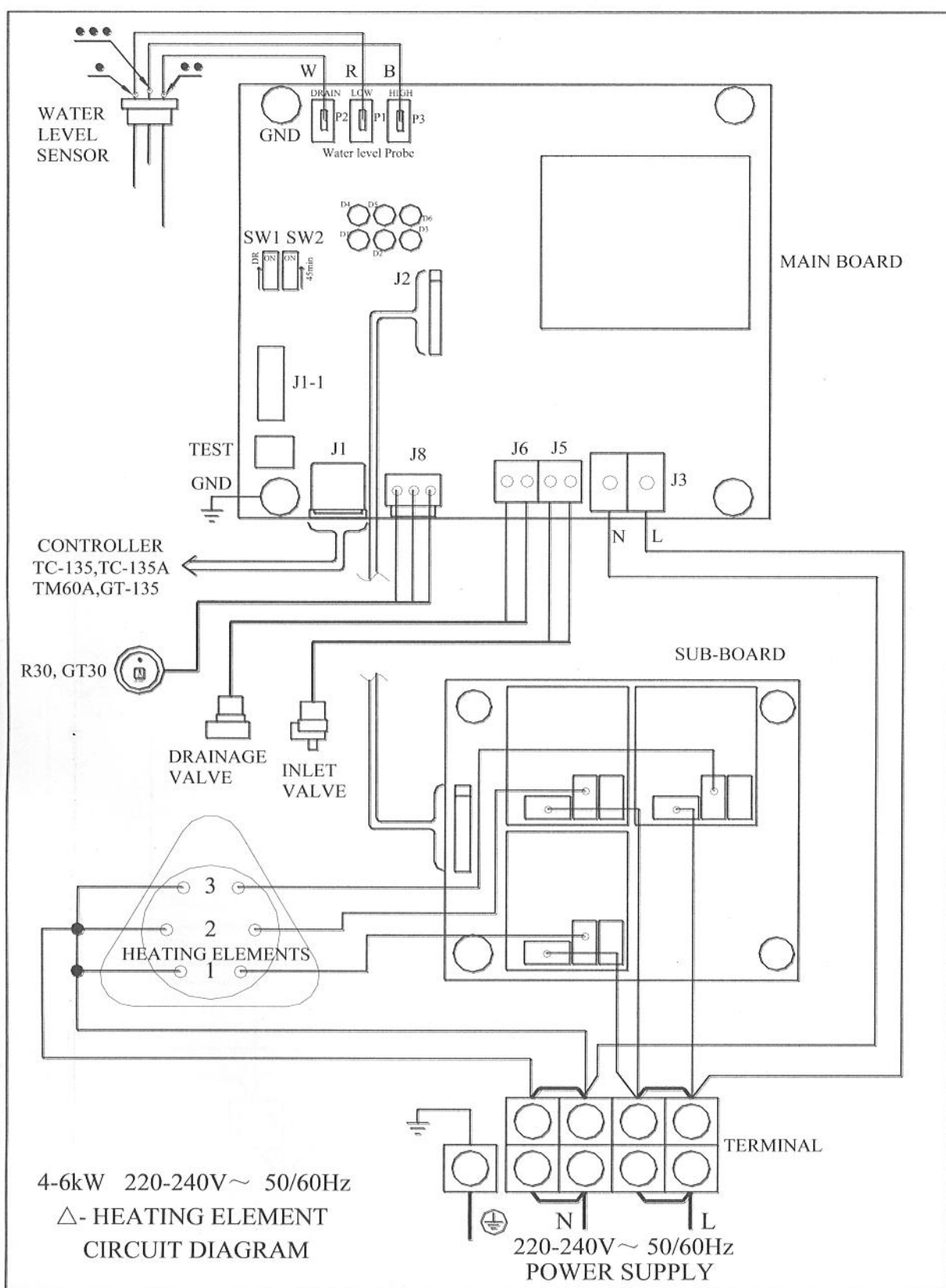


Figure 18

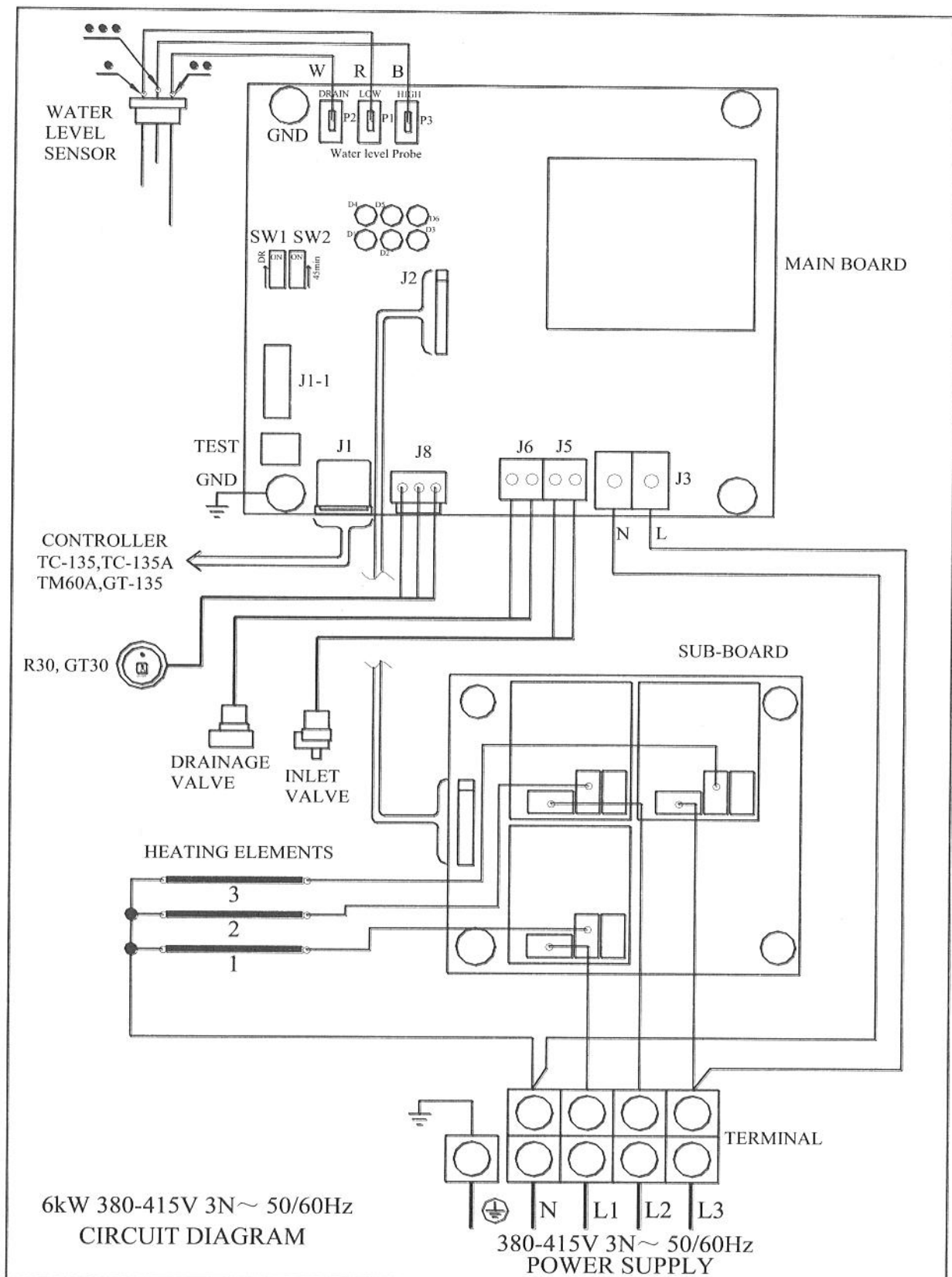


Figure 19

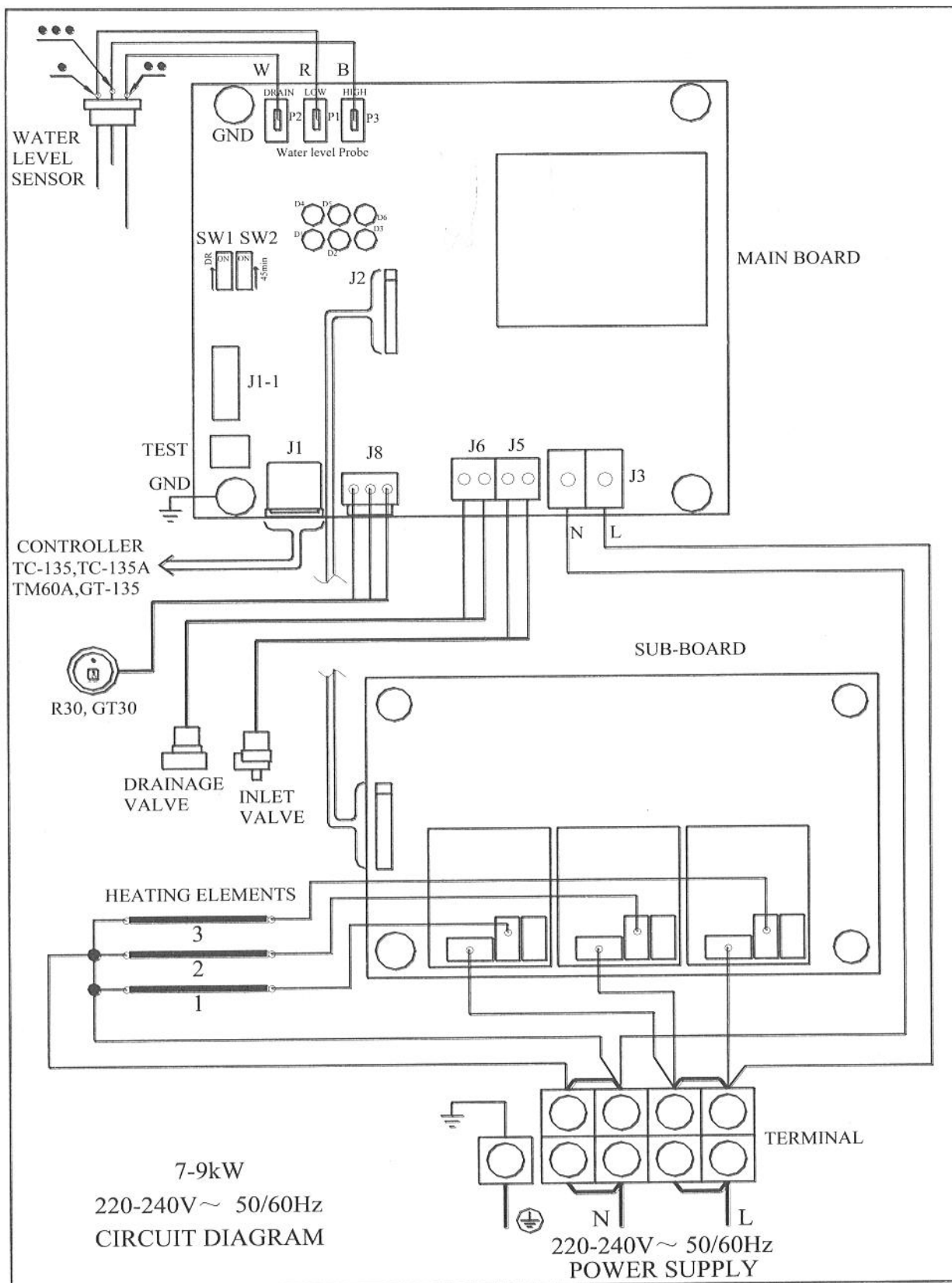


Figure 20

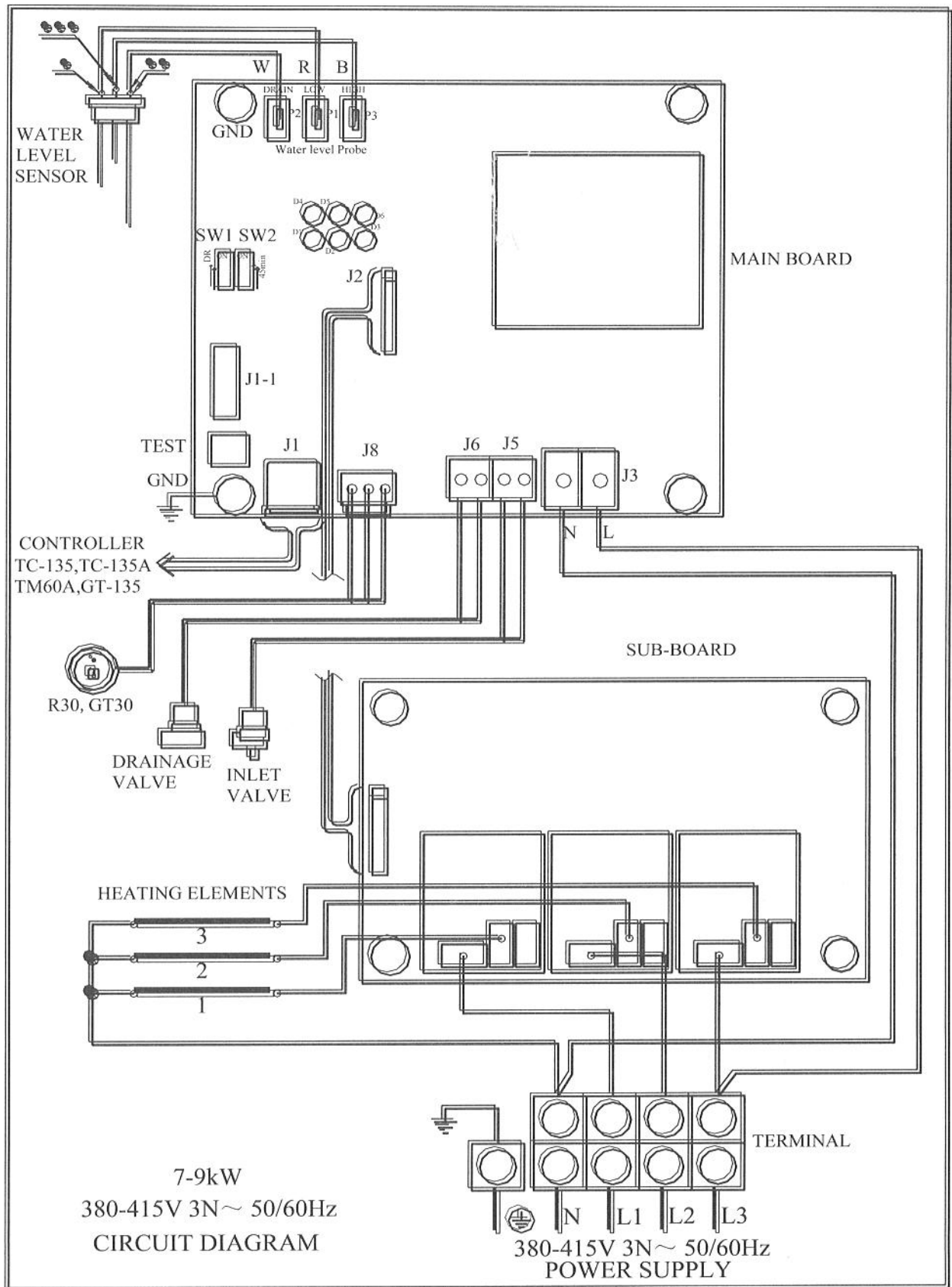


Figure 21

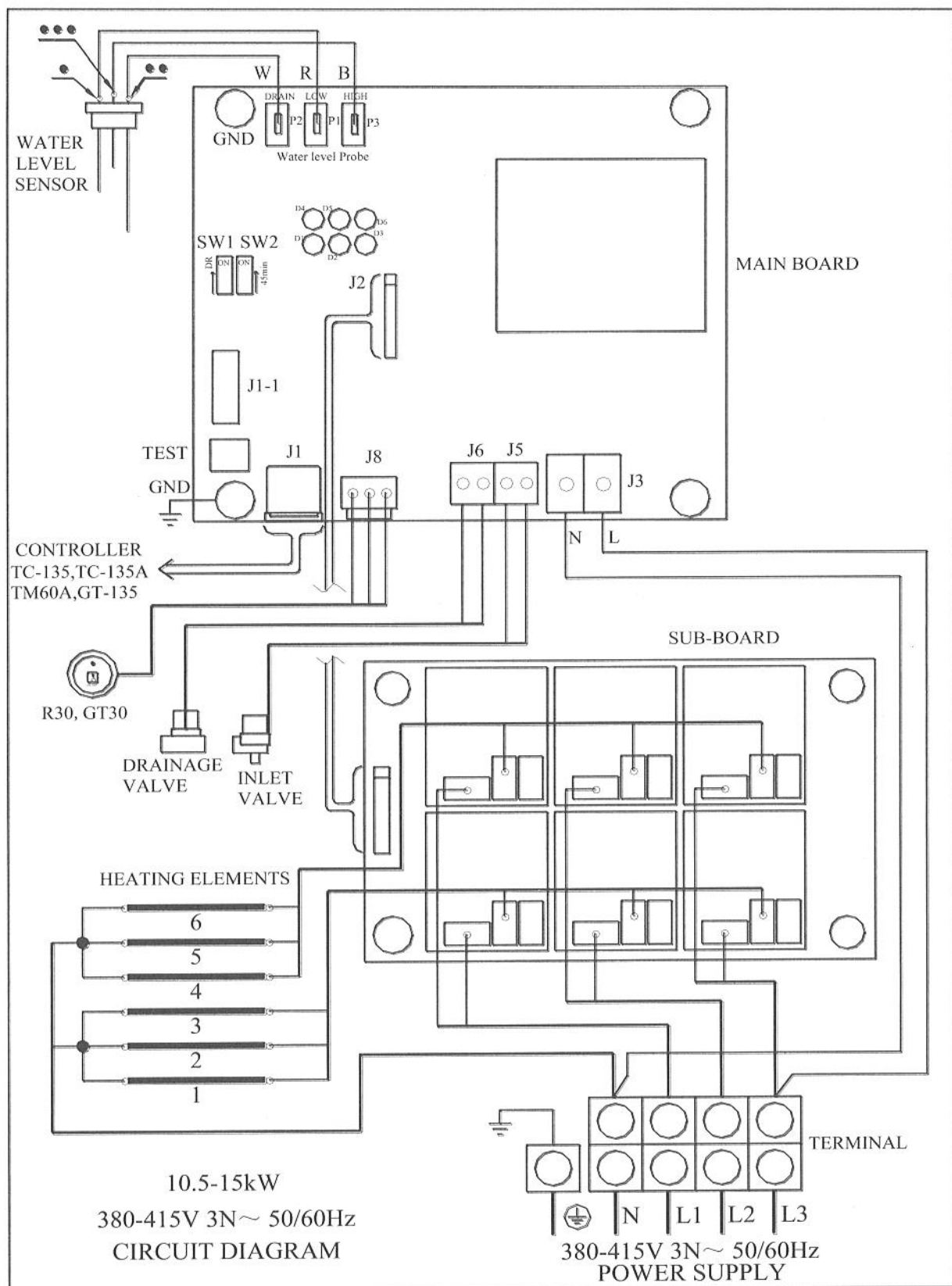


Figure 22


CHAPTER 3 FUNCTIONS AND OPERATION


1. R30 and GT30 controller

ON/OFF To switch on and off of the whole system. Press this button can switch on the generator and open the water inlet solenoid valve to fill in water, then heating up for 45 minutes and switch off automatically. Or press “ON/OFF” to switch off the system manually.

