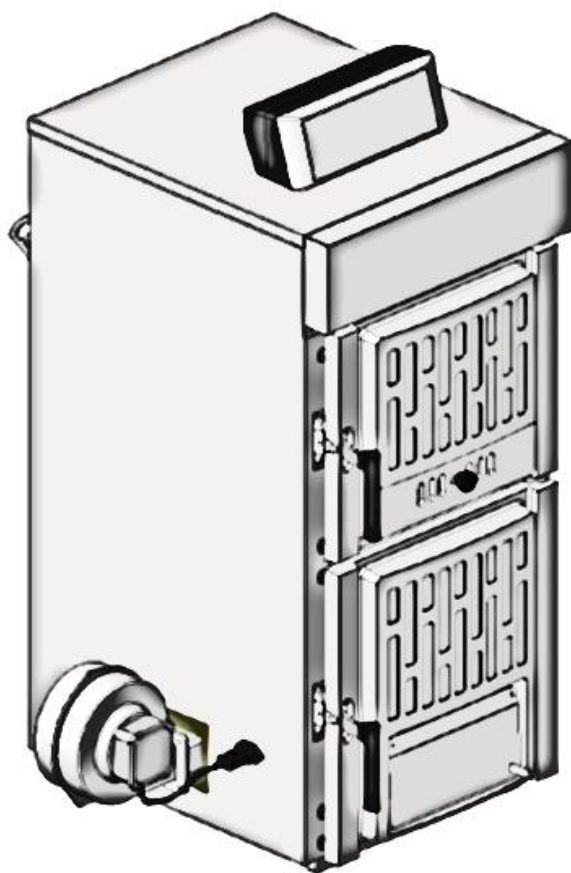




Installation and User Manual



K A P P A F

Dear Customer

Thank you for purchasing KAPPA F cast iron solid fuel boiler. This instruction manual is intended to help you install and operate the product safely, properly and economically. Please read this manual carefully before installation and operation of your product, and keep it during the whole operation life. Do not touch or interfere any part of the product other than those allowed. The installation, maintenance and service of this boiler requires skilled technicians. For the installation of the boiler and proper room selection, installation of water circuit, chimney design, this manual and mandatory regulations must be considered.

Carry out maintenance and cleaning work recommended on your heating system at regular intervals. Details can be found later in the instruction manual. By doing this, you will not only be ensuring the operational reliability of your heating system but also its efficient and low-emission operation.

EC DECLARATION OF CONFORMITY

We, BOYSIS MAKINE TAAHHUT SANAYI VE TICARET A.S.

located at

Şerifali Mahallesi Hüsrev Sokak No.2 Erişkenler Plaza Kat 3 34775 Ümraniye/İstanbul/Turkey

certify under our sole responsibility that the equipment specified below has been designed, manufactured, and inspected by the relevant provisions of the Pressure Equipment Directive 2014/68/EU and carried out final control as required by the relevant provisions of the Pressure Equipment Directive 2014/68/EU

The item of equipment identified below has been subject to Conformity Based On Full Quality Assurance (Module H of the Pressure Equipment Directive) by Inspecco Belgelendirme ve Gözetim Hizmetleri A.Ş. (Notified Body Number 2459).

Address of Notified Body: Şerifali Mahallesi Açıkyüz Sokak No:2-3 Ümraniye, İstanbul

Certificate Number / Date: CE 2459

DESCRIPTION OF EQUIPMENT: Hand stocked cast iron sectional boilers for solid fuels

MODEL/TYPE : KP3 / KP4 / KP5 / KP6 / KP7 / KP8 / KP9 / KP10

KP4F / KP5F / KP6F / KP7F / KP8F / KP9F / KP10F

DIRECTIVES: Pressure Equipment Directive 2014/68/EU

STANDARDS: EN 303/5

SIGNED ON BEHALF OF THE MANUFACTURER

NAME : Murat Gedik

POSITION : Project Coordinator

PLACE / DATE : 17.07.2020

SIGNATURE :



1 INTRODUCTION AND DELIVERY

Kappa is a cast iron boiler for solid fuels which is constructed in advanced two pass horizontal flue gas circulation principle. It is designed for hot water heating systems, therefore should not be used for direct sanitary water supply. Kappa fires your fuel with very high water efficiency, saving on your fuel cost. As the bottom grate of the boiler is water cooled, the boiler can maintain sufficient outlet water temperatures until all fuel in the combustion chamber is consumed.

Your boiler can be used either in forced or natural water circulation systems thanks to its large waterways inside the boiler and medium sized delivery and return connections. You can fire different solid fuels whose specifications are given further in this manual. As calorific values of solid fuel types differ from each other, the output power of the boiler will vary between a maximum and a minimum range specified.

Delivery term: Kappa F is delivered in two packages:

1. Boiler body, secured on a wooden pallet (combustion fan, fan adaptor, control panel, boiler data plate, this manual, safety thermostat, fan adaptor gaskets, put inside body)
2. Accessories in a cardboard box (external cabinet, insulation material, fuel shaker arm, cleaning brush delivered with this box)

Each boiler is tested hydraulically for any leakage before leaving the factory.

Optional accessory: A safety heat exchanger kit against overheating should be purchased. This kit holds a copper heat exchanger against excessive heat accumulation inside the boiler, a safety valve to activate the heating system at high water temperatures, and auxiliary accessories for installation. Whether the hydraulic circuit is open vented or pressurised, this safety heat exchanger system should be utilized for meeting the regulations of related European standard for this product, as well as safety of whole heating installation and boiler itself.

2 SAFETY WARNINGS

2.1 Basic safety instructions

- Never get yourself into danger; give own safety the utmost priority.
- Keep children away from the boiler room and fuel storage room.
- Observe all instructions related to operation, maintenance, servicing and cleaning.
- Heating system and boiler should only be installed and started up for the first time by an authorised installer. Professional installation and start-up are essential for safe and economical operation.
- Never make any changes to the heating system or flue gas system.
- Never close or remove safety valves.

ESSENTIAL WARNING

THIS APPLIANCE MUST BE EARTHED !

2.2 Warning signs

DANGER - Risk of electric shock

- Switch off any component on the system before performing work on the boiler.
- ALL ELECTRICAL APPLIANCES ON HEATING SYSTEM MUST BE EARTHED !

DANGER - Risk of poisoning

- Make sure that the boiler is supplied with sufficient combustion air. The openings in the combustion air inlet must never be partially or completely closed.
- Ventilation systems, central vacuum cleaning systems, extractor fans, air conditioning systems, flue gas blowers, dryers or similar equipment must never be allowed to draw air from the boiler room
- The boiler must be connected tight to the chimney using a flue gas tube.
- Clean the chimney and the flue gas tube at regular intervals.
- Boiler room must be sufficiently supplied with air and ventilated.

DANGER - Risk of explosion

- Never burn petrol, diesel, engine oil or other explosive materials in the boiler or storage room
- Never use liquids or chemicals to ignite the fuel
- Switch off the heating system before any work on boiler or heating system

DANGER - Risk of fire

- Do not store any flammable materials in the boiler room.
- Do not hang out any washing in the boiler room.
- Always keep all boiler doors closed during operation
- Store fuels in another room, or leave a minimum distance of 80 cm between boiler and fuel pile.

WARNING - Risk of burns

- Do not touch the flue spigot or the flue gas tube.
- Do not touch boiler hot surfaces (front upper and front door when boiler is hot. Use only door handles. Use gloves for performing all work and fuel loading
- Do not open ash door reach into the ash chamber.
- Do not clean the boiler until it has been allowed to cool down.

NOTICE

Damage to property

- Do not feed cold water directly to the boiler overheated by any reason. This may result in noise production in the system and/or permanent damage on boiler body.
- Do not drain water in hydraulic circuit unless in case of maintenance or risk of freezing
- Heat the boiler using fuels that comply with the specifications below
- Do not use the heating system if it, or any of its components, come into contact with water.
- If any damage occurs, have the heating system checked by your authorised service staff or approved technicians, and have any damaged parts replaced in case needed.

2.3. What to do in an emergency

What to do in the event of a fire

- Switch off the heating system.
- Call the fire brigade
- Use approved fire extinguishers.

What to do if you smell smoke

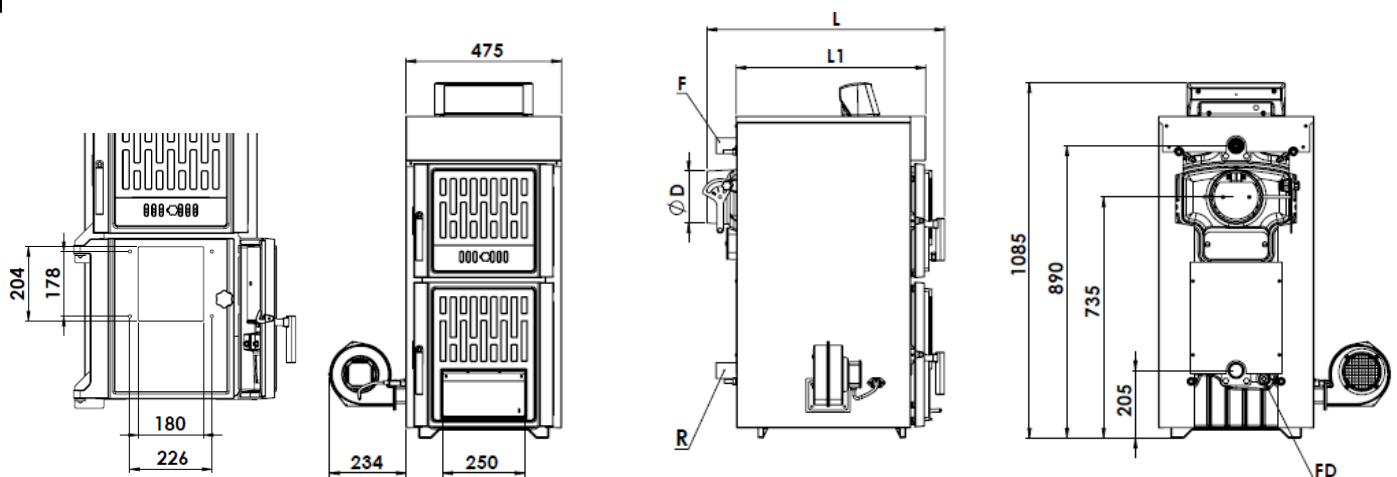
- Switch off the heating system.
- Close the doors leading to living areas.
- Ventilate the boiler room.

