MAKTEK®

ELECTRICAL BOILER



OMEGA

6 kW - 100 kW

USER'S MANUAL

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TS EN ISO 9001:2015

Read carefully
Keep for referance

CONTENT

1.SAFETY 3
1.1 SYMBOL KEY 3
1.2 SAFETY PRECAUTIONS 3
1.3 GENERAL EXPLANATIONS 4

2.INTRODUCTION OF THE DEVICE 5
2.1 APPERANCE AND EXTERNAL DIMENSIONS 5
2.2 COMPONENTS OF THE BOILER 6
2.3 CONTROL PANEL 7

3. MOUNTING AND INSTALLATION 8
3.1 ELECTRICAL CONNECTIONS AND SHORT CIRCUIT RELAY 8
3.2 SHORT CIRCUIT RELAY CONNECTION DIAGRAM 8
3.3 OPENING THE BOX 9
3.4 INSTRUCTIONS FOR MOUNTING 9
3.5 MINIMUM SPACES FOR INSTALLATION 10
3.6 HEATING AND HOT WATER SYSTEM INSTALLATION CONNECTIONS 10
3.7 FILLING WATER TO THE SYSTEM 11
3.8 STARTING UP 11
3.8.1 PRE-CONTROLS BEFORE STARTING UP 11
3.8.2 FIRST OPERATION 11
3.8.3 CIRCULATION PUMP PRESSURE CURVE 12

4. FEATURES OF OMEGA ELECTRIC BOILER 13

5. TECHNICAL TABLE 14

6.ELECTRICITY CONNECTION DIAGRAM 15

7. SAFETY SYSTEM OF DEVICE 16
7.1 SHORT CIRCUIT RELAY 17
7.2 HEATING TANK WATER LEVEL SENSOR 17
7.3 LOW WATER PRESSURE 17
7.4 OVERHEAT LIMIT THERMOSTAT 17
7.5 FROST PROTECTION 17
7.6 DOMESTIC HOT WATER NTC SENSOR 18
7.7 CENTRAL HEATING NTC SENSOR 18
7.8 HIGH WATER PRESSURE PROTECTION 18
7.9 PRECAUTION AGANIST PUMP LOCK 18
7.10 MOTORISED VALVE SAFETY 18
7.11 AUTOMATIC BY-PASS 18
8.MAINTANCE 18
9. GUARANTEE CONDITIONS 19

Valuable Maktek User ,

We would like to inform you that , you carry the harmony of the modern and aesthetic desing by latest technology to your homes by choosing Maktek Boiler to your homes.

We advise you to read this guide carefully .This guide is an important source of installation and technical features that you can benefit from.It is very important for you autorized services in terms of the information it contains.

Maktek Boiler will provide you a safe and comfortable life for many years thanks to conscious use.

PLEASE keep this manual carefully so that you can apply when necessary.

We are stronger with you...

1. SAFETY

1.1 Symbol Key


This symbol expresses the risk of serious personel injury or death unless taking care of warnings.


This symbol expresses the risks which can cause minor injuries or harms to the environmet and goods.

1.2 Safety Precautions

Do not open the protective cover of the device.


Electric shock as a result of the contact with electrical items.


Personel injury like burnt as a result of contact with overheated surfaces or cut as a result of contact with sharp surfaces.

Do not remove the device from the place of mounting, do not disconnect the electrical or water connections. (Get in contact with authorized service)


Electric shock as a result of the contact with electrical items.


Flood as a result of demounted water installation.

Protect the main energy cable against damages.


Electric shock danger as a result of contact with not izolated open wires.

Do not leave tools or other objects on the device.


Injury resulted from falling objects from device because of vibration.


Damage to the furniture or floor or animals resulted from falling objects from device because of vibration.

Do not climb on the device.


Personel injury as a result of falling down with device or falling down of the device itself.


Damage risk under device as a result of fall down from the place installed.

Do not climb on unsteady objects like stool, chair or ladders for cleaning or maintenance.


Personel injury resulted from falling down from height or cuts which can be caused from a rapid closing of the ladder.

Do not clean the device without switching it to off position and cutting of the main energy supply.


Electric shock as a result of the contact with electircal items.

Use the device for only heating the house and getting hot water.


Explosion and damage risk resulted from inappropriate using and overloading.


Damage risk to the environment resulted from inappropriate using.

Do not allow children or adults who have limited physical or mental competance, or People lacking the knowlagde about the operating instructions of the boiler to intervene with the device.


Risk of damage to device resulted from misuse.


Personal injury from burnts, breathing smoke or poisoning.

Pay attention to not damaging the electric cables and water pipes inside the wall while making holes on wall for boiler mounting plate.
Electric shock as a result of the contact with electrical items.
Flood risk resuls from water pipe puncture.

Suitable profiled cables must be used in all electric connections.
Fire risk results from overheated law profiled cables.

1.3 GENERAL EXPLANATIONS

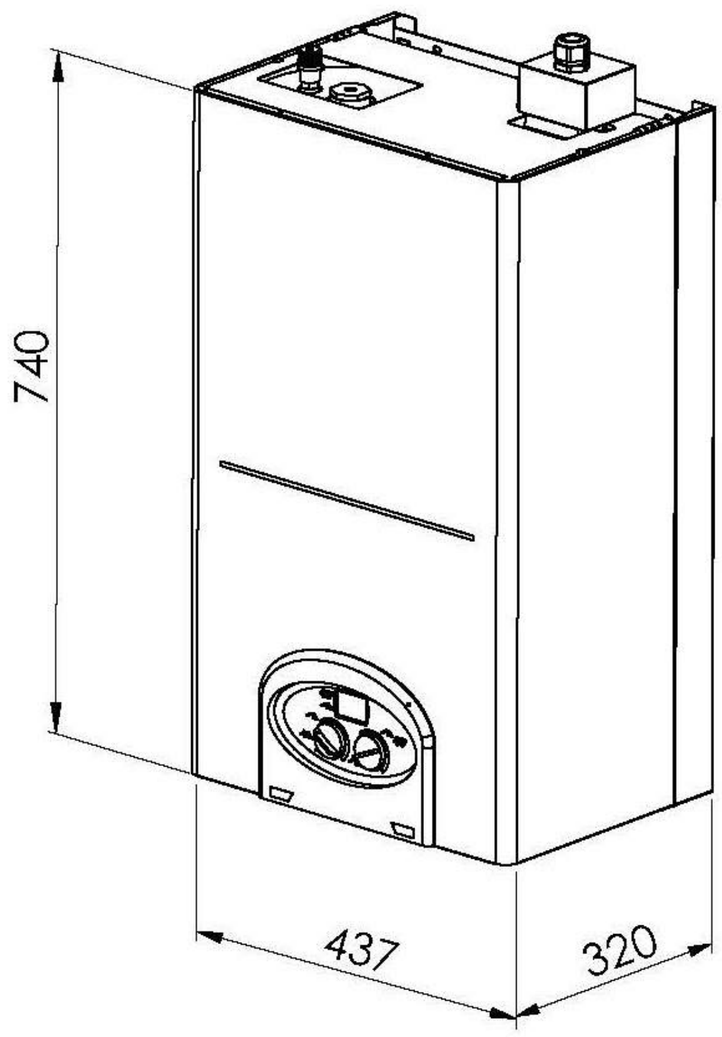
Maktek Electric Boiler provides the heating by central boiler heating system and with radiators connected to the system and provides hot water by heat exchanger. Installation and services must be in accordance with recent standarts and announced directives. Our company is not responsible for damages caused from wrong installation and usage.

