METAL-FACH

HEATING TECHNOLOGY

TRANSLATION
OF THE
ORIGINAL MANUAL
ISSUE I
06.2015

16-150

11-13

08

+200

OPERATION AND MAINTENANCE DOCUMENTATION

SOKOL SE

INTRODUCTION

Dear User

Thank you for choosing the “Sokół” heating boiler from Metal-Fach. We hope that the device will meet your requirements and bring much satisfaction.

The Sokół heating boiler was designed and manufactured according to the most important, current norms and standards, guaranteeing safety and dependable use. Using the device in accordance with the provided manual ensures effective and dependable operation.

METAL-FACH
HEATING TECHNOLOGY

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USER (U) - actions concerning the person using the central heating boiler
INSTALLER (I) - actions concerning the person installing and servicing the central heating boiler
USER/INSTALLER (U/I) - actions concerning both of them

LIST OF TABLES

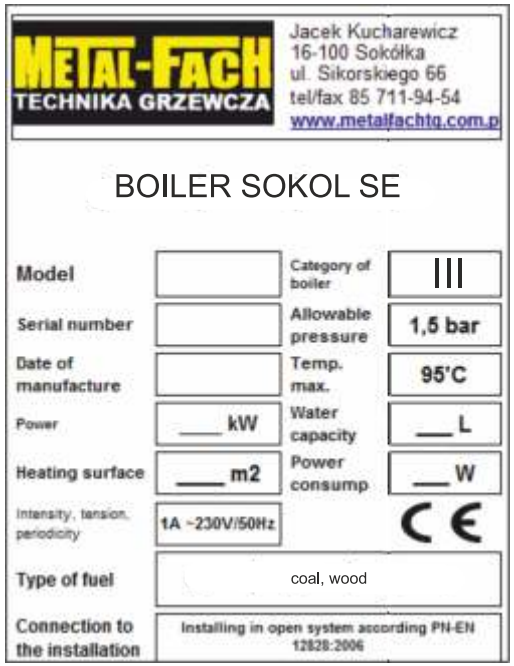
DESCRIPTION OF SCHEMATICS

1. INITIAL ACTIVITIES

(USER)

Procedure to follow on delivery of the METAL-FACH boiler:

- check if the boiler is complete (tab 6.1 page 5) and if it has not been damaged during delivery
- confront your order with the data plate, that is placed on the left or right on the boiler body
- read the user's manual carefully as it contains all the information required for safe operation of the boiler



Description 1.1 Serial plate

If you happen to encounter any problems, please contact our service department or dedicated METAL- FACH service centre.

The staff are trained and certified and have access to the original parts which ensure proper servicing and boiler installation.

2. PICTOGRAMS

(USER)

Table 2.1 Pictograms

5	5 year warranty		Movable grate (SE 11-45)
6MM	6 mm certified boiler steel		Programmer
≤81%	Thermal efficiency up to 81%		Blower fan
	Water-cooled grate		Draught regulator
	Chimney draught regulation	Z Y X	Big loading chamber

3. APPLIED SYMBOLS

(USER/INSTALLER)

ATTENTION!
Very important piece of information that needs to be read

TIP!
Information that should be read to make operation easier.

4. DEFINITIONS OF TERMS IN THE MANUAL

(USER/INSTALLER)

Central heating boiler is a device intended to burn solid fuels in order to heat up the heat carrier (usually water) that circulates in the heating sysytem.

Draught regulator is a device that regulates temperature in solid fuel boilers. as the temperature increases, the airflow fed into the furnace is limited thus slowing the burning process.
as the temperature drops, the airflow into the furnace increases thus encouraging the burning process.

Chimney draught regulator controls and lowers the excessive vacuum in the chimney system.

5. GENERAL INFORMATION

(USER)

The maintenance and operation documentation is a part of the product that comes with the delivered boiler. the documentation contains all the information concerning the construction characteristics, installation and operation of SOKÓŁ boilers equipped with the SE. A thorough study of the manual enables a proper and safe operation of the boiler.

ATTENTION!
Failure to comply with the provisions and guidelines included in this documentation as well as the nationally- recognised norms concerning such devices will make the producer's warranty and libility void.

Our boilers are shipped assembled. they are tightly attached to a pallet. some other forms of securing the boiler are used e.g. foil wrapping. during the shipping, the boiler should be tightly secured (e.g.with transport belts) so that it does not turn or move. the delivery should meet the requirements set in the general rules for transporting materials. the loading and unloading of the boilers should be carried out using lifting devices (fork lift truck) of lifting capacity over 1000kg.

6. BOILER EQUIPMENT

(USER)

The delivery includes basic as well as additional elements depending on the type of order. on receiving the boiler you should carefully inspect the boiler to ensure that it has been delivered undamaged and complete. the additional and basic elements are listed below (tab 6.1).

Table 6.1 Boiler equipment

Basic equipment:	Unit	Number of items
Central heating boiler	pcs.	1
Szuflada popielnikowa	pcs.	1
Thermometer	pcs.	1
Poker	pcs.	1
Brush	pcs.	1
Additional equipment:	**Unit**	**Number of items**
Draught regulator	pcs.	1
Documentation:	**Unit**	**Number of items**
Boiler maintenance and operation documentation	pcs.	1

ATTENTION!
Every user should familirise themselves with the operation manual for the regulator, blower fan.

ATTENTION!
METAL-FACH reserves the right to implement changes to the parametres, equipment and specification of the offered products without prior notice.

7. USE SE

(USER/INSTALLER)

Steel water boilers are used for central heating and preparation of hot tap water for single-family houses and utility rooms, sales outlets, farms, public houses etc. they are equipped with a manual feeding grate. thanks to the newest construction solutions, the SE boiler can reach the capacity of 81%.

The proper operation and highest performance of the boiler depends on the quality of installation, right flue and appropriate service and maintenance.

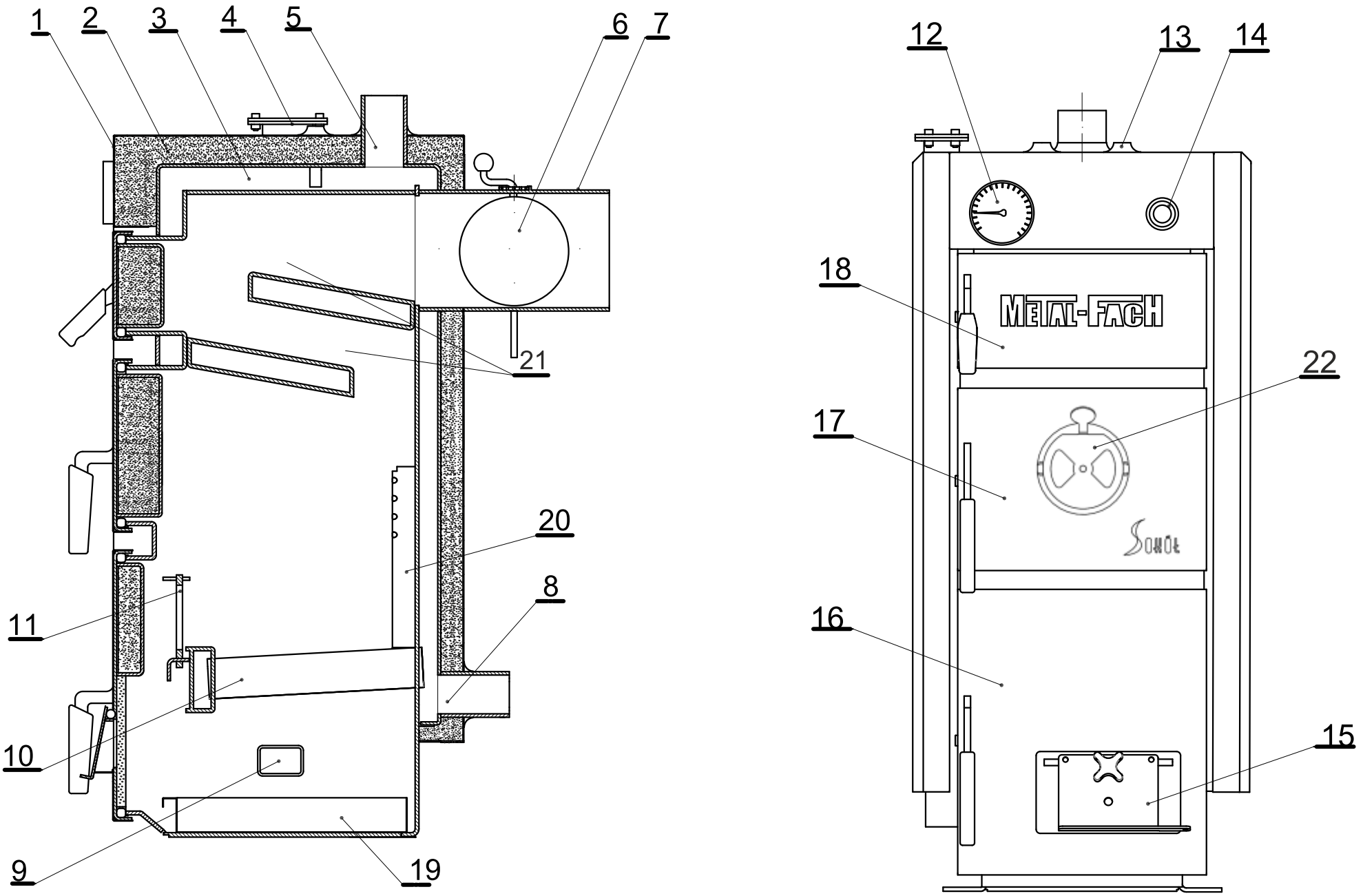
ATTENTION!
The boilers are designed to operate only with open system water installations with gravitional or forced circulation which are secured in accordance with PN-EN 13384-1:2004/ A1:2007 Heating and Calorifics