3 TECHNICAL DATA

Model		KP 4F	KP 5F	KP 6F	KP 7F	KP 8F	KP 9F	KP 10F
Number of sections	pcs.	4	5	6	7	8	9	10
Output range	(Coal) kW	22-26	28-32	34-38	40-46	48-54	56-62	64-70
	(Wood) kW	18-22	24-28	30-34	36-42	44-48	50-56	58-64
Water Content	lt	27,5	33,5	39,5	45,5	51,5	57,5	63,5
Combustion chamber dimensions								
	Height	425						
	Width	315						
	Depth	300	400	500	600	700	800	900
	Volume	52,4	69,8	87,3	104,8	122,2	139,7	157,1
Required draft at chimney	Pa	18-24	20-28		24-32		32-40	
	mbar	0,18-0,24	0,20-0,28		0,24-0,32		0,32-0,40	
Fuel loading clearance (upper door)	mmxmm	330 x 324						
Max. Fuel loading height (for log wood)	mm	375						
Max. Logwood length	mm	300	400	500	600	700	800	900
Temperature control range	°C	50 - 90						
Maximum operating temperature	°C	100						
Maximum operating pressure	bar	4						
Water flow/return connections (D)	G	1 ½"						
Filling / draining connection	G	½"						
External dimensions	L	625	725	825	925	1025	1125	1225
	L1	480	580	680	780	880	980	1080
	Flue outlet diameter (D)	160						175
Electrical supply		230 V 50 Hz						
Power consumption	W	40						

Fuel type		Wood logs						
Maximum fuel charge	kg	14	18	22	26	30	34	38
Requested fuel parameters		Maximum water content 20% Maximum cross section 10 cm x 10 cm Average calorific value 17.000 - 20.000 kJ/kg						
Flue gas mass flow	g/s	12,0	16,8	20,0	24,0	29,5	33,5	37,0

Fuel type		Hard coal, lignite, coke						
Maximum fuel charge	kg	18	23	28	33	38	43	48
Requested fuel parameters		Maximum water content 15% Average size between 30 to 60 mm Average calorific value 26.000 - 30.000 kJ/kg						
Flue gas mass flow	g/s	19,5	24,0	29,5	34,5	40,0	44,8	50,5



You can install a pellet burner on your boiler. Before any purchase, first check if pellet boiler you find in the market fits your boiler. Maximum burner tube diameter you can fit on this boiler is 170 mm. Burner must be installed and operated in accordance with burner manufacturer's regulations. Any misuse will terminate all warranty terms given by boiler manufacturer.

4 BEFORE INSTALLATION

4.1. Handling the product

Kappa is a heavy product, and care should be taken when carrying the boiler to the room where it is going to be installed. The total weight of each boiler is indicated in Technical data section. Carrying equipments must be of enough capacity to support that weight.

4.2. Room selection

Kappa boiler must be installed in an individual boiler room particularly organized for heating. The boiler room should be of enough volume for installation, firing, and maintenance of the boiler. There should be enough fresh air circulation for combustion, the chimney design must ensure an adequate draught for related boiler type, and must comply with construction criteria given further in this manual and in mandatory regulations. Your boiler must never be installed in open spaces or balconies, in spaces occupied by people like kitchen, living room, bathroom, bedroom, in spaces where there are explosive and combustible materials.

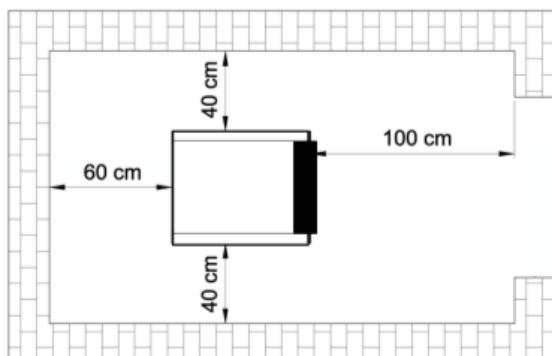
The boiler room should have air ventilation holes through outside to let fresh air in. One air ventilation hole must be built maximum 40 cm below the level of room ceiling, the other must be built maximum 50 cm above the floor level. These ventilation holes should always be kept open. The upper hole should be at least 40x40 cm in size, the lower hole at least 30x30 cm.

All hydraulic and electrical circuits must be arranged by authorized staff in accordance with mandatory regulations specified by legal organizations. Solid fuels should be stored by keeping minimum 800 mm distance from the boiler. We recommend you to keep the solid fuel in another room. Boiler should be installed on a concrete plinth made of a fireproof material. For minimum sizes of the plinth following table should be referred

Model	KP 4F	KP 5F	KP 6F	KP 7F	KP 8F	KP 9F	KP 10F
Plinth height (mm)	50						
Plinth width (mm)	500						
Plinth length (mm)	500	600	700	800	900	1000	1100

4.3. Clearances around boiler

At least the following clearances should be achieved around the boiler:



5 INSTALLATION

5.1. Circulation pump

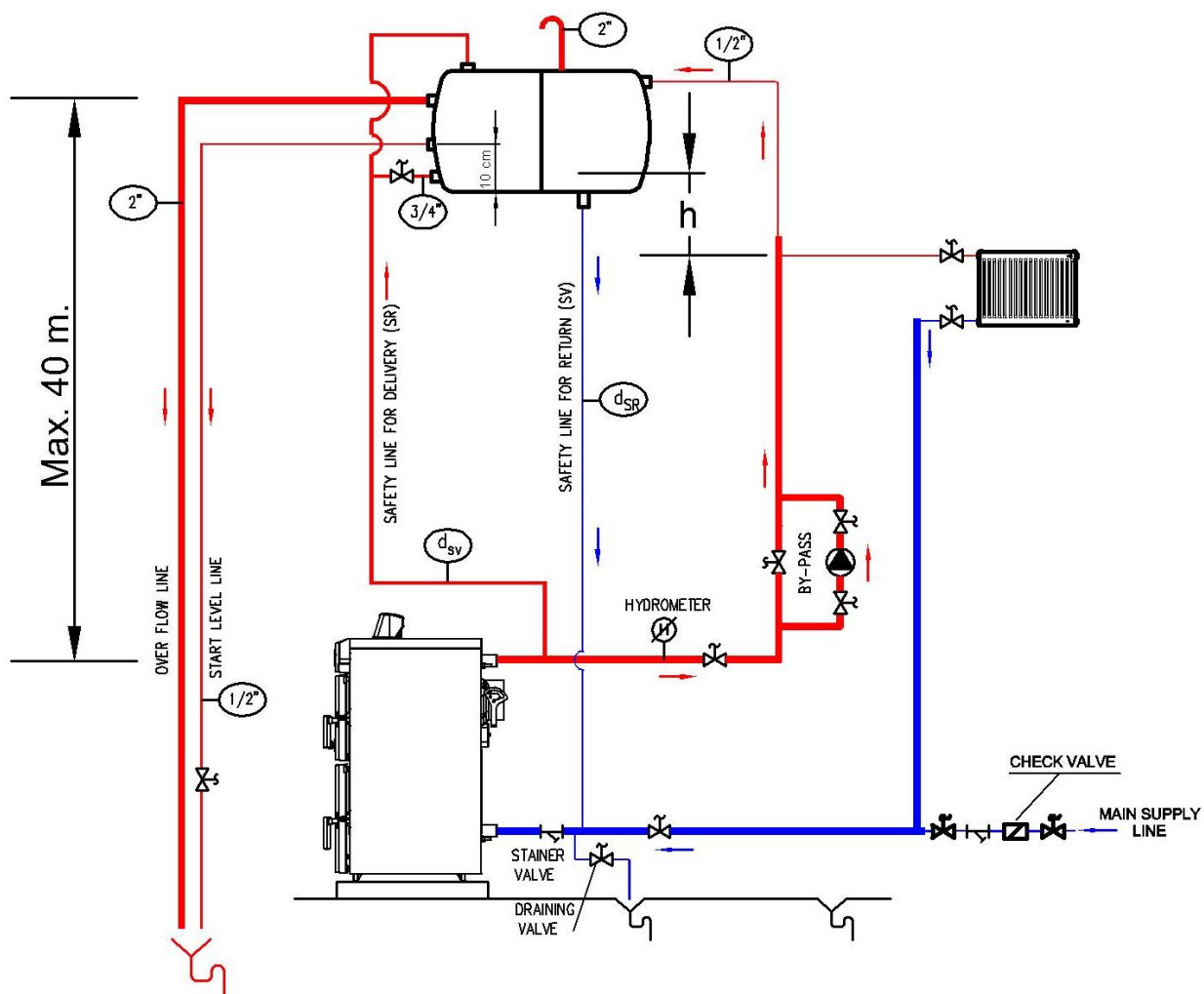
We recommend building a forced water circulation system accompanied with a sufficient pump. Refer to the system diagrams given in this manual to find the right position of the pump within the hydraulic circuit.

NOTICE

- Your boiler automatically switches pump on and off according the program stored in its PCB. That is why heating circuit pump must be driven by the control panel. Wiring to the pump is supplied within control panel with indications. So, attach this wire to terminals of the heating circuit pump.
- The pump will automatically start when boiler outlet water exceeds 40 C., and will automatically switch off when temperature falls below 40 C. This feature will help prevent boiler from condensation in flue.

5.2. Open vented hydraulic circuit

Kappa boilers are preferred to be installed in a hydraulic circuit with an open type expansion tank in accordance with the following schemes. The circulation pump may be installed on either delivery or return line of the boiler



Open type expansion tank must be installed at the highest level of whole hydraulic system. No globe valves must be installed on delivery and return safety lines between boiler and expansion tank. Safety lines should

be attached to inlet and outlet lines of boiler at points as close as possible to boiler, using the shortest possible vertical way between expansion tank and boiler. If the circulation pump is installed on return line, and the head of pump at maximum speed is "h", the vertical distance (h) given in above scheme must be achieved within the system design (h, being the vertical distance between the top radiator of the circuit and bottom level of open expansion tank). If h is not achieved in such system, there will be air suction on radiators at highest level of circuit. In this case, the pump must be installed on delivery line from boiler.

A hydrometer must be installed on the delivery line to monitor the pressure level and to check if there is any leakage. The hydrometer should be purchased separately, and should be installed at the same level with the boiler outlet. A by-pass line should be installed between inlet and outlet connections of circulation pump in order to allow maximum water delivery when circulation pump is switched off and there is fuel fired in boiler, particularly during sudden electricity cuts off.

NOTICE

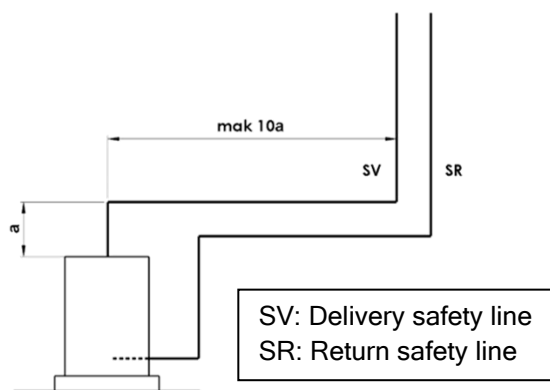
- The optional safety heat exchanger kit is highly recommended to be used with the boiler, even in the case of open vented systems to protect the boiler and the whole heating circuit against excessive heat accumulation. For installation of this kit, please refer to the next section.

NOTICE

- When water temperature in hydraulic circuit is relatively low, particularly when solid fuel is just fired, it is quite normal for water vapour in flue gases to condense. Condensation rarely creates a problem for boiler, as it will stop when boiler becomes hot. However, the boiler should not be operated in fully condensing mode. When you open loading door, if chamber walls are wet, it means that there is condensation in flue gases. Continuous condensation does not only creates massive soot on chamber heating surfaces, but also has effect on boiler lifetime. For this reason, we recommend you to set desired boiler outlet temperature not less than 60 C at all times.