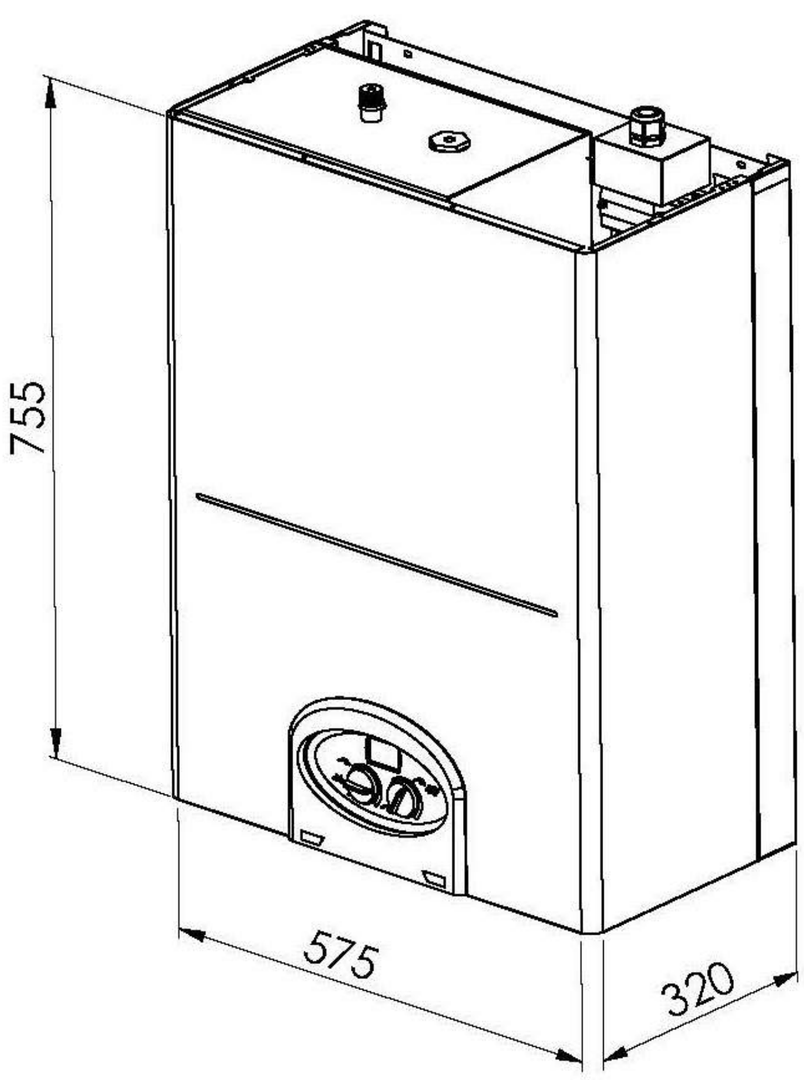
Make sure the boiler is operated only to comply the intended use of the boiler. Any usage which does not comply with the boiler's intended use may cause serious injuryor death or harms to the environment and goods.

ATTENTION ; Only Autorised Services and Manufacturer are responsible for the boiler.Do not allow other people to fiddle with settings of the boiler.