7.1 BASIC ELEMENTS OF THE BOILER SE

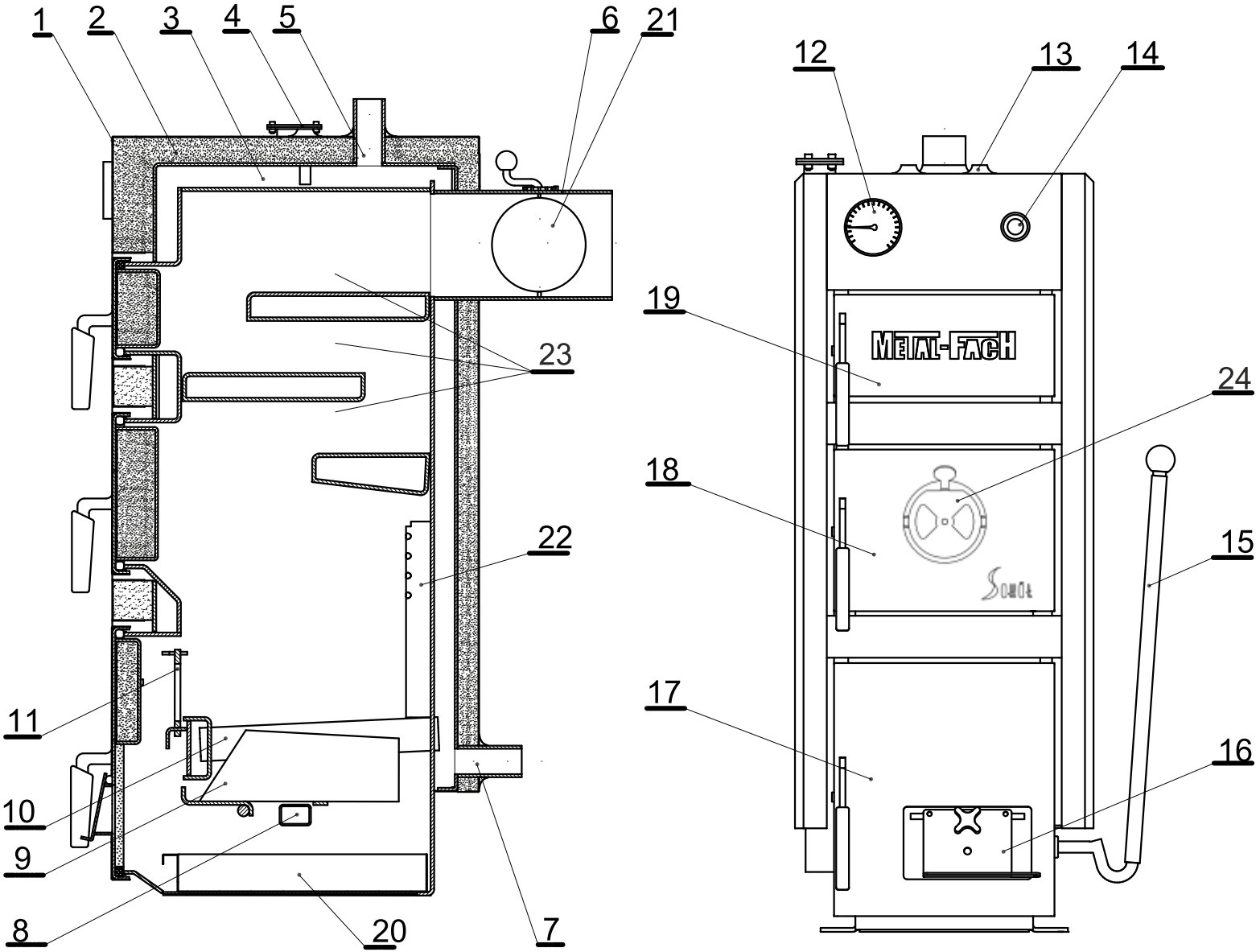
(USER/INSTALLER)

The water chassis is a construction made from welded certified steel sheets of 6 mm thickness P265GH (for fumes interacting elements) and 4 mm (for other elements) S235JR+N.

Schematics description:
1. Boiler chassis
2. Thermal insulation
3. Boiler body
4. Ventilator hold down
5. Power supply stub
6. Fumes throttle
7. Flue
8. Return stub
9. Airflow outlet
10. Water- cooled grate
11. Grate door
12. Thermometer
13. Temperature sensor seat
14. Draught controller stub
15. Air feeder
16. Grate- ash door
17. Charge door
18. Cleaning door
19. Ash drawer
20. Secondary air channel
21. Convection channels
22. Return air throttle