5.3. Design parameters for open expansion tank

Expansion tank protects hydraulic circuit from excessive temperatures by allowing free volume for expanding water and keeping the water pressure from exceeding the static pressure. Expansion tank may be built in rectangular prism or cylindrical shape, may be installed in horizontal or vertical position in the system. Safety lines between boiler and expansion tank should be installed by an increasing slope up to tank. Following scheme shows the maximum vertical distances between safety lines and boiler:



The size of expansion tank can easily be calculated regarding the total expanding water contained in whole system. If the total volume of water in the system is V_s ; the volume of expansion tank should be:

$$V_g = 8 \cdot V_s / 100 \text{ (in litres)}$$

In more practical way, just using the nominal heat output of boiler (Q_k) in terms of kW, the volume of expansion tank can be calculated as;

$$V_g = 2,15 \cdot Q_k \text{ (in litres)}$$

Size of the safety line for delivery (in mm)

$$d_{SV} = 15 + 1,5 \cdot \sqrt{Q_k}$$

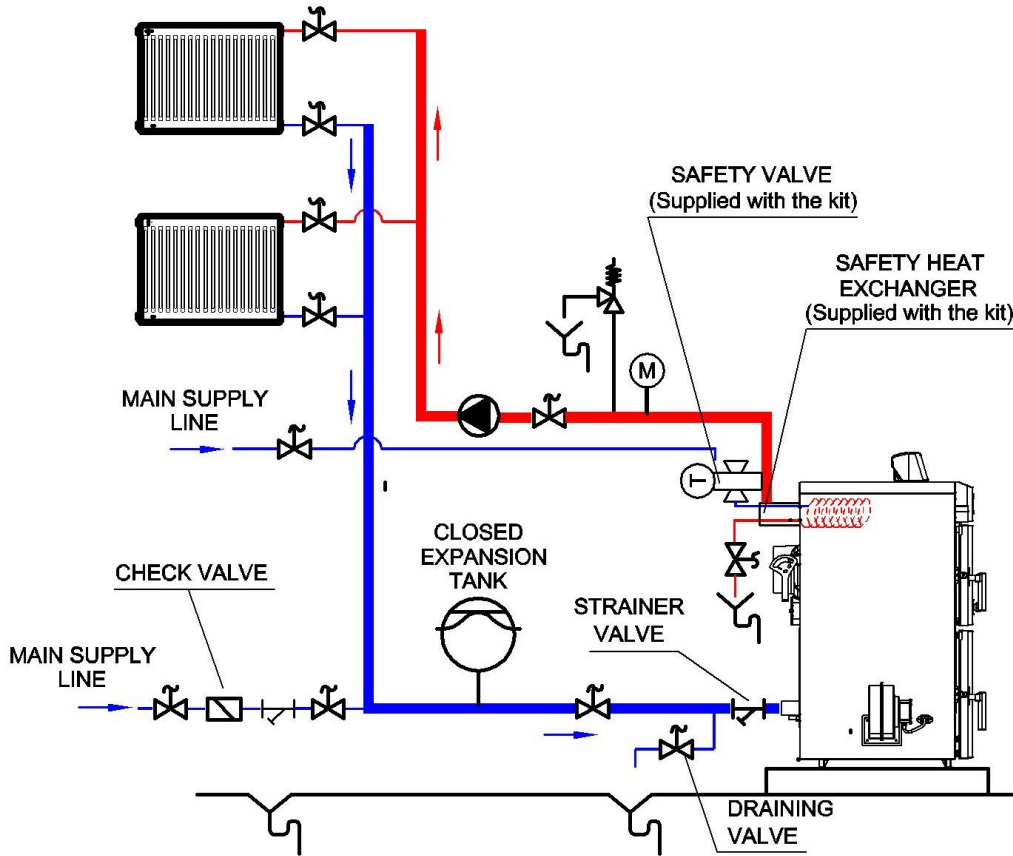
Size of the safety line for return

$$d_{SR} = 15 + \sqrt{Q_k}$$

where Q_k is the boiler output in kW.

5.4. Pressurized hydraulic circuit

Your boiler can be installed in a pressurised heating system if following scheme is referred with addition of the safety heat exchanger kit which is supplied as a separate accessory.



NOTICE – Safety of heating circuit

- Install a ½" safety valve with a maximum relief pressure of 4 bars. Refer to following table when sizing the safety valve:

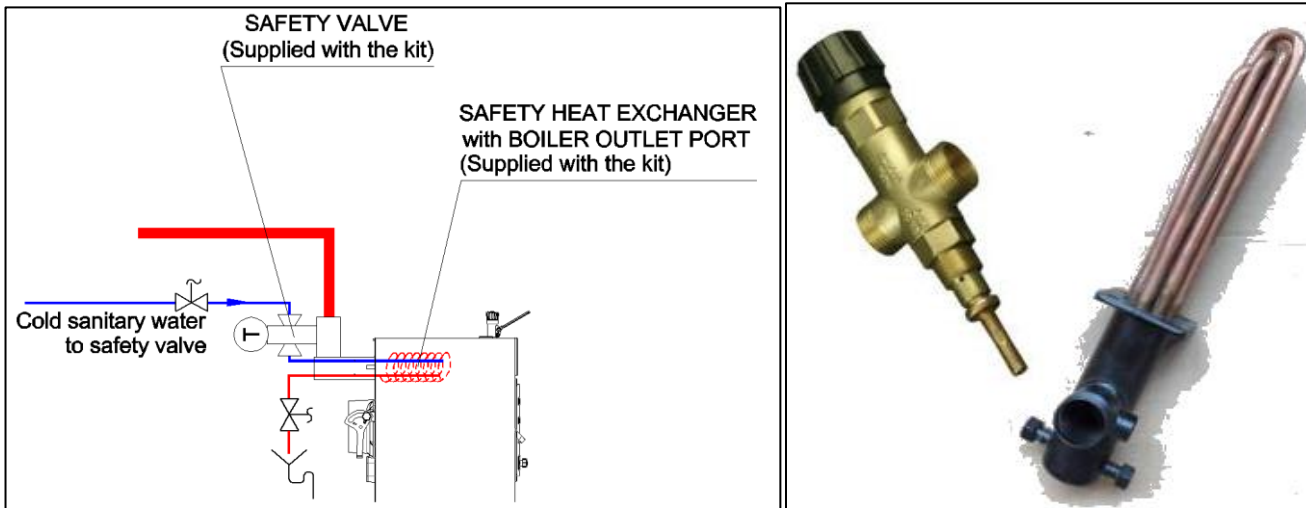
Boiler model:	KP 4-6F	KP 7-10F
Safety valve size:	1/2"	3/4"

- Install a manometer to follow and check water pressure in the system.

5.4. Additional safety against over-heating

To ensure safety against high temperatures on boiler and heating system, a cooling loop (safety heat exchanger) with activating valve must be installed. Safety heat exchanger includes the following items:

1. Safety heat exchanger (copper serpentine integrated with outlet stub pipe)
2. Safety valve
3. Auxiliary fittings / flexible hose



If the boiler water temperature exceeds 95 °C, thermostat of the safety valve lets cold sanitary water flows through the serpentine of the safety heat exchanger. Serpentine with cold water circulating inside cools down the boiler water temperature. When the boiler temperature decreases below the safe degree, safety valve shuts the cold sanitary water circulation, and the boiler goes back to normal operation.

NOTICE

- The valves on the sanitary connections of safety heat exchanger must always be kept open.
- Boiler can only be used with original safety heat exchanger kit which is tested and approved for each boiler model. The safety valve could be purchased separately if it is not included in the kit.
- Cold water must never be delivered directly to boiler inlet in order to solve overheating problems as this will result in serious damage on boiler body. That application will end the warranty of boiler.

5.5. Warning on water level in system

After first water make-up in the system, minimum water level must be marked on hydrometer for open vented circuits, minimum water pressure level must be marked on manometer for pressurized circuits. Water level or pressure should be checked daily, and water should added to circuit if they are below the minimum value. During first water make-up, oxygen must be fully discharged from the system. Generally, oxidation will not be a problem, if all measures are taken into account during first water make-up. Oxidation will take place because of fresh water addition to the system during operation of the boiler. The main reasons are as follows:

1. In open vented systems, oxygen will be added as expansion tank is open to atmosphere. That is why, open expansion tank sizes, its position in the system, safety connections to and from, are very important, and instructions given in this manual for open vented systems should be followed carefully.
2. Leak points in a system will cause oxygen to be absorbed inside the heating water. For this reason, minimum water pressure in a pressurized heating circuit must be above atmospheric pressure. Besides, pressure level should always be checked periodically.

5.6. Precautions for new installations:

System should be sized and designed accordingly, in order to minimize fresh water addition. Make sure that no part of the system is made of material that is permeable to gases. The original system filling water and any topping-up water must always be filtered (using synthetic or metal mesh filters with a filtration rating of no less than 50 microns) to prevent sludge from forming and triggering deposit induced corrosion.

5.7. Chimney connection

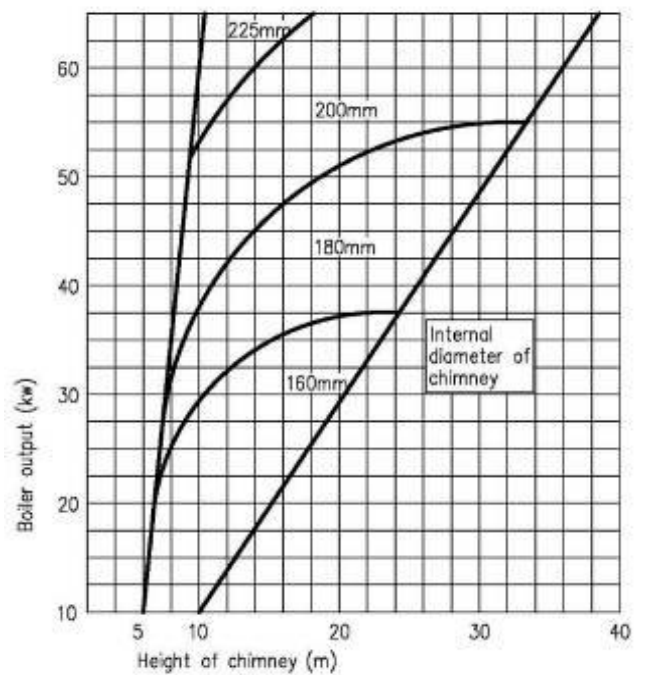
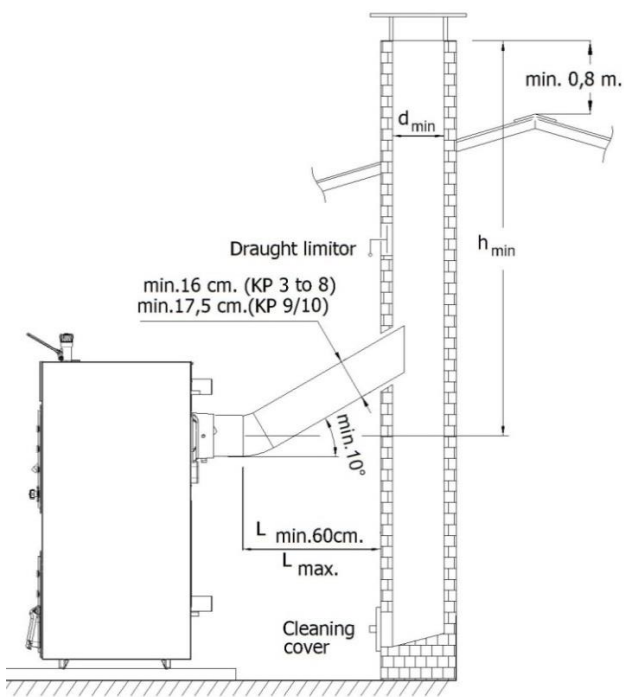
Your boiler must be connected to an individual chimney that will provide at least the minimum draught requested. The flue canal between the boiler and the chimney should be insulated using a glass wool

material. The flue canal to chimney and chimney must be made of steel or an equivalent material that can be used at temperatures around 400 °C.