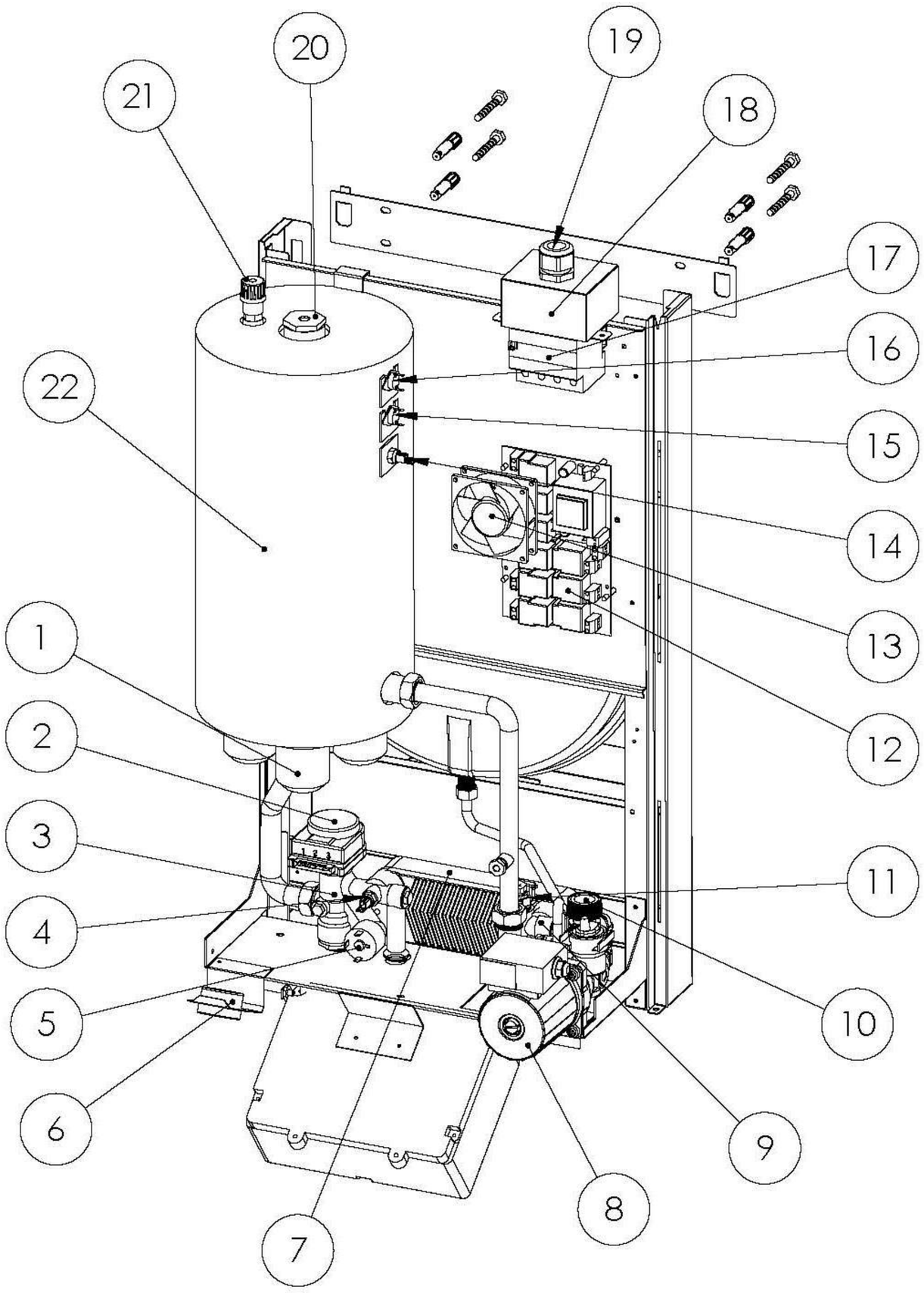
2. INTRODUCTION OF THE DEVICE

2.1 APPERANCE AND EXTERNAL DIMENSIONS



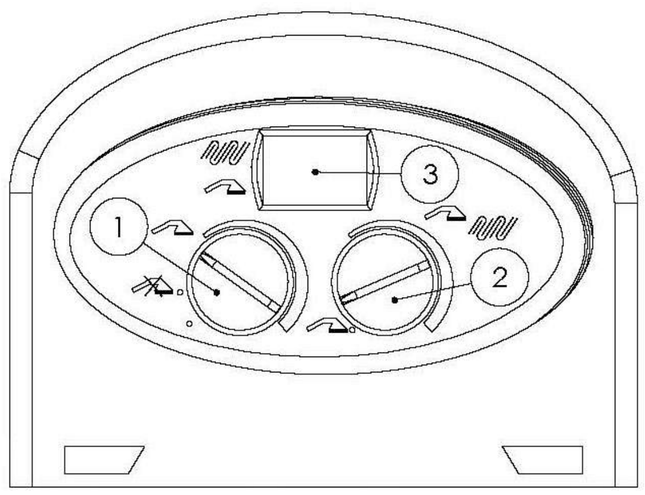


2.2 COMPONENTS OF THE BOILER



1.Heating elements
2.3-way valve actuator motor
3.Flow manifold
4.DHW temperature NTC sensor
5.Water pressure switch
6.Pressure gauge
7.Plate heat exchanger
8.Circulation pump
9.Return manifold
10.3bar safety valve
11.Electronic Flow sensor
12.Relay board
13.Cooling fan for relay board
14.CH temperature NTC sensor
15.Short-circuit thermostat
16.Limit thermostat
17.3-Phase RCD device
18.RCD protective cover
19.Cable gland
20.Float level sensor
21.Manual air vent
22.Main heat exchanger

2.3 CONTROL PANEL



All functions required to run the boiler is done via two buttons on control panel. These functions can be followed on LCD screen. All failure reportings can be seen on screen via specific codes.

1. P1 KEY



This position is where the device is used for hot water usage. The desired domestic hot water temperature is adjusted by turning the P1 key to the right. The set temperature value flashes on the display. The seady numbers show the current hot water temperature.



Domestic hot water function is OFF. In this position there is no hot water production even when the hot water tap is opened.

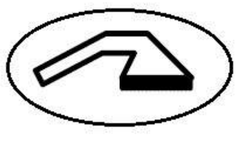
TEST : Mode of adjustment by AUTORISED SERVICE during first installation or maintance. Users should not use this position during operation.

2. P2 KEY

OFF-RESET : The boiler is functionally switched off in this position.At failure times, it is used as reset. Security measures such as anti-frost and jamming protection are active in this position swueeze.



Winter Mode : Both DHW and heating function is on. Heating system adjustments are made from P2 key. Desired temperature flashes on the screen as you adjust with P2 key. The steady numbers show the current heating water temperature. Primarily DHW is supplied.



Summer Mode : Only DHW function is on. You can set this mode from P2 key when you do not need central heating. You can adjust the desired DHW temperature by P1 key.

3. DIGITAL SCREEN

Shows operating parameters and errors occuring during operation with the warning codes on the screen.

2.4 ERROR CODES

ERROR CODES	EXPLANATION
H 1	Central Heating Sensor Error
H 2	DHW Sensor Error
H 3	Central Heating Circuit Low Water Pressure Error
H 4	High Temperature Measurement Error >= 95°C
H 5	Limit Thermostat Error
H 6	Heating Tank Water Level Error

3. MOUNTING AND INSTALLATION

The installation of the electric boiler must be done by authorized dealers and electricians. First time operation must be done by MAKTEK AUTHORISED SERVICE. Your device will be held out of guarantee if the installation and operation conditions on this manual are complied.

3.1 ELECTRICAL CONNECTIONS AND SHORT-CIRCUIT RELAY

Maktek Omega Electrical Boilers with capacities upto 12 kW can operate both with 230V/50 Hz and 380V50Hz. Higher capacities only operate with 380V/50Hz electricity connection.
The main energy cable dimensions should be chosen from the technical specifications table in this manual and must be connected by a qualified electrician.

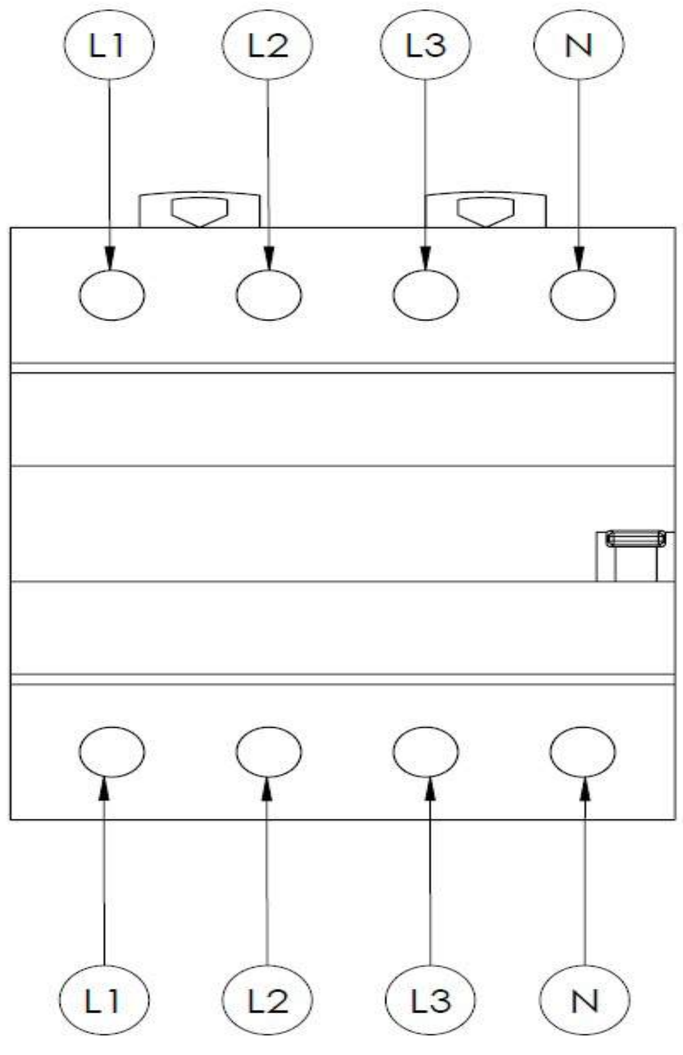
WARNING !
Do not operate the boiler before venting the air from the central heating installation.
Do not operate the boiler without proper connection of the RCD device.
Make sure to use the correct size main energy cable.