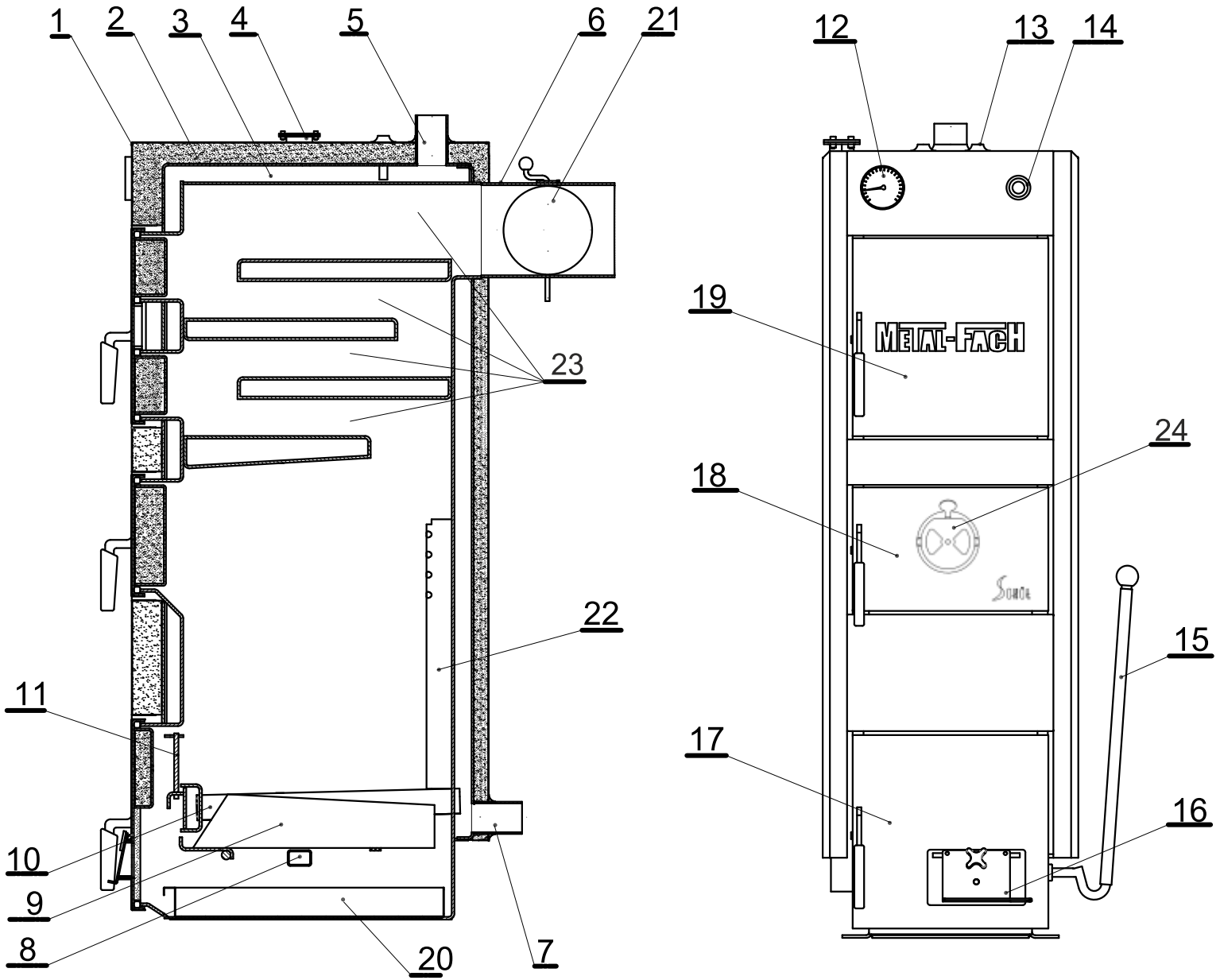


Description 7.1 Basic elements of the boiler SE 08



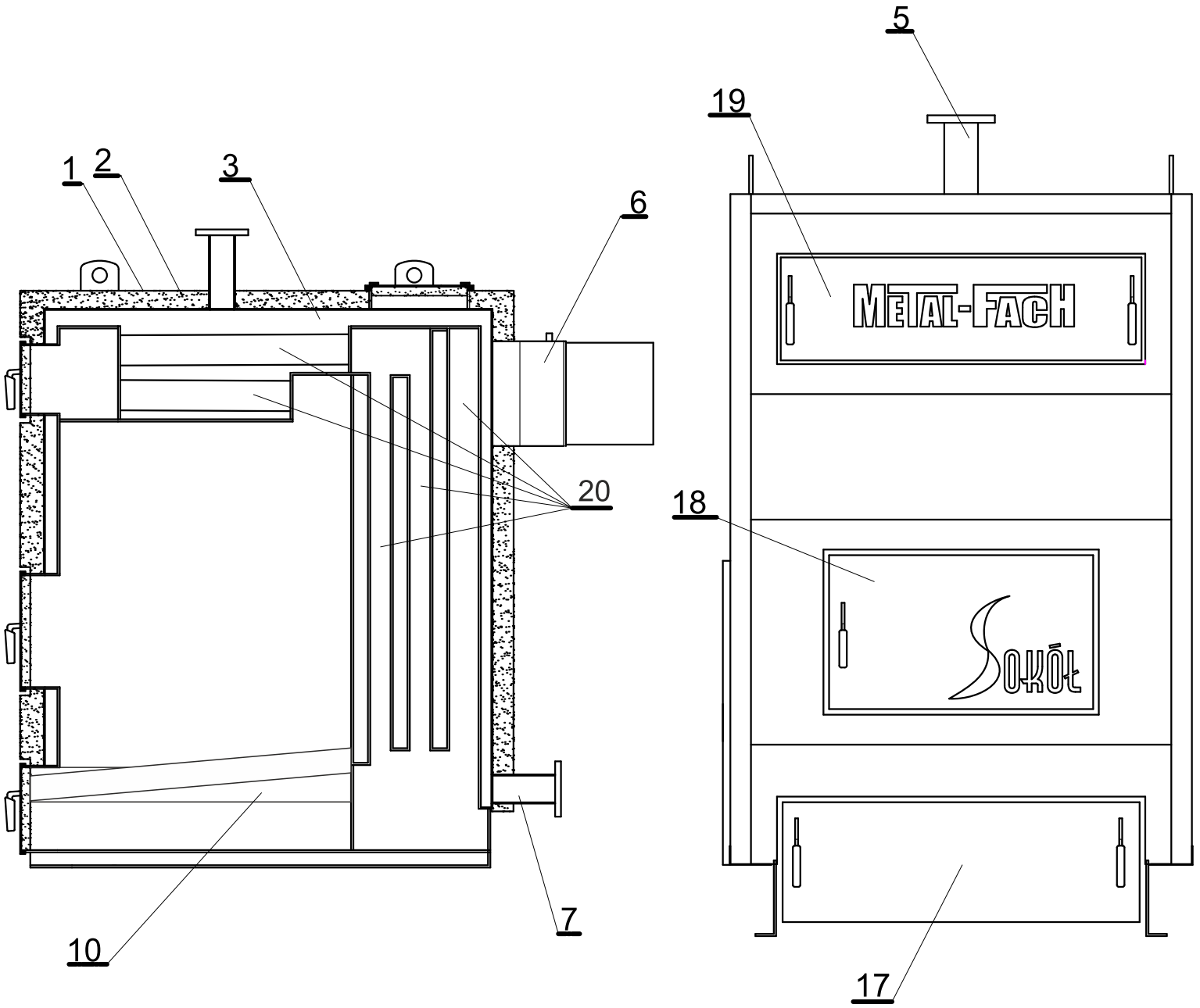
Schematics description:
1. Boiler chassis
2. Heat insulation
3. Boiler body
4. Ventilator hold down
5. Power supply stub
6. Flue
7. Return stub
8. Airflow outlet
9. Movable air
10. Water- cooled grate
11. Grate door
12. Thermometer
13. Temeperature sensor seats
14. Draught regulator
15. Poker lever
16. Air feeder
17. Grate- ash door
18. Charge door
19. Cleaning door
20. Ash drawer
21. Fumes throttle
22. Secondary air channel
23. Convection channels
24. Return air throttle

Description 7.2 Basic elements of the boiler SE 11-13



Schematics description:
1. Boiler chassis
2. Heat insulation
3. Boiler body
4. Ventilator hold down
5. Power supply stub
6. Flue
7. Return stub
8. Airflow outlet
9. Movable air
10. Water- cooled grate
11. Grate door
12. Thermometer
13. Temeperature sensor seats
14. Draught regulator
15. Poker lever
16. Air feeder
17. Grate- ash door
18. Charge door
19. Cleaning door
20. Ash drawer
21. Fumes throttle
22. Secondary air channel
23. Convection channels
24. Return air throttle

Description 7.3 Basic elements of the boiler SE 16-150

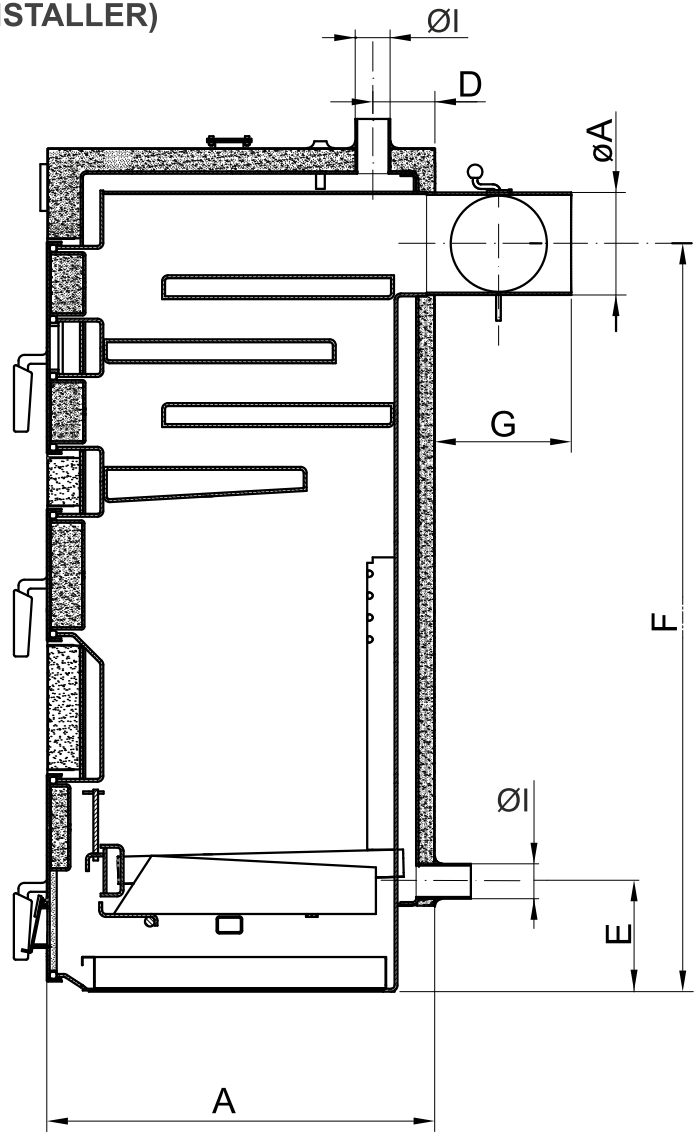


Schematics description:
1. Boiler chassis
2. Thermal insulation
3. Boiler body
4. -
5. Power supply stub
6. Flue
7. Return stub
8. -
9. -
10. Water- cooled grate
11. -
12. Thermometer
13. -
14. -
15. -
16. -
17. Grate - ash door
18. Charge door
19. Cleaning hatch door
20. Convection channels

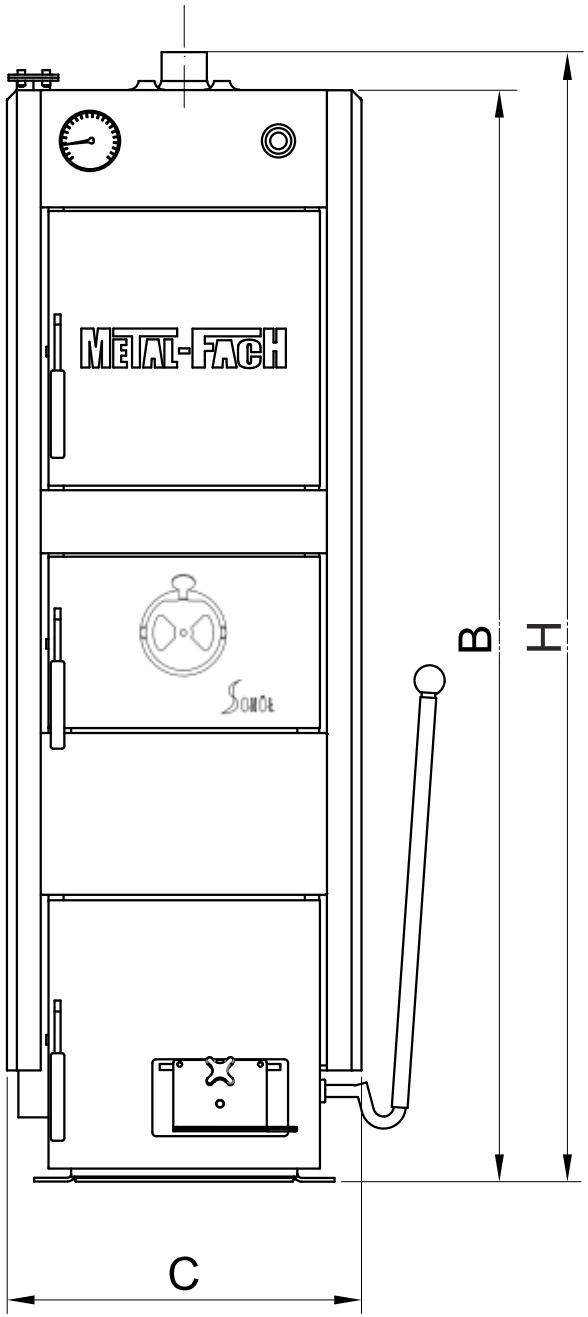
Description 7.4 Basic elements of the boiler SE 200

7.2 BASIC DIMENTIONS OF THE BOILER SE

(USER/INSTALLER)



Description 7.2.1 Boiler dimentions SE

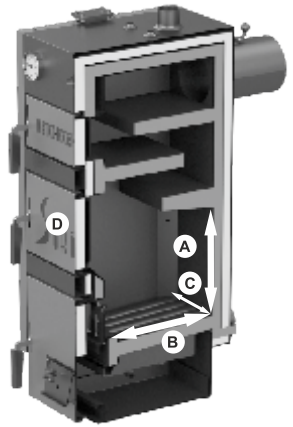


Description 7.2.1 Boiler dimentions SE

Table 7.2.1 Boiler dimentions (mm) SE

Type	SE-08	SE-11	SE-13	SE-16	SE-19	SE-25	SE-32	SE-38	SE-45	SE-50	SE-80	SE-100	SE-120	SE-150	SE-200
A	460	515	565	615	615	665	665	700	800	800	1120	1170	1170	1270	1726
B	915	1065	1165	1392	1392	1450	1520	1520	1520	1520	1810	1890	2090	2090	1865
C	420	420	420	420	470	470	540	540	590	690	770	870	870	870	1240
D	105	155	155	105	190	105	400	400	460	460	610	480	590	700	1023
E	188	188	188	188	188	188	190	190	160	173	330	330	338	338	370
F	770	915	1015	1240	1235	1285	1330	1330	1330	1330	1690	1780	1980	1980	1520
G	190	190	190	190	190	190	190	190	190	190	320	360	360	360	370
H	970	1115	1215	1445	1445	1445	1495	1550	1550	1550	1830	1930	2130	2130	2025
ØI	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2	2	2
ØA	160	160	160	180	180	180	200	200	200	200	250	250	250	250	350

ATTENTION!
The manufacturer reserves the right to implement any construction changes during modernisation of the product.