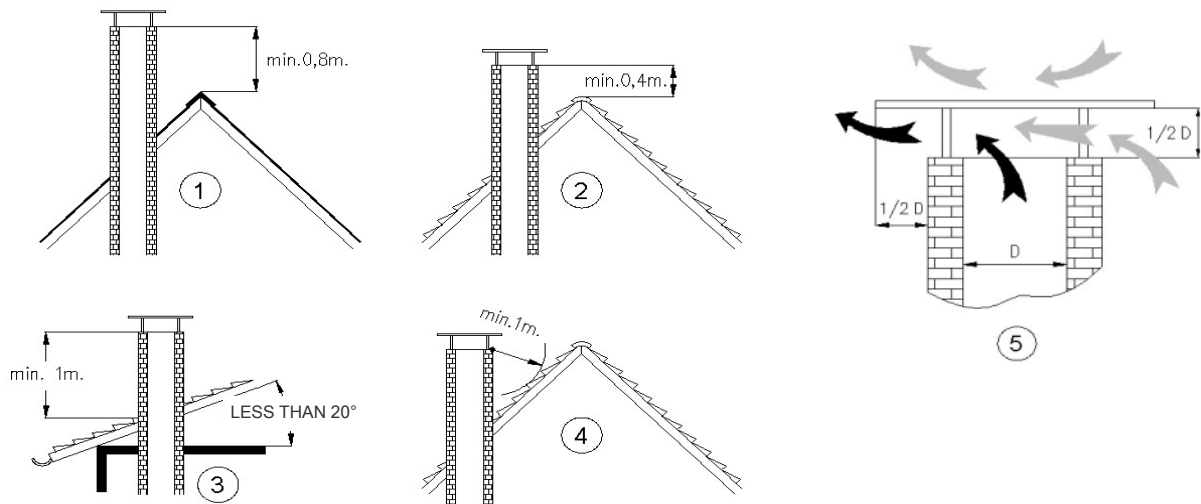
All connections on flue system must be sealed in order to perform a good combustion and efficiency. The flue canal must be connected to the chimney using the shortest way possible and in accordance with the dimensions given in the following scheme. Horizontal connections and equipments that will increase the pressure loss such as elbows should be avoided

A vertical single steel piping should not be used as a chimney. Chimney must be made of one internal and one external surface. External surface may be made of steel or brick. For internal surface stainless steel chimney elements should be preferred against corrosion. The space between internal and external surfaces of the chimney should be insulated to prevent condensation in flue gasses.

At the lowest level of chimney, there should be a cleaning cover which is made of steel, and sealed for any leakage. The length of flue canal between the boiler and the chimney should not exceed ¼ height of chimney.



Highest level of chimney outside should be in accordance with the dimensions given in following sketch so as to minimize the harmful effect of flue gasses on ambient, and to improve draught in chimney.



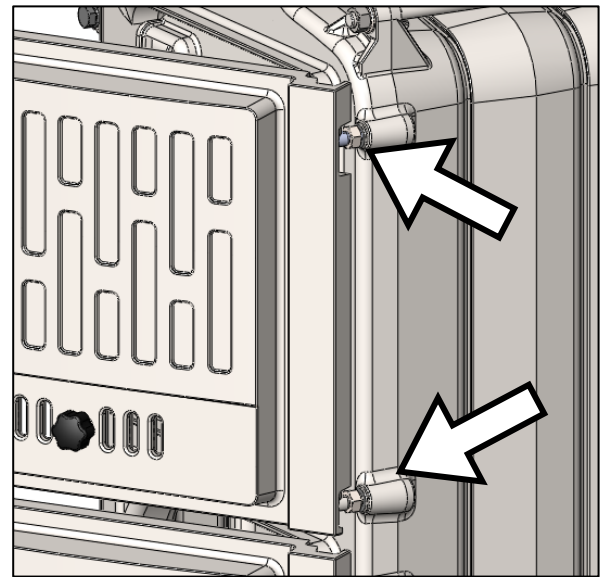
6 ASSEMBLY INSTRUCTIONS

6.1. Boiler accessories

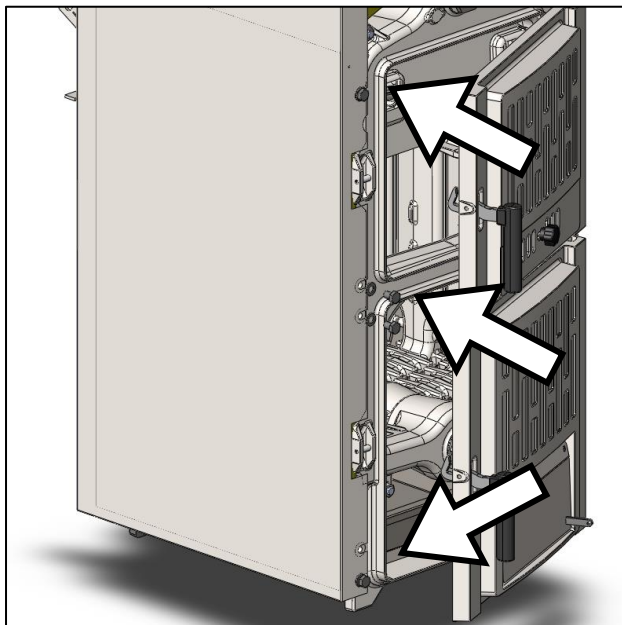
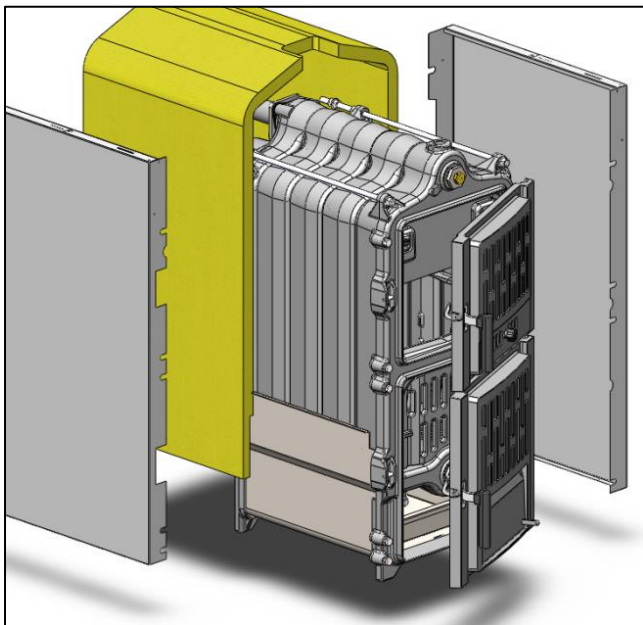
Follow the instructions to finish the assembly of boiler accessories supplied together with the boiler

1. Before assembly of boiler accessories, we recommend completing water inlet and outlet connections, together with all devices on water circuit. Then, feed the whole system with water to check any leak. Start assembly of accessories pack.

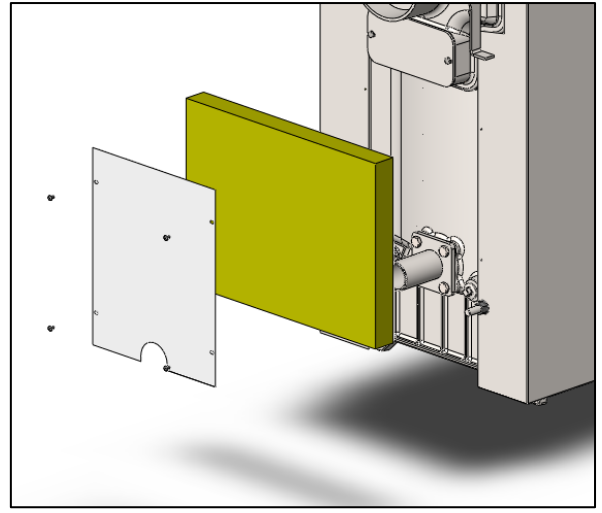
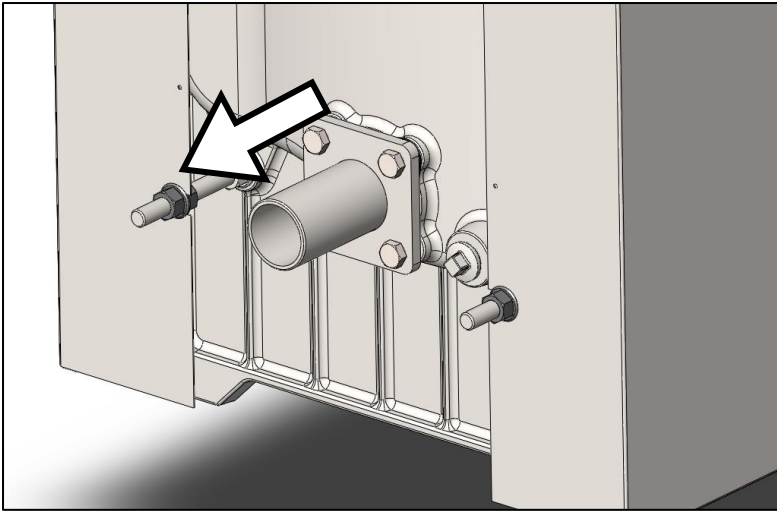
2. Loosen M10 nuts holding front door hinges a bit (in order to fit side panels)



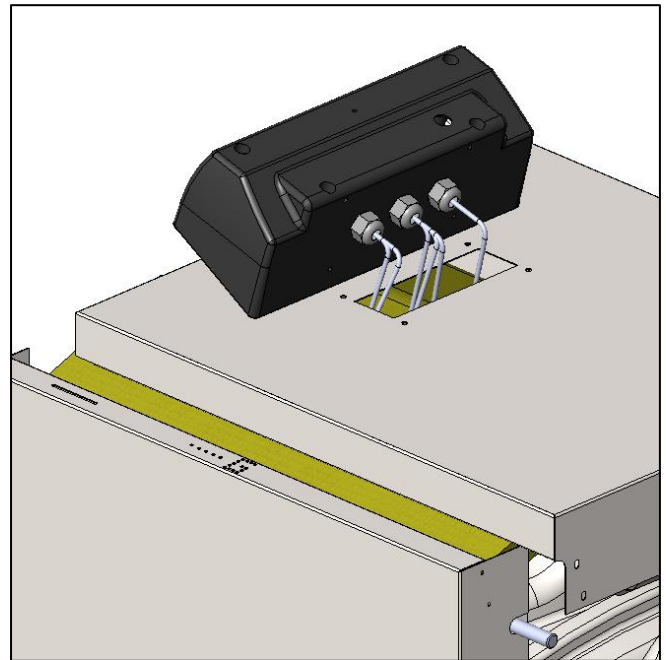
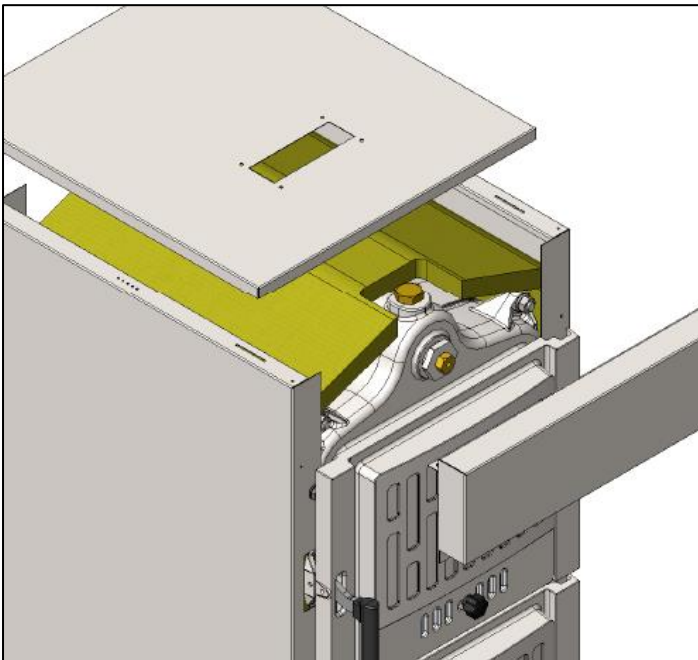
3. Put boiler body insulation squarely onto boiler body. Then fix side and left panels. On front side of boiler use four pieces M10x16 setscrews together with M10 washers for left hand side panel. For right hand panel just tighten the existing nuts back. On rear side of boiler, put one M12 nut before, then after fitting rear bend of side panels, secure by four pieces of M12 washers and M12 nuts on each corner.