2. TC-135 and GT-135 controller

Temperature: The LCD on the panel will display the temperature measured by the temperature sensor in the range of 6°C ~ 60°C (43°F ~ 140°F).

Heating: During heating-up process, “” is displayed on the left side of LCD

Heat preservation function: During heating-preservation process, “” is displayed on the right side of the LCD.

Functions and operation


START/STOP : Press this button can switch on the generator and open the water inlet solenoid valve to fill in water. Current temperature is displayed on the LCD. When the water level reaches the required minimum water level, system begins to heat up (if current temperature is lower than setting temperature). Once the water level reaches its maximum level, inlet valve closes and the system enter the automatic working process according to default temperature and time setting or user-set values, until being reset by user. The system will turn off automatically after heat-up for 45 minutes or “START/STOP” button is pressed again during working process.


SET TEMP: Temperature setting button. Press to adjust the temperature. The LCD will blink and display the previous setting temperature, if the system has been turned off and restarted, the LCD displays the default temperature 43°C (109°F). Then press the “▲” or “▼” button to adjust and press “SET TEMP” again to confirm, then the system will automatically operating under the user-set value. The available temperature range is 35°C ~ 55°C (95°F ~ 131°F).

3. TC-135A controller

Temperature: The LCD on the right of the panel will display the temperature measured by the temperature sensor in the range of 6°C ~ 60°C (43°F ~ 140°F).

Setting time: The LCD on the left of the panel will display the remaining working time. The maximum setting time is 60 minutes while the default setting time is 45 minutes. When no working time is set (which is working for a long term), the LCD will display “CH”.

Heating : During heating-up process, “” is displayed on the left side of LCD

Heat preservation function: During heating-preservation process, “” is displayed on the right side of the LCD.