IMPORTANT !
Installation and connections should only be made by an authorized electrician. Your device does not work on an incorrect connection.

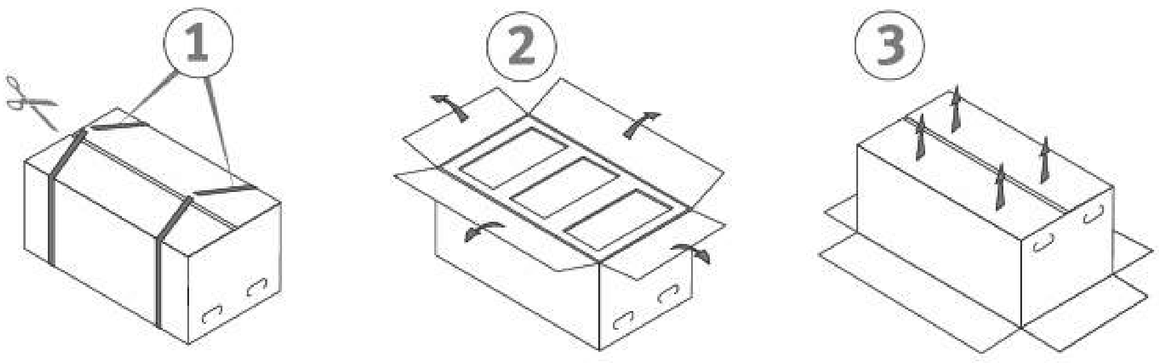
WARNING !
Make sure to cut off the energy supply from the RCD (short circuit relay) before any cleaning or maintenance on the boiler.

IMPORTANT !
Do not operate the device without proper grounding.

3.2 SHORT CIRCUIT RELAY CONNECTION DIAGRAM



3.3 OPENING THE BOX



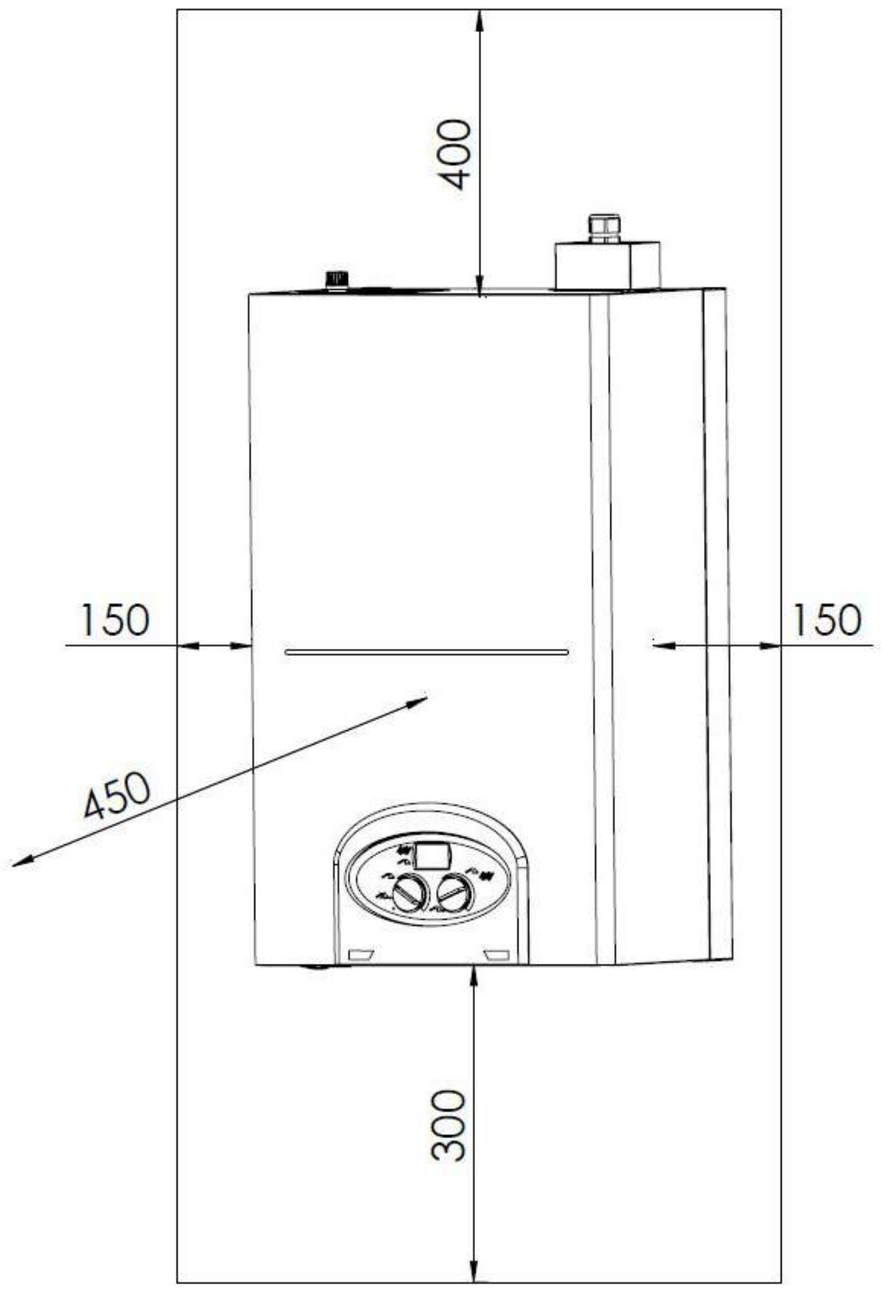
Open the box as seen in the above sketch. Place the box on the ground, arrows on the box pointing to the ground. Cut the cords or remove the staples, fold the lids of the box on each side and turn the box upside down. Pull the box upwards and remove it.

3.4 INSTRUCTIONS FOR MOUNTING

Boiler should not be installed in humid places such as bathrooms and areas that may be affected by rain water.
The boiler should be installed on strong walls that can carry it and perpendicular to the ground.
Spesific space must be left around the for the authorized service to intervene in the event of a technical breakdown or maintenance. You can find the minimum spaces required for installation in the below diagram.
Only use the dowel, screw and hanger assemblies supplied with the device during installation.It is a must to install the device vertically and smoothly with a water balance so that it can work properly after installation.