Description 7.2.2 Dimentions of the supplementary burning chamber and charging inlet SE

Table 7.2.2 Dimentions (mm) of the supplementary burning chamber and charging inlet SE

Type	SE-08	SE-11	SE-13	SE-16	SE-19	SE-25	SE-32
A	330	330	430	500	500	550	550
B	340	350	400	450	500	500	500
C	240	240	240	240	290	290	340
D	240x200	240x200	240x200	240x200	290x200	290x200	340x200

Type	SE-38	SE-45	SE-50	SE-80	SE-100	SE-120	SE-150
A	550	550	550	550	650	850	850
B	600	600	600	900	950	950	1050
C	340	390	490	540	640	640	640
D	340x200	390x200	490x200	540x300	640x300	640x300	640x300

* SE 200 - There is no backup combustion chamber

7.3 TECHNICAL SPECIFICATIONS SE

(USER/INSTALLER)

Table 7.3 Boiler technical specifications SE

Parameters	Unit		Type of boiler						
			SE - 08	SE - 11	SE - 13	SE - 16	SE - 19	SE - 25	SE - 32
Nominal thermal output (coal)	[kW]		11	14	16	19	23	30	38
Heating surface	[m^2]		0,85	1,15	1,45	2,1	2,3	2,6	2,9
Boiler water capacity	[L]		30	41	49	53	62	69	76
Maximum working pressure	[Bar]		1,5	1,5	1,5	1,5	1,5	1,5	1,5
Maximum working temperature	[°C]		95	95	95	95	95	95	95
Test pressure	[Bar]		4	4	4	4	4	4	4
Boiler class	-		3	3	3	3	3	3	3
Boiler efficiency	[%]		≤81	≤81	≤81	≤81	≤81	≤81	≤81
Burn time at nominal power	[h]		-	-	-	-	-	-	-
Fuel	-		coal, wood						
Required chimney flue	[Pa]		20	20	20	20	23	23	35
Flow resistance δt	[mBar]	[10K]	0,14	0,23	0,30	0,42	0,61	1,05	1,7
		[20K]	0,07	0,115	0,15	0,21	0,30	0,55	0,85
Boiler weight	[kg]		147	197	235	270	300	343	378

Table 7.3 Boiler technical specifications SE

Parameters	Unit		Type of boiler							
			SE - 38	SE - 45	SE - 50	SE - 80	SE - 100	SE - 120	SE - 150	SE - 200
Nominal thermal output (coal)	[kW]		45	52	60	80	100	120	150	200
Heating surface	[m^2]		3,4	3,8	4,5	6,9	8,0	9,2	10	18,32
Boiler water capacity	[L]		90	105	115	260	290	316	330	713
Maximum working pressure	[Bar]		1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Maximum working temperature	[°C]		95	95	95	95	95	95	95	95
Test pressure	[Bar]		4	4	4	4	4	4	4	4
Boiler class	-		3	3	3	3	3	3	3	3
Boiler efficiency	[%]		≤81	≤81	≤81	≤81	≤81	≤81	≤81	≤76
Burn time at nominal power	[h]		-	-	-	-	-	-	-	-
Fuel	-		coal, wood							
Required chimney flue	[Pa]		35	38	38	40	40	45	45	50
Flow resistance δt	[mBar]	[10K]	2,36	3,14	4,20	7,45	11,65	16,76	26,20	26,20
		[20K]	1,18	1,57	2,10	3,73	5,825	8,38	13,10	13,10
Boiler weight	[kg]		410	460	495	800	950	1015	1090	2050

7.4 FUEL

(USER)

The fuel intended to be burnt in SE type is deciduous wood under 20% humidity and coal of OI sort. the recommended types of wood are beech, hornbeam, oak, willow, alder or ash.

It is not advised to use coniferous logs as they produce a lot of soot in the boiler, requiring it to be cleaned often.

ATTENTION!
If the humidity of wood you use is over 20%, it is recommended to install an insert made from acidproof steel.

8. REQUIREMENTS FOR THE BOILER ROOM AND BOILER INSTALLATION

(USER/INSTALLER)

In Poland, all the soild fuels boilers should be made in accordance with PN- 87/B-02411 Norm „Soild fuels boilers". the have been divided into two categories.

1) For small boilers under 25 kW, the following requirements should be met:

- the boiler should be placed in the central position to the heated rooms and in a separate room.
- the floor surface should be inflammable. if the floor is flammable, it should be covered with steel metal sheet of 0,7 mm thickness and exceed the boiler contour by at least 50 cm. the boiler should be placed on inflammable base of 0,5 cm above the floor and secured by steel angles.
- the boiler room can be lit naturally as well as artificially.
- the location of the boiler in the room should enable free access to the boiler during cleaning and maintenance works. The distance between the back of the boiler and a wall should be at least 70 cm, the side of the boiler and a wall should be at least 100 cm and the front of the boiler and a wall opposite should be at least 200 cm;
- the height in a new building should be at least 220 cm. in old buildings the the boiler room should be at least 190 cm high as long as the ventilation inside is sufficient (supply- exhaust ventilation)
- supply ventilation should be provided by an open slot of 200 cm2 in diameter and placed up to 100 cm over the floor surface.
- the exhaust ventilation should be provided by an exhaust duct of 14 x 14 diameter and made from noncombustible material. its outlet should be installed under the ceiling of the boiler room. the exhaust duct should lead out over the roof and placed in the close vicinity of the chimney. no shut down equipment can be installed on the duct.

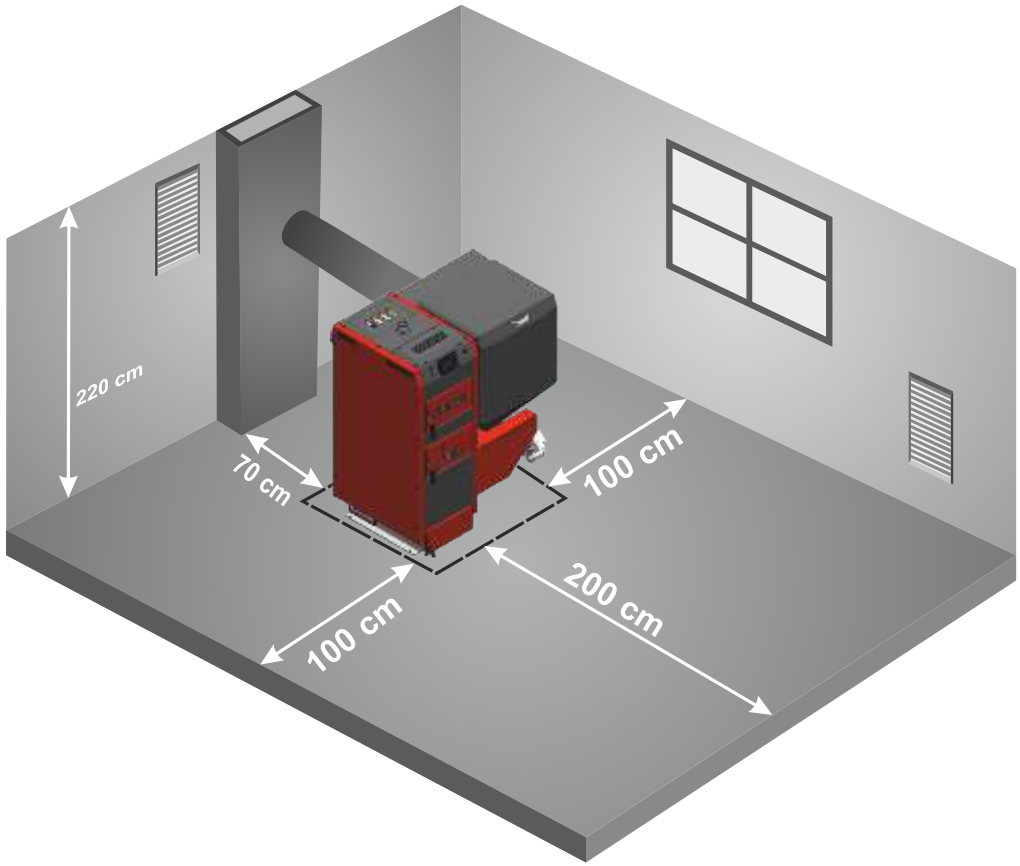
2) Boiler rooms of heating power greater than 25kW should meet extra requirements, such as:

- the distance to the far-most chimney, at gravitional draught, cannot exceed 50 cm of the chimney height.
- the fuel and slag store should be located by the boiler room. The storing height up to 220 cm with a 50 cm free space above it.
- the equipment for vertical and horizontal delivery of the fuel and slag should be considered.
- the fuel store should be equipped with natural ventilation that allows for full airing once an hour in the fuel store and three airing circles an hour in the slag store.
- the entrance door to the boiler room should be fire- resistant (0,5 class of fire resistance), the minimum width 80cm and should open outside. the door should have a handle- free system when opened from the inside and have a door handle when coming inside
- the requirements for the ventilation are the same as those for the boiler rooms of lower power; additionaly, in the boiler rooms of power greater than 400 kW, the supply exhaust ventilation should be accompanied by mechanical ventilation that can be periodically activated when feeding the fuel and removing slag. it must also be able to provide 10 airing circles an hour
- natural lightning which can light the front of the boiler should be considered in the room. the total surface of the windows should equal at least 1/15 of the floor surface; half of the windows in the room should open; the electrical lightining and electrical socket of max. 24 V should also be located in the room
- inspection chamber that will allow cooling water should be located in the floor; its capacity should equal the water capacity of the biggest boiler but not exceed $2m^3$

- in the boiler room all the heating pipes should be insulated

The placing of the boiler together with the minimum distance requirements is presented in the boiler room schematics (8.1)

TIP!
The rules included in the law serve only as guidelines which must be verified as the law is amended.