Functions and operation

ON/OFF: To switch on and off of the whole system. Press this button can switch on the generator and open the water inlet solenoid valve to fill in water, then heating up for 45 minutes and switch off automatically. Or press“ON/OFF”to switch off the system manually。

SETTING: Temperature and Time setting button. Press once to adjust the temperature. The LCD and the red LED will blink and display the previous setting temperature. If the system has been turned off and restarted, the LCD displays the default temperature 43℃ (109°F), then press the “↑” or “↓” button to adjust and press “SETTING” again to confirm. At this time, the right LCD displays the setting temperature and the left LCD blinks and displays the previous setting time or the default setting time 45 minutes if the system has been turned off and restarted, or the remaining working time(during working time), you could set the working time now. Press “↑” or “↓” button to adjust the working time to the value you want, or press “↑” button until the LCD displays “CH” and then press “SET” to confirm, after that the system automatically enters long-term working mode. The system will automatically operate under the user-set values.

4. TM60A controller


Temperature: The LCD on the top of the panel will display the temperature measured by the temperature sensor in the range of 6℃～60℃ (43°F～140°F).

Time display: The LCD on bottom of the panel will display the working time. The maximum setting time is 60 minutes while the default setting time is 45 minutes. When no working time is set (which is working for a long term), the LCD will display “CH”.

Heating : During heating-up process, LED beside “START” button is on.

Heat preservation function: During heating-preservation process, LED beside “STOP” button is on.

Temperature setting indicator: When setting the temperature, the LED of“” button is on.

Time setting indicator: When setting the time, the LED of“” button is on.


Power indicator: When the system is switched on, the LED on the bottom of the panel is on.



Functions and operation



START/STOP To switch on and off of the whole system. Press this button can switch on the generator and open the water inlet solenoid valve to fill in water, then heating up for 45 minutes and switch off automatically. Or press“START/STOP”to switch off the system manually.



Memory/Settings: Temperature and Time setting button. Press once to adjust the temperature. The LED beside  will be on, and the top LCD will blink and display the previous setting temperature. If the system has been turned off and restarted, the LCD displays the default temperature 43℃ (109°F), then press the “▲”或“▼” button to adjust and press “Memory/Settings” again to confirm. At this time,

LED beside  turns off and the LED beside  turns on. The top LCD displays the setting temperature and the bottom LCD blinks and displays the previous setting time or the default setting time 45 minutes if the system has been turned off and restarted, or the remaining working time(during working time), you could set the working time now. Press “▲” or “▼” button to adjust the working time to the value you want, or press “▲” button until the LCD displays “CH” and then press “Memory/Settings” to confirm, after that the system automatically enters long-term working mode. The system will automatically operate under the user-set values.

CHAPTER 4 MAINTENANCE

1. As leakage of the steam will damage the equipment. To prevent any hazard, steam generators, steam head, parts and pipe line connections should be checked regularly.
2. Clean the solenoid valve, magnetizer and all the other sets in the pipe line regularly according to the local water quality and usage of the steam generator.
3. When operate, check the equipment to see whether it's over heated, check the stability and corrosion of all the wire plugs.
4. **Replace the heating elements:** Switch off the steam generator and remove the element access cover when the generator completely cools down. Label the wires connect to the heating elements which need to be replaced and plug out the wires. Screw the heating elements out. Clear the scale in the water tank and screw in the heating elements after putting the rubber rings on them (airproof gasket should be pressed firmly without reversion). Plug on the wires, make sure the heating elements are properly connected before put on the element access cover.
5. **Replace the main board:** Switch off the steam generator and remove the cover when the generator completely cools down. Label the three wires which connecting the main board to the water level sensor and solenoid drain valve, and then remove all these wires as well as the wire connectors between controller and sub-boards. Replace the main board (be careful with yellow-green ground wire under the screws of the circuit board). Install the replacing main board back carefully.
6. **Replace the sub-board:** Switch off the steam generator and cut off the power supply. Remove the cover when the generator completely cools down. Unplug all the wires on the sub-board. Label all the wires on the relay and remove the sub-board. Install the replacing sub-board back carefully.
7. **Replace the solenoid valve:** Switch off the steam generator and disconnect from the power and water supply. Remove the cover then the soft pipes, wires and screws when the generator completely cools down. Remove the solenoid valve and install back the replacing one back.
8. **Replace the water level sensor:** Switch off the steam generator and remove the cover when the generator completely cools down. Carefully label all wires for different colors and different plugs. Take off all the wires, screw out the water level sensor, and screw in the new water level sensor until the bottom of the plastic nut reaches the same height as the old one. Finally reconnect the wires (all wires must be plugged back to the right place, refer to figure 15,16).