3.5 MINIMUM SPACES FOR INSTALLATION

At least the following space must be left in order to reach the internal parts of the device easily whe a fault occurs or when maintenance is carried out.
Suggested space is the minimum space and it is favorable to leave more space depending on the situation.



3.6 HEATING AND HOT WATER SYSTEM INSTALLATION CONNECTIONS

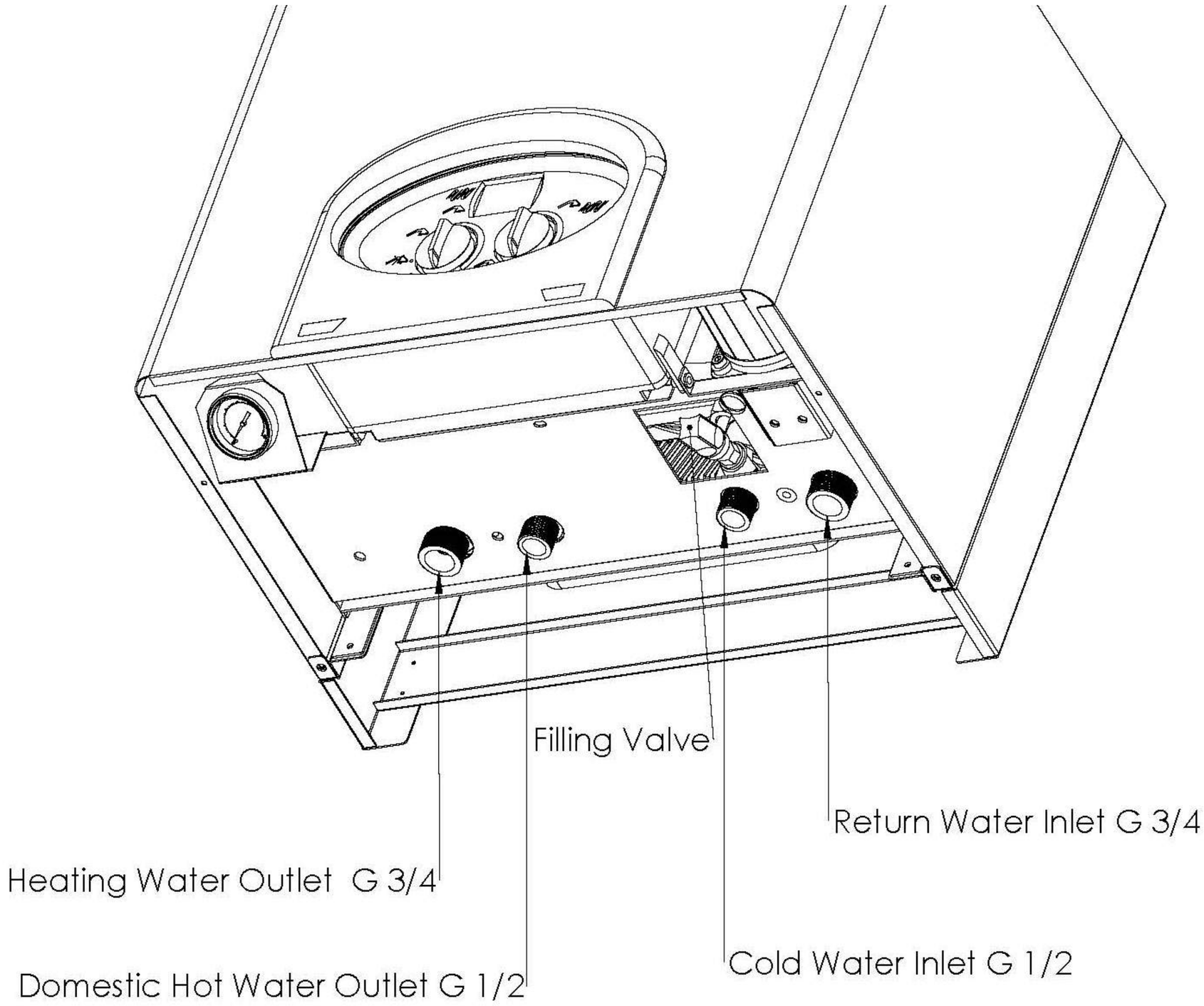
At DHW function, please make sure that the pressure of the city water network on cold water inlet side is not more that 6 Bars. If the network pressure is more than 6 Bars, a pressure regulator must be added. In order for the DHW system to run, the minimum pressure level of the network must be 0,8 Bar.

In order to provide a good circulation at heating function, installation pipe diameters must be selected properly and diameter restrictions should not be allowed at elbow passage. When selecting the pipe diameter, pipe resistance above the capacity of the pump must be avoided. You can see the pump capacities from the pump pressure curve.

When there is a pressure increase at heating system, the security ventile operates in order to discharge water to decrease pressure.

When radiator thermostatic valves are installed in the heating system and when the heat balance is provided at all isolated departments, if the thermostatic valves turns off the system, automatic by-pass system immediately runs in order to provide the minimum circulation in heat exchanger and provides the safety of device.

CAUTION ! : During installation ; on the return water inlet pipe , usage of 3/4" particule filter and 2 valves on both sides of the filter is advised. On the cold water inlet pipe 1/2" particule filter and valve must installed.



3.7 FILLING WATER TO THE SYSTEM

Open all the air vents on the radiators and the manual air vent on the boiler.

Start filling the system by opening the filling valve on the boiler.

Turn of each air vent as soon as you see buble free water coming out.

Continue the flooding process until the closed circuit pressure in the system reaches 1.5 bar and then close the filling valve.

You can observe the water pressure on the system from the manometer which placed on the bottom of the boiler.

3.8 STARTING UP

First time operation of the boiler must be done by authorised Maktek service personel in order to validate the guarantee of the boiler and to ensure the boiler runs efficiently and safely for many years.

3.8.1 PRE-CONTROLS BEFORE STARTING UP

A) Make sure all air is vented from the system (radiators and the boiler) and all air vents are closed.
B) Check the system pressure from the manometer. (Must be 1.2-1.5 bars)
C) Remove the screw of the pump mill and make sure the pump is turning freely.This way any trapped air inside the pump is also removed.
D) Discharge the air in the hot water system by opening on hot water tap.
E) Check all the valves on the system including the radiator valves and make sure all are open.