4. Fit rear insulation board, then fit rear panel with four pieces 4.2x9.5 self-tapping screws as shown below.



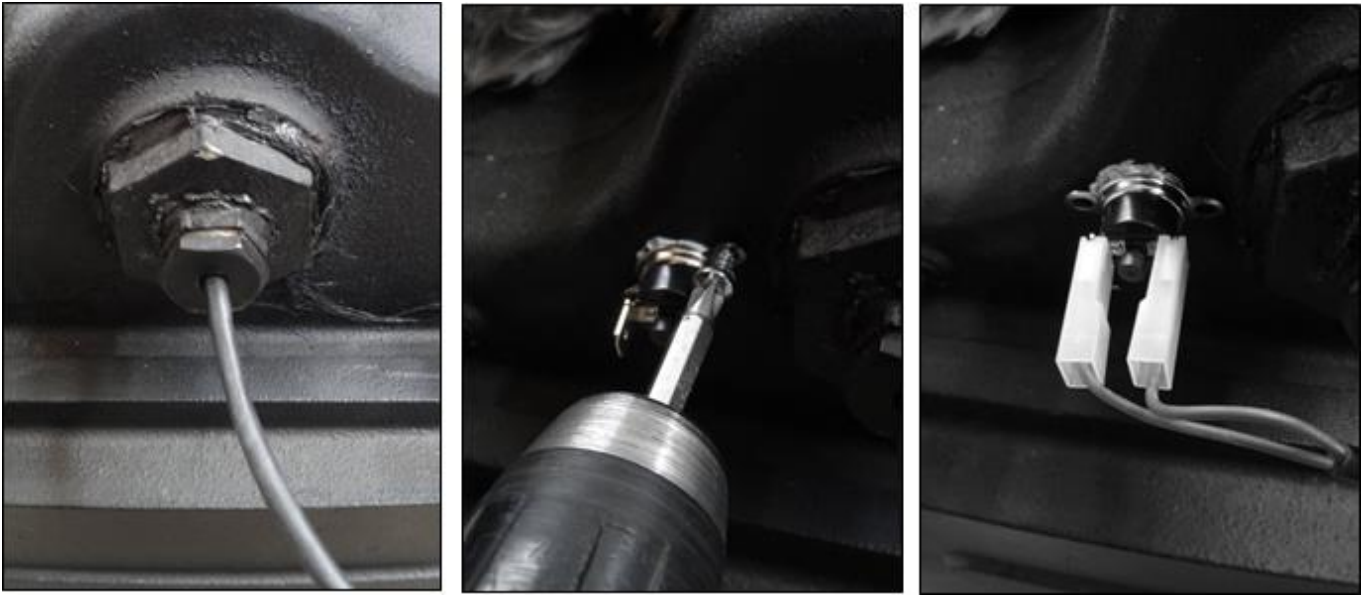
5. Fit front insulation board inside front panel, and continue with installation of control panel and its accessories. Control panel has three sets of wiring for different equipments and sensors. Pass those three wiring sets through corresponding holes cut on the top panel as seen in the following pictures



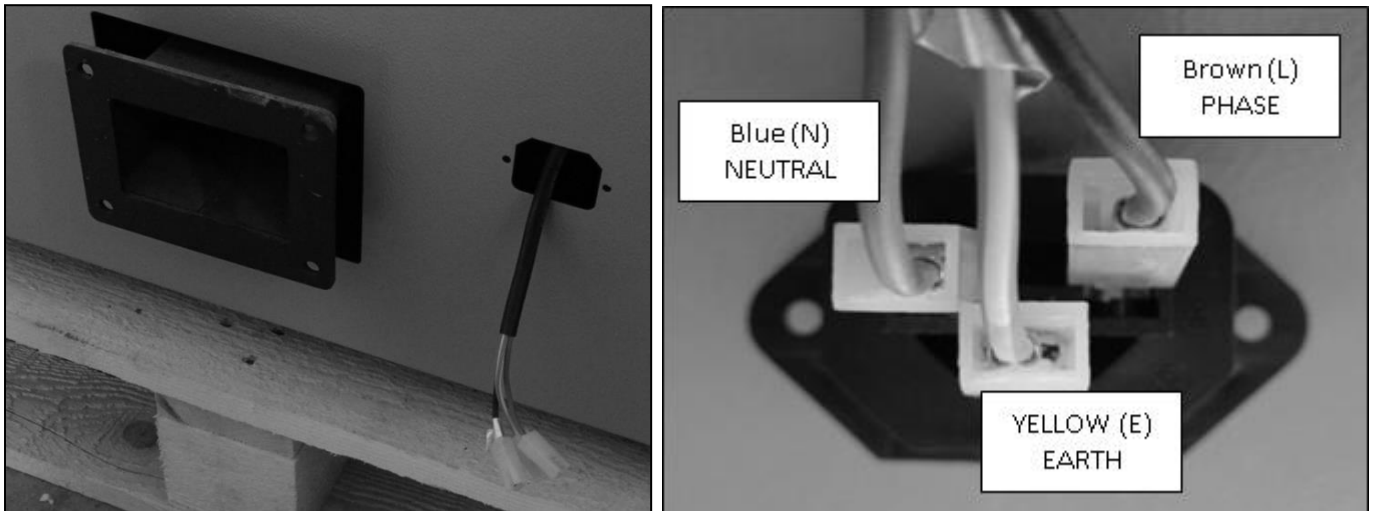
6. Attach bi-metal safety limiter onto machined surface on front section by two self tapping screws supplied with boiler. Attach two ends of wiring to bi-metal thermostat onto the two terminals on the thermostat as seen on the following pictures. Attach boiler thermostat sensing element from the control panel into the horizontal sensor pocket on front section as shown on the picture left hand side.

7. Fit front panel onto side panels securing with four pieces 4.2x9.5 self-tapping screws. Then fit top panel with four pieces 4.2x9.5 self-tapping screws.

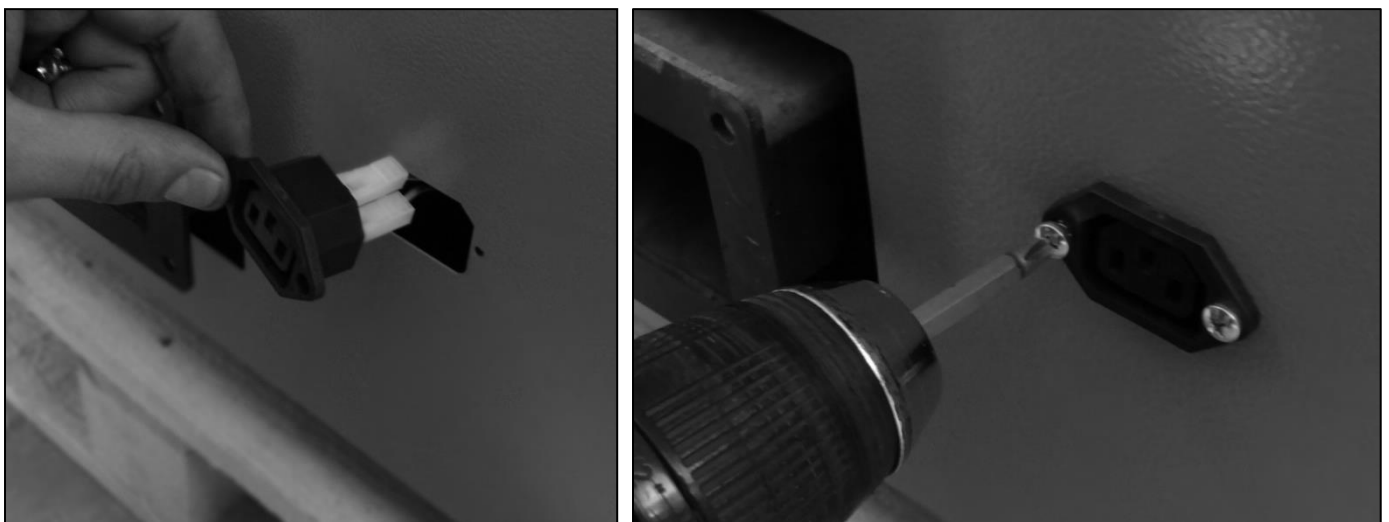
8. Loose upper setscrews that fix left hand side panel to front section, and draw the wiring to the fan, routing it around boiler insulation board, and passing it through the space for fan plug cut on bottom level of left hand side panel.



9. Attach isolated terminals of fan wiring to the female plug supplied together with the boiler package. Make sure that you are connecting the right wire to the right terminal on female plug. Follow the matching given in above picture



10. Fix female plug for fan wiring to the left hand side panel by self tapping screw as shown in the following pictures.



11. Install fan adaptor onto related port of boiler baseframe. Fit 4 pieces of M6 x 20 setscrews through the flange holes of fan inlet adaptor on the left hand side. Attach one of seramic paper fan gasket onto those setscrews. Fit fan with position shown in the following picture and secure it with 4 pieces M6 nuts. Attach the male power plug of the fan to the female plug on the left hand side panel:



NOTICE

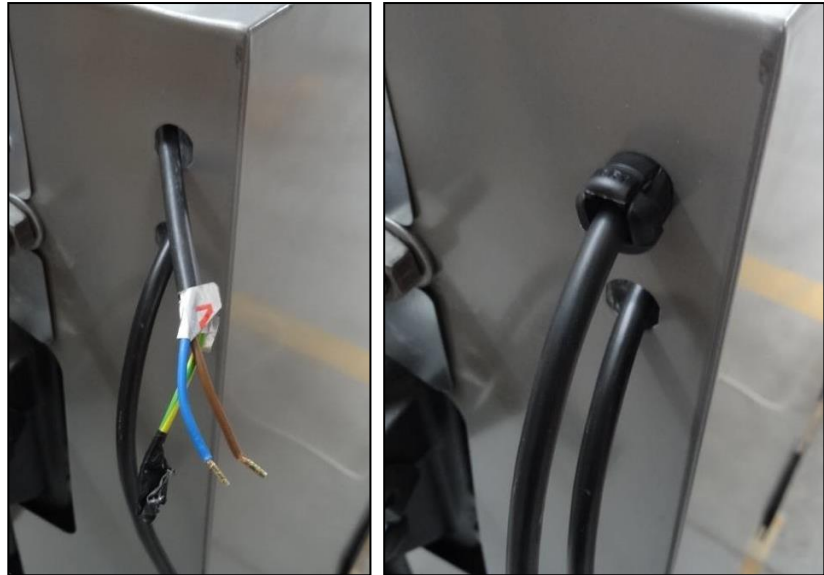
Installation position of the fan is very important, as it has its own air flap integrated on the body. Therefore, follow the instruction above carefully. Fan has also another flap on inlet side to limit air entrance to fan body. Use this flap if you need further air flow control during combustion. Never let this flap positioned fully closed