9. Cut off the power supply before any maintenance.

10. Test the equipment after maintenance.

CHAPTER 5 TROUBLESHOOTING

Repair can only be performed by qualified professionals, for more services or technical helps please contact the dealer.

LT, AR, GT model steam generator has self-diagnose function, and some common faults will be displayed on the LCD if occur.

Code	Meaning	Diagnose and Solution
-L	Temperature measured by temperature sensor is below 6℃	Check whether the room temperature is below 6 ℃, the code should disappear after the room temperature reaches 6 ℃. Otherwise check the connection of the sensor.
-H	Temperature measured by temperature sensor is higher than 60℃	Check whether the room temperature is above 60 ℃, the code should disappear after the room temperature drops below 60 ℃. Otherwise check the connection of the sensor.
-E	Fault on the water supply, heating elements stop working	Check the connection and status of solenoid valve, water supply, magnetizer and water level sensor. After clean or replacement, restart the system and you should feel the flow of incoming water.
EE	Connection error between control panel and main board.	Check the connection wire and connectors between the control panel and the main board.
d or dd	Automatically draining when setting time is up or ON/OFF button is pressed. Automatically shut down after draining for a few minutes	Normal

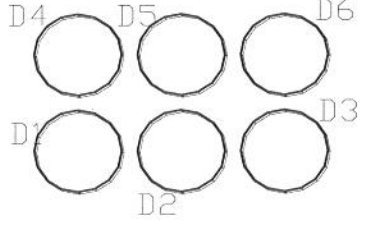
Table 4

If meet any problem with the steam generator, please follow the procedure to identify and solve the problem:

1. Take off the cover of the generator and plug out the connection wire for controller, then press the “TEST” button. If the generator can fill in water -> heat up -> produce steam, and stop working when press the “TEST” button again, it means that the main circuit board is working properly and the faults should be on controller part (including temperature sensor), then please replace the faulty parts. Otherwise the faults are on the main

board, sub-board, water level sensor, and inlet solenoid valve or inlet pipelines, please carefully test each part and replace the faulty ones.

2. If the generator can fill in and drain out water properly but does not heat up, please check the connection wire between main circuit board and the sub-board, the relays on sub-board, and heating elements.
3. If water leaks from the steam outlet pipe seriously, please clean or change the outlet solenoid valve. You also need to check the connection of the water level sensor.
4. If the system keeps on heating up even if the current temperature is more than 2°C above the setting value with the indicator on, carefully test the relays on the sub-board then change the faulty ones, or change the whole sub-board.
5. All troubleshooting process could refer the indicators on the main board.

D1	D2	D3	D4, D5, D6	
GREEN	RED	ORANGE	YELLOW	
DRAINAGE	POWER	WATER FILLING IN	HEATING UP	

- Do cut off the power supply before repair.

If problems still cannot be solved by the procedures listed above, please contact the dealer.

CHAPTER 6 WARRANTY AND SERVICES

Limited warranty is offered to all customers. Any quality problem will be covered for one year (from the purchasing date) or 18 months (from the factory producing date) under free warranty (base on the earlier one). Damaged accessories, parts, and knobs are not under warranty.

- Heating elements are under 90 days (from installation) or half year from the factory producing date) free warranty (base on the earlier one).
- Our company has the right to decide whether to repair or to change. Approval must be obtained from our company before shipping back the product. The customer has to pay for the transportation fee and any parts fee beforehand.
- Any clause mentioned in the manual is not covered by the warranty.
- This warranty does not cover any defect, malfunction or failure caused by, or resulting from unauthorized installation, maintenance and repair; improper power supply; and any action which violates the manual.
- Damage caused by accident, misusing of chemistry products, or any other reason which are beyond our company's responsibilities will not be covered. Any product whose label, nameplate has been removed, altered, damaged is not covered either.
- Using in a salty environment or any other extreme, corrosive condition is not covered by the warranty.
- After the free warranty period, services are still available if all cost is covered by the customer.
- Our company is not responsible for any direct or indirect damage caused by the generator.
- Please contact our company for further information and more details.