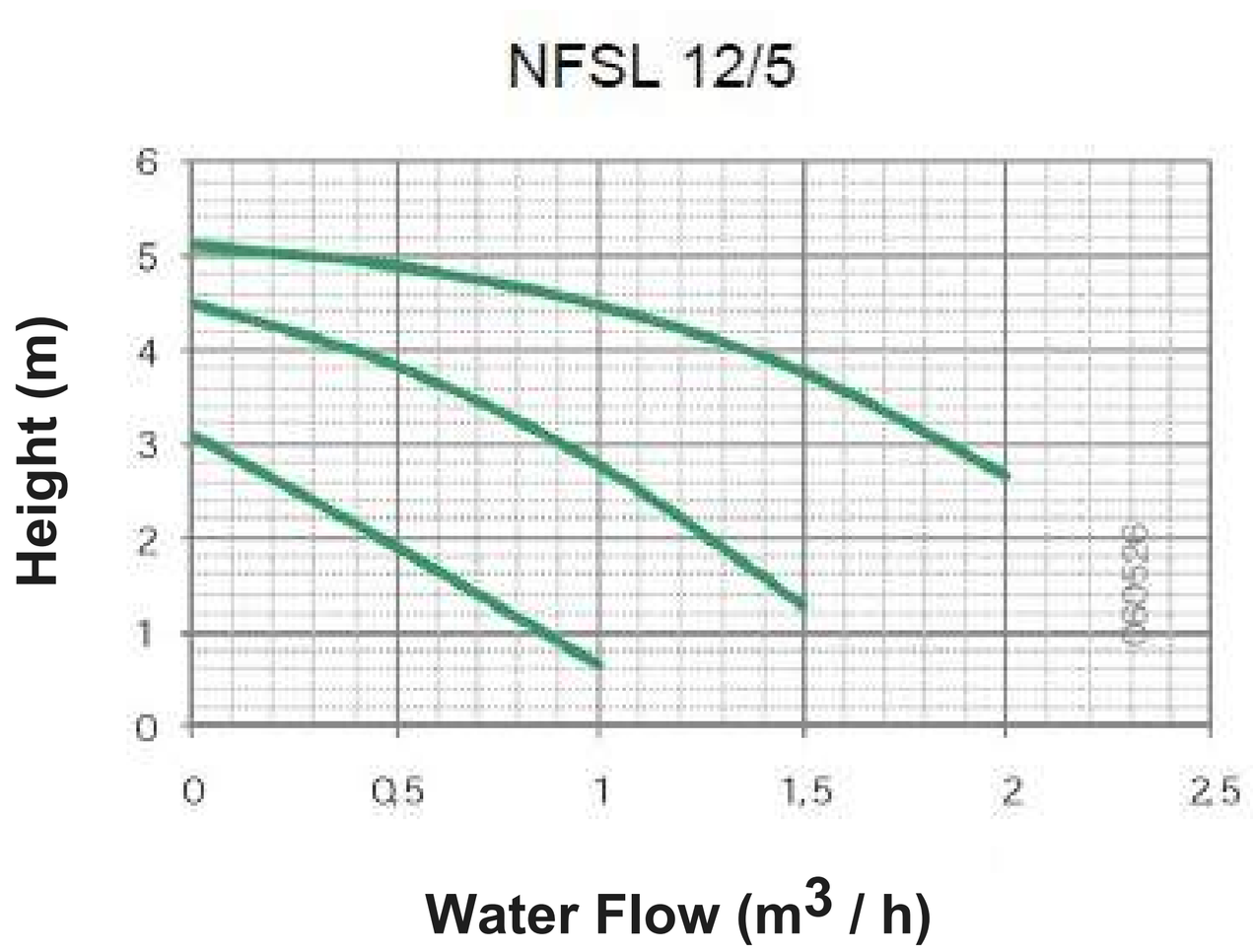
3.8.2 FIRST OPERATION

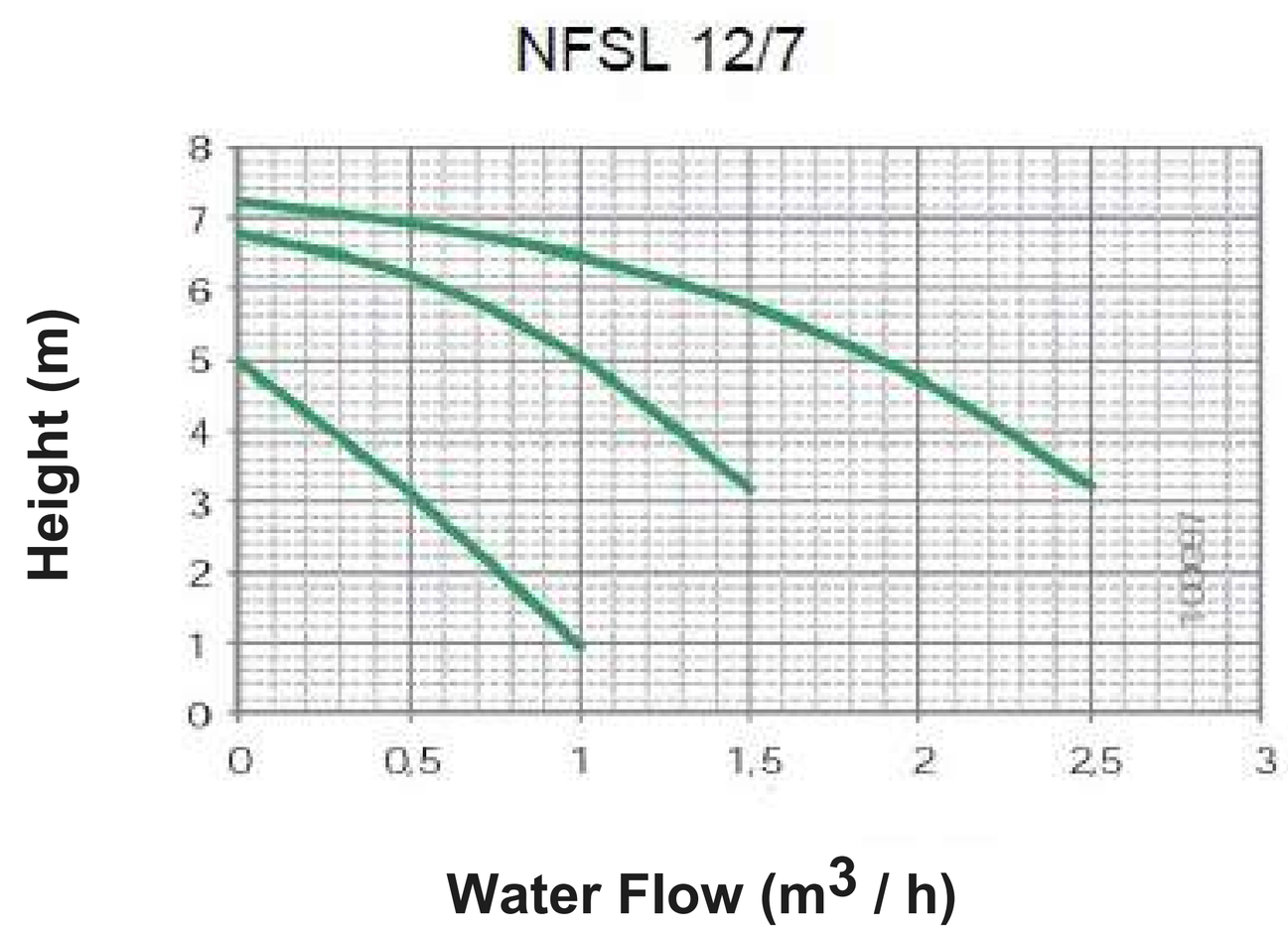
1- Switch on the short circuit relay switch
2- Make sure the cold water inlet valve which is on the bottom of the device is open.
3- Set the P2 switch to the desired position from the OFF position and set the water temperature to the desired temperature by following the thermometer degree on the screen.