NOTICE

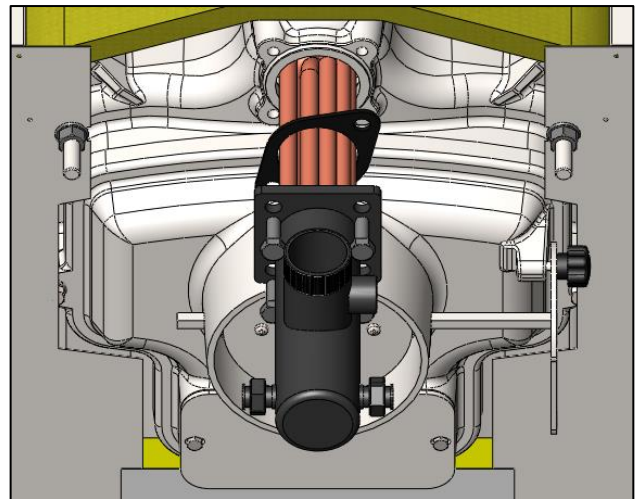
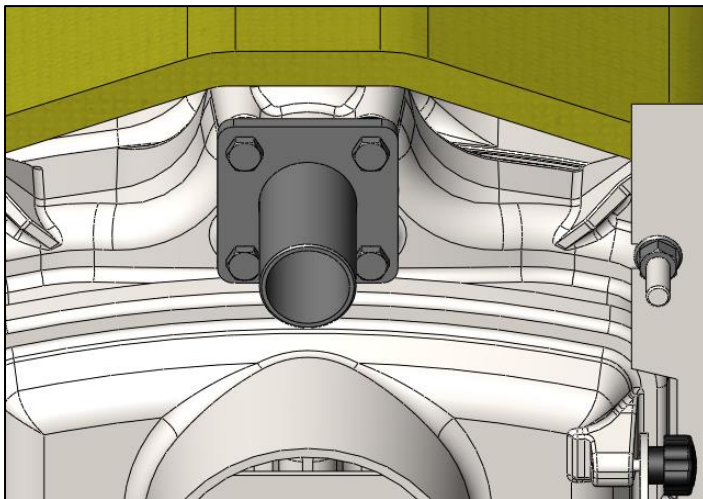
Wiring type	Identification at the end of the wire
To the fan	FAN / TO BLOWER FAN
To the pump	POMPA / TO PUMP
To the mains	BESLEME / TO MAINS
To bi-metal safety limiter	EMNIYET / SAFETY LIMIT THERMOSTAT
Room thermostat	ODA TERMOSTADI / ROOM HERMOSTAT

12. Draw wiring to mains and heating circuit pump through cable clips and secure the cable and clips together on the side panel of the boiler as shown on the following picture. Finally fix control panel back to the top panel. Then reposition the front upper and top panels into their original place and secure them.



6.2. Safety exchanger

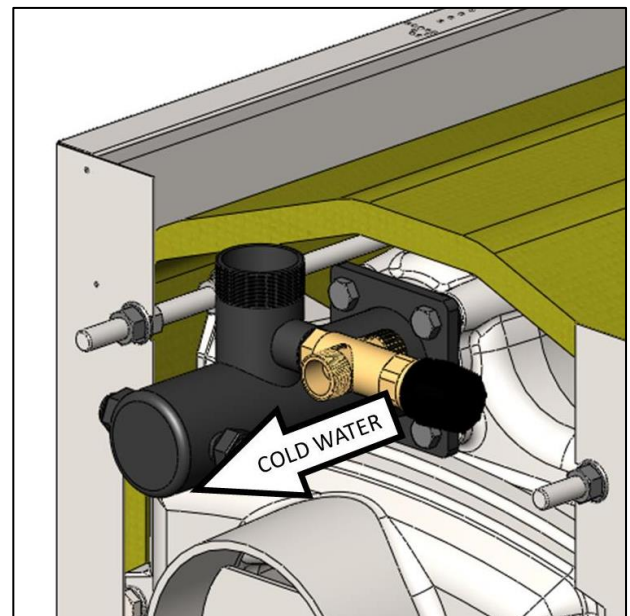
1. Remove the existing outlet piping attached to the boiler. Install safety heat exchanger to the delivery port on the rear section via 1 1/2" pipe union as shown in following pictures. Use the same flange gasket and stay bolts those you have after removing the original outlet piping.

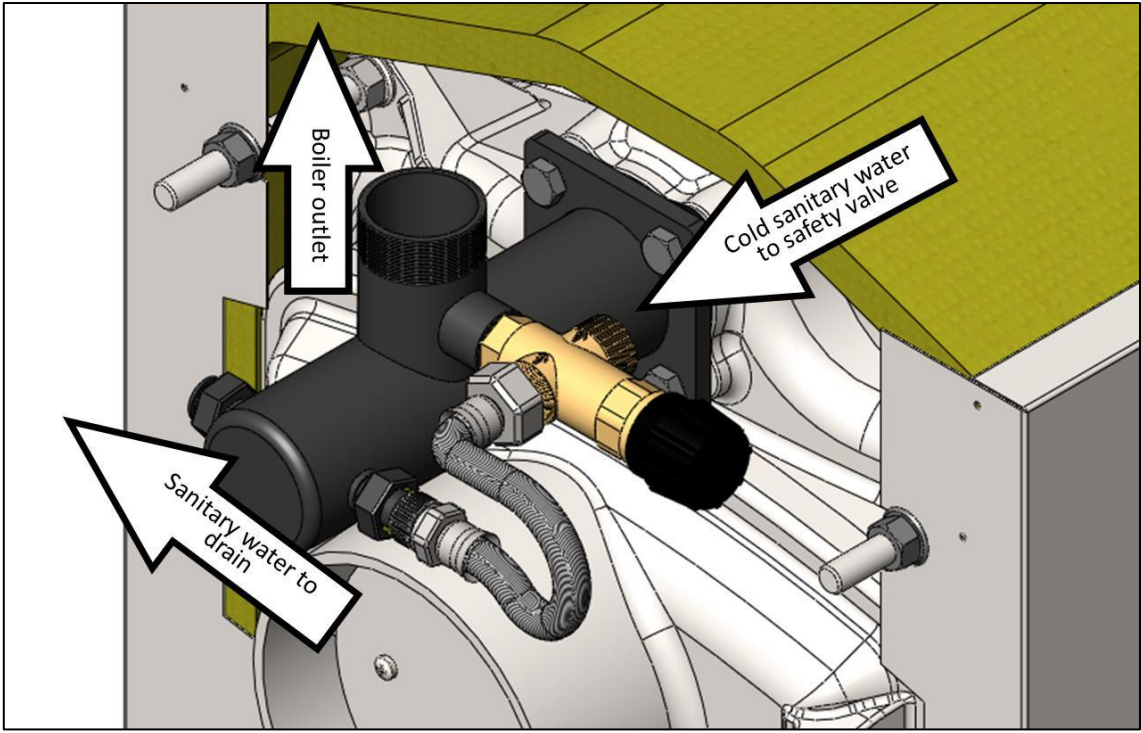


2. Attach Regulus JBV safety valve into 1/2" housing on hot water delivery line of safety heat exchanger as shown on the picture right hand side. Pay attention to the cold sanitary water flow through safety valve. This is indicated on brass body of safety valve.

3. There are two ports sized 1/2" for sanitary water inlet and outlet connection on safety heat exchanger. These ports are welded to copper serpentine of the exchanger. Attach outlet of Regulus JBV valve to one of these 1/2" ports using the flexible hose supplied within the kit.

4. Connect the cold sanitary water to inlet of Regulus JBV valve. Drain the other (hot sanitary water) outlet of the safety heat exchanger.





7 OPERATING INSTRUCTIONS

NOTICE - Electrical wiring

- The boiler is fed with 220 V. A regulator must be used in installations where the power supply is below 205 V or above 230 V.
- Control panel should be connected to a wall plug with an efficient ground system, which is placed not far more than 50 cm. to boiler with a circuit breaker which has at least 3 mm gap between contacts. For this reason, if a new electrical installation is required, 3x1,5 TTR cables must be used.
- All electrical installations must be carried out by authorized persons in accordance with mandatory regulations and codes of practise.

THIS APPLIANCE MUST BE EARTHED !

7.1. Pre-firing checks

Before first operation of boiler right after installation, hydraulic circuit must be ready for operation. To fill an open vented circuit, the valve on start level line from expansion tank is opened, and the circuit is filled with main supply water. During filling the system all valves and accessories on the lines must be checked for leakage. Filling is stopped, when water from start level line is observed, closing the valve on this line. Right after that the hydraulic pressure is marked on screen of the hydrometer. This will make re-filling operations during heating season much easier, just feeding the system with fresh water until the hydraulic pressure on screen reaches the pre-marked value.

Before every firing make sure that;

- * Boiler and circuit are filled with water, and the hydraulic pressure is in the required range.
- * All valves on the line (except by-pass lines and start level line) are in open position.
- * There is enough draught in chimney.
- * There is electricity in front of the control panel inlet. Panel is in STAND-BY mode.

To fill a pressurised circuit, feed the fresh water from main supply line using either the filling/drilling tap connection on the boiler rear section, or the feeding line constructed within the circuit. To purge the air contained in the system, use air relief valves on the hydraulic circuit, on the radiators, and also spring pressure relief valve at boiler hot water outlet.

WARNING

- Do not turn on the control panel during the ignition period, leave it in STAND-BY mode

7.2. Firing

* Set the Kindling. Place firestarters, crumpled newspaper (3 or 4 sheets balled up fairly tightly) on the grate of the boiler. Place small kindling over the paper or starter. The more dry, small kindling you have - the easier and better the fire will start. Crisscross the kindling so there is plenty of air space in between each piece.

Wood that is packed too tight will not burn properly. Set larger wood on top of the kindling, and continue to set larger and larger pieces on top until the fuel exceeds the 1/3 level of the filling chamber.

* Ensure that chimney damper is open. Then light the newspaper at the bottom

* For air entrance, leave the lower front door open for a while

* After first ignition, turn on the control panel by pressing ON/OFF button. Follow the instructions in the next chapter given for control panel. Close the front lower door.

* The fire should be well established within approximately 15 minutes, then filling chamber can be loaded completely but check to make sure that the firelighters have not been extinguished.

* Keep the fire going always keep a “flame” on your fire - a smoking or smoldering fire is a cold and inefficient fire and also produces pollutants and creosote (tar in the chimney)

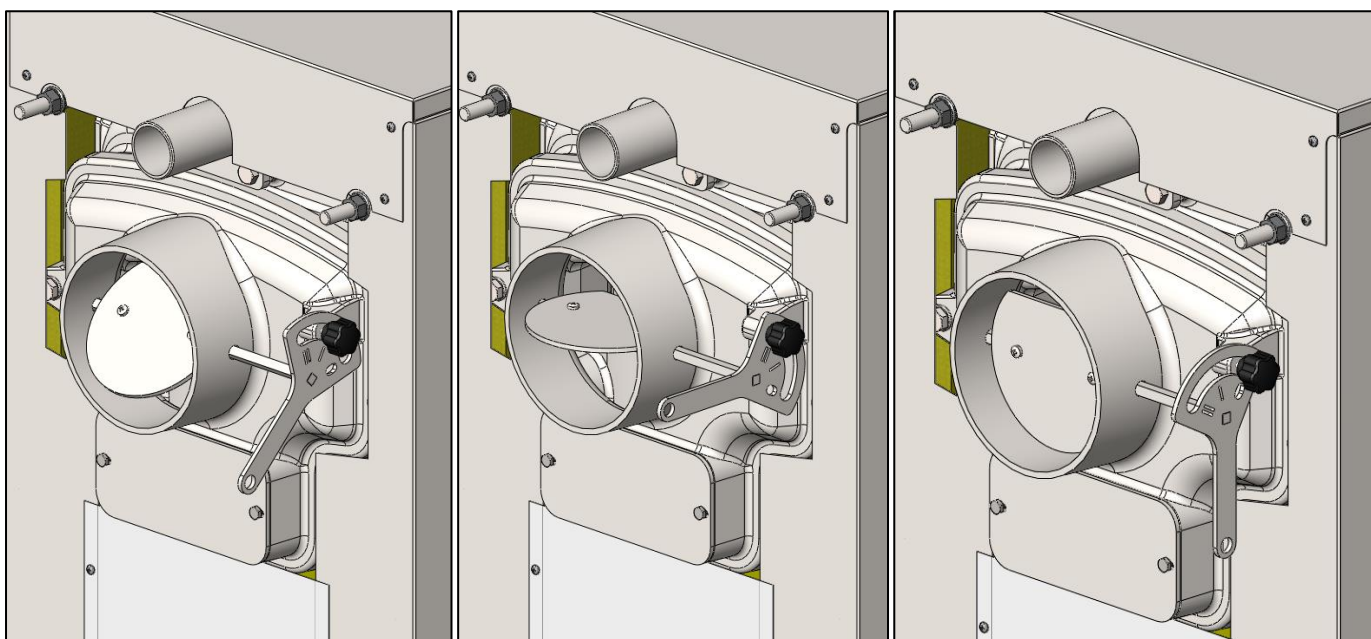
WARNING

- Never let the boiler water temperature reach high values sharply with leaving control panel switched off. In this case, instant cold water delivery to hot boiler may result in cracks on boiler body due to high thermal energy.