Description 8.1 Minimal requirements for the boiler room

ATTENTION!
The mechanical exhaust ventilation should not be used in the boiler room

ATTENTION!
Correct fresh air infeed to the boiler room will ensure efficient fuel burn.

ATTENTION!
Ensure that the carbon dioxide level in the room is not too high.

ATTENTION!
For more information on boiler room construction, refer to the 12.03.2009 Minister of Infrastructure Law.

8.1 BOILER INSTALLATION

(USER/INSTALLER)

The important element of installation is correct setting and levelling of the SE boilers. the boilers do not require special base and need to be leveled with adjustable feet. the boiler must be set in the vertical position.

The boiler must be placed on a flameproof pad that exceeds the boiler outline by 2 cm. if the boiler is located in the basement, it is recommended that it is placed on a base of at least 5 cm thick. the bearing of the floor and the fire hazard conditions are the key elements of choosing the right location for the boiler i.e:

- 20 cm from any flammable materials
- 40 cm from any flammable materials of C3 flammability
- 40 cm from any flammable materials of unknown flammability

Table 8.1 Mass and building materials flammability

Flammability of construction products:	Construction products
A- noncombustible	Sandstone, concrete, bricks, fire-resistant plaster, (concrete/ cement) mortar, tiles, granite
B- difficult to ignite	Wood- cement boards/beams, fibreglass, mineral insulation
C1- difficult to ignite	Beech wood, oak wood, plywood
C2- normal combustibility	Pine, larch and spruce wood, corck, plank boards, rubber floorings
C3-Easily ignited	Asphalt plywood, celluloid compound, polyurethane, polystyrene, polyethylene, plastics, PVC

ATTENTION!
If the boiler is not levelled properly it can be damaged.

ATTENTION!
The boiler must not be placed in a damp and wet room as the enhanced corrosion process will shortly damage the boiler.

8.2 CONNECTING THE BOILER TO THE HEATING SYSTEM

(INSTALLER)

The connecting of the boiler to the central heating system should be contracted to a producer- certified company. this procedure should be confirmed in the warranty card which is attached to this manual. the boiler must be connected according to the manufacturer's guidelines and this manual.

ATTENTION!
It is required that the boiler is connected to the heating installation by a four- way valve.

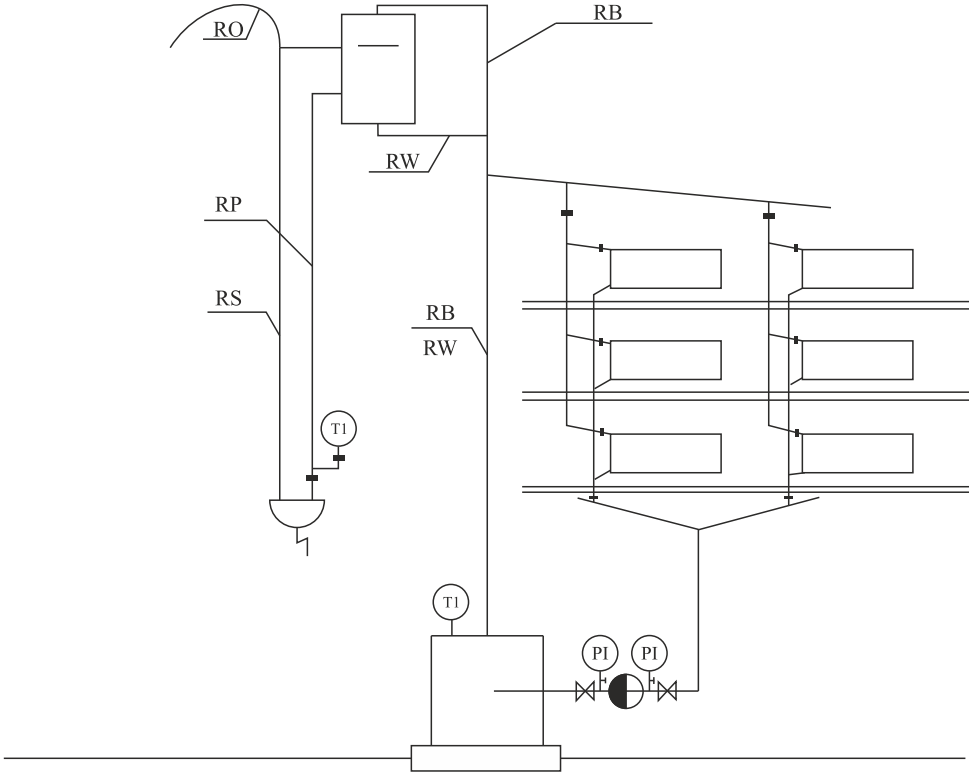
ATTENTION!
The temperature of the return water from the central heating boiler should not be lower than 45°C.

ATTENTION!
Ensure that the thermometre capillary is tightened and sealed.

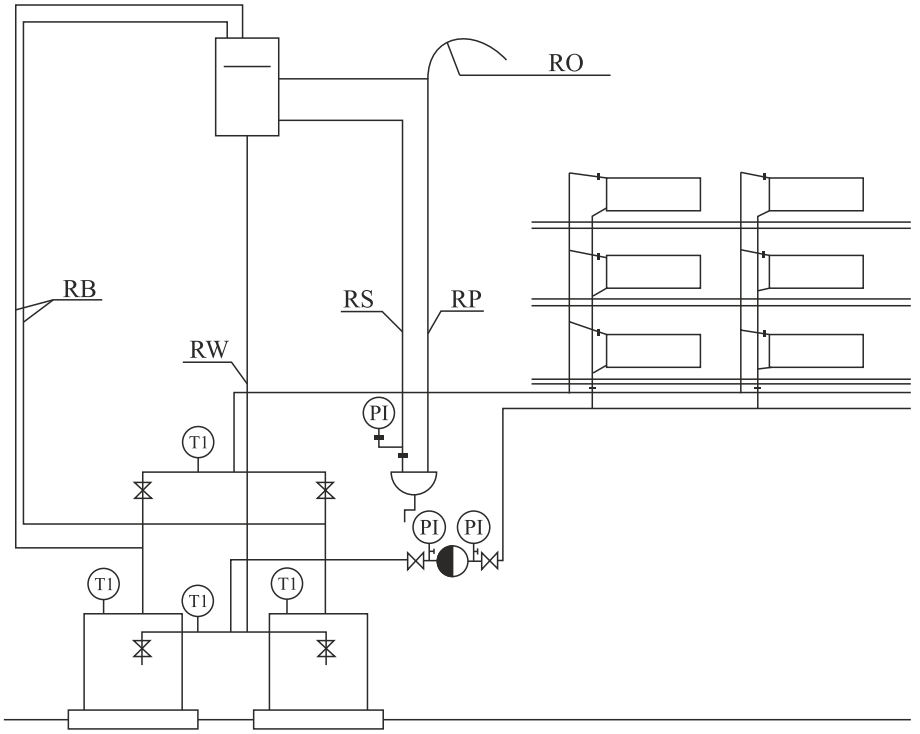
Table 8.2.1 Symbols applied in the schematics

Designation	Key
RO	deaeration pipe
RW	expansion pipe
RS	signal pipe
RP	spill pipe
RB	safety pipe
T1	temperature
P1	pressure

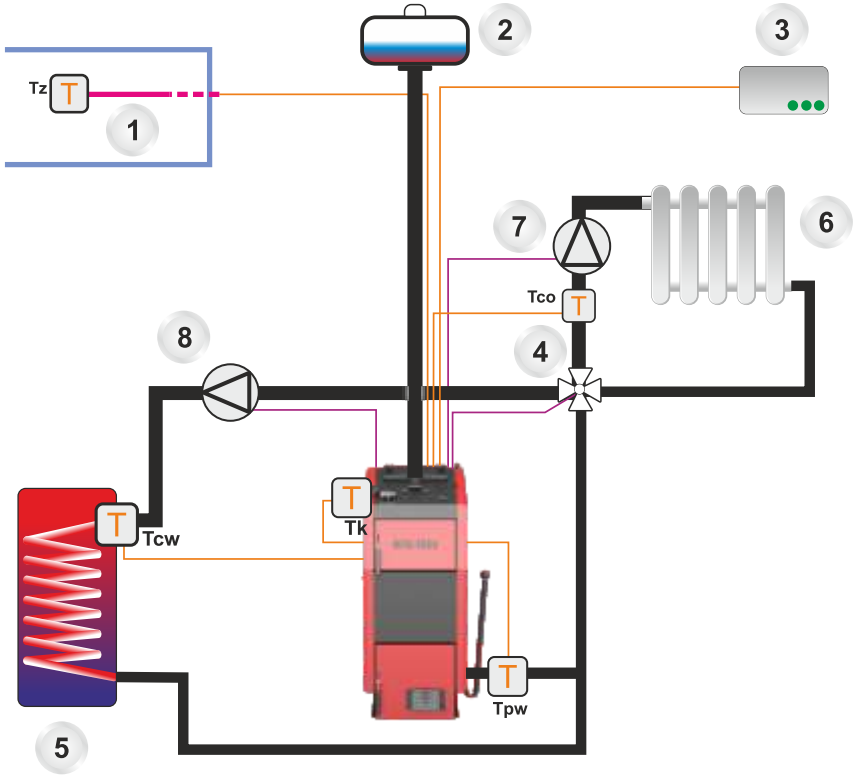
The schematics of the connecting the boiler to the heating installation meet the PN- 91/B-02420 requirements.