The boiler will start operation automatically according to the adjustments made on the control panel.

3.8.3 CIRCULATION PUMP PRESSURE CURVE

MAKTEK Omega Boiler Circulation pump has 3 speed options. You can choose the required pump speed according to the resistance of your installation. You can use the below diagram for deciding the pump speed.



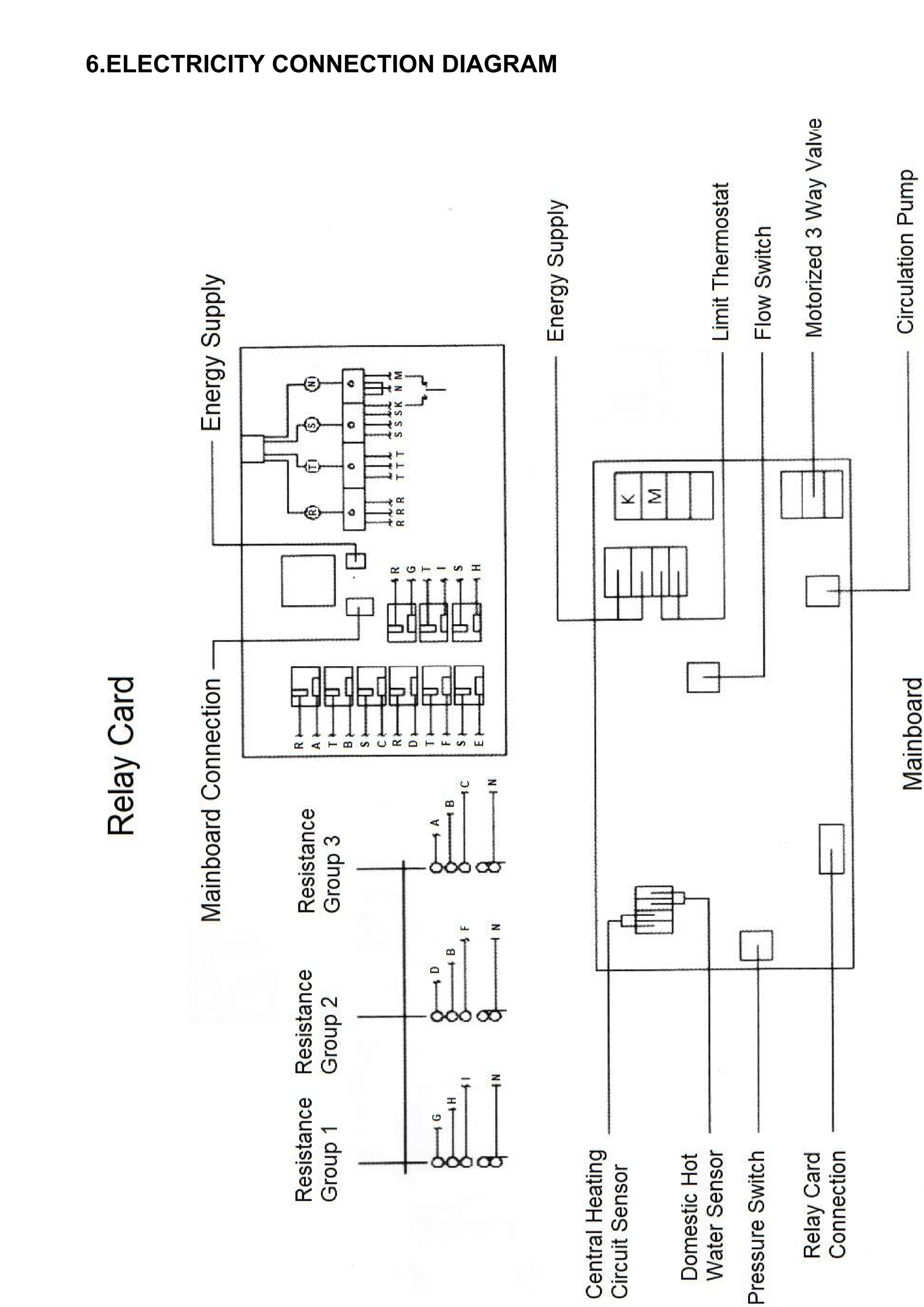


4. FEATURES OF OMEGA ELECTRIC BOILER

Maktek Omega Boiler uses ONLY electricity as fuel.
The device is equipped with many safety functions to provide risk free operation.
Operates with 99% efficiency.
Eco-friendly, 0 emissions.
Due to its quiet operation and lack of connections like chimneys, it can be mounted in living areas easily.
It offers an aesthetic look with its minimized dimensions and exterior design.
Running costs are 32% lower than diesel boilers and 25% lower than LPG boilers.
Provides hot water in constant temperature at set value.
Heating system can quickly enter the regime and heat the house.
Protection against high pressures with 3 bar safety valve.
Manometer
3-stage circulation pump.
1 bar set safety switch.(protection againts running without water)
Built-in RCD (short circuit relay) provides electrical protection and safe operation.
Automatic by-pass system.
Modulation according to room temperature (with optional room thermostat)
Electronic water temperature control with NTC system.
Electronic temperature adjustment thermostat.
Limit thermostat against overheating.
Short-circuit thermostat for increased protection.
Anti-jamming system. Operating in every 24 hours to prevent pump jamming.
Frost protection system.
Wide capacity range, from 6 kW upto 100 kW. Meets a wide range of heating requirements.