7.3. Chimney (flue gas damper)

Your boiler has fan assisted combustion. Air for combustion is forced to enter the combustion room. As the speed of the fan is controlled and modulated by control panel, the boiler itself adjusts the air flow. However, you can use the flap (or damper) on the boiler smokehood to adjust the draught at flue. If flue circulation to chimney is too fast, you can half close the flue gas damper in order to slowdown the combustion. Likewise, you can leave flue gas damper half closed at any time you want to slow combustion, such as at night mode.

When fan is switched off by control panel, there is no air entrance to combustion chamber, thanks to auto shut-off air damper installed inside the fan adaptor.



Half-open

Fully-open

Closed

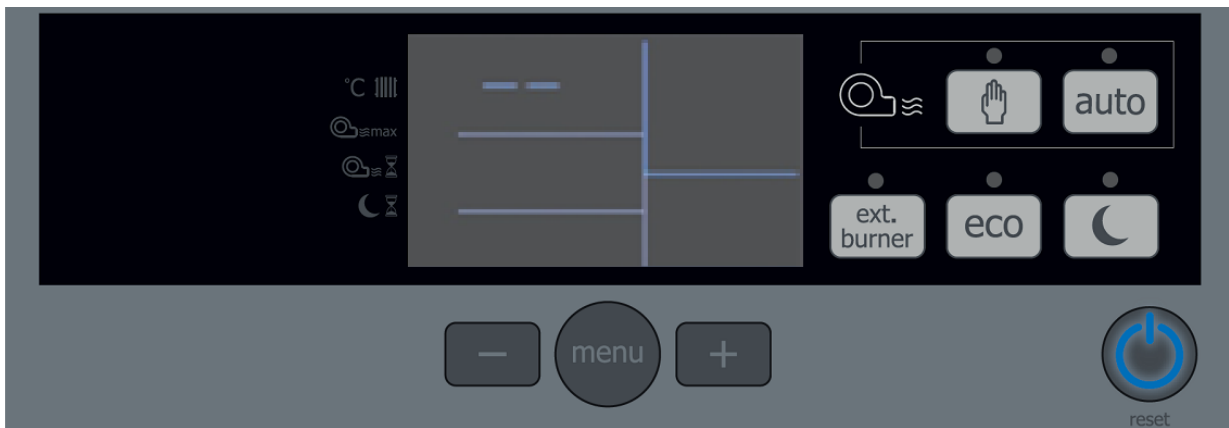
7.4. Control panel user interface

Control panel has following features:

- 1) Displays:
 - a) Actual boiler temperature
 - b) Set boiler temperature
 - c) Fan operation mode and speed
 - d) Circulation pump status
 - e) Warning and failure indications
 - f) Set parameters in sub-menus
 - g) Boiler operation function (manual, auto, ECO, Night-mode)
- 2) Allows adjustment of following parameters in "MENU" mode:
 - a) Boiler set temperature (between 60 to 90 °C with 2 °C intervals)
 - b) Fan speed in manual mode
 - c) Maximum fan speed in auto mode (if needed)
 - d) Night mode stop and run time re-set (if needed)
 - e) Fan safe over-run working parameter (if needed)
- 3) Controls:
 - a) Boiler temperature according to set value
 - b) Auto operation of CH pump
 - c) Modulation of fan speed for optimum efficiency (in "FAN AUTO" mode)
 - d) Room thermostat option
 - e) External burner (preferably as pellet burner) ON/OFF control
- 4) Safety features:
 - a) If boiler temperature reaches up to 100 C for any reason, fan is shut-off, CH pump is kept in operation. Panel warns the user by an audible buzzer alarm. If boiler temperature falls below 95°C again, buzzer alarms switches off, boiler switches back to its normal operation.
 - b) External safety bi-metal thermostat for additional safety which is activated if boiler temperature is over 110 °C. This thermostat is of manual reset type due to European regulations.
 - c) High current protection fuse, cut outboard on rear panel of the control box.
 - d) All settings are stored in the memory of electronic board even in case of electricity cut-off
- 5) Energy-saving functions:
 - a) Circulation pump is switched off below boiler temperatures of 40 °C. This will also protect the boiler against excessive condensation (this parameter can be re-set)
 - b) Fan speed modulation in respect with desired boiler temperature saves energy and fuel.
 - c) ECO mode automatically shifts set boiler temperature down to 50 C and saves fuel
 - d) NIGHT mode keeps the boiler in minimum flame without stopping during the times when there is no need for high temperatures. This will save energy and there will no need to re-fire the boiler in the morning.

7.5 Stand-by mode

When the mains is attached, the control panel has following view in STAND-BY mode. Boiler ON/OFF led is on, but no number is shown on the display:



7.6. Operation mode

When loading wood logs and starting fire, you can leave the control panel in STAND-BY mode. When you have continuous flame, switch the control panel on by pressing ON/OFF button.

7.7. Turning on the panel

By pressing "ON/OFF button" for three seconds, control panel is switched on. LCD display is lit and, actual boiler temperature is displayed. During first ignition, you can run the fan in manual mode. By pressing fan manual button, you can set fan speed at minimum level to help the fire become alive in short time.



7.8. Fan operation mode setting

You can set the speed of the fan manually at 5 steps, or you can leave fan in "AUTO" mode, in that case, fan speed is modulated by the electronic board in accordance with boiler set and actual temperature.



When control panel is switched on, fan will automatically work in the last mode left. By pressing FAN CONTROL buttons "manual" or "auto" you can select in which mode fan will operate.

Fan in manual mode: When this button is pressed, fan will continuously work at selected constant speed:

- If pressed once: Fan will be ON and speed will be minimum
- Twice: 2nd stage
- Third: 3rd stage
- Four times: 4th stage
- Five times: Maximum speed
- Six times: Fan will be OFF again

Fan in auto mode: When this button is pressed, other mode is cancelled, and fan starts to operate in modulated mode in respect with boiler outlet temperature by the help of written software.



7.9. Boiler outlet water temperature setting

You can set desired boiler outlet water temperature as follows:

- Press MENU button once
- The icon which points the setting parameter will blink
- You can increase or decrease the desired outlet water temperature by pressing the buttons on right or left side of the MENU button



NOTICE

Short-cut for thermostat setting:

You can just press (+) or (-) buttons to set the desired boiler outlet water temperature without entering the MENU.

Boiler outlet temperature can be set between 60 °C to 90 °C, with 2 °C intervals.

If you press MENU button once again, thermostat setting will be over, and the menu switches to the next set parameter sub-menu. Control panel leaves the MENU mode if you wait for 10 seconds without pressing any button, and goes back to normal operation

7.10. Fan maximum speed setting (for FAN AUTO mode only)



You can set the maximum speed of the fan if you choose "fan operation mode" as auto as described in the previous page. Control panel allows you to set the maximum speed in fan modulation mode. If you feel the air is too much for your chimney installation and fuel to be loaded, then you may decrease the maximum speed of fan. In this case, fan will be operated between minimum speed and the maximum new speed you set. This feature will help the boiler save on fuel consumption.



To re-set the maximum speed of fan:

1. Press MENU button twice
2. The icon which points the setting parameter will blink
3. You can increase or decrease the new maximum speed between 3 and 5 pressing the buttons on right or left side of the MENU button

If you press MENU button once again, thermostat setting will be over, and the menu switches to the next set parameter sub-menu. Control panel leaves the MENU mode if you wait for 10 seconds without pressing any button, and goes back to normal operation.

7.11. Auto fan switch-off feature



When power is turned on by ON/OFF button of control panel, fan will automatically start no matter what the boiler temperature is. Then, fan will be operated according to your adjustments, that is modulated by electronic board between a minimum speed and a maximum default or re-set speed by the user. Fan is automatically switched-off when desired boiler outlet temperature is reached.

If boiler outlet temperature falls below 40 °C, electronic board keeps on operating fan as long as a pre-set safety time is elapsed. If boiler temperature does not exceed 40 °C again during this safety time, then control panel assumes that there is no fuel in combustion chamber, and fan will be switched off. After this safety time, if boiler outlet temperature is over 40 °C again for any reason, fan will be switched on again. However, we recommend that you should reset the control panel by pressing ON/OFF button ONCE in that case.

Default value for safety time is 45 minutes. But you can re-adjust this safety time between 5 minutes to 90 minutes by 5 minutes intervals. To re-adjust safety time:



1. Press MENU button three times
2. The icon which points the setting parameter will blink
3. You can increase or decrease the new over-run time between 5 and 90 minutes pressing the buttons on right or left side of the MENU button

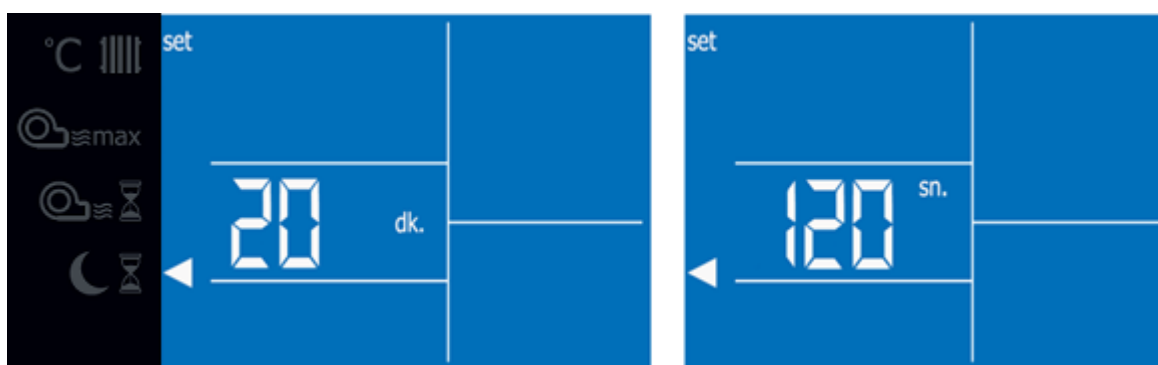
NOTICE

Pump will operate as long as boiler outlet temperature is above 40 C. Pump is always kept switched off when boiler temperature is below 40 C, in order to prevent condensation and save energy. Control panel does not allow re-set on pump start temperature.

7.12. Night (sleep) mode adjustments



You can use night mode if you do not need to warm the radiators and if you will not stop the boiler permanently. Using this feature you can have a small fire bed in combustion chamber, and you do not have to start-up the boiler from the very beginning. In this mode, fan is switched ON and OFF in respect with a pre-set duration so that it will only operate to maintain a minimum flame in the combustion chamber. According to factory set values, when this mode is activated, fan operates 120 seconds, and stops for 20 minutes. You can re-set this time intervals within the MENU. To re-set ON and OFF time intervals:



1. Press MENU button four times. The icon which points the setting parameter will blink
2. You can increase or decrease the OFF time between 10 and 40 minutes pressing the buttons on right or left side of the MENU button
3. Press MENU button again. The icon which points the setting parameter will blink
4. You can increase or decrease the ON time between 60 and 240 seconds pressing the buttons on right or left side of the MENU button

7.13. Slowdown the combustion

You can slowdown the combustion by:

1. Decreasing set value of boiler outlet temperature or switch control panel to ECO mode
2. Closing flue damper on smokehood to half closed or fully closed position (in case low fire bed)

You can combine the steps of 1 and 2, or if you do not want to warm your room you can set the control panel to NIGHT mode.

7.14. ECO mode



You can use ECO mode to shift boiler outlet temperature down to 50 C, if you do not need to much heat in your room instead of decreasing set temperature on the menu. If you want to leave ECO mode, and go back to standard operation just press ECO button once again.

7.15. NIGHT mode



If you want to activate NIGHT mode, just press NIGHT mode button on the control panel. When this mode is selected fan is switched to manual mode at the third speed level. As described above, we recommend you to activate this mode specially during night times when you do not need to heat up the radiators. If you want to leave NIGHT mode, and go back to standard operation just press NIGHT button once again.

7.16. External burner



You can install a pellet burner in respect with the information and recommendations given by your authorised re-seller in your territory. Manufacturer or re-seller do not hold any responsibility caused by improper application of any external burner.

A clear contact to switch pellet burner ON and OFF in respect with desired outlet temperature is supplied within the control panel. The burner will operate according to its own software when switched ON. Pellet burner is installed on lower front door of the boiler. You do not have to remove the combustion fan which is on the left hand side of the boiler. You can activate pellet burner just by pressing the EXT.BURNER button on the control panel, then the boiler will operate according to pellet fuel. To switch back to operation with wood or coal, just press FAN MANUEL of FAN AUTO buttons.

NOTICE

If you fire wood or coal we recommend you to remove pellet burner from the front door to prevent any damage on the burner

7.17. Safety shut-offs

If boiler temperature reaches up to 100 °C for any reason, fan is shut-off, CH pump is kept in operation. Panel warns the user by high temperature icon on LCD and an audible buzzer alarm. If boiler temperature falls below 95 °C again, buzzer alarm switches off, boiler switches back to its normal operation.

If boiler temperature reaches 110 °C, it means that there is a problem on control panel's PCB or sensors. In that case, an additional safety thermostat stops the boiler operation for an external safety. Sensing bulb of safety thermostat is attached on the boiler hot water outlet pipe, under the top panel of the boiler, and its reset button is outboard on top panel under a plastic cap. If boiler temperature is above 110 °C, fan is switched OFF, but pump is kept ON in order to protect the system against very high temperatures. E1 failure code appears on LCD. In this case, we recommend you to call for a service agent to check the control panel and its associated equipments. The safety thermostat is of manual reset type, and therefore it must be manually reset right after the problem is solved. Then the control panel is reset by pressing ON/OFF button once.

7.18. Turning off the panel

Control panel is turned off by pressing ON/OFF button. Never turn off the control panel when there is fire in combustion chamber.

NOTICE

Before opening the front door for fuel addition in combustion chamber, we recommend you to switch off the fan by pressing FAN CONTROL button. After closing the front door, switch on the fan again.

NOTICE

After each combustion period, before loading combustion chamber and ignition, the control panel must be reset by pressing ON/OFF button.

7.19. Room thermostat

You can install a room thermostat between the short-cut terminals of room thermostat contact outboard the control panel. If you do not use a room thermostat, leave this wire bridge as it is. When requested room temperature by room thermostat is reached:



1. Fan and pump are switched off
2. In the meantime, if boiler temperature exceeds 75 C, pump will start and, be in operation until boiler temperature is below 70 C again

7.20. Warning on fuels




Different fuels require different fresh air volumes for combustion. That is why control panel has some features to adapt the fan speed for the fuel types used for boiler. For example, if you use wood logs as a fuel, boiler will require less air than it needs for combustion of black coal and lignite.

Fuels must comply with the specifications given in the technical data section. The manufacturer will not be held responsible for the problems due to lack of fuel specifications, use of fuels not suggested for this boiler.

7.21. Lack of chimney draught

If there is lack on chimney draught or there is no draught at the chimney (such as badly built, uninsulated, blocked etc) you may face combustion problems (no fire, excessive smoke, condensation due to cold flue gasses). In this case, we strictly recommend you to have your chimney controlled by an expert, and fix any irregularity.

7.22. Failure codes and indicators

<p>code E1: High temperature. Bi-metal safety thermostat stopped the boiler code E2: NTC sensor fail</p> <p> High temperature warning</p> <p> No fuel warning</p>	
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8 HEALTH AND SAFETY INFORMATIONS

8.1. Control of substances hazardous to user health

For the type of material and where used in your boiler refer to the following chart

1. PAINTS:

General purpose black undercoat	NOT APPLICABLE
High temperature black coating	Sections Boiler body bottom plate
Powder coating	All external panels

2. INSULATION AND SEALS

Rock-wool insulation board	NOT APPLICABLE
Glass-wool insulation board (aluminium backed)	Sections Smoke-hood
Fibre-glass rope and tape	Front door
Ceramic-fibre board	Front door
CFC free polyurethane spray/foam	NOT APPLICABLE
Refractory brick	NOT APPLICABLE
Asbestos products	NOT APPLICABLE

3. SEALANTS

Red-lead dye	Nipples
Ceramic/mineral compound gasket	Flanged stub pipes
Water jointing flax	Tapings on sections
Grey paste jointing compound	Inter section joints
Fire cement	NOT APPLICABLE
Gas jointing compound	NOT APPLICABLE

NOTICE

Paints, sealants, grey paste compound, ceramic-fibre boards

1. These materials contain organic solvents and should be used in well-ventilated area away from naked flames. Do not allow to come into contact with the skin, eyes, inhale or swallow.
3. Use barrier cream or gloves to protect the skin, and goggles to protect the eyes from accidental contact.
4. Small quantities can be removed from clothes or skin with a proprietary paint remover or hand cleaning product.
5. If inhaled, remove sufferer into fresh air, if swallowed clean mouth with and drink fresh water but do not induce vomiting. If in the eye, irrigate the eye with clean water and seek medical attention.

NOTICE

Devices under pressure

1. Avoid contact with the parts of heating system under pressure during operation of the boiler. These dangerous parts are:
 - Boiler sections
 - Boiler inlet and outlet lines
 - Safety lines
 - Pressure relief devices installed on heating system
2. Never attempt to drain water from heating system when the boiler is being operated
3. Never feed the boiler directly with cold water to cool it down for any reason, when the boiler is hot.

WARNING on high temperature surfaces

Avoid contact with parts and surfaces having high temperatures (working surfaces) which will be hazardous for human such as:

1. Boiler front door
2. Fire door on the front section
3. Water delivery and return lines (even if isolated), safety lines
4. Flue spigot
5. Connection between flue outlet and chimney
6. Circulator pumps, expansion vessels

NOTICE

Flue gases

1. There could be a little gas release from the front side of the boiler, when the front loading door is opened. Never breathe this gas flow.
2. When adding solid fuel when there is active fire bed inside the combustion chamber, protect your hands and face..If needed wear protective gloves.

NOTICE

Firing fuel

1. Do not take the firing fuel out from the combustion chamber while it is still burning
2. Do not try to put the firing fuel off using water or any other liquids.
3. Do not leave the front doors and fire door open when there is fire inside the combustion chamber
4. To slow down or stop the fire, close air inlets, and flue outlets..
5. Your boiler can only be fired with the solid fuels whose characteristics have been given in Technical data section. Never use any other solid fuel that would be harmful for boiler section design, any liquid or gaseous fuels.

9 MAINTENANCE AND CLEANING

9.1. Periodic inspections

- * Check the water level or pressure. The hydrometer must be marked after first filling of the boiler. So water level can be checked regularly. If the water level or pressure is under the level of static pressure or the system set-up, a water make-up is needed. The make-up water should be softened according the local regulations before feeding into the system to prevent corrosion inside the heating circuit and the boiler.
- * Front doors of the boiler should be checked for properly closing. Fibre-glass ropes must be replaced if necessary. Check the condition of refractory inside the front door. If it is damaged, you will have higher surface temperatures on front doors. In this case the refractory should be replaced to save energy and prevent further crack.
- * Check if there is flue gas leakage from the chimney connections of the boiler, and have it fixed if necessary.
- * Check wiring to control panel, and wiring from control panel to heating circuit pump and fan.
- * Check gasket in front of the fan
- * Check the heat transfer surfaces of cast iron sections. The soot formation will change according to fuel type you use, and the combustion air amount. So if you feel that the outlet water temperature cannot reach the usual values with the same conditions, heating surfaces therefore should be cleaned

9.2 Boiler cleaning

Before cleaning the boiler, switch off the control panel and other electrical appliances in boiler room off. Detach the control panel electrical supply from the mains. To clean the boiler:

- * Clean all heating surfaces using the brush supplied with the boiler.
- * Move back deposits towards the smoke-hood if you cannot brush them forward
- * Clean the fresh air inlet section at the bottom level of intermediate sections with supplied fuel poker
- * Collect all soot deposits inside the ash tray
- * Remove the disposals collected in ash tray and rear smokehood through rear cleaning cover.

9.3. Maintenance

Before each heating season we would recommend you to call for the contracted service agent to check the boiler, heating system, electrical connections, and chimney conditions. Do not attempt to carry any maintenance work without getting help from qualified people.

START-UP / COMMISSIONING FORM

1/2

END-USER INFORMATION

NAME / SURNAME	:	_____
ADDRESS	:	_____
CITY / PROVINCE	:	_____
COUNTRY	:	_____
E-MAIL / GSM	:	_____
SIGNATURE	:	_____

PRODUCT INFORMATION

PRODUCT MODEL	:	_____
EXTRAS 1	:	_____
EXTRAS 2	:	_____
INVOICE DATE and NUMBER	:	_____
SERIAL NUMBER	:	_____

COMMISSIONING OF THE DEVICE

DATE OF COMMISSIONING	:	_____
AUTHORIZED COMPANY for COMMISSIONING	:	_____
ADDRESS	:	_____
E-MAIL / GSM	:	_____
SERVISER NAME / SURNAME	:	_____
SERVISER STAMP and SIGNATURE	:	_____

- Warranty period is 2 (two) years, and starts with signing of this document
- One copy of this document shall be handed to end-user
- General checks on next page should be completed for future reference

START-UP / COMMISSIONING FORM

2/2

General Checks	Check	Comments
Wall plug voltage measurement	_____ V (AC)	
There is no damage because of transportation		
Chimney is clean, functioning well and meets the requirements defined in manuals		
Outputs are tested before start-up and working correctly		
Plumbing plant installation is made according to manuals, and necessary sensors are installed		
Optimization for auger / chimney calibration (if needed) is made		
Purchased optional elements are installed correctly, and tested		

End-User Notification	Check	Comments
User is informed about boiler/stove cleaning and service cycles		
User is informed about errors and how to act when they are shown		
User is informed about combustion power selection and setting necessary thermostats		
User is informed about boiler/stove functioning, operating, fuel quality and warranty conditions		

REMARKS / DIFFERENCES