Description 8.2.1 Connecting the boiler to the heating system diagram



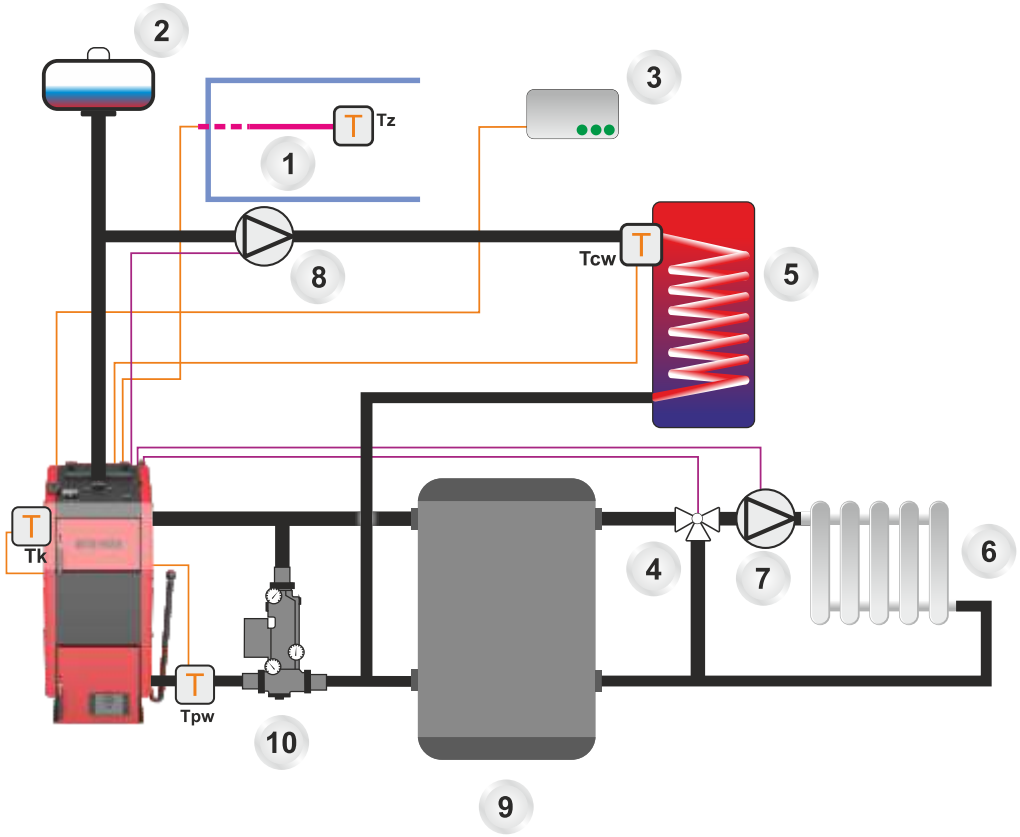
Description 8.2.2 Connecting boilers to the heating system diagram



Description 8.2.3 Connecting the boiler to the heating system

Table 8.2.2 Symbols applied in the schematics

Designation	Key
T	temperature sensor
Tk	boiler temperature sensor
Tz	outside temperature sensor
Tcw	hot tap water temperature sensor
Tco	central heating temperature sensor
Tpw	return water temperature
Tpod	feeder temperature sensor



Description 8.2.4 Connecting the boiler to the heating system with Laddomat and buffer

Figure description:
1. Outside the building
2. Expansion vessel
3. Room regulator
4. Mixer
5. Heater
6. Heating circle
7. Central heating pump (CO)
8. Hot tap water pump (CWU)
9. Block
10. Laddomat

9. REQUIREMENTS FOR THE EXPANSION VESSEL

(INSTALLER)

Every open water heating installation should be equipped with an expansion vessel, which receives excess water volume and deaerates the installation. The vessel should be installed in the top-most point of the installation, and if possible, vertically above the boiler (boilers).The capacity of the vessel should be calculated using the unit capacity for every kW of power at 1-2 dm 3.The expansion vessel is equipped in stubs to connect a riser safety tube, safety downpipe, and a spill pipe and - connected to it - deaeration.

The diameter of the deaeration and spill pipe should be at least

$$d = 15 + 1{,}39\sqrt{\dot{Q}}\ [\text{mm}]$$

$\dot{Q}$ - Boiler efficiency [kW]

The most important requirements on the operation of the device are the following:

- The expansion vessel should be about 3.5% of the total water volume in the water heating installation and boiler.
- Each boiler must have a safety tube and spill-pipe.
- Installation should be equipped with a signal pipe and expansion pipe, and a stub for deaerating the expansion vessel.

In the case of several boilers, each should have its own safety pipe in accordance with the guidelines in PN-91/B-02413. Safety and spill pipes should not have any closing valves, and the pipes and vessel should be protected from freezing.

10. CONNECTING THE BOILER TO THE POWER SUPPLY

(INSTALLER)

The boiler is designed for 230V/50 Hz voltage. such connection should be carried out by a certified specialist. the 230V/10A connection socket with grounding should be easily accessible. the power supply to the boiler and room lighting should have own circuit. the finishing and heating test should be noted in the Warranty Card. the Warranty Card should then be sent over to the manufacturer in order for the user to be registered in the company system.

ATTENTION!
The start-up of the boiler should be carried out by the manufacturer- certified and trained company with a valid METAL-FACH Distributor or Service Technician Certificate.

11. CONNECTING THE BOILER TO THE CHIMNEY

(INSTALLER)

Smoke flue

The flue pipes extract the fumes outside and intake air used for burning fuel.

The necessary draught depends on:

- the temperature difference between the hot fumes and cold air
- proper chimney height
- the chimney diameter should be no less than 20 x 20 cm
- chimney properties (smooth surfaces inside and outside) grout tightness

The effective height of the chimney is the difference between the highest grate and the flue outlet. The effective height of the individual chimneys must be at least 4 m and of collective chimneys for solid and liquid fuels should be at least 5 m. the difference between the two grates can't be greater than 6,5 m.

In case of sloping roofs, the chimneys should end at the ridge, in the area of free wind. It prevents any draught brakes. Pay attention to the location of the building in relation to the buildings around.

Choosing chimney

In most cases, choosing the right chimney is done by using an approximation method or according to manufacturer's recommendations. In special cases (bad pressure conditions, large volume of fumes) the chimneys are chosen according to the PN-EN 13384-1+A2:2008 Norm.
Chimneys for solid fuels boilers

It must be noted that the solid fuel grates of nominal thermal power of >20 kW and without vent require separate chimney.For the solid fuel grates, single-layer brick chimneys can be used. Today, three-layer chimneys of smooth surface and good thermal insualtion are commonly used.

Flue

The boiler is connected to the chimney with a flue and smoke flue. The smoke flue consists of pipes and fittings which are set in rooms. The smoke flues meet the requirements set in the chimney fire hazard regulations and are often made from the same material as the main chimney. The smoke flues should be made from non-flammable materials. The smoke flues or their housings should meet the requirements set in the small chimneys fire test Polish Norm. It is allowed to build the housing from solid bricks of 12 cm thickness. The bricks should be set on the cement- plaster mortar with outer plaster or binder. The connections should be kept as short as possible and set in the upright direction to the chimney in order to avoid heat losses and additional resistance. They cannot be set to other rooms. The fumes pipes should not be set in rooms where furnaces cannot be installed, moreover, they cannot installed in walls and ceilings. Due to low fumes temperature, in order to protect the chimney from dampness and draught limit, use the acid- resistant or ceramic chimney liners with condensate discharge to the waste drain. The distance between the chimney and the closest tree top line should be at least 6m.

12. BOILER START-UP

(USER/INSTALLER)

Before starting fire in the boiler, make sure that the central heating installation has been installed properly and filled with water- until it flows over through the overflow pipe from the expansion vessel. For the best results, the installation should ideally be filled with softened water/ chemically treated water, distilled water or rain water.

Also, ensure that the grate has been cleaned from any unburnt fuel, ash and slag from the previous burning and make sure that ash has been removed from the tray.

Proper kindling (from top down)- once the grate base is ready, fill it up with fuel, (full load), place ingnition layer (paper, wood chips) and then ignite. The boiler start-up must be done with the return air throttle open in the charge door.

It is not advisable to kindle the fuel from bottom up in the upper burn boilers.

Before igniting the layer, make sure that the chimney has proper flue. Insufficient flue occurs durning the boiler start-up or after the boiler has been idle for a long time or the boiler and the chimney have been cooled off.

In this case, before igniting the layer, you should heat up the chimney in the following way:

- put few wood chips into the flue and ignite them
- keep the fire going for as long as possible until the chimney draught increases (the flame is sucked into the chimney)
- after the wood has burnt out, remove any remains and place them in the ash tray

Once the required water temperature is reached in the boiler, adjust the combustion intensity. The combustion intensity is adjusted by proper regulation screw setting. During normal boiler operation you should periodically monitor and top up the fuel in the way presented above. In case of coal with sintering properties the fuel might hang over the grate. Its symptom is that although the chamber is filled up with coal, the boiler efficiency drops. If situation occurs, open the charging door and knock down any fuel leftovers with a metal rod.

When opening the charge door, be extra careful as sudden opening of the door may cause gas ignition (degassing products). When opening the door, stand next to the boiler, open slightly and wait a moment until the fumes are extracted from the fuel bin and then slowly open the door ajar. Also in this situation you should not stand in front of the door. Remember about these tips when opening any doors of the boiler.

After starting a cold boiler, or at first start-up, the boiler can “sweat”. It

may seem like it is leaking. In such case, you must perform intense combustion (70-80ºC) in order to dry and warm the boiler and chimney vent through, even for 2-3 days.

To ensure longer boiler operation, it advised to keep the fumes temperature 180ºC above the outside temperature and the water temperature in the boiler should not be lower than 60ºC.

In such situation, keeping an appropriately low temperature in the radiators in the autumn-spring season can be done, amongst others, by:

- Properly selecting the boiler to the heated rooms.
- Using, between the infeed and return of water, three- of four-way mixing valves, operated manually or automatically.

Improper heat insulation of the expansion vessel can also lead to boiler explosion and all following consequences.

If the water in the expansion vessel freezes, it severs the connection between the heating installation and boiler and the atmosphere, and when temperature of boiler water rises uncontrolled, it may lead to boiler explosion.

ATTENTION!
If, by any reason, there is no water in the boiler-installation system, it should not be refilled with cold water. Cool the boiler down as quickly as possible to 30”C (if necessary, remove burning fuel), and only then refill the water and start up the boiler anew.

ATTENTION!
The cold water infeed to the boiler walls, while they are hot, bears the risk of boiler explosion, and, consequently, destruction of the heating devices. In extreme cases, it can lead to damage to the building and people.