CAPACITY															
> Heating Power	**kW**	**6**	**10**	**12**	**15**	**18**	**24**	**30**	**32**	**35**	**40**	**50**	**60**	**80**	**100**
Capacity	kcal/h	5160	8600	10320	12900	15480	20640	25800	27520	30100	34400	43000	51600	68800	86000
Maximum Working Pressure (Heating Circuit)	Bar	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Maximum Working Pressure (Hot Water Circuit)	Bar	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Heating Circuit Temperature Setting Range (min)	°C	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80	30-80
Hot Water Setting Range (min-max)	°C	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55	30-55
Domestic Hot Water Output	lt/dk	–	4	5	6	9	11	13	13	13	13	15	15	15	17
> > SIZES															
Height	mm	740	740	740	740	740	740	740	740	740	740	755	755	755	755
Width	mm	435	435	435	435	435	435	435	435	435	435	571	571	571	571
Depth	mm	320	320	320	320	320	320	320	320	320	320	320	320	320	320
> > ELECTRICITY															
Electricity Connection Cable	piece/mm2	2x6/4x4	4x4	4x4	4x4	4x6	4x6	4x10	4x10	4x10	4x10	4x16	4x16	3x25+16	3x25+16
Residual Current Relay	A/mA	40-25/30	25/30	25/30	25/30	40/30	40/30	63/30	63/30	63/30	63/30	80/30	100/30	125/30	2x80/30
Voltage/Frequency	V~Hz	230/380/50	230/380/50	230/380/50	380/50	380/50	380/50	380/50	380/50	380/50	380/50	380/50	380/50	380/50	380/50
Maximum Current	A	26/9	43/15	52/18	22	27	36	46	48	53	61	75	90	120	152
Getting Maximum Power	W	6098	10098	12098	15098	18098	24098	30098	32140	35140	40140	50140	60140	80140	100140
Electricity Isolation Degree	IP	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D	X4D
> > INSTALLATION															
Heating Installation Pipe Diameter	inch	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"
Hot Water Installation Pipe Diameter	inch	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"

6.ELECTRICITY CONNECTION DIAGRAM



7. SAFETY SYSTEM OF THE DEVICE

MAKTEK OMEGA ELECTRIC BOILER ; has the following safety features in order to ensure the highest level of safety and highest technology.

7.1 RCD DEVICE (SHORT CIRCUIT RELAY)

In case of short circuit, the relay shuts off the electricity connection and prevents any possibility of electruction and prevents any harm to people or the device.

7.2 HEATING TANK FLOAT LEVEL SENSOR (H6)

This sensor prevents the boiler from running without sufficient water inside the heating tank therefore avoids any damage to the resistances. In case of low water level, H06 is displayed on the device's screen. The air trapped must be completely removed from the air vent valve which is placed on top of the device. If the water pressure drops after the air is taken, the display shows H03. In this case, water should be added from the filling valve.

7.3 LOW WATER PRESSURE

If the pressure at the heating circuit is below 0.7 bar, the boiler will not operate and the H3 warning code will appear on the digital display,preventing damage which causes from running without water.

What to Do: The heating system pressure is increased by adding water up to the desired level by the filling valve. You can view the pressure of the water filled from the manometer.

7.4 OVERHEAT LIMIT THERMOSTAT

If the water temperature at the heating system is above 95°C, the system energy is cut off by the card and the H5 warning code is shown on the digital screen.

What to Do: When the water temperature of heating system drops down to 60°C, the boiler will start working again. If this failure occurs two times consequently, please call an authorized service.

7.5 FROST PROTECTION

When the temperature in the heating system drops down to 5°C, there is security system that automatically activates the resistances When the water temperature reaches 40°C, activation of resistances are stopped.
In order for this system to work, the main switch to which the device is connected must be switched on and the heating and hot water selector switches must be set to the minimum setting.

7.6 DOMESTIC HOT WATER NTC SENSOR

When a sensor failure occurs in hot water system, H2 warning code appears on LCD screen.

7.7 CENTRAL HEATING NTC SENSOR

When a sensor failure occurs in central heating system.H1 warning code appears on the LCD screen

7.8 HIGH WATER PRESSURE PROTECTION

When there is over pressure in the heating system, the 3 bar safety valve discharges water and decreases the pressure.

7.9 PRECAUTION AGAINST PUMP LOCK

When the boiler is in the OFF position, the pump is operated in every 24 hours by the control card for a certain period of time to prevent locking and jamming of the pump.

7.10 MOTORISED VALVE SAFETY

When the boiler is in the OFF position, the 3-way valve is operated in every 24 hours by the control card for a certain period of time. The motorized valve returns to its previous position after a certain period of time after changing the position.

7.11 AUTOMATIC BY-PASS

If there is thermostatic valve one each radiator, even when all thermostatic valves are switched off, there is an automatic by-pass system in order to provide of passing of minimum water flow in order to prevent rapid over heating of the boiler.

8. MAINTENANCE

We recommend that the following controls are made by authorised service once a year.
1-Check for leaks in the water circuit and, if necessary, replace the joints to ensure water tightness.
2-Check the status of the device visually.
3-Check the safety system of the heating system if it is working properly. Heat limit and safety thermostats artificially and check that they are functioning.
4-Check all electricity connections of the device. Fasten any loosened cables.
5-Check the operation of resistances with required measurement equipment.
6-Check the hot water production efficiency as flow and temperature.
7-Check the general operation of the device.

CAUTION!: Especially during winter, when the ambiant temperature decreases below 0°C there is a risk of freezing and the system water must be drained if the electrical connection of the device is interrupted during these periods.
WARNING! : Make sure to cut off the electricity from the short circuit relay before making any maintenance or repair on the boiler.

9. GUARANTEE CONDITIONS

This guarantee stars from the date of the boiler's first operation and continues to the period of time stated in Guarantee Certificate. In order for this guarantee to be valid, first operation and periodical maintenance must be performed by an authorized service in your area.

ATTENTION!: The selection of the area where the boiler is installed, must be in conformity with all relevant directives and laws of the country.
Manufacturer company cannot be held liable for any adverse situation as a result of non conformance.

The guarantee of the boiler is not valid under these circumstances:

1- Improper installation, improper electricity connection.
2- Damages arising from the installation of the device in places with humidity or water contact.
3- The assembling of non authentic and non approved parts to the boiler.
4- Extreme high or low temperature of the working environment.
5- Damages that occur as a result of inappropriate storing.
6- Damages which are results of damaged parts during transport.
7- Damages caused by the use of lime water in hot water circulation (ideal water hardness will be 15-20 French hardness)
8- First operation and interventions by people other than the authorized service.
9- Damages as a result of installation and maintenance that are not in conformance with relevant directives and rules.
10- Using of the boiler for purposes other than the device is designed for.
11- Boilers that are kept inappropriately, as showroom items for a long time.
12- Unavailability of the documents that the authorized service issues after the first operation.The user must keep these documents at all times.
13- Boilers whose serial number is modified or damaged.
14- When the temperature of the water below 0°C there is a risk of freezing and the system water must be drained if the electrical connection of the device is not connected. Otherwise damages that occur because of freezing are not covered by the warranty.
15- Damages to the relay board or the main board becuase of high voltage from the electric grid.
16- Damages caused by dirty closed circuit water in old installations. The installation must be cleaned and flushed before installing the boiler and operating on the closed circuit.

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10013 Sk. No. 14 A.O.S.B. Çiğli - İZMİR
Tel: 0 232 328 21 06 - 07 - 08 • Faks: 0 232 328 04 86
www.maktek.com.tr • info@maktek.com.tr