ATTENTION!
Do not stand directly in front of the boiler when opening the boiler door- it may cause burning.

13. TIPS WHEN USING THE BOILER

(USER)

- the boiler can be operated by two adults who have familiried themselves with the manual
- the presence of unsupervised children in the boiler room, or allowing them to operate the boiler is forbidden.
- ensure that the boiler is switched off during any works with flammable materials that emimt flammable gases or fumes e.g glueing, painting etc.)
- turn off the boiler before clearing out the exhaust carbon from the retort, gutter etc.(„OFF” position)
- turn off the boiler before stoking the boiler („OFF position)
- do not use flammable liquids for igniting the boiler, the boiler ignites automatically (ignition)
- turn off the boiler before cleaning
- do not overheat the boiler
- do not place any flammable material in the close vicinity of the boiler
- during ash removal, any flammable materials should be kept at a distance of 150 cm from the boiler
- the ash should be placed in heat resistant containers with a lid
- if the boiler operates at the temperature lower that 60°C, the steel exchanger may „sweat” and cause corrosion that shorten the boiler life span. That is why the minimum operation temperature of the boiler should be 60°C
- after the heating season is over, the boiler and the smoke duct must be thoroughly cleaned
- the boiler room should be kept tidy and dry

ATTENTION!
The boiler is not meant to be operated by persons of lowered mental or physical independence or by persons with no experience or limited knowledge about the product if they are not supervised or instructed by the person responsible for their safety.

ATTENTION!
Any tampering with the boiler electronic system or boiler construction is forbidden.

14. Boiler maintenece and cleaning

(USER)

ATTENTION!
Clean the boiler only when it is disconnected from the power supply.

In order to save fuel, the burner chamber as well as the convection channels must be kept clean. The walls and the grates in the burner chamber should be cleaned through the charger and burner doors. The boiler exchanger should also be cleaned regularly. the convection channels and the flue should be cleaned through cleaning hatch on the boiler flue or at the bottom in the side wall. It should be carried out with expendable metal brushes. The boiler should be cleaned during the idle period, preferrably every 100 hours.

A thorough cleaning of the boiler should be done monthly. If the fuel is of low quality, cleaning should be done more often.

15. Istruction for utilising the boiler

(USER)

Before scrapping the boiler, all the electronic elements should be removed. They should be disposed of according to the 2002/96/WE Electric and Electronic Equipment. In order to dispose of the electronic elements you should contact the manufacturer. The steel elements the boiler is made from should be scrapped in the dedicated locations (scrap yards).

ATTENTION!
The boiler and its elements should not be disposed of toghether with other waste.

16. Possible faults and malfunctions

(USER)

Before calling the helpline read the FAQ section of the manual.

ATTENTION!
Please remember that in the case of unnecessary customer support, the customer covers the costs of calling and work of the support unit.

Infoline: Paweł Czepiel
(Russian, English)
mobile +48 660 788 944
e-mail: p.czepiel@metalfach.com.pl

You can also report problems online: http://metalfachtg.com.pl/en/report-a-problem-online/

Table 16.1 Possible faults and malfunctions

Question	Answer	Explanation
Smoke from charge door or ash door.	-no draught -improper boiler-chimney connection - fuel remains in the hinge or sealant. - another boiler connected to the same chimney vent - insufficient chimney diameter.	- tighten wall in the connection of the flue and chimney vent - check the patency of the chimney, and its parameters - check the sealant on the door - seal the outlet of the boiler to the chimney vent, preventing the suction of cool air - extend the diameter of the chimney vent.
There is water coming from the boiler during the first start-up (leakage).	Condensation (sweating of the boiler).	Heat the boiler above 80°C and keep this temperature for at least 6 hours. If necessary, repeat.
Temperature on the boiler is too low.	- wrong selection of power (boiler size) - calorific value of fuel too low - improper boiler regulation.	- see the chapter on boiler use and maintenance - wrong selection of power.
Sudden rise in temperature and pressure.	- the ash chamber is not sealed - the chimney diameter is too big.	- seal up the doors or cleaning doors (if present) - decrease the chimney vent diameter.
Water leakage in the convection channels.	- incorrect fuel - too low combustion temperature - no air through the air throttle - closed flue gas throttle.	- use fuel of proper energy value and humidity - open the air throttle - open the flue gas throttle.

17. Warranty conditions

(USER)

1. Hot water boiler warranty, confirmed with the seal of the manufacturer of point of sale and the signature of the seller, is granted for the period

- 5 years from date of purchase, but not longer that 72 months from production, for the tightness of the exchanger and use of the boiler safety devices before returning cold water (four-way valve, loddomat, etc.);
- 2 years for correct function of the boiler
- 1 year for moving, cast iron, and mechanical elements, and screw

Warranty does not include wear materials (sealing rope, gaskets). The warranty for SOKÓŁ boiler is granted under the condition of issuing a complete payment for the boiler, and sending to the manufacturer a properly filled Warranty Card.

2. In case of damage of material faults during the warranty period, the manufacturer ensures free repair.
3. The manufacturer is obligated to perform the repairs within 14 days from the date of submitting the boiler to repair by the buyer.
4. The warranty is extended by the period from the date of submission of the fault to the day of informing the buyer about the completion of the repairs. This period is confirmed in the warranty card.
5. Repair of the boiler n the warranty period by persons not authorized by the manufacturer, releases the manufacturer of any warranty obligations.
6. Any damages due to incorrect use, improper storage, incompetent maintenance, non-conforming to the conditions outlined in this operation and maintenance manual, and due to reasons outside the manufacturer's power, make the warranty void, if these damages led to changes in the boiler.
7. The warranty does not include elements, which were damaged due to users carelessness and non-conformity with the manual, as well as boiler equipment: Thermometer, valves, cocks, etc., purchased by the manufacturer as boiler equipment.
8. The purchaser may seek warranty claims only when the manufacturer does not perform his warranty obligations.
9. The boiler can be replaced when the manufacturer states, on the basis of a certified expert opinion, that he cannot repair that boiler.
10. The warranty card is the only basis for free warranty repairs for the purchaser.
11. Warranty card without dates, seals, signatures, or with corrections and deletions made by unauthorized persons, is invalid.
12. No duplicates are issued if the warranty card is misplaced.
13. The pin guarding the screw throttle is not included in the warranty. It can get damaged when using incorrect fuel. The replacement of the pin by a support serviceman is charged.
14. The sealing rope in the combustion chamber door and cleaning openings, is not included in the warranty, nor is it included for replacement. It is an operating material.
15. Any electrical devices provided with the boiler are under separate warranty by the manufacturer of these devices.
16. The Warrant can charge the Purchaser in case of unnecessary support.
17. The warranty is in force on the territory of the EU.
18. The warranty for consumer goods, does not exclude, limit, or withhold the rights of the purchaser stemming from non-conformity with the contract.
19. The condition of recognizing the warranty is the submission of the proof of purchase and properly filled warranty card.
20. First startup of the boiler, as well as any other repairs and actions outside the scope of user actions described in this manual, can be performed only by a manufacturer certified service. First startup cost is covered by the user.

Metal-Fach Jacek Kucharewicz is not liable for an inappropriate selection of boiler in relation to the heating surface. If the warranty call is unnecessary, the cost of travel of manufacturer service unit is covered by the warrantee.

THE WARRANTY IS VOID WHEN:

1. The boiler is connected to a closed installation.
2. There are damages from overheating the boiler.
3. There are damages due to non-conformity to the guidelines in this manual.

18. CERTYFIKAT

Urząd Dozoru Technicznego

Jednostka Notyfikowana UDT-CERT Nr 1433

CERTYFIKAT BADANIA PROJEKTU WE

EC Certificate of design examination

Nr 41963/JN/001/04

Jednostka Notyfikowana UDT-CERT Nr 1433

po przeprowadzeniu badania projektu WE
- moduł B1 - urządzenia ciśnieniowego:

Notified body no 1433 after design examination
– module B1 - pressure equipment

Rodzaj urządzenia: kocioł do wytwarzania ciepłej wody o temperaturze nie większej niż 95°C zasilany ręcznie paliwem stałym
Description of pressure equipment

Typ urządzenia/nr rysunku: SE 80, SE 100, SE 120, SE 150
Type of equipment/Drawing No.

Producent: Metal Fach Jacek Kucharewicz, ul. Sikorskiego 66, 16-100 Sokółka
Manufacturer

Kategoria zagrożenia: art. 3, ust. 2.3 Dyrektywy 97/23/WE
Hazard category

Nr protokołu badań: 41963/JN/001/02
Test report No

niniejszym poświadcza, że dokumentacja spełnia wymagania

Dyrektywy 97/23/WE
wdrożonej do prawa polskiego rozporządzeniem Ministra Gospodarki z dnia 21 grudnia 2005 r. w sprawie zasadniczych wymagań dla urządzeń ciśnieniowych i zespołów urządzeń ciśnieniowych

certifies that the design documentation satisfies the requirements of Directive 97/23/EC

Dokumentacja została oznaczona:
The documentation has been marked as follows

37204/JN/001/04

Warunki wydania i ważności certyfikatu oraz wykaz odpowiednich części dokumentacji podano w wymienionym powyżej protokole badań załączonym do niniejszego certyfikatu.
The conditions of the certificate and the specification of adequate parts of documentation are described in mentioned above test report enclosed to this certificate

Urząd Dozoru Technicznego UDT-CERT

CEOC

Lublin 12.06.2012r.
Miejsce i data wydania
Location, date

W imieniu JN UDT-CERT
On behalf of UDT-CERT Notified Body

UDT-CERT, 02-353 WARSZAWA, UL. SZCZĘŚLIWICKA 34

CONFORMITY DECLARATION

1. Manufacturer

Metal-Fach Jacek Kucharewicz
Ul. Sikorskiego 66
16-100 Sokółka
NIP 545-100-10-62

2. Product name and intended use.

Solid fuel steel central heating boiler with automatic feeder.

Type SE ..... Manufacturer's number ..... Year of production .....

I. Dokumenty odniesienia:

1. Regulation of the Polish Minister of Economy of 21.12.2005 on the essential requirements of pressure devices and sets of pressure devices (Polish Journal of Laws no. 263 item 2200).
Pressure Directive 97/23/EWG.
2. Regulation of the Polish Minister of Economy of 21.10.2008 on the essential requirements of mechanical devices (Polish Journal of Laws no. 199 item 1228) with change published in Polish Journal of Laws 2011 no. 124 item 701. Directive 2006/42/WE Machinery.

II. Technical documentation:

1. Norm PN-EN 303-5:2012: Heating boilers for solid fuels, hand and automatically stocked of nominal power of 500 kW.
2. Norm PN-EN ISO 12100-1 Safety of machinery –Basic concepts, principles for design – part 1: Basic terminology, Methodology.
3. Norm PN-EN 1708-1 Welding — Basic welded joint details in steel Part 1: Pressurized components
4. Norm PN-EN 287-1+A1 Welder Approval Testing.Steel

The product has the marks 12-06-2012. CE

Person approving the documentation: Location: Sokółka, Date 28.05.2014 ..... Włodzimierz Lewko
(Name, Surname, Signature)

Location: Sokółka, Date 28.05.2014 ..... Jacek Kucharewicz
(Name, Surname, Signature)

KIEROWNIK ZAKŁADU
Włodzimierz Lewko

WŁAŚCICIEL
Jacek Kucharewicz

WARRANTY CARD FOR THE STEEL BOILERS, CENTRAL HEATING WATER BOILERS

Power ..... kW Type: ..... Number: .....

Production date: .....

Purchase date: .....

Buyer's name: .....

Address: .....

....

Date of purchase and seal

I agree to the warranty conditions
Buyer's signature

WARRANTY CLAIM

Client's details: .....
.....
.....
(first name, second name, address, contact number)

Purchase document number date: .....
.....

Payment document number: .....
.....

Seller's signature: .....

Batch and product number: .....
.....

Name of the product under warranty: .....
.....

Warranty period: valid ☐ invalid ☐

Detailed description of the fault .....
.....
.....
.....

Warranty comencement conditions

1. Payment confirmation from the point of sale is the condition of warranty procedure comencement.
2. The warranty card is the only condition for free repair.
3. The Purchaser is obligated to cover the costs of METAL FACH Jacek Kucharewicz company in case of unnecessary calling and work of support unit.
4. Legible signature of the Purchaser to confirm the familiarisation with the warranty procedure conditions

.....
(legible signature of Purchaser)

.....
(Warrant's signature)

I declare, that I have read and understood the Warranty Conditions under which I am claiming warranty and I allow my personal data to be processed for the purpose of warranty, in accordance with the Personal Data Protection Act dated 29/08/1997 (Dz. Ust. No. 133, item 883).

.....
(legible signature of Purchaser)

The Producer is obligated to take warranty actions within 30 days from receiving the claim in writing on the producer's form.

WARRANTY CARD

METAL-FACH
HEATING TECHNOLOGY

Purchaser's Copy

Sokółka, date .....…20.....

WARRANTY CLAIM NO. ……./R/20……

Client's details:

First name and last name: .....

Address: .....

Phone no.: .....

Purchase document no.: .....

Full name of the purchased product: .....

.....

Warranty expiry date: valid ☐ invalid ☐

Detailed description of the fault: .....

.....

The Purchaser is obligated to cover the costs of METAL FACH Jacek Kucharewicz company if the warranty claim has been rejected.

.....
(legible signature of Purchaser)

.....
(Warrant's signature)

METAL-FACH
HEATING TECHNOLOGY

The original for the Warrant
(attach to the claim)

Sokółka, date .....…20.....

WARRANTY CLAIM NO. ……./R/20……

Client's details:

First name and last name: .....

Address: .....

Phone no.: .....

Purchase document no.: .....

Full name of the purchased product: .....

.....

Warranty expiry date: valid ☐ invalid ☐

Detailed description of the fault: .....

.....

The Purchaser is obligated to cover the costs of METAL FACH Jacek Kucharewicz company if the warranty claim has been rejected.

.....
(legible signature of Purchaser)

.....
(Warrant's signature)

START-UP REPORT

(OWNER'S COPY)

In order to verify your purchase and warranty validity please send the report on the start-up within 30 days.
You can do it by:

1. Filling in the „Start-up" online form at www.metalfachtg.com.pl/en/
2. E- mailing the scan or photo of the report.
3. Sending a letter with the copy of the report, the company's address can be found at the end of the manual.

I. Boiler room	Valid	Invalid	Comments
In compliance with the conditions of chapter 8. Boiler room and boiler installation requirements			
In compliance with the conditions of chapter 11. Connecting the boiler to the chimney			
II. Central heating system	**Valid**	**Invalid**	**Comments**
In compliance with the conditions of chapter 8.2 Connecting the boiler to the heating system			
In compliance with the conditions of chapter 9. Expansion vessel requirements			
There is no other heating source. If there is, how does it affect the operation of the boiler?			
Anti-freeze protection of the boiler			

III. Connecting the components to the electrical system	Valid	Invalid	Comments
The conditions are in accordance with the Operation and Mainteneance Documentation in the chapter: 10. Connecting the components to the electrical system.			
IV. Components test	**Valid**	**Invalid**	**Comments**
The sensors are placed in the correct places.			
The readings are in accordance with the actual state.			
The fan rotation is correct.			
Opening the blower door with blow power.			
The screw rotation is correct.			
V. Boiler start-up	**Valid**	**Invalid**	**Comments**
The hydraulic connection to the system is tight.			
Fireman/Strażak system test (if installed)			
Checking the connection between the fuel feeder and boiler.			
Stoking fuel to the fuel bin.			
Checking the coal feed by the feeder			
Boiler start-up in accordance with chapter 12. Boiler start-up			
Initial regulation of the boiler parameters settings.			
Final regulation of the boiler parameters settings.			

VI. The set parameters of the boiler parameters (chapter 13. Recommended settings of the boiler power)

Boiler:

Boiler operation mode: Required temperature: Boiler hysthesis:

System password:

Burner:

Fuel: Stand-by maintaining: Operation maintaining: Blower outlet: Antilock: Test mode power:

Feeding 100%: Initial stoking: Ignition: Blower+ Ignitor: Fire test: Initial power:

Burn out:

Blow:

Oxygen 100%: Oxygen 80%: Oxygen 60%: Oxygen 40%: Oxygen 20%: Starting power:

Sustain power:

VII. User's training certificate on	Valid	Invalid	Comments
Training on safe operation of the boiler is included in chapter 14. When operating the boiler you should remember			
Training on boiler regulator and combustion control			
Blower rpm			
Boiler maintenance chapter 15. Cleaning and maintenance of the boiler			
Required fuel quality chapter 7.8 Fuel			
Procedure to follow in emergency situation 16. Examples of device faults and malfunctions			

Stat-up date	Boiler name	Boiler power (kW)	Serial number

(Technician's name)	(Owner's name)
(Address)	(Address)
(Company seal)	(Contact number)
(Signature)	(Signature)

START-UP REPORT

(METAL FACH JACEK KUCHAREWICZ COMPANY'S COPY)

In order to verify your purchase and warranty validity please send the report on the start-up within 30 days.
You can do it by:

1. Filling in the „Start-up" online form at www.metalfachtg.com.pl/en/
2. E- mailing the scan or photo of the report.
3. Sending a letter with the copy of the report, the company's address can be found at the end of the manual.

I. Boiler room	Valid	Invalid	Comments
In compliance with the conditions of chapter 8. Boiler room and boiler installation requirements			
In compliance with the conditions of chapter 11. Connecting the boiler to the chimney			
II. Central heating system	**Valid**	**Invalid**	**Comments**
In compliance with the conditions of chapter 8.2 Connecting the boiler to the heating system			
In compliance with the conditions of chapter 9. Expansion vessel requirements			
There is no other heating source. If there is, how does it affect the operation of the boiler?			
Anti-freeze protection of the boiler			

III. Connecting the components to the electrical system	Valid	Invalid	Comments
The conditions are in accordance with the Operation and Mainteneance Documentation in the chapter: 10. Connecting the components to the electrical system.			
IV. Components test	**Valid**	**Invalid**	**Comments**
The sensors are placed in the correct places.			
The readings are in accordance with the actual state.			
The fan rotation is correct.			
Opening the blower door with blow power.			
The screw rotation is correct.			
V. Boiler start-up	**Valid**	**Invalid**	**Comments**
The hydraulic connection to the system is tight.			
Fireman/Strażak system test (if installed)			
Checking the connection between the fuel feeder and boiler.			
Stoking fuel to the fuel bin.			
Checking the coal feed by the feeder			
Boiler start-up in accordance with chapter 12. Boiler start-up			
Initial regulation of the boiler parameters settings.			
Final regulation of the boiler parameters settings.			

VI. The set parameters of the boiler parameters (chapter 13. Recommended settings of the boiler power)

Boiler:

Boiler operation mode: Required temperature: Boiler hysthesis:

System password:

Burner:

Fuel: Stand-by maintaining: Operation maintaining: Blower outlet: Antilock: Test mode power:

Feeding 100%: Initial stoking: Ignition: Blower+ Ignitor: Fire test: Initial power:

Burn out:

Blow:

Oxygen 100%: Oxygen 80%: Oxygen 60%: Oxygen 40%: Oxygen 20%: Starting power:

Sustain power:

VII. User's training certificate on	Valid	Invalid	Comments
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Training on boiler regulator and combustion control			
Blower rpm			
Boiler maintenance chapter 15. Cleaning and maintenance of the boiler			
Required fuel quality chapter 7.8 Fuel			
Procedure to follow in emergency situation 16. Examples of device faults and malfunctions			

Stat-up date	Boiler name	Boiler power (kW)	Serial number

(Technician's name)

(Address)

(Company seal)

(Owner's name)

(Address)

(Contact number)

(Signature)

(Signature)

METAL-FACH

HEATING TECHNOLOGY

METAL-FACH Jacek Kucharewicz

TECHNIKA GRZEWCZA

16-100 Sokółka, ul. Sikorskiego 66

tel. +48 85 711 94 54, www.metalfachtg.com